

**POLTECHNIK**

ELEKTROTECHNIKA PRZEMYSŁOWA

murrplastik



# Professional cable management

Innovative solutions and products

Cable drag chain systems

Cable product line

Cable protection conduits  
and fitting systems

Robotic equipment

Cable entry- and  
cable retaining systems

Labelling systems



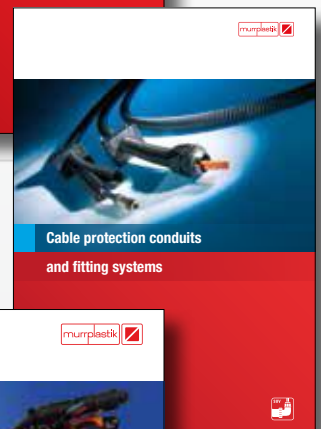
 **CABLE DRAG CHAIN SYSTEMS**  
Complete solutions for many application areas page 5 – 440



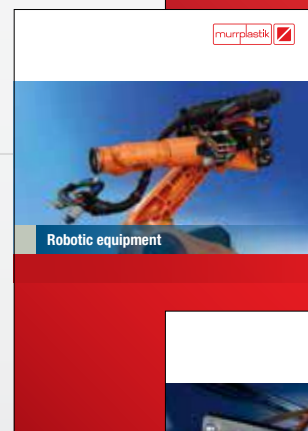
 **CABLE PRODUCT LINE**  
Cables sold by the metre for highly flexible applications page 441 – 550



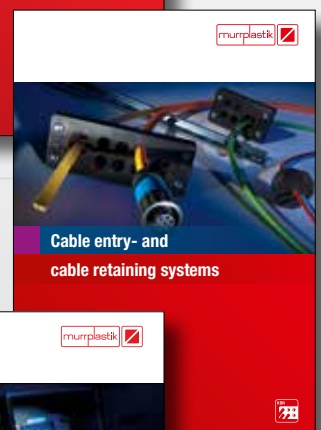
 **CABLE PROTECTION CONDUITS AND FITTING SYSTEMS**  
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 **CABLE ENTRY- AND CABLE RETAINING SYSTEMS**  
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 **LABELLING SYSTEMS**  
Labelling materials and labelling devices page 1059 – 1306



All information with respect to the chemical and physical properties of our products, as well as application advice given verbally, in writing or by tests, is given to the best of our knowledge.

It does not exempt the purchaser from the responsibility to carry out examinations and tests in order to determine the suitability of the products for their intended use.

The purchaser is solely liable for the application, use, and installation of the products. He must also comply with the legal and official provisions, and observe any possible property rights of third parties.

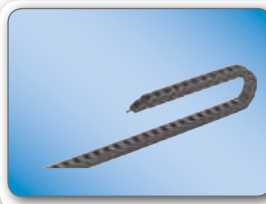
Our General Terms and Conditions shall apply.

Subject to technical alterations.



# Cable drag chain systems





**EasyLine cable drag chains**

Simple filling with the Easy mechanism

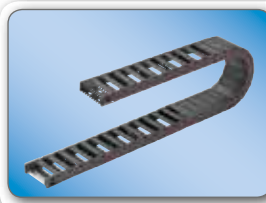
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**MultiLine cable drag chains**

Compact dimensions, can be supplied in open and closed designs

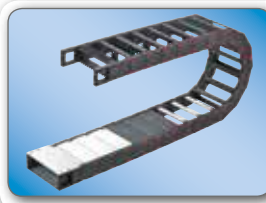
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**ModulLine cable drag chains**

Extensive shelving system/interior division, can be supplied in open and closed designs, quiet running

from page 162



**PowerLine cable drag chains**

Opens on both sides, for high additional loads and long travel distances, open and closed designs available, variable widths via aluminium crossbars

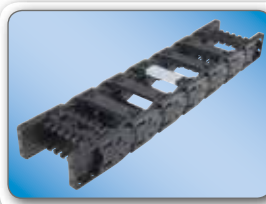
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**HeavyLine cable drag chains**

Very high tensile strength, for high additional loads and long travel distances, opens on both sides, variable widths via aluminium crossbars

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**Murrplastik legacy products**

*(do not use for new-build projects)*

Tried-and-tested ranges, still in stock, not to be used for new-build projects

from page 330



**Strain relief systems**

Strain relief and Steel Fix bow clamps

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**Appendix**

Protection classes, fire classifications, directives, chemical resistances and other information

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**CABLE DRAG CHAIN SYSTEMS**

<b>Product line</b>	<b>Type</b>	<b>Variation</b>	<b>Inside width</b>		
<b>EasyLine</b>	MP 10.1	open	10 mm . . . . .	Page	62 – 67
<b>MultiLine</b>	MP 14	open	14 mm . . . . .	Page	68 – 73
<b>MultiLine</b>	MP 15	open	14 mm . . . . .	Page	74 – 79
<b>MultiLine</b>	MP 18.1/MP 18.2	open	18 mm . . . . .	Page	80 – 85
<b>MultiLine</b>	MP 18.4	open	18 mm . . . . .	Page	86 – 91
<b>MultiLine</b>	MP 20.2	open	20 mm . . . . .	Page	92 – 97
<b>MultiLine</b>	MP 3000	open	26 mm . . . . .	Page	98 – 105
<b>MultiLine</b>	MP 25G	open	25 mm . . . . .	Page	106 – 113
<b>MultiLine</b>	MP 35.1/MP 35.2	open	35 mm . . . . .	Page	114 – 125
<b>MultiLine</b>	MP 36G	open	36 mm . . . . .	Page	126 – 133
<b>MultiLine</b>	MP 43G	open	38 mm . . . . .	Page	134 – 141
<b>MultiLine</b>	MP 45.1/MP 45.2	open	45 mm . . . . .	Page	142 – 153
<b>MultiLine</b>	MP 65G	open	60 mm . . . . .	Page	154 – 161
<b>ModulLine</b>	MP 25.1/.2	open	25 mm . . . . .	Page	162 – 173
<b>ModulLine</b>	MP 25.3/.4	closed	25 mm . . . . .	Page	162 – 173
<b>ModulLine</b>	MP 30.1/.2	open	30 mm . . . . .	Page	174 – 185
<b>ModulLine</b>	MP 30.3/.4	closed	30 mm . . . . .	Page	174 – 185
<b>PowerLine</b>	MP 32.2	open	32 mm . . . . .	Page	186 – 201
<b>PowerLine</b>	MP 32.3	closed	30 mm . . . . .	Page	186 – 201
<b>PowerLine</b>	MP 41.2	open	42 mm . . . . .	Page	202 – 217
<b>PowerLine</b>	MP 41.3	closed	38 mm . . . . .	Page	202 – 217
<b>PowerLine</b>	MP 52.2	open	52 mm . . . . .	Page	218 – 233
<b>PowerLine</b>	MP 52.3	closed	48 mm . . . . .	Page	218 – 233
<b>PowerLine</b>	MP 52.2-D	open	52 mm . . . . .	Page	234 – 249
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<b>PowerLine</b>	MP 52.5	closed	48 mm . . . . .	Page	250 – 265



PowerLine	MP 52.6	open	52 mm . . . . .	Page	266 – 275
PowerLine	MP 52.7	closed	48 mm . . . . .	Page	266 – 275
PowerLine	MP 62.4	open	62 mm . . . . .	Page	276 – 289
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HeavyLine	MP 62.3	closed	62 mm . . . . .	Page	290 – 303
HeavyLine	MP 82.2	open	82 mm . . . . .	Page	304 – 317
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**Murrplastik legacy products** *(do not use for new-build projects)*

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# SUCCESS DOESN'T HAPPEN OVERNIGHT



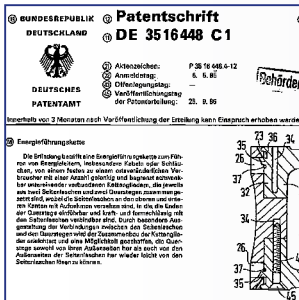
## A SELECTION OF OUR INNOVATIONS FOR YOUR ADVANTAGE:

- 1984** First cable drag chain that can be opened
- 1987** Crossbars pivotable on both sides
- 1988** Bayonet stop system
- 1994** Integrated strain relief plate
- 1994** Guide channel system with releasable connecting glide rails
- 1996** Center piece for guide channel systems aligned in parallel
- 1997** Guide channel system with multiple grooves
- 1998** Crossbar connectors for greater stability with large chain widths
- 2001** PowerLine 2nd Generation Generation
- 2002** PowerLine shelving system for optimised chain compartment
- 2003** Magnet chain technology for non-contact gliding
- 2005** MultiLine series
- 2007** Brush supports for optimum cable positioning in the neutral strand
- 2008** ModulLine series
- 2011** Bracket bar for integration of large-diameter media conduits into an cable drag chain system
- 2013** Sliding blocks for higher service life of the chain
- 2015** PowerLine MP 52.6 for long travel distance
- 2016** PowerLine light series
- 2016** noiseLESS guide channel system
- 2016** MultiLine MP 45 with additional damper option
- 2017** Gliding plates for Power- and HeavyLine

# OVER 30 YEARS OF PASSION FOR INNOVATION



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1984



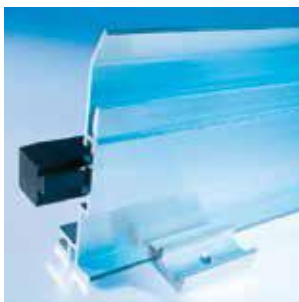
1987



1988



1994



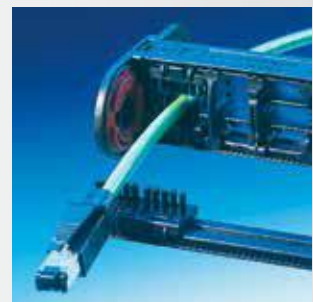
1994



2000



2003



2007



2008



2011



2013



2015



2016



2016



2016



2017

# CLICK LOCK CLICK – AND YOU’RE DONE



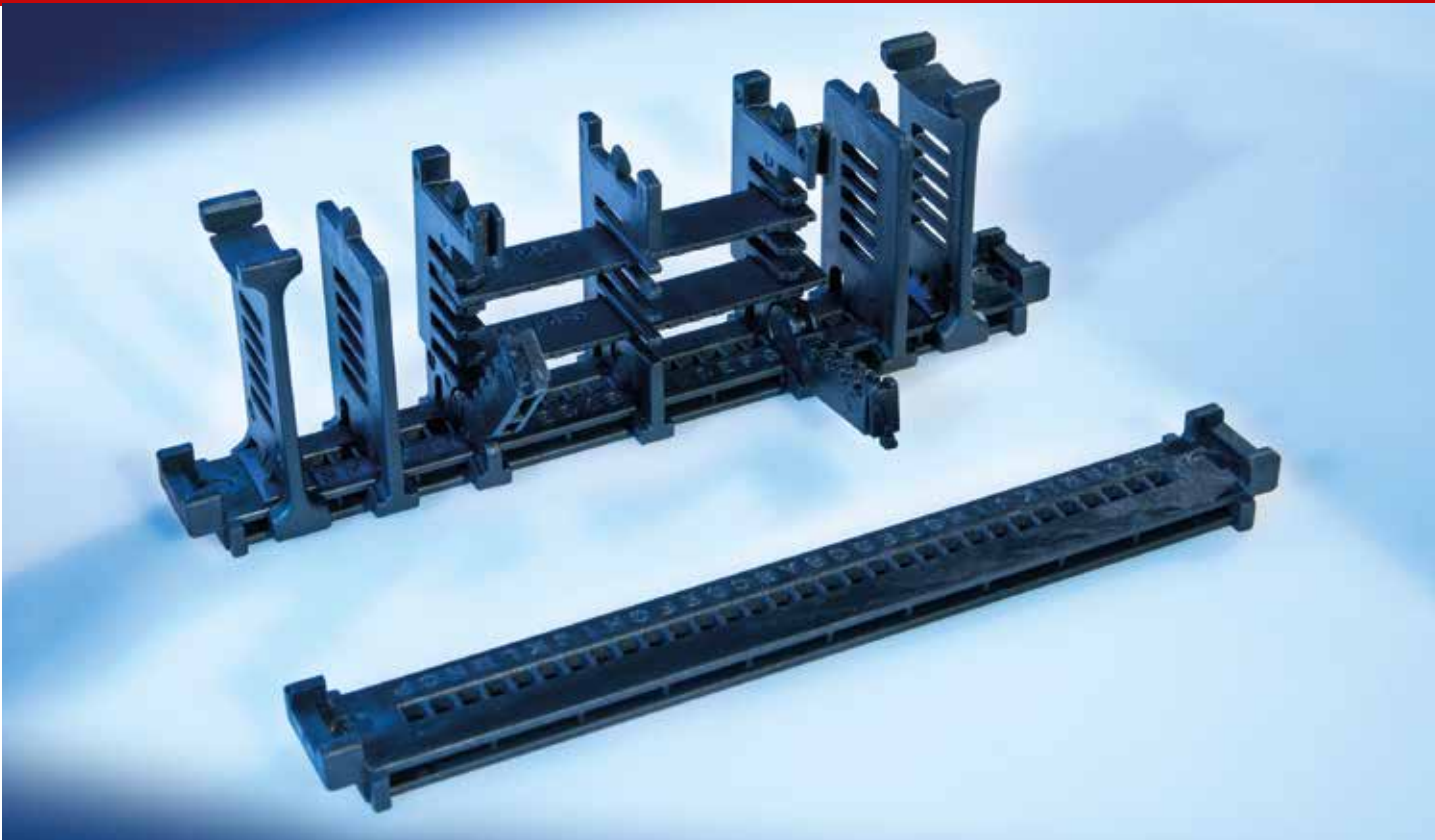
## FAST AND EASY

The crossbars can be fitted and removed quickly and with very little effort. Position the screwdriver between side link and crossbar and slightly turn it to open the click lock. Retrofitting a cable in the cable drag chain is also a quick and simple task. Assembly is even simpler. Position the crossbar in the side links and lock the click lock by hand.

With the click lock it is child’s play. Fitting and removal are rarely quicker or simpler without compromising stability.



- Quick assembly: click and go!
- REFA time and motion study conducted
- Assembly without tools
- Easy assembly
- Incredibly simple to retrofit cables



## EXTREMELY VERSATILE

Equipping the chain with cables is made simpler by using separable shelf supports

The multitude of combination options means that the perfect shelving system can be put together for any application.

The shelf separators lock firmly into the crossbars and, once in place, they cannot slip. No matter what type of installation – horizontal, backwards, etc. – the cables stay in the position that was originally intended. This means: a long service life and no uneven wear to the chain.



- Easy assembly
- REFA time and motion study conducted
- Lockable separator, fixed position
- Rapid assembly
- Modifications possible when installed

# VARIABLE CROSSBARS AND COVERS



## VARIABLE

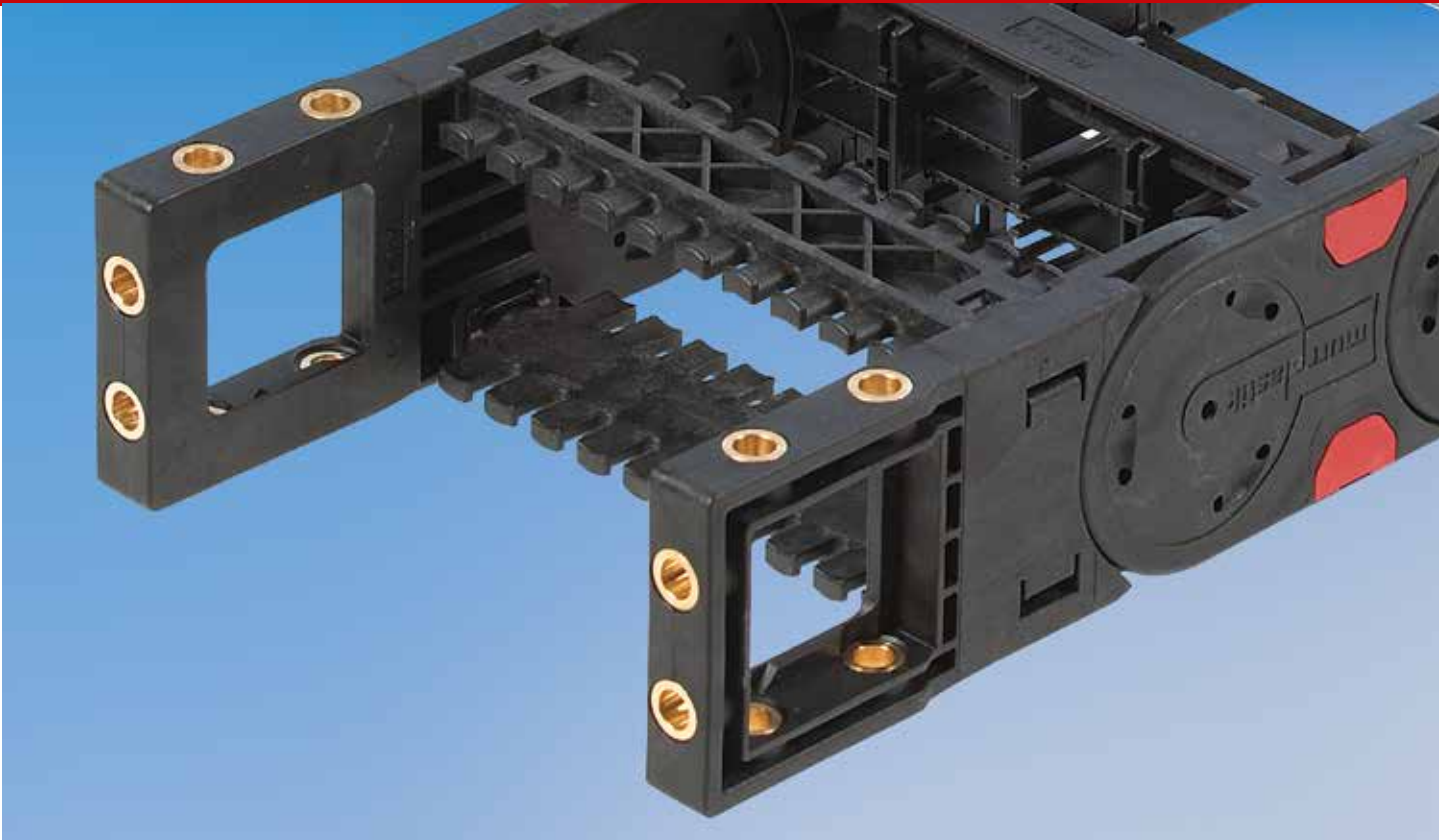
Crossbars/covers come in two alternative versions: plastic or aluminium. The plastic version is standard for crossbars and can be supplied in a range of widths. The aluminium version can be supplied in any width.

## FIXED

In both the plastic and the aluminium versions, the separators lock into the crossbar/cover and are thus fixed in place. The separators remain in their original position regardless of the type of installation and any chain movement. The crossbars and separators form a stable unit.



- Flexible adjustment due to closely spaced lock tabs
- Fixed with lock tabs
- Variable length
- Extremely stable



## FAST AND EASY TO ASSEMBLE

Metal bushes are injected permanently into the plastic in the chain bracket. There are two types of bushings: with and without thread. The bushings are offered without thread as standard.

Both types of bush inhibit cold flow properties during screwing, thus effecting an extremely good fit. The threaded bush is screwed directly without a nut.



- No cold flow deformation
- Quick
- Secure fastening
- Compact

# INTEGRATED STRAIN RELIEF SAVES TIME AND SPACE



## SIMPLE AND SAFE STRAIN RELIEF

No cumbersome special design for cable strain relief. Everything is quick and safe with the Murrplastik cable drag chain system.

Special strain relief crossbars are used on the chain bracket. The strain relief is effected by cable ties. The cable can be fixed on the strain relief plate on two sides.

This integrated strain relief system is very quick to assemble and is extremely economical on space.

The Steel Fix bow clamps are mounted on the C-rail integrated into the chain bracket. This strain relief mechanism is impressively easy to fit and very secure. One Steel Fix bow clamp can provide strain relief for up to three cables.



- Easy to assemble
- Compact design
- Economical
- Saves space
- Secure strain relief





## INTEGRATION OF MEDIA CONDUITS

Large-diameter conduits are routed securely by using bracket bars. These bracket bars can be supplied in various sizes.

Mounting is either on the crossbars or on the closed cover. Thanks to the modular design, retrofitting with bracket bars is also possible at any time.

### Bracket bars are available for the following cable drag chains:

MP 32.2 / MP 32.3 ALU

MP 41.2 / MP 41.3

MP 52.2 / MP 52.3 / MP 52.4 / MP 52.5

MP 62.2 / MP 62.3 / MP 62.4 / MP 62.5 ALU

MP 82.2 / MP 82.3



- Modular system
- Available for crossbars and covers
- Can be supplied in a range of sizes
- Can be retrofitted

# EXTENSION OF THE SERVICE LIFE OF THE CABLE DRAG CHAIN IN GLIDING APPLICATION



## SLIDING BLOCKS - INNOVATION AGAINST WEAR AND TEAR

Cable drag chains that are used in horizontal gliding applications, with travel of longer than three meters, are often subjected to very high mechanical loads.

Murrplastik Systemtechnik has developed a simple and clever solution to address this problem: the sliding block. The sliding blocks are fitted onto the side links in the cable drag chain's inside bend without the need for any kind of tools. A screwdriver may be needed merely to disengage a sliding block for removal. As a result, when the wear limit is reached, only the comparatively inexpensive sliding blocks have to be replaced and not the complete cable drag chain.

Practical tests show that cable drag chains can gain as much as a fivefold extension to their service life by using sliding blocks. An investment that pays for itself in a very short time.



WITH SLIDING BLOCK



WITHOUT SLIDING BLOCK

**Sliding blocks are available for the following cable drag chains:**

MP 32.2 / MP 32.3 ALU

MP 41.2 / MP 41.3

MP 52.2 / MP 52.3 / MP 52.4 / MP 52.5

MP 62.2 / MP 62.3 / MP 62.4 / MP 62.5 ALU

MP 82.2 / MP 82.3

- Wear-reducing
- Extension of the service life by up to five times
- Easy assembly and disassembly
- Interchangeable

# GLIDING PLATES FOR HORIZONTAL SIDE-MOUNTED POSITION



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## GLIDING PLATES – CONTROLLED WEAR

Gliding plates are used with cable drag chains in horizontal side-mounted position. The gliding plates are snapped into the side links instead of using side link locks (GLP 8 and GLP 10, no tools required) or they are screwed directly to the side links (GLP 4 and GLP 5).

This allows the cable drag chain to slide on the gliding plates and not on the side links. Depending on the application, the service life of the cable drag chain may be extended two-fold, by using slide plates.

The wear limit for all gliding plates is 2.5 mm. Once the wear limit is reached, the material thickness on the sliding surface of the gliding plate is 4.5 mm. We recommend replacing the cable drag chain when this limit has been reached.



GLP 5 SLIDE PLATE



GLP 8 SLIDE PLATE

**Gliding plates are available for the following cable drag chains:**

MP 41.2 / MP 41.3

MP 52.2 / MP 52.3 / MP 52.4 / MP 52.5

MP 62.4 / MP 62.5 ALU

MP 82.2 / MP 82.3 / MP 102.2

- Doubling of the service life
- Runs more quiet through significantly reduced polygon effect.
- Cable drag chain can also be opened in side-mounted position
- For GLP 8 and GLP 10 no tool required
- Cable drag chains are supplied completely mounted with the gliding plates

# NOISE REDUCTION SYSTEM



## NOISE REDUCTION SYSTEM

Thanks to the innovative development of the damping elements the noise emission can be reduced by up to 10 dB(A) compared to conventional cable drag chains without damper.

The integrated damping elements function in the inside bend stops and facilitate a significantly quieter unrolling of the chain links.

Since a noise reduction by 10 dB(A) is already perceived as half the noise emission, it is therefore considered a much quieter environment, conducive to concentrated work.

The damping elements are available for the cable drag chain series MP 35.1/MP 35.2, MP 45.1/MP 45.2, MP 52.2-D/MP 52.3-D, MP 52.4/ MP 52.5, MP 62.4/ MP62.5 ALU.



- Reduction of the noise emission by up to 10 dB(A)
- Significantly quieter unrolling of the chain links.
- Completely assembled system

# GUIDE CHANNELS VAW WITH DAMPER



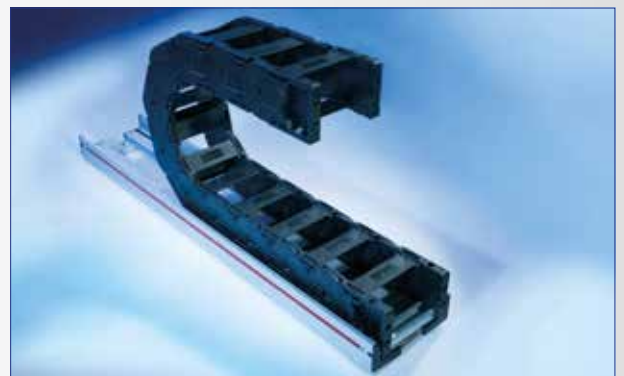
## REDUCTION OF THE NOISE EMISSION

The use of cable drag chains generates considerable noise, especially at higher speeds. The reason for this is the non-circular rolling of the cable drag chain links on the surface – the so-called polygon effect.

As a solution to reduce the noise emission Murrplastik offers variable guide channel systems with integrated damping elements. This reduces disturbing noise by up to 20 dB(A)

Available variants:

VAW 146, noiseLESS NL30, noiseLESS NL35



- Reduction of the noise emission by up to 20 dB(A)
- Quick and easy assembly
- Salt-water resistant and corrosion proof
- Variable chain widths

# VAW GUIDE CHANNELS



## VAW GUIDE CHANNELS - FOR MAXIMUM SPEED ASSEMBLY

The VAW variable guide channel system is harmonised for Murrplastik cable drag chains. Since different applications require different materials, the guide channels are made of galvanized steel, stainless steel or aluminium. We can also supply V4a models on request for saltwater applications.

No screwing or welding is required for the individual sections in our variable guide channel system. The channel sections are perfectly aligned thanks to special plastic connectors or channel brackets. The floor mounting is made with clamping pieces and C-rails.

The glide rail profile not only guarantees snag-free gliding for the cable drag chain over the entire travel distance, but also reduces the noise level.



- Quick and easy assembly
- High quality
- Highly economical
- Tailored system
- Long service life

# CONFECTIONING CONNECT 4 MOTION



[www.mp.de](http://www.mp.de)



## EVERYTHING FROM ONE SOURCE

Reduce your labour costs and save time by taking advantage of our experience in chain systems gained over many years.

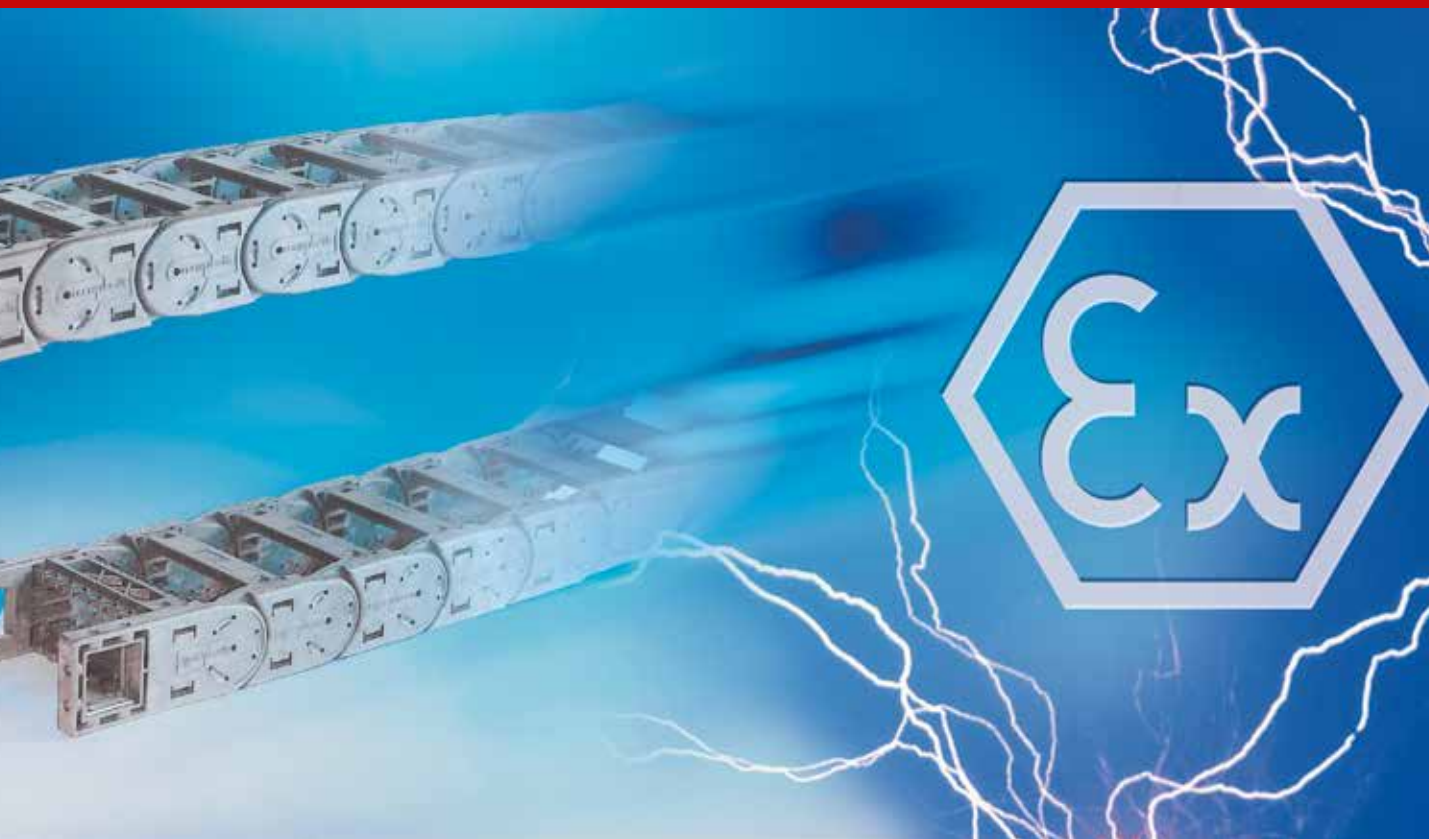
At the customer's request we assemble complete cable drag chains with cables. We handle the layout, assembly and ordering of individual components. The customer is supplied with a complete assembly kit that only needs to be fitted.

Thanks to our experience of cable drag chains and cables acquired over many years, we can combine both elements in one system. This guarantees a long service life.



- System guarantee
- Easy handling
- Saves time and hassle when ordering
- Reduced warehousing costs

# ATEX CABLE DRAG CHAINS



## SAFETY ACCORDING TO ATEX EX II 2GD

Since July 2003, all equipment, components and protective systems used in explosion hazard areas must comply with the ATEX Product Directive 94/P/EC.

Explosions can always occur where flammable gases, vapors, liquids or dusts are produced, stored or transported and, under certain conditions, can form an explosive mixture in conjunction with air. In such explosive atmospheres a small spark is often enough to trigger an explosion.

Our certified cable drag chains made of dissipative ESD material always put you on the safe side!



- Full ATEX EX II 2GD certification
- Simple to exchange, certification remains in force
- For areas at risk of explosion 1, 2, 21, 22





## ELECTROSTATIC DISCHARGES

In many areas of industrial production, the requirements for avoiding electrostatic discharge are growing in order to protect sensitive electronic components.

Friction occurs between machine parts during movement, which can lead to the formation of frictional electricity. Electrostatic discharges that occur after contact with an earthed body can be harmful to sensitive electronic components: They can be destroyed or their function can be affected.

Murrplastik cable drag chains made of ESD material control and permanently dissipate electrostatic charges.



- **Controlled and permanent discharge of electrostatic discharges**
- **Excellent protection of electronic components**
- **Cable drag chains made of ESD material**

# CLEAN ROOM CABLE DRAG CHAINS



## APPLICATION IN SENSITIVE CLEAN ENVIRONMENTS

Clean room cable drag chains from Murrplastik Systemtechnik are produced using special materials. These cable drag chains have excellent clean room properties that meet the highest technical requirements.

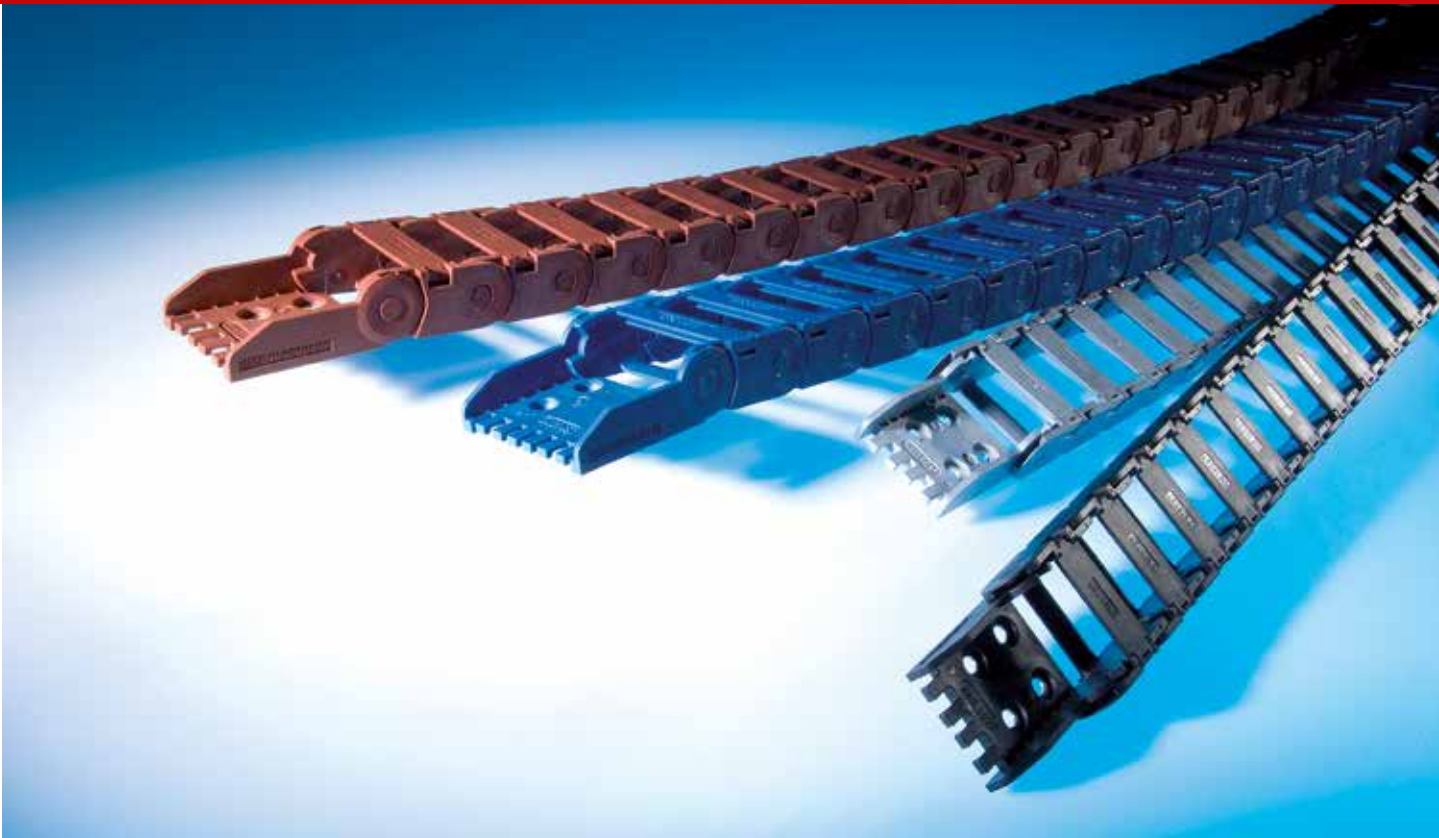
Even in continuous operation, our clean room cable drag chains discharge only a minimal amount of particles into the environment.

The clean room certification was carried out and confirmed by the renowned Fraunhofer Institute for Manufacturing Engineering and Automation IPA.

Despite its outstanding abrasion properties, Murrplastik nevertheless refused to compromise in the slightest when it comes to functionality, reliability and ease of assembly.



- Clean room classification by Fraunhofer Institute (IPA)
- Fulfills the ATEX Europe guidelines
- Uncompromising functionality
- Unflinching reliability



## EXTREME AREAS OF APPLICATION REQUIRE DIFFERENT MATERIALS.

The Murrplastik colour coding system enables you to recognise and classify different materials and hence areas of application safely and easily.

Clear assignments, safe use – as with all Murrplastik products.



- Murrplastik colour coding system
- Black cable drag chain:  
Polyamide (PA): standard
- Light gray cable drag chain:  
Polyamide (PA): EMC model
- Oxide red cable drag chain:  
Polyamide (PA), UL 94/V0
- Blue cable drag chain:  
Polypropylene (PP)

# CORPORATE IDENTITY – INDIVIDUAL CABLE DRAG CHAIN IDENTIFICATION



## INDIVIDUAL CABLE DRAG CHAIN IDENTIFICATION

Would you like to individually label your products and stand out from other companies? Should your corporate identity immediately catch the eye?

With our ability to realize locking mechanisms in custom colours and the option to add your company logo, you can set visual signals and accents and give your product a unique identity.

Either access our standard colour palette or ask us for individual solutions.



- Individual product identification
- Locking mechanisms in custom colours
- Addition of company logo on request

# SELECTION CRITERIA FOR CABLE DRAG CHAINS

## IDEALLY, THE DESIGN OF AN CABLE DRAG CHAIN SYSTEM WILL TAKE THE FOLLOWING CRITERIA INTO ACCOUNT:

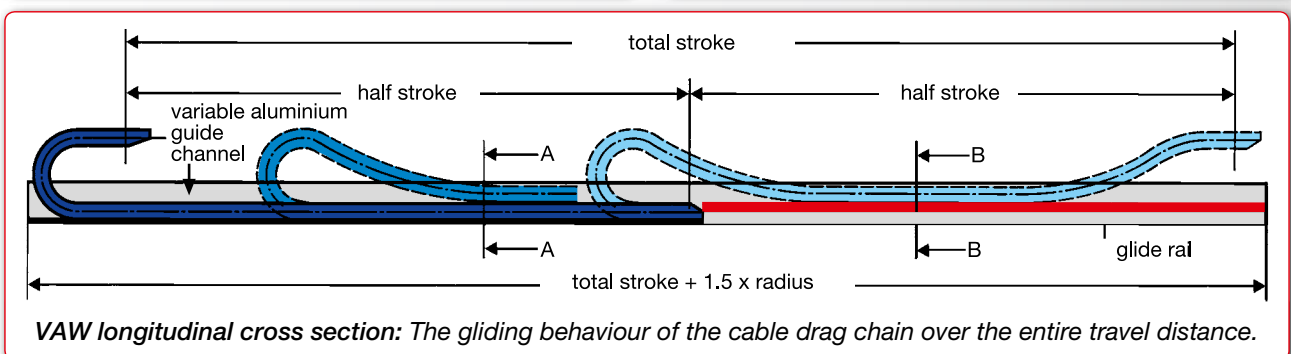
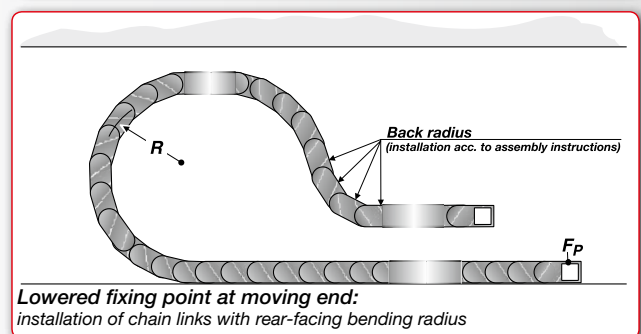
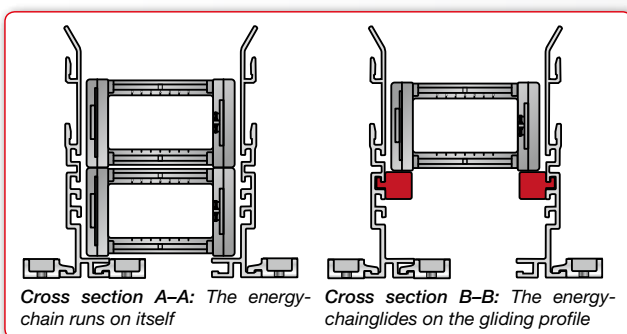
- Determine the number and outside diameter of the cables or conduits to be laid.
- For self-supporting applications, the diagram “self-supporting length” can be used to identify the matching chain using load and travel distance.
- Determine width of cable drag chain, design shelving system (separators, shelves, etc.).
- Determine the minimum possible bending radius of cabling and conduits, as per manufacturer specifications, and select the matching bending radius for the cable drag chain.
- Determine chain length respective to the travel distance and the selected bending radius. (Using a formula – see matching cable drag chain types)
- Check whether a guide channel is required for the application. For gliding applications, a guide channel is always required.

## SELF-SUPPORTING LENGTHS AND TRAVEL DISTANCES

If the travel distance is too long for self-supporting installation, the chain upper run rests on the chain lower run (the upper run glides over the lower run). We describe this system as a “gliding” type of installation.




With gliding installations, we recommend setting the chain bracket at the moving end lower, depending on the chain type and bending radius.

Please contact us: we will be very happy to help you design your cable drag chain project. Further information can be found in the “Manual for the design and assembly of cable drag chain systems”, Order No. 8902804550 as well as in our online configuration <https://mymppchain.com/>



		Inside height in mm		Chain type		Crossbars in mm from - to		Covers in mm from - to		INSIDE WIDTH	BENDING RADIUS
		Open	Closed	PA	ALU	PA	ALU	Bending radii in mm, from - to			
<b>MURRPLASTIK SERIES</b>	10	MP 10.1		6 – 41	—	—	—	18 – 58			
	14	MP 14		16 – 40	—	—	—	25 – 75			
	14	MP 15		16 – 40	—	—	—	25 – 75			
	18	MP 18.1/2		15 – 70	—	—	—	28 – 78			
	18	MP 18.4		18 – 50	—	—	—	40 – 80			
	20	MP 20.2		15 – 50	—	—	—	38 – 125			
	25	MP 25.1/2	25.3/25.4	40 – 200	—	40 – 200	—	50 – 300/100 – 300*			
	25		MP 25 G	—	—	26 – 125	—	60 – 250			
	26	MP 3000		26 – 125	—	—	—	50 – 300			
	30	MP 30.1/2	30.3/4	40 – 200	—	40 – 200	—	60 – 300/100 – 300*			
	32/30	MP 32.2	MP 32.3 ALU	45 – 546	67 – 600	45 – 546	43 – 600	80 – 250/120 – 250*			
	35	MP 35.1/2		50 – 175	—	—	—	63 – 250			
	36		MP 36 G	—	—	62 – 125	—	80 – 200			
	38		MP 43 G	—	—	62 – 182	—	125 – 400			
	42/38	MP 41.2	MP 41.3	45 – 546	67 – 600	84 – 246	43 – 600	90 – 350/150 – 350*			
	45	MP 45.1/2		50 – 175	—	—	—	75 – 300			
	52/48	MP 52.2	MP 52.3	45 – 546	67 – 600	96 – 346	43 – 600	100 – 350/150 – 350*			
	52/48	MP 52.2-D	MP 52.3-D	45 – 546	67 – 600	96 – 346	43 – 600	200			
	52/48	MP 52.4	MP 52.5	45 – 546	67 – 600	96 – 346	43 – 600	125 -300/150 – 300*			
	52/48	MP 52.6	MP 52.7 ALU	—	50 – 600	—	42 – 600	150 – 300			
60		MP 65 G	—	—	84 – 144	—	200 – 400				
62/62	MP 62.2	MP 62.3	93 – 518	72 – 600	118 – 418	40 – 600	150-500/200-500*				
62	MP 62.4	MP 62.5 ALU	45 – 546	67 – 600	—	43 – 600	135 -300/150 – 300*				
82/74	MP 82.2	MP 82.3	93 – 518	72 – 600	243	40 – 600	150 -650/200 – 650*				
102	MP 102.2		93 – 518	72 – 600	—	—	250 – 500				
<b>MURRPLASTIK LEGACY PRODUCTS</b> <i>(do not use for new-build projects)</i>	32	MP 32		45 – 546	67 – 600	—	—	80 – 250			
	34	MP 35		62 – 150	—	—	—	70 – 300			
	40	MP 44		45 – 182	—	—	—	90 – 400			
	42	MP 41		45 – 546	67 – 600	—	—	90 – 350			
	52	MP 52.1		45 – 546	67 – 600	80 – 600	—	100 – 350			
	60	MP 66		45 – 182	77 – 600	—	—	150 – 400			
	62	MP 62.1		93 – 518	72 – 600	—	—	150 – 500			
	72	MP 72		93 – 518	72 – 600	118 – 600	—	150 – 500			

\* Note: only for closed variants

		TRAVEL DISTANCE		SPEED		ACCELERATION	
							
		max. travel distance in m self-supporting   gliding applic.		Max. speed of travel in m/s self-supporting   gliding applic.		max. acceleration in m/s <sup>2</sup> self-supporting   gliding applic.	
	1.0	10.0	4.0	2.0	2.0	2.0	62
	2.0	12.0	4.0	2.0	2.0	2.0	68
	2.0	12.0	4.0	2.0	2.0	2.0	74
	3.0	20.0	5.0	2.0	5.0	5.0	80
	3.0	20.0	5.0	2.0	5.0	5.0	86
	3.0	not recommended	10.0	–	10.0	–	92
	4.0	35.0	10.0	3.0	15.0	10.0	162
	4.0	40.0	6.0	3.0	15.0	10.0	106
	4.0	60.0	6.0	3.0	15.0	10.0	98
	4.5	40.0	10.0	3.0	15.0	10.0	174
	4.5	100.0	20.0	5.0	30.0	25.0	186
	6.0	80.0	20.0	5.0	50.0	15.0	114
	4.0	60.0	10.0	3.0	20.0	15.0	126
	5.0	50.0	15.0	5.0	20.0	15.0	134
	7.0	120.0	20.0	5.0	30.0	25.0	202
	7.0	80.0	10.0	5.0	20.0	15.0	142
	9.0	150.0	20.0	5.0	30.0	25.0	218
	9.0	150.0	20.0	5.0	30.0	25.0	234
	7.5	50.0	20.0	5.0	30.0	25.0	250
	–	150.0	–	6.0	–	10.0	266
	8.0	60.0	15.0	5.0	20.0	15.0	154
	10.0	150.0	20.0	5.0	40.0	25.0	290
	7.5	50.0	20.0	5.0	30.0	25.0	276
	10.0	150.0	20.0	5.0	40.0	25.0	304
	10.5	150.0	20.0	5.0	40.0	25.0	318
	5.0	100.0	20.0	5.0	30.0	25.0	330
	4.5	80.0	10.0	3.0	20.0	15.0	344
	5.0	50.0	15.0	5.0	20.0	15.0	366
	7.0	120.0	20.0	5.0	30.0	25.0	352
	9.0	150.0	20.0	5.0	30.0	25.0	374
	8.0	60.0	15.0	5.0	20.0	15.0	400
	10.0	150.0	20.0	5.0	40.0	25.0	388
	10.0	150.0	20.0	5.0	40.0	25.0	408












Catalogue page



## SELECTION TABLE CONFIGURATION

	Inside height in mm	Chain type		CHAIN BRACKET							STRAIN RELIEF	
		Open	Closed	U-part (plastic)	U-part (steel)	Flexible	Angle	Flange	integrated	integrated (RS-ZL)	integrated (bow clamp)	separately mountable (ZL)
<b>MURRPLASTIK SERIES</b>	10	MP 10.1		•					•			
	14	MP 14		•					•			
	14	MP 15		•					•			
	18	MP 18.1/2		•					•			
	18	MP 18.4		•					•			
	20	MP 20.2		•					•			
	25	MP 25.1/2	25.3/25.4			•				•	•	
	25		MP 25 G		•							•
	26	MP 3000		•			•		•			•
	30	MP 30.1/2	30.3/4			•				•	•	
	32/30	MP 32.2	MP 32.3 ALU			•				•	•	
	35	MP 35.1/2				•				•	•	
	36		MP 36 G		•			•				•
	38		MP 43 G				•					•
	42/38	MP 41.2	MP 41.3			•	•			•	•	
	45	MP 45.1/2				•				•	•	
	52/48	MP 52.2	MP 52.3			•	•			•	•	
	52/48	MP 52.2-D	MP 52.3-D			•	•			•	•	
	52/48	MP 52.4	MP 52.5			•				•	•	
	52/48	MP 52.6	MP 52.7 ALU			•					•	
60		MP 65 G		•		•	•					
62/62	MP 62.2	MP 62.3			•	•			•	•		
62	MP 62.4	MP 62.5 ALU			•				•	•		
82/74	MP 82.2	MP 82.3			•				•	•		
102	MP 102.2					•			•	•		
<b>MURRPLASTIK LEGACY PRODUCTS</b> <i>(do not use for new-build projects)</i>	32	MP 32				•				•	•	
	34	MP 35			•		•					•
	40	MP 44			•		•					•
	42	MP 41				•	•			•	•	
	52	MP 52.1				•	•			•	•	
	60	MP 66			•		•	•				
	62	MP 62.1				•	•			•	•	
	72	MP 72				•	•			•	•	



				ACCESSORIES			SHELVING SYSTEM								
				Sliding blocks (GS)	Damping elements for the side links	Gliding plates (GLP)	Bracket bars (BS)	Separator with snap-lock (TR/TRT)	Separator (TR-V)	Separator fixed	Shelving system (RTT)	Shelving system	Crossbar connector (RSY)	H-shaped shelf unit (RE)	Catalogue page
															
															62
															68
															74
															80
															86
															92
															162
															106
															98
															174
															186
															114
															126
															134
															202
															142
															218
															234
															250
															266
															154
															290
															276
															304
															318
															330
															344
															366
															352
															374
															400
															388
															408

	Inside height in mm	Chain type	OPENING VARIANTS									Catalogue page		
			No opening	Slitted	Inside bend foldable on one side*	Outside bend foldable on one side*	Inside bend foldable on both sides*	Outside bend foldable on both sides*	Inside and outside bend engage seamlessly	Inside and outside bend engage				
	Open	Closed	1	2	3	4	5	6	7	8	9			
<b>MURRPLASTIK SERIES</b>	10	MP 10.1		•								62		
	14	MP 14				•						68		
	14	MP 15		•								74		
	18	MP 18.1/2			•	•						80		
	18	MP 18.4		•								86		
	20	MP 20.2			•							92		
	25	MP 25.1/2	25.3/25.4					•	•			162		
	25		MP 25 G				•					106		
	26	MP 3000						•				98		
	30	MP 30.1/2	30.3/4					•	•			174		
	32/30	MP 32.2	MP 32.3 ALU									•	186	
	35	MP 35.1/2						•	•				114	
	36		MP 36 G			•							126	
	38		MP 43 G								•		134	
	42/38	MP 41.2	MP 41.3									•	202	
	45	MP 45.1/2						•	•				142	
	52/48	MP 52.2	MP 52.3									•	218	
	52/48	MP 52.2-D	MP 52.3-D									•	234	
	52/48	MP 52.4	MP 52.5									•	250	
	52/48	MP 52.6	MP 52.7 ALU									•	266	
60		MP 65 G								•		154		
62/62	MP 62.2	MP 62.3									•	290		
62	MP 62.4	MP 62.5 ALU									•	276		
82/74	MP 82.2	MP 82.3									•	304		
102	MP 102.2										•	318		
<b>MURRPLASTIK LEGACY PRODUCTS</b> <i>(do not use for new-build projects)</i>	32	MP 32								•		330		
	34	MP 35							•			344		
	40	MP 44								•		366		
	42	MP 41								•		352		
	52	MP 52.1								•		374		
	60	MP 66								•		400		
	62	MP 62.1								•		388		
	72	MP 72								•		408		

\* Note: not recommended for gliding applications

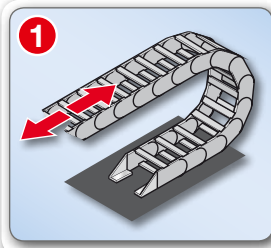
SELECTION TABLE AVAILABLE MATERIAL / RECOMMENDED GUIDE CHANNELS



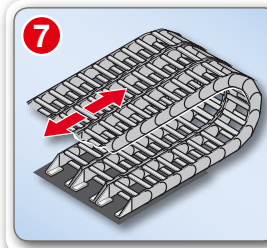
	Inside height in mm	Chain type		MATERIAL				GUIDE CHANNEL								
		Open	Closed	Standard	ESD/ATEX/Clean room	PA black	PA gray	Fireprotected UL94V0	H2O environment	PA red	PP blue	rcmd - aluminium guide channel (for self-supporting application)	rcmd - aluminium guide channel (for gliding application)	rcmd - stainless steel* guide channel (for self-supporting application)	rcmd - stainless steel* guide channel (for gliding application)	Catalogue page
								VAW	VAW	VAW-E	VAW-E					
<b>MURRPLASTIK SERIES</b>	10	MP 10.1		•	•	•		25	80	—	—	62				
	14	MP 14		•				25	80	—	—	68				
	14	MP 15		•	•	•		25	80	—	—	74				
	18	MP 18.1/2		•	•	•	•	35	80	—	—	80				
	18	MP 18.4		•				35	80	—	—	86				
	20	MP 20.2		•				35	80	—	—	92				
	25	MP 25.1/2	25.3/25.4	•				80	86	120	120	162				
	25		MP 25 G	•	•			80	86	120	120	106				
	26	MP 3000		•	•	•	•	80	86	120	120	98				
	30	MP 30.1/2	30.3/4	•				80	86	120	120	174				
	32/30	MP 32.2	MP 32.3 ALU	•	•		•	86	106	120	120	186				
	35	MP 35.1/2		•				80	86	120	120	114				
	36		MP 36 G	•				80	86	120	120	126				
	38		MP 43 G	•				86	106	120	120	134				
	42/38	MP 41.2	MP 41.3	•	•		•	86	122	120	120	202				
	45	MP 45.1/2		•				86	106	120	120	142				
	52/48	MP 52.2	MP 52.3	•	•		•	86	146	120	170	218				
	52/48	MP 52.2-D	MP 52.3-D	•	•		•	86	146	120	170	234				
	52/48	MP 52.4	MP 52.5	•				86	146	120	170	250				
	52/48	MP 52.6	MP 52.7 ALU	•				—	146	—	170	266				
60		MP 65 G	•				86	146	120	170	154					
62/62	MP 62.2	MP 62.3	•	•		•	106	177	120	170	290					
62	MP 62.4	MP 62.5 ALU	•				106	146	120	170	276					
82/74	MP 82.2	MP 82.3	•	•		•	146	248	170	220	304					
102	MP 102.2		•				146	248	170		318					
<b>MURRPLASTIK LEGACY PRODUCTS</b> <i>(do not use for new-build projects)</i>	32	MP 32		•				86	106	120	120	330				
	34	MP 35		•				80	86	120	120	344				
	40	MP 44		•				86	106	120	120	366				
	42	MP 41		•				86	106	120	120	352				
	52	MP 52.1		•				86	146	120	170	374				
	60	MP 66		•				86	146	120	170	400				
	62	MP 62.1		•				106	177	120	170	388				
	72	MP 72		•				122	177	120	170	408				

\* Note: also available in steel

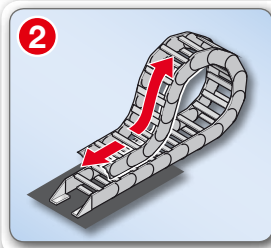
## Installation options for cable drag chains



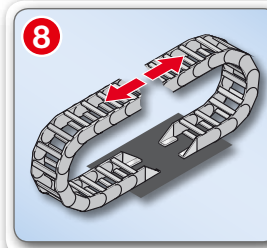
**1** Horizontal installation option, self-supporting



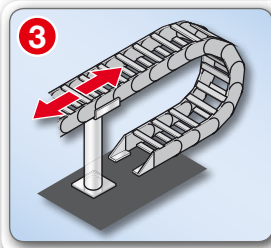
**7** Horizontal installation option, parallel



**2** Horizontal installation option, gliding



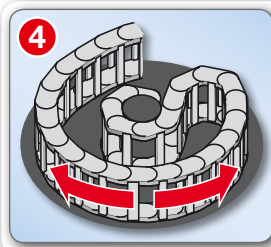
**8** Horizontal installation option, opposed



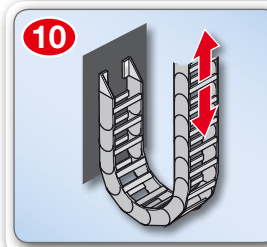
**3** Horizontal installation option, self-supporting, overlap with support



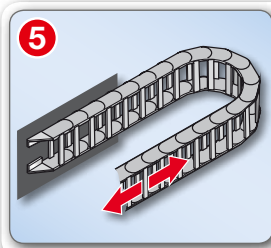
**9** Vertical installation option, standing



**4** Horizontal installation option, circular movement  
Design using reverse bending radius



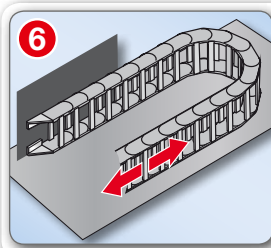
**10** Vertical installation option, hanging



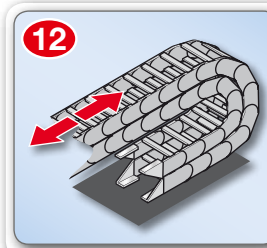
**5** Horizontal installation option, side-mounted (rotated 90°)



**11** Horizontal/vertical combined installation option



**6** Horizontal installation option, side-mounted (rotated 90°) with support

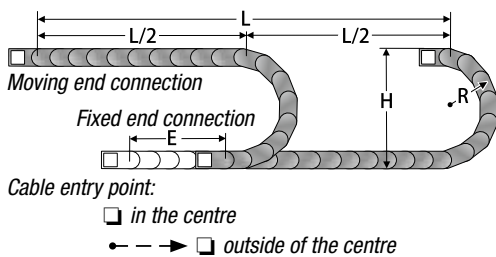


**12** Horizontal installation option, interlocked

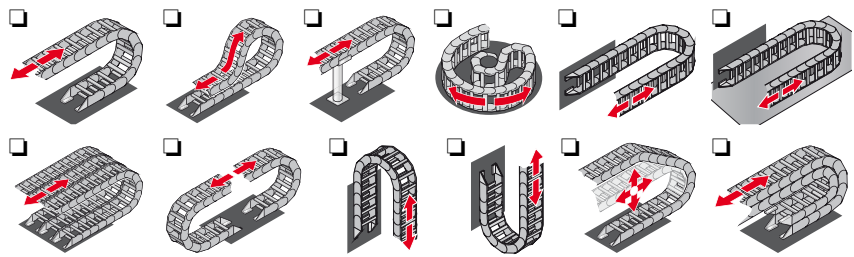
Quotation  Order Date:

<b>Project designation:</b>		<b>Project implementation in week/year:</b>
<b>Customer No.:</b>	<b>Customer information:</b>	<b>Planning extent:</b>
Company:		<input type="checkbox"/> Cable drag chain (CDC)
Department:		<input type="checkbox"/> Guide channel
Contact person:		<input type="checkbox"/> Tubes
Address/PO Box:		<input type="checkbox"/> Cables
Address/PO Box:		<input type="checkbox"/> Wire connection
Phone and extension no.:		<input type="checkbox"/> Complete assembly
Fax and extension no.:		<input type="checkbox"/> MP on-site assembly service
E-mail address:		

**Application parameters:**



**Please select type of installation:**



CDC type (also competitors):		Quantity of CDC:	Units
CDC length (if predefined):	mm	Quantity of links:	Units
Travel distance (L):	mm	Minimum bending radius (R):	mm
Maximum installation height (H):	mm	Maximum installation width:	mm
Speed of travel:	m/s	Material:	<input type="checkbox"/> PA (Standard)
Acceleration:	m/s <sup>2</sup>		<input type="checkbox"/> PA UL V0
Travel frequency:	cycles/day		<input type="checkbox"/> PA ESD
Load:	kg/m		<input type="checkbox"/> PP
Ambient temperature (from - to):	°C °C		
Environmental influences:	<input type="checkbox"/> Outdoor application <input type="checkbox"/> Dirt <input type="checkbox"/> Swarf <input type="checkbox"/> Dust <input type="checkbox"/>		
Feed-in (cable entry point):	<input type="checkbox"/> Centre of travel distance <input type="checkbox"/> Ends of travel distance		
Dist. E between entry point and middle of travel dist.:	mm from the centre of the travel distance		

1. Inside/Down    2. Inside/Up    3. Outside/down    4. Outside/up    5. Front/Inside    6. Front/outside    7. Flex/bush    8. Flex/thread  
 9. U-part/below    10. U-part/above    11. Up 90°    12. Down 90°

**Chain bracket**

Fixed end connection - no.:   
 Moving end connection - no.:

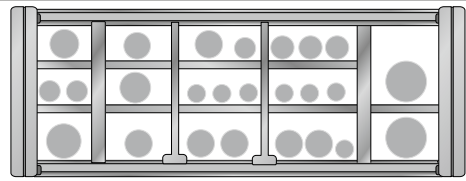
<p><i>Case example:</i> KA/F with C-profile and Steel Fix bow clamps</p>	<p><b>Strain relief</b></p> <input type="checkbox"/> Crossbar strain relief plate (type RS-ZL with standard inside widths up to 246 mm) <input type="checkbox"/> Strain relief plates (type ZL for strain relief outside of the chain bracket) <input type="checkbox"/> C-profile including strain relief plate (type ZL-C Set) <input type="checkbox"/> C-profile <input type="checkbox"/> Steel Fix bow clamps    Type: <input type="text"/> <input type="checkbox"/> on both sides	<p><i>Case example:</i> KA/F with crossbar strain relief plate RS-ZL</p>
--	--	--

Cut out and fax/copy

<b>Project designation:</b>	<b>Project implementation in week/year:</b>
-----------------------------	---

<b>Opening variant cable drag chain (loading side)</b>	<input type="checkbox"/> inside bend	<input type="checkbox"/> outside bend
	<input type="checkbox"/> on both sides	

<b>Variable guide channel system</b>		
<input type="checkbox"/> Murrplastik quotation requested		Material: <input type="checkbox"/> Plastic <input type="checkbox"/> Aluminium <input type="checkbox"/> Stainless steel <input type="checkbox"/> Steel (zinc-plated)
<input type="checkbox"/> Guide channel existing / dimensions		Additional foreign components:
Internal width of the guide channel:	mm	
Internal height of the guide channel:	mm	
Distance of bearing profiles:	mm	

<b>Partitioning the energy carriers (cables, tubes) into the internal chain compartment</b>	
<input type="checkbox"/> Chain compartment is supposed to be designed by Murrplastik <input type="checkbox"/> Assignment according to Murrplastik cable request form <input type="checkbox"/> Murrplastik is supposed to be supply cables, details in MP cable request form <input type="checkbox"/> Chain compartment according to customer request (see sketch below) <input type="checkbox"/> Cables provided by customer (remark outside diameters below)	 <p><i>Example: Multi-layer internal chain compartment</i></p>

**Sketches, notes, specific features:**





<b>Project designation:</b>		
<b>Position within CDC cable request form no.:</b>		<b>Features:</b>
Cable reference type:		<input type="checkbox"/> No shielding
Conduit construction/design:		<input type="checkbox"/> shielded (see below: <i>Shield processing</i> )
Contact person:		<input type="checkbox"/> Cable without protective conductor PE
<p><b>Cables with green-yellow protective conductor (PE) are standard (exception: bus and data cables up to 0.75mm<sup>2</sup>).</b> Cables with PE are often also marked with G, e.g. 3G1.5 means two normal conductors and 1 PE with a cross section of 1.5mm<sup>2</sup> each.</p>		

### Customisation of cable endings

<b>FP aspect (fixed point connection)</b>	<b>MP aspect (moving point connection)</b>
<input type="checkbox"/> Ending not processed – cable cut to total length only	<input type="checkbox"/> Ending not processed – cable cut to total length only

**alternatively:**

**alternatively:**

<input type="checkbox"/> Ending with connector		<input type="checkbox"/> Ending with connector	
Item No. of connector		Item No. of connector	
Description, supplier:		Description, supplier:	
<b>Connections (quantity of contacts):</b>		<b>Connections (quantity of contacts):</b>	
<input type="checkbox"/> Male connector		<input type="checkbox"/> Male connector	
<input type="checkbox"/> Female connector		<input type="checkbox"/> Female connector	
Item No. of contact:		Item No. of contact:	
<b>Housing for connector:</b>		<b>Housing for connector:</b>	
Item No. / design:		Item No. / design:	
Cable outlet on housing:	<input type="checkbox"/> straight <input type="checkbox"/> sideways	Cable outlet on housing:	<input type="checkbox"/> straight <input type="checkbox"/> sideways
<b>Cable compression gland (type):</b>		<b>Cable compression gland (type):</b>	

#### Wiring specifications

- Pin assignment: see enclosed plan or chart
  - Standard wiring as extension cord (pin 1 to 1, 2 to 2 etc.)
- When used as an extension the connectors are wired from pin 1. If there are not enough wires, the high contact pins will be unconnected.

**alternatively:**

**alternatively:**

<input type="checkbox"/> End processed (without housing)		<input type="checkbox"/> End processed (without housing)	
bared cable length (jacket free):		bared cable length (jacket free):	
Wire end ferrule:		Wire end ferrule:	
Contacts:		Contacts:	
Ring-type cable lugs:		Ring-type cable lugs:	
	(Type, supplier, item No., size, which wire?)		(Type, supplier, item No., size, which wire?)

<input type="checkbox"/> Shield processing	Entire shield	if nec. pair(s) of wire(s)	<input type="checkbox"/> Shield processing	Entire shield	if nec. pair(s) of wire(s)
cut:			cut:		
on housing:			on housing:		
shield connected to pin No.:			shield connected to pin No.:		
extended with wire/length:		mm	extended with wire/length:		mm
shield bent back on jacket:			shield bent back on jacket:		

<input type="checkbox"/> Labelling	Short text:	<input type="checkbox"/> Labelling	Short text:
<input type="checkbox"/> label cable jacket (sticker, ESL):		<input type="checkbox"/> label cable jacket (sticker, ESL):	
<input type="checkbox"/> label single wire(s) (e.g. KDE):		<input type="checkbox"/> label single wire(s) (e.g. KDE):	
Distance from jacket/cable end:	mm	Distance from jacket/cable end:	mm

Additional text for labelling: see attached circuit diagram:

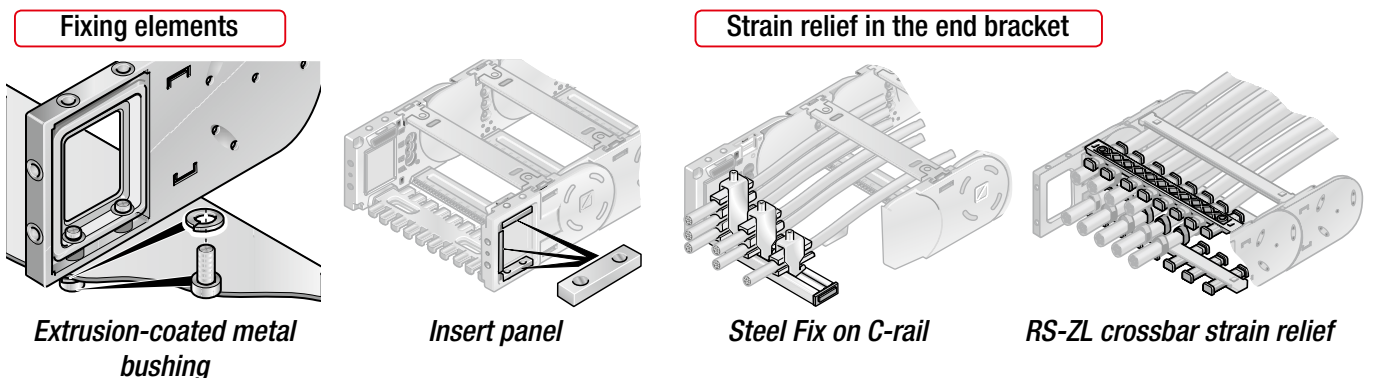
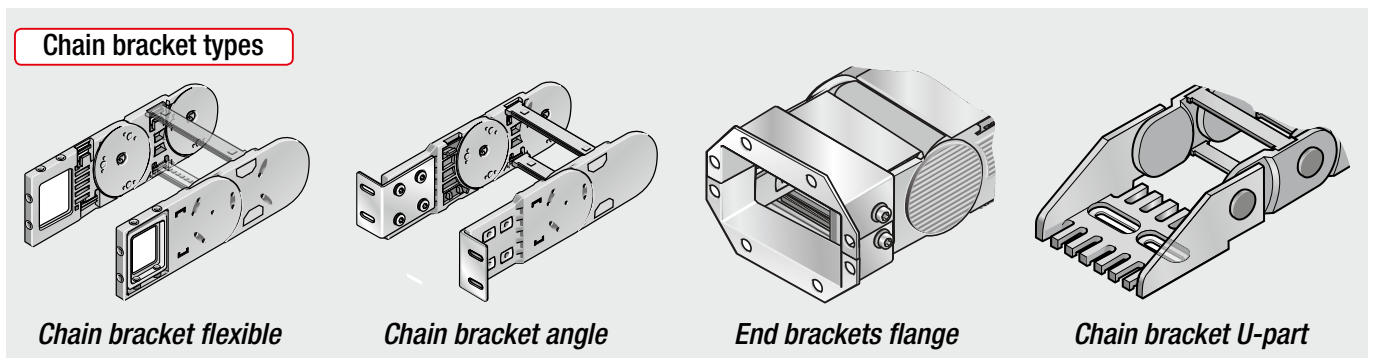
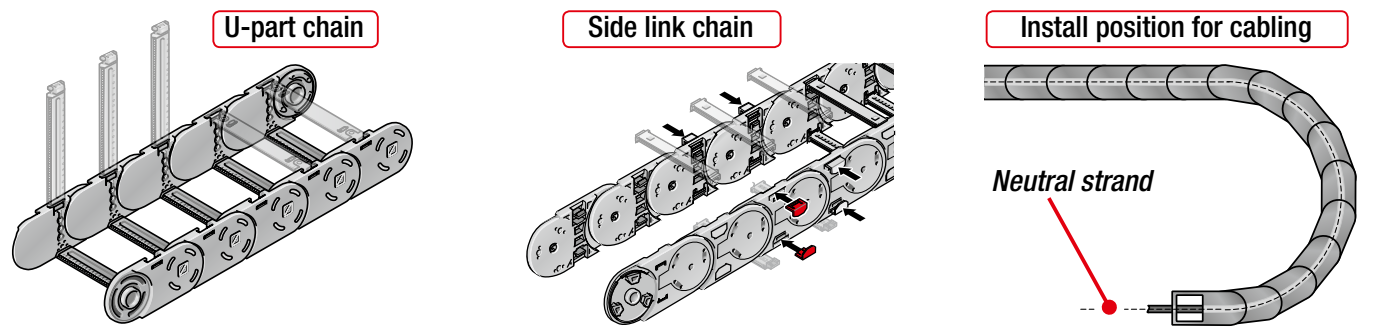
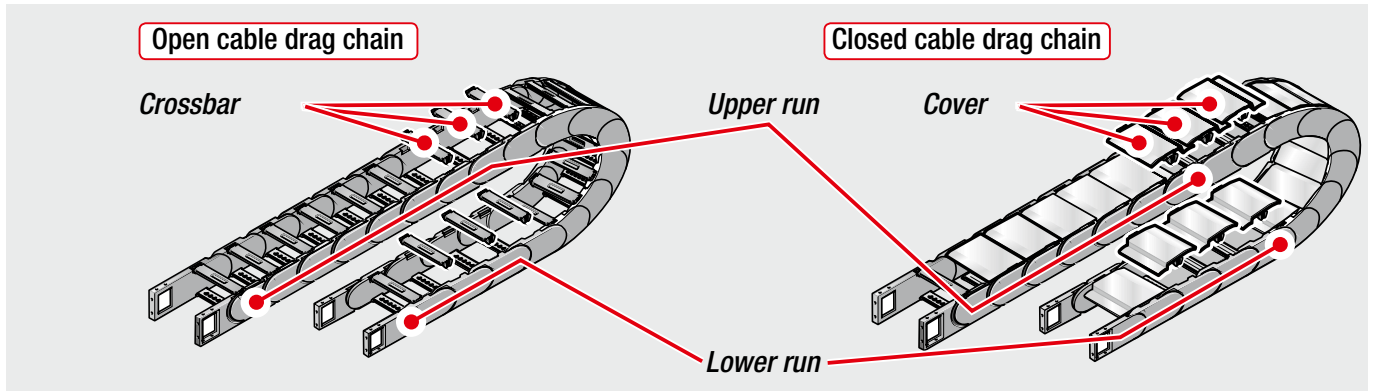
Notes (attachments etc.):



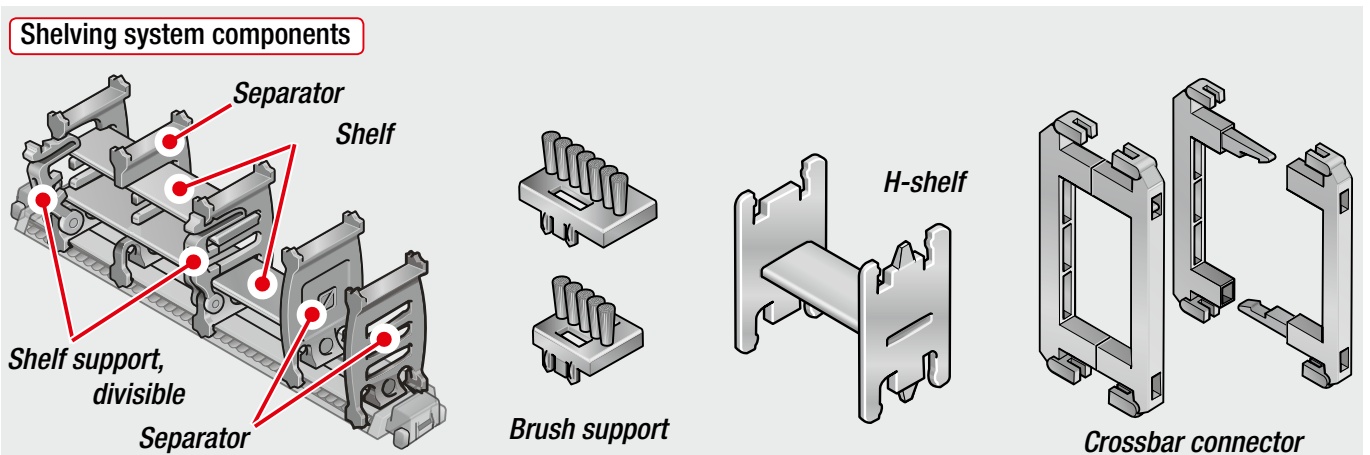
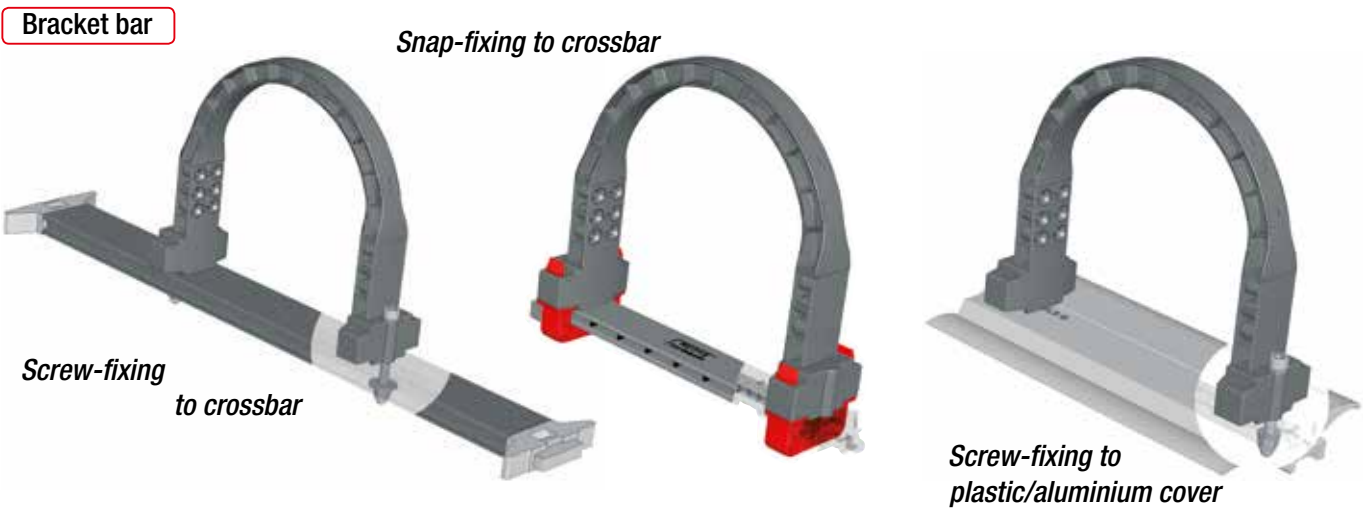
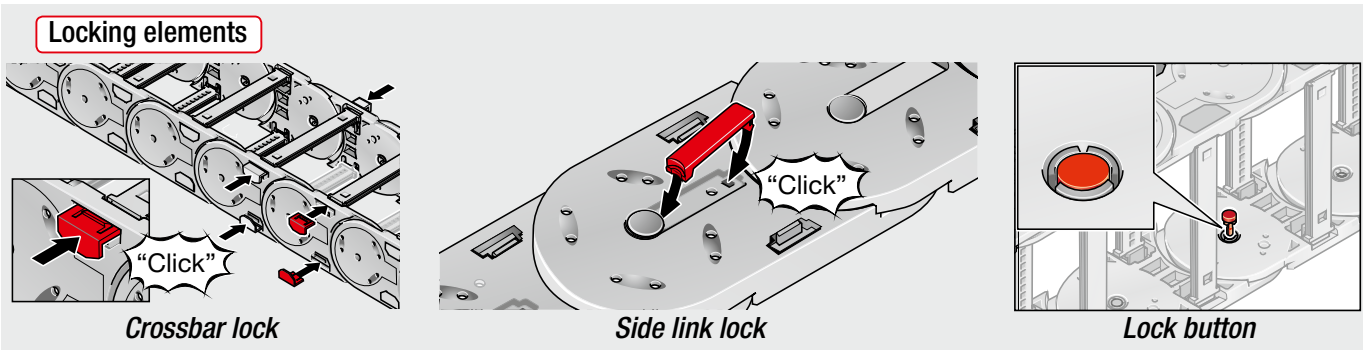
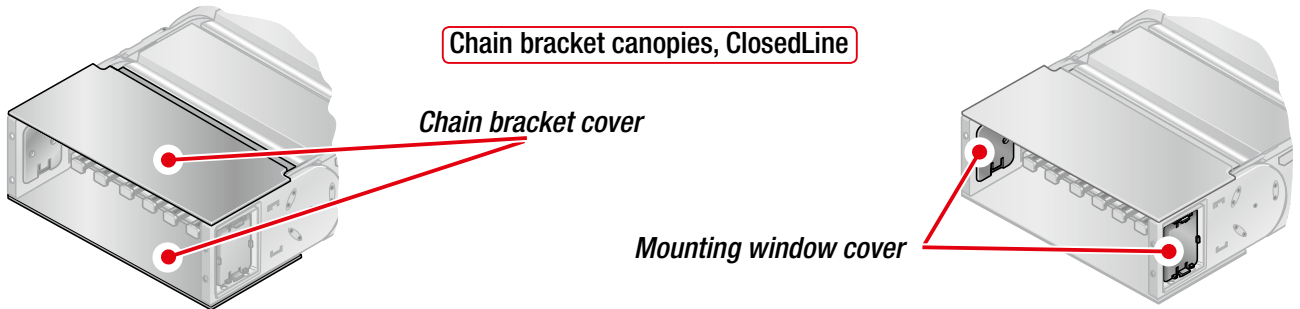
# Murrplastik Glossary – So that you know what we are talking about

We want to make our products and product components as accessible to you as possible. So what, then, are the actual names Murrplastik uses for specific components?

You'll find the answers in this Glossary. We have prepared some schematic drawings of sub-assemblies and individual components for you with the terms that we use for them.



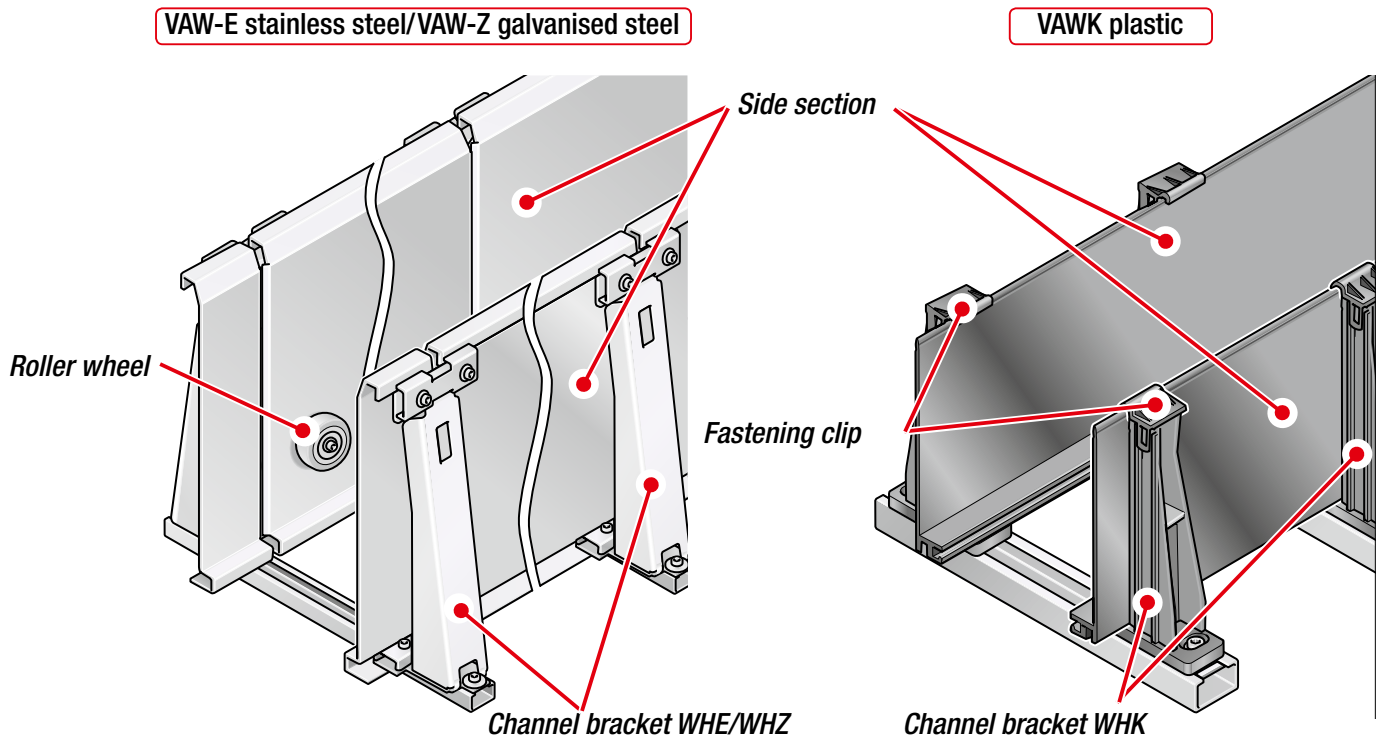
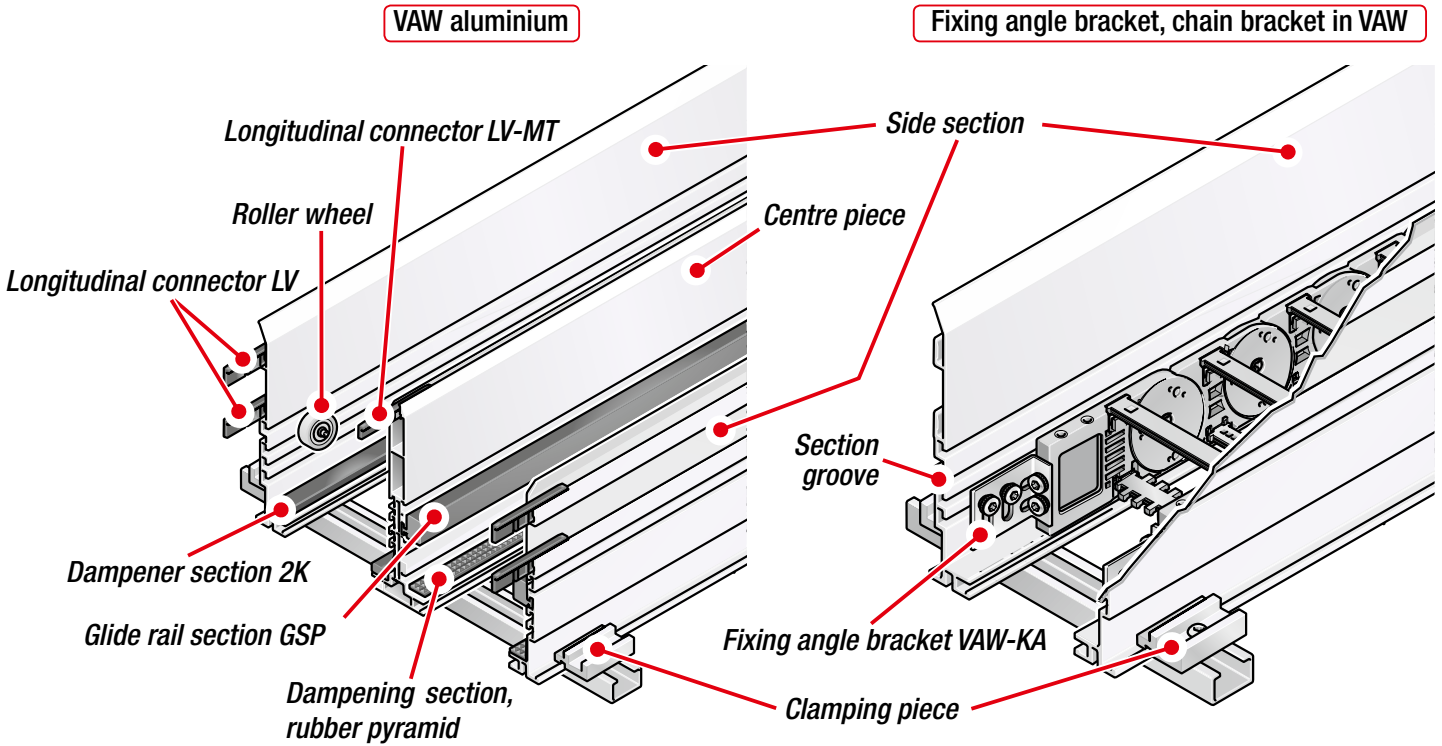
# Murrplastik Glossary – So that you know what we are talking about



## Murrplastik Glossary – So that you know what we are talking about

Our guide channel systems and their accessory parts are also given specific names. So what, then, are the names Murrplastik uses for specific components?

You'll find the answers in this Glossary. We have prepared some schematic drawings of sub-assemblies and individual components for you with the terms that we use for them.

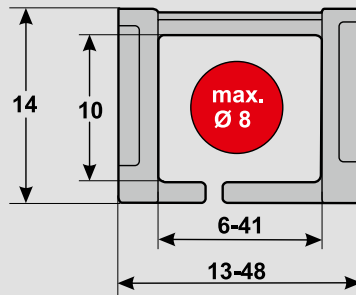


### EasyLine

#### MP 10.1

open

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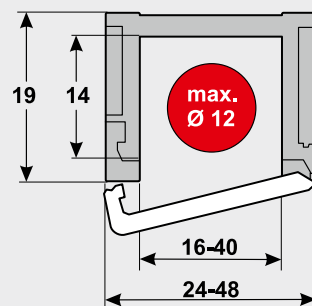
- Internal height: 10.0 mm
- Internal widths: 6.0 – 41.0 mm
- Radii: 18.0 – 58.0 mm
- Pitch: 15.0 mm
- Links per metre: 67 qty.
- Loading side: Outside bend slitted

### MultiLine

#### MP 14

open

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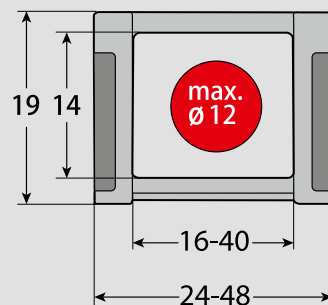
- Internal height: 14.0 mm
- Internal widths: 16.0 – 40.0 mm
- Radii: 25.0 – 75.0 mm
- Pitch: 26.0 mm
- Links per metre: 39 qty.
- Loading side: Outside bend

### MultiLine

#### MP 15

open

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- Internal height: 14.0 mm
- Internal widths: 16.0 – 40.0 mm
- Radii: 25.0 – 75.0 mm
- Pitch: 26.0 mm
- Links per metre: 39 qty.
- Loading side: Non-opening

### MultiLine

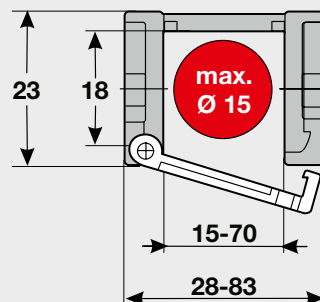
#### MP 18.1

#### MP 18.2

open

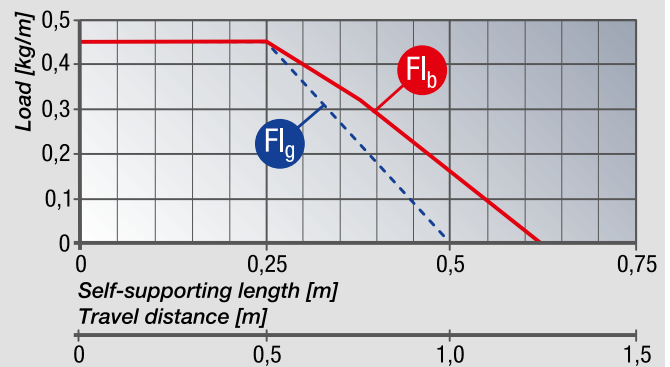
open

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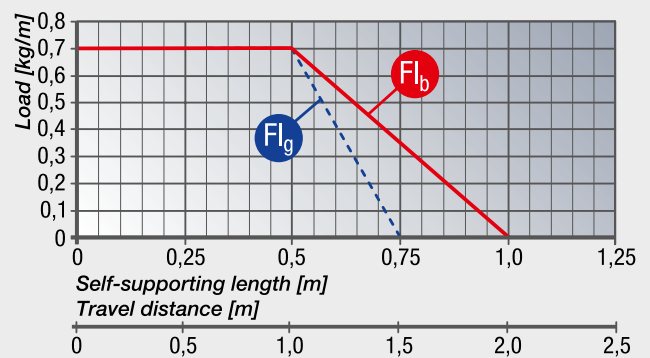


- Internal height: 18.0 mm
- Internal widths: 15.0 – 70.0 mm
- Radii: 28.0 – 78.0 mm
- Pitch: 33.0 mm
- Links per metre: 30 qty.
- Loading side: Inside or outside bend

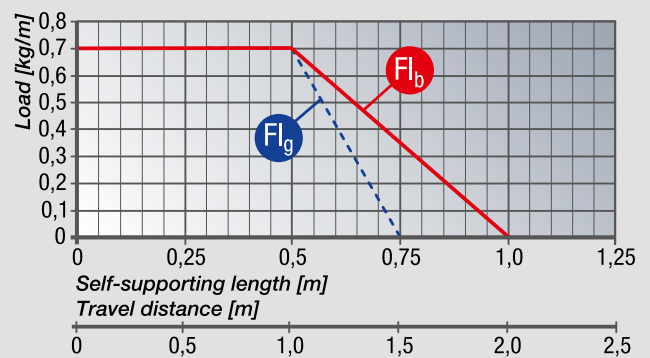
- Travel distance gliding  $L_g$  max.: 10.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 65
- Travel distance vertical, hanging  $L_{vh}$  max.: 2.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 1.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: not recommended
- Speed, gliding  $V_g$  max.: 2.0 m/s
- Speed, self-supporting  $V_f$  max.: 4.0 m/s
- Acceleration, gliding  $a_g$  max.: 2.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 2.0 m/s<sup>2</sup>



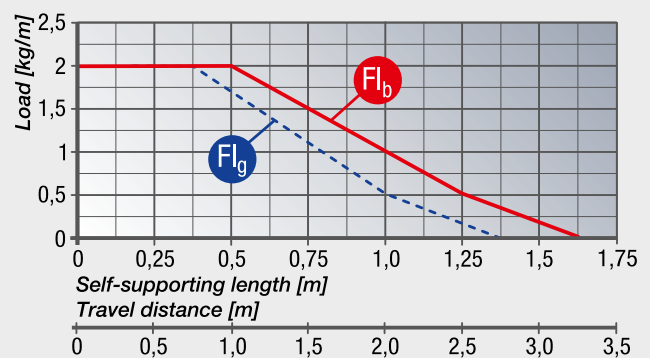
- Travel distance gliding  $L_g$  max.: 12.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 71
- Travel distance vertical, hanging  $L_{vh}$  max.: 3.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 2.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: not recommended
- Speed, gliding  $V_g$  max.: 2.0 m/s
- Speed, self-supporting  $V_f$  max.: 4.0 m/s
- Acceleration, gliding  $a_g$  max.: 2.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 2.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 12.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 77
- Travel distance vertical, hanging  $L_{vh}$  max.: 3.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 2.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: not recommended
- Speed, gliding  $V_g$  max.: 2.0 m/s
- Speed, self-supporting  $V_f$  max.: 4.0 m/s
- Acceleration, gliding  $a_g$  max.: 2.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 2.0 m/s<sup>2</sup>

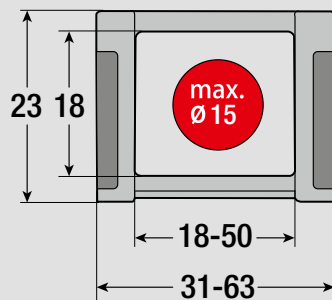


- Travel distance gliding  $L_g$  max.: 20.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 83
- Travel distance vertical, hanging  $L_{vh}$  max.: 8.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 0.5 m
- Speed, gliding  $V_g$  max.: 2.0 m/s
- Speed, self-supporting  $V_f$  max.: 5.0 m/s
- Acceleration, gliding  $a_g$  max.: 5.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 5.0 m/s<sup>2</sup>



**MultiLine  
MP 18.4**

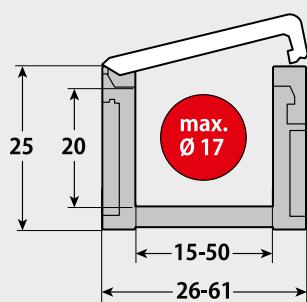
**open**  
Page 86



- Internal height: 18.0 mm
- Internal widths: 18.0 – 50.0 mm
- Radii: 40.0 – 80.0 mm
- Pitch: 33.0 mm
- Links per metre: 33 qty.
- Loading side: Non-opening

**MultiLine  
MP 20**

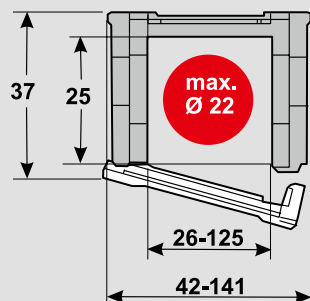
**open**  
Page 92



- Internal height: 20.0 mm
- Internal widths: 15.0 – 50.0 mm
- Radii: 38.0 – 125.0 mm
- Pitch: 35.0 mm
- Links per metre: 29 qty.
- Loading side: Inside bend

**MultiLine  
MP 25G**

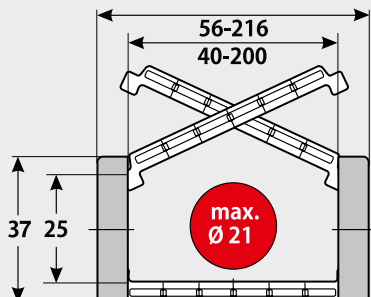
**closed**  
Page 106



- Internal height: 25.0 mm
- Internal widths: 26.0 – 125.0 mm
- Radii: 60.0 – 250.0 mm
- Pitch: 30.0 mm
- Links per metre: 33 qty.
- Loading side: Outside bend

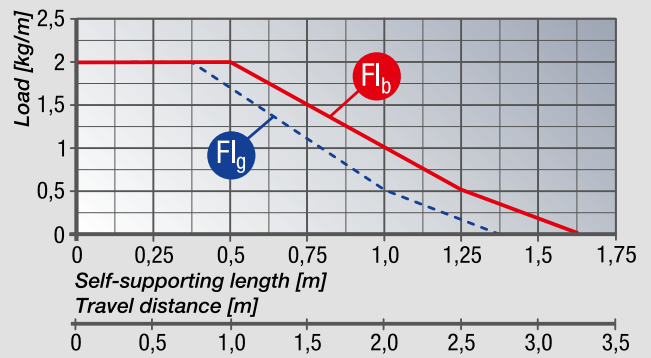
**ModulLine  
MP 25.1/.2  
MP 25.3/.4**

**open  
closed**  
Page 162

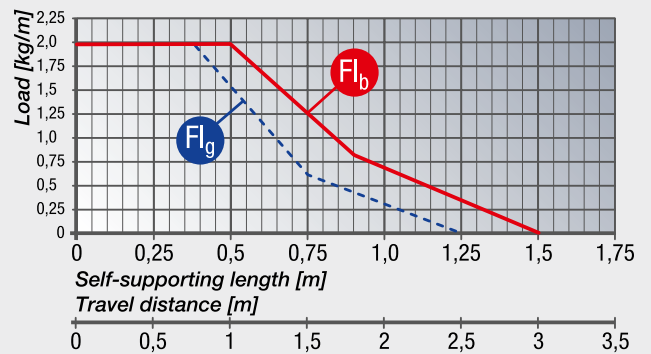


- Internal height: 25.0 mm
- Internal widths: 40.0 – 200.0 mm
- Radii: 50.0 – 300.0 mm
- Pitch: 45.0 mm
- Links per metre: 22 qty.
- Loading side: Inside or outside bend

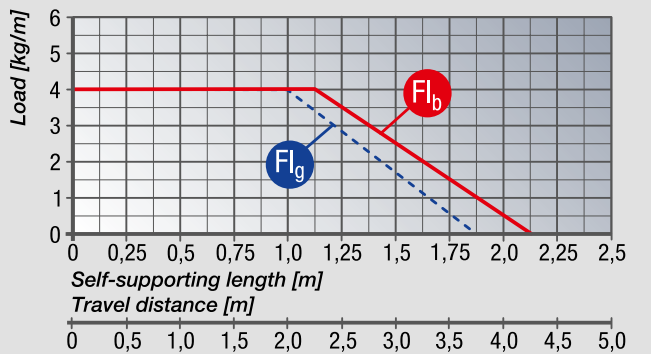
- Travel distance gliding  $L_g$  max.: 20.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 89
- Travel distance vertical, hanging  $L_{vh}$  max.: 8.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 0.5 m
- Speed, gliding  $V_g$  max.: 2.0 m/s
- Speed, self-supporting  $V_f$  max.: 5.0 m/s
- Acceleration, gliding  $a_g$  max.: 5.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 5.0 m/s<sup>2</sup>



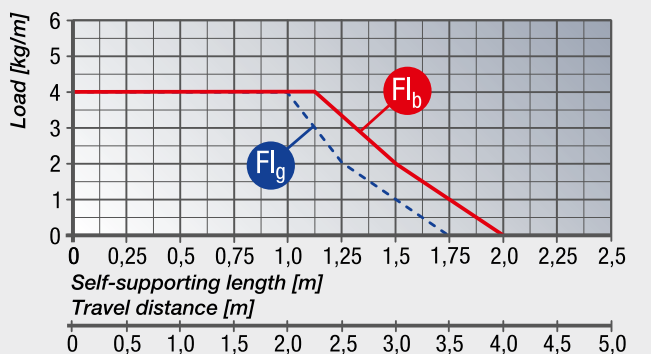
- Travel distance gliding  $L_g$  max.: not recommended
- Travel distance self-supporting  $L_f$  max.: see diagram on page 95
- Travel distance vertical, hanging  $L_{vh}$  max.: 8.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 0.5 m
- Speed, self-supporting  $V_f$  max.: 10.0 m/s
- Acceleration, self-supporting  $a_f$  max.: 10.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 40.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 109
- Travel distance vertical, hanging  $L_{vh}$  max.: 25.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 3.0 m/s
- Speed, self-supporting  $V_f$  max.: 6.0 m/s
- Acceleration, gliding  $a_g$  max.: 10.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 15.0 m/s<sup>2</sup>

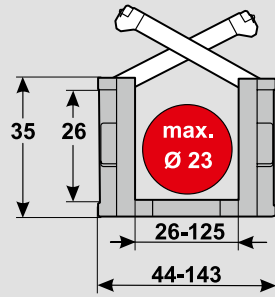


- Travel distance gliding  $L_g$  max.: 35.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 165
- Travel distance vertical, hanging  $L_{vh}$  max.: 25.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 0.7 m
- Speed, gliding  $V_g$  max.: 3.0 m/s
- Speed, self-supporting  $V_f$  max.: 10.0 m/s
- Acceleration, gliding  $a_g$  max.: 10.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 15.0 m/s<sup>2</sup>



**MultiLine  
MP 3000**

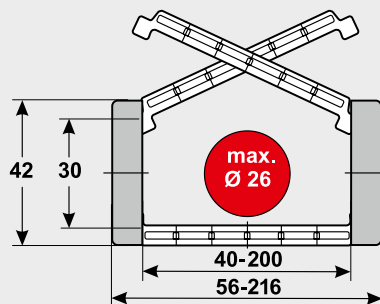
**open**  
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- Internal height: 26.0 mm
- Internal widths: 26.0 – 125.0 mm
- Radii: 50.0 – 300.0 mm
- Pitch: 45.0 mm
- Links per metre: 22 qty.
- Loading side: Inside bend

**ModulLine  
MP 30.1/.2  
MP 30.3/.4**

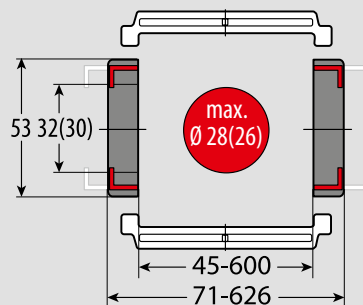
**open  
closed**  
Page 174



- Internal height: 30.0 mm
- Internal widths: 40.0 – 200.0 mm
- Radii: 60.0 – 300.0 mm
- Pitch: 50.0 mm
- Links per metre: 20 qty.
- Loading side: Inside or outside bend

**PowerLine  
MP 32.2  
MP 32.3**

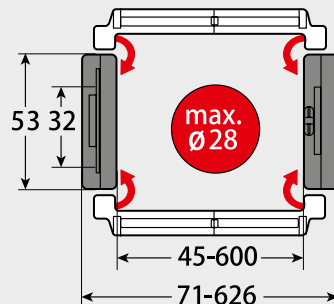
**open  
closed**  
Page 186



- Internal height: 32.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 80.0 – 250.0 mm
- Pitch: 64.5 mm
- Links per metre: 16 qty.
- Loading side: Inside and outside bend
- MP 32.3: inner widths 62–346 mm, radii 120-250 mm, lower inner height (values in brackets)

**MP Legacy  
MP 32**

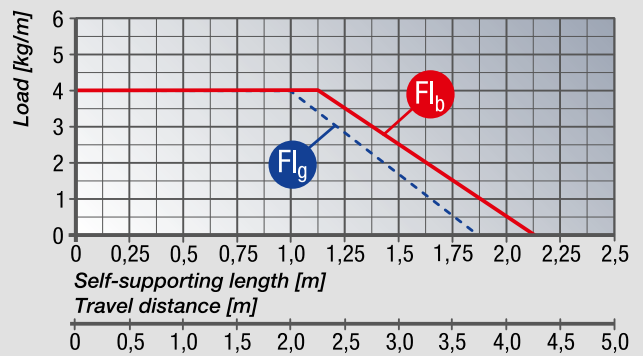
**open**  
Page 330



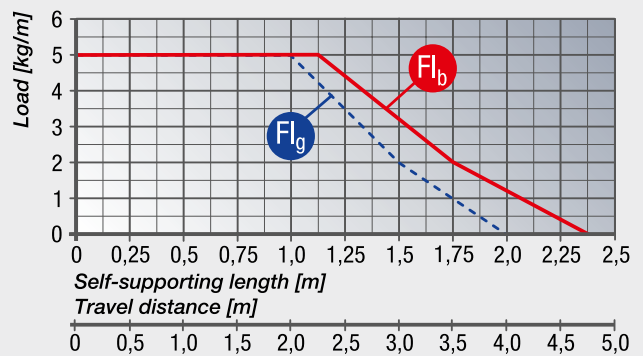
- Internal height: 32.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 80.0 – 250.0 mm
- Pitch: 64.5 mm
- Links per metre: 16 qty.
- Loading side: Inside and outside bend



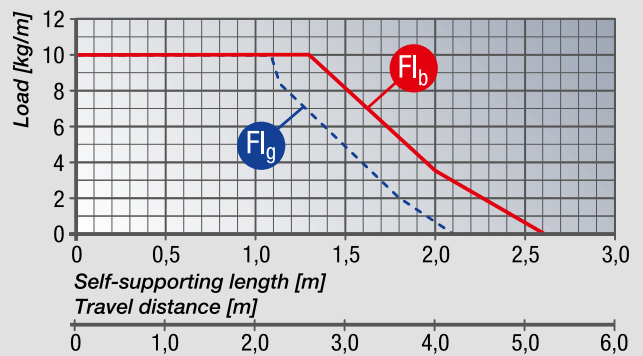
- Travel distance gliding  $L_g$  max.: 60.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 101
- Travel distance vertical, hanging  $L_{vh}$  max.: 40.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 0.7 m
- Speed, gliding  $V_g$  max.: 3.0 m/s
- Speed, self-supporting  $V_f$  max.: 6.0 m/s
- Acceleration, gliding  $a_g$  max.: 10.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 15.0 m/s<sup>2</sup>



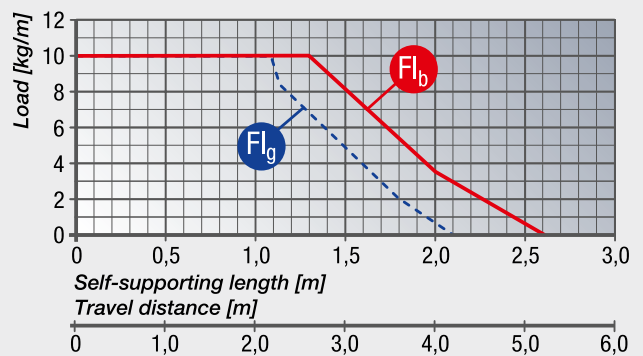
- Travel distance gliding  $L_g$  max.: 40.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 177
- Travel distance vertical, hanging  $L_{vh}$  max.: 30.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 0.7 m
- Speed, gliding  $V_g$  max.: 3.0 m/s
- Speed, self-supporting  $V_f$  max.: 10.0 m/s
- Acceleration, gliding  $a_g$  max.: 10.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 15.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 100.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 189
- Travel distance vertical, hanging  $L_{vh}$  max.: 40.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 5.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 100.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 333
- Travel distance vertical, hanging  $L_{vh}$  max.: 40.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 5.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 2.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>

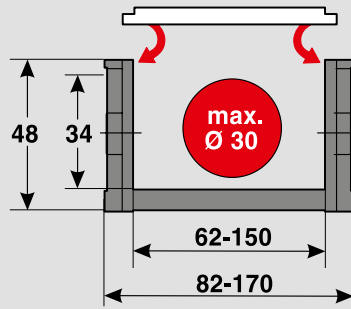


**MP Legacy**

**MP 35**

**open**

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- Internal height: 34.0 mm
- Internal widths: 62.0 – 150.0 mm
- Radii: 70.0 – 300.0 mm
- Pitch: 58.0 mm
- Links per metre: 17 qty.
- Loading side: Inside bend

**MultiLine**

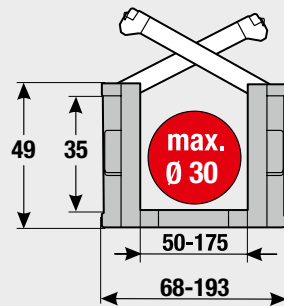
**MP 35.1**

**MP 35.2**

**open**

**open**

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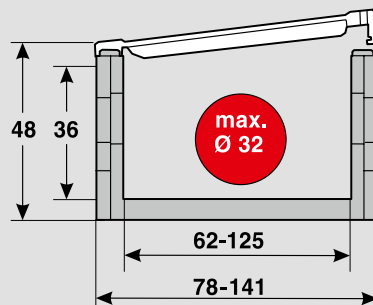
- Internal height: 35.0 mm
- Internal widths: 50.0 – 175.0 mm
- Radii: 63.0 – 250.0 mm
- Pitch: 56.0 mm
- Links per metre: 18 qty.
- Loading side: Inside or outside bend

**MultiLine**

**MP 36G**

**closed**

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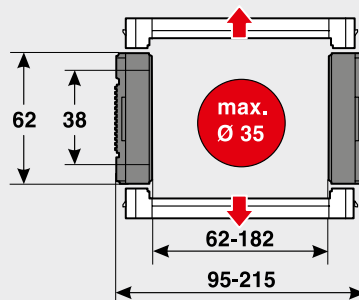
- Internal height: 36.0 mm
- Internal widths: 62.0 – 125.0 mm
- Radii: 80.0 – 200.0 mm
- Pitch: 40.0 mm
- Links per metre: 25 qty.
- Loading side: Inside bend

**MultiLine**

**MP 43G**

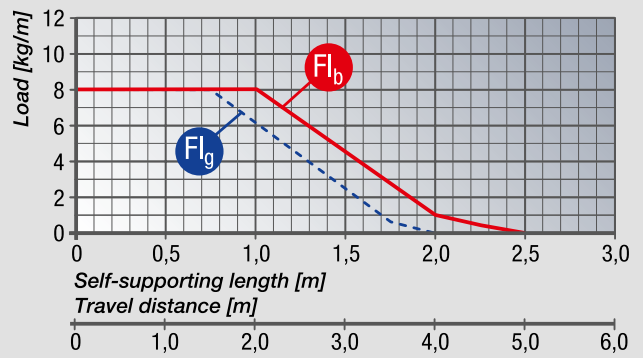
**closed**

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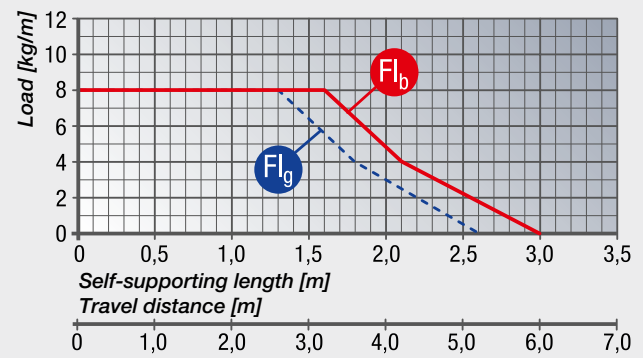


- Internal height: 38.0 mm
- Internal widths: 62.0 – 182.0 mm
- Radii: 125.0 – 400.0 mm
- Pitch: 75.5 mm
- Links per metre: 13 qty.
- Loading side: Inside and outside bend

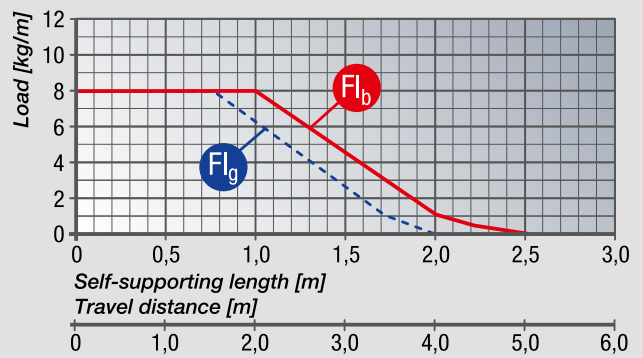
- Travel distance gliding  $L_g$  max.: 80.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 347
- Travel distance vertical, hanging  $L_{vh}$  max.: 40.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 3.0 m/s
- Speed, self-supporting  $V_f$  max.: 10.0 m/s
- Acceleration, gliding  $a_g$  max.: 15.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 20.0 m/s<sup>2</sup>



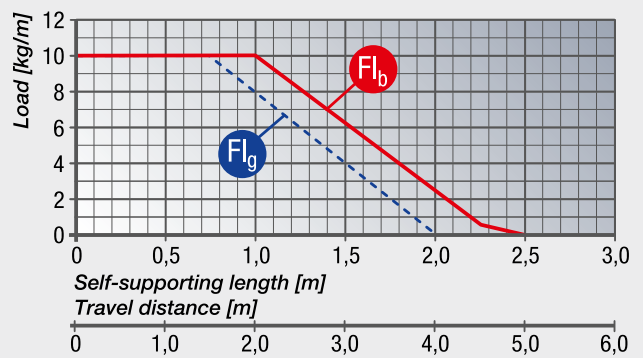
- Travel distance gliding  $L_g$  max.: 80.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 117
- Travel distance vertical, hanging  $L_{vh}$  max.: 50.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 15.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 50.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 60.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 129
- Travel distance vertical, hanging  $L_{vh}$  max.: 30.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 3.0 m/s
- Speed, self-supporting  $V_f$  max.: 10.0 m/s
- Acceleration, gliding  $a_g$  max.: 15.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 20.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 50.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 137
- Travel distance vertical, hanging  $L_{vh}$  max.: 40.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 15.0 m/s
- Acceleration, gliding  $a_g$  max.: 15.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 20.0 m/s<sup>2</sup>

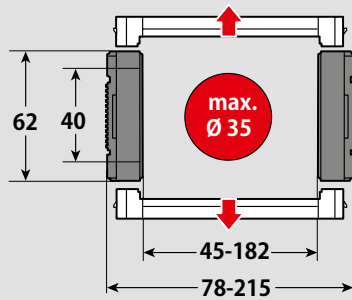


**MP Legacy**

**MP 44**

**open**

Page 366



- Internal height: 40.0 mm
- Internal widths: 45.0 – 182.0 mm
- Radii: 90.0 – 400.0 mm
- Pitch: 75.5 mm
- Links per metre: 13 qty.
- Loading side: Inside and outside bend

**PowerLine**

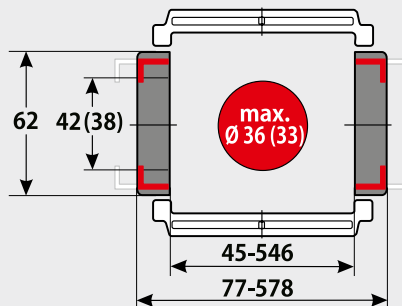
**MP 41.2**

**MP 41.3**

**open**

**closed**

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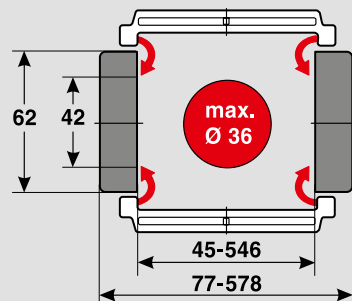
- Internal height: 42.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 90.0 – 350.0 mm
- Pitch: 77.0 mm
- Links per metre: 13 qty.
- Loading side: Inside and outside bend
- MP 41.3: inner widths 71–346 mm, radii 150-300 mm, lower inner height (values in brackets)

**MP Legacy**

**MP 41**

**open**

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- Internal height: 42.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 90.0 – 350.0 mm
- Pitch: 77.0 mm
- Links per metre: 13 qty.
- Loading side: Inside and outside bend

**MultiLine**

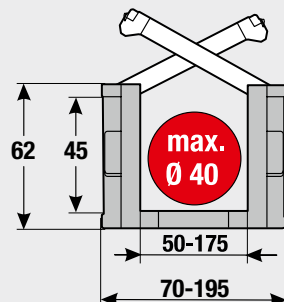
**MP 45.1**

**MP 45.2**

**open**

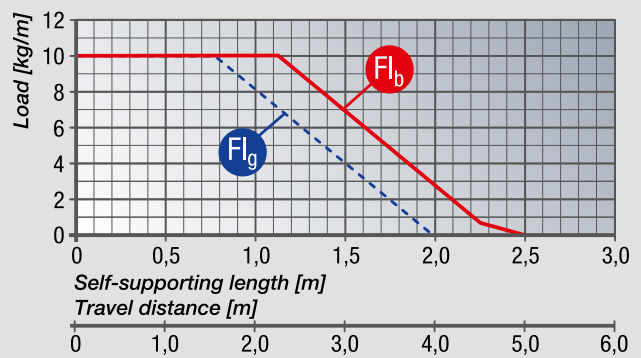
**open**

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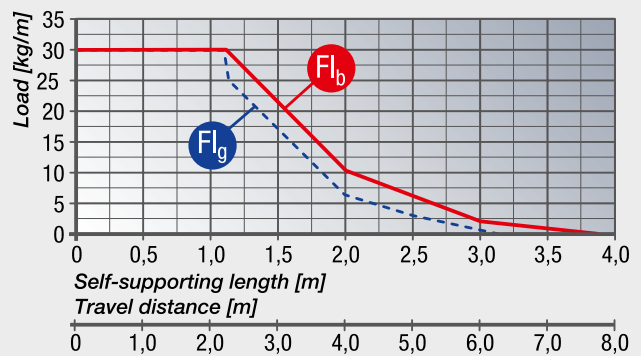


- Internal height: 45.0 mm
- Internal widths: 50.0 – 175.0 mm
- Radii: 75.0 – 300.0 mm
- Pitch: 67.0 mm
- Links per metre: 15 qty.
- Loading side: Inside or outside bend

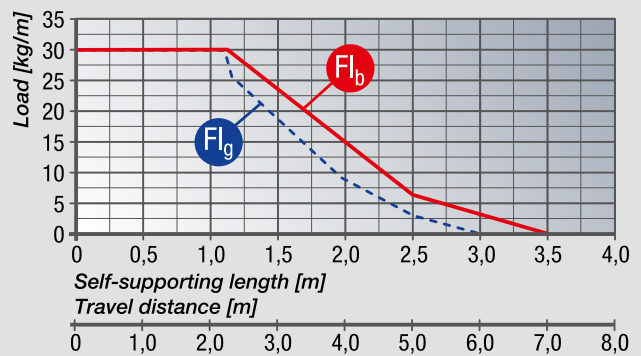
- Travel distance gliding  $L_g$  max.: 50.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 369
- Travel distance vertical, hanging  $L_{vh}$  max.: 40.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 3.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 15.0 m/s
- Acceleration, gliding  $a_g$  max.: 15.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 20.0 m/s<sup>2</sup>



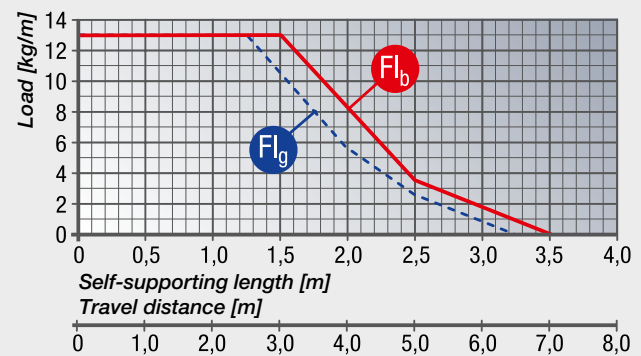
- Travel distance gliding  $L_g$  max.: 120.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 205
- Travel distance vertical, hanging  $L_{vh}$  max.: 50.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>



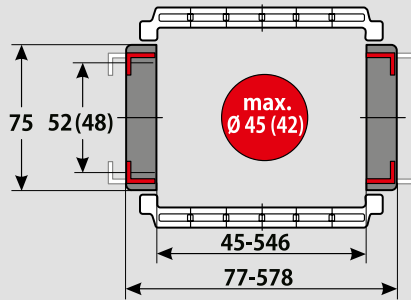
- Travel distance gliding  $L_g$  max.: 120.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 355
- Travel distance vertical, hanging  $L_{vh}$  max.: 50.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 2.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 80.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 145
- Travel distance vertical, hanging  $L_{vh}$  max.: 60.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 4.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 15.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 50.0 m/s<sup>2</sup>

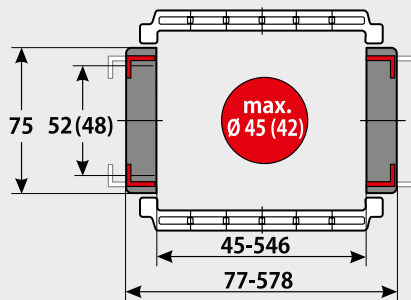


**PowerLine**  
**MP 52.2**  
**MP 52.3**  
**open**  
**closed**  
 Page 218



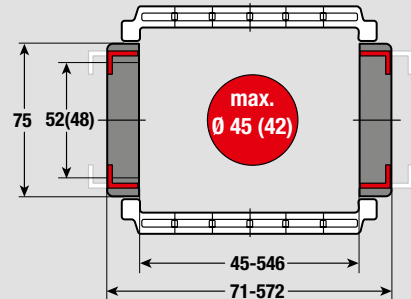
- Internal height: 52.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 100.0 – 350.0 mm
- Pitch: 91.0 mm
- Links per metre: 11 qty.
- Loading side: Inside and outside bend
- MP 52.3: inner widths 71–346 mm, radii 150-350 mm, lower inner height (values in brackets)

**PowerLine**  
**MP 52.2-D**  
**MP 52.3-D**  
**open**  
**closed**  
 Page 234



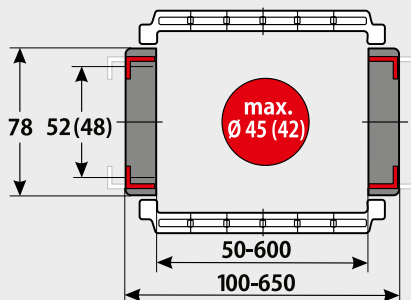
- Internal height: 52.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 200.0
- Pitch: 91.0 mm
- Links per metre: 11 qty.
- Loading side: Inside and outside bend

**PowerLine**  
**MP 52.4**  
**MP 52.5**  
**open**  
**closed**  
 Page 250



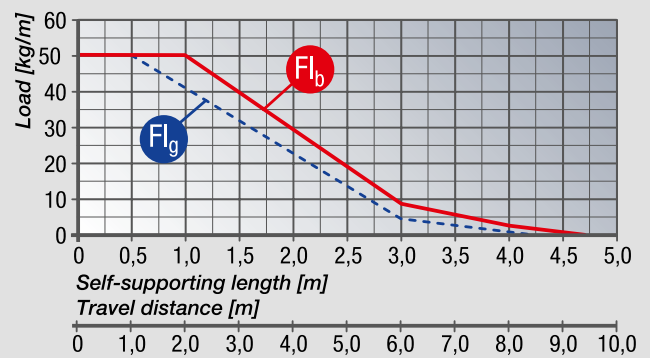
- Internal height: 52.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 125.0 – 300.0 mm
- Pitch: 91.0 mm
- Links per metre: 11 qty.
- Loading side: Inside and outside bend

**PowerLine**  
**MP 52.6**  
**MP 52.7**  
**open**  
**closed**  
 Page 266

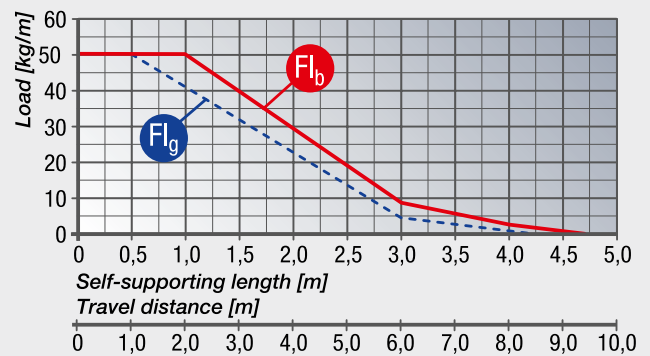


- Internal height: 52.0 mm
- Internal widths: 50.0 – 600.0 mm
- Radii: 150.0 – 300.0 mm
- Pitch: 91.0 mm
- Links per metre: 11 qty.
- Loading side: Inside and outside bend

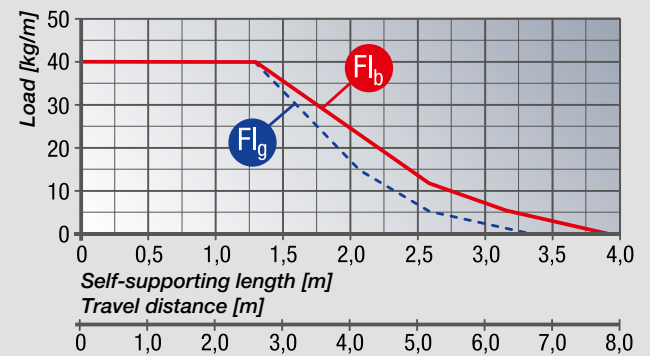
- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 221
- Travel distance vertical, hanging  $L_{vh}$  max.: 60.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 2.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 237
- Travel distance vertical, hanging  $L_{vh}$  max.: 60.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 2.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 50.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 253
- Travel distance vertical, hanging  $L_{vh}$  max.: 50.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 4.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>



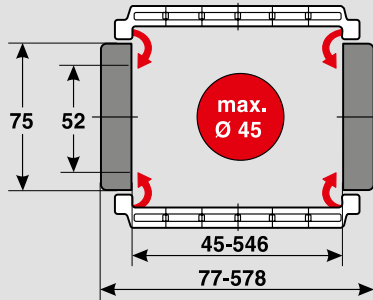
- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance vertical, hanging  $L_{vh}$  max.: 80.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.5 m
- Speed, gliding  $V_g$  max.: 6.0 m/s
- Acceleration, gliding  $a_g$  max.: 10.0 m/s<sup>2</sup>

**MP Legacy**

**MP 52.1**

**open**

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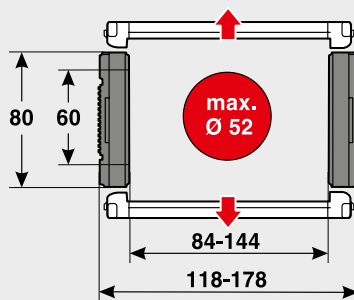
- Internal height: 52.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 100.0 – 350.0 mm
- Pitch: 91.0 mm
- Links per metre: 11 qty.
- Loading side: Inside and outside bend

**MultiLine**

**MP 65G**

**closed**

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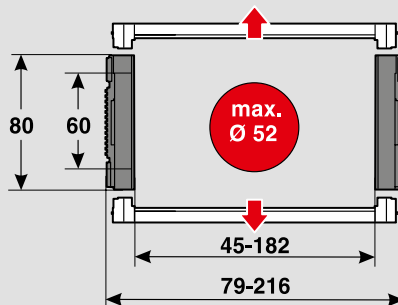
- Internal height: 60.0 mm
- Internal widths: 84.0 – 144.0 mm
- Radii: 200.0 – 400.0 mm
- Pitch: 91.5 mm
- Links per metre: 11 qty.
- Loading side: Inside and outside bend

**MP Legacy**

**MP 66**

**open**

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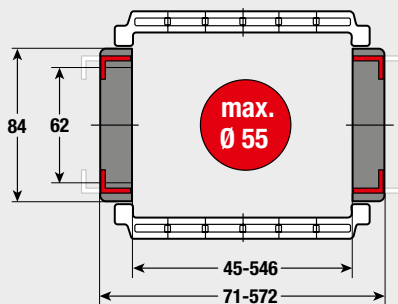
- Internal height: 60.0 mm
- Internal widths: 45.0 – 182.0 mm
- Radii: 150.0 – 400.0 mm
- Pitch: 91.5 mm
- Links per metre: 11 qty.
- Loading side: Inside and outside bend

**PowerLine**

**MP 62.4**

**open**

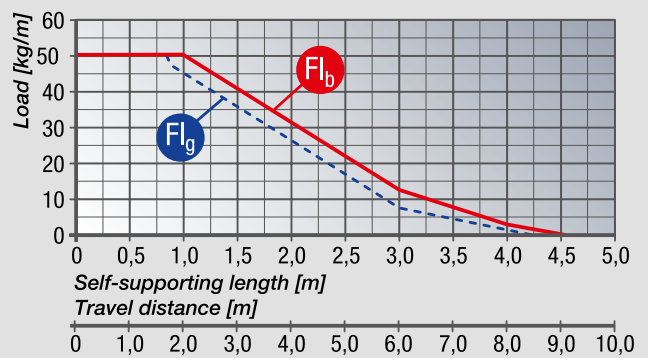
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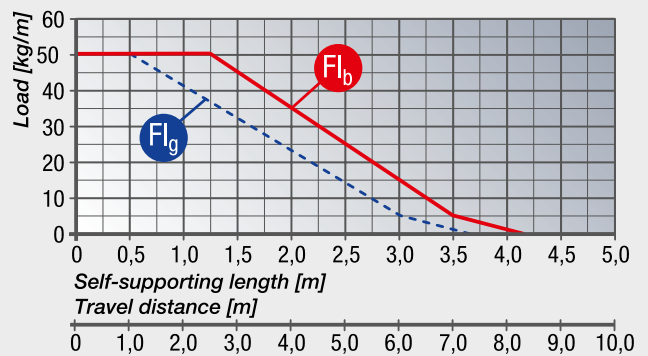
- Internal height: 62.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 135.0 – 300.0 mm
- Pitch: 91.0 mm
- Links per metre: 11 qty.
- Loading side: Inside and outside bend



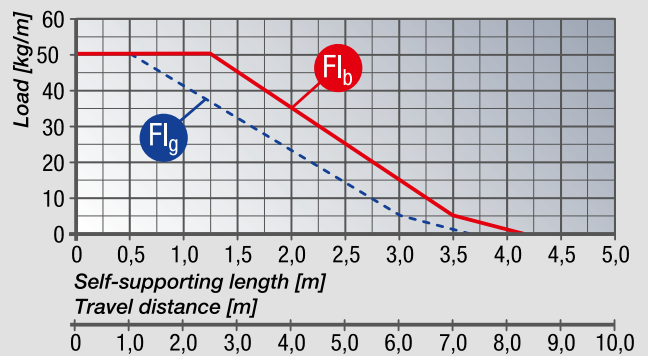
- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 377
- Travel distance vertical, hanging  $L_{vh}$  max.: 60.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 3.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>



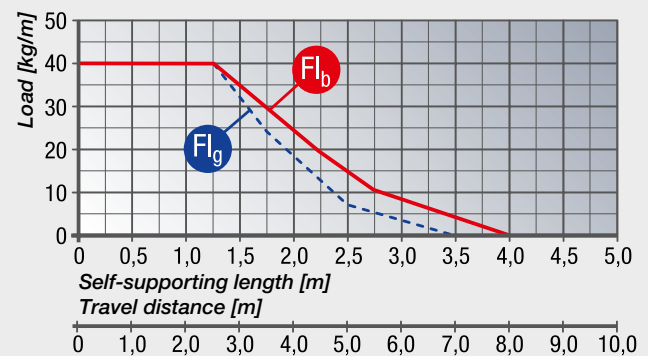
- Travel distance gliding  $L_g$  max.: 60.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 157
- Travel distance vertical, hanging  $L_{vh}$  max.: 50.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 5.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 2.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 15.0 m/s
- Acceleration, gliding  $a_g$  max.: 15.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 20.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 60.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 403
- Travel distance vertical, hanging  $L_{vh}$  max.: 50.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 5.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 2.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 15.0 m/s
- Acceleration, gliding  $a_g$  max.: 15.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 20.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 50.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 279
- Travel distance vertical, hanging  $L_{vh}$  max.: 50.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 4.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 1.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 30.0 m/s<sup>2</sup>



**HeavyLine**

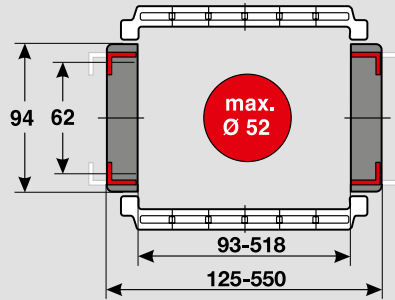
**MP 62.2**

**MP 62.3**

**open**

**closed**

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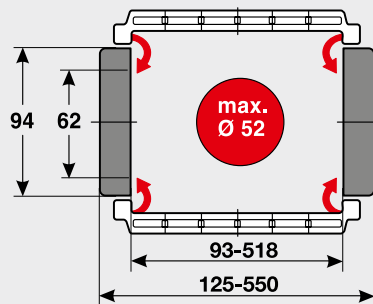
- Internal height: 62.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 150.0 – 500.0 mm
- Pitch: 100.0 mm
- Links per metre: 10 qty.
- Loading side: Inside and outside bend
- MP 62.3: inner widths 118–418 mm, radii 200–500 mm

**MP Legacy**

**MP 62.1**

**open**

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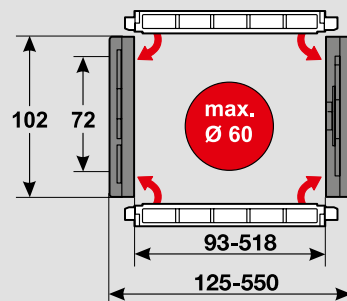
- Internal height: 62.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 150.0 – 500.0 mm
- Pitch: 100.0 mm
- Links per metre: 10 qty.
- Loading side: Inside and outside bend

**MP Legacy**

**MP 72**

**open**

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- Internal height: 72.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 150.0 – 500.0 mm
- Pitch: 100.0 mm
- Links per metre: 10 qty.
- Loading side: Inside and outside bend

**HeavyLine**

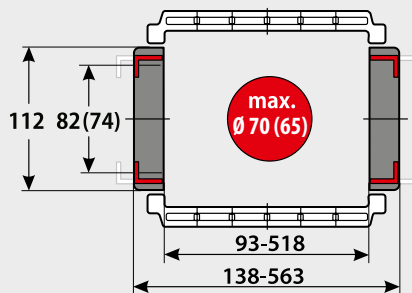
**MP 82.2**

**MP 82.3**

**open**

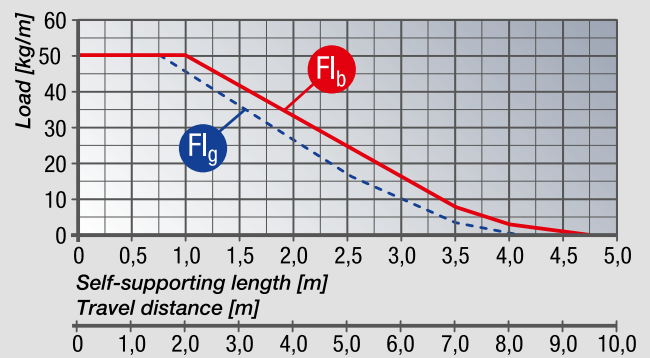
**closed**

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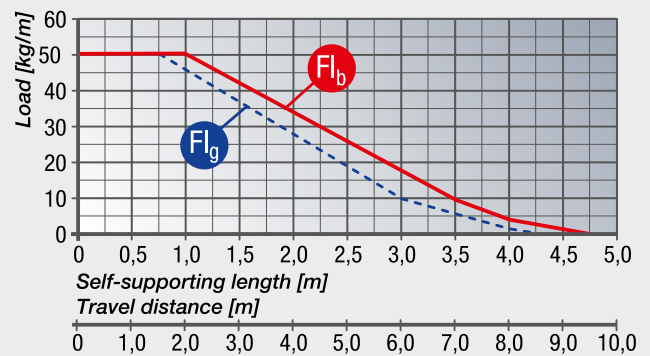


- Internal height: 82.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 150.0 – 650.0 mm
- Pitch: 118.0 mm
- Links per metre: 9 qty.
- Loading side: Inside and outside bend
- MP 82.3: inner widths 118–418 mm, radii 200–650 mm, lower inner height (values in brackets)

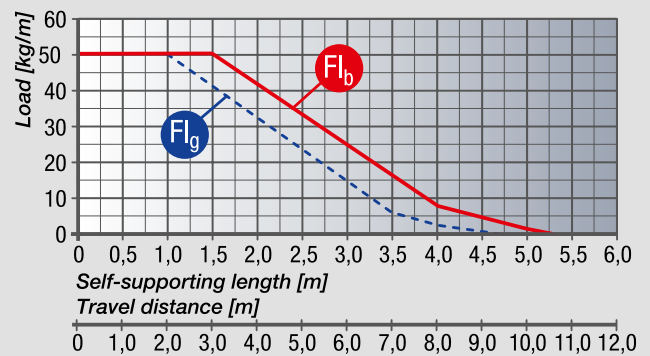
- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 293
- Travel distance vertical, hanging  $L_{vh}$  max.: 65.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 4.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 40.0 m/s<sup>2</sup>



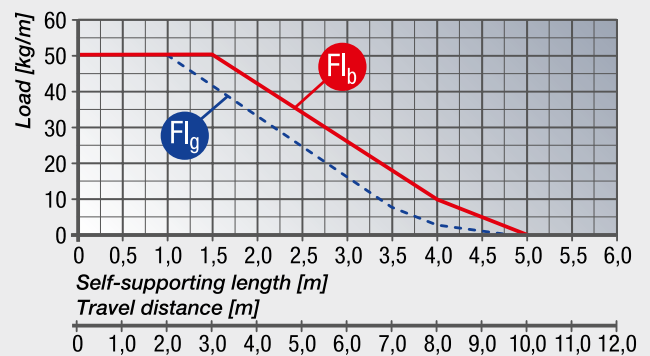
- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 391
- Travel distance vertical, hanging  $L_{vh}$  max.: 65.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 4.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 40.0 m/s<sup>2</sup>



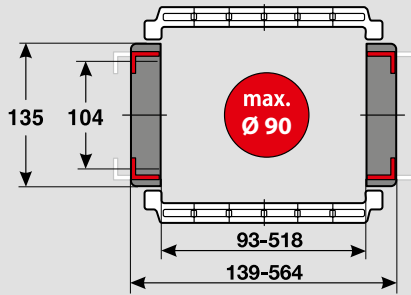
- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 411
- Travel distance vertical, hanging  $L_{vh}$  max.: 80.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 6.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 40.0 m/s<sup>2</sup>



- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 307
- Travel distance vertical, hanging  $L_{vh}$  max.: 80.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 6.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 3.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 40.0 m/s<sup>2</sup>

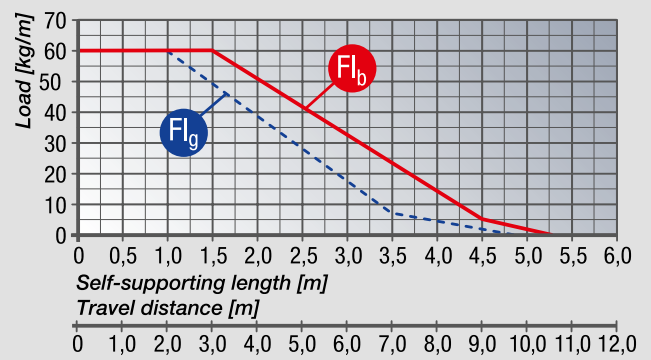


**HeavyLine**  
**MP 102.2**  
**open**  
 Page 318



- Internal height: 104.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 250.0 – 500.0 mm
- Pitch: 141.0 mm
- Links per metre: 7 qty.
- Loading side: Inside and outside bend

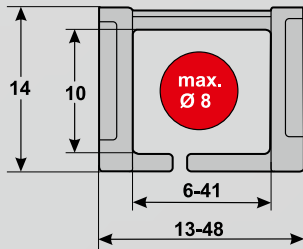
- Travel distance gliding  $L_g$  max.: 150.0 m
- Travel distance self-supporting  $L_f$  max.: see diagram on page 321
- Travel distance vertical, hanging  $L_{vh}$  max.: 80.0 m
- Travel distance vertical, upright  $L_{vs}$  max.: 8.0 m
- Rotated 90°, unsupported  $L_{90f}$  max.: 8.0 m
- Speed, gliding  $V_g$  max.: 5.0 m/s
- Speed, self-supporting  $V_f$  max.: 20.0 m/s
- Acceleration, gliding  $a_g$  max.: 25.0 m/s<sup>2</sup>
- Acceleration, self-supporting  $a_f$  max.: 40.0 m/s<sup>2</sup>



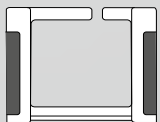
## MP 10.1 OPEN



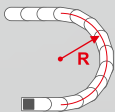
- EASY (FILL) MECHANISM
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED
- VERY FLEXIBLE, HIGH TORSION



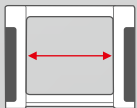
### TECHNICAL DATA



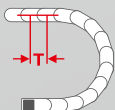
**Loading side**  
Outside bend slitted



**Available radii**  
18.0 – 58.0 mm



**Available interior widths**  
With plastic crossbar  
6.0 – 41.0 mm



**Pitch**  
T = 15.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	10.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 65
Travel distance vertical, hanging $L_{vh}$ max.	2.0 m
Travel distance vertical, upright $L_{vs}$ max.	1.0 m
Rotated 90°, unsupported $L_{90f}$ max.	not recommended
Speed, gliding $V_g$ max.	2.0 m/s
Speed, self-supporting $V_s$ max.	4.0 m/s
Acceleration, gliding $a_g$ max.	2.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	2.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

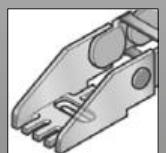
## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request.



## CHAIN BRACKET

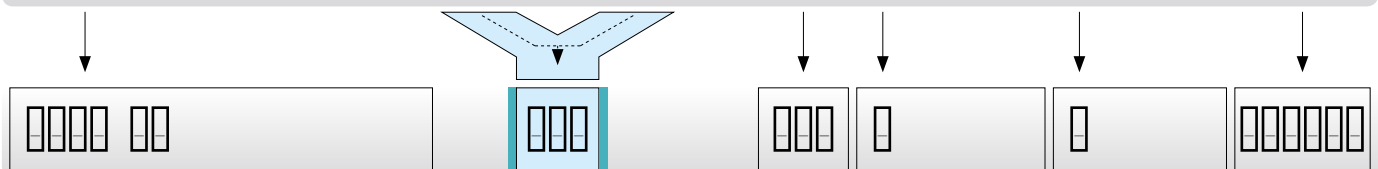


Chain bracket U-part

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
0101 22	Crossbar on outside bend Crossbar on inside bend Slotted on outside bend	006 <sup>1)</sup> [0.24]	013 [0.51]			018 [0.71]	0 Plastic, full-ridged with bias	0 Polyamide standard (PA/black)	
		009 [0.35]	016 [0.63]						
		015 [0.59]	022 [0.87]						
		021 [0.83]	028 [1.10]			028 [1.10]		1 UL94 / V0 (PA/oxide red)	
		031 [1.22]	038 [1.50]			038 [1.50]		7 EMC (PA/light grey)	
		041 [1.61]	048 [1.89]			048 [1.89]		9 Special version (on request)	
						058 [2.28]			



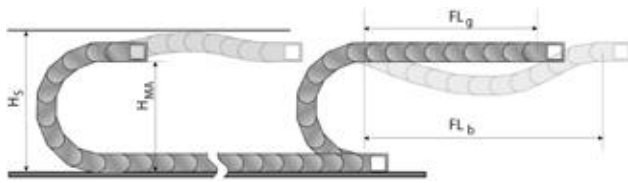
**ORDERING EXAMPLE: 0101 22 006 018 0 0 1065**

Crossbar on outside bend, crossbar on inside bend, slotted on outside bend  
 Inside width 6 mm; radius 18 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1065 mm (71 links)

<sup>1)</sup> max. line diameter 5 mm



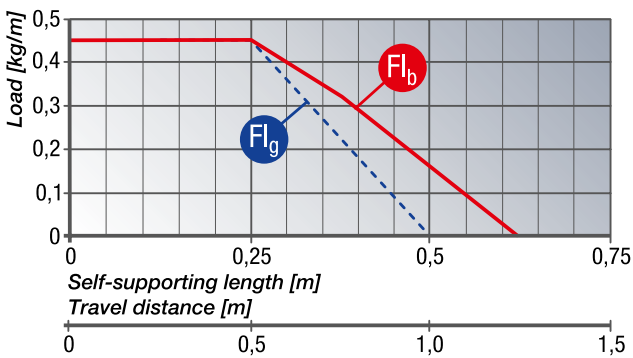
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

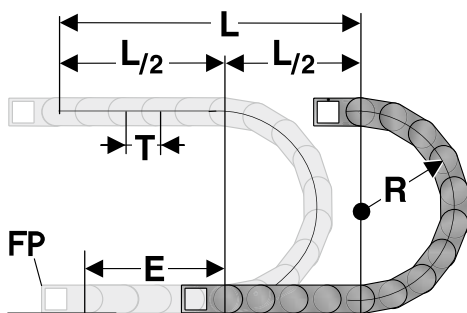
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**FL<sub>g</sub> Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 30.0 mm.

**FL<sub>b</sub> Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 30.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

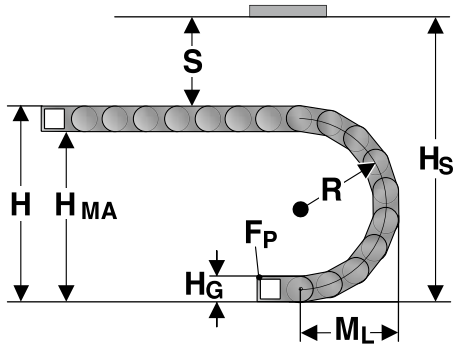


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 67 \text{ qty. } \times 15.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 15.0 mm

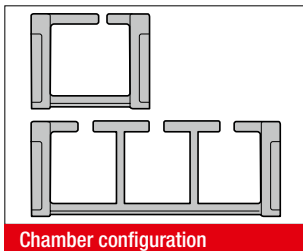
**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_S$ ” value has to be taken into account.

Radius R	18	28	38	48	58
Outside height of chain link ( $H_e$ )	14	14	14	14	14
Height of bend (H)	50	70	90	110	130
Height of moving end bracket ( $H_{MA}$ )	36	56	76	96	116
Safety margin (S)	10	10	10	10	10
Installation height ( $H_s$ )	60	80	100	120	140
Arc projection ( $M_L$ )	40	50	60	70	80

**MP 10.1 CHAMBER SIZE**

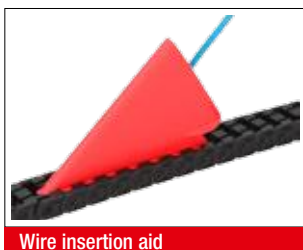


Chamber configuration

Depending on chain width, the MP10.1 is fitted with one, two, three or four chambers. This system of chambers enables cabling to be laid separately.

Type	Number of chambers qty.	Chamber width mm
10.1 006	1	6.5
10.1 009	1	9.5
10.1 015	1	15.5
10.1 021	2	9.5
10.1 031	3	9.5
10.1 041	4	9.0

**WIRE INSERTION AID**

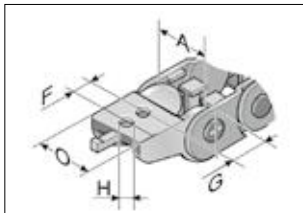


Wire insertion aid

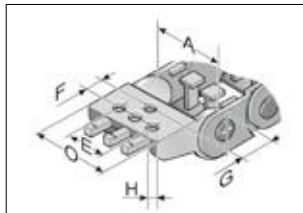
The wire insertion tool allows for quick and simple installation of cables and conduits into the cable drag chain.

Type	Order No.
KE	83729010

**KA 10.1 CHAIN BRACKET U-PART**



KA 10.1 006 - 021



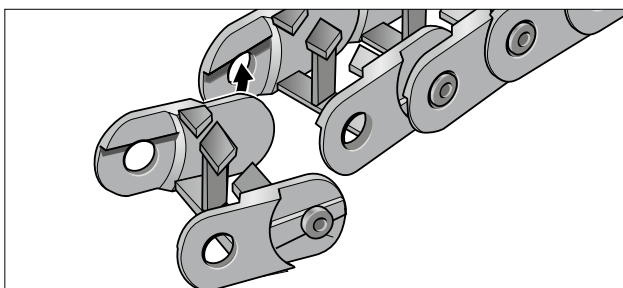
KA 10.1 031 - 041

The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M3 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

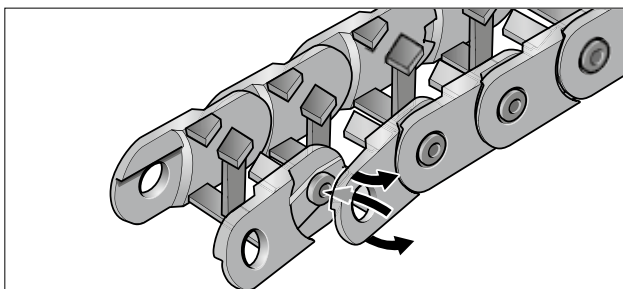
Type	Order No.	Material	Inside width					Outside width of KA 0 mm
			A mm	E mm	F mm	G mm	HØ mm	
KA 10.1 006 Female end	010100005000	Plastic	6.0		8.0	11.0	3.2	A+7.0
KA 10.1 006 Male end	010100005100	Plastic	6.0		8.0	11.0	3.2	A+7.0
KA 10.1 009 Female end	010100005200	Plastic	9.0		8.0	11.0	3.2	A+7.0
KA 10.1 009 Male end	010100005300	Plastic	9.0		8.0	11.0	3.2	A+7.0
KA 10.1 015 Female end	010100005400	Plastic	15.0		8.0	11.0	3.2	A+7.0
KA 10.1 015 Male end	010100005500	Plastic	15.0		8.0	11.0	3.2	A+7.0
KA 10.1 021 Female end	010100005600	Plastic	21.0		8.0	11.0	3.2	A+7.0
KA 10.1 021 Male end	010100005700	Plastic	21.0		8.0	11.0	3.2	A+7.0
KA 10.1 031 Female end	010100005800	Plastic	31.0	A-9.0	8.0	11.0	3.2	A+7.0
KA 10.1 031 Male end	010100005900	Plastic	31.0	A-9.0	8.0	11.0	3.2	A+7.0
KA 10.1 041 Female end	010100006000	Plastic	41.0	A-9.0	8.0	11.0	3.2	A+7.0
KA 10.1 041 Male end	010100006100	Plastic	41.0	A-9.0	8.0	11.0	3.2	A+7.0

**ASSEMBLY**

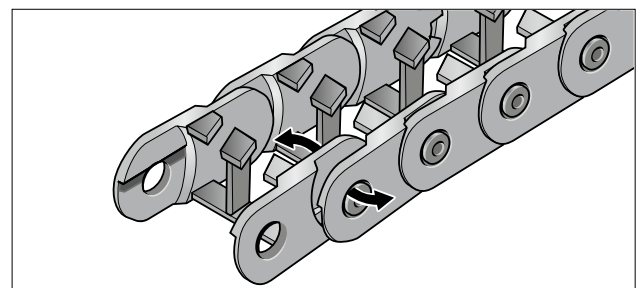
**DISASSEMBLY**



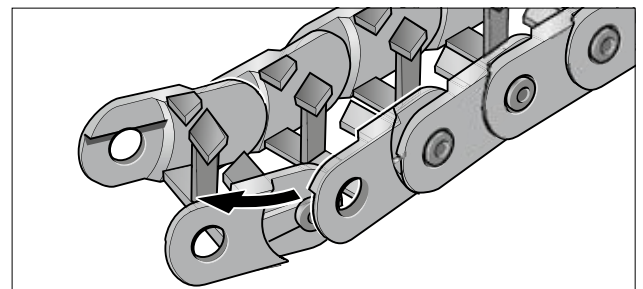
Step 1



Step 2



Step 1

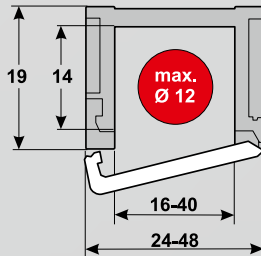


Step 2

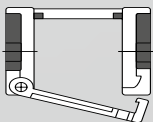
## MP 14 OPEN



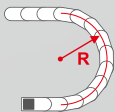
- LOW-COST VARIANT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED



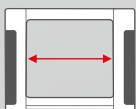
### TECHNICAL DATA



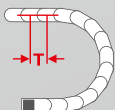
**Loading side**  
Outside bend



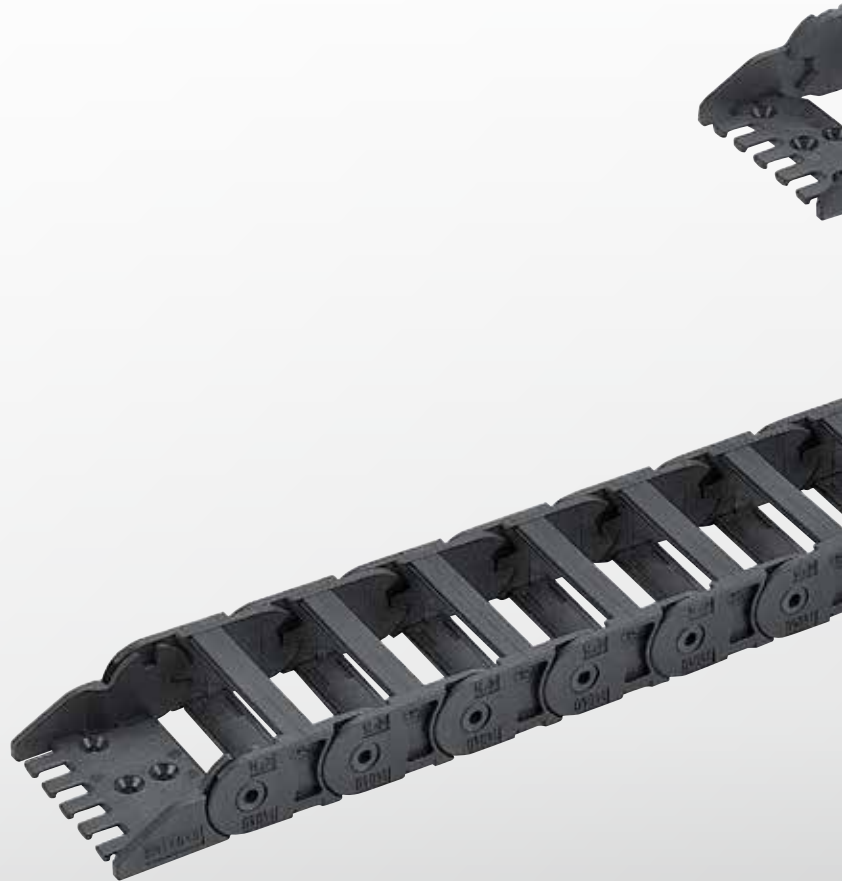
**Available radii**  
25.0 – 75.0 mm



**Available interior widths**  
With plastic crossbar  
16.0 – 40.0 mm



**Pitch**  
T = 26.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	12.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 71
Travel distance vertical, hanging $L_{vh}$ max.	3.0 m
Travel distance vertical, upright $L_{vs}$ max.	2.0 m
Rotated 90°, unsupported $L_{90f}$ max.	not recommended
Speed, gliding $V_g$ max.	2.0 m/s
Speed, self-supporting $V_s$ max.	4.0 m/s
Acceleration, gliding $a_g$ max.	2.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	2.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

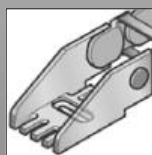


## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

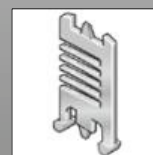
Other material properties on request.

### CHAIN BRACKET



Chain bracket U-part

### SHELVING SYSTEM



Separator TR

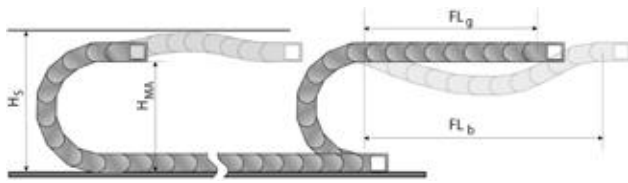
### GUIDE CHANNELS



VAW aluminium



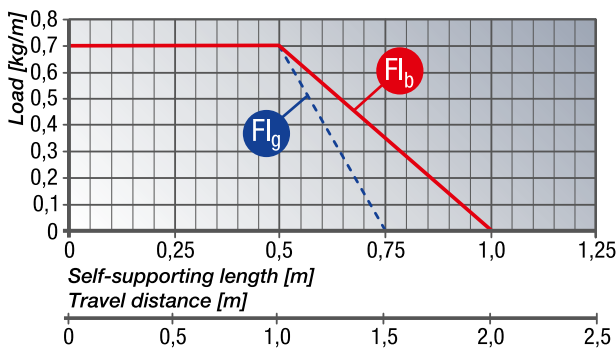
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

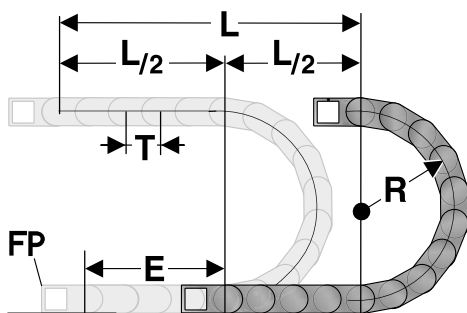
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 30.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 30.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

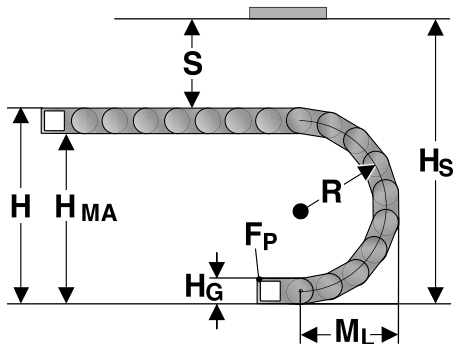


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 39 \text{ qty. } \times 26.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 26.0 mm

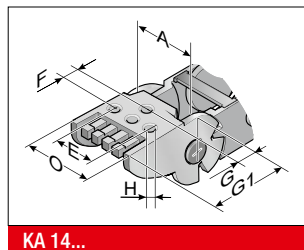
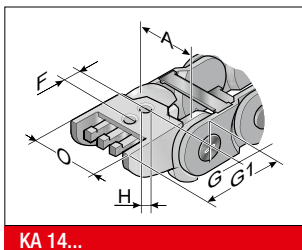
**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_S$ ” value has to be taken into account.

Radius R	25	38	48	75
Outside height of chain link ( $H_G$ )	19	19	19	19
Height of bend (H)	69	95	115	169
Height of moving end bracket ( $H_{MA}$ )	50	76	96	150
Safety margin (S)	20	20	20	20
Installation height ( $H_S$ )	89	115	135	189
Arc projection ( $M_L$ )	61	74	84	111

**KA 14 / 15 CHAIN BRACKET U-PART**



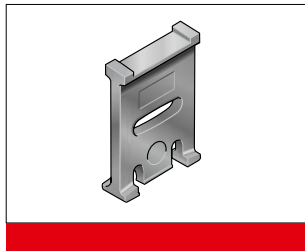
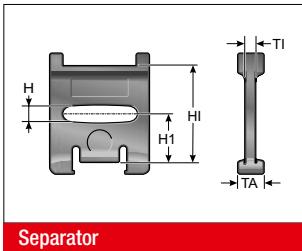
The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M3 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width						Outside width of KA O mm
			A mm	E mm	F mm	G mm	G1 mm	HØ mm	
KA 14016 Female end	014000005000	Plastic	16.0		8.0	11.0	30.5	3.2	A+8.0
KA 14016 Male end	014000005100	Plastic	16.0		8.0	7.5	30.5	3.2	A+8.0
KA 14020 Female end	014000005200	Plastic	20.0		8.0	11.0	30.5	3.2	A+8.0
KA 14020 Male end	014000005300	Plastic	20.0		8.0	7.5	30.5	3.2	A+8.0
KA 14030 Female end	014000005400	Plastic	30.0	A-8.0	8.0	11.0	30.5	3.2	A+8.0
KA 14030 Male end	014000005500	Plastic	30.0	A-8.0	8.0	7.5	30.5	3.2	A+8.0
KA 14040 Female end	014000005600	Plastic	40.0	A-8.0	8.0	11.0	30.5	3.2	A+8.0
KA 14040 Male end	014000005700	Plastic	40.0	A-8.0	8.0	7.5	30.5	3.2	A+8.0



# MP 14 OPEN

## TR 14 SEPARATOR



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	HI mm
TR 14	014000009200	Separator	moveable	1.5	6.0	14.0

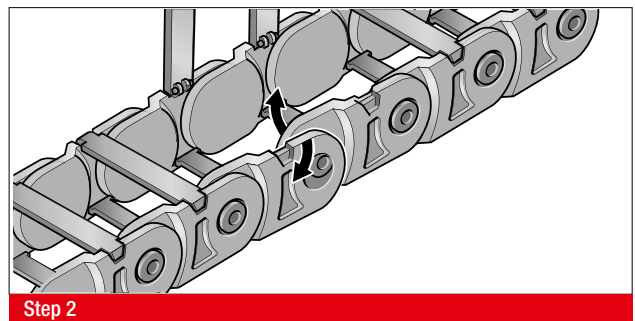
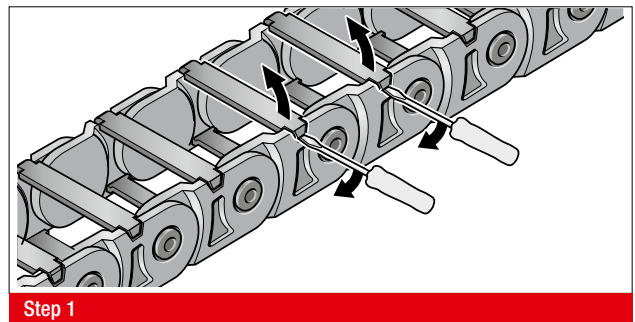
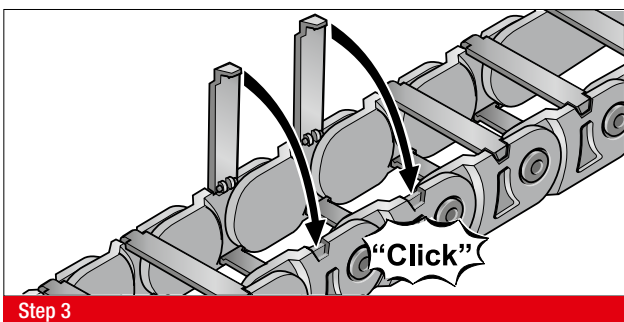
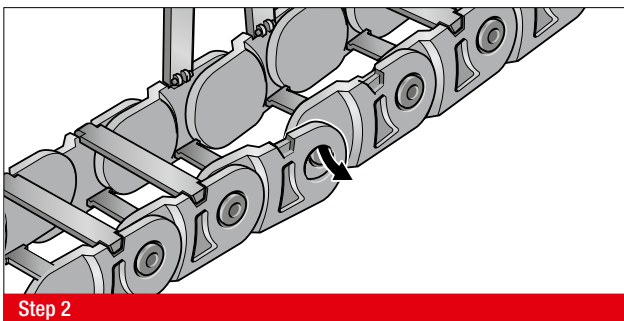
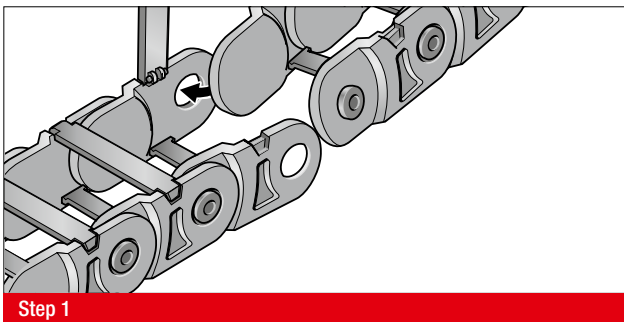
## GUIDE CHANNEL VAW (ALUMINIUM)



A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

### ASSEMBLY

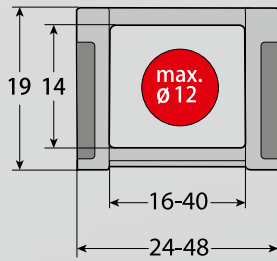
### DISASSEMBLY



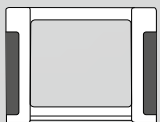
## MP 15 OPEN



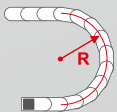
- LOW-COST VARIANT
- COMPACT DESIGN (NON-OPENING)
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED
- NON-OPENING



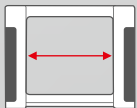
### TECHNICAL DATA



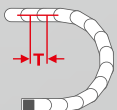
**Loading side**  
Non-opening



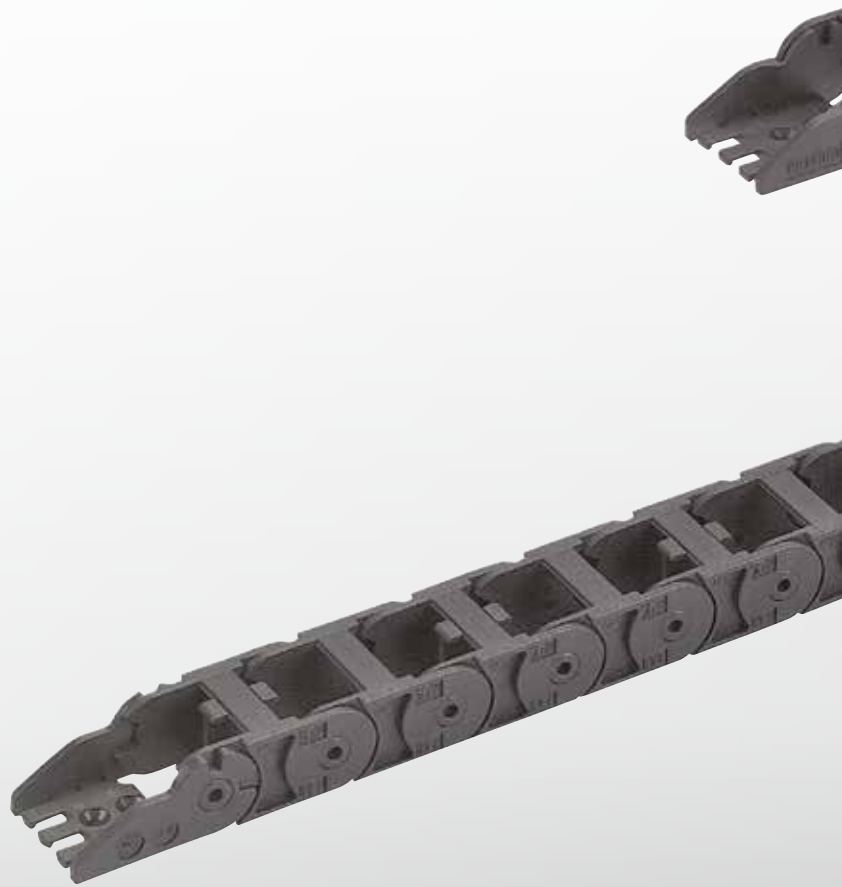
**Available radii**  
25.0 – 75.0 mm



**Available interior widths**  
With plastic crossbar  
16.0 – 40.0 mm



**Pitch**  
T = 26.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	12.0 m
Travel distance self-supporting $L_f$ max.	see diagram on page 77
Travel distance vertical, hanging $L_{vh}$ max.	3.0 m
Travel distance vertical, upright $L_{vs}$ max.	2.0 m
Rotated 90°, unsupported $L_{90f}$ max.	not recommended
Speed, gliding $V_g$ max.	2.0 m/s
Speed, self-supporting $V_f$ max.	4.0 m/s
Acceleration, gliding $a_g$ max.	2.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_f$ max.	2.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

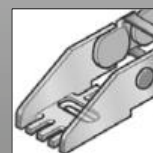


## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request.

### CHAIN BRACKET



Chain bracket U-part

### GUIDE CHANNELS

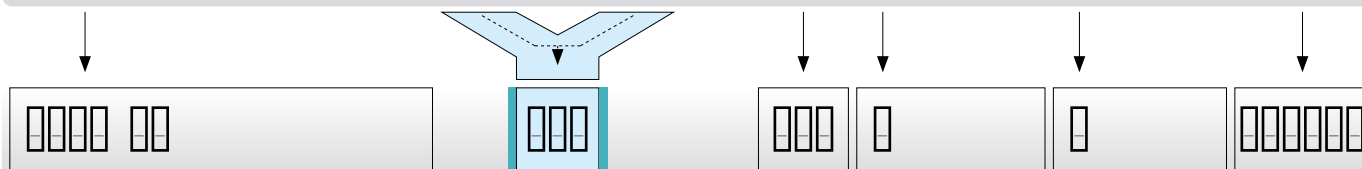


VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

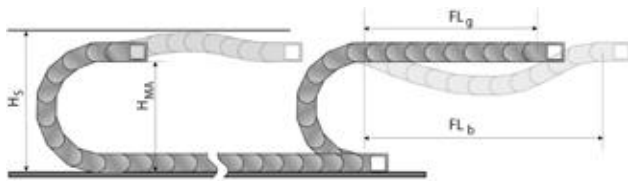
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0150 34</b>	Crossbar on outside bend Crossbar on inside bend Non-opening	<b>016</b> [0.63]	<b>024</b> [0.94]			<b>025</b> [0.98]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>020</b> [0.79]	<b>028</b> [1.10]						
		<b>030</b> [1.18]	<b>038</b> [1.50]			<b>038</b> [1.50]		<b>1</b> UL94 / V0 (PA/oxide red)	
		<b>040</b> [1.57]	<b>048</b> [1.89]						
						<b>048</b> [1.89]		<b>7</b> EMC (PA/light grey)	
						<b>075</b> [2.95]		<b>9</b> Special version (on request)	



**ORDERING EXAMPLE: 0150 34 016 025 0 0 1092**

Crossbar on outside bend, crossbar on inside bend, cannot be opened  
 Inside width 16 mm; radius 25 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1092 mm (42 links)

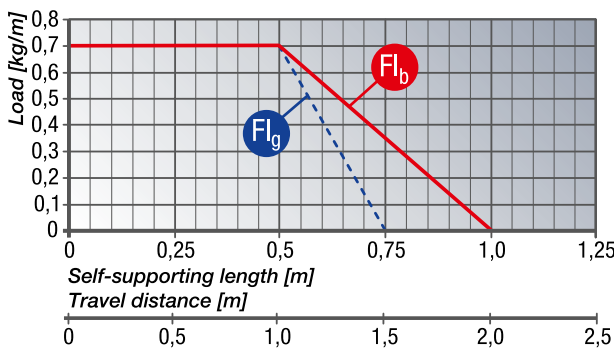
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

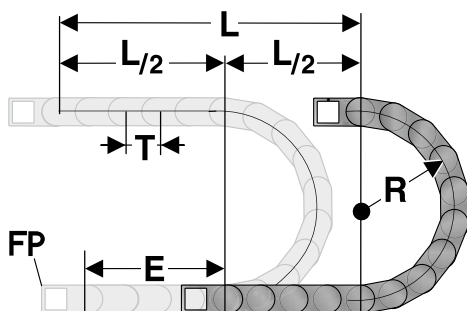
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 30.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 30.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

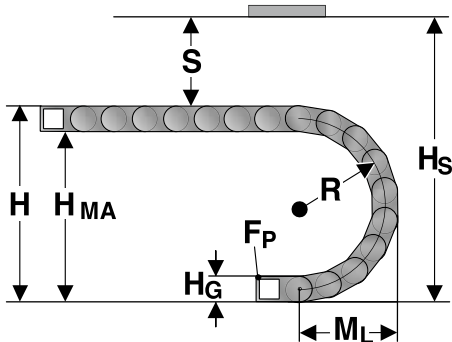


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 39 \text{ qty. } \times 26.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 26.0 mm

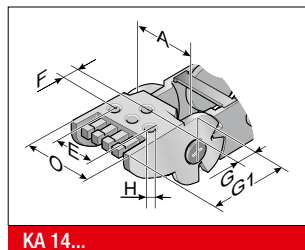
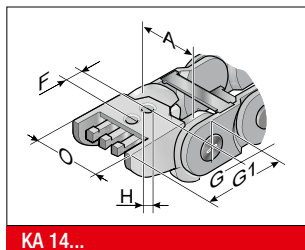
**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_S$ ” value has to be taken into account.

Radius R	25	38	48	75
Outside height of chain link ( $H_G$ )	19	19	19	19
Height of bend (H)	69	95	115	169
Height of moving end bracket ( $H_{MA}$ )	50	76	96	150
Safety margin (S)	20	20	20	20
Installation height ( $H_S$ )	89	115	135	189
Arc projection ( $M_L$ )	61	74	84	111

**KA 14 / 15 CHAIN BRACKET U-PART**



The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M3 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width						Outside width of KA O mm
			A mm	E mm	F mm	G mm	G1 mm	HØ mm	
KA 14016 Female end	014000005000	Plastic	16.0		8.0	11.0	30.5	3.2	A+8.0
KA 14016 Male end	014000005100	Plastic	16.0		8.0	7.5	30.5	3.2	A+8.0
KA 14020 Female end	014000005200	Plastic	20.0		8.0	11.0	30.5	3.2	A+8.0
KA 14020 Male end	014000005300	Plastic	20.0		8.0	7.5	30.5	3.2	A+8.0
KA 14030 Female end	014000005400	Plastic	30.0	A-8.0	8.0	11.0	30.5	3.2	A+8.0
KA 14030 Male end	014000005500	Plastic	30.0	A-8.0	8.0	7.5	30.5	3.2	A+8.0
KA 14040 Female end	014000005600	Plastic	40.0	A-8.0	8.0	11.0	30.5	3.2	A+8.0
KA 14040 Male end	014000005700	Plastic	40.0	A-8.0	8.0	7.5	30.5	3.2	A+8.0

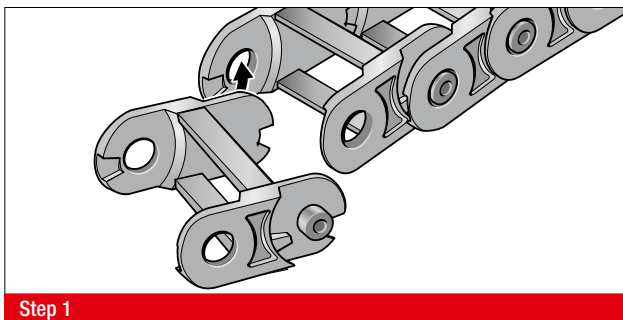
**GUIDE CHANNEL VAW (ALUMINIUM)**



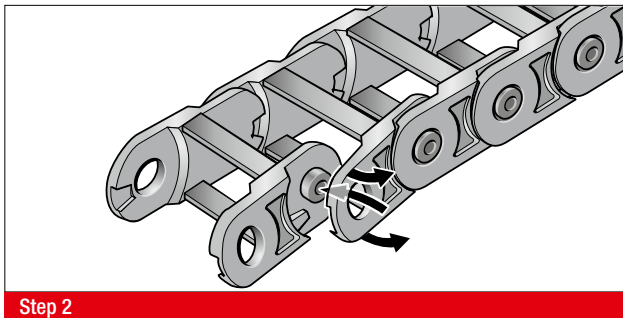
VAW aluminium

A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY**

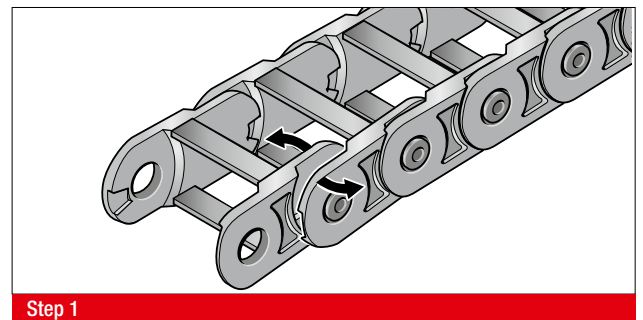


Step 1

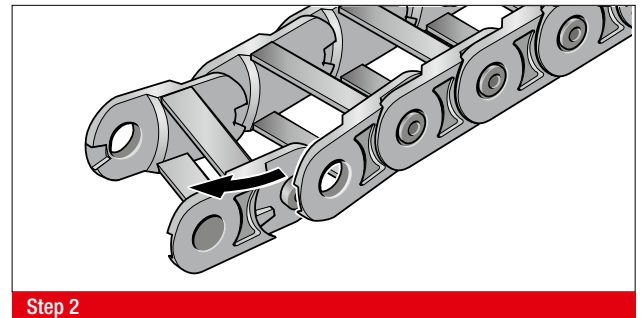


Step 2

**DISASSEMBLY**



Step 1



Step 2

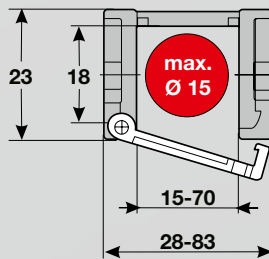
**MP 18.1**  
OPEN



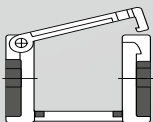
**MP 18.2**  
OPEN



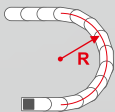
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED



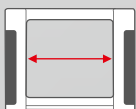
## TECHNICAL DATA



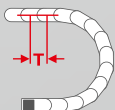
**Loading side**  
Inside or outside bend



**Available radii**  
28.0 – 78.0 mm



**Available interior widths**  
With plastic crossbar  
15.0 – 70.0 mm



**Pitch**  
T = 33.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	20.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 83
Travel distance vertical, hanging $L_{vh}$ max.	8.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	0.5 m
Speed, gliding $V_g$ max.	2.0 m/s
Speed, self-supporting $V_s$ max.	5.0 m/s
Acceleration, gliding $a_g$ max.	5.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	5.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

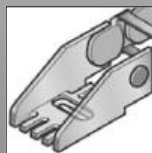


## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

### CHAIN BRACKET



Chain bracket U-part

### SHELVING SYSTEM



Separator TR

### GUIDE CHANNELS

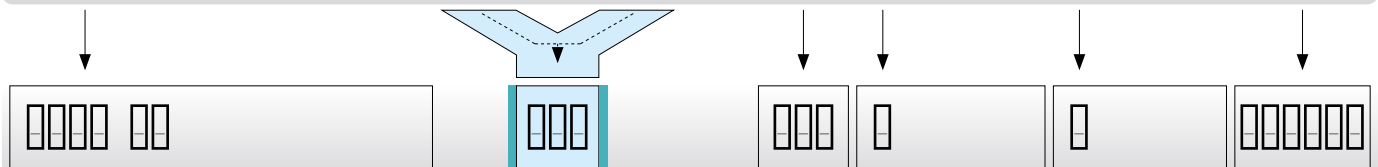


VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length																																						
0181 01 <sup>1)</sup>	MP 18.1 open Crossbar on outside bend Crossbar on inside bend Opens on outside bend	015 <sup>3)</sup> [0.59]	028 [1.10]			028 [1.10]	0 Plastic, full-ridged with bias	0 Polyamide standard (PA/black)																																							
		018 [0.71]	031 [1.22]							0182 02 <sup>2)</sup>	MP 18.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside bend	025 [0.98]	038 [1.50]			038 [1.50]		1 UL94 / V0 (PA/oxide red)		037 [1.46]	050 [1.97]					050 [1.97]	063 [2.48]			048 [1.89]		5 Polypropylene (PP/blue)				070 [2.76]	083 [3.27]			078 [3.07]		7 EMC (PA/light grey)					
0182 02 <sup>2)</sup>	MP 18.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside bend	025 [0.98]	038 [1.50]			038 [1.50]		1 UL94 / V0 (PA/oxide red)																																							
		037 [1.46]	050 [1.97]									050 [1.97]	063 [2.48]			048 [1.89]		5 Polypropylene (PP/blue)				070 [2.76]	083 [3.27]			078 [3.07]		7 EMC (PA/light grey)										9 Special version (on request)									
		050 [1.97]	063 [2.48]			048 [1.89]		5 Polypropylene (PP/blue)																																							
		070 [2.76]	083 [3.27]			078 [3.07]		7 EMC (PA/light grey)																																							
								9 Special version (on request)																																							

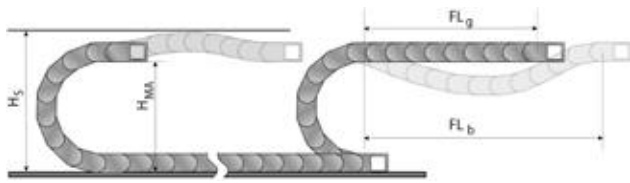


**ORDERING EXAMPLE: 0181 01 015 028 0 0 1122**

Crossbar on outside bend, crossbar on inside bend, can be opened from outside bend  
 Inside width 15 mm; radius 28 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1122 mm (34 links)

<sup>1)</sup> for Type 0181 only  
<sup>2)</sup> for Type 0182 only  
<sup>3)</sup> max. line diameter 13 mm

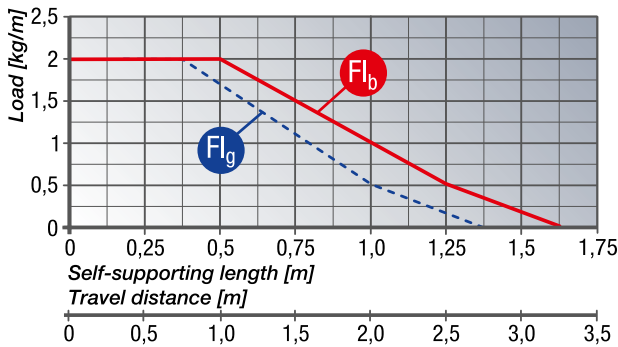
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

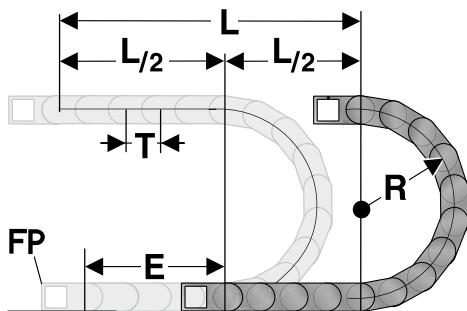
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 40.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 40.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

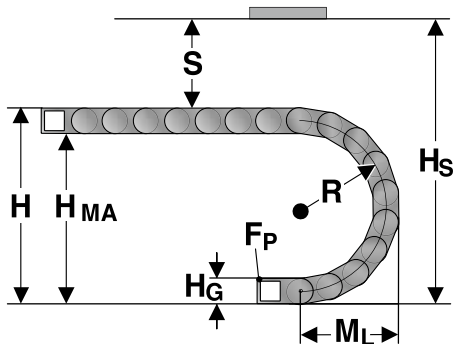


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 30 \text{ qty. } \times 33.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 33.0 mm

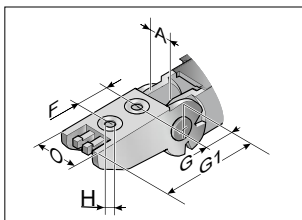
**INSTALLATION DIMENSIONS**



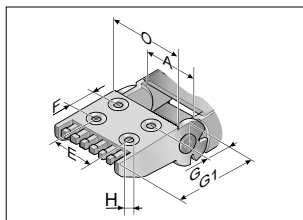
The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_S$ ” value has to be taken into account.

Radius R	28	38	48	78
Outside height of chain link ( $H_G$ )	23	23	23	23
Height of bend (H)	79	99	119	179
Height of moving end bracket ( $H_{MA}$ )	56	76	96	156
Safety margin (S)	30	30	30	30
Installation height ( $H_S$ )	109	129	149	209
Arc projection ( $M_L$ )	73	83	93	123

**KA 18.1 / 18.2 CHAIN BRACKET U-PART**



KA/Z 18015 - 025



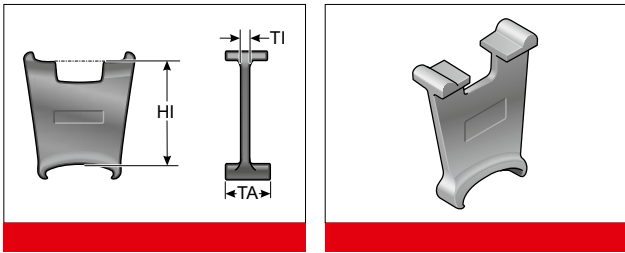
KA/Z 18037 - 070

The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width						Outside width of KA O mm
			A mm	E mm	F mm	G mm	G1 mm	H0 mm	
KA/Z 18015 female end	018100004800	Plastic	15.4		19.0	10.5	53.0	5.5	A+13.0
KA/Z 18015 male end	018100004900	Plastic	15.4		19.0	8.5	53.0	5.5	A+13.0
KA/Z 18018 female end	018100005000	Plastic	18.4		19.0	10.5	53.0	5.5	A+13.0
KA/Z 18018 male end	018100005100	Plastic	18.4		19.0	8.5	53.0	5.5	A+13.0
KA/Z 18025 female end	018100005200	Plastic	25.4		19.0	10.5	53.0	5.5	A+13.0
KA/Z 18025 male end	018100005300	Plastic	25.4		19.0	8.5	53.0	5.5	A+13.0
KA/Z 18037 female end	018100005400	Plastic	37.4	A-17.4	19.0	10.5	53.0	5.5	A+13.0
KA/Z 18037 male end	018100005500	Plastic	37.4	A-17.4	19.0	8.5	53.0	5.5	A+13.0
KA/Z 18050 female end	018100005600	Plastic	50.4	A-16.4	19.0	10.5	53.0	5.5	A+13.0
KA/Z 18050 male end	018100005700	Plastic	50.4	A-16.4	19.0	8.5	53.0	5.5	A+13.0
KA/Z 18070 female end	018100005800	Plastic	70.4	A-22.4	19.0	10.5	53.0	5.5	A+13.0
KA/Z 18070 male end	018100005900	Plastic	70.4	A-22.4	19.0	8.5	53.0	5.5	A+13.0

**MP 18.1 OPEN / MP 18.2 OPEN**

**TR 18.1/2 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	TI mm	HI mm
TR 14/18	018200009000	Separator	1.5	18.0

**GUIDE CHANNEL VAW (ALUMINIUM)**

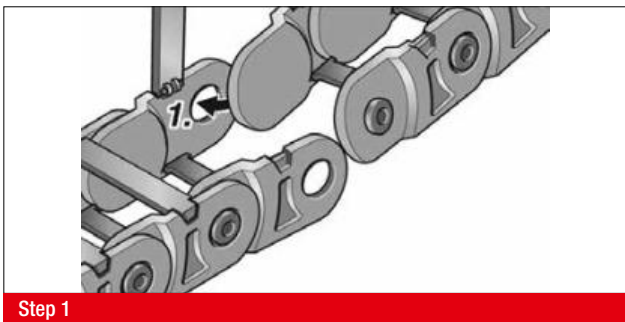


VAW aluminium

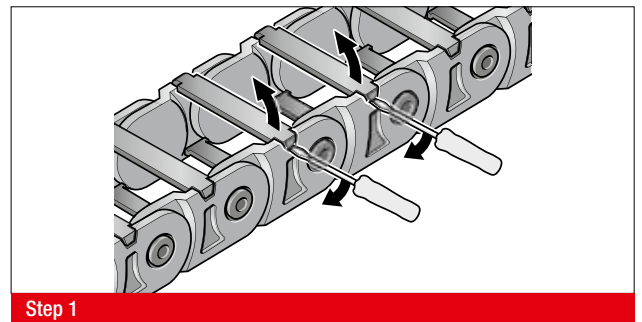
A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY**

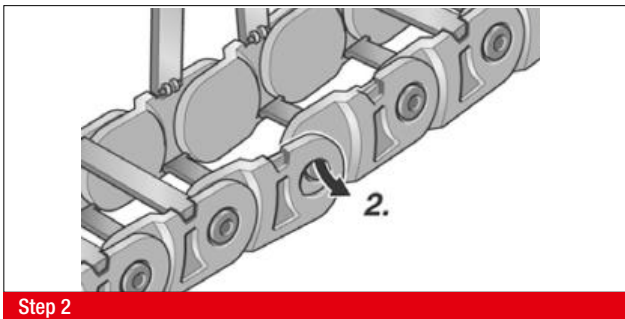
**DISASSEMBLY**



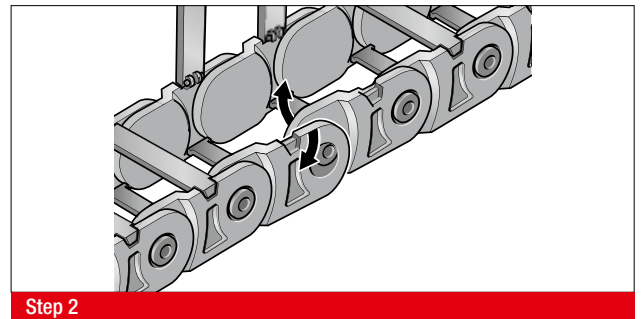
Step 1



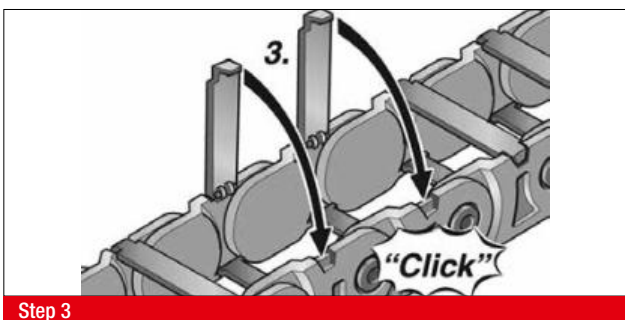
Step 1



Step 2



Step 2

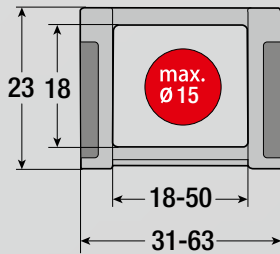


Step 3

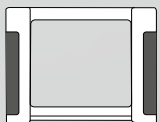
## MP 18.4 OPEN



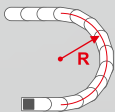
- HIGH STABILITY
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- VERY FLEXIBLE, HIGH TORSION
- NON-OPENING



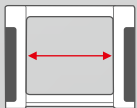
### TECHNICAL DATA



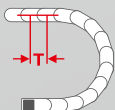
**Loading side**  
Non-opening



**Available radii**  
40.0 – 80.0 mm



**Available interior widths**  
With plastic crossbar  
18.0 – 50.0 mm



**Pitch**  
T = 33.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	20.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 89
Travel distance vertical, hanging $L_{vh}$ max.	8.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	0.5 m
Speed, gliding $V_g$ max.	2.0 m/s
Speed, self-supporting $V_f$ max.	5.0 m/s
Acceleration, gliding $a_g$ max.	5.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	5.0 m/s <sup>2</sup>

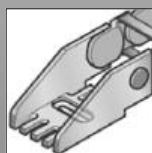
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

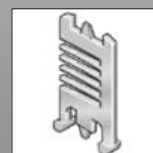
Other material properties on request.

### CHAIN BRACKET



Chain bracket U-part

### SHELVING SYSTEM



Separator TR

### GUIDE CHANNELS

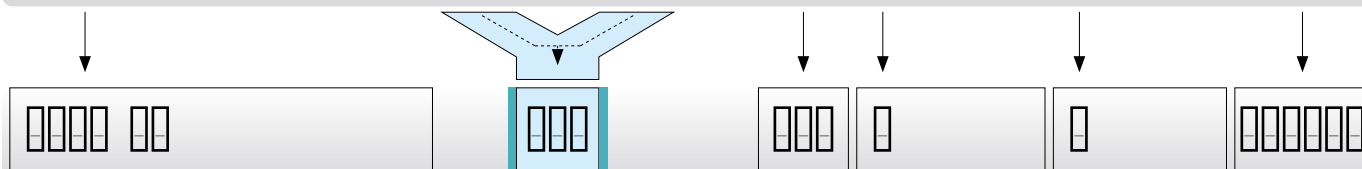


VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0184 34</b>	Crossbar on outside bend Crossbar on inside bend Non-opening	<b>018</b> [0.71]	<b>031</b> [1.22]			<b>040<sup>1)</sup></b> [1.57]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>025</b> [0.98]	<b>038</b> [1.50]						
		<b>037</b> [1.46]	<b>050</b> [1.97]			<b>050<sup>2)</sup></b> [1.97]			
		<b>050</b> [1.97]	<b>063</b> [2.48]						
						<b>080<sup>3)</sup></b> [3.15]			



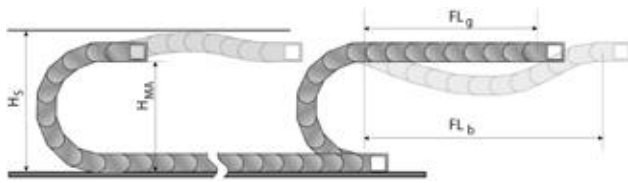
**ORDERING EXAMPLE: 0184 34 025 050 0 0 1020**

Crossbar on outside bend, crossbar on inside bend, cannot be opened  
 Inside width 25 mm; radius 50 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1020 mm (34 links)

<sup>1)</sup> Only for inside width of 18, 25, 37 mm  
<sup>2)</sup> Only for inside width of 18 mm  
<sup>3)</sup> Only for inside width of 25, 50 mm



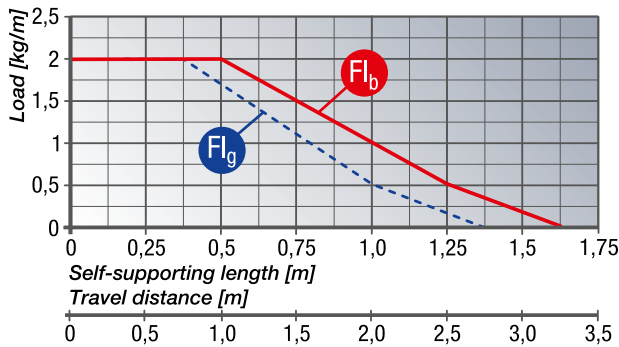
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

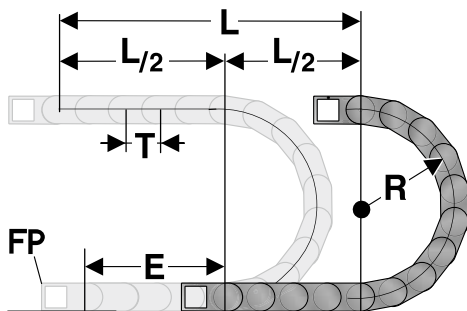
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 40.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 40.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

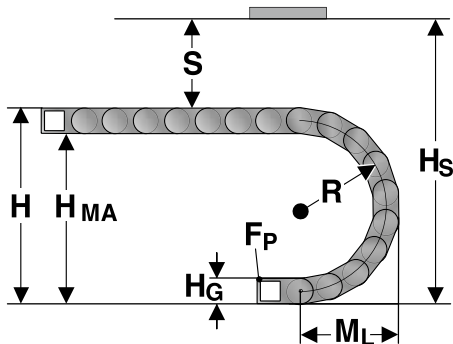


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 33 \text{ qty. } \times 33.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 33.0 mm

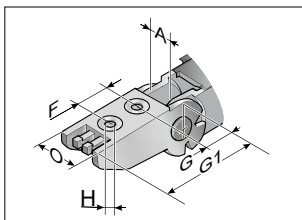
**INSTALLATION DIMENSIONS**



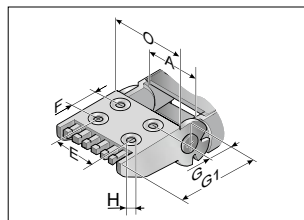
The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_S$ ” value has to be taken into account.

Radius R	40	50	80
Outside height of chain link ( $H_G$ )	23	23	23
Height of bend (H)	103	123	183
Height of moving end bracket ( $H_{MA}$ )	80	100	160
Safety margin (S)	30	30	30
Installation height ( $H_S$ )	133	153	213
Arc projection ( $M_L$ )	85	95	125

**KA 18.4 CHAIN BRACKET U-PART**



KA/Z 18015 – 025

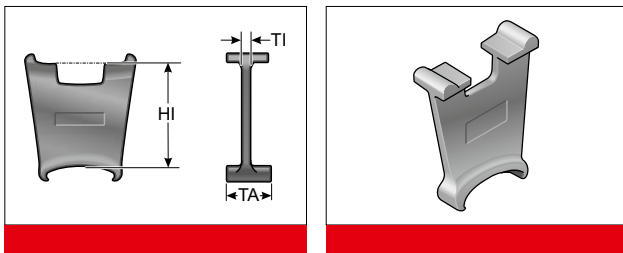


KA/Z 18037 – 070

The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width						Outside width of KA 0 mm
			A mm	E mm	F mm	G mm	G1 mm	H0 mm	
KA/Z 18.4 018 Hole	018400005000	Plastic	18.0		19.0	23.0	57.0	5.5	A+13.0
KA/Z 18.4 018 Male end	018400005100	Plastic	18.0		19.0	23.0	57.0	5.5	A+13.0
KA/Z 18.4 025 Hole	018400005200	Plastic	25.0		19.0	23.0	57.0	5.5	A+13.0
KA/Z 18.4 025 Male end	018400005300	Plastic	25.0		19.0	25.0	59.0	5.5	A+13.0
KA/Z 18.4 037 Hole	018400005400	Plastic	37.0	A-17.0	19.0	23.0	57.0	5.5	A+13.0
KA/Z 18.4 037 Male end	018400005500	Plastic	37.0	A-17.0	19.0	25.0	59.0	5.5	A+13.0
KA/Z 18.4 050 Hole	018400005600	Plastic	50.0	A-16.0	19.0	23.0	57.0	5.5	A+13.0
KA/Z 18.4 050 Male end	018400005700	Plastic	50.0	A-16.0	19.0	25.0	59.0	5.5	A+13.0

**TR 18.1/2: SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

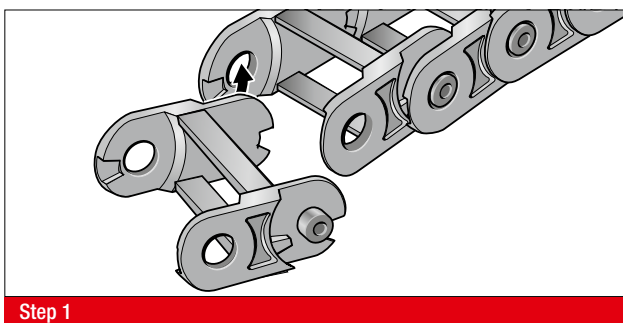
Type	Order No.	Description	TI mm	HI mm
TR 14/18	018200009000	Separator	1.5	18.0

**GUIDE CHANNEL VAW (ALUMINIUM)**

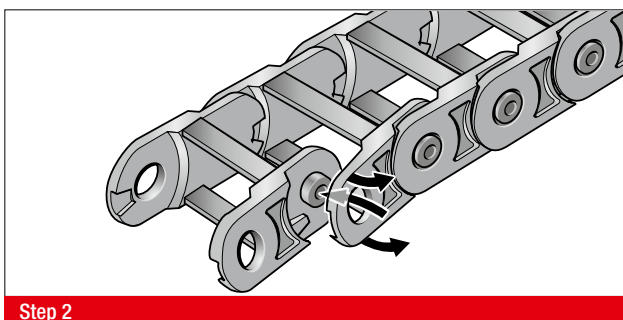


A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY**

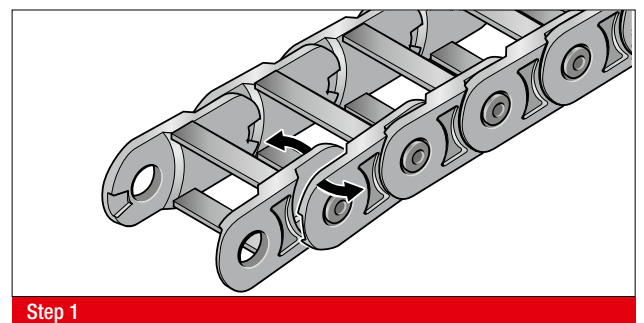


Step 1

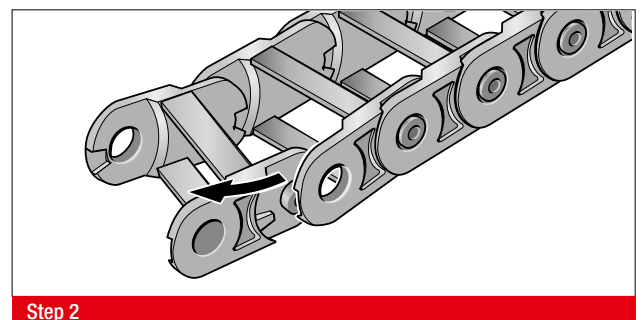


Step 2

**DISASSEMBLY**



Step 1

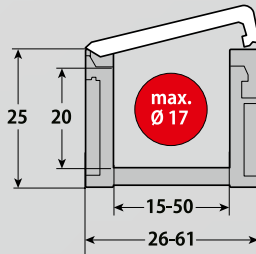


Step 2

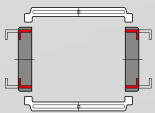
## MP 20 OPEN



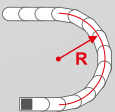
- LOW-COST VARIANT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CROSSBAR WITH INTEGRAL HINGE



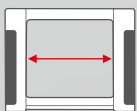
### TECHNICAL DATA



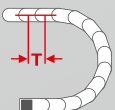
**Loading side**  
Inside bend



**Available radii**  
38.0 – 125.0 mm



**Available interior widths**  
With plastic crossbar  
15.0 – 50.0 mm



**Pitch**  
T = 35.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	not recommended
Travel distance self-supporting $L_r$ max.	see diagram on page 95
Travel distance vertical, hanging $L_{vh}$ max.	8.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	0.5 m
Speed, self-supporting $V_f$ max.	10.0 m/s
Acceleration, self-supporting $a$ max.	10.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

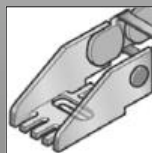


## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

### CHAIN BRACKET



Chain bracket U-part

### SHELVING SYSTEM



Separator TR

### GUIDE CHANNELS

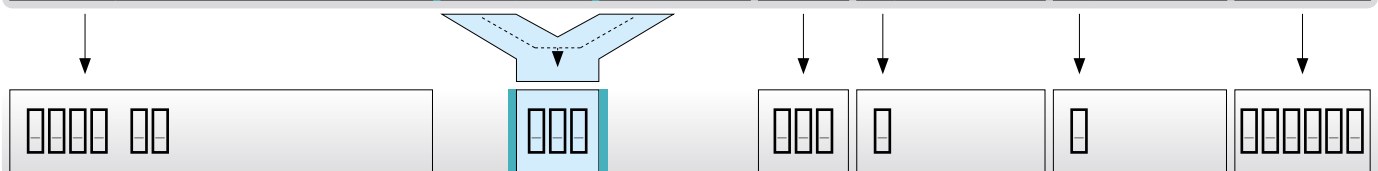


VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0202 02</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside bend	<b>015<sup>1)</sup></b> [0.59]	<b>026</b> [1.02]			<b>038</b> [1.50]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>025</b> [0.98]	<b>036</b> [1.42]						
		<b>038</b> [1.50]	<b>049</b> [1.93]			<b>048</b> [1.89]			
		<b>050</b> [1.97]	<b>061</b> [2.40]						
						<b>075</b> [2.95]			
						<b>100</b> [3.94]			
						<b>125</b> [4.92]			

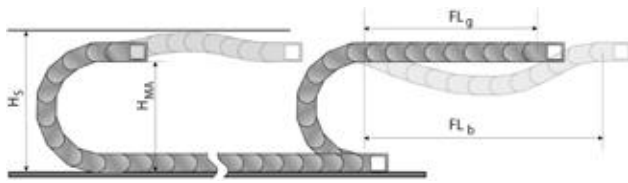


**ORDERING EXAMPLE: 0202 02 025 048 0 0 770**

Crossbar on outside bend, crossbar on inside bend, opens on inside bend  
 Inside width 25 mm; radius 48 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 770 mm (22 links)

<sup>1)</sup> max. line diameter 13 mm

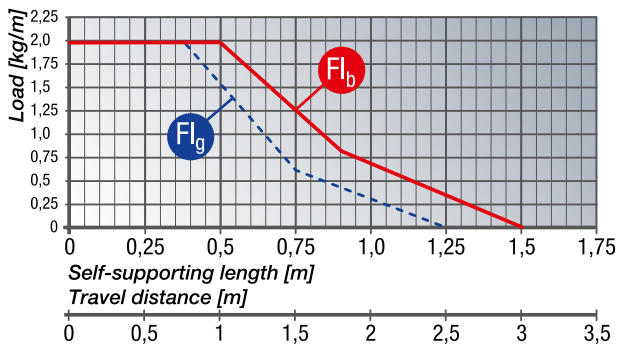
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_S$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

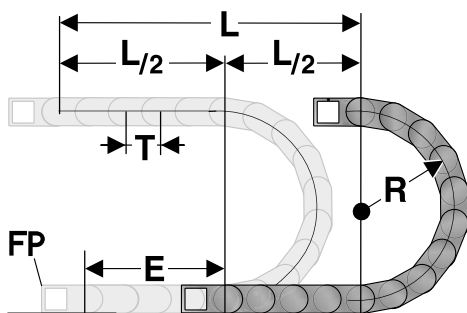
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 40.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 40.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

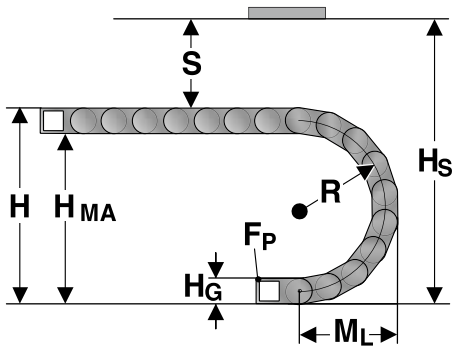


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 29 \text{ qty. } \times 35.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 35.0 mm

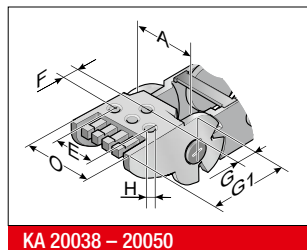
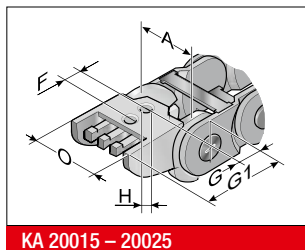
**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_S$ ” value has to be taken into account.

Radius R	38	48	75	100	125
Outside height of chain link ( $H_G$ )	25	25	25	25	25
Height of bend (H)	101	121	175	225	275
Height of moving end bracket ( $H_{MA}$ )	76	96	150	200	250
Safety margin (S)	20	20	20	20	20
Installation height ( $H_S$ )	121	141	195	245	295
Arc projection ( $M_L$ )	86	96	123	148	173

**KA 20 CHAIN BRACKET U-PART**

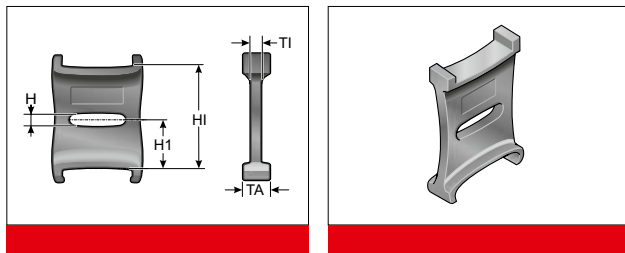


The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width						Outside width of KA 0 mm
			A mm	E mm	F mm	G mm	G1 mm	H0 mm	
KA 20015 Female end	020200005000	Plastic	15.0		19.0	16.5	42.0	5.5	A+11.0
KA 20015 Male end	020200005100	Plastic	15.0		19.0	16.5	42.0	5.5	A+11.0
KA 20025 Female end	020200005200	Plastic	25.0		19.0	16.5	42.0	5.5	A+11.0
KA 20025 Male end	020200005300	Plastic	25.0		19.0	16.5	42.0	5.5	A+11.0
KA 20038 Female end	020200005400	Plastic	38.0	A-18.0	19.0	16.5	42.0	5.5	A+11.0
KA 20038 Male end	020200005500	Plastic	38.0	A-18.0	19.0	16.5	42.0	5.5	A+11.0
KA 20050 Female end	020200005600	Plastic	50.0	A-16.0	19.0	16.5	42.0	5.5	A+11.0
KA 20050 Male end	020200005700	Plastic	50.0	A-16.0	19.0	16.5	42.0	5.5	A+11.0



**TR 20 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

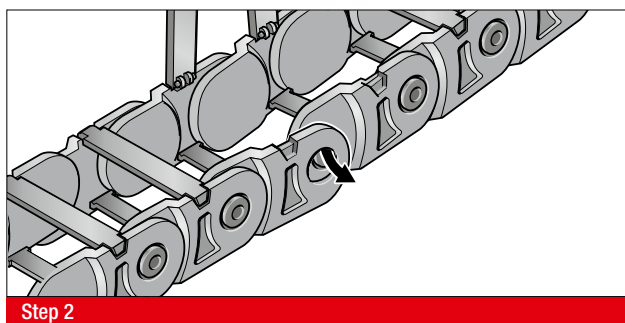
Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm
TR 20	020000009000	Separator	moveable	1.6	8.0	2.5	10.0	10.0

**GUIDE CHANNEL VAW (ALUMINIUM)**

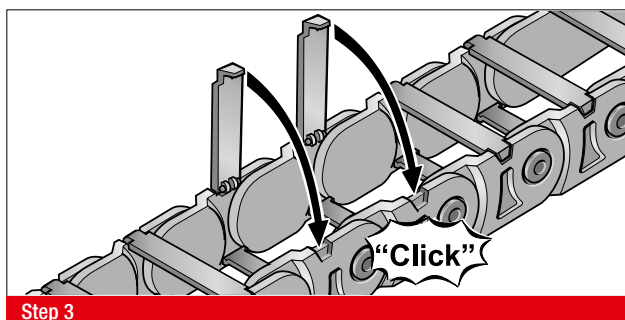


A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY**

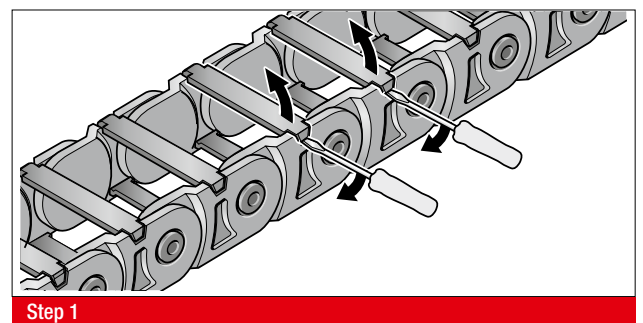


Step 2

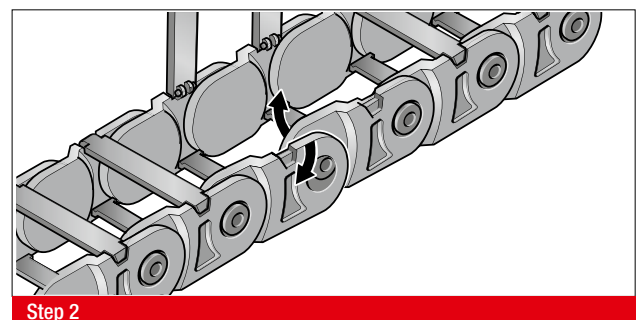


Step 3

**DISASSEMBLY**



Step 1

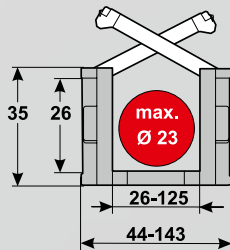


Step 2

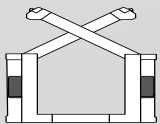
## MP 3000 OPEN



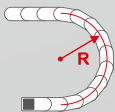
- LOW-COST VARIANT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF



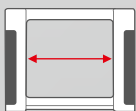
### TECHNICAL DATA



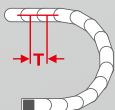
**Loading side**  
Inside bend



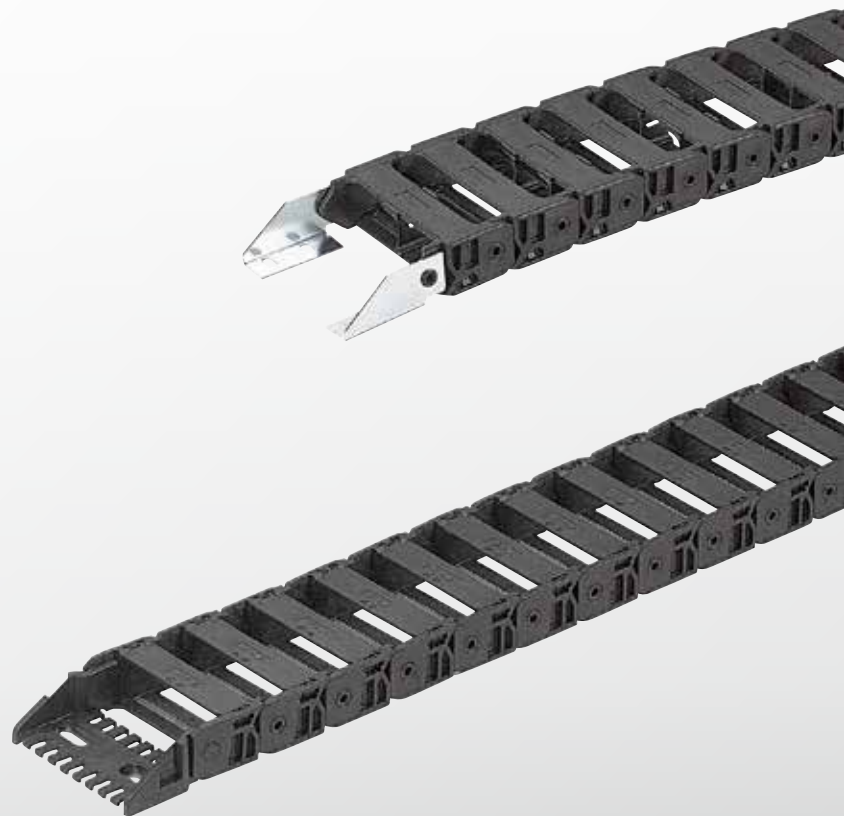
**Available radii**  
50.0 – 300.0 mm



**Available interior widths**  
With plastic crossbar  
26.0 – 125.0 mm



**Pitch**  
T = 45.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	60.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 101
Travel distance vertical, hanging $L_{vh}$ max.	40.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	0.7 m
Speed, gliding $V_g$ max.	3.0 m/s
Speed, self-supporting $V_s$ max.	6.0 m/s
Acceleration, gliding $a_g$ max.	10.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	15.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

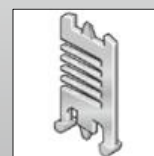


## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

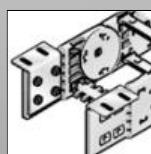
Other material properties on request.

## SHELVING SYSTEM

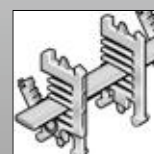


Separator TR

### CHAIN BRACKET



Chain bracket angle

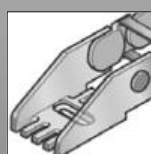


RS shelving system

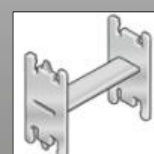
### GUIDE CHANNELS



VAW steel galvanised / stainless steel



Chain bracket U-part



H-shaped shelf unit RE



VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

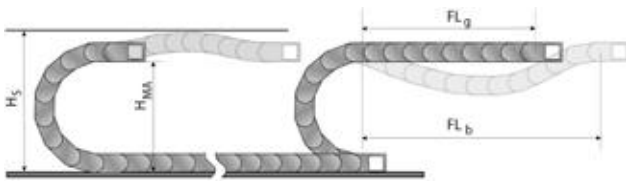
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0300 02</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside bend	<b>026</b> [1.02]	<b>044</b> [1.73]			<b>050</b> [1.97]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>037</b> [1.46]	<b>055</b> [2.17]						
		<b>056</b> [2.20]	<b>074</b> [2.91]						
		<b>062</b> [2.44]	<b>080</b> [3.15]			<b>070</b> [2.76]	<b>1</b> Plastic, full-ridged without bias	<b>1</b> UL94 / V0 (PA/oxide red)	
		<b>076</b> [2.99]	<b>094</b> [3.70]			<b>095</b> [3.74]		<b>5</b> Polypropylene (PP/blue)	
		<b>087</b> [3.43]	<b>105</b> [4.13]						
		<b>101</b> [3.98]	<b>119</b> [4.69]			<b>120</b> [4.72]		<b>7</b> EMC (PA/light grey)	
		<b>125</b> [4.92]	<b>143</b> [5.63]						
						<b>150</b> [5.91]		<b>9</b> Special version (on request)	
						<b>200</b> [7.87]			
						<b>300</b> [11.81]			



**ORDERING EXAMPLE: 0300 02 026 050 0 0 1215**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside bend  
 Inside width 26 mm; radius 50 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1215 mm (27 links)

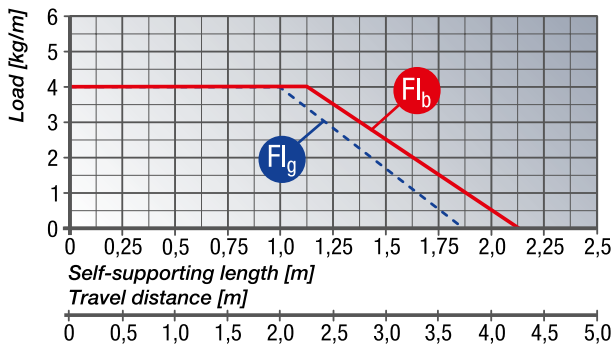
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

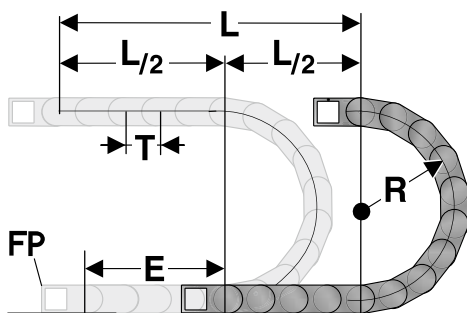
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

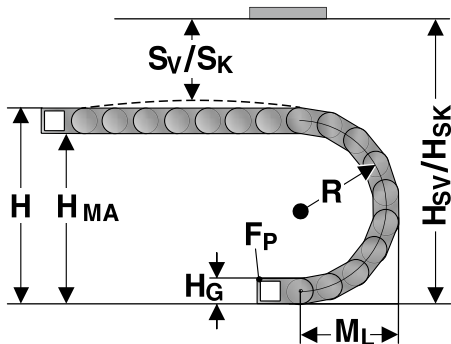


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 22 \text{ qty. } \times 45.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 45.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

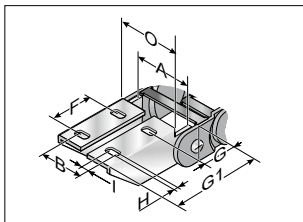
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.

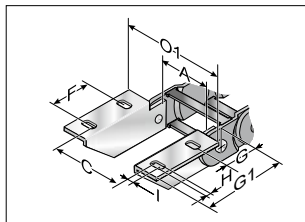
If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	50	70	95	120	150	200	300
Outside height of chain link ( $H_G$ )	35	35	35	35	35	35	35
Height of bend (H)	135	175	225	275	335	435	635
Height of moving end bracket ( $H_{MA}$ )	100	140	190	240	300	400	600
Safety margin with bias ( $S_v$ )	45	45	45	45	45	45	45
Installation height with bias ( $H_{sv}$ )	180	220	270	320	380	480	680
Safety margin without bias ( $S_k$ )	10	10	10	10	10	10	10
Installation height without bias ( $H_{sk}$ )	145	185	235	285	345	445	645
Arc projection ( $M_L$ )	113	133	158	183	213	263	363

**KA 3000 CHAIN BRACKET ANGLE**



KA 300... (Inside up / down)

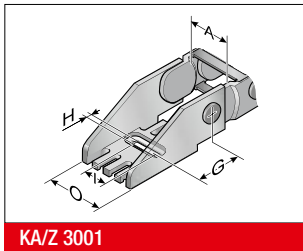


KA 300... (Outside up / down)

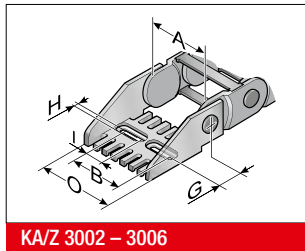
The chain bracket can be supplied either in galvanised sheet steel or stainless steel. To secure one cable drag chain, you will need two angle brackets (left and right) with a drilled hole and two angle brackets (left and right) with a bolt. The order numbers given below each comprise a left and right angle bracket.

Type	Order No.	Material	Inside width								Outside width of KA 0	Outside width of KA 01
			A mm	B mm	C mm	F mm	G mm	G1 mm	HØ mm	I mm		
KA 3008 Female end	0300000052	Sheet steel	26.0 – 125.0	A-8.5	A+22.5	25.0	21.0	58.0	6.5	4.5	A+18.0	A+40.0
KA 3008 Male end	0300000053	Sheet steel	26.0 – 125.0	A-3.5	A+31.0	25.0	21.0	57.0	6.5	4.5	A+9.0	A+40.0
KA 3009 Female end	0300000054	Stainless steel 1.4301	26.0 – 125.0	A-8.5	A+22.5	25.0	21.0	58.0	6.5	4.5	A+18.0	A+40.0
KA 3009 Male end	0300000055	Stainless steel 1.4301	26.0 – 125.0	A-3.5	A+31.0	25.0	21.0	57.0	6.5	4.5	A+9.0	A+40.0

**KA 3000 CHAIN BRACKET U-PART**



KA/Z 3001

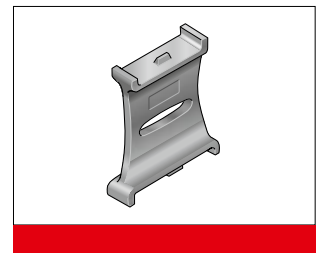
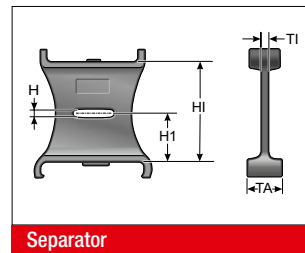
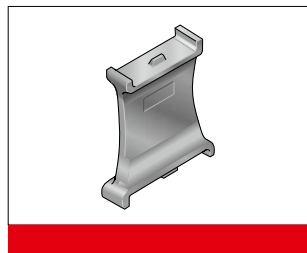
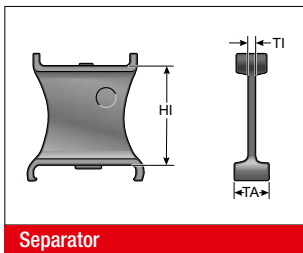


KA/Z 3002 – 3006

The type KA/Z 3001 – 3006 chain bracket is a plastic part with an extrusion-coated metal insert. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M6 screws. The cables or tubes may be fastened with cable ties at the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width					Outside width of KA O mm
			A mm	B mm	G mm	HØ mm	I mm	
KA/Z 3001 female end	030000008000	Plastic with metal insert	26.0		31.5	6.5	18.5	A+18.0
KA/Z 3001 male end	030000008100	Plastic with metal insert	26.0		31.5	6.5	18.5	A+18.0
KA/Z 3002 female end	030000008200	Plastic with metal insert	37.0	A-7.0	31.5	6.5	7.5	A+18.0
KA/Z 3002 male end	030000008300	Plastic with metal insert	37.0	A-7.0	31.5	6.5	7.5	A+18.0
KA/Z 3002.5 female end	030000007600	Plastic with metal insert	56.0	A-8.0	31.5	6.5	7.5	A+18.0
KA/Z 3002.5 male end	030000007700	Plastic with metal insert	56.0	A-8.0	31.5	6.5	7.5	A+18.0
KA/Z 3003 female end	030000008400	Plastic with metal insert	62.0	A-7.0	31.5	6.5	18.5	A+18.0
KA/Z 3003 male end	030000008500	Plastic with metal insert	62.0	A-7.0	31.5	6.5	18.5	A+18.0
KA/Z 3003.5 female end	030000007800	Plastic with metal insert	76.0	A-8.0	31.5	6.5	18.5	A+18.0
KA/Z 3003.5 male end	030000007900	Plastic with metal insert	76.0	A-8.0	31.5	6.5	18.5	A+18.0
KA/Z 3004 female end	030000008600	Plastic with metal insert	87.0	A-7.0	31.5	6.5	18.5	A+18.0
KA/Z 3004 male end	030000008700	Plastic with metal insert	87.0	A-7.0	31.5	6.5	18.5	A+18.0
KA/Z 3005 female end	030000008800	Plastic with metal insert	101.0	A-7.0	31.5	6.5	18.5	A+18.0
KA/Z 3005 male end	030000008900	Plastic with metal insert	101.0	A-7.0	31.5	6.5	18.5	A+18.0
KA/Z 3006 female end	030000009300	Plastic with metal insert	125.0	A-6.5	31.5	6.5	18.5	A+18.0
KA/Z 3006 male end	030000009400	Plastic with metal insert	125.0	A-6.5	31.5	6.5	18.5	A+18.0

**TR 3000 SEPARATOR**

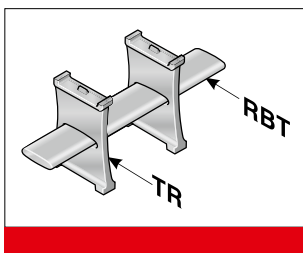


We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. For cable

drag chains that need to be side mounted, the lockable (unmovable) separator must be used.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	HI mm
TR 3000	030000009000	Separator	moveable	1.5	13.0	2.5	12.9	12.9	26.0
TR 3001	030000009200	Separator	lockable	1.5	13.0	2.5	12.9	12.9	26.0
TR 3002	030000009500	Separator, closed	lockable	1.5	13.0				26.0

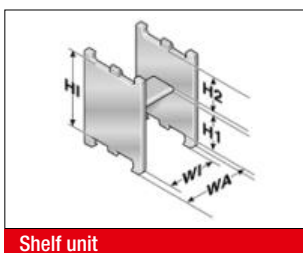
**MP 3000 SHELVING SYSTEM**



The shelf must be used with a minimum of two separators to create a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them. The shelves are matched to the available chain widths.

Type	Order No.	Description	Width mm	Pitch mm
RBT 037	100000003700	Shelf	37.0	3.0
RBT 062	100000006200	Shelf	62.0	3.0
RBT 086	100000008600	Shelf	86.0	3.0
RBT 101	100000010100	Shelf	101.0	3.0
RBT 125	100000012500	Shelf	125.0	3.0

**RE 26 H-SHAPED SHELF UNIT**



One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 26/15	100000261510	H-shaped shelf unit	17.5	12.5	13.7	9.6	26.0
RE 26/27	100000262710	H-shaped shelf unit	29.5	24.5	13.7	9.6	26.0
RE 26/32	100000263210	H-shaped shelf unit	34.5	29.5	13.7	9.6	26.0
RE 26/51	100000265110	H-shaped shelf unit	53.5	48.5	13.7	9.6	26.0



**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel

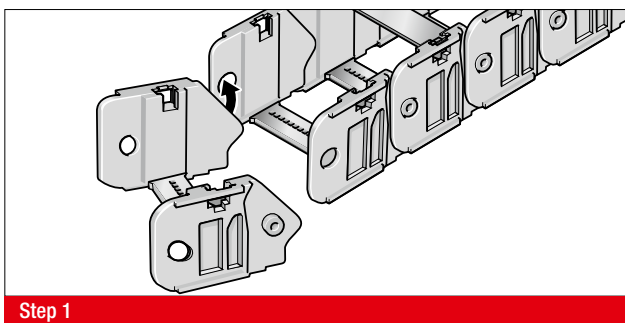


VAW aluminium

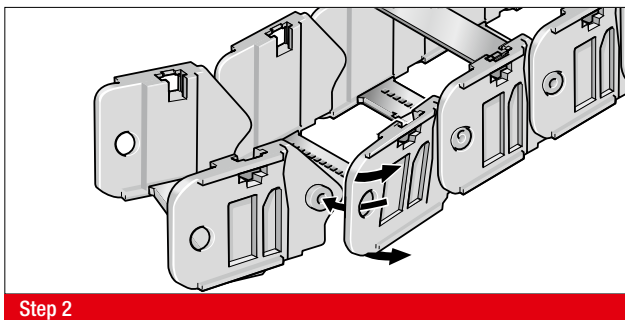
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

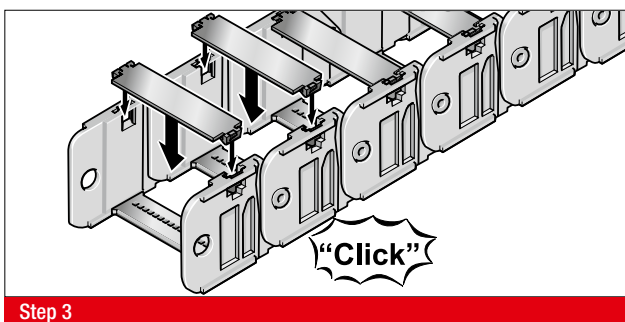
**ASSEMBLY**



Step 1

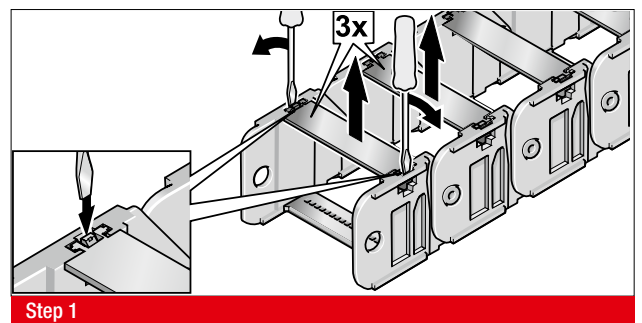


Step 2

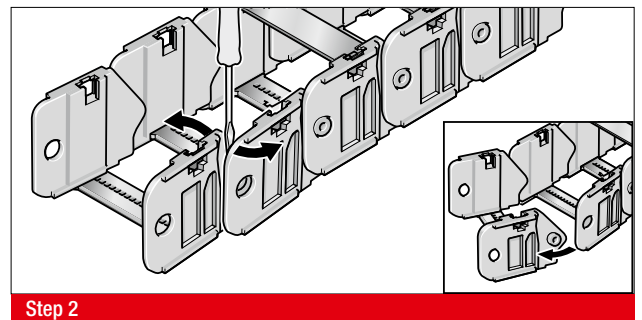


Step 3

**DISASSEMBLY**



Step 1



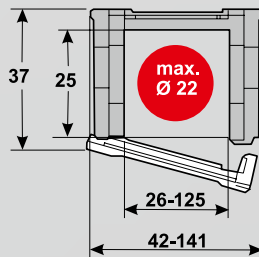
Step 2

## MP 25G

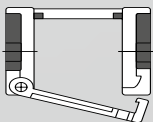
CLOSED



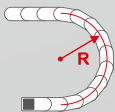
- CLOSED VARIANTS, STARTING WITH R60
- COMPACT DESIGN



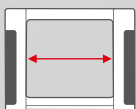
### TECHNICAL DATA



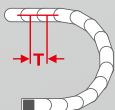
**Loading side**  
Outside bend



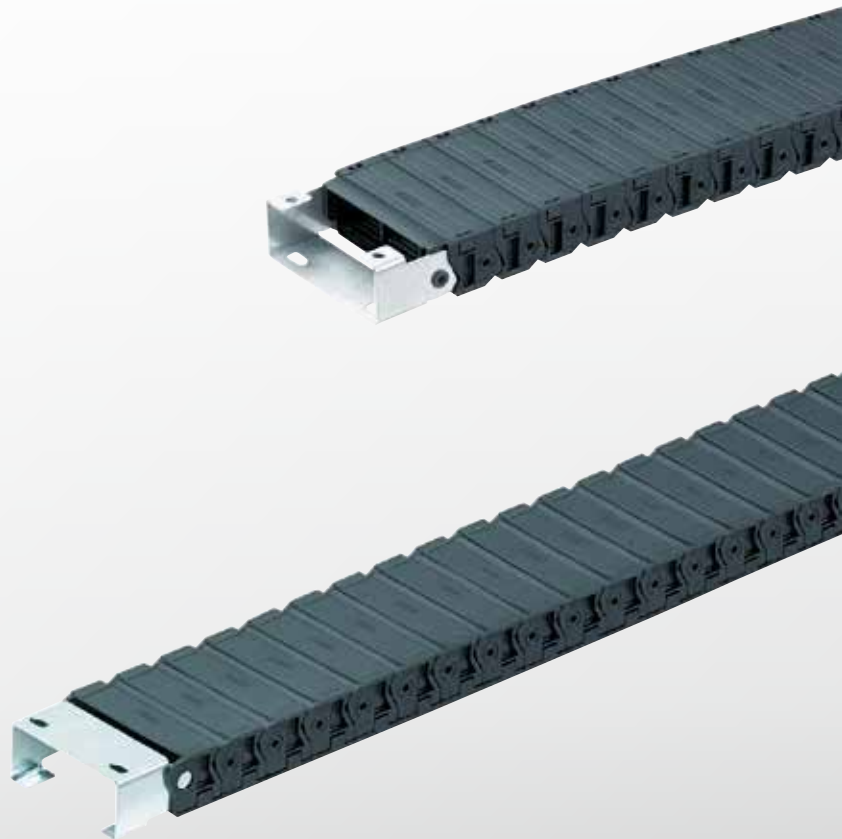
**Available radii**  
60.0 – 250.0 mm



**Available interior widths**  
With plastic crossbar  
26.0 – 125.0 mm



**Pitch**  
T = 30.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	40.0 m
Travel distance self-supporting $L_r$ max.	see diagram on page 109
Travel distance vertical, hanging $L_{vh}$ max.	25.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	3.0 m/s
Speed, self-supporting $V_f$ max.	6.0 m/s
Acceleration, gliding $a_g$ max.	10.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	15.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)



## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request.

### SHELVING SYSTEM

### GUIDE CHANNELS

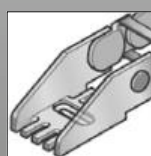
### CHAIN BRACKET



Separator TR



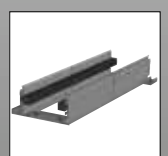
VAW steel galvanised / stainless steel



Chain bracket U-part



RS shelving system

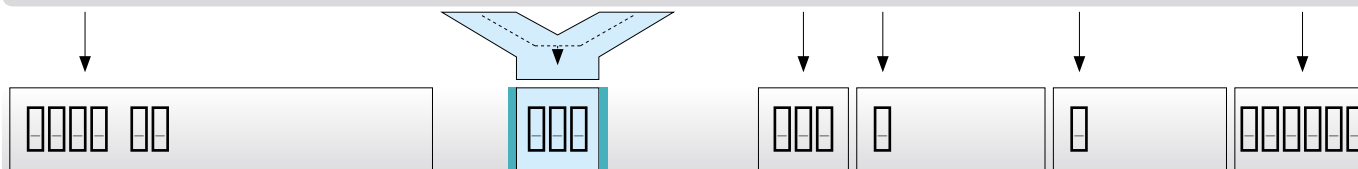


VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

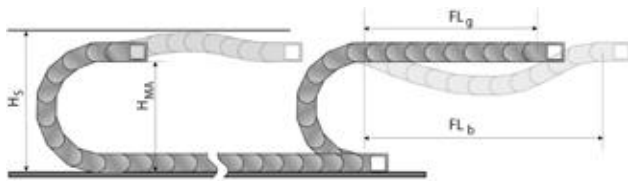
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0250 03</b>	Cover on outside bend Cover on inside bend Opens on outside bend	<b>026</b> [1.02]	<b>042</b> [1.65]			<b>060</b> [2.36]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>037</b> [1.46]	<b>053</b> [2.09]						
		<b>062</b> [2.44]	<b>078</b> [3.07]			<b>075</b> [2.95]		<b>7</b> EMC (PA/light grey)	
		<b>087</b> [3.43]	<b>103</b> [4.06]						
		<b>101</b> [3.98]	<b>117</b> [4.61]			<b>100</b> [3.94]		<b>9</b> Special version (on request)	
		<b>125</b> [4.92]	<b>141</b> [5.55]						
						<b>125</b> [4.92]			
						<b>150</b> [5.91]			
						<b>200</b> [7.87]			
						<b>250</b> [9.84]			



**ORDERING EXAMPLE: 0250 03 026 060 0 0 1230**

Cover on outside bend, cover on inside bend, can be opened from outside bend  
 Inside width 26 mm; radius 60 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1230 mm (41 links)

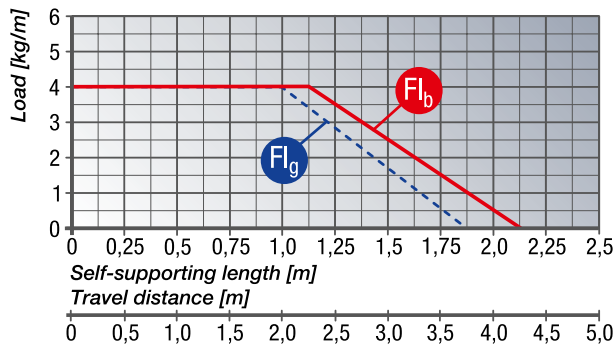
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

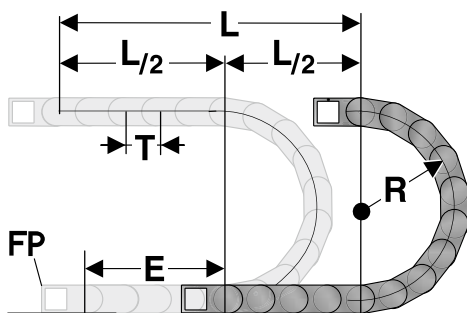
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

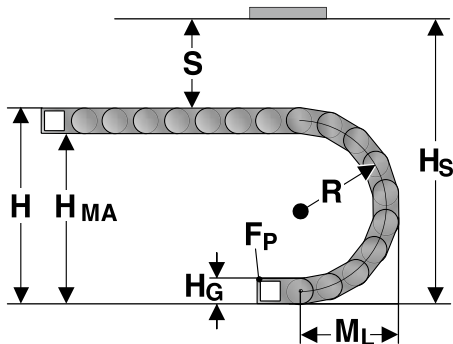


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 33 \text{ qty. } \times 30.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 30.0 mm

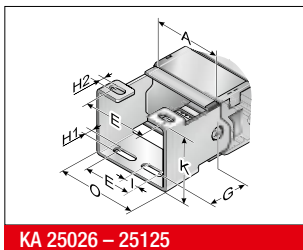
**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_s$ ” value has to be taken into account.

Radius R	60	75	100	125	150	200	250
Outside height of chain link ( $H_G$ )	37	37	37	37	37	37	37
Height of bend (H)	157	187	237	287	337	437	537
Height of moving end bracket ( $H_{MA}$ )	120	150	200	250	300	400	500
Safety margin (S)	33	33	33	33	33	33	33
Installation height ( $H_s$ )	190	220	270	320	370	470	570
Arc projection ( $M_L$ )	109	124	149	174	199	249	299

**KA 25 G CHAIN BRACKET U-PART**



The chain bracket can be supplied either in galvanised sheet steel or stainless steel. To secure one energy chain, you will need a bracket with a drilled hole and a bracket with a bolt.

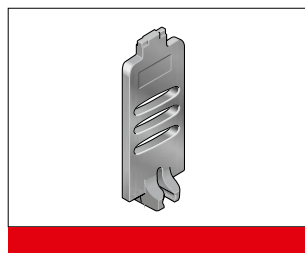
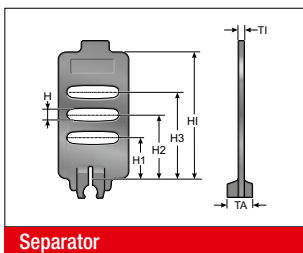
KA 25026 – 25125

Type	Order No.	Material	Inside width							Outside width of KA 0 mm
			A mm	E mm	G mm	H1 mm	H2 mm	I mm	K mm	
KA 25026 C Female end	025000001000	Sheet steel	26.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0
KA 25026 C Male end	025000001100	Sheet steel	26.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0
KA 25037 C Female end	025000001200	Sheet steel	37.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0
KA 25037 C Male end	025000001300	Sheet steel	37.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0
KA 25062 C Female end	025000001400	Sheet steel	62.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0
KA 25062 C Male end	025000001500	Sheet steel	62.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0
KA 25087 C Female end	025000001600	Sheet steel	87.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0
KA 25087 C Male end	025000001700	Sheet steel	87.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0
KA 25101 C Female end	025000001800	Sheet steel	101.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0
KA 25101 C Male end	025000001900	Sheet steel	101.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0
KA 25125 C Female end	025000002000	Sheet steel	125.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0
KA 25125 C Male end	025000002100	Sheet steel	125.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0
KA 25026 C Female end	025000003000	Stainless steel 1.4301	26.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0
KA 25026 C Male end	025000003100	Stainless steel 1.4301	26.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0
KA 25037 C Female end	025000003200	Stainless steel 1.4301	37.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0

**KA 25 G CHAIN BRACKET U-PART**

Type	Order No.	Material	Inside width								Outside width of KA 0 mm
			A mm	E mm	G mm	H1 mm	H2 mm	I mm	K mm		
KA 25037 C Male end	025000003300	Stainless steel 1.4301	37.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0	
KA 25062 C Female end	025000003400	Stainless steel 1.4301	62.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0	
KA 25062 C Male end	025000003500	Stainless steel 1.4301	62.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0	
KA 25087 C Female end	025000003600	Stainless steel 1.4301	87.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0	
KA 25087 C Male end	025000003700	Stainless steel 1.4301	87.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0	
KA 25101 C Female end	025000003800	Stainless steel 1.4301	101.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0	
KA 25101 C Male end	025000003900	Stainless steel 1.4301	101.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0	
KA 25125 C Female end	025000004000	Stainless steel 1.4301	125.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+11.0	
KA 25125 C Male end	025000004100	Stainless steel 1.4301	125.0	A-10.0	42.0	6.6	6.6	6.6	36.0	A+8.0	

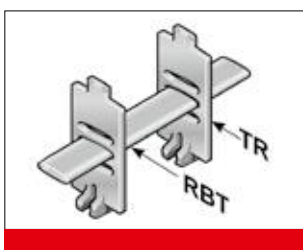
**TR 25G SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm
TR 25G	025000009200	Separator	lockable	2.0	8.0	2.5	8.3	12.8	17.3	25.0

**MP 25G SHELVING SYSTEM**



The shelf must be used with a minimum of two separators to create a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them. The shelves are matched to the available chain widths.

Type	Order No.	Description	Width mm	Pitch mm
RBT 037	100000003700	Shelf	37.0	2.5
RBT 062	100000006200	Shelf	62.0	2.5
RBT 086	100000008600	Shelf	86.0	2.5
RBT 101	100000010100	Shelf	101.0	2.5
RBT 125	100000012500	Shelf	125.0	2.5

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**

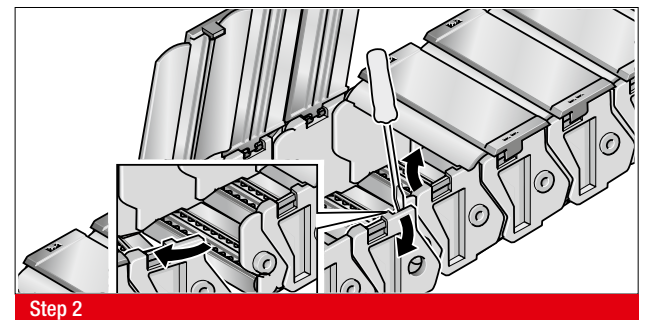
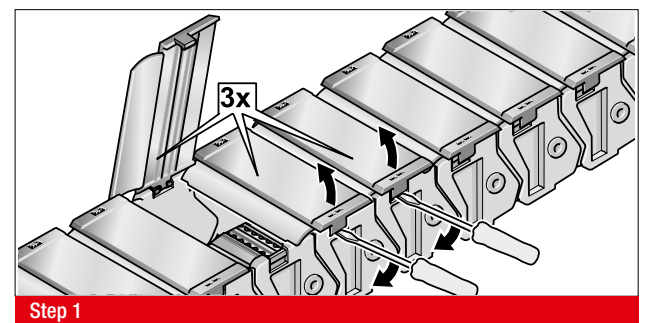
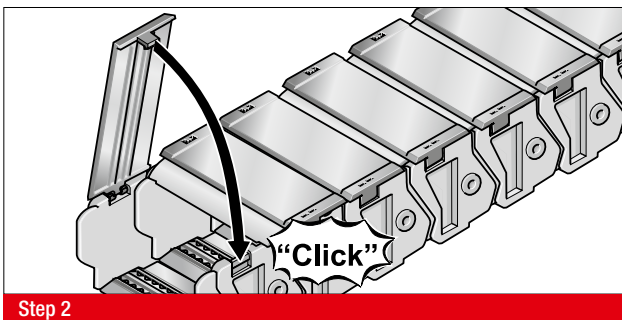
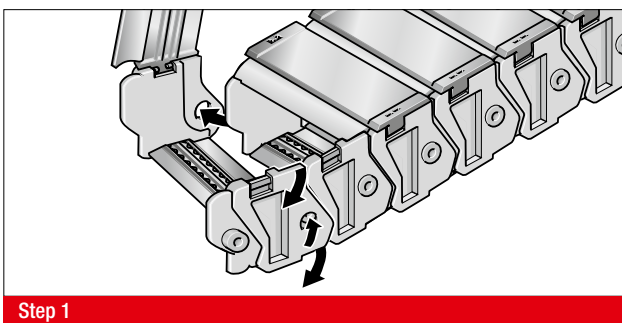


A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY**

**DISASSEMBLY**







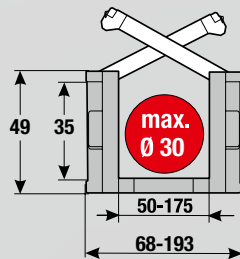
**MP 35.1**  
OPEN



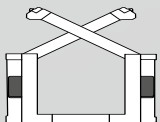
**MP 35.2**  
OPEN



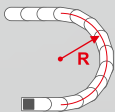
- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- SUITABLE FOR UNIVERSAL USE
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- EXTENSIVE AND EASY TO INSTALL INTERIOR LAYOUT



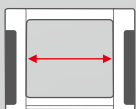
## TECHNICAL DATA



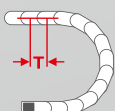
**Loading side**  
Inside or outside bend



**Available radii**  
63.0 – 250.0



**Available interior widths**  
With plastic crossbar  
50.0 – 175.0



**Pitch**  
T = 56.0 mm



**noise attenuator**



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	80.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 117
Travel distance vertical, hanging $L_{vh}$ max.	50.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	15.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	50.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

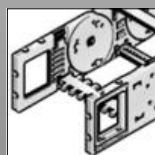


## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

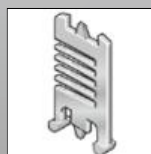
Other material properties on request.

### CHAIN BRACKET

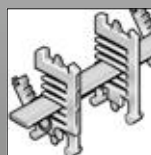


Chain bracket flexible

### SHELVING SYSTEM



Separator TR

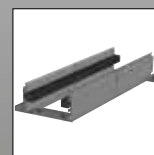


RS shelving system

### GUIDE CHANNELS

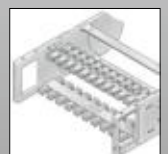


VAW steel galvanised / stainless steel



VAW aluminium

### STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

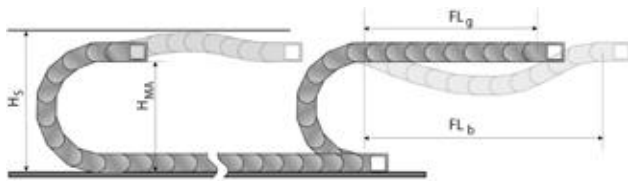
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length																																																																																																								
0351 01	MP 35.1 open Crossbar on outside bend Crossbar on inside bend Opens on outside bend	050 [1.97]	068 [2.68]			063 [2.48]	0 Plastic, full-ridged with bias	2 Polyamide without attenuator (PA/black)																																																																																																									
		065 <sup>1)</sup> [2.56]	083 <sup>1)</sup> [3.27]							0352 02	MP 35.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside bend	075 [2.95]	093 [3.66]			075 [2.95]	1 Plastic, full-ridged without bias	3 Polyamide with attenuator (PA/black)		090 <sup>1)</sup> [3.54]	108 <sup>1)</sup> [4.25]					100 [3.94]	118 [4.65]			100 [3.94]		9 Special version (on request)				125 [4.92]	143 [5.63]					150 [5.91]	168 [6.61]			125 [4.92]						175 [6.89]	193 [7.60]									150 [5.91]																175 [6.89]																200 [7.87]																250 [9.84]			
0352 02	MP 35.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside bend	075 [2.95]	093 [3.66]			075 [2.95]	1 Plastic, full-ridged without bias	3 Polyamide with attenuator (PA/black)																																																																																																									
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Ordering example: 0352 02 075 100 0 3 2016  
 Crossbar on outside bend, crossbar on inside bend, can be opened from inside bend  
 Internal width 075 mm, Radius 100mm  
 Plastic, full-ridged with bias, material polyamide with damper (PA/black)  
 Chain length 2016 mm (36 links)

<sup>1)</sup> Available from Q 4/2018

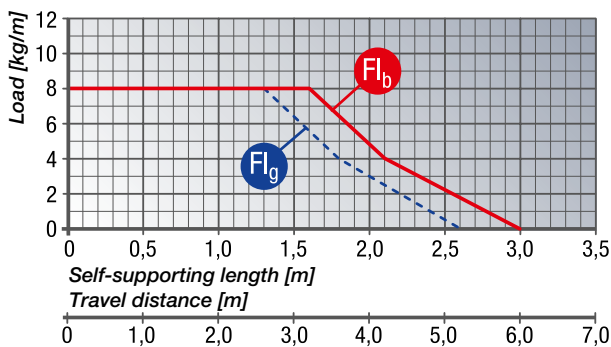
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

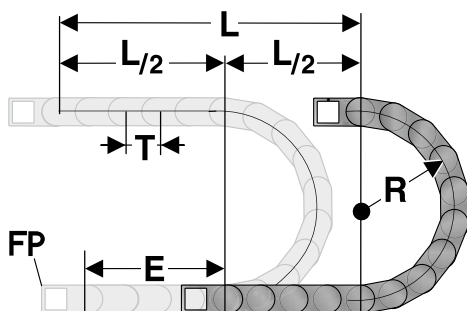
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

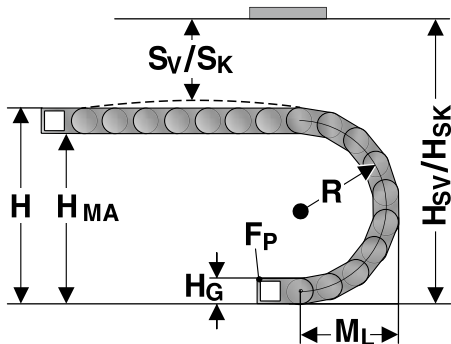


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 18 \text{ qty. } \times 56.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 56.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

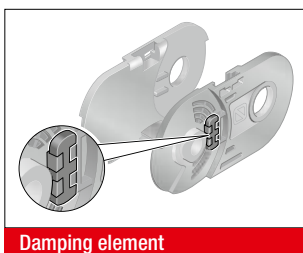
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.

If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	63	75	100	125	150	175	200	250
Outside height of chain link ( $H_G$ )	49	49	49	49	49	49	49	49
Height of bend (H)	175	199	249	299	349	399	449	549
Height of moving end bracket ( $H_{MA}$ )	126	150	200	250	300	350	400	500
Safety margin with bias ( $S_V$ )	20	20	20	20	20	20	20	20
Installation height with bias ( $H_{SV}$ ) without damper	245	269	319	369	419	469	519	619
Installation height with bias ( $H_{SV}$ ) with damper	265	289	339	389	439	489	539	639
Safety margin without bias ( $S_K$ )	20	20	20	20	20	20	20	20
Installation height without bias ( $H_{SK}$ ) without damper	195	219	269	319	369	419	469	569
Installation height without bias ( $H_{SK}$ ) with damper	215	239	289	339	389	439	489	589
Arc projection ( $M_L$ )	144	156	181	206	231	256	281	331

**DAMPING ELEMENT FOR THE CHAIN LINKS**

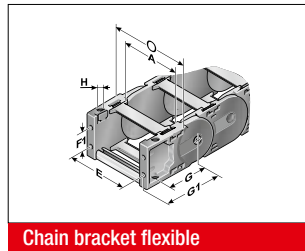
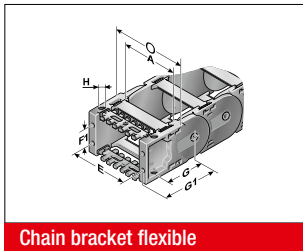


Damping element

The damping elements in the stops facilitate a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

A reduction of the noise emission by up to 10 dB(A) comparing to the variants without the use of damping elements is possible.

**KA 35 CHAIN BRACKET FLEXIBLE**

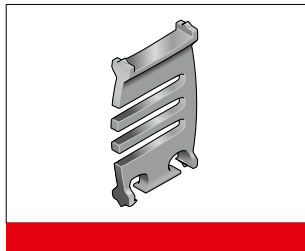
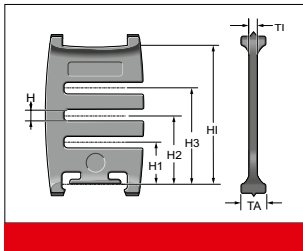


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the energy chain like a side link. This allows the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. M5 screws are used to secure the brackets in place. Press-in metal bushes with a through-hole ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

By default, the chain bracket is supplied with frame bridges. The chain bracket can then be optionally fitted with frame bridge strain relief plates (RS-ZL) or with strain relief using C-rails and type STF bow clamps.

Type	Order No.	Material	Inside width							Outside width	
			A mm	E mm	F1 mm	G mm	G1 mm	H mm	H0 mm	of KA 0 mm	
KA 35-FB Female end, 050, complete	0350005050	Plastic	50.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 050, pendular, complete	0350005052	Plastic	50.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 050, complete	0350005051	Plastic	50.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 050, pendular, complete	0350005053	Plastic	50.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 065, complete	0350006550	Plastic	65.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 065, pendular, complete	0350006552	Plastic	65.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 065, complete	0350006551	Plastic	65.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 065, pendular, complete	0350006553	Plastic	65.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 075, complete	0350007550	Plastic	75.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 075, pendular, complete	0350007552	Plastic	75.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 075, complete	0350007551	Plastic	75.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 075, pendular, complete	0350007553	Plastic	75.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 090, complete	0350009050	Plastic	90.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 090, pendular, complete	0350009052	Plastic	90.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 090, complete	0350009051	Plastic	90.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 090, pendular, complete	0350009053	Plastic	90.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 100, complete	0350010050	Plastic	100.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 100, pendular, complete	0350010052	Plastic	100.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 100, complete	0350010051	Plastic	100.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 100, pendular, complete	0350010053	Plastic	100.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 125, complete	0350012550	Plastic	125.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 125, pendular, complete	0350012552	Plastic	125.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 125, complete	0350012551	Plastic	125.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 125, pendular, complete	0350012553	Plastic	125.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 150, complete	0350015050	Plastic	150.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 150, pendular, complete	0350015052	Plastic	150.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 150, complete	0350015051	Plastic	150.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 150, pendular, complete	0350015053	Plastic	150.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 175, complete	0350017550	Plastic	175.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Female end, 175, pendular, complete	0350017552	Plastic	175.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 175, complete	0350017551	Plastic	175.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	
KA 35-FB Male end, 175, pendular, complete	0350017553	Plastic	175.0	A+8.0	19.0	49.1	77.6	M5	5.5	A+19.0	

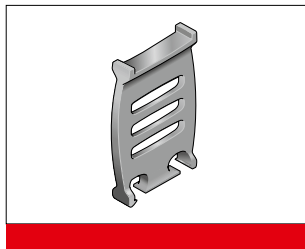
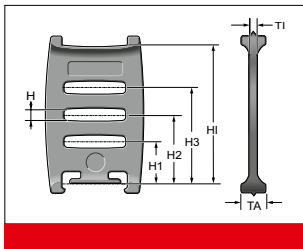
**TRT 35 DIVISIBLE SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm
TRT 35	035000009400	TRT 35, separator, divisible	lockable	3.0	8.0	3.2	10.5	17.5	24.5	35.0

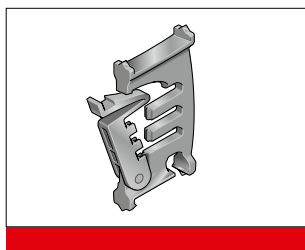
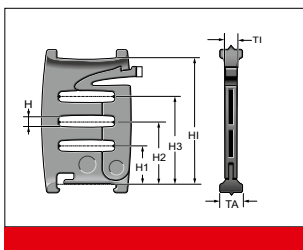
**TR 35-V SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm
TR 35-V	035000009300	TR 35-V Separator	moveable	3.0	8.0	3.2	10.5	17.5	24.5	35.0

**RTT 35 SHELF SUPPORT, DIVISIBLE**

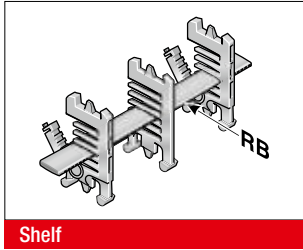


In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm
RTT 35	100090350000	Shelf support, divisible	lockable	5.0	8.0	3.2	10.5	17.5	24.5	35.0



**RB-3 SHELF**



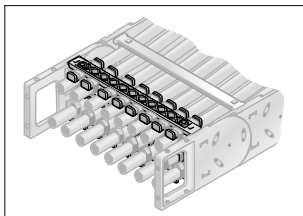
In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 039-3	030100003900	Shelf	38.6	40.0
RB 041-3	1000004103	Shelf	41.1	50.0
RB 044-3	1000004403	Shelf	43.6	50.0
RB 046-3	1000004603	Shelf	46.1	50.0
RB 049-3	030100004900	Shelf	48.6	50.0
RB 051-3	1000005103	Shelf	51.1	60.0
RB 054-3	1000005403	Shelf	53.6	60.0
RB 056-3	1000005603	Shelf	56.1	60.0
RB 059-3	030100005900	Shelf	58.6	60.0
RB 061-3	1000006103	Shelf	61.1	75.0
RB 064-3	1000006403	Shelf	63.6	75.0
RB 066-3	1000006603	Shelf	66.1	75.0
RB 069-3	1000006903	Shelf	68.6	75.0
RB 071-3	1000007103	Shelf	71.1	75.0
RB 074-3	030100007400	Shelf	73.6	75.0
RB 076-3	1000007603	Shelf	76.1	85.0
RB 079-3	1000007903	Shelf	78.6	85.0
RB 081-3	1000008103	Shelf	81.1	85.0
RB 084-3	030100008400	Shelf	83.6	85.0
RB 086-3	1000008603	Shelf	86.1	100.0
RB 089-3	1000008903	Shelf	88.6	100.0
RB 091-3	1000009103	Shelf	91.1	100.0
RB 094-3	1000009403	Shelf	93.6	100.0
RB 096-3	1000009603	Shelf	96.1	100.0
RB 099-3	030100009900	Shelf	98.6	100.0
RB 101-3	1000010103	Shelf	101.1	115.0
RB 104-3	1000010403	Shelf	103.6	115.0
RB 106-3	1000010603	Shelf	106.1	115.0
RB 109-3	1000010903	Shelf	108.6	115.0
RB 111-3	1000011103	Shelf	111.1	115.0
RB 114-3	030100011400	Shelf	113.6	115.0
RB 116-3	1000011603	Shelf	116.1	125.0
RB 119-3	1000011903	Shelf	118.6	125.0
RB 121-3	1000012103	Shelf	121.1	125.0
RB 124-3	030100012400	Shelf	123.6	125.0
RB 126-3	1000012603	Shelf	126.1	150.0

**RB-3 SHELF**

Type	Order No.	Description	Width mm	Inside width mm
RB 129-3	1000012903	Shelf	128.6	150.0
RB 131-3	1000013103	Shelf	131.1	150.0
RB 134-3	1000013403	Shelf	133.6	150.0
RB 136-3	1000013603	Shelf	136.1	150.0
RB 139-3	1000013903	Shelf	138.6	150.0
RB 141-3	1000014103	Shelf	141.1	150.0
RB 144-3	1000014403	Shelf	143.6	150.0
RB 146-3	1000014603	Shelf	146.1	150.0
RB 149-3	030100014900	Shelf	148.6	150.0
RB 151-3	1000015103	Shelf	151.1	175.0
RB 154-3	1000015403	Shelf	153.6	175.0
RB 156-3	1000015603	Shelf	156.1	175.0
RB 159-3	1000015903	Shelf	158.6	175.0
RB 161-3	1000016103	Shelf	161.1	175.0
RB 164-3	1000016403	Shelf	163.6	175.0
RB 166-3	1000016603	Shelf	166.1	175.0
RB 169-3	1000016903	Shelf	168.6	175.0
RB 174-3	030100017400	Shelf	173.6	175.0

**RS-ZL-3 ZLA MP 35 CROSSBAR STRAIN RELIEF PLATE**

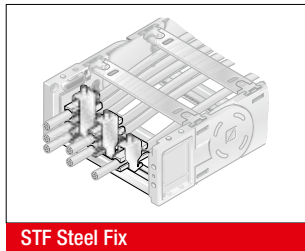
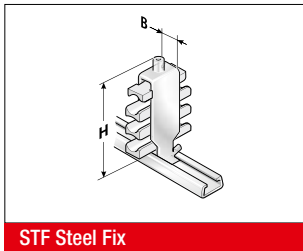


Crossbar strain relief plate

Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 175 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 050-3 ZLA MP 35	0351050010	Crossbar strain relief plate	50.0
RS-ZL 075-3 ZLA MP 35	0351075010	Crossbar strain relief plate	75.0
RS-ZL 100-3 ZLA MP 35	0351100010	Crossbar strain relief plate	100.0
RS-ZL 125-3 ZLA MP 35	0351125010	Crossbar strain relief plate	125.0
RS-ZL 150-3 ZLA MP 35	0351150010	Crossbar strain relief plate	150.0
RS-ZL 175-3 ZLA MP 35	0351175010	Crossbar strain relief plate	175.0

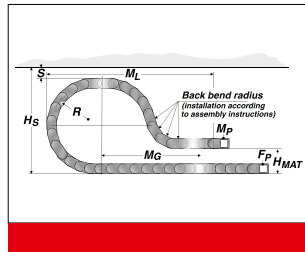
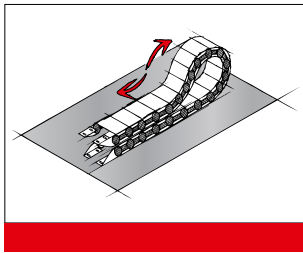
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 35 LOWERED FIXING POINT**



It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

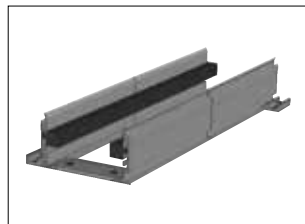
Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
150.0	180.0	50.0	399.0	590.0	12	4
175.0	180.0	50.0	449.0	680.0	15	4
200.0	180.0	50.0	499.0	780.0	18	5
250.0	180.0	50.0	599.0	980.0	24	5

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel

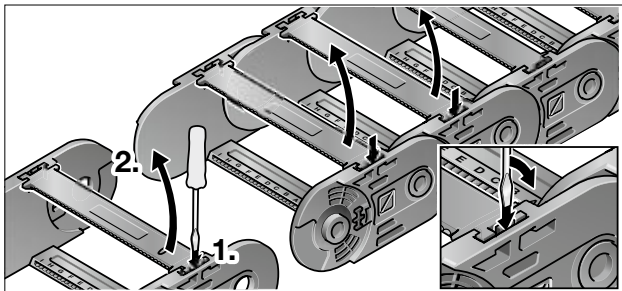


VAW aluminium

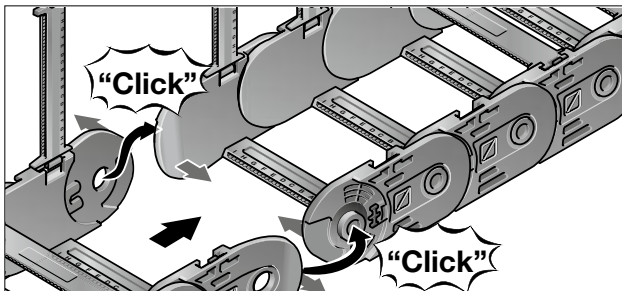
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

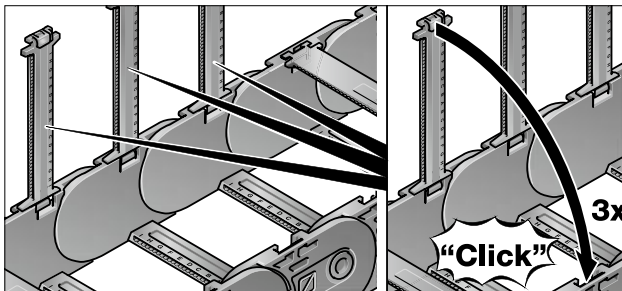
**ASSEMBLY**



Step 1

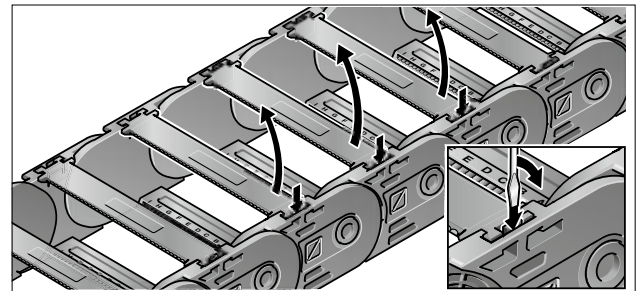


Step 2

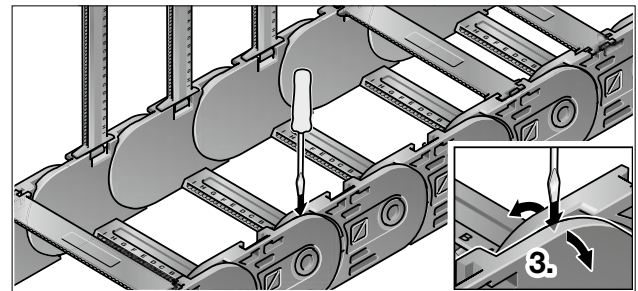


Step 3

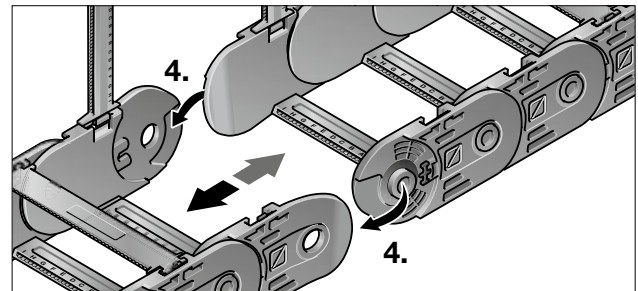
**DISASSEMBLY**



Step 1



Step 2



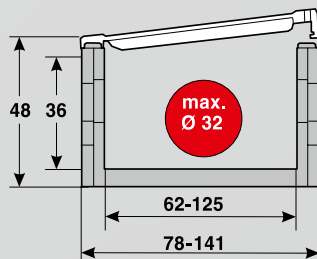
Step 3

## MP 36G

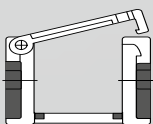
CLOSED



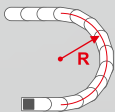
- CLOSED VARIANTS, STARTING WITH R80
- METAL CHAIN BRACKET



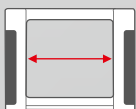
### TECHNICAL DATA



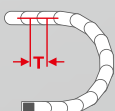
**Loading side**  
Inside bend



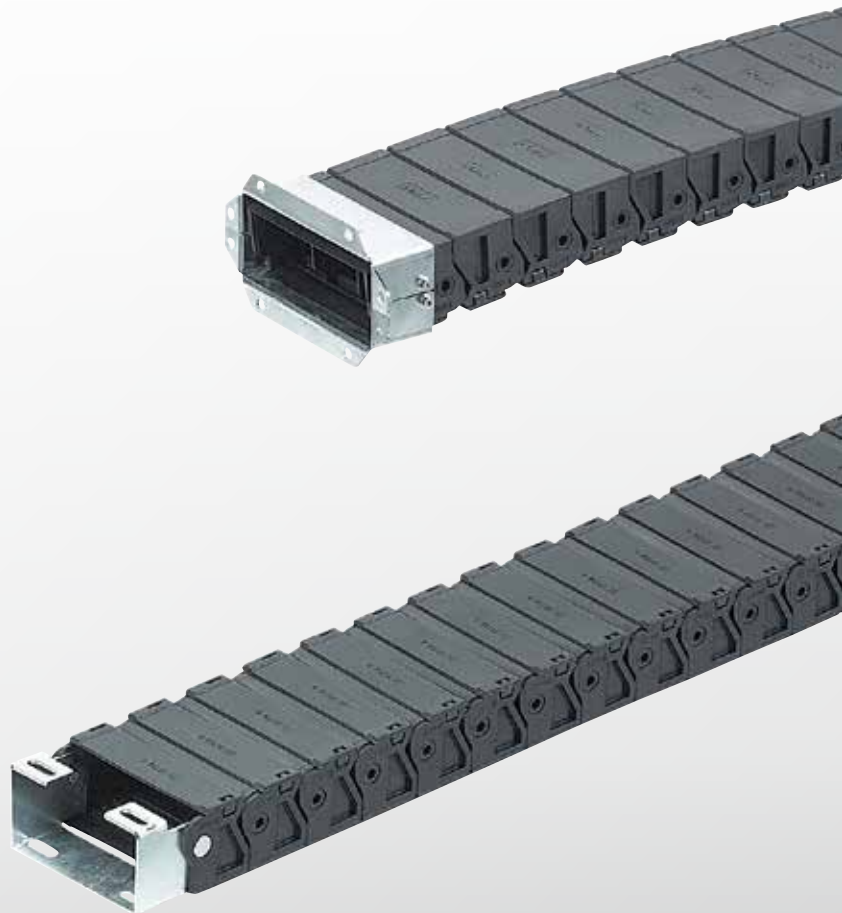
**Available radii**  
80.0 – 200.0 mm



**Available interior widths**  
With plastic crossbar  
62.0 – 125.0 mm



**Pitch**  
T = 40.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	60.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 129
Travel distance vertical, hanging $L_{vh}$ max.	30.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	3.0 m/s
Speed, self-supporting $V_s$ max.	10.0 m/s
Acceleration, gliding $a_g$ max.	15.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	20.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

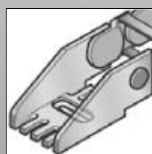


## MATERIAL PROPERTIES

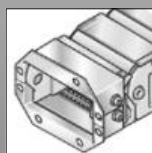
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request.

### CHAIN BRACKET

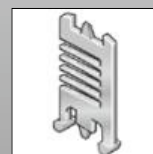


Chain bracket U-part



End brackets flange

### SHELVING SYSTEM



Separator TR



RS shelving system

### GUIDE CHANNELS



VAW steel galvanised / stainless steel

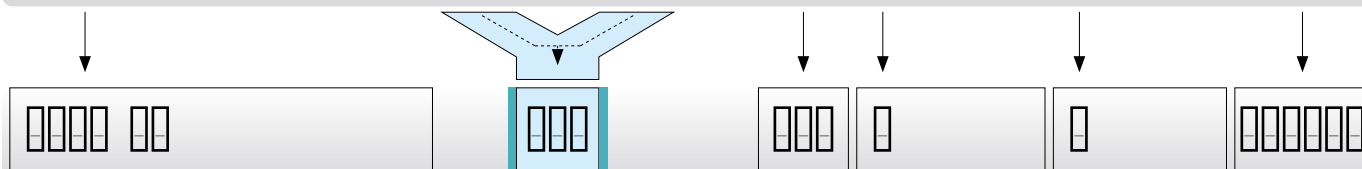


VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0360 04</b>	Cover on outside bend Cover on inside bend Opens on inside bend	<b>062</b> [2.44]	<b>078</b> [3.07]			<b>080</b> [3.15]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>086</b> [3.39]	<b>102</b> [4.02]						
		<b>102</b> [4.02]	<b>118</b> [4.65]			<b>100</b> [3.94]		<b>9</b> Special version (on request)	
		<b>125</b> [4.92]	<b>141</b> [5.55]			<b>125</b> [4.92]			
						<b>150</b> [5.91]			
						<b>200</b> [7.87]			

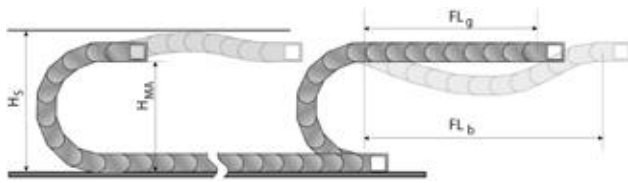


**ORDERING EXAMPLE: 0360 04 062 080 0 0 1280**

Cover on outside bend, cover on inside bend, openable from inside bend  
 Inside width 62 mm; radius 80 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1280 mm (32 links)



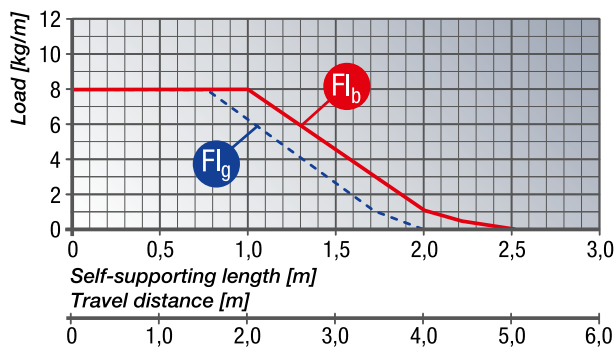
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

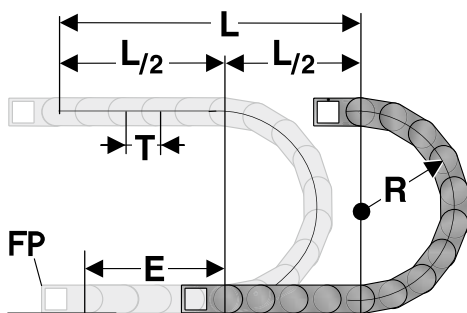
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

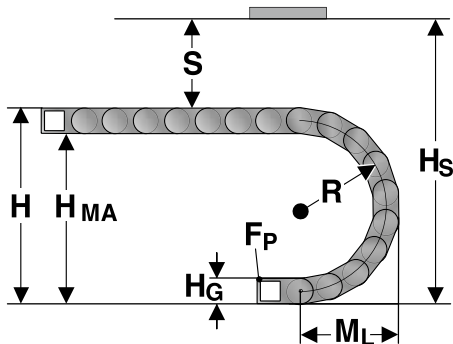


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 25 \text{ qty. } \times 40.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 40.0 mm

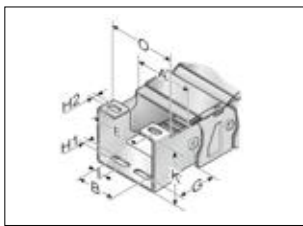
**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_S$ ” value has to be taken into account.

Radius R	80	100	125	150	200
Outside height of chain link ( $H_G$ )	48	48	48	48	48
Height of bend (H)	208	248	298	348	448
Height of moving end bracket ( $H_{MA}$ )	160	200	250	300	400
Safety margin (S)	32	32	32	32	32
Installation height ( $H_S$ )	240	280	330	380	480
Arc projection ( $M_L$ )	144	164	189	214	264

**KA 36 G CHAIN BRACKET U-PART**

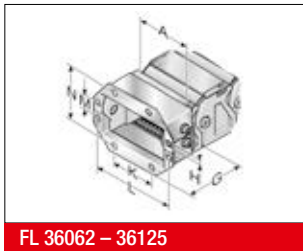


KA 36062 – 36125

The chain bracket can be supplied either in galvanised sheet steel or stainless steel. To secure one energy chain, you will need a bracket with a drilled hole and a bracket with a bolt.

Type	Order No.	Material	Inside width							Outside width of KA 0 mm
			A mm	E mm	G mm	H1 mm	H2 mm	I mm	K mm	
KA 36062 C Female end	036000001000	Sheet steel	62.0	A-7.5	42.0	6.6	6.6	6.0	48.8	A+12.0
KA 36062 C Male end	036000001100	Sheet steel	62.0	A-7.5	42.0	6.6	6.6	6.0	48.8	A+8.0
KA 36086 C Female end	036000001200	Sheet steel	86.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+12.0
KA 36086 C Male end	036000001300	Sheet steel	86.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+8.0
KA 36102 C Female end	036000001400	Sheet steel	102.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+12.0
KA 36102 C Male end	036000001500	Sheet steel	102.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+8.0
KA 36125 C Female end	036000001600	Sheet steel	125.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+12.0
KA 36125 C Male end	036000001700	Sheet steel	125.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+8.0
KA 36062 C Female end	036000002000	Stainless steel 1.4301	62.0	A-7.5	42.0	6.6	6.6	6.0	48.8	A+12.0
KA 36062 C Male end	036000002100	Stainless steel 1.4301	62.0	A-7.5	42.0	6.6	6.6	6.0	48.8	A+8.0
KA 36086 C Female end	036000002200	Stainless steel 1.4301	86.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+12.0
KA 36086 C Male end	036000002300	Stainless steel 1.4301	86.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+8.0
KA 36102 C Female end	036000002400	Stainless steel 1.4301	102.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+12.0
KA 36102 C Male end	036000002500	Stainless steel 1.4301	102.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+8.0
KA 36125 C Female end	036000002600	Stainless steel 1.4301	125.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+12.0
KA 36125 C Male end	036000002700	Stainless steel 1.4301	125.0	A-7.5	42.0	6.6	6.6	15.5	48.8	A+8.0

**KA 36 G END BRACKETS FLANGE**

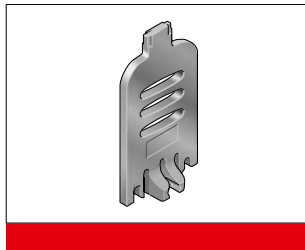
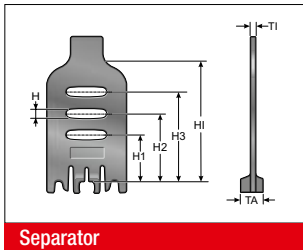


An energy chain requires two chain brackets. The divisible flange connection has been specifically designed for commissioning and re-installation. This keeps the chain in the installed position.

FL 36062 – 36125

Type	Order No.	Material	Inside width					
			A mm	HØ mm	K mm	L mm	M mm	N mm
FL 36062	0360062054	Sheet steel	62.0	7.0	40.0	97.9	18.0	68.5
FL 36086	0360086054	Sheet steel	86.0	7.0	64.0	121.9	18.0	68.5
FL 36102	0360102054	Sheet steel	102.0	7.0	80.0	137.9	18.0	68.5
FL 36125	0360125054	Sheet steel	125.0	7.0	103.0	160.9	18.0	68.5
FL 36062	0360062056	Stainless steel 1.4301	62.0	7.0	40.0	97.9	18.0	68.5
FL 36086	0360086056	Stainless steel 1.4301	86.0	7.0	64.0	121.9	18.0	68.5
FL 36102	0360102056	Stainless steel 1.4301	102.0	7.0	80.0	137.9	18.0	68.5
FL 36125	0360125056	Stainless steel 1.4301	125.0	7.0	103.0	160.9	18.0	68.5

**TR 36G SEPARATOR**

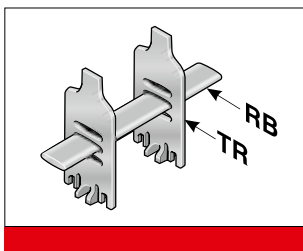


We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Separator

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 36G	036000009200	Separator	lockable	2.5	10.5	2.5	13.5	19.5	25.5	36.5

**MP 36G SHELVING SYSTEM**



The shelf must be used with a minimum of two separators to create a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them. The shelves are matched to the available chain widths.

Type	Order No.	Description	Width mm	Pitch mm
RBT 062	100000006200	Shelf	62.0	2.5
RBT 086	100000008600	Shelf	86.0	2.5
RBT 101	100000010100	Shelf	101.0	2.5
RBT 125	100000012500	Shelf	125.0	2.5

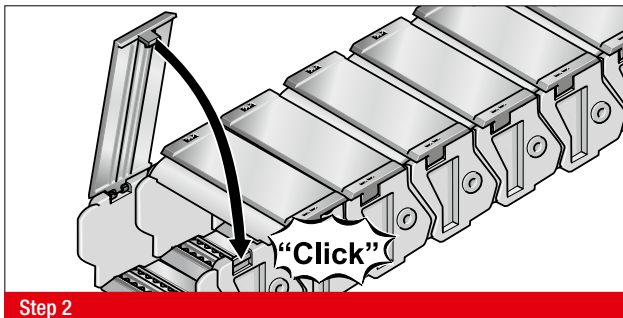
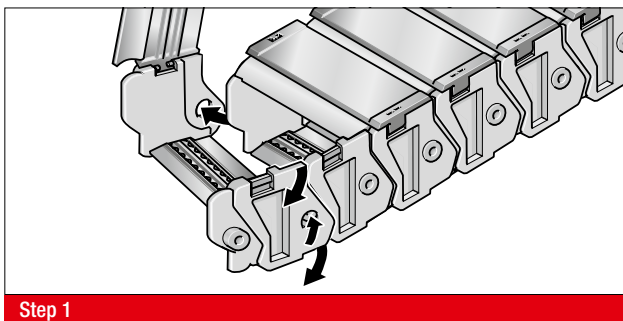
**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



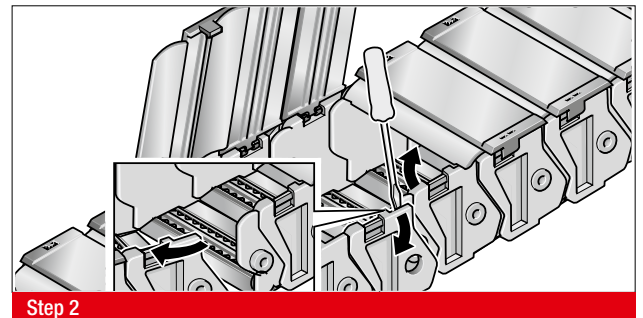
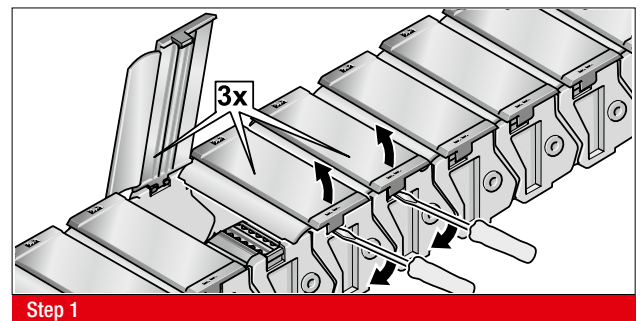
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY**



**DISASSEMBLY**



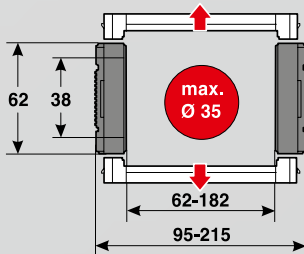


## MP 43G

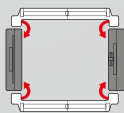
CLOSED



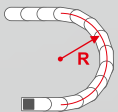
- METAL CHAIN BRACKET
- OPENS ON INSIDE AND OUTSIDE BEND



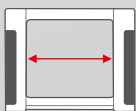
### TECHNICAL DATA



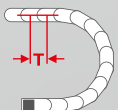
**Loading side**  
Inside and outside bend



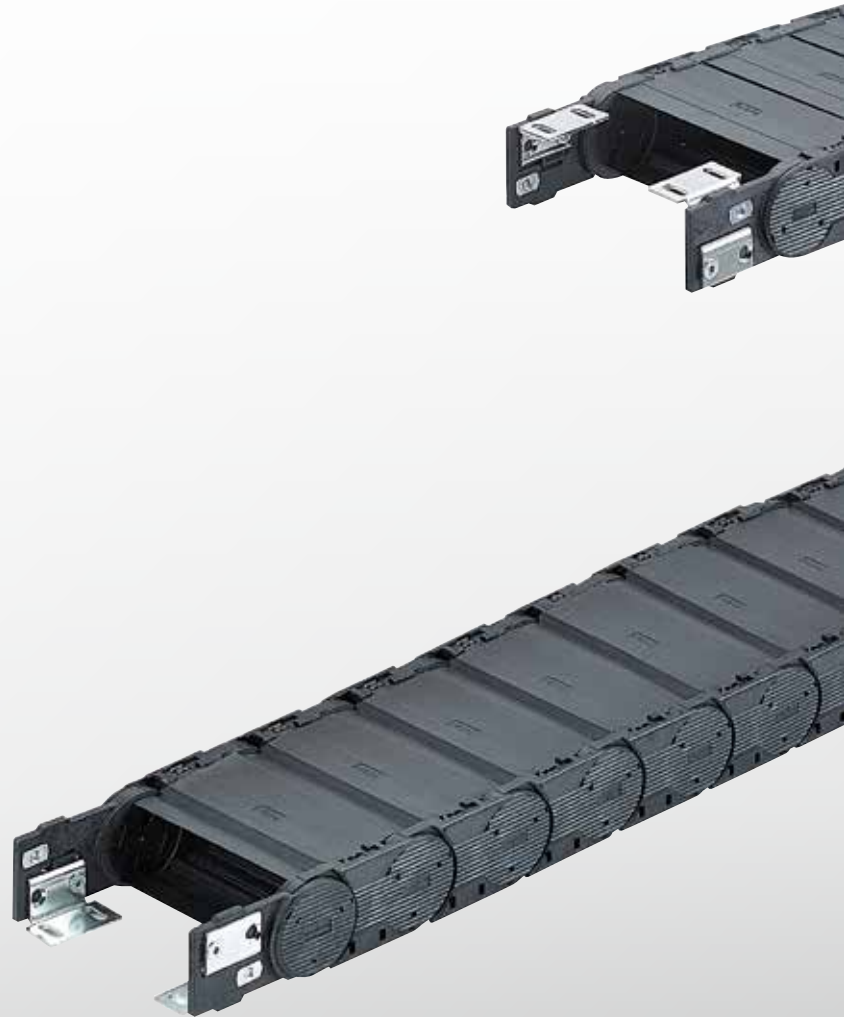
**Available radii**  
125.0 – 400.0 mm



**Available interior widths**  
With plastic crossbar  
62.0 – 182.0 mm



**Pitch**  
T = 75.5 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	50.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 137
Travel distance vertical, hanging $L_{vh}$ max.	40.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	15.0 m/s
Acceleration, gliding $a_g$ max.	15.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	20.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

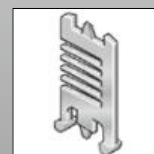


## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

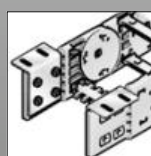
Other material properties on request.

## SHELVING SYSTEM



Separator TR

## CHAIN BRACKET



Chain bracket angle



RS shelving system

## GUIDE CHANNELS

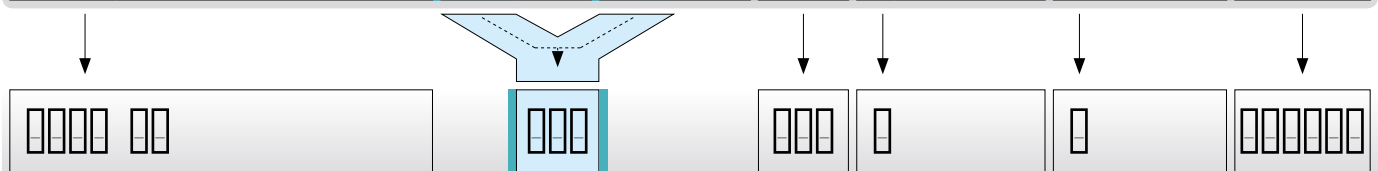


VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length																																																																										
<b>0430 44</b>	Cover on outside bend Cover on inside bend Opens on inside and outside bend	<b>062</b> [2.44]	<b>095</b> [3.74]			<b>125</b> [4.92]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)																																																																											
		<b>084</b> [3.31]	<b>117</b> [4.61]									<b>105</b> [4.13]	<b>138</b> [5.43]			<b>150</b> [5.91]	<b>1</b> Plastic, full-ridged without bias	<b>9</b> Special version (on request)				<b>144</b> [5.67]	<b>177</b> [6.97]					<b>182</b> [7.17]	<b>215</b> [8.46]			<b>200</b> [7.87]	<b>9</b> Special version (on request)															<b>250</b> [9.84]																<b>300</b> [11.81]																<b>400</b> [15.75]			
		<b>105</b> [4.13]	<b>138</b> [5.43]			<b>150</b> [5.91]	<b>1</b> Plastic, full-ridged without bias	<b>9</b> Special version (on request)																																																																											
		<b>144</b> [5.67]	<b>177</b> [6.97]									<b>182</b> [7.17]	<b>215</b> [8.46]			<b>200</b> [7.87]	<b>9</b> Special version (on request)															<b>250</b> [9.84]																<b>300</b> [11.81]																<b>400</b> [15.75]																			
		<b>182</b> [7.17]	<b>215</b> [8.46]			<b>200</b> [7.87]	<b>9</b> Special version (on request)																																																																												
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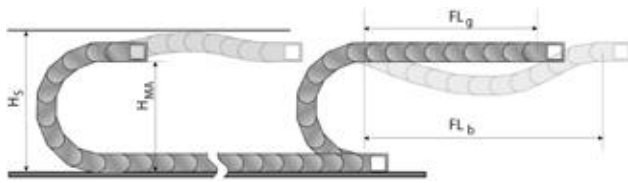


**ORDERING EXAMPLE: 0430 44 062 125 0 0 1435**

Cover on outside bend, cover on inside bend, openable from inside and outside bend  
 Inside width 62 mm; radius 125 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1435 mm (19 links)



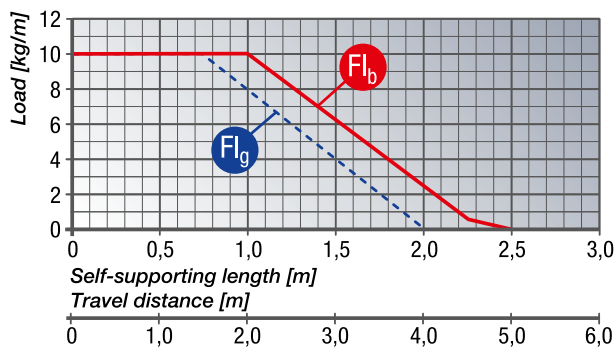
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_S$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

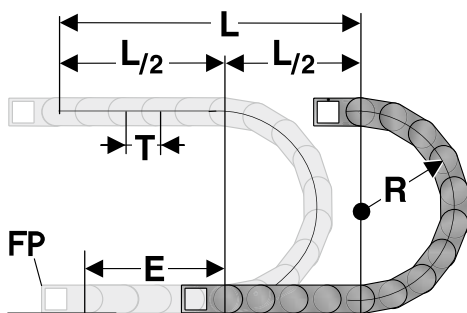
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

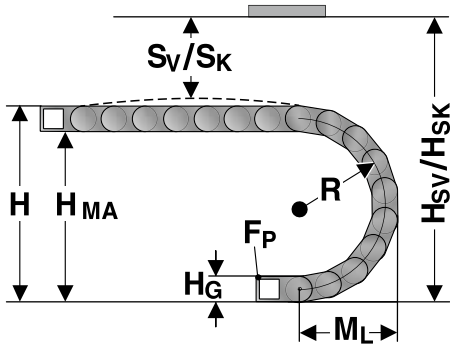


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 13 \text{ qty. } \times 75.5 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 75.5 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

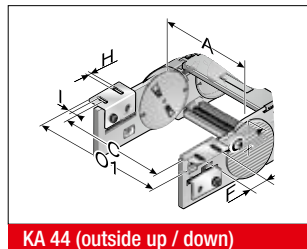
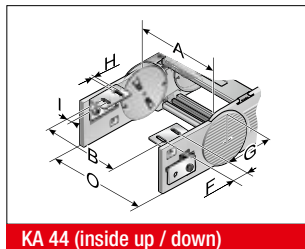
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.

If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	125	150	200	250	300	400
Outside height of chain link ( $H_G$ )	62	62	62	62	62	62
Height of bend (H)	312	362	462	562	662	862
Height of moving end bracket ( $H_{MA}$ )	250	300	400	500	600	800
Safety margin with bias ( $S_v$ )	38	38	38	38	38	38
Installation height with bias ( $H_{sv}$ )	350	400	500	600	700	900
Safety margin without bias ( $S_k$ )	13	13	13	13	13	13
Installation height without bias ( $H_{sk}$ )	325	375	475	575	675	875
Arc projection ( $M_L$ )	232	257	307	357	407	507

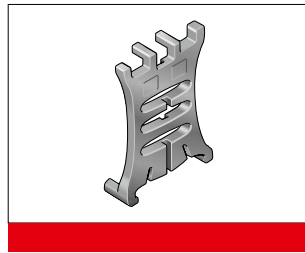
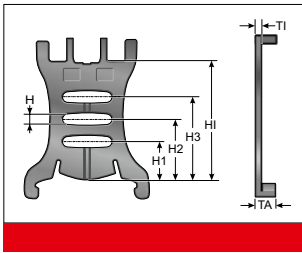
**KA 44 CHAIN BRACKET ANGLE**



There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires two chain brackets. The brackets should be fastened with M6 screws.

Type	Order No.	Material	Inside width								Outside width of KA 0	Outside width of KA 01	
			A mm	B mm	C mm	E mm	F mm	G mm	G1 mm	H0 mm			I mm
KA 44	0440000050	Sheet steel	62.0 – 182.0	A-14.5	A+38.5	A+32.0	32.0	43.2	86.0	6.5	12.5	A+33.0	A+64.0
KA 44	0440000052	Stainless steel 1.4301	62.0 – 182.0	A-14.5	A+38.5	A+32.0	32.0	43.2	86.0	6.5	12.5	A+33.0	A+64.0

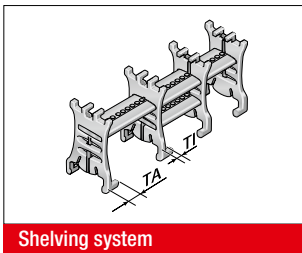
**TR 43G SEPARATOR**



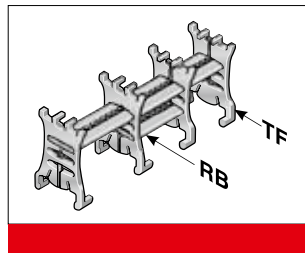
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TF 43	0430000090	Separator	moveable	4.0	9.0	4.3	12.3	19.5	26.5	38.0

**MP 43G SHELVING SYSTEM**



Shelving system



The shelf must be used with a minimum of two separators to create a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them. The shelves are matched to the available chain widths.

Type	Order No.	Description	Width mm	Clearance width mm	Pitch mm
RB 031	100000003100	Shelf	42.0	31.0	1.6
RB 048	100000004800	Shelf	59.0	48.0	1.6
RB 070	100000007000	Shelf	81.0	70.0	1.6
RB 092	100000009200	Shelf	103.0	92.0	1.6
RB 128	100000012800	Shelf	139.0	128.0	1.6
RB 167	100000016700	Shelf	178.0	167.0	1.6

**GUIDE CHANNEL VAW (ALUMINIUM)**

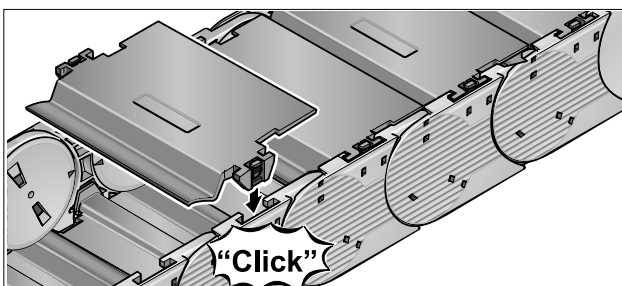
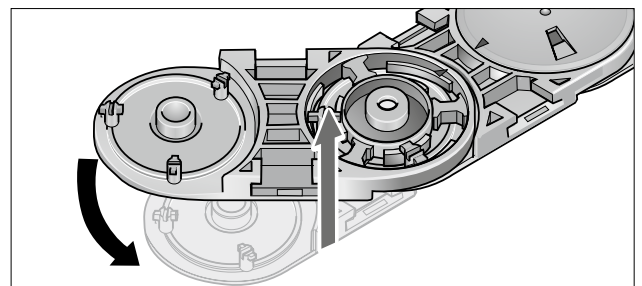
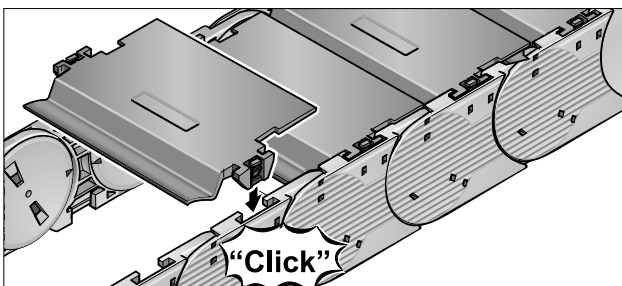
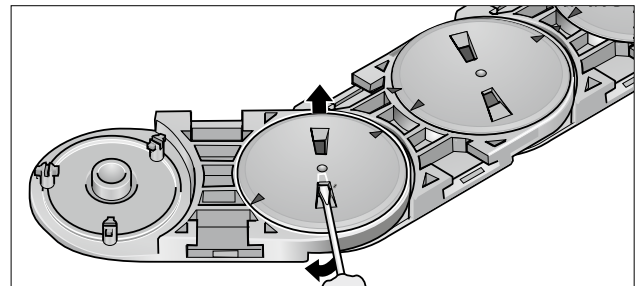
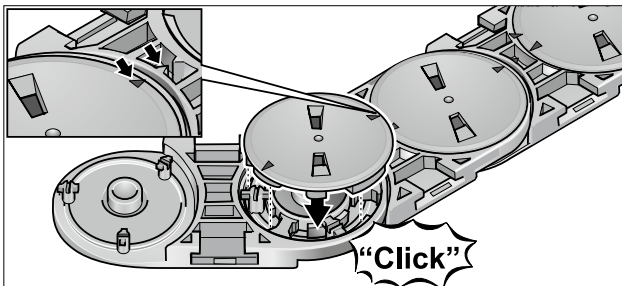
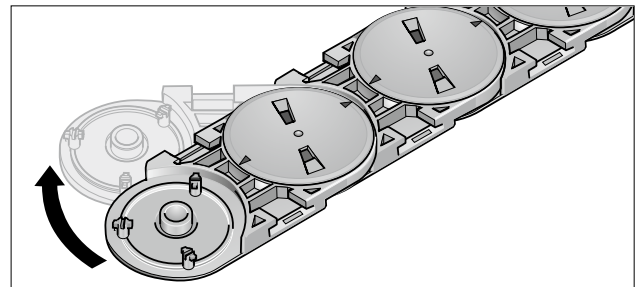
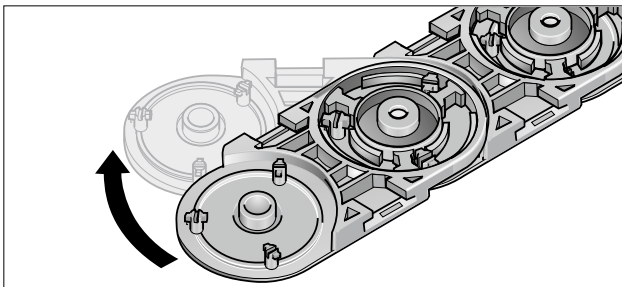
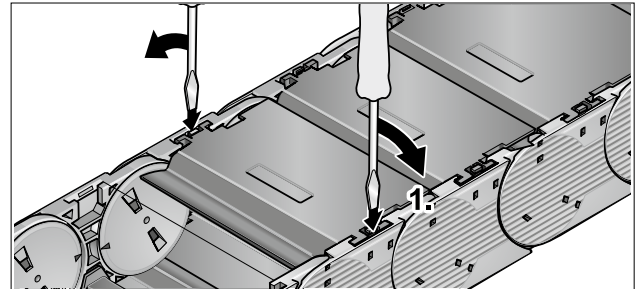
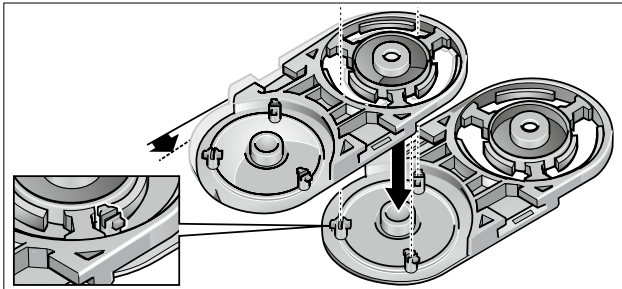


VAW aluminium

A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

DISASSEMBLY





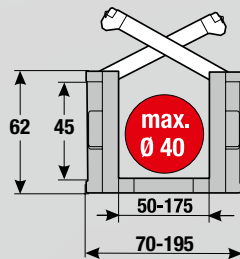
**MP 45.1**  
OPEN



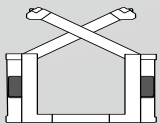
**MP 45.2**  
OPEN



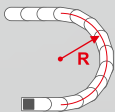
- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- SUITABLE FOR UNIVERSAL USE
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- BROAD INTERIOR LAYOUT



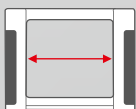
## TECHNICAL DATA



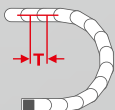
**Loading side**  
Inside or outside bend



**Available radii**  
75.0 – 300.0



**Available interior widths**  
With plastic crossbar  
50.0 – 175.0



**Pitch**  
T = 67.0 mm



**Noise attenuator**  
Reduction of the noise emission by up to 10 dB(A) by the use of damping elements in the chain links.





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	80.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 145
Travel distance vertical, hanging $L_{vh}$ max.	60.0 m
Travel distance vertical, upright $L_{vs}$ max.	4.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	15.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	50.0 m/s <sup>2</sup>

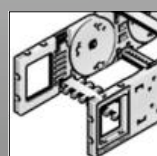
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

### CHAIN BRACKET

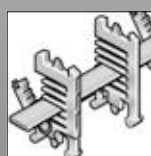


Chain bracket flexible

### SHELVING SYSTEM



Separator TR

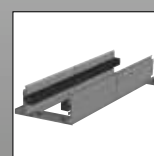


RS shelving system

### GUIDE CHANNELS



VAW steel galvanised / stainless steel

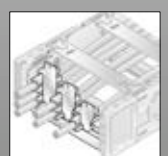


VAW aluminium

### STRAIN RELIEF



RS-ZL crossbar strain relief

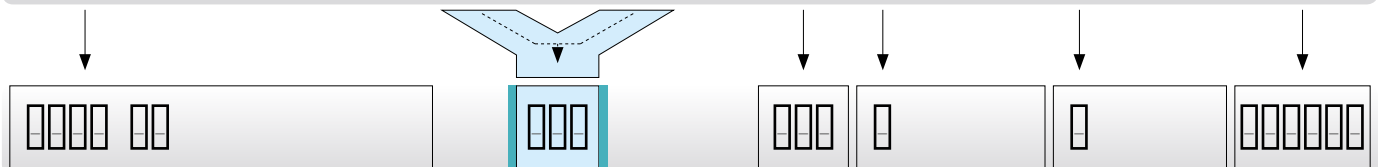


STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length																																																																				
0451 01	MP 45.1 open Crossbar on outside bend Crossbar on inside bend Opens on outside bend	050 [1.97]	070 [2.76]			075 [2.95]	0 Plastic, full-ridged with bias	2 Polyamide without attenuator (PA/black)																																																																					
		075 [2.95]	095 [3.74]							0452 02	MP 45.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside bend	100 [3.94]	120 [4.72]			100 [3.94]	1 Plastic, full-ridged without bias	3 Polyamide with attenuator (PA/black)		115 [4.53]	135 [5.31]					125 [4.92]	145 [5.71]			125 [4.92]		9 Special version (on request)				150 [5.91]	170 [6.69]			150 [5.91]						175 [6.89]	195 [7.68]			150 [5.91]										200 [7.87]										250 [9.84]							
0452 02	MP 45.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside bend	100 [3.94]	120 [4.72]			100 [3.94]	1 Plastic, full-ridged without bias	3 Polyamide with attenuator (PA/black)																																																																					
		115 [4.53]	135 [5.31]									125 [4.92]	145 [5.71]			125 [4.92]		9 Special version (on request)				150 [5.91]	170 [6.69]			150 [5.91]						175 [6.89]	195 [7.68]			150 [5.91]										200 [7.87]										250 [9.84]										300 [11.81]											
		125 [4.92]	145 [5.71]			125 [4.92]		9 Special version (on request)																																																																					
		150 [5.91]	170 [6.69]			150 [5.91]																																																																							
		175 [6.89]	195 [7.68]			150 [5.91]																																																																							
						200 [7.87]																																																																							
						250 [9.84]																																																																							
						300 [11.81]																																																																							

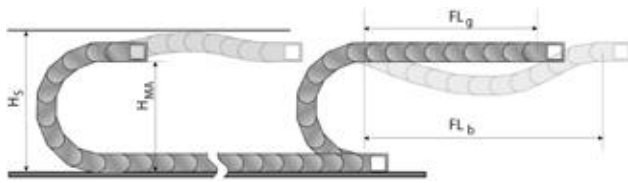


**ORDERING EXAMPLE: 0452 02 075 100 0 3 2000**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside bend  
 Inside width 075 mm, radius 100 mm  
 Plastic, full-ridged with bias, material polyamide with damper (PA/black)  
 Chain length 2000 mm (30 links)



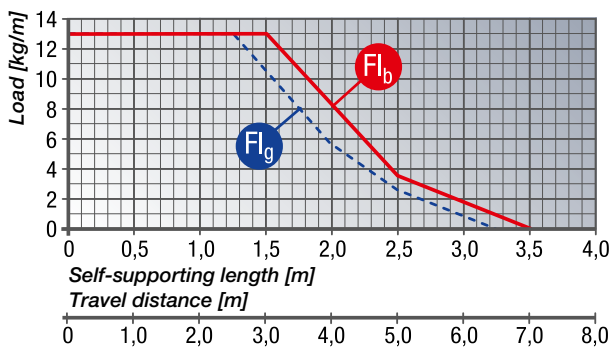
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

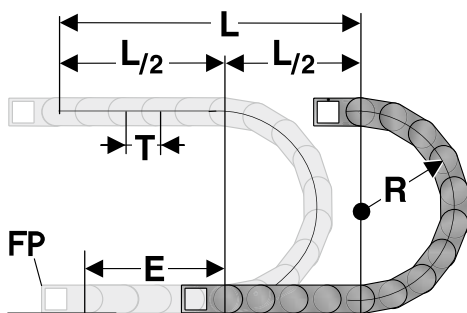
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 50.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 50.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

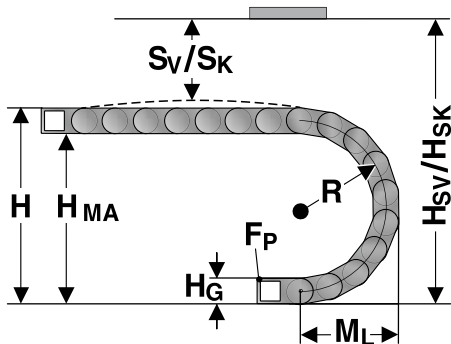


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 15 \text{ qty. } \times 67.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 67.0 mm

**INSTALLATION DIMENSIONS**



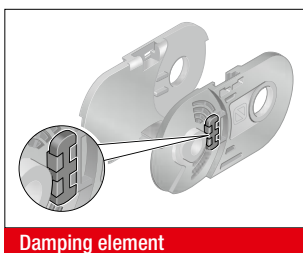
The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

Concerning the installed dimensions, you must take into consideration whether the chain links are equipped with damping elements or not.

For chain links without damping elements, the value “Installed height with bias  $H_{SV}$  without damper” or “Installed height without bias  $H_{SK}$  without damper” must be taken into account. If the chain links are equipped with a damping element, the value “Installed height with bias  $H_{SV}$  with damper” or “Installed height without bias  $H_{SK}$  with damper” is to be taken into account.

Radius R	75	100	125	150	200	250	300
Outside height of chain link ( $H_G$ )	62	62	62	62	62	62	62
Height of bend (H)	212	262	312	362	462	562	662
Height of moving end bracket ( $H_{MA}$ )	150	200	250	300	400	500	600
Safety margin with bias ( $S_V$ )	20	20	20	20	20	20	20
Installation height with bias ( $H_{SV}$ ) without damper	322	372	422	472	572	672	772
Installation height with bias ( $H_{SV}$ ) with damper	342	392	442	492	592	692	792
Safety margin without bias ( $S_K$ )	20	20	20	20	20	20	20
Installation height without bias ( $H_{SK}$ ) without damper	232	282	332	382	482	582	682
Installation height without bias ( $H_{SK}$ ) with damper	252	302	352	402	502	602	702
Arc projection ( $M_L$ )	173	198	223	248	298	348	398

**DAMPING ELEMENT FOR THE CHAIN LINKS**

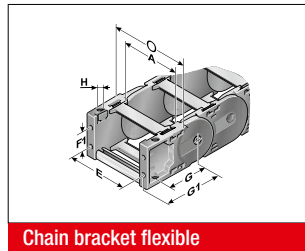
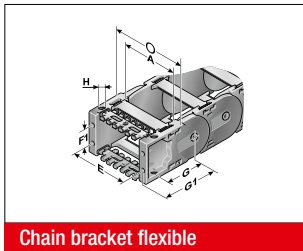


Damping element

The damping elements in the stops facilitate a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

A reduction of the noise emission by up to 10 dB(A) comparing to the variants without the use of damping elements is possible.

**KA 45 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the energy chain like a side link. This allows the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. M5 screws are used to secure the brackets in place. Press-in metal bushes with a through-hole ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

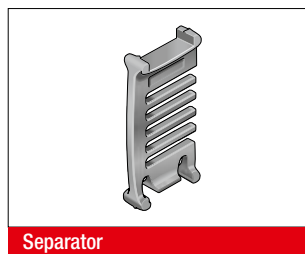
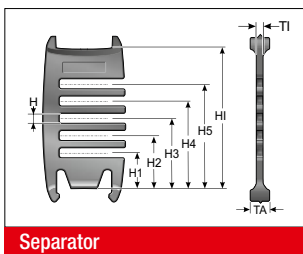
By default, the chain bracket is supplied with frame bridges. The chain bracket can then be optionally fitted with frame bridge strain relief plates (RS-ZL) or with strain relief using C-rails and type STF bow clamps.

Type	Order No.	Material	Inside width						Outside width of KA O mm
			A mm	E mm	F1 mm	G mm	G1 mm	H0 mm	
KA 45-FB Female end, 050, complete	0450005050	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 050, pendular, complete	0450005052	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 050, complete	0450005051	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 050, pendular, complete	0450005053	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 075, complete	0450007550	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 075, pendular, complete	0450007552	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 075, complete	0450007551	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 075, pendular, complete	0450007553	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 100, complete	0450010050	Plastic	100.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 100, pendular, complete	0450010052	Plastic	100.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 100, complete	0450010051	Plastic	100.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 100, pendular, complete	0450010053	Plastic	100.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 115, complete	0450011550	Plastic	115.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 115, pendular, complete	0450011552	Plastic	115.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 115, complete	0450011551	Plastic	115.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 115, pendular, complete	0450011553	Plastic	115.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 125, complete	0450012550	Plastic	125.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 125, pendular, complete	0450012552	Plastic	125.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 125, complete	0450012551	Plastic	125.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 125, pendular, complete	0450012553	Plastic	125.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 150, complete	0450015050	Plastic	150.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 150, pendular, complete	0450015052	Plastic	150.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 150, complete	0450015051	Plastic	150.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 150, pendular, complete	0450015053	Plastic	150.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 175, complete	0450017550	Plastic	175.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Female end, 175, pendular, complete	0450017552	Plastic	175.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 175, complete	0450017551	Plastic	175.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FB Male end, 175, pendular, complete	0450017553	Plastic	175.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 050, complete	0450005054	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 050, pendular, complete	0450005056	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 050, complete	0450005055	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 050, pendular, complete	0450005057	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0

**KA 45 CHAIN BRACKET FLEXIBLE**

Type	Order No.	Material	Inside width						Outside width of KA 0 mm
			A mm	E mm	F1 mm	G mm	G1 mm	H0 mm	
KA 45-FG Female end, 075, complete	0450007554	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 075, pendular, complete	0450007556	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 075, complete	0450007555	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 075, pendular, complete	0450007557	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 100, complete	0450010054	Plastic	100.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 100, pendular, complete	0450010056	Plastic	100.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 100, complete	0450010055	Plastic	100.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 100, pendular, complete	0450010057	Plastic	100.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 115, complete	0450011554	Plastic	115.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 115, pendular, complete	0450011556	Plastic	115.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 115, complete	0450011555	Plastic	115.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 115, pendular, complete	0450011557	Plastic	115.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 125, complete	0450012554	Plastic	125.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 125, pendular, complete	0450012556	Plastic	125.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 125, complete	0450012555	Plastic	125.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 125, pendular, complete	0450012557	Plastic	125.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 150, complete	0450015054	Plastic	150.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 150, pendular, complete	0450015056	Plastic	150.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 150, complete	0450015055	Plastic	150.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 150, pendular, complete	0450015057	Plastic	150.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 175, complete	0450017554	Plastic	175.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Female end, 175, pendular, complete	0450017556	Plastic	175.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 175, complete	0450017555	Plastic	175.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0
KA 45-FG Male end, 175, pendular, complete	0450017557	Plastic	175.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0

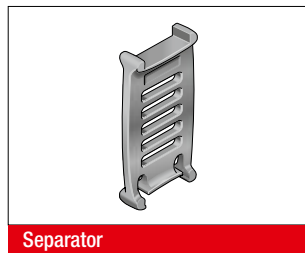
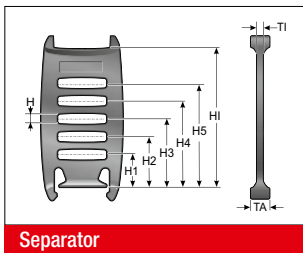
**TRT 45 DIVISIBLE SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	Dimensions									
				T1 mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm	
TRT 45	045000009200	TRT 45, separator, divisible	lockable	3.0	8.0	3.2	11.3	16.9	22.5	28.1	33.7	45.0	

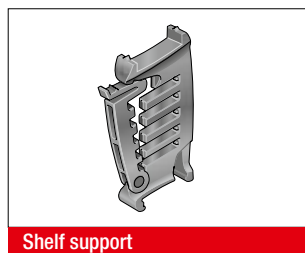
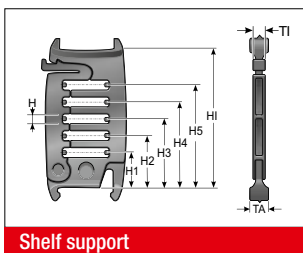
**TR 45-V SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
TR 45-V	045000009300	TR 45-V Separator	moveable	3.0	8.0	3.2	11.3	16.9	22.5	28.1	33.7	45.0

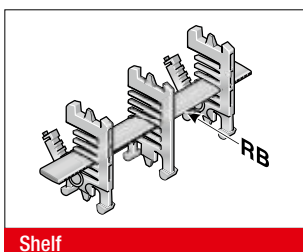
**RTT 45 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
RTT 45	100090450000	Shelf support, divisible	lockable	5.0	8.0	3.2	11.3	16.9	22.5	28.1	33.7	45.0

**RB-3 SHELF**



In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

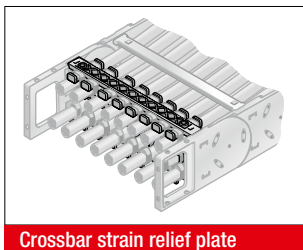
Type	Order No.	Description	Width mm	Inside width mm
RB 039-3	030100003900	Shelf	38.6	40.0
RB 041-3	1000004103	Shelf	41.1	50.0
RB 044-3	1000004403	Shelf	43.6	50.0
RB 046-3	1000004603	Shelf	46.1	50.0

**RB-3 SHELF**

Type	Order No.	Description	Width mm	Inside width mm
RB 049-3	030100004900	Shelf	48.6	50.0
RB 051-3	1000005103	Shelf	51.1	60.0
RB 054-3	1000005403	Shelf	53.6	60.0
RB 056-3	1000005603	Shelf	56.1	60.0
RB 059-3	030100005900	Shelf	58.6	60.0
RB 061-3	1000006103	Shelf	61.1	75.0
RB 064-3	1000006403	Shelf	63.6	75.0
RB 066-3	1000006603	Shelf	66.1	75.0
RB 069-3	1000006903	Shelf	68.6	75.0
RB 071-3	1000007103	Shelf	71.1	75.0
RB 074-3	030100007400	Shelf	73.6	75.0
RB 076-3	1000007603	Shelf	76.1	85.0
RB 079-3	1000007903	Shelf	78.6	85.0
RB 081-3	1000008103	Shelf	81.1	85.0
RB 084-3	030100008400	Shelf	83.6	85.0
RB 086-3	1000008603	Shelf	86.1	100.0
RB 089-3	1000008903	Shelf	88.6	100.0
RB 091-3	1000009103	Shelf	91.1	100.0
RB 094-3	1000009403	Shelf	93.6	100.0
RB 096-3	1000009603	Shelf	96.1	100.0
RB 099-3	030100009900	Shelf	98.6	100.0
RB 101-3	1000010103	Shelf	101.1	115.0
RB 104-3	1000010403	Shelf	103.6	115.0
RB 106-3	1000010603	Shelf	106.1	115.0
RB 109-3	1000010903	Shelf	108.6	115.0
RB 111-3	1000011103	Shelf	111.1	115.0
RB 114-3	030100011400	Shelf	113.6	115.0
RB 116-3	1000011603	Shelf	116.1	125.0
RB 119-3	1000011903	Shelf	118.6	125.0
RB 121-3	1000012103	Shelf	121.1	125.0
RB 124-3	030100012400	Shelf	123.6	125.0
RB 126-3	1000012603	Shelf	126.1	150.0
RB 129-3	1000012903	Shelf	128.6	150.0
RB 131-3	1000013103	Shelf	131.1	150.0
RB 134-3	1000013403	Shelf	133.6	150.0
RB 136-3	1000013603	Shelf	136.1	150.0
RB 139-3	1000013903	Shelf	138.6	150.0
RB 141-3	1000014103	Shelf	141.1	150.0
RB 144-3	1000014403	Shelf	143.6	150.0
RB 146-3	1000014603	Shelf	146.1	150.0
RB 149-3	030100014900	Shelf	148.6	150.0
RB 151-3	1000015103	Shelf	151.1	175.0
RB 154-3	1000015403	Shelf	153.6	175.0
RB 156-3	1000015603	Shelf	156.1	175.0
RB 159-3	1000015903	Shelf	158.6	175.0

**RB-3 SHELF**

Type	Order No.	Description	Width mm	Inside width mm
RB 161-3	1000016103	Shelf	161.1	175.0
RB 164-3	1000016403	Shelf	163.6	175.0
RB 166-3	1000016603	Shelf	166.1	175.0
RB 169-3	1000016903	Shelf	168.6	175.0
RB 174-3	030100017400	Shelf	173.6	175.0
RB 176-3	1000017603	Shelf	176.1	200.0
RB 179-3	1000017903	Shelf	178.6	200.0
RB 181-3	1000018103	Shelf	181.1	200.0
RB 184-3	1000018403	Shelf	183.6	200.0
RB 186-3	1000018603	Shelf	186.1	200.0
RB 189-3	1000018903	Shelf	188.6	200.0
RB 191-3	1000019103	Shelf	191.1	200.0
RB 194-3	1000019403	Shelf	193.6	200.0
RB 196-3	1000019603	Shelf	196.1	200.0
RB 199-3	030100019900	Shelf	198.6	200.0

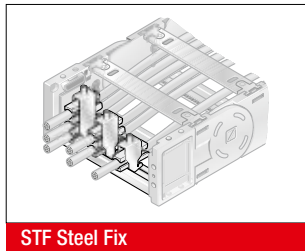
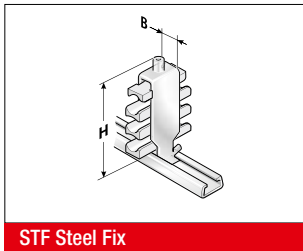
**RS-ZL-3 ZLA MP 45 CROSSBAR STRAIN RELIEF PLATE**

Crossbar strain relief plate

Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 175 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 050-3 ZLA MP 45	0451050010	Crossbar strain relief plate	50.0
RS-ZL 075-3 ZLA MP 45	0451075010	Crossbar strain relief plate	75.0
RS-ZL 100-3 ZLA MP 45	0451100010	Crossbar strain relief plate	100.0
RS-ZL 115-3 ZLA MP 45	0451115010	Crossbar strain relief plate	115.0
RS-ZL 125-3 ZLA MP 45	0451125010	Crossbar strain relief plate	125.0
RS-ZL 150-3 ZLA MP 45	0451150010	Crossbar strain relief plate	150.0
RS-ZL 175-3 ZLA MP 45	0451175010	Crossbar strain relief plate	175.0

**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

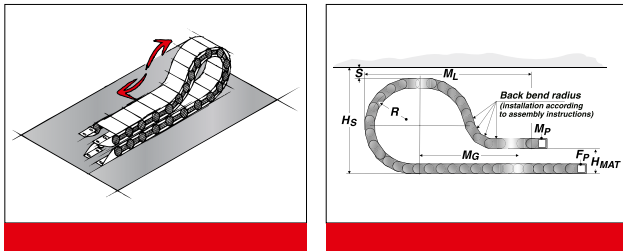
**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.



**MP 45 LOWERED FIXING POINT**



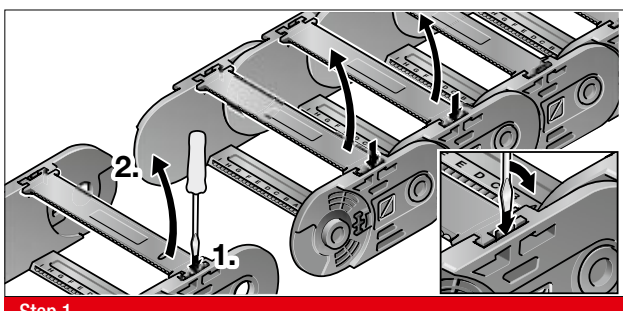
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

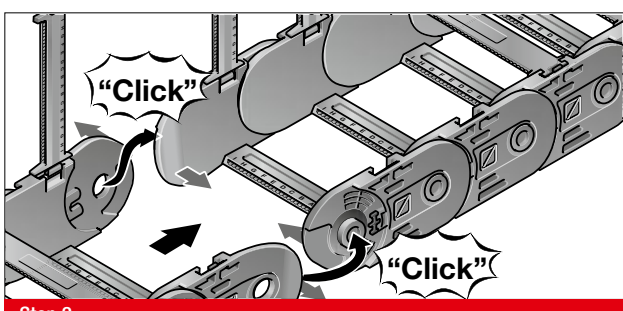
Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>s</sub> ) mm	Projection (M <sub>1</sub> ) mm	Additional links qty.	of which additional back chain links qty.
150.0	200.0	50.0	412.0	630.0	12	3
200.0	200.0	50.0	512.0	760.0	13	3
250.0	200.0	50.0	612.0	930.0	18	4
300.0	200.0	50.0	712.0	1080.0	20	4

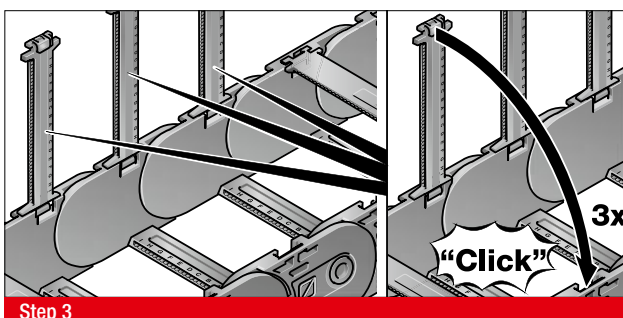
**ASSEMBLY**



Step 1

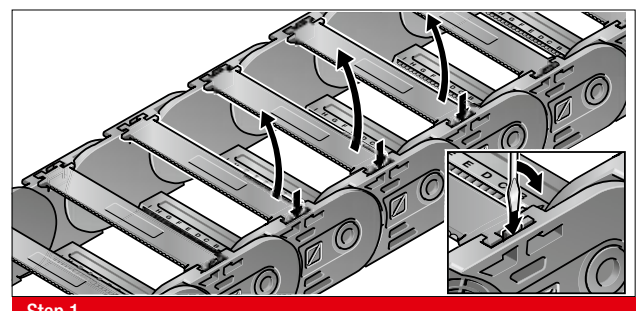


Step 2

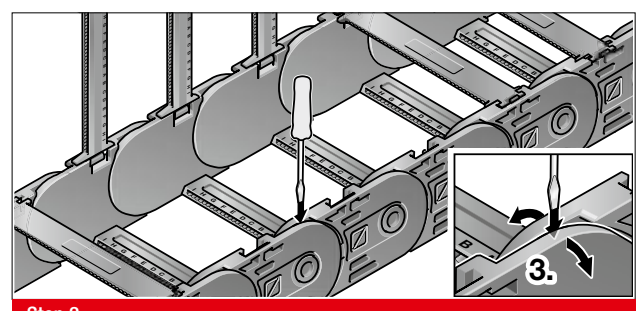


Step 3

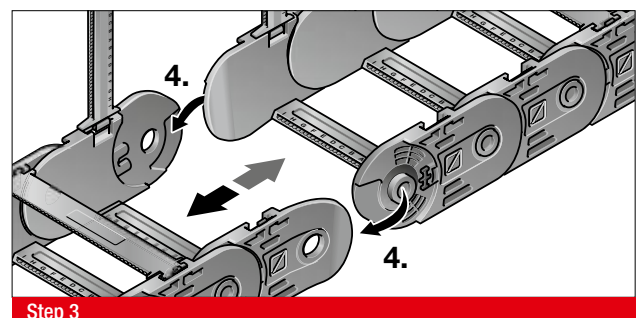
**DISASSEMBLY**



Step 1



Step 2



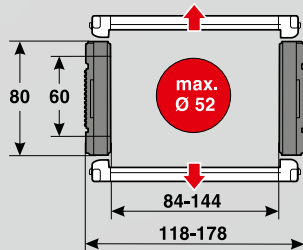
Step 3

## MP 65G

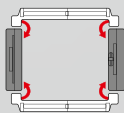
CLOSED



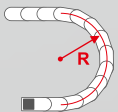
- PLASTIC VARIANT
- METAL CHAIN BRACKET
- OPENS ON INSIDE AND OUTSIDE BEND



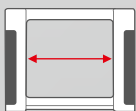
### TECHNICAL DATA



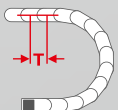
**Loading side**  
Inside and outside bend



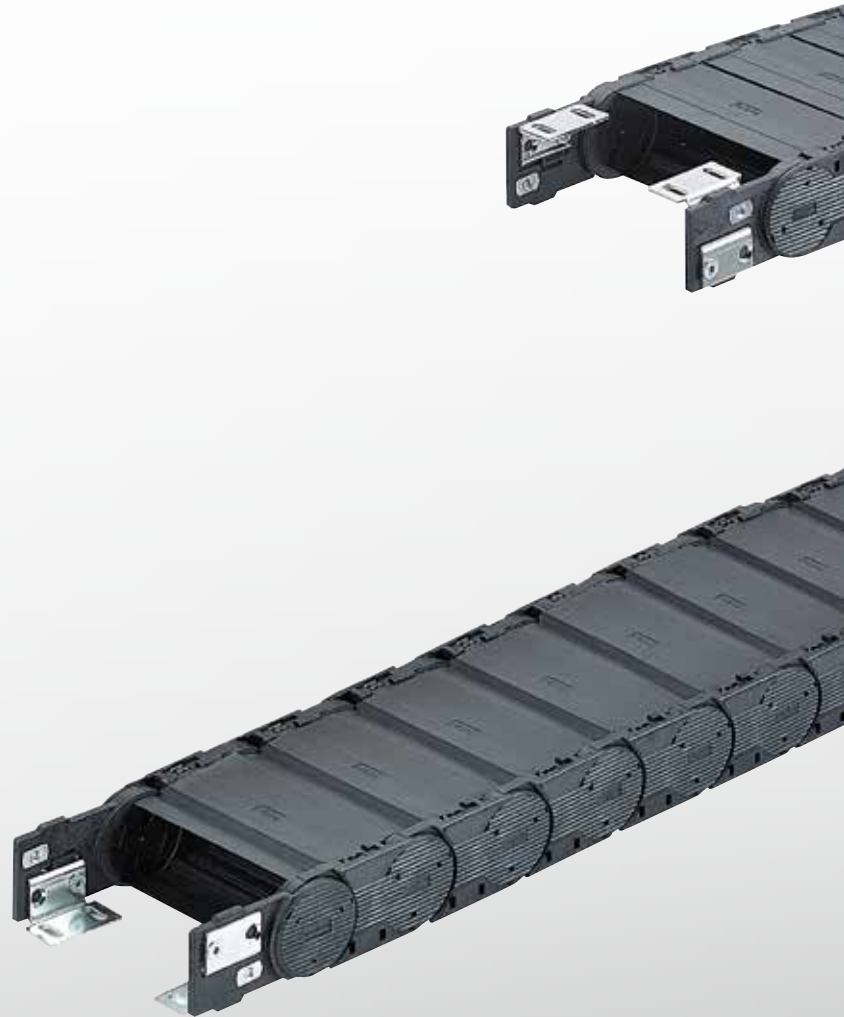
**Available radii**  
200.0 – 400.0 mm



**Available interior widths**  
with plastic cover  
84.0 – 144.0 mm



**Pitch**  
T = 91.5 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	60.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 157
Travel distance vertical, hanging $L_{vh}$ max.	50.0 m
Travel distance vertical, upright $L_{vs}$ max.	5.0 m
Rotated 90°, unsupported $L_{90f}$ max.	2.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	15.0 m/s
Acceleration, gliding $a_g$ max.	15.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	20.0 m/s <sup>2</sup>

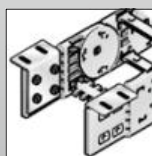
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

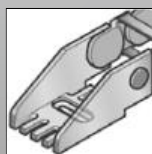
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request.

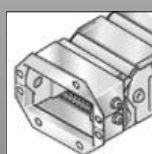
## CHAIN BRACKET



Chain bracket angle

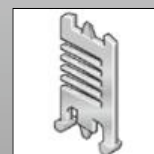


Chain bracket U-part

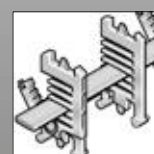


End brackets flange

## SHELVING SYSTEM

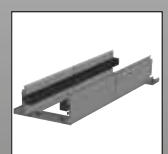


Separator TR



RS shelving system

## GUIDE CHANNELS

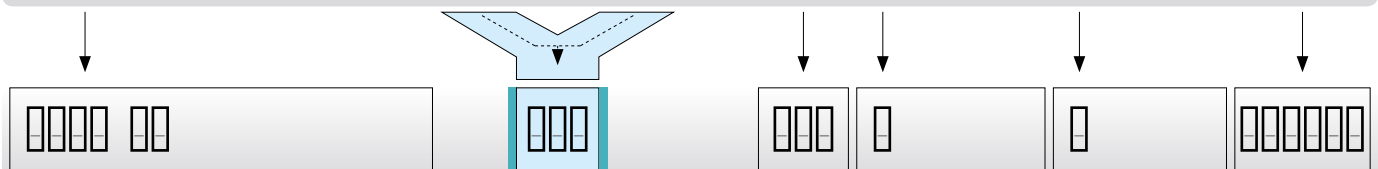


VAW aluminium

**ORDERING KEY**

Dimensions in mm [US inch]

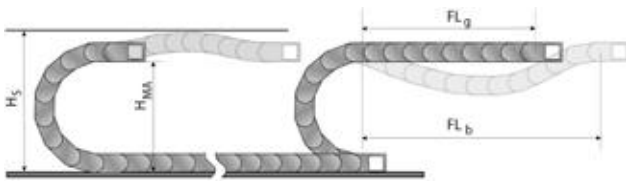
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0650 44</b>	Cover on outside bend Cover on inside bend Opens on inside and outside bend	<b>084</b> [3.31]	<b>118</b> [4.65]			<b>200</b> [7.87]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>105</b> [4.13]	<b>139</b> [5.47]						
		<b>144</b> [5.67]	<b>178</b> [7.01]						
						<b>240</b> [9.45]	<b>1</b> Plastic, full-ridged without bias	<b>9</b> Special version (on request)	
						<b>280</b> [11.02]	<b>9</b> Special version (on request)		
						<b>350</b> [13.78]			
						<b>400</b> [15.75]			



**Ordering example: 0650 44 084 200 0 0 1556**

Cover on outside bend, cover on inside bend, openable from inside and outside bend  
 Inside width 84 mm, radius 200 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1556 mm (17 links)

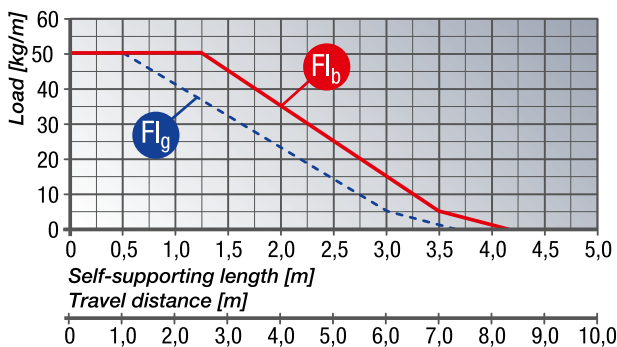
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_S$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

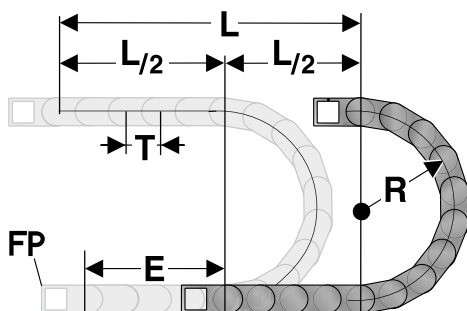
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**FL<sub>g</sub> Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**FL<sub>b</sub> Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

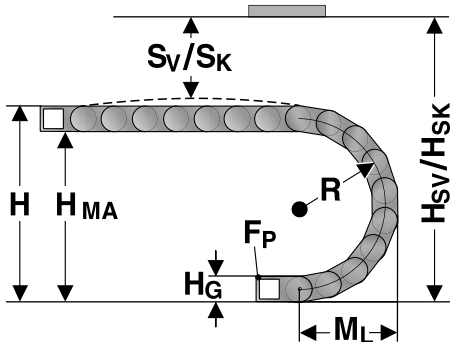


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 11 \text{ qty. } \times 91.5 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 91.5 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

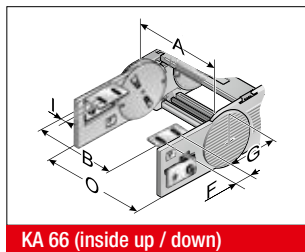
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.

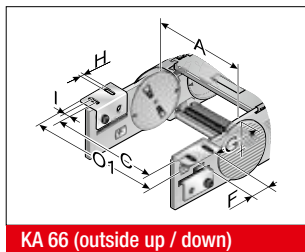
If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	200	240	280	350	400
Outside height of chain link ( $H_G$ )	80	80	80	80	80
Height of bend (H)	480	560	640	780	880
Height of moving end bracket ( $H_{MA}$ )	400	480	560	700	800
Safety margin with bias ( $S_v$ )	50	50	50	50	50
Installation height with bias ( $H_{sv}$ )	530	610	690	830	930
Safety margin without bias ( $S_k$ )	15	15	15	15	15
Installation height without bias ( $H_{sk}$ )	495	575	655	795	895
Arc projection ( $M_L$ )	332	372	412	482	532

**KA 66 CHAIN BRACKET ANGLE**



KA 66 (inside up / down)

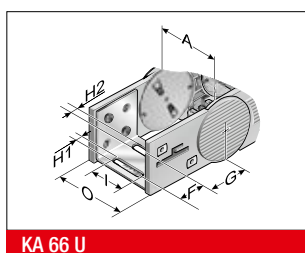


KA 66 (outside up / down)

There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires two chain brackets. The brackets should be fastened with M8 screws.

Type	Order No.	Material	Inside width							Outside width of KA 0	Outside width of KA 01	
			A mm	B mm	C mm	F mm	G mm	G1 mm	HØ mm			I mm
KA 66	0660000050	Sheet steel	62.0 – 182.0	A-17.0	A+51.0	45.0	50.5	86.0	9.0	10.0	A+34.0	A+64.0
KA 66	0660000060	Stainless steel 1.4301	62.0 – 182.0	A-17.0	A+51.0	45.0	50.5	86.0	9.0	10.0	A+34.0	A+64.0

**KA 66 CHAIN BRACKET U-PART**

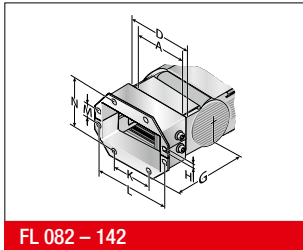


KA 66 U

The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width					Outside width of KA 0	
			A mm	F mm	G mm	H1 mm	H2 mm		I mm
KA 66 U	0660000054	Sheet steel	45.0	28.0	58.5	6.5	8.5	33.0	A+34.0

**KA 65 G END BRACKETS FLANGE**

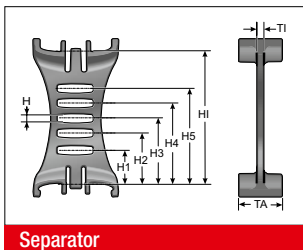


An energy chain requires two chain brackets. The divisible flange connection has been specifically designed for commissioning and re-installation. This keeps the chain in the installed position.

FL 082 – 142

Type	Order No.	Material	Inside width						
			A mm	G mm	HØ mm	K mm	L mm	M mm	N mm
FL 082	0650000070	Sheet steel	86.0	136.0	7.0	78.0	141.5	40.0	105.0
FL 107	0650000072	Sheet steel	102.0	136.0	7.0	100.0	163.5	40.0	105.0
FL 142	0650000074	Sheet steel	125.0	136.0	7.0	138.0	201.5	40.0	105.0
FL 082	0650000080	Stainless steel 1.4301	86.0	136.0	7.0	78.0	141.5	40.0	105.0
FL 107	0650000082	Stainless steel 1.4301	102.0	136.0	7.0	100.0	163.5	40.0	105.0
FL 142	0650000084	Stainless steel 1.4301	125.0	136.0	7.0	138.0	201.5	40.0	105.0

**TR 66 SEPARATOR**

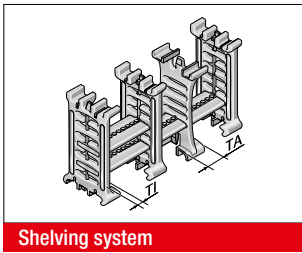


Separator

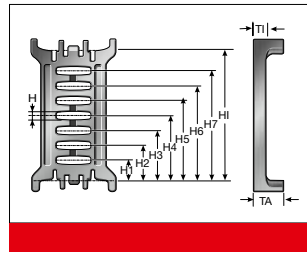
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm
TV 66	066000009000	Separator	lockable	3.5	20.0	4.4	15.8	22.9	30.0	37.1	44.2	60.0

**MP 66 SHELVING SYSTEM**



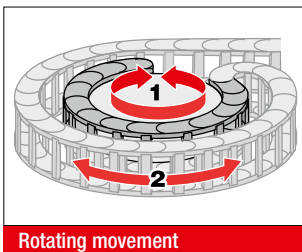
Shelving system



The shelf must be used with a minimum of two shelf supports to create a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them. The shelving system may be preassembled on request.

Type	Order No.	Description	Width mm	Clearance width mm	Pitch mm	TI mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm	H7 mm
RB 031	100000003100	Shelf	42.0	31.0	1.6								
RB 048	100000004800	Shelf	59.0	48.0	1.6								
RB 070	100000007000	Shelf	81.0	70.0	1.6								
RB 092	100000009200	Shelf	103.0	92.0	1.6								
RB 100	100000010000	Shelf	111.0	100.0	1.6								
RB 128	100000012800	Shelf	139.0	128.0	1.6								
RB 167	100000016700	Shelf	178.0	167.0	1.6								
RT 66	1000900100	Shelf support	4.3		1.6	6.5	8.7	15.8	22.9	30.0	37.1	44.2	51.3

**MP 66 REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

Type	Order No.	Rearward radius mm	Version
SR 66 (RÜ240)	066000000060	240.0	Available for radii 150, 200, 240, 280 and 350 mm

**GUIDE CHANNEL VAW (ALUMINIUM)**



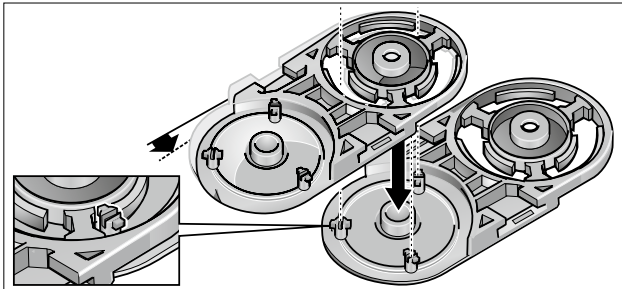
VAW aluminium

A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

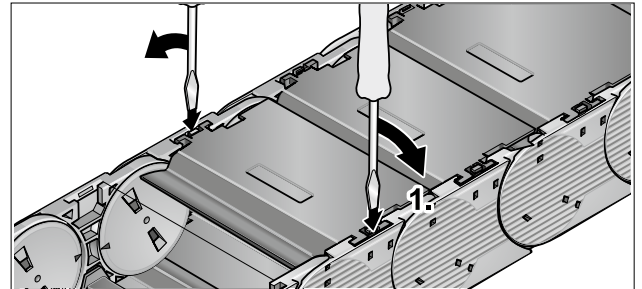


ASSEMBLY

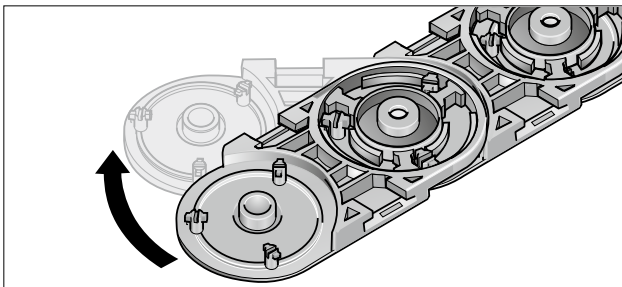
DISASSEMBLY



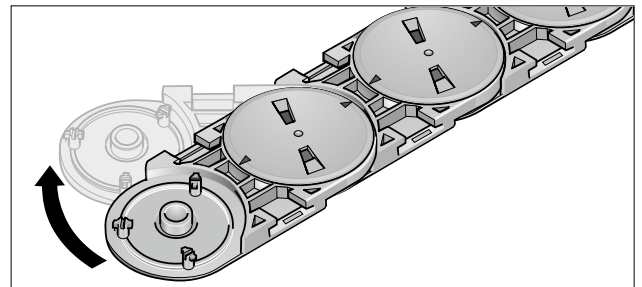
Step 1



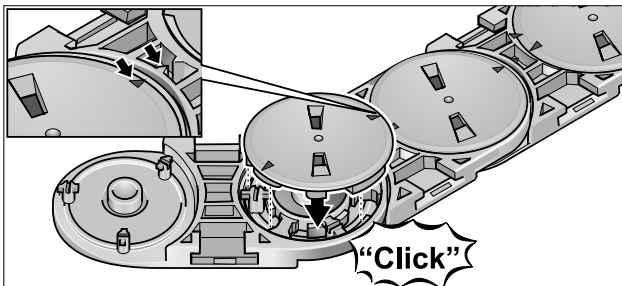
Step 1



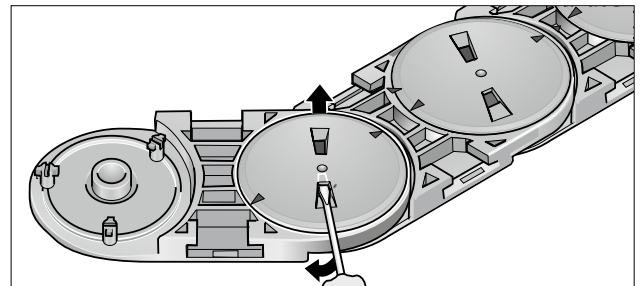
Step 2



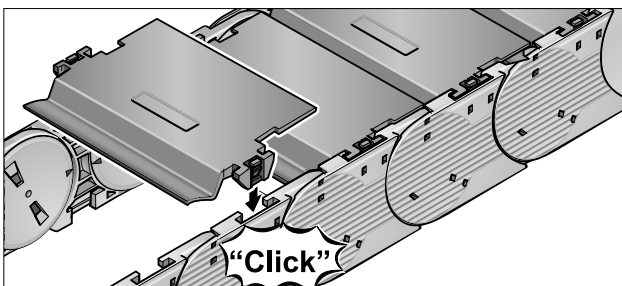
Step 2



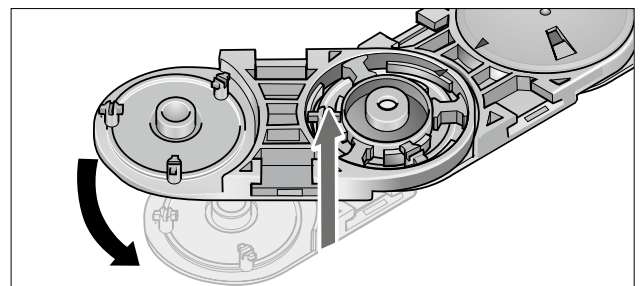
Step 3



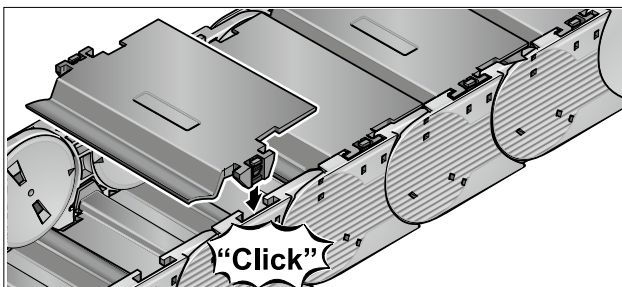
Step 3



Step 4



Step 4



Step 5

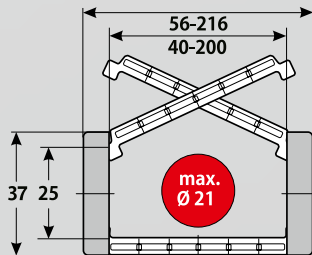
**MP 25.1/.2**  
OPEN



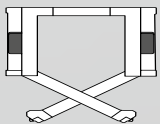
**MP 25.3/.4**  
CLOSED



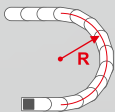
- BROAD INTERIOR LAYOUT
- BRUSH SUPPORT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- SUITABLE FOR UNIVERSAL USE



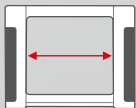
## TECHNICAL DATA



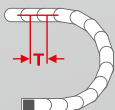
**Loading side**  
Inside or outside bend



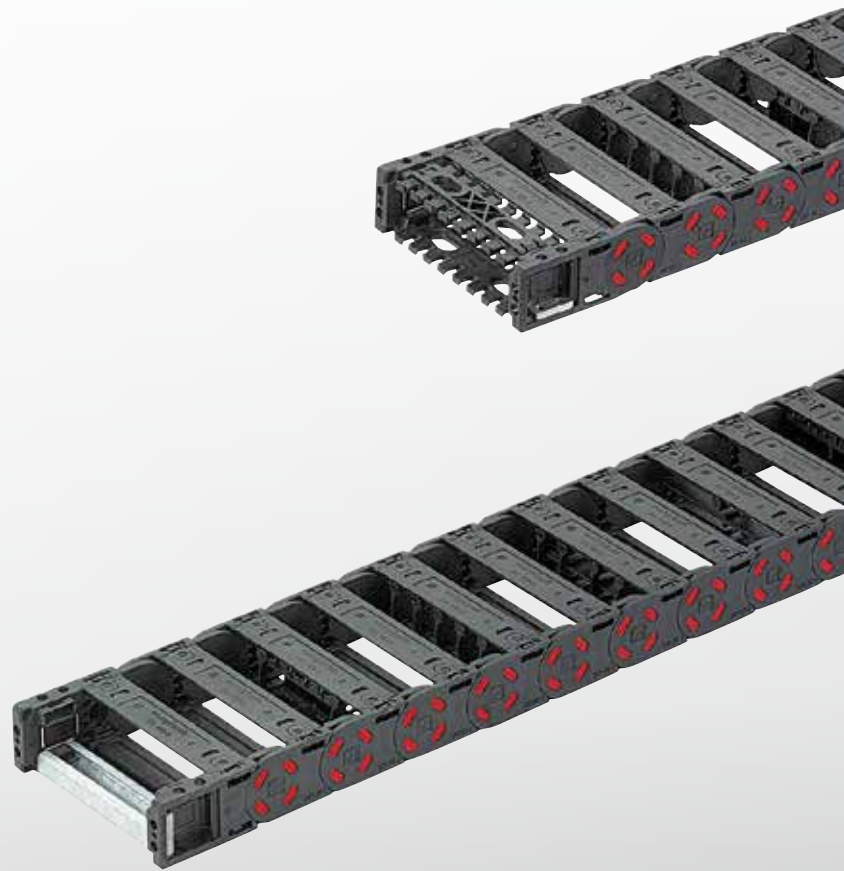
**Available radii**  
50.0 – 300.0 mm



**Available interior widths**  
With plastic crossbar  
40.0 – 200.0 mm



**Pitch**  
T = 45.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	35.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 165
Travel distance vertical, hanging $L_{vh}$ max.	25.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	0.7 m
Speed, gliding $V_g$ max.	3.0 m/s
Speed, self-supporting $V_f$ max.	10.0 m/s
Acceleration, gliding $a_g$ max.	10.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	15.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

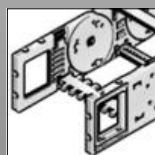


## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

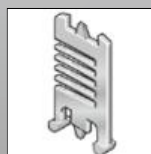
Other material properties on request.

### CHAIN BRACKET

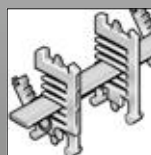


Chain bracket flexible

### SHELVING SYSTEM



Separator TR

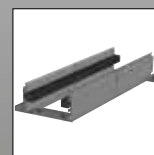


RS shelving system

### GUIDE CHANNELS

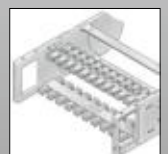


VAW steel galvanised / stainless steel



VAW aluminium

### STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length																																																																																												
0025 01	Crossbar on outside bend Crossbar on inside bend Opens on outside bend	040 [1.57]	056 [2.20]			050 <sup>1)</sup> [1.97]	0 Plastic, full-ridged with bias	0 Polyamide standard (PA/black)																																																																																													
		050 [1.97]	066 [2.60]							0025 02	Crossbar on outside bend Crossbar on inside bend Opens on inside bend	060 [2.36]	076 [2.99]			075 <sup>1)</sup> [2.95]	1 Plastic, full-ridged without bias	7 EMC (PA/light grey)		075 [2.95]	091 [3.58]			0025 03	Cover on outside bend Cover on inside bend Opens on outside bend	085 [3.35]	101 [3.98]			100 [3.94]		9 Special version (on request)		100 [3.94]	116 [4.57]			0025 04	Cover on outside bend Cover on inside bend Opens on inside bend	125 [4.92]	141 [5.55]			125 [4.92]				150 [5.91]	166 [6.54]			0025 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]								0025 06	Cover on outside bend Crossbar on inside bend Opens on inside bend					200 [7.87]								0025 07	Crossbar on outside bend Cover on inside bend Opens on outside bend					250 [9.84]								0025 08	Crossbar on outside bend Cover on inside bend Opens on inside bend					300 [11.81]	
0025 02	Crossbar on outside bend Crossbar on inside bend Opens on inside bend	060 [2.36]	076 [2.99]			075 <sup>1)</sup> [2.95]	1 Plastic, full-ridged without bias	7 EMC (PA/light grey)																																																																																													
		075 [2.95]	091 [3.58]							0025 03	Cover on outside bend Cover on inside bend Opens on outside bend	085 [3.35]	101 [3.98]			100 [3.94]		9 Special version (on request)		100 [3.94]	116 [4.57]			0025 04	Cover on outside bend Cover on inside bend Opens on inside bend	125 [4.92]	141 [5.55]			125 [4.92]				150 [5.91]	166 [6.54]			0025 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]								0025 06	Cover on outside bend Crossbar on inside bend Opens on inside bend					200 [7.87]								0025 07	Crossbar on outside bend Cover on inside bend Opens on outside bend					250 [9.84]								0025 08	Crossbar on outside bend Cover on inside bend Opens on inside bend					300 [11.81]															
0025 03	Cover on outside bend Cover on inside bend Opens on outside bend	085 [3.35]	101 [3.98]			100 [3.94]		9 Special version (on request)																																																																																													
		100 [3.94]	116 [4.57]							0025 04	Cover on outside bend Cover on inside bend Opens on inside bend	125 [4.92]	141 [5.55]			125 [4.92]				150 [5.91]	166 [6.54]			0025 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]								0025 06	Cover on outside bend Crossbar on inside bend Opens on inside bend					200 [7.87]								0025 07	Crossbar on outside bend Cover on inside bend Opens on outside bend					250 [9.84]								0025 08	Crossbar on outside bend Cover on inside bend Opens on inside bend					300 [11.81]																													
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		150 [5.91]	166 [6.54]							0025 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]								0025 06	Cover on outside bend Crossbar on inside bend Opens on inside bend					200 [7.87]								0025 07	Crossbar on outside bend Cover on inside bend Opens on outside bend					250 [9.84]								0025 08	Crossbar on outside bend Cover on inside bend Opens on inside bend					300 [11.81]																																											
0025 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]																																																																																															
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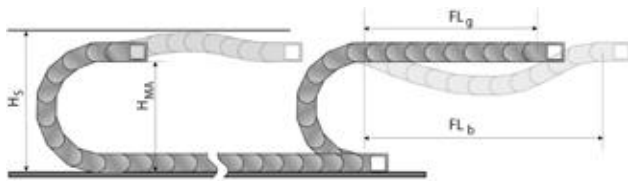


**ORDERING EXAMPLE: 0025 01 040 050 0 0 1125**

Crossbar on outside bend, crossbar on inside bend, can be opened from outside bend  
 Inside width 40 mm; radius 50 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1125 mm (25 links)

<sup>1)</sup> only for Version 01 and 02

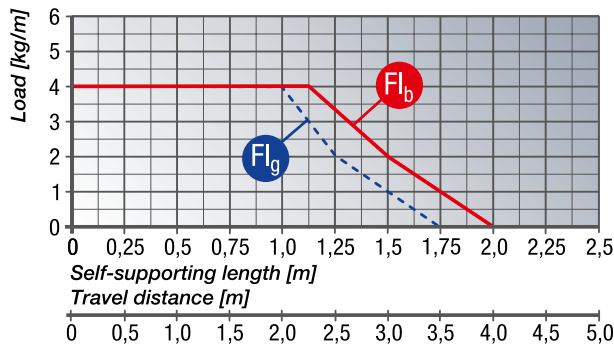
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

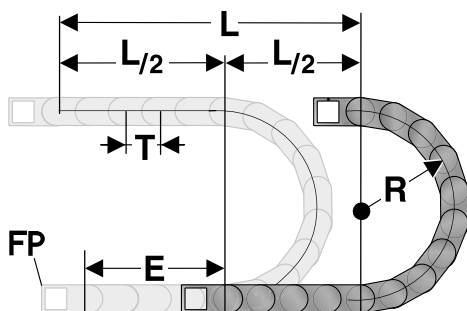
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain. Closed energy chains (with covers) have a higher unit weight than open chains (with crossbars). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 0.3 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**

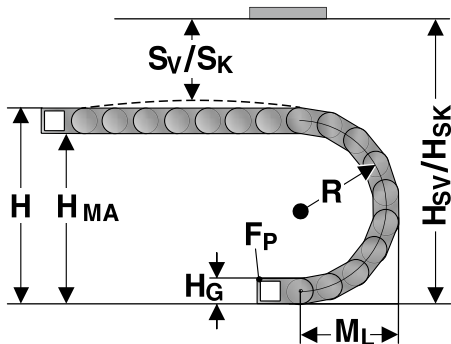


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 22 \text{ qty. } \times 45.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 45.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

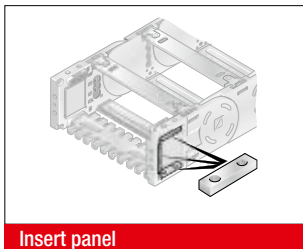
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.

If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	50	75	100	125	150	200	250	300
Outside height of chain link ( $H_G$ )	37	37	37	37	37	37	37	37
Height of bend (H)	157	207	257	307	357	457	557	657
Height of moving end bracket ( $H_{MA}$ )	120	170	220	270	320	420	520	620
Safety margin with bias ( $S_V$ )	38	38	38	38	38	38	38	38
Installation height with bias ( $H_{SV}$ )	195	245	295	345	395	495	595	695
Safety margin without bias ( $S_K$ )	18	18	18	18	18	18	18	18
Installation height without bias ( $H_{SK}$ )	175	225	275	325	375	475	575	675
Arc projection ( $M_L$ )	124	149	174	199	224	274	324	374

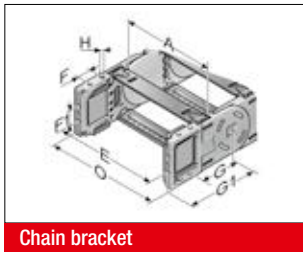
**EB 25/30 INSERT PANEL**



To fix the chain connection, the insert panels can be inserted above, below or on the side and are available with threads or through-holes.

Type	Order No.	Description	Holes mm	Thread
EB 25/30-FG V2A	030100005502	Insert panel with thread		M5x0,8
EB 25/30-FB V2A	030100005500	Insert panel with through-hole	5.5	

**KA 25 CHAIN BRACKET FLEXIBLE**



Chain bracket

This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M5 screws and insert panels are used to secure the brackets in place.

By default, the chain bracket is supplied with frame bridges.

The chain bracket can then be optionally fitted with frame bridge strain relief plates (RS-ZL) or with strain relief using C-rails and type STF bow clamps.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm
			A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA25	KA25ML	Plastic	40.0 – 200.0	A+9.0	12.0	12.0	42.5	70.0	M5	5.5	A+18.0

**Configurator chain bracketKA25**

Configurator for chain brackets:

Type KA	Inside width mm	Radius mm	RS-ZL No. Pieces	C-profile No. Pieces	No. of EB** Pieces
KA 25*	085	250	2	0	2

**Ordering example:**

- Type = KA 25 = Chain bracket flexible for MP 25
- Internal width = 085 mm
- Radius = 250 mm
- Crossbar-strain relief (RS-ZL) = 2 pieces
- C-rail = 0 pieces
- Insert panel (EB) = 2 pieces

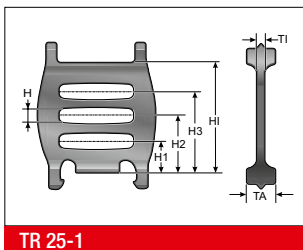
\* One set chain bracket is needed per chain, containing male and female end

\*\* Two insert panels (EB) are needed per connection element

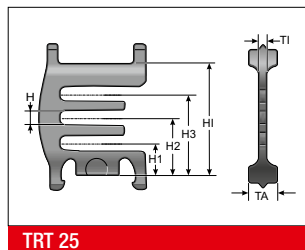
**Note:**

For an exact determination of the chain bracket, the inside width and radius are absolutely essential. Optional frame bridge strain relief (RS-ZL), C-profiles and insert panels (EB) can be selected.

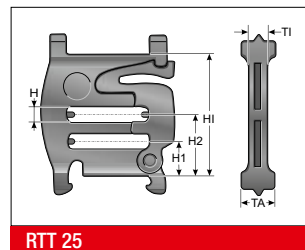
**MP 25 SEPARATOR / SHELVING SYSTEM**



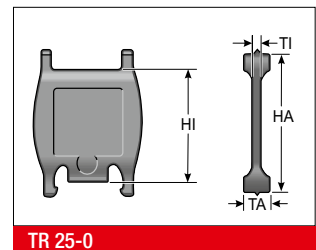
TR 25-1



TRT 25



RTT 25

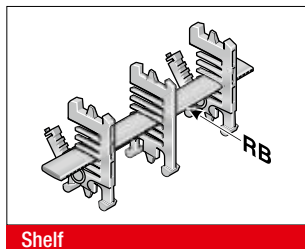


TR 25-0

We recommend that separators be used if multiple round cables

or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	T1 mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H1 mm
TR 25-0	025100009300	Separator, closed	lockable	2.2	8.0					25.0
TR 25-1	025100009400	Separator, open	lockable	2.2	8.0	3.3	7.0	12.5	18.0	25.0
TRT 25	025100009200	Separator, divisible	lockable	2.2	8.0	3.3	7.0	12.5	18.0	25.0
RTT 25	025100006500	Shelf support, divisible	lockable	4.5	8.0	3.3	7.0	12.5		25.0

**RB-3 SHELF**

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 039-3	030100003900	Shelf	38.6	40.0
RB 041-3	1000004103	Shelf	41.1	50.0
RB 044-3	1000004403	Shelf	43.6	50.0
RB 046-3	1000004603	Shelf	46.1	50.0
RB 049-3	030100004900	Shelf	48.6	50.0
RB 051-3	1000005103	Shelf	51.1	60.0
RB 054-3	1000005403	Shelf	53.6	60.0
RB 056-3	1000005603	Shelf	56.1	60.0
RB 059-3	030100005900	Shelf	58.6	60.0
RB 061-3	1000006103	Shelf	61.1	75.0
RB 064-3	1000006403	Shelf	63.6	75.0
RB 066-3	1000006603	Shelf	66.1	75.0
RB 069-3	1000006903	Shelf	68.6	75.0
RB 071-3	1000007103	Shelf	71.1	75.0
RB 074-3	030100007400	Shelf	73.6	75.0
RB 076-3	1000007603	Shelf	76.1	85.0
RB 079-3	1000007903	Shelf	78.6	85.0
RB 081-3	1000008103	Shelf	81.1	85.0
RB 084-3	030100008400	Shelf	83.6	85.0
RB 086-3	1000008603	Shelf	86.1	100.0
RB 089-3	1000008903	Shelf	88.6	100.0
RB 091-3	1000009103	Shelf	91.1	100.0
RB 094-3	1000009403	Shelf	93.6	100.0
RB 096-3	1000009603	Shelf	96.1	100.0
RB 099-3	030100009900	Shelf	98.6	100.0
RB 101-3	1000010103	Shelf	101.1	115.0
RB 104-3	1000010403	Shelf	103.6	115.0
RB 106-3	1000010603	Shelf	106.1	115.0
RB 109-3	1000010903	Shelf	108.6	115.0
RB 111-3	1000011103	Shelf	111.1	115.0
RB 114-3	030100011400	Shelf	113.6	115.0
RB 116-3	1000011603	Shelf	116.1	125.0
RB 119-3	1000011903	Shelf	118.6	125.0
RB 121-3	1000012103	Shelf	121.1	125.0
RB 124-3	030100012400	Shelf	123.6	125.0
RB 126-3	1000012603	Shelf	126.1	150.0
RB 129-3	1000012903	Shelf	128.6	150.0
RB 131-3	1000013103	Shelf	131.1	150.0
RB 134-3	1000013403	Shelf	133.6	150.0



**RB-3 SHELF**

Type	Order No.	Description	Width mm	Inside width mm
RB 136-3	1000013603	Shelf	136.1	150.0
RB 139-3	1000013903	Shelf	138.6	150.0
RB 141-3	1000014103	Shelf	141.1	150.0
RB 144-3	1000014403	Shelf	143.6	150.0
RB 146-3	1000014603	Shelf	146.1	150.0
RB 149-3	030100014900	Shelf	148.6	150.0
RB 151-3	1000015103	Shelf	151.1	175.0
RB 154-3	1000015403	Shelf	153.6	175.0
RB 156-3	1000015603	Shelf	156.1	175.0
RB 159-3	1000015903	Shelf	158.6	175.0
RB 161-3	1000016103	Shelf	161.1	175.0
RB 164-3	1000016403	Shelf	163.6	175.0
RB 166-3	1000016603	Shelf	166.1	175.0
RB 169-3	1000016903	Shelf	168.6	175.0
RB 174-3	030100017400	Shelf	173.6	175.0
RB 176-3	1000017603	Shelf	176.1	200.0
RB 179-3	1000017903	Shelf	178.6	200.0
RB 181-3	1000018103	Shelf	181.1	200.0
RB 184-3	1000018403	Shelf	183.6	200.0
RB 186-3	1000018603	Shelf	186.1	200.0
RB 189-3	1000018903	Shelf	188.6	200.0
RB 191-3	1000019103	Shelf	191.1	200.0
RB 194-3	1000019403	Shelf	193.6	200.0
RB 196-3	1000019603	Shelf	196.1	200.0
RB 199-3	030100019900	Shelf	198.6	200.0

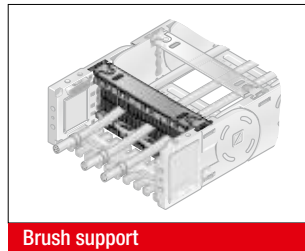
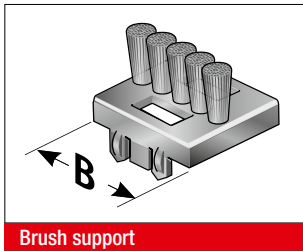
**RBD-3 SOLID SHELF FLOOR**



The shelf RBD creates a horizontal separation over the entire width of the chain link. When used together with the TRT 30 separator, an additional, vertical division can be realised.

Type	Order No.	Description	Width mm	Inside width mm
RBD 040-3	030100004001	Shelf, end-to-end	40.0	40.0
RBD 050-3	030100005001	Shelf, end-to-end	50.0	50.0
RBD 060-3	030100006001	Shelf, end-to-end	60.0	60.0
RBD 075-3	030100007501	Shelf, end-to-end	75.0	75.0
RBD 085-3	030100008501	Shelf, end-to-end	85.0	85.0
RBD 100-3	030100010001	Shelf, end-to-end	100.0	100.0

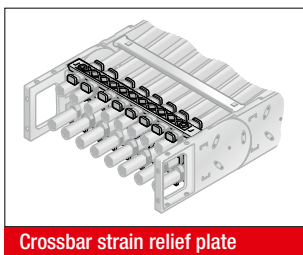
**MP 25 BRUSH SUPPORT**



The cables in the neutral strand are routed through the brush supports. This innovative solution was developed especially for applications where cables are subjected to higher levels of wear from cyclical movement.

Type	Order No.	Description	Version	Width mm
BT 20-25, completely	025100009702	Brush support	lockable	20.0
BT 25-25, completely	025100009802	Brush support	lockable	25.0

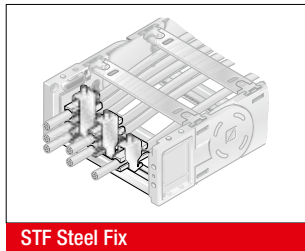
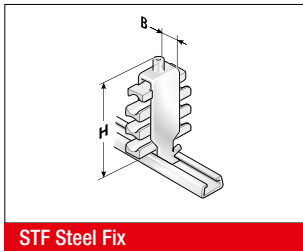
**RS-ZL-3 CROSSBAR STRAIN RELIEF PLATE**



Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 200 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 040-3	030104000010	Crossbar strain relief plate	40.0
RS-ZL 050-3	030105000010	Crossbar strain relief plate	50.0
RS-ZL 060-3	030106000010	Crossbar strain relief plate	60.0
RS-ZL 075-3	030107500010	Crossbar strain relief plate	75.0
RS-ZL 085-3	030108500010	Crossbar strain relief plate	85.0
RS-ZL 100-3	030110000010	Crossbar strain relief plate	100.0
RS-ZL 125-3	030112500010	Crossbar strain relief plate	125.0
RS-ZL 150-3	030115000010	Crossbar strain relief plate	150.0
RS-ZL 200-3	030120000010	Crossbar strain relief plate	200.0

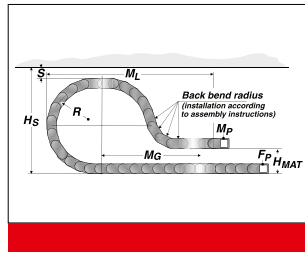
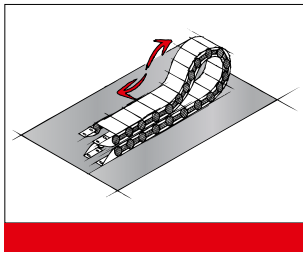
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 25 LOWERED FIXING POINT**



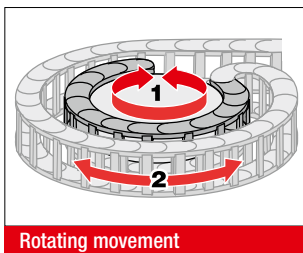
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
100.0	100.0	50.0	287.0	290.0	5	3
125.0	100.0	50.0	337.0	340.0	6	3
150.0	100.0	50.0	387.0	450.0	8	5
200.0	100.0	50.0	487.0	590.0	11	6
250.0	100.0	50.0	587.0	710.0	14	7
300.0	100.0	50.0	687.0	810.0	17	8

**MP 25.1/2 REARWARD RADII**



Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. The appropriate number of washer discs have to be placed into the side links to achieve the rearward radius.

Type	Order No.
AS 25 (RÜ075/R075) left	025100007560
AS 25 (RÜ075/R075) right	025100007562
AS 25 (RÜ100/R100) left	025100010060
AS 25 (RÜ100/R100) right	025100010062

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel

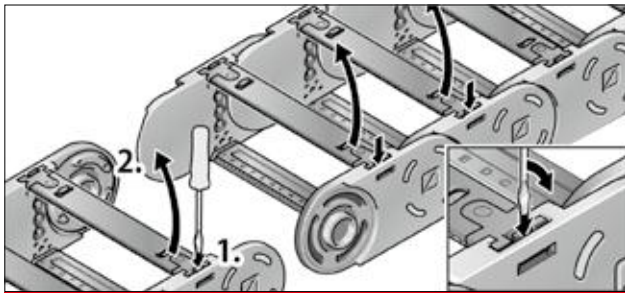


VAW aluminium

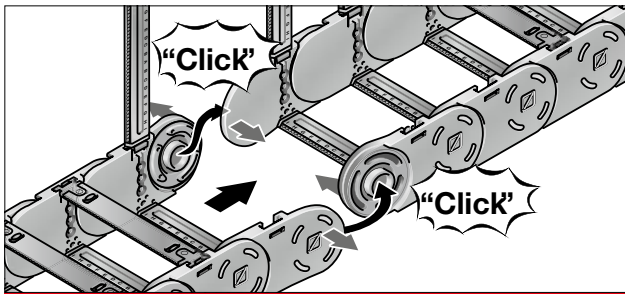
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

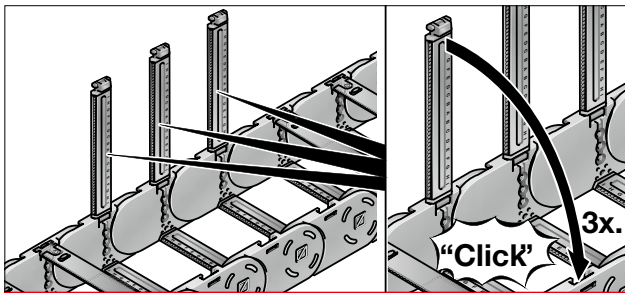
**ASSEMBLY**



Step 1

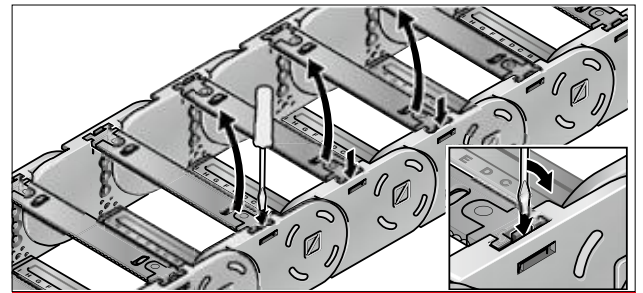


Step 2

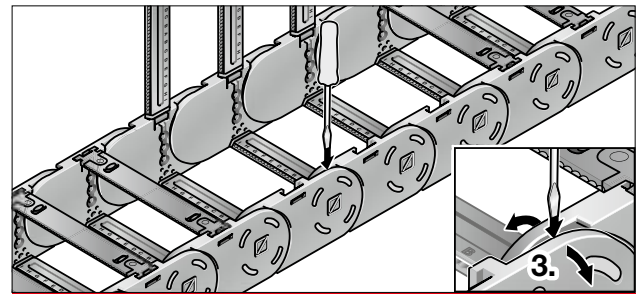


Step 3

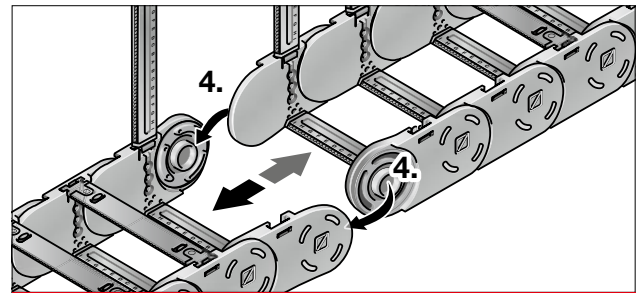
**DISASSEMBLY**



Step 1



Step 2

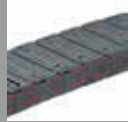


Step 3

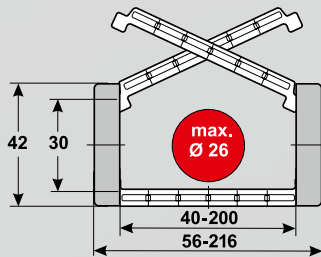
**MP 30.1/.2**  
OPEN



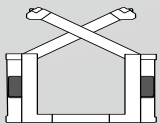
**MP 30.3/.4**  
CLOSED



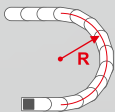
- BROAD INTERIOR LAYOUT
- BRUSH SUPPORT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- SUITABLE FOR UNIVERSAL USE



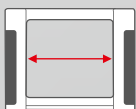
## TECHNICAL DATA



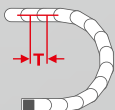
**Loading side**  
Inside or outside bend



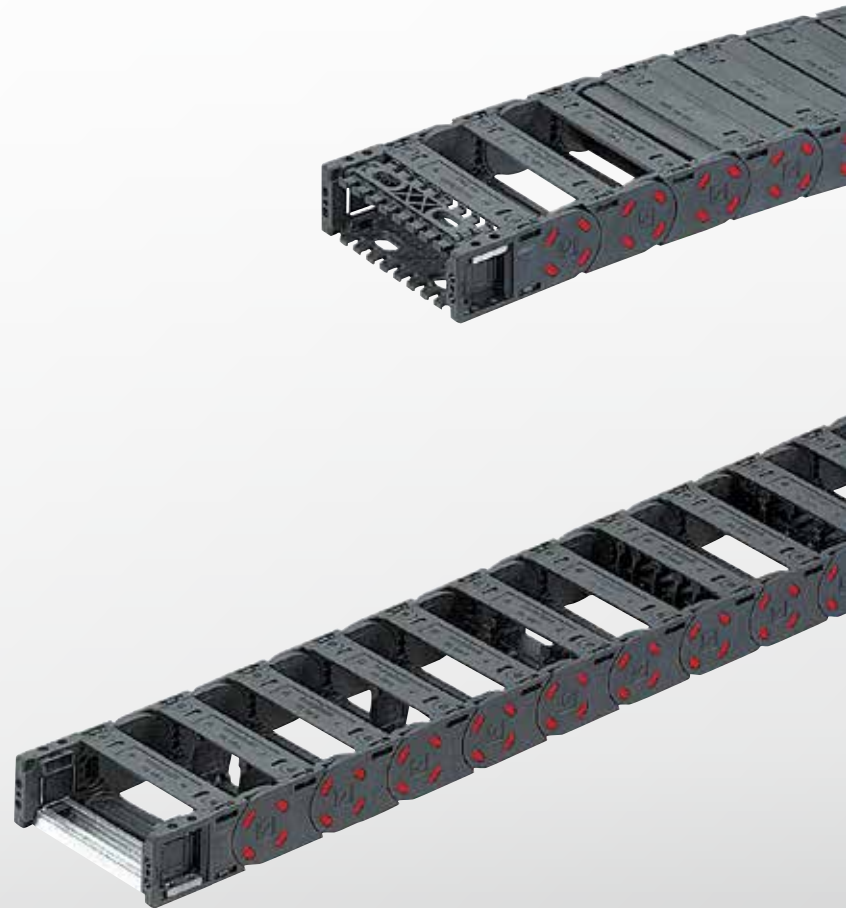
**Available radii**  
60.0 – 300.0 mm



**Available interior widths**  
With plastic crossbar  
40.0 – 200.0 mm



**Pitch**  
T = 50.0 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	40.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 177
Travel distance vertical, hanging $L_{vh}$ max.	30.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	0.7 m
Speed, gliding $V_g$ max.	3.0 m/s
Speed, self-supporting $V_f$ max.	10.0 m/s
Acceleration, gliding $a_g$ max.	10.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	15.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

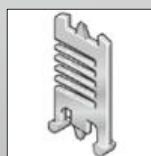


## MATERIAL PROPERTIES

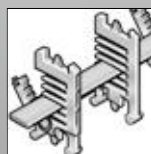
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

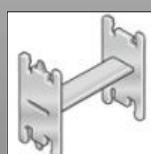
## SHELVING SYSTEM



Separator TR



RS shelving system

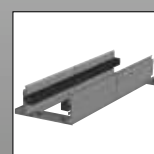


H-shaped shelf unit RE

## GUIDE CHANNELS

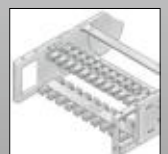


VAW steel galvanised / stainless steel

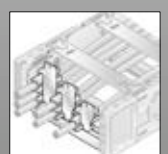


VAW aluminium

## STRAIN RELIEF

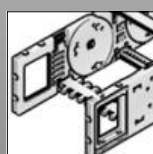


RS-ZL crossbar strain relief



STF Steel Fix

## CHAIN BRACKET

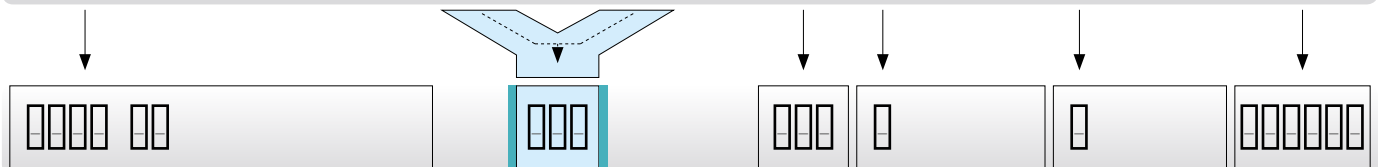


Chain bracket flexible

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length																																																																																
0030 01	Crossbar on outside bend Crossbar on inside bend Opens on outside bend	040 [1.57]	056 [2.20]			060 <sup>1)</sup> [2.36]	0 Plastic, full-ridged with bias	0 Polyamide standard (PA/black)																																																																																	
		050 [1.97]	066 [2.60]							0030 02	Crossbar on outside bend Crossbar on inside bend Opens on inside bend	060 [2.36]	076 [2.99]			075 <sup>1)</sup> [2.95]	1 Plastic, full-ridged without bias	7 EMC (PA/light grey)		075 [2.95]	091 [3.58]			0030 03	Cover on outside bend Cover on inside bend Opens on outside bend	085 [3.35]	101 [3.98]			100 [3.94]		9 Special version (on request)		100 [3.94]	116 [4.57]			0030 04	Cover on outside bend Cover on inside bend Opens on inside bend	125 [4.92]	141 [5.55]			125 [4.92]				150 [5.91]	166 [6.54]			0030 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]								0030 06	Cover on outside bend Crossbar on inside bend Opens on inside bend					200 [7.87]				0030 07	Crossbar on outside bend Cover on inside bend Opens on outside bend					250 [9.84]				0030 08	Crossbar on outside bend Cover on inside bend Opens on inside bend		
0030 02	Crossbar on outside bend Crossbar on inside bend Opens on inside bend	060 [2.36]	076 [2.99]			075 <sup>1)</sup> [2.95]	1 Plastic, full-ridged without bias	7 EMC (PA/light grey)																																																																																	
		075 [2.95]	091 [3.58]							0030 03	Cover on outside bend Cover on inside bend Opens on outside bend	085 [3.35]	101 [3.98]			100 [3.94]		9 Special version (on request)		100 [3.94]	116 [4.57]			0030 04	Cover on outside bend Cover on inside bend Opens on inside bend	125 [4.92]	141 [5.55]			125 [4.92]				150 [5.91]	166 [6.54]			0030 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]								0030 06	Cover on outside bend Crossbar on inside bend Opens on inside bend					200 [7.87]				0030 07	Crossbar on outside bend Cover on inside bend Opens on outside bend					250 [9.84]				0030 08	Crossbar on outside bend Cover on inside bend Opens on inside bend					300 [11.81]											
0030 03	Cover on outside bend Cover on inside bend Opens on outside bend	085 [3.35]	101 [3.98]			100 [3.94]		9 Special version (on request)																																																																																	
		100 [3.94]	116 [4.57]							0030 04	Cover on outside bend Cover on inside bend Opens on inside bend	125 [4.92]	141 [5.55]			125 [4.92]				150 [5.91]	166 [6.54]			0030 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]								0030 06	Cover on outside bend Crossbar on inside bend Opens on inside bend					200 [7.87]				0030 07	Crossbar on outside bend Cover on inside bend Opens on outside bend					250 [9.84]				0030 08	Crossbar on outside bend Cover on inside bend Opens on inside bend					300 [11.81]																									
0030 04	Cover on outside bend Cover on inside bend Opens on inside bend	125 [4.92]	141 [5.55]			125 [4.92]																																																																																			
		150 [5.91]	166 [6.54]							0030 05	Cover on outside bend Crossbar on inside bend Opens on outside bend	200 [7.87]	216 [8.50]			150 [5.91]								0030 06	Cover on outside bend Crossbar on inside bend Opens on inside bend					200 [7.87]				0030 07	Crossbar on outside bend Cover on inside bend Opens on outside bend					250 [9.84]				0030 08	Crossbar on outside bend Cover on inside bend Opens on inside bend					300 [11.81]																																							
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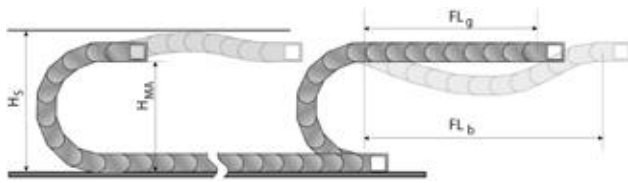
**ORDERING EXAMPLE: 0030 01 040 060 0 0 1250**

Crossbar on outside bend, crossbar on inside bend, can be opened from outside bend  
 Inside width 40 mm; radius 60 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1250 mm (25 links)

<sup>1)</sup> only for Version 01 and 02



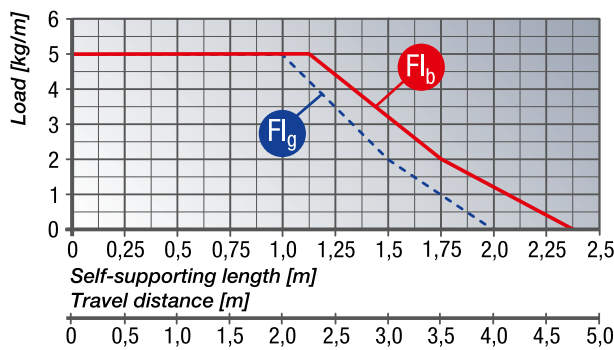
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

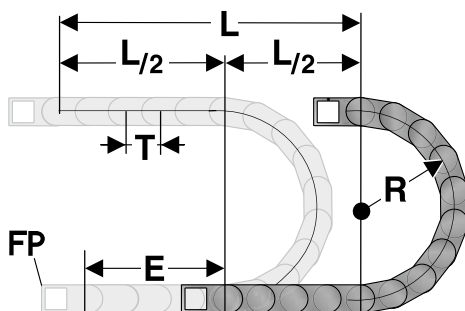
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain. Closed energy chains (with covers) have a higher unit weight than open chains (with crossbars). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 0.3 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**

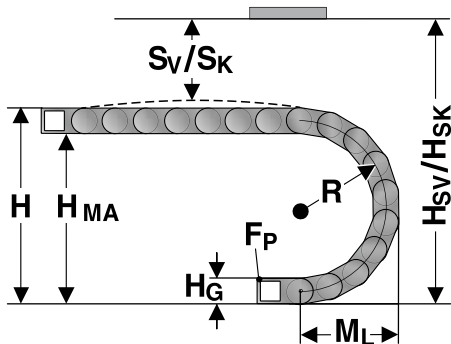


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 20 \text{ qty. } \times 50.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 50.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

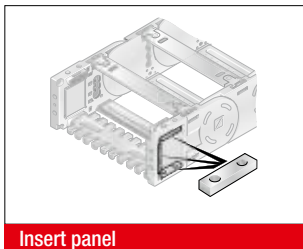
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.

If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	60	75	100	125	150	200	250	300
Outside height of chain link ( $H_G$ )	42	42	42	42	42	42	42	42
Height of bend (H)	182	212	262	312	362	462	562	662
Height of moving end bracket ( $H_{MA}$ )	140	170	220	270	320	420	520	620
Safety margin with bias ( $S_V$ )	38	38	38	38	38	38	38	38
Installation height with bias ( $H_{SV}$ )	220	250	300	350	400	500	600	700
Safety margin without bias ( $S_K$ )	18	18	18	18	18	18	18	18
Installation height without bias ( $H_{SK}$ )	200	230	280	330	380	480	580	680
Arc projection ( $M_L$ )	141	156	181	206	231	281	331	381

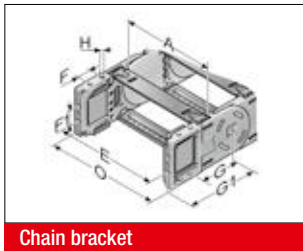
**EB 25/30 INSERT PANEL**



To fix the chain connection, the insert panels can be inserted above, below or on the side and are available with threads or through-holes.

Type	Order No.	Description	Holes mm	Thread
EB 25/30-FG V2A	030100005502	Insert panel with thread		M5x0,8
EB 25/30-FB V2A	030100005500	Insert panel with through-hole	5.5	

**KA 30 CHAIN BRACKET FLEXIBLE**



Chain bracket

This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M5 screws and insert panels are used to secure the brackets in place.

By default, the chain bracket is supplied with frame bridges.

The chain bracket can then be optionally fitted with frame bridge strain relief plates (RS-ZL) or with strain relief using C-rails and type STF bow clamps.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm
			A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA30	KA30ML	Plastic	40.0 – 200.0	A+9.0	12.0	12.0	45.0	72.0	M5	5.5	A+18.0

**Configurator chain bracket KA 30**

Configurator for chain brackets:

Type KA	Inside width mm	Radius mm	RS-ZL number of Pieces	C-profile number of Pieces	No. of EB** Pieces
KA 30*	085	250	2	0	2

**Ordering example:**

- Type = KA 30 = Chain bracket flexible for MP 30
- Internal width = 085 mm
- Radius = 250 mm
- Crossbar-strain relief (RS-ZL) = 2 pieces
- C-rail = 0 pieces
- Insert panel (EB) = 2 pieces

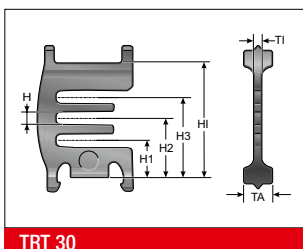
\* One set chain bracket is needed per chain, containing male and female end

\*\* Two insert panels (EB) are needed per connection element

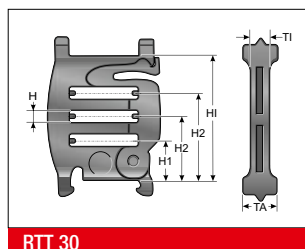
**Note:**

For an exact determination of the chain bracket, the inside width and radius are absolutely essential. Optional frame bridge strain relief (RS-ZL), C-profiles and insert panels (EB) can be selected.

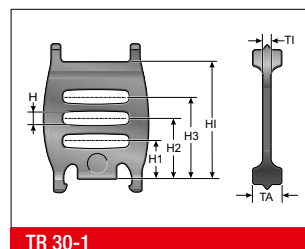
**MP 30 SEPARATOR / SHELVING SYSTEM**



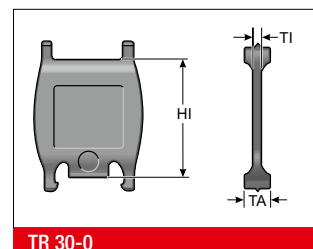
TRT 30



RTT 30



TR 30-1

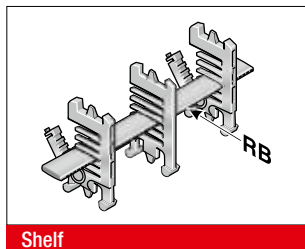


TR 30-0

We recommend that separators be used if multiple round cables

or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	T1 mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 30-0	030100009300	Separator, closed	lockable	2.2	8.0					30.0
TR 30-1	030100009400	Separator, open	lockable	2.2	8.0	3.3	9.5	15.0	20.5	30.0
TRT 30	030100009200	Separator, divisible	lockable	2.2	8.0	3.3	9.5	15.0	20.5	30.0
RTT 30	030100006500	Shelf support, divisible	lockable	4.5	8.0	3.3	9.5	15.0	20.5	30.0

**RB-3 SHELF**

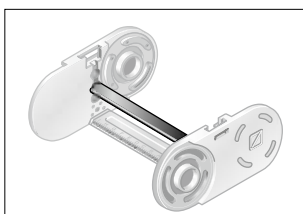
In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 039-3	030100003900	Shelf	38.6	40.0
RB 041-3	1000004103	Shelf	41.1	50.0
RB 044-3	1000004403	Shelf	43.6	50.0
RB 046-3	1000004603	Shelf	46.1	50.0
RB 049-3	030100004900	Shelf	48.6	50.0
RB 051-3	1000005103	Shelf	51.1	60.0
RB 054-3	1000005403	Shelf	53.6	60.0
RB 056-3	1000005603	Shelf	56.1	60.0
RB 059-3	030100005900	Shelf	58.6	60.0
RB 061-3	1000006103	Shelf	61.1	75.0
RB 064-3	1000006403	Shelf	63.6	75.0
RB 066-3	1000006603	Shelf	66.1	75.0
RB 069-3	1000006903	Shelf	68.6	75.0
RB 071-3	1000007103	Shelf	71.1	75.0
RB 074-3	030100007400	Shelf	73.6	75.0
RB 076-3	1000007603	Shelf	76.1	85.0
RB 079-3	1000007903	Shelf	78.6	85.0
RB 081-3	1000008103	Shelf	81.1	85.0
RB 084-3	030100008400	Shelf	83.6	85.0
RB 086-3	1000008603	Shelf	86.1	100.0
RB 089-3	1000008903	Shelf	88.6	100.0
RB 091-3	1000009103	Shelf	91.1	100.0
RB 094-3	1000009403	Shelf	93.6	100.0
RB 096-3	1000009603	Shelf	96.1	100.0
RB 099-3	030100009900	Shelf	98.6	100.0
RB 101-3	1000010103	Shelf	101.1	115.0
RB 104-3	1000010403	Shelf	103.6	115.0
RB 106-3	1000010603	Shelf	106.1	115.0
RB 109-3	1000010903	Shelf	108.6	115.0
RB 111-3	1000011103	Shelf	111.1	115.0
RB 114-3	030100011400	Shelf	113.6	115.0
RB 116-3	1000011603	Shelf	116.1	125.0
RB 119-3	1000011903	Shelf	118.6	125.0
RB 121-3	1000012103	Shelf	121.1	125.0
RB 124-3	030100012400	Shelf	123.6	125.0
RB 126-3	1000012603	Shelf	126.1	150.0
RB 129-3	1000012903	Shelf	128.6	150.0

**RB-3 SHELF**

Type	Order No.	Description	Width mm	Inside width mm
RB 131-3	1000013103	Shelf	131.1	150.0
RB 134-3	1000013403	Shelf	133.6	150.0
RB 136-3	1000013603	Shelf	136.1	150.0
RB 139-3	1000013903	Shelf	138.6	150.0
RB 141-3	1000014103	Shelf	141.1	150.0
RB 144-3	1000014403	Shelf	143.6	150.0
RB 146-3	1000014603	Shelf	146.1	150.0
RB 149-3	030100014900	Shelf	148.6	150.0
RB 151-3	1000015103	Shelf	151.1	175.0
RB 154-3	1000015403	Shelf	153.6	175.0
RB 156-3	1000015603	Shelf	156.1	175.0
RB 159-3	1000015903	Shelf	158.6	175.0
RB 161-3	1000016103	Shelf	161.1	175.0
RB 164-3	1000016403	Shelf	163.6	175.0
RB 166-3	1000016603	Shelf	166.1	175.0
RB 169-3	1000016903	Shelf	168.6	175.0
RB 174-3	030100017400	Shelf	173.6	175.0
RB 176-3	1000017603	Shelf	176.1	200.0
RB 179-3	1000017903	Shelf	178.6	200.0
RB 181-3	1000018103	Shelf	181.1	200.0
RB 184-3	1000018403	Shelf	183.6	200.0
RB 186-3	1000018603	Shelf	186.1	200.0
RB 189-3	1000018903	Shelf	188.6	200.0
RB 191-3	1000019103	Shelf	191.1	200.0
RB 194-3	1000019403	Shelf	193.6	200.0
RB 196-3	1000019603	Shelf	196.1	200.0
RB 199-3	030100019900	Shelf	198.6	200.0

**RBD-3 SOLID SHELF FLOOR**

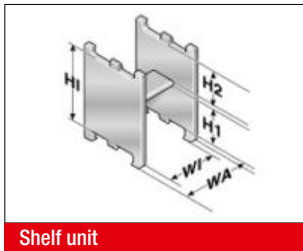


Shelf, end-to-end RBD

The shelf RBD creates a horizontal separation over the entire width of the chain link. When used together with the TRT 30 separator, an additional, vertical division can be realised.

Type	Order No.	Description	Width mm	Inside width mm
RBD 040-3	030100004001	Shelf, end-to-end	40.0	40.0
RBD 050-3	030100005001	Shelf, end-to-end	50.0	50.0
RBD 060-3	030100006001	Shelf, end-to-end	60.0	60.0
RBD 075-3	030100007501	Shelf, end-to-end	75.0	75.0
RBD 085-3	030100008501	Shelf, end-to-end	85.0	85.0
RBD 100-3	030100010001	Shelf, end-to-end	100.0	100.0

### RE 30 H-SHAPED SHELF UNIT

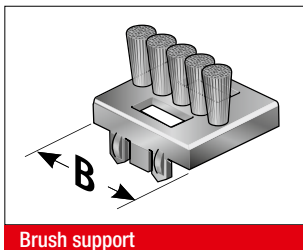


Shelf unit

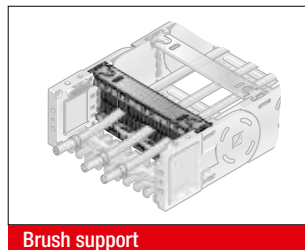
One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 30/15	100000301510	H-shaped shelf unit	20.0	15.0	15.8	11.8	29.7
RE 30/32 K5	100000303210	H-shaped shelf unit	37.4	32.6	15.8	11.8	29.7

### MP 30 BRUSH SUPPORT



Brush support

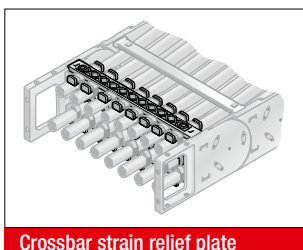


Brush support

The cables in the neutral strand are routed through the brush supports. This innovative solution was developed especially for applications where cables are subjected to higher levels of wear from cyclical movement.

Type	Order No.	Description	Width mm
BT 20-30, completely	030100009702	Brush support	20.0
BT 25-30, completely	030100009802	Brush support	25.0

### RS-ZL-3 CROSSBAR STRAIN RELIEF PLATE

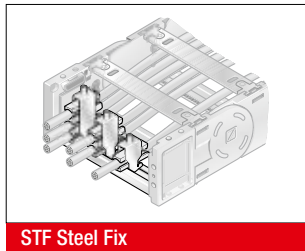
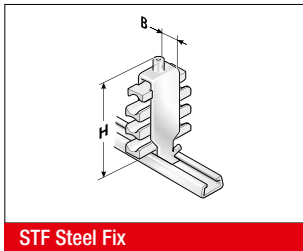


Crossbar strain relief plate

Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 200 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 040-3	030104000010	Crossbar strain relief plate	40.0
RS-ZL 050-3	030105000010	Crossbar strain relief plate	50.0
RS-ZL 060-3	030106000010	Crossbar strain relief plate	60.0
RS-ZL 075-3	030107500010	Crossbar strain relief plate	75.0
RS-ZL 085-3	030108500010	Crossbar strain relief plate	85.0
RS-ZL 100-3	030110000010	Crossbar strain relief plate	100.0
RS-ZL 125-3	030112500010	Crossbar strain relief plate	125.0
RS-ZL 150-3	030115000010	Crossbar strain relief plate	150.0
RS-ZL 200-3	030120000010	Crossbar strain relief plate	200.0

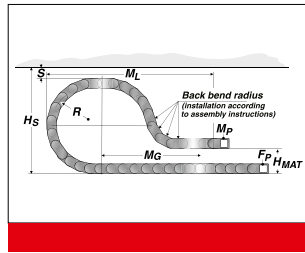
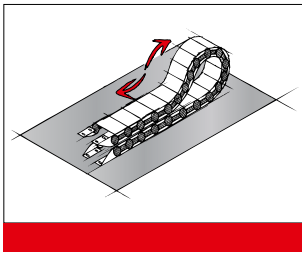
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**LOWERED FIXING POINT MP 30**



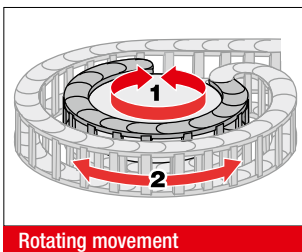
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>s</sub> ) mm	Projection (M <sub>1</sub> ) mm	Additional links qty.	of which additional back chain links qty.
100.0	100.0	50.0	292.0	300.0	4	3
125.0	100.0	50.0	342.0	345.0	5	3
150.0	100.0	50.0	392.0	470.0	8	5
200.0	100.0	50.0	492.0	605.0	10	6
250.0	100.0	50.0	592.0	680.0	12	7
300.0	100.0	50.0	692.0	805.0	15	7

**MP 30.1/2 REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. The appropriate number of washer discs have to be placed into the side links to achieve the rearward radius.

Type	Order No.
AS 30 (RÜ100/R100) left	030100010060
AS 30 (RÜ100/R100) right	030100010062
AS 30 (RÜ150/R150) left	030100015060
AS 30 (RÜ150/R150) right	030100015062

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel



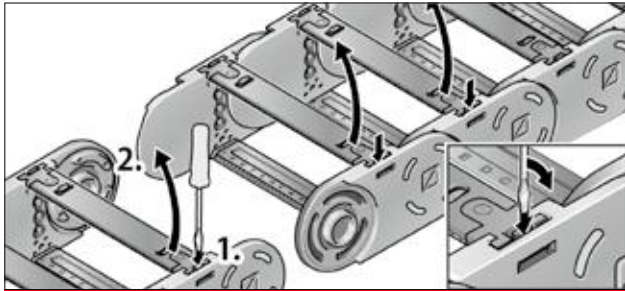
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

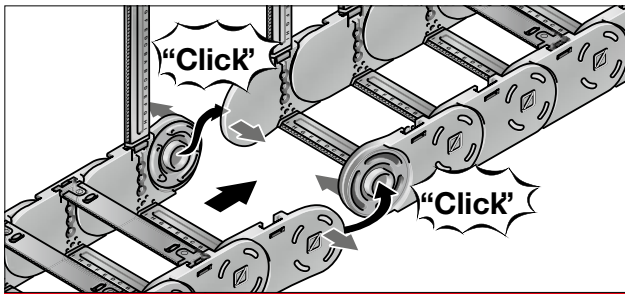
The variable guide channel ensures that the energy chain is supported and guided securely.



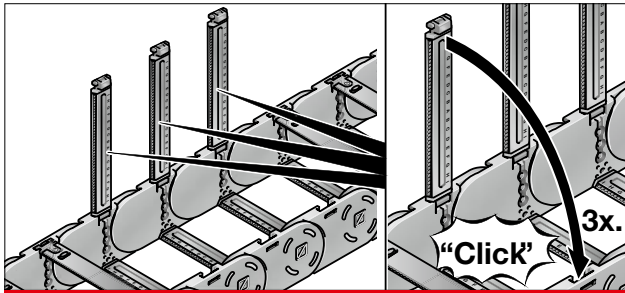
**ASSEMBLY**



Step 1

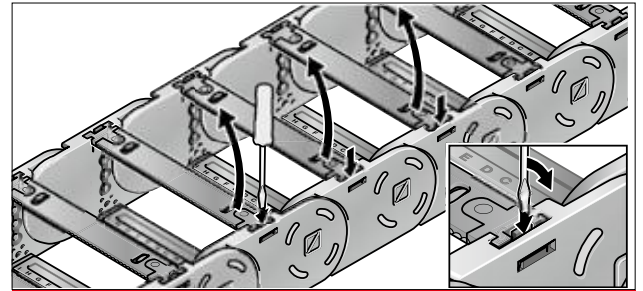


Step 2

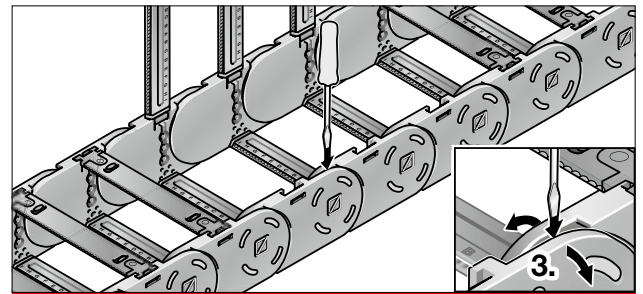


Step 3

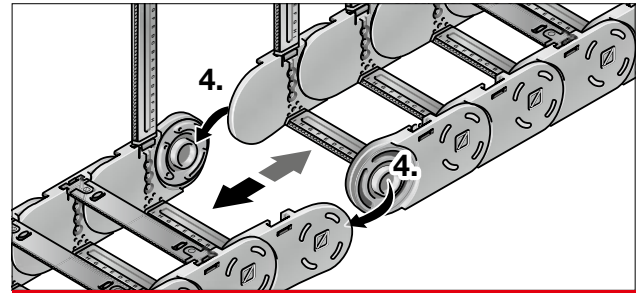
**DISASSEMBLY**



Step 1



Step 2



Step 3

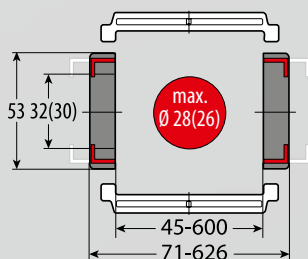
**MP 32.2**  
OPEN



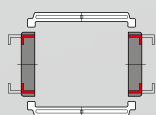
**MP 32.3**  
CLOSED



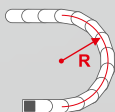
- SLIDING BLOCKS FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- CHAIN BRACKET FLEXIBLE
- PLASTIC OR ALUMINIUM VERSION



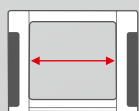
## TECHNICAL DATA



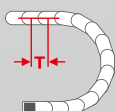
**Loading side**  
Inside and outside bend



**Available radii**  
80.0 – 250.0 mm



**Available interior widths**  
With plastic crossbar  
45.0 – 546.0 mm  
With alu crossbar / with alu cover  
67.0 – 600.0 mm / 43.0 – 600.0 mm



**Pitch**  
T = 64.5 mm



## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	100.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 189
Travel distance vertical, hanging $L_{vh}$ max.	40.0 m
Travel distance vertical, upright $L_{vs}$ max.	5.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	30.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)



## MATERIAL PROPERTIES

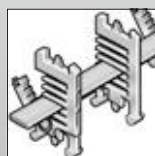
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

### SHELVING SYSTEM



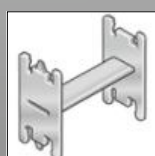
Separator TR



RS shelving system



Crossbar connector RSV



H-shaped shelf unit RE

### ACCESSORIES



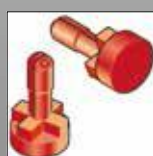
Sliding block



Bracket bar



Cover

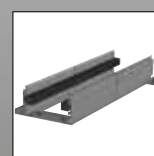


Lock button

### GUIDE CHANNELS



VAW steel galvanised / stainless steel



VAW aluminium

### STRAIN RELIEF

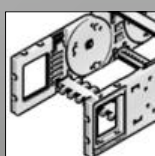


RS-ZL crossbar strain relief



STF Steel Fix

### CHAIN BRACKET



Chain bracket flexible

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0322 30</b>	MP 32.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>045<sup>1)</sup></b> [1.77]	<b>071</b> [2.80]	<b>233</b> [9.17]	<b>259</b> [10.20]	<b>080<sup>1)</sup></b> [3.15]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>057<sup>1)</sup></b> [2.24]	<b>083</b> [3.27]	<b>246</b> [9.69]	<b>272</b> [10.71]				
<b>0323 44<sup>2)</sup></b>	MP 32.3 Closed Cover on outside bend Cover on inside bend Opens on inside and outside bend	<b>062</b> [2.44]	<b>088</b> [3.46]	<b>252</b> [9.92]	<b>278</b> [10.94]	<b>100<sup>1)</sup></b> [3.94]	<b>2</b> Plastic, half-ridged with bias	<b>5</b> Polypropylene (PP/blue)	
		<b>071</b> [2.80]	<b>097</b> [3.82]	<b>258</b> [10.16]	<b>284</b> [11.18]				
		<b>084</b> [3.31]	<b>110</b> [4.33]	<b>296</b> [11.65]	<b>322</b> [12.68]	<b>120</b> [4.72]	<b>4</b> Aluminium full-ridged with bias	<b>7</b> EMC (PA/light grey)	
		<b>093</b> [3.66]	<b>119</b> [4.69]	<b>346</b> [13.62]	<b>372</b> [14.65]				
		<b>096</b> [3.78]	<b>122</b> [4.80]	<b>350</b> [13.78]	<b>376</b> [14.80]	<b>150</b> [5.91]	<b>6</b> Aluminium half-ridged with bias	<b>9</b> Special version (on request)	
		<b>104</b> [4.09]	<b>130</b> [5.12]	<b>358</b> [14.09]	<b>384</b> [15.12]				
		<b>107</b> [4.21]	<b>133</b> [5.24]	<b>371</b> [14.61]	<b>397</b> [15.63]	<b>200</b> [7.87]	<b>9</b> Special version (on request)		
		<b>121</b> [4.76]	<b>147</b> [5.79]	<b>396</b> [15.59]	<b>422</b> [16.61]				
		<b>133</b> [5.24]	<b>159</b> [6.26]	<b>421</b> [16.57]	<b>447</b> [17.60]	<b>250</b> [9.84]			
		<b>144</b> [5.67]	<b>170</b> [6.69]	<b>446</b> [17.56]	<b>472</b> [18.58]				
		<b>146</b> [5.75]	<b>172</b> [6.77]	<b>496</b> [19.53]	<b>522</b> [20.55]				
		<b>158</b> [6.22]	<b>184</b> [7.24]	<b>546</b> [21.50]	<b>572</b> [22.52]				
		<b>164</b> [6.46]	<b>190</b> [7.48]						
		<b>171</b> [6.73]	<b>197</b> [7.76]						
		<b>182</b> [7.17]	<b>208</b> [8.19]						
		<b>196</b> [7.72]	<b>222</b> [8.74]						
		<b>208</b> [8.19]	<b>234</b> [9.21]						
		<b>220</b> [8.66]	<b>246</b> [9.69]						



**ORDERING EXAMPLE: 0322 30 045 080 0 0 1290**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 045 mm; radius 80 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1290 mm (20 links)

<sup>1)</sup> for Variant 30 only

<sup>2)</sup> reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm .

**Aluminium covers:**

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 43.0 mm – 600.0 mm .

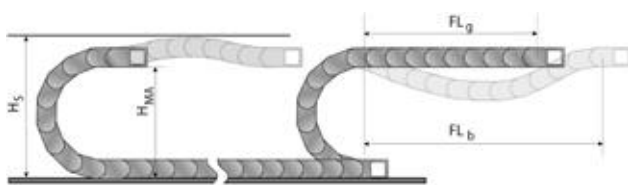
**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminium.

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

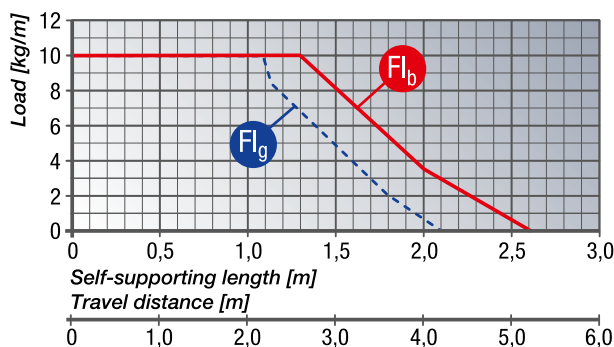
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



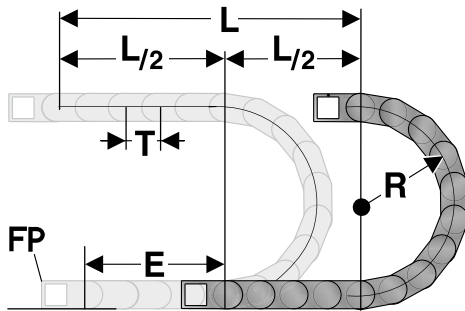
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain. Closed energy chains (with covers) have a higher unit weight than open chains (with crossbars). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 1.5 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**

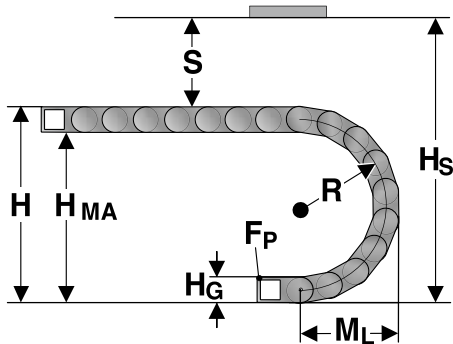


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 16 \text{ qty. } \times 64.5 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 64.5 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius. For the installed dimension the "Installed height  $H_s$ " value has to be taken into account.

Radius R	80	100	120	150	200	250
Outside height of chain link ( $H_o$ )	53	53	53	53	53	53
Height of bend (H)	233	273	313	373	473	573
Height of moving end bracket ( $H_{MA}$ )	180	220	260	320	420	520
Safety margin (S)	30	30	30	30	30	30
Installation height ( $H_s$ )	263	303	343	403	503	603
Arc projection ( $M_L$ )	181	201	221	251	301	351

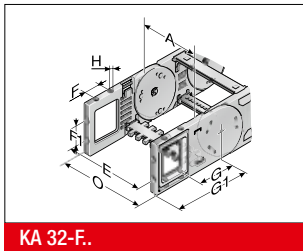
## POWERLINE PLASTIC CROSSBAR



The crossbars connect the two side runs of the energy chain.  
The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

**KA 32 CHAIN BRACKET FLEXIBLE**

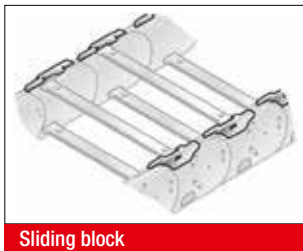


KA 32-F.

This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M5 bolts are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 32-FB	0321000054	Plastic	with bush	45.0 – 546.0	A+14.0	22.5	22.0	57.8	95.5	95.5	5.5	A+28.0
KA 32-FG	0321000055	Plastic	with thread	45.0 – 546.0	A+14.0	22.5	22.0	57.8	95.5	M5		A+28.0

**MP 32.2 SLIDING BLOCK**

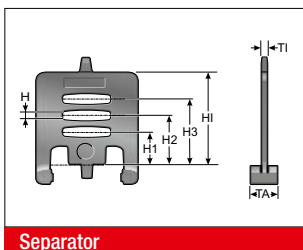


Sliding block

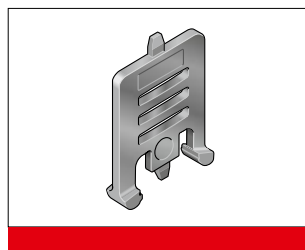
In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Min. radius mm	Sliding block height mm
GS 32.2	032290400300	120.0	4.0

**TR 32 SEPARATOR**



Separator

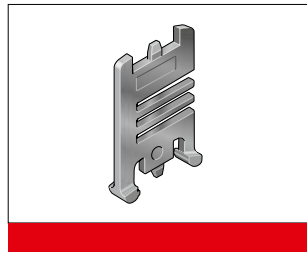
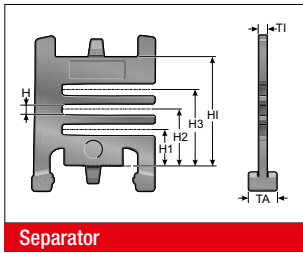


We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	T1 mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm
TR 32	032000009200	Separator	lockable	3.0	10.0	4.2	10.4	16.2	22.0	32.0



**TR 32.1 SEPARATOR**

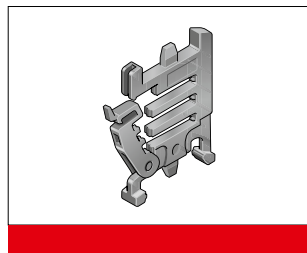
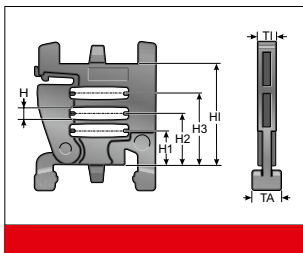


We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Separator

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 32.1	032200009200	Separator	lockable	3.5	8.0	4.0	10.5	16.5	22.5	32.0

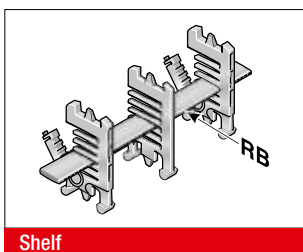
**RTT 32 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
RTT 32	100090322000	Shelf support, divisible	lockable	7.0	8.0	4.0	10.5	16.5	22.5	32.0

**RB-5 SHELF**



Shelf

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	100000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0

**RB-5 SHELF**

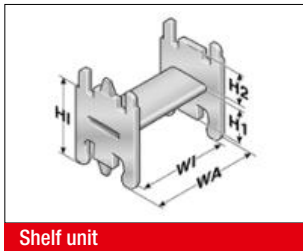
Type	Order No.	Description	Width mm	Inside width mm
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0

**RSV 32 CROSSBAR CONNECTOR**

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	TI mm
RSV 32	032000009600	Crossbar connector	7.5
RSV 32 Alu	032000009800	Crossbar connector for aluminium crossbars	7.5

**RE 32 H-SHAPED SHELF UNIT**



One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 32/35	100000322010	H-shaped shelf unit	43.2	35.2	14.2	14.2	32.4
RE 32/52	100000323510	H-shaped shelf unit	60.0	52.0	14.2	14.2	32.4
RE 32/75	100000327510	H-shaped shelf unit	82.4	74.4	16.4	12.0	32.4

**BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

**D3 CHAIN BRACKET COVER**



Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order No.
Cover D3 KA 32.1-FB/FG	0323888002

**MP 32.3 CHAIN BRACKET CANOPY**



Canopy

Constructed from aluminium, the canopies for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

**Canopy for chain bracket fixed point outside bend: Type and order number configurator**



Type:	KA 32.1 FB/FG AB	Inside width	2-2
Order No.:	0321	Inside width	060

**Canopy for chain bracket fixed point inside bend: Type and order number configurator**



Type:	KA 32.1 FB/FG IB	Inside width	2-2
Order No.:	0321	Inside width	058

**Canopy for chain bracket moving end outside bend: Type and order number configurator**



Type:	KA 32.1 FB/FG AB	Inside width	1-2
Order No.:	0321	Inside width	059

**Canopy for chain bracket moving end inside bend: Type and order number configurator**



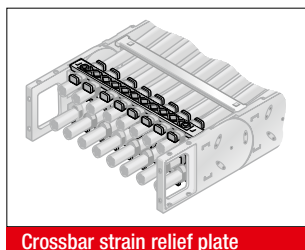
Type:	KA 32.1 FB/FG IB	Inside width	1-2
Order No.:	0321	Inside width	057

**Ordering example:**

0321096058 KA 32.1 FB/FG IB 096 2-2

Chain bracket canopy at fixing point in inside bend, for inside width of 96 mm.

**RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**



Crossbar strain relief plate

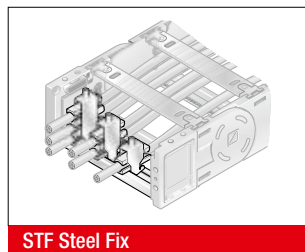
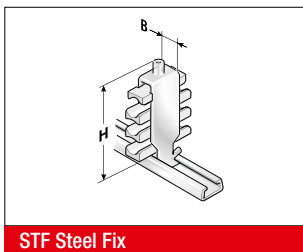
Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0

**RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**

Type	Order No.	Description	Inside width mm
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

**STRAIN RELIEF WITH STEEL FIX**



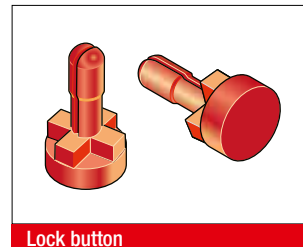
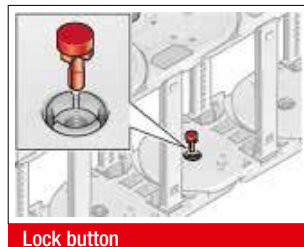
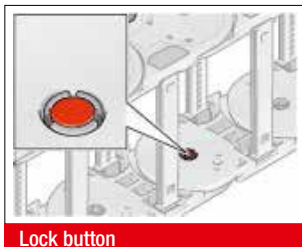
C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0

**STRAIN RELIEF WITH STEEL FIX**

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 32/41 LOCK BUTTON**

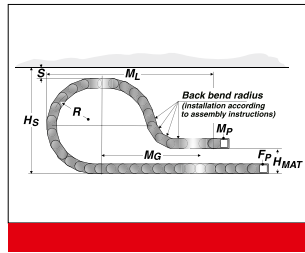
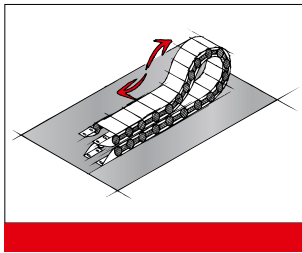


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP32/41 lock button	041000008000

**MP 32 LOWERED FIXING POINT**



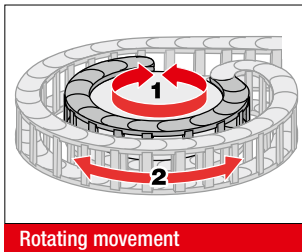
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>s</sub> ) mm	Projection (M <sub>1</sub> ) mm	Additional links qty.	of which additional back chain links qty.
200.0	210.0	50.0	523.0	720.0	14	3
250.0	230.0	50.0	623.0	880.0	17	3

**MP 32.2 REARWARD RADII**



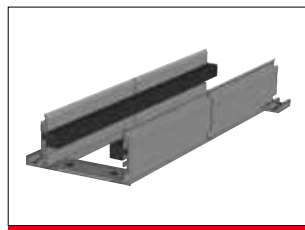
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 32.2 RK080 (RÜ200/R120)	032200008060	120.0	200.0
SR 32.2 RK100 (RÜ200/R135)	032200010060	135.0	200.0
SR 32.2 RK120 (RÜ200/R150)	032200012060	150.0	200.0
SR 32.2 RK150 (RÜ200/R170)	032200015060	170.0	200.0
SR 32.2 RK200 (RÜ200/R200)	032200020060	200.0	200.0
SR 32.2 RK250 (RÜ200/R250)	032200025060	250.0	200.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel

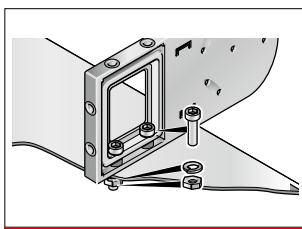


VAW aluminium

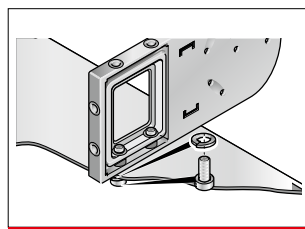
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**

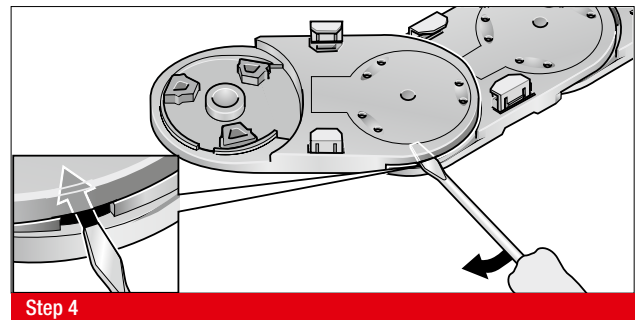
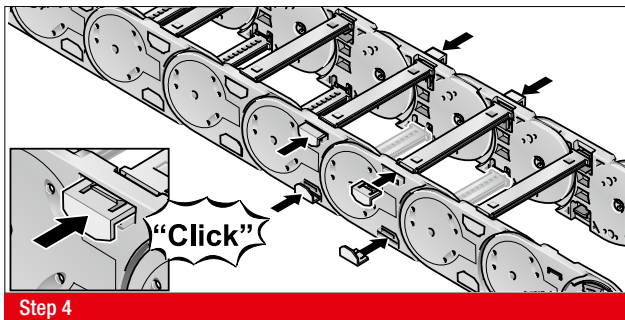
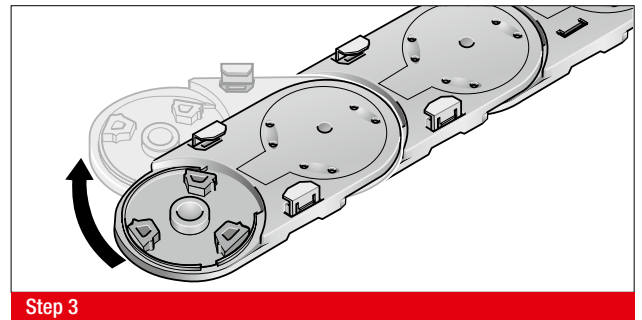
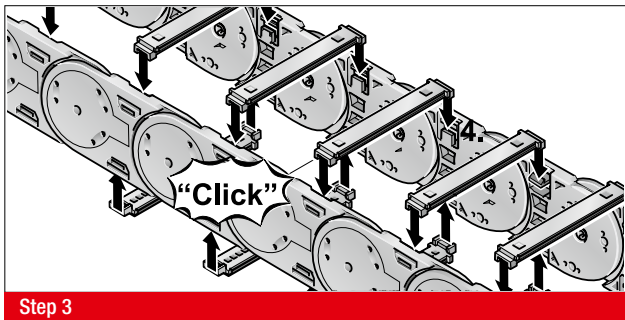
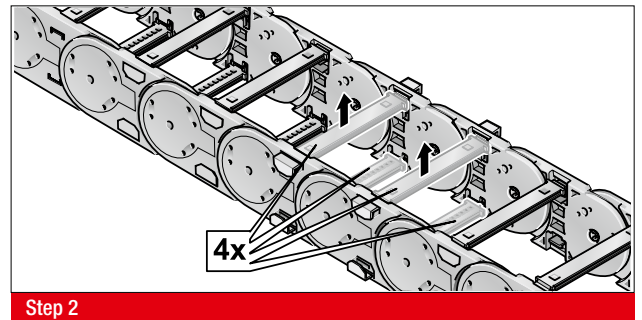
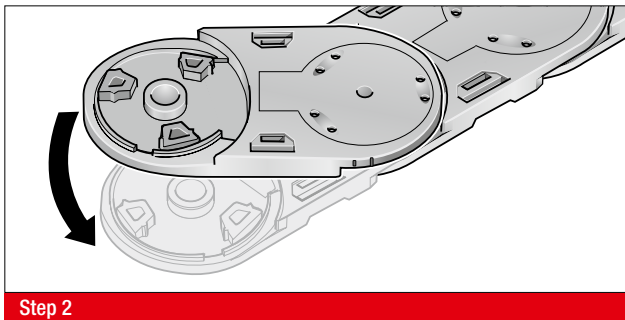
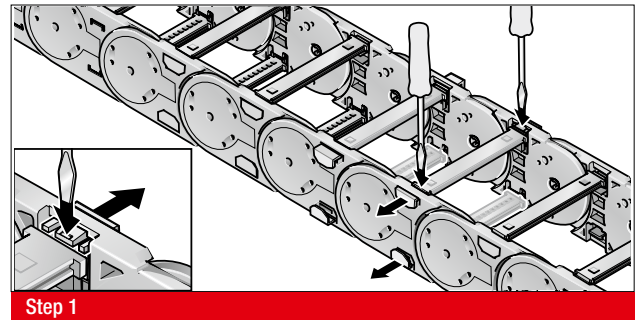
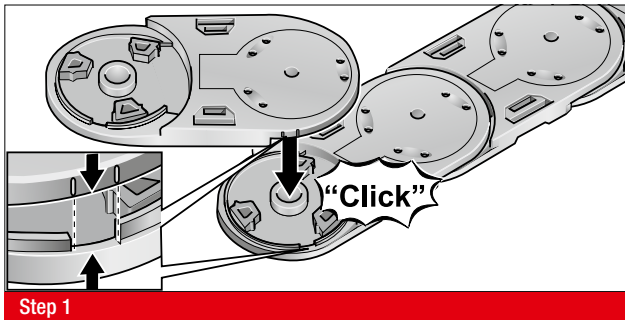
Integrated through-hole fastened down using screw and nut.

**Version KA-FG:**

Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

**ASSEMBLY**

**DISASSEMBLY**



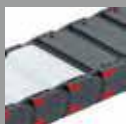




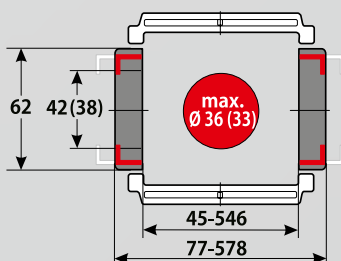
**MP 41.2**  
OPEN



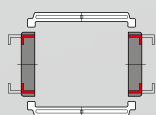
**MP 41.3**  
CLOSED



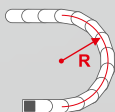
- SLIDING BLOCKS FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- CHAIN BRACKET FLEXIBLE
- PLASTIC OR ALUMINIUM VERSION



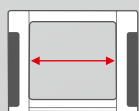
## TECHNICAL DATA



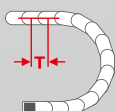
**Loading side**  
Inside and outside bend



**Available radii**  
90.0 – 350.0 mm



**Available interior widths**  
With plastic crossbar  
45.0 – 546.0 mm  
With alu crossbar / with alu cover  
67.0 – 600.0 mm / 43.0 – 600.0 mm



**Pitch**  
T = 77.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	120.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 205
Travel distance vertical, hanging $L_{vh}$ max.	50.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	30.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

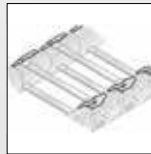
Other material properties on request.

## ACCESSORIES

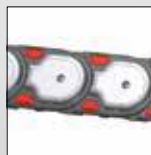
### SHELVING SYSTEM



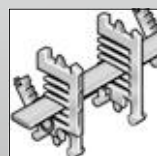
Separator TR



Sliding block



Gliding plate

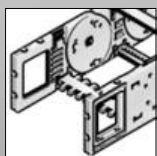


RS shelving system



Bracket bar

### CHAIN BRACKET



Chain bracket flexible



Crossbar connector RSV



Cover

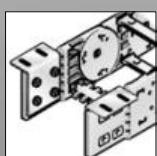
### GUIDE CHANNELS



VAW steel galvanised / stainless steel



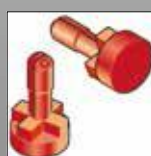
RS-ZL crossbar strain relief



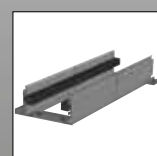
Chain bracket angle



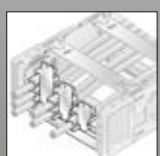
H-shaped shelf unit RE



Lock button



VAW aluminium



STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0412 30</b>	MP 41.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>045<sup>1)</sup></b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	<b>090<sup>1)</sup></b> [3.54]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>057<sup>1)</sup></b> [2.24]	<b>089</b> [3.50]	<b>246<sup>2)</sup></b> [9.69]	<b>278<sup>2)</sup></b> [10.94]				
<b>0413 44<sup>3)</sup></b>	MP 41.3 Closed Cover on outside bend Cover on inside bend Opens on inside and outside bend	<b>062<sup>1)</sup></b> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]	<b>120<sup>1)</sup></b> [4.72]	<b>1</b> Plastic, full-ridged without bias	<b>5</b> Polypropylene (PP/blue)	
		<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]				
		<b>084<sup>2)</sup></b> [3.31]	<b>116<sup>2)</sup></b> [4.57]	<b>296<sup>2)</sup></b> [11.65]	<b>328<sup>2)</sup></b> [12.91]	<b>150</b> [5.91]	<b>2</b> Plastic, half-ridged with bias	<b>7</b> EMC (PA/light grey)	
		<b>093</b> [3.66]	<b>125</b> [4.92]	<b>346</b> [13.62]	<b>378</b> [14.88]				
		<b>096<sup>2)</sup></b> [3.78]	<b>128<sup>2)</sup></b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]	<b>175</b> [6.89]	<b>3</b> Plastic, half-ridged without bias	<b>9</b> Special version (on request)	
		<b>104</b> [4.09]	<b>136</b> [5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]				
		<b>107</b> [4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	<b>403</b> [15.87]	<b>200</b> [7.87]	<b>4</b> Aluminium full-ridged with bias		
		<b>121<sup>2)</sup></b> [4.76]	<b>153<sup>2)</sup></b> [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]				
		<b>133</b> [5.24]	<b>165</b> [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]	<b>250</b> [9.84]	<b>5</b> Aluminium full-ridged without bias		
		<b>144</b> [5.67]	<b>176</b> [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]				
		<b>146<sup>2)</sup></b> [5.75]	<b>178<sup>2)</sup></b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]	<b>300</b> [11.81]	<b>6</b> Aluminium half-ridged with bias		
		<b>158</b> [6.22]	<b>190</b> [7.48]	<b>546</b> [21.50]	<b>578</b> [22.76]				
		<b>164</b> [6.46]	<b>196</b> [7.72]			<b>350</b> [13.78]	<b>7</b> Aluminium half-ridged without bias		
		<b>171<sup>2)</sup></b> [6.73]	<b>203<sup>2)</sup></b> [7.99]						
		<b>182<sup>2)</sup></b> [7.17]	<b>214<sup>2)</sup></b> [8.43]				<b>9</b> Special version (on request)		
		<b>196<sup>2)</sup></b> [7.72]	<b>228<sup>2)</sup></b> [8.98]						
		<b>208</b> [8.19]	<b>240</b> [9.45]						
		<b>220</b> [8.66]	<b>252</b> [9.92]						



**ORDERING EXAMPLE: 0412 30 045 090 0 0 1386**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 45 mm; radius 90 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1386 mm (18 links)

- <sup>1)</sup> for Variant 30 only
- <sup>2)</sup> also available with plastic cover
- <sup>3)</sup> Reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm .

**Aluminium covers:**

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 43.0 mm – 600.0 mm .

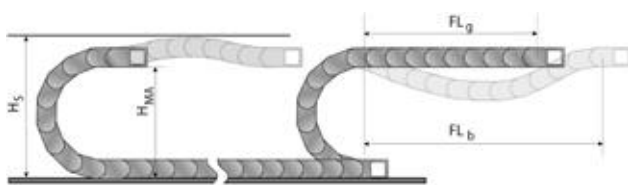
**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminium.

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

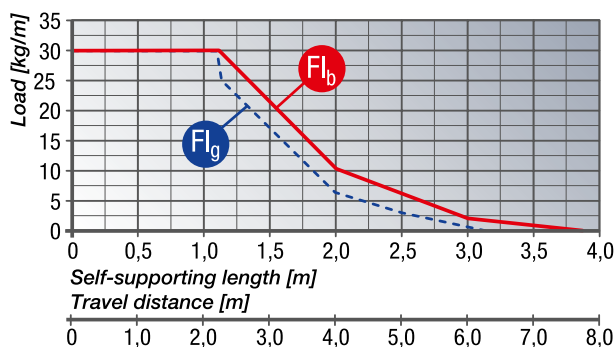
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



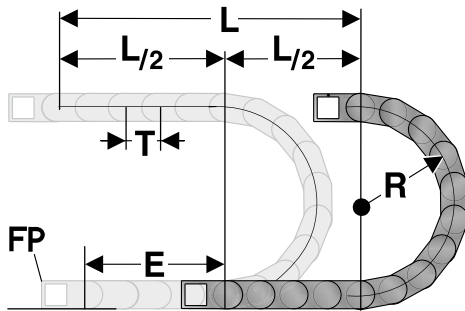
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain. Closed energy chains (with covers) have a higher unit weight than open chains (with crossbars). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 1.5 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**

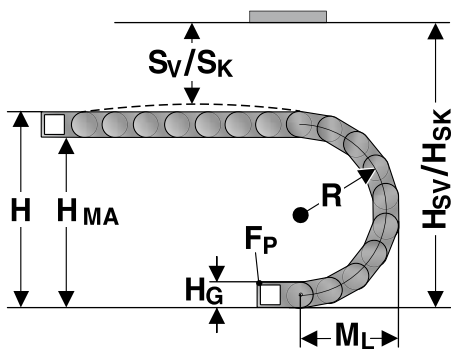


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 13 \text{ qty. x } 77.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 77.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height H<sub>MA</sub> for the respective radius. Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the “Installed height without bias H<sub>SK</sub>” value has to be taken into account. If the chain links are equipped with a bias, the value “Installed height with bias H<sub>sv</sub>” has to be taken into account.

Radius R	90	120	150	175	200	250	300	350
Outside height of chain link (H <sub>e</sub> )	62	62	62	62	62	62	62	62
Height of bend (H)	252	312	372	422	472	572	672	772
Height of moving end bracket (H <sub>MA</sub> )	190	250	310	360	410	510	610	710
Safety margin with bias (S <sub>v</sub> )	30	30	30	30	30	30	30	30
Installation height with bias (H <sub>sv</sub> )	282	342	402	452	502	602	702	802
Safety margin without bias (S <sub>k</sub> )	15	15	15	15	15	15	15	15
Installation height without bias (H <sub>sk</sub> )	267	327	387	437	487	587	687	787
Arc projection (M <sub>L</sub> )	203	233	263	288	313	363	413	463

## POWERLINE PLASTIC CROSSBAR



The crossbars connect the two side runs of the energy chain. The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

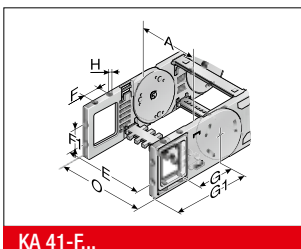
**MP 41.3 PLASTIC COVER**



The covers connect the two side runs of the energy chain. The cover length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Installation site	Inside width mm
A-413084, outside	041308410000	Cover	Outside bend	84.0
I-413084, inside	041308420000	Cover	Inside bend	84.0
A-413096, outside	041309610000	Cover	Outside bend	96.0
I-413096, inside	041309620000	Cover	Inside bend	96.0
A-413121, outside	041312110000	Cover	Outside bend	121.0
I-413121, inside	041312120000	Cover	Inside bend	121.0
A-413146, outside	041314610000	Cover	Outside bend	146.0
I-413146, inside	041314620000	Cover	Inside bend	146.0
A-413171, outside	041317110000	Cover	Outside bend	171.0
I-413171, inside	041317120000	Cover	Inside bend	171.0
A-413182, outside	041318210000	Cover	Outside bend	182.0
I-413182, inside	041318220000	Cover	Inside bend	182.0
A-413196, outside	041319610000	Cover	Outside bend	196.0
I-413196, inside	041319620000	Cover	Inside bend	196.0
A-413246, outside	041324610000	Cover	Outside bend	246.0
I-413246, inside	041324620000	Cover	Inside bend	246.0
A-413296, outside	041329610000	Cover	Outside bend	296.0
I-413296, inside	041329620000	Cover	Inside bend	296.0

**KA 41 CHAIN BRACKET FLEXIBLE**

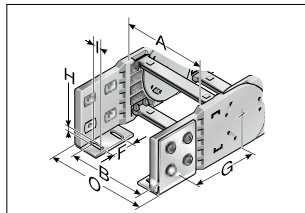


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M6 bolts are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

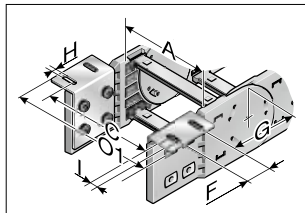
Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 41.1-FB	0411000054	Plastic	with bush	45.0 – 546.0	A+20.0	22.5	22.0	79.0	120.0	6.5	A+34.0	
KA 41.1-FG	0411000055	Plastic	with thread	45.0 – 546.0	A+20.0	22.5	22.0	79.0	120.0	M6	A+34.0	



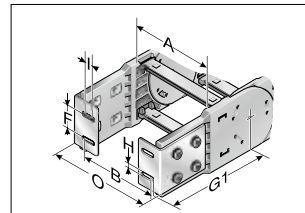
**KA 41 CHAIN BRACKET ANGLE**



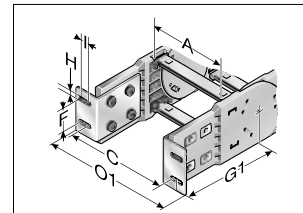
KA 41 (inside up / down)



KA 41 (outside up / down)



KA 41 (front inside)



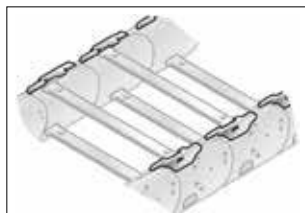
KA 41 (front outside)

There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is fas-

tened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires two chain brackets. The brackets should be fastened with M6 screws.

Type	Order No.	Material	Inside width							HØ mm	Outside width of KA 0 mm	Outside width of KA 01 mm
			A mm	B mm	C mm	F mm	G mm	G1 mm				
KA 41	0410000051	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	79.0	125.7	6.5	A+32.0	A+71.0	

**MP 41.2 SLIDING BLOCK**

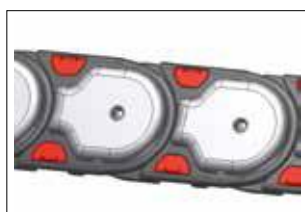


Sliding block

In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Min. radius mm	Sliding block height mm
GS 41.2	041290400300	120.0	4.0

**GLP 4 (41.2) GLIDING PLATE**

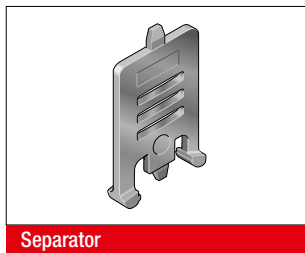
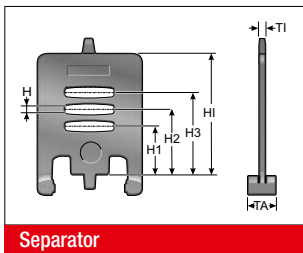


Gliding plate

The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 2.5 mm. We recommend replacing the energy chain when this limit has been reached. Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding plates. The energy chain must be placed on its side before opening.

Type	Order No.	Installation site	For radius mm	Gliding plate height mm
SG 41.2 RK090 with GLP4, mounted	041200009064	Chain link including gliding plate	90.0	7.0
SG 41.2 RK120 with GLP4, mounted	041200012064	Chain link including gliding plate	120.0	7.0
SG 41.2 RK150 with GLP4, mounted	041200015064	Chain link including gliding plate	150.0	7.0
SG 41.2 RK175 with GLP4, mounted	041200017564	Chain link including gliding plate	175.0	7.0
SG 41.2 RK200 with GLP4, mounted	041200020064	Chain link including gliding plate	200.0	7.0
SG 41.2 RK250 with GLP4, mounted	041200025064	Chain link including gliding plate	250.0	7.0
SG 41.2 RK300 with GLP4, mounted	041200030064	Chain link including gliding plate	300.0	7.0
SG 41.2 RK350 with GLP4, mounted	041200035064	Chain link including gliding plate	350.0	7.0

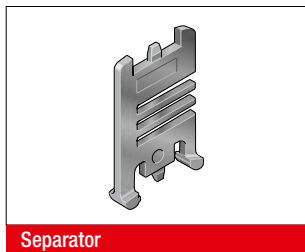
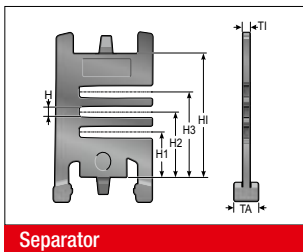
**TR 41 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41	041000009200	Separator	lockable	3.5	10.0	4.2	16.1	22.9	28.9	42.0

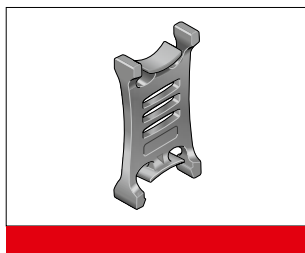
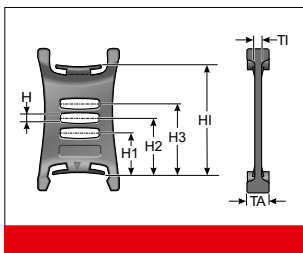
**TR 41.1 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41.1	041200009200	Separator	lockable	3.5	8.0	4.0	16.1	22.9	28.9	42.0

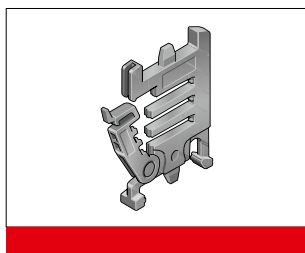
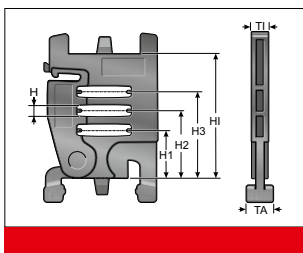
**TR 41-V SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

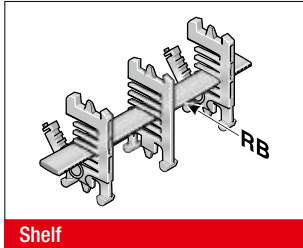
Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41-V	041000009300	Separator	moveable	3.5	12.0	4.0	16.1	22.9	28.9	42.0

**RTT 41 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
RTT 41	100090412000	Shelf support, divisible	lockable	7.0	8.0	4.0	16.1	22.9	28.9	42.0

**RB-5 SHELF**

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	10000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0

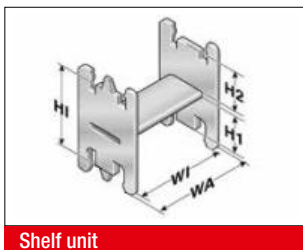
### RSV 41 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	Tl mm
RSV 41	041000009600	Crossbar connector	7.5
RSV 41 Alu	041000009800	Crossbar connector for aluminium crossbars	7.5

### MP 41 H-SHAPED SHELF UNIT



One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	H3 mm
RE 36/11	100000361112	H-shaped shelf unit	42.5	36.5	26.2	11.5	42.0
RE 59/18	100000591812	H-shaped shelf unit	65.0	59.0	18.8	18.8	42.0
RE 81/11	100000811112	H-shaped shelf unit	87.5	81.5	26.2	11.5	42.0

### BS-5 BRACKET BAR



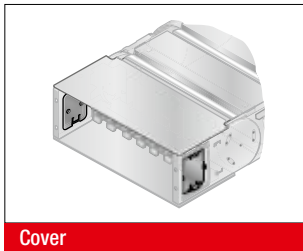
Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

**D4 CHAIN BRACKET COVER**



Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order No.
D4 Cover	0413888002

**MP 41.3 CHAIN BRACKET CANOPY**



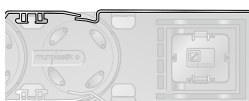
Constructed from aluminium, the canopies for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

**Canopy for chain bracket fixed point outside bend: Type and order number configurator**



Type:	KA 41.1 FB/FG AB	Inside width	2-2
Order No.:	0411	Inside width	060

**Canopy for chain bracket fixed point inside bend: Type and order number configurator**



Type:	KA 41.1 FB/FG IB	Inside width	2-2
Order No.:	0411	Inside width	058

**Canopy for chain bracket moving end outside bend: Type and order number configurator**



Type:	KA 41.1 FB/FG AB	Inside width	1-2
Order No.:	0411	Inside width	059

**Canopy for chain bracket moving end inside bend: Type and order number configurator**



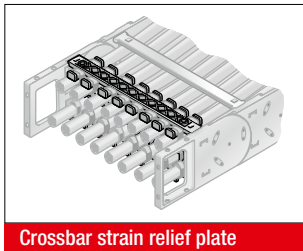
Type:	KA 41.1 FB/FG IB	Inside width	1-2
Order No.:	0411	Inside width	057

**The bestExample:**

0411096058 KA 41.1 FB/FG IB 096 2-2

Chain bracket canopy at fixing point in inside bend, for inside width of 96 mm.

**RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**

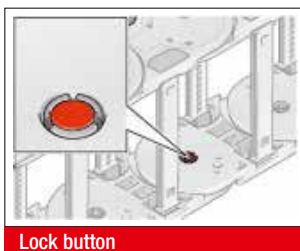


Crossbar strain relief plate

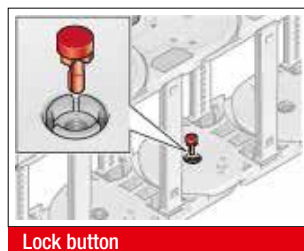
Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

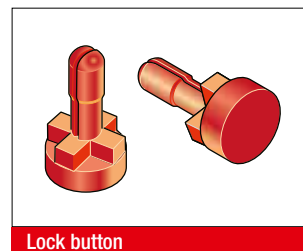
**MP 32/41 LOCK BUTTON**



Lock button



Lock button



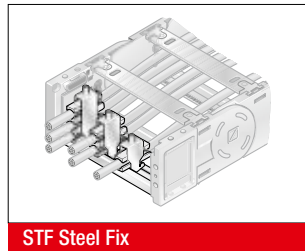
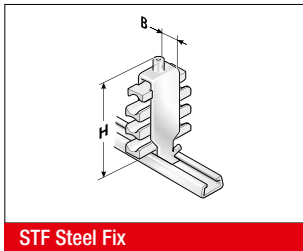
Lock button

To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP32/41 lock button	041000008000

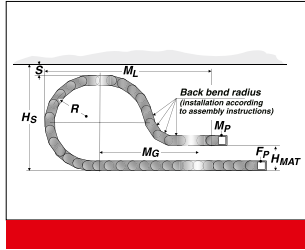
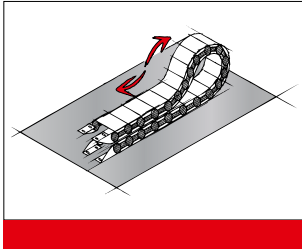
## STRAIN RELIEF WITH STEEL FIX



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 41 LOWERED FIXING POINT**



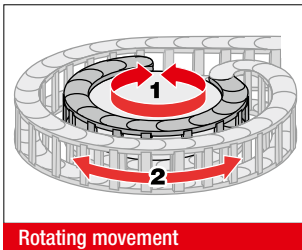
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
175.0	160.0	50.0	472.0	640.0	6	2
200.0	190.0	50.0	522.0	770.0	13	2
250.0	220.0	50.0	622.0	910.0	15	2
300.0	280.0	50.0	722.0	1180.0	19	2
350.0	320.0	50.0	822.0	1140.0	19	3

**MP 41.2 REARWARD RADII**



Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 41.2 (RÜ200/R125)	041200009060	125.0	200.0
SR 41.2 (RÜ200/R160)	041200012060	160.0	200.0
SR 41.2 (RÜ200/R175)	041200015060	175.0	200.0
SR 41.2 (RÜ200/R200)	041200020060	200.0	200.0
SR 41.2 (RÜ200/R250)	041200025060	250.0	200.0
SR 41.2 (RÜ200/R300)	041200030060	300.0	200.0
SR 41.2 (RÜ200/R350)	041200035060	350.0	200.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel



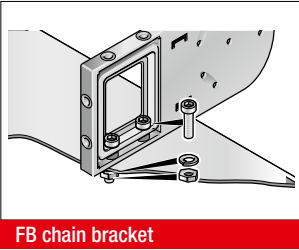
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

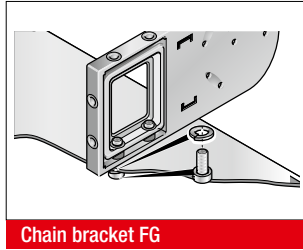
The variable guide channel ensures that the energy chain is supported and guided securely.



**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**

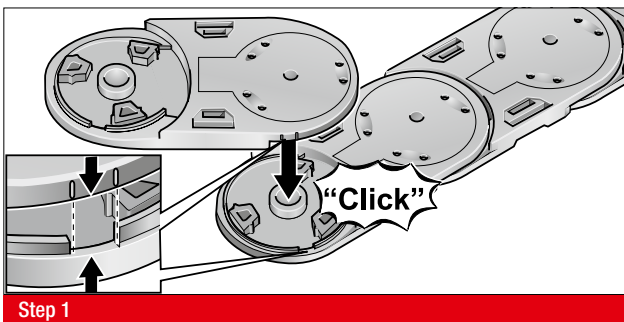
Integrated through-hole fastened down using screw and nut.

**Version KA-FG:**

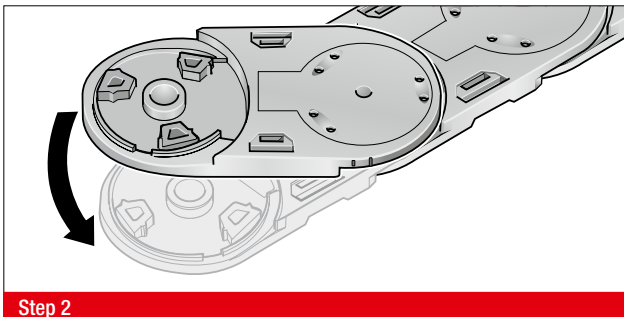
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

**ASSEMBLY**

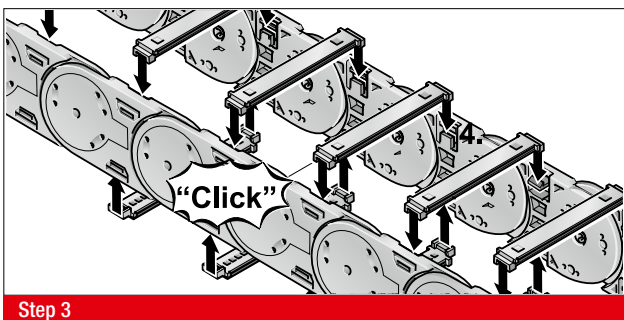
**DISASSEMBLY**



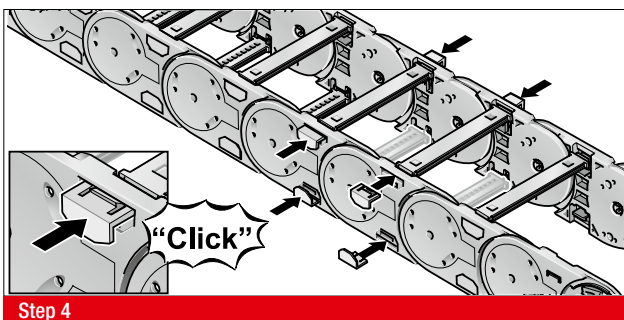
Step 1



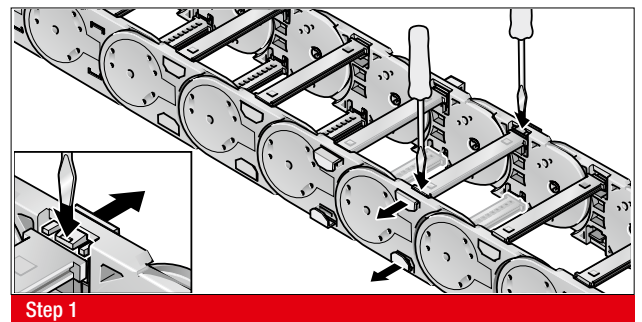
Step 2



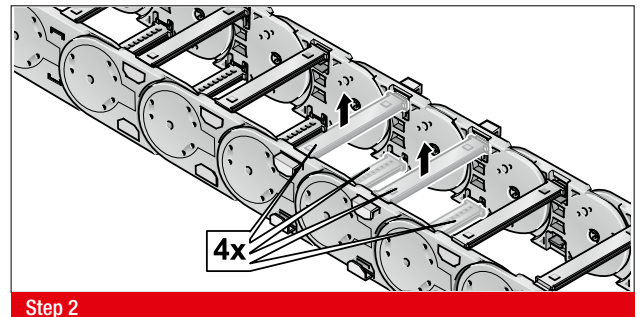
Step 3



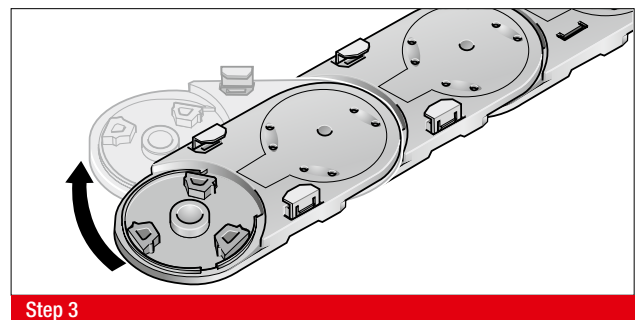
Step 4



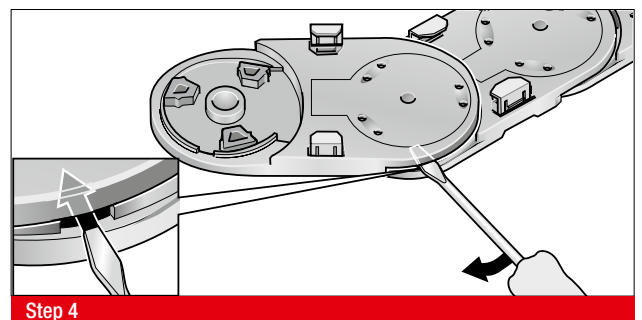
Step 1



Step 2



Step 3



Step 4

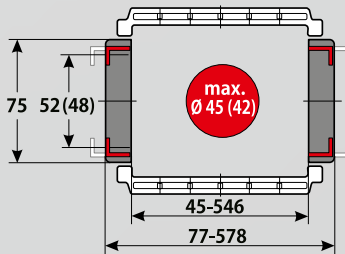
## MP 52.2 OPEN



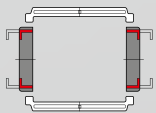
## MP 52.3 CLOSED



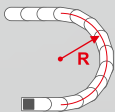
- SLIDING BLOCKS FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- CHAIN BRACKET FLEXIBLE
- PLASTIC OR ALUMINIUM VERSION



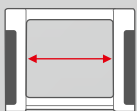
### TECHNICAL DATA



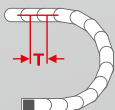
**Loading side**  
Inside and outside bend



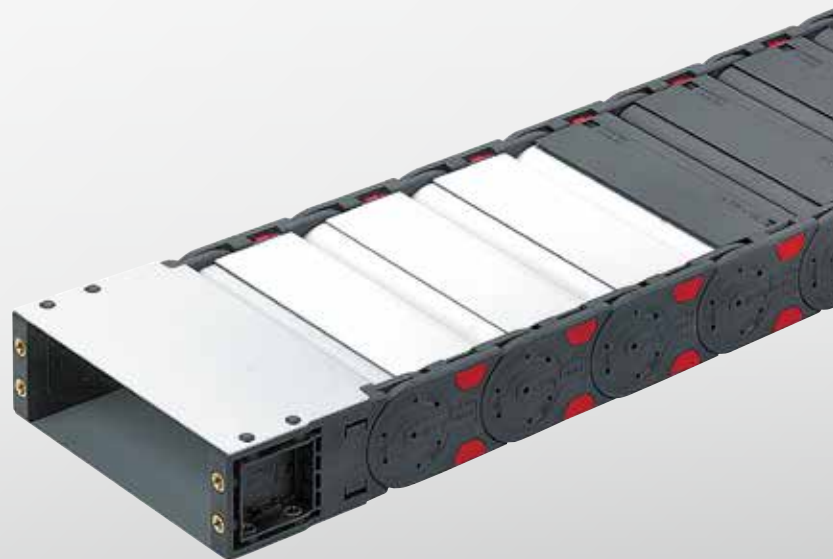
**Available radii**  
100.0 – 350.0 mm

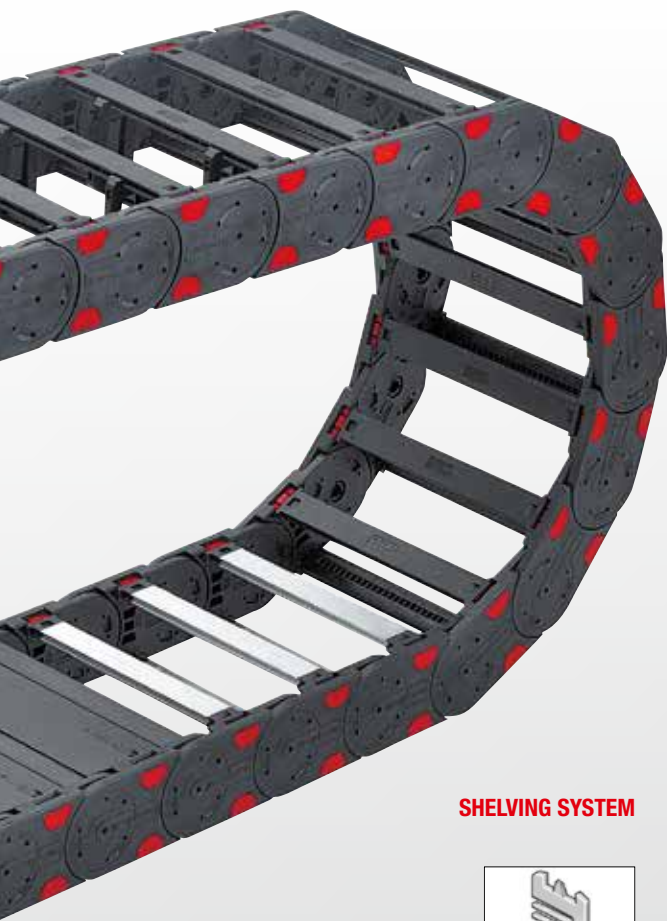


**Available interior widths**  
With plastic crossbar  
45.0 – 546.0 mm  
With alu crossbar / with alu cover  
67.0 – 600.0 mm / 43.0 – 600.0 mm



**Pitch**  
T = 91.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 221
Travel distance vertical, hanging $L_{vh}$ max.	60.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	2.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	30.0 m/s <sup>2</sup>

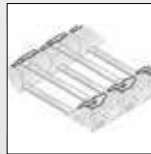
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

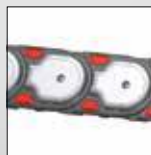
## ACCESSORIES



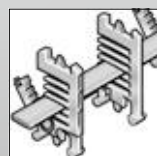
Sliding block



Separator TR



Gliding plate

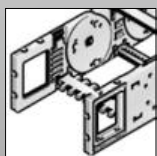


RS shelving system



Bracket bar

## CHAIN BRACKET



Chain bracket flexible



Crossbar connector RSV

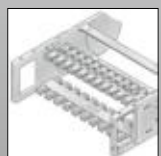


Cover

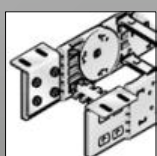
## GUIDE CHANNELS



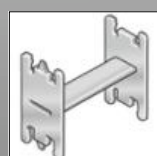
VAW steel galvanised / stainless steel



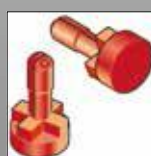
RS-ZL crossbar strain relief



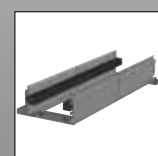
Chain bracket angle



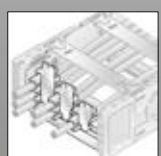
H-shaped shelf unit RE



Lock button



VAW aluminium

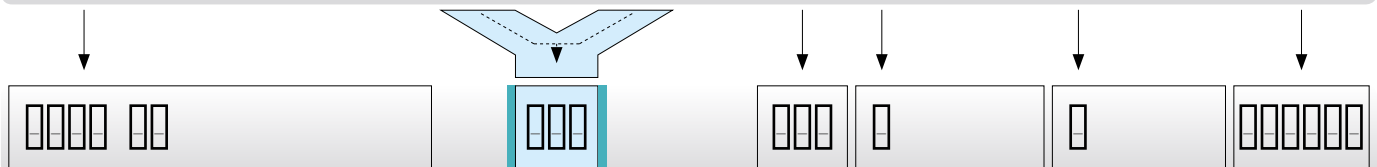


STF Steel Fix

ORDERING KEY

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
0522 30	MP 52.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	045 <sup>1)</sup> [1.77]	077 [3.03]	233 [9.17]	265 [10.43]	100 <sup>1)</sup> [3.94]	0 Plastic, full-ridged with bias	0 Polyamide standard (PA/black)	
		057 <sup>1)</sup> [2.24]	089 [3.50]	246 <sup>2)</sup> [9.69]	278 <sup>2)</sup> [10.94]				
0523 44 <sup>3)</sup>	MP 52.3 Closed Cover on outside bend Cover on inside bend Opens on inside and outside bend	062 <sup>1)</sup> [2.44]	094 [3.70]	252 [9.92]	284 [11.18]	150 [5.91]	1 Plastic, full-ridged without bias	5 Polypropylene (PP/blue)	
		071 [2.80]	103 [4.06]	258 [10.16]	290 [11.42]				
		084 [3.31]	116 [4.57]	296 <sup>2)</sup> [11.65]	328 <sup>2)</sup> [12.91]	175 [6.89]	2 Plastic, half-ridged with bias	7 EMC (PA/light grey)	
		093 [3.66]	125 [4.92]	346 <sup>2)</sup> [13.62]	378 <sup>2)</sup> [14.88]				
		096 <sup>2)</sup> [3.78]	128 <sup>2)</sup> [5.04]	350 [13.78]	382 [15.04]	200 [7.87]	3 Plastic, half-ridged without bias	9 Special version (on request)	
		104 [4.09]	136 [5.35]	358 [14.09]	390 [15.35]				
		107 [4.21]	139 [5.47]	371 [14.61]	403 [15.87]	250 [9.84]	4 Aluminium full-ridged with bias		
		121 <sup>2)</sup> [4.76]	153 <sup>2)</sup> [6.02]	396 [15.59]	428 [16.85]				
		133 [5.24]	165 [6.50]	421 [16.57]	453 [17.83]	300 [11.81]	5 Aluminium full-ridged without bias		
		144 [5.67]	176 [6.93]	446 [17.56]	478 [18.82]				
		146 <sup>2)</sup> [5.75]	178 <sup>2)</sup> [7.01]	496 [19.53]	528 [20.79]	350 [13.78]	6 Aluminium half-ridged with bias		
		158 [6.22]	190 [7.48]	546 [21.50]	578 [22.76]				
		164 [6.46]	196 [7.72]				7 Aluminium half-ridged without bias		
		171 [6.73]	203 [7.99]						
		182 <sup>2)</sup> [7.17]	214 <sup>2)</sup> [8.43]				9 Special version (on request)		
		196 <sup>2)</sup> [7.72]	228 <sup>2)</sup> [8.98]						
		208 [8.19]	240 [9.45]						
		220 <sup>2)</sup> [8.66]	252 <sup>2)</sup> [9.92]						



ORDERING EXAMPLE: 0522 30 220 100 0 0 1365

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 220 mm, radius 100 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1365 mm (15 links)

- <sup>1)</sup> for variant 30 only
- <sup>2)</sup> also available with plastic cover
- <sup>3)</sup> reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm .

**Aluminium covers:**

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 43.0 mm – 600.0 mm .

**Crossbar connector and crossbar strain relief plate:**

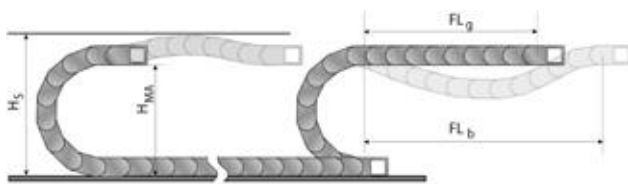
Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV).

Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminium.

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

**SELF-SUPPORTING LENGTH**

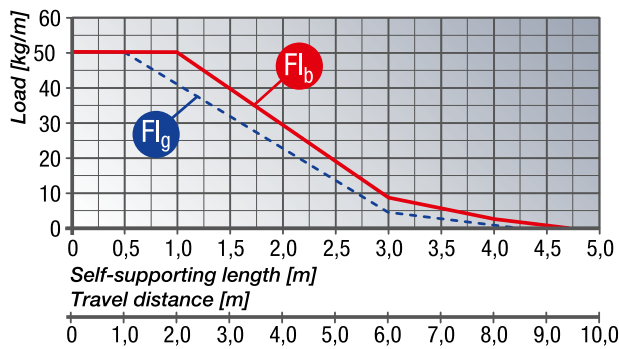


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant FL<sub>g</sub> offers the lowest load and wear for the energy chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>S</sub> = Installation height plus safety
- H<sub>MA</sub> = Height of moving end connection
- FL<sub>g</sub> = Self-supporting length, upper run straight
- FL<sub>b</sub> = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**FL<sub>g</sub> Self-supporting length, upper run straight**

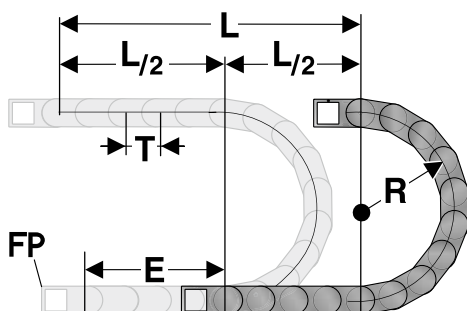
In the FL<sub>g</sub> range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**FL<sub>b</sub> Self-supporting length, upper run bent**

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

Closed energy chains (with covers) have a higher unit weight than open chains (with crossbars). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 1.5 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**



The fixed point of the energy chain should be connected in the middle of the travel distance.

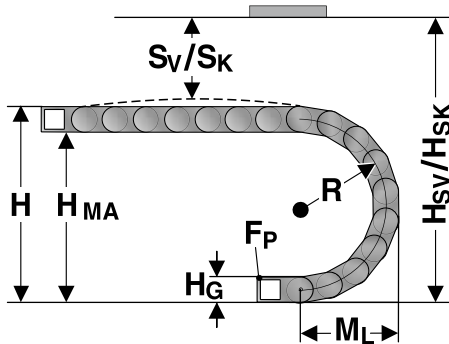
This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

$$\text{Chain length calculation} = L/2 + \pi * R + E$$

$$\approx 1 \text{ m chain} = 11 \text{ qty. } \times 91.0 \text{ mm.}$$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 91.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
 Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.  
 For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.  
 If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	100	150	175	200	250	300	350
Outside height of chain link ( $H_G$ )	75	75	75	75	75	75	75
Height of bend (H)	305	405	455	505	605	705	805
Height of moving end bracket ( $H_{MA}$ )	230	330	380	430	530	630	730
Safety margin with bias ( $S_V$ )	46	46	46	46	46	46	46
Installation height with bias ( $H_{SV}$ )	351	451	501	551	651	751	851
Safety margin without bias ( $S_K$ )	16	16	16	16	16	16	16
Installation height without bias ( $H_{SK}$ )	321	421	471	521	621	721	821
Arc projection ( $M_L$ )	244	294	319	344	394	444	494

**POWERLINE PLASTIC CROSSBAR**



Crossbar

The crossbars connect the two side runs of the energy chain.  
 The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0

**POWERLINE PLASTIC CROSSBAR**

Type	Order No.	Description	Inside width mm
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

**MP 52.3 / MP 52.5 PLASTIC COVER**

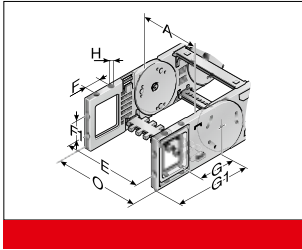


Cover

The covers connect the two side runs of the energy chain. The cover length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Installation site	Inside width mm
A-523062, outside	052306210000	Cover	Outside bend	62.0
I-523062, inside	052306220000	Cover	Inside bend	62.0
A-523096, outside	052309610000	Cover	Outside bend	96.0
I-523096, inside	052309620000	Cover	Inside bend	96.0
A-523121, outside	052312110000	Cover	Outside bend	121.0
I-523121, inside	052312120000	Cover	Inside bend	121.0
A-523146, outside	052314610000	Cover	Outside bend	146.0
I-523146, inside	052314620000	Cover	Inside bend	146.0
A-523182, outside	052318210000	Cover	Outside bend	182.0
I-523182, inside	052318220000	Cover	Inside bend	182.0
A-523196, outside	052319610000	Cover	Outside bend	196.0
I-523196, inside	052319620000	Cover	Inside bend	196.0
A-523220, outside	052322010000	Cover	Outside bend	220.0
I-523220, inside	052322020000	Cover	Inside bend	220.0
A-523246, outside	052324610000	Cover	Outside bend	246.0
I-523246, inside	052324620000	Cover	Inside bend	246.0
A-523296, outside	052329610000	Cover	Outside bend	296.0
I-523296, inside	052329620000	Cover	Inside bend	296.0
A-523346, outside	052334610000	Cover	Outside bend	346.0
I-523346, inside	052334620000	Cover	Inside bend	346.0

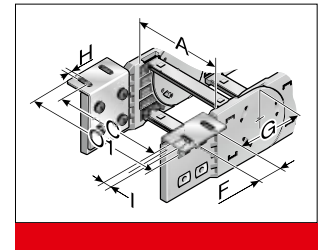
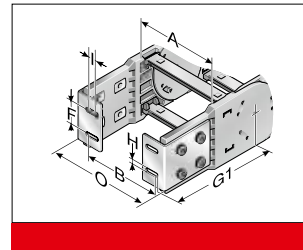
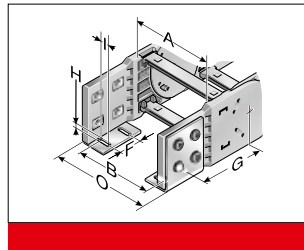
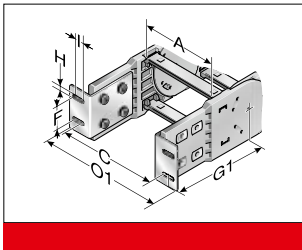
**KA 52.1 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	HØ mm	
KA 52.1-FB Female end	0521000056	Plastic	with bush	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	146.0	8.5	A+36.0
KA 52.1-FB Male end	0521000057	Plastic	with bush	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	146.0	8.5	A+36.0
KA 52.1-FG Female end	0521000058	Plastic	with thread	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	146.0	M8	A+36.0
KA 52.1-FG Male end	0521000059	Plastic	with thread	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	146.0	M8	A+36.0

**KA 52.1 CHAIN BRACKET ANGLE**



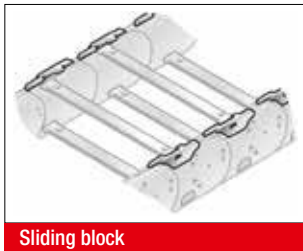
There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is

fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires one male and one female bracket. The brackets should be fastened with M6 screws.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm	Outside width of KA 01 mm
			A mm	B mm	C mm	F mm	G mm	G1 mm	HØ mm	I mm		
KA 52.1 Female end	0521000050	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	95.5	144.0	6.5	14.0	A+32.0	A+71.0
KA 52.1 Male end	0521000051	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	95.5	144.0	6.5	14.0	A+32.0	A+71.0



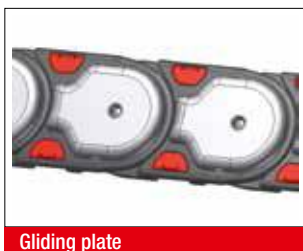
**GS 52.2 SLIDING BLOCK**



In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Installation site	Min. radius mm	Sliding block height mm
GS 52.2.1 right	052290400302	For right side link	150.0	4.0
GS 52.2.2 left	052290400300	For left side link	150.0	4.0

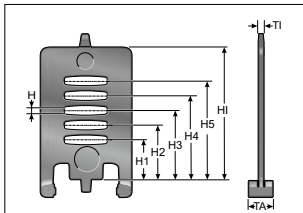
**GLP 5 (52.2) GLIDING PLATE**



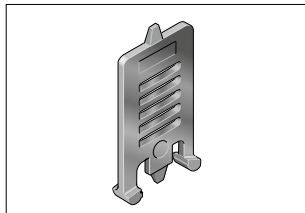
The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 2.5 mm. We recommend replacing the energy chain when this limit has been reached. Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding plates. The energy chain must be placed on its side before opening.

Type	Order No.	Installation site	For radius mm	Gliding plate height mm
SG 52.2 RK100.1 right with GLP5, mounted	052200010066	Right chain link including gliding plate	100.0	7.0
SG 52.2 RK100.2 left with GLP5, mounted	052200010064	Left chain link including gliding plate	100.0	7.0
SG 52.2 RK150.1 right with GLP5, mounted	052200015066	Right chain link including gliding plate	150.0	7.0
SG 52.2 RK150.2 left with GLP5, mounted	052200015064	Left chain link including gliding plate	150.0	7.0
SG 52.2 RK175.1 right with GLP5, mounted	052200017566	Right chain link including gliding plate	175.0	7.0
SG 52.2 RK175.2 left with GLP5, mounted	052200017564	Left chain link including gliding plate	175.0	7.0
SG 52.2 RK200.1 right with GLP5, mounted	052200020066	Right chain link including gliding plate	200.0	7.0
SG 52.2 RK200.2 left with GLP5, mounted	052200020064	Left chain link including gliding plate	200.0	7.0
SG 52.2 RK250.1 right with GLP5, mounted	052200025066	Right chain link including gliding plate	250.0	7.0
SG 52.2 RK250.2 left with GLP5, mounted	052200025064	Left chain link including gliding plate	250.0	7.0
SG 52.2 RK300.1 right with GLP5, mounted	052200030066	Right chain link including gliding plate	300.0	7.0
SG 52.2 RK300.2 left with GLP5, mounted	052200030064	Left chain link including gliding plate	300.0	7.0
SG 52.2 RK350.1 right with GLP5, mounted	052200035066	Right chain link including gliding plate	350.0	7.0
SG 52.2 RK350.2 left with GLP5, mounted	052200035064	Left chain link including gliding plate	350.0	7.0

**TR 52 SEPARATOR**



Separator

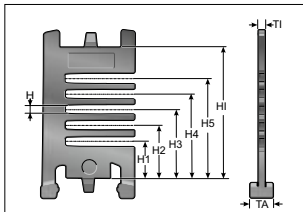


Separator

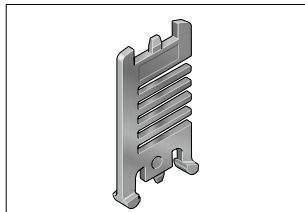
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. The closed separator is used when no shelves are used. This is the recommended design for travel paths of 30 metres or greater.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52	052000009200	TR 52 Separator	lockable	3.5	10.0	4.2	16.3	22.3	28.2	33.8	39.8	52.0

**TR 52.1 SEPARATOR**



Separator

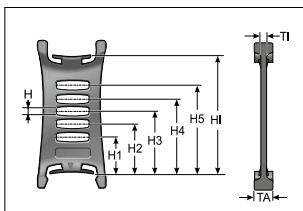


Separator

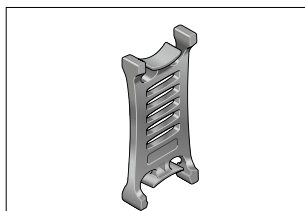
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52.1	052100009200	TR 52.1 Separator	lockable	3.5	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

**TR 52-V SEPARATOR**



Separator

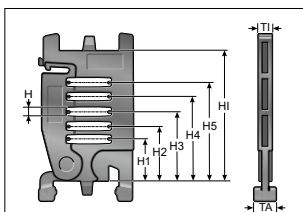


Separator

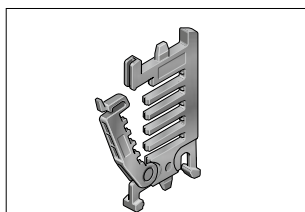
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52-V	052000009300	TR 52-V Separator	moveable	3.5	13.0	4.0	16.3	22.3	28.2	33.8	39.8	52.0

**RTT 52 SHELF SUPPORT, DIVISIBLE**



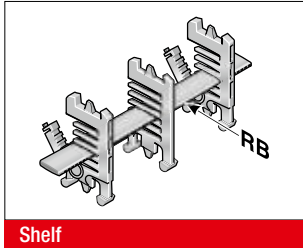
Shelf support



Shelf support

In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
RTT 52	100090522000	Shelf support, divisible	lockable	7.0	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

**RB-5 SHELF**

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	10000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0

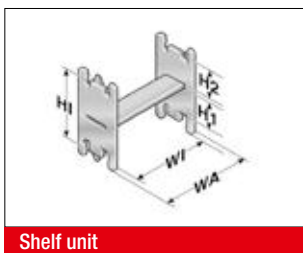
### RSV 52 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	TI mm
RSV 52	052000009600	Crossbar connector	7.5
RSV 52 Alu	052000009800	Crossbar connector for aluminium crossbars	7.5

### RE 52 H-SHAPED SHELF UNIT



One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 36/17	100000361714	H-shaped shelf unit	42.5	36.5	31.0	17.4	52.0
RE 59/24	100000592414	H-shaped shelf unit	65.0	59.0	24.2	24.2	52.0
RE 81/12	100000811214	H-shaped shelf unit	87.5	81.5	36.0	12.4	52.0

### BS-5 BRACKET BAR



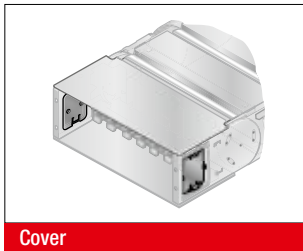
Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

**D5 CHAIN BRACKET COVER**



Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order No.
D5 Cover	0523888002

**MP 52.3 CHAIN BRACKET CANOPY**



Constructed from aluminium, the canopies for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

**Canopy for chain bracket fixed point outside bend: Type and order number configurator**



Type:	KA 52.1 FB/FG AB	Inside width	2-2
Order No.:	0521	Inside width	060

**Canopy for chain bracket fixed point inside bend: Type and order number configurator**



Type:	KA 52.1 FB/FG IB	Inside width	2-2
Order No.:	0521	Inside width	058

**Canopy for chain bracket moving end outside bend: Type and order number configurator**



Type:	KA 52.1 FB/FG AB	Inside width	1-2
Order No.:	0521	Inside width	059

**Canopy for chain bracket moving end inside bend: Type and order number configurator**



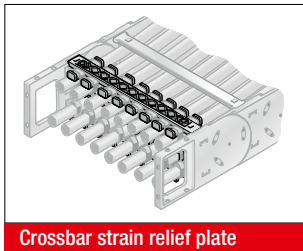
Type:	KA 52.1 FB/FG IB	Inside width	1-2
Order No.:	0521	Inside width	057

**Ordering example:**

0521096058 KA 52.1 FB/FG IB 096 2-2

Chain bracket canopy at fixing point in inside bend, for inside width of 96 mm.

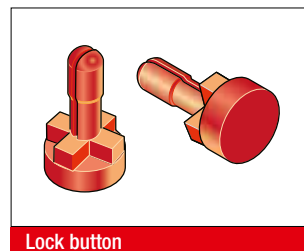
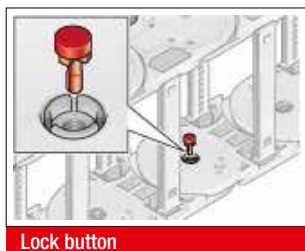
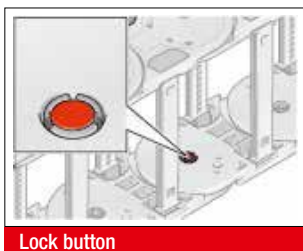
**RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**



Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

**MP 52/62/72 LOCK BUTTON**

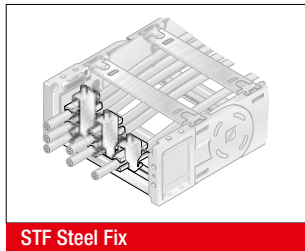
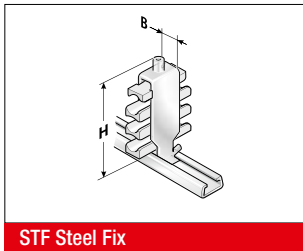


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP52/62/72 lock button	0520000080

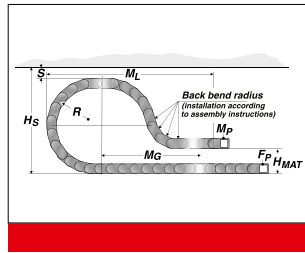
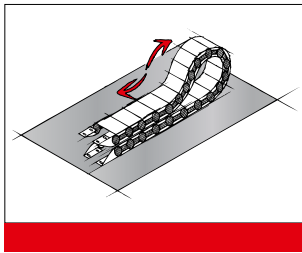
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**LOWERED FIXING POINT MP 52**



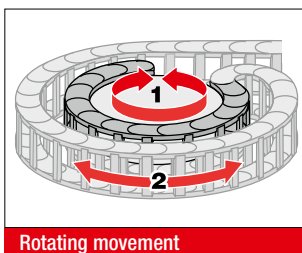
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
175.0	180.0	50.0	515.0	620.0	6	3
200.0	210.0	50.0	565.0	830.0	10	3
250.0	250.0	50.0	665.0	990.0	13	3
300.0	300.0	50.0	765.0	900.0	14	3
350.0	330.0	50.0	865.0	1180.0	16	3

**MP 52.2 REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 52.2 (RÜ200/R135) left	052200010060	135.0	200.0
SR 52.2 (RÜ200/R135) right	052200010062	135.0	200.0
SR 52.2 (RÜ200/R170) left	052200015060	170.0	200.0
SR 52.2 (RÜ200/R170) right	052200015062	170.0	200.0
SR 52.2 (RÜ200/R200) left	052200020060	200.0	200.0
SR 52.2 (RÜ200/R200) right	052200020062	200.0	200.0
SR 52.2 (RÜ200/R250) left	052200025060	250.0	200.0
SR 52.2 (RÜ200/R250) right	052200025062	250.0	200.0
SR 52.2 (RÜ200/R300) right	052200030062	300.0	200.0
SR 52.2 (RÜ200/R350) left	052200035060	350.0	200.0
SR 52.2 (RÜ200/R350) right	052200035062	350.0	200.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel



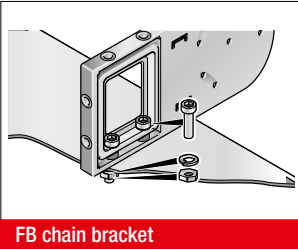
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

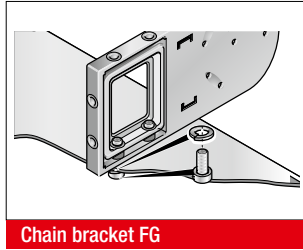
The variable guide channel ensures that the energy chain is supported and guided securely.



**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**

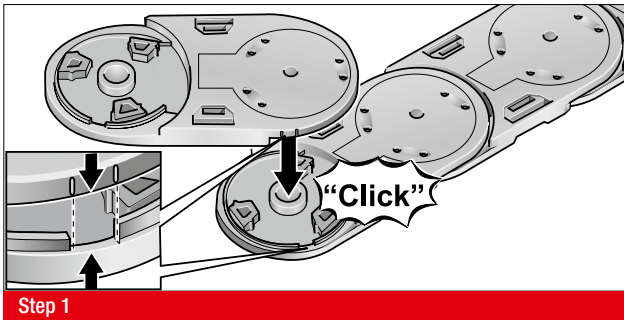
Integrated through-hole fastened down using screw and nut.

**Version KA-FG:**

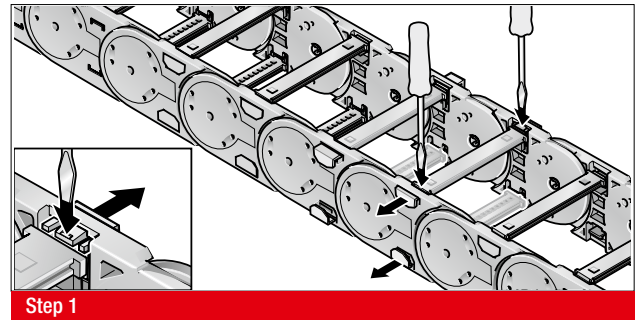
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

**ASSEMBLY**

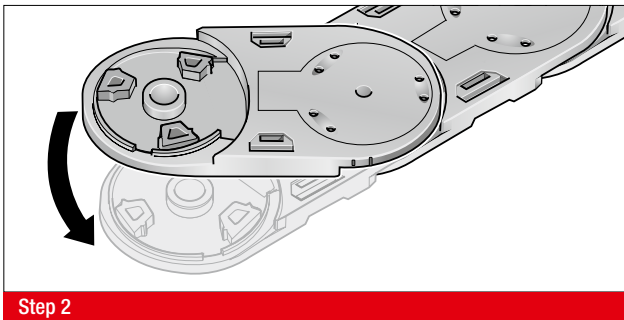
**DISASSEMBLY**



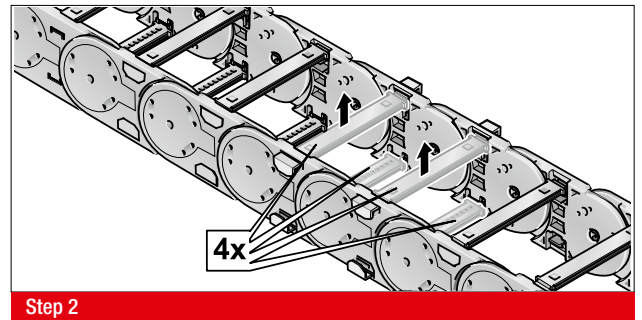
Step 1



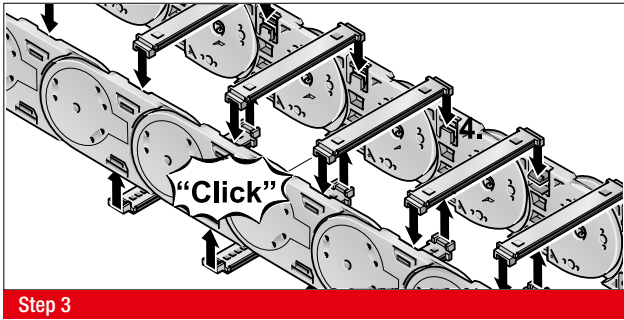
Step 1



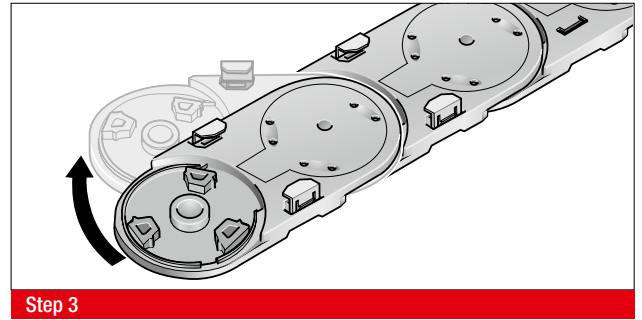
Step 2



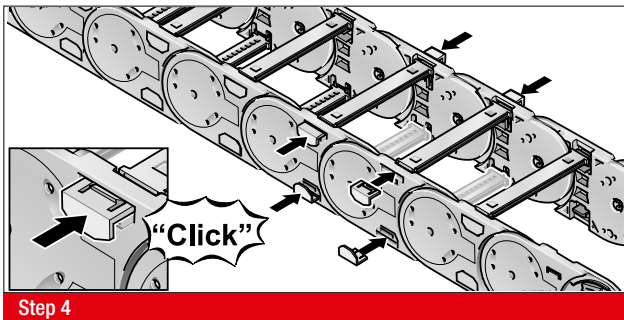
Step 2



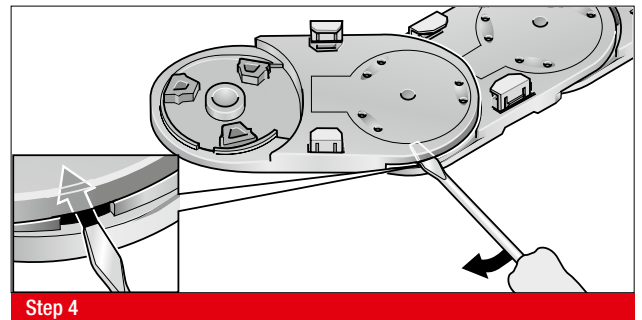
Step 3



Step 3



Step 4



Step 4

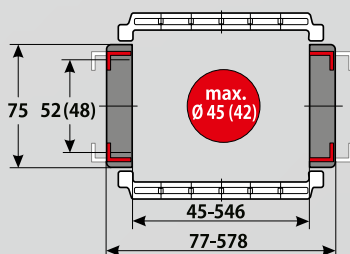
## MP 52.2-D OPEN



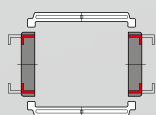
## MP 52.3-D CLOSED



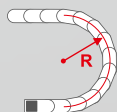
- SOFT-STOP SYSTEM
- SLIDING BLOCKS FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- CHAIN BRACKET FLEXIBLE
- PLASTIC OR ALUMINIUM VERSION



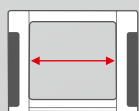
### TECHNICAL DATA



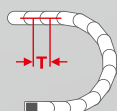
**Loading side**  
Inside and outside bend



**Available radii**  
200.0



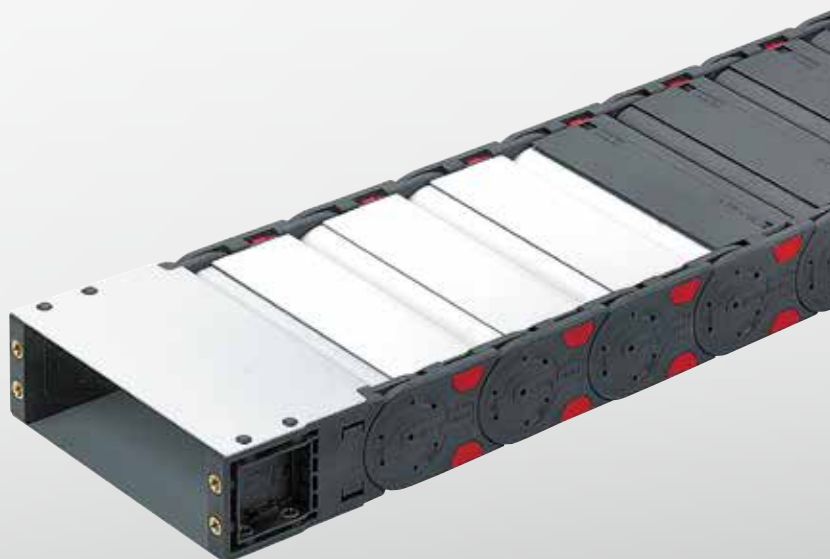
**Available interior widths**  
With plastic crossbar  
45.0 – 546.0  
With alu crossbar / with alu cover  
67.0 – 600.0 mm / 43.0 – 600.0 mm

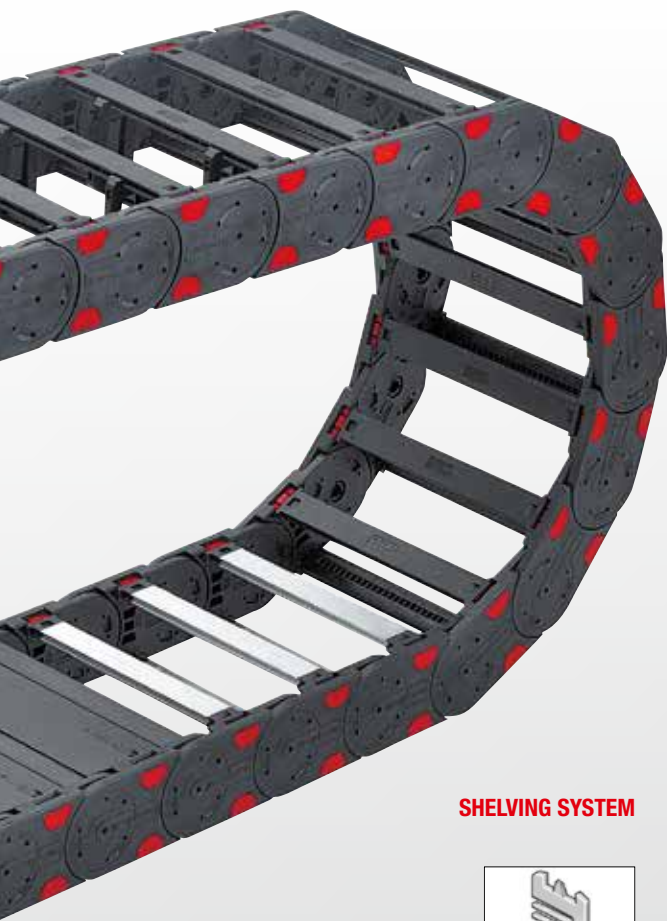


**Pitch**  
T = 91.0 mm



**Noise attenuator**  
Reduction of the noise emission by up to 10 dB(A) by the use of damping elements in the chain links.





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 237
Travel distance vertical, hanging $L_{vh}$ max.	60.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	2.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	30.0 m/s <sup>2</sup>

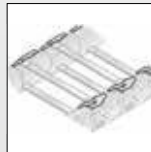
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

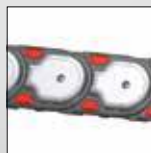
## ACCESSORIES



Sliding block



Separator TR



Gliding plate

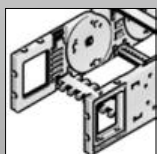


RS shelving system



Bracket bar

## CHAIN BRACKET



Chain bracket flexible



Crossbar connector RSV

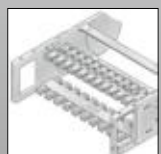


Cover

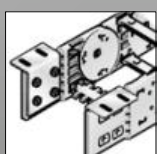
## GUIDE CHANNELS



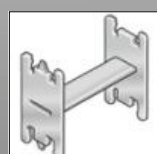
VAW steel galvanised / stainless steel



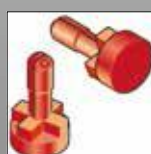
RS-ZL crossbar strain relief



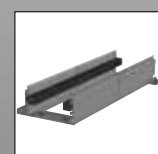
Chain bracket angle



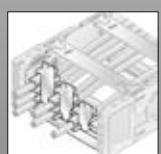
H-shaped shelf unit RE



Lock button



VAW aluminium



STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0522 30</b>	MP 52.2-D open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>045<sup>1)</sup></b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	<b>200</b> [7.87]	<b>0</b> Plastic, full-ridged with bias	<b>3</b> Polyamide with attenuator (PA/black)	
		<b>057<sup>1)</sup></b> [2.24]	<b>089</b> [3.50]	<b>246<sup>2)</sup></b> [9.69]	<b>278<sup>2)</sup></b> [10.94]				
<b>0523 44<sup>3)</sup></b>	MP 52.3-D Closed Cover on outside bend Cover on inside bend Opens on inside and outside bend	<b>062<sup>1)</sup></b> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]		<b>1</b> Plastic, full-ridged without bias	<b>9</b> Special version (on request)	
		<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]				
		<b>084</b> [3.31]	<b>116</b> [4.57]	<b>296<sup>2)</sup></b> [11.65]	<b>328<sup>2)</sup></b> [12.91]		<b>2</b> Plastic, half-ridged with bias		
		<b>093</b> [3.66]	<b>125</b> [4.92]	<b>346<sup>2)</sup></b> [13.62]	<b>378<sup>2)</sup></b> [14.88]				
		<b>096<sup>2)</sup></b> [3.78]	<b>128<sup>2)</sup></b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]		<b>3</b> Plastic, half-ridged without bias		
		<b>104</b> [4.09]	<b>136</b> [5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]				
		<b>107</b> [4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	<b>403</b> [15.87]		<b>4</b> Aluminium full-ridged with bias		
		<b>121<sup>2)</sup></b> [4.76]	<b>153<sup>2)</sup></b> [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]				
		<b>133</b> [5.24]	<b>165</b> [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]		<b>5</b> Aluminium full-ridged without bias		
		<b>144</b> [5.67]	<b>176</b> [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]				
		<b>146<sup>2)</sup></b> [5.75]	<b>178<sup>2)</sup></b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]		<b>6</b> Aluminium half-ridged with bias		
		<b>158</b> [6.22]	<b>190</b> [7.48]	<b>546</b> [21.50]	<b>578</b> [22.76]				
		<b>164</b> [6.46]	<b>196</b> [7.72]				<b>7</b> Aluminium half-ridged without bias		
		<b>171</b> [6.73]	<b>203</b> [7.99]						
		<b>182<sup>2)</sup></b> [7.17]	<b>214<sup>2)</sup></b> [8.43]				<b>9</b> Special version (on request)		
		<b>196<sup>2)</sup></b> [7.72]	<b>228<sup>2)</sup></b> [8.98]						
		<b>208</b> [8.19]	<b>240</b> [9.45]						
		<b>220<sup>2)</sup></b> [8.66]	<b>252<sup>2)</sup></b> [9.92]						



**ORDERING EXAMPLE: 0522 30 220 200 1 3 9555**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 220 mm, radius 200 mm  
 Plastic crossbar, full-ridged without bias, material is black-coloured polyamide with damper  
 Chain length 9555 mm (105 links)

- <sup>1)</sup> for Variant 30 only
- <sup>2)</sup> also available with plastic cover
- <sup>3)</sup> reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm .

**Aluminium covers:**

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 43.0 mm – 600.0 mm .

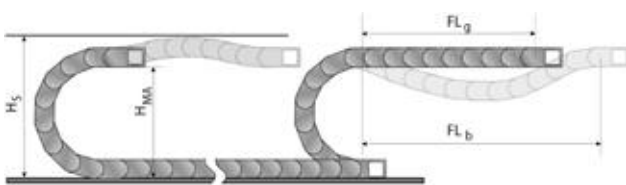
**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminium.

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

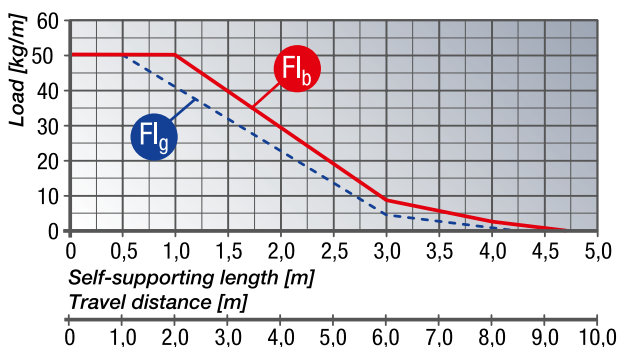
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



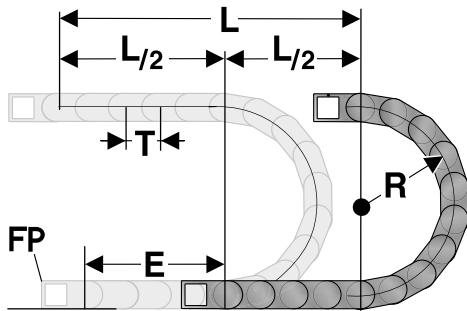
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain. Closed energy chains (with covers) have a higher unit weight than open chains (with crossbars). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 1.5 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**



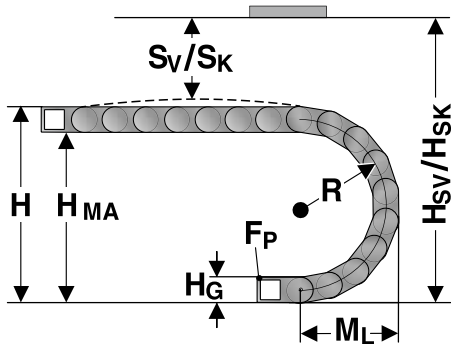
The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 11 \text{ qty. } \times 91.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 91.0 mm

**INSTALLATION DIMENSIONS**



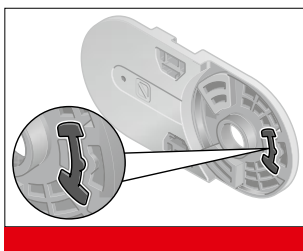
The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

Concerning the installed dimensions, you must take into consideration whether the chain links are equipped with damping elements or not.

For chain links without damping elements, the value “Installed height with bias  $H_{sv}$  without damper” or “Installed height without bias  $H_{sk}$  without damper” must be taken into account. If the chain links are equipped with a damping element, the value “Installed height with bias  $H_{sv}$  with damper” or “Installed height without bias  $H_{sk}$  with damper” is to be taken into account.

<b>Radius R</b>	<b>200</b>
Outside height of chain link ( $H_o$ )	75
Height of bend (H)	505
Height of moving end bracket ( $H_{MA}$ )	430
Safety margin with bias ( $S_v$ )	20
Installation height with bias ( $H_{sv}$ ) with damper	585
Safety margin without bias ( $S_k$ )	20
Installation height without bias ( $H_{sk}$ ) with damper	555
Arc projection ( $M_L$ )	344

**DAMPING ELEMENTS FOR THE SIDE LINKS**



The damping elements in the stops facilitate a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

A reduction of the noise emission by up to 10 dB(A) comparing to the variants without the use of damping elements is possible.

## POWERLINE PLASTIC CROSSBAR



The crossbars connect the two side runs of the energy chain.  
The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

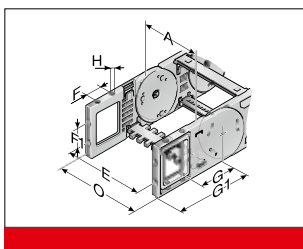
**MP 52.3 / MP 52.5 PLASTIC COVER**



The covers connect the two side runs of the energy chain. The cover length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Installation site	Inside width mm
A-523062, outside	052306210000	Cover	Outside bend	62.0
I-523062, inside	052306220000	Cover	Inside bend	62.0
A-523096, outside	052309610000	Cover	Outside bend	96.0
I-523096, inside	052309620000	Cover	Inside bend	96.0
A-523121, outside	052312110000	Cover	Outside bend	121.0
I-523121, inside	052312120000	Cover	Inside bend	121.0
A-523146, outside	052314610000	Cover	Outside bend	146.0
I-523146, inside	052314620000	Cover	Inside bend	146.0
A-523182, outside	052318210000	Cover	Outside bend	182.0
I-523182, inside	052318220000	Cover	Inside bend	182.0
A-523196, outside	052319610000	Cover	Outside bend	196.0
I-523196, inside	052319620000	Cover	Inside bend	196.0
A-523220, outside	052322010000	Cover	Outside bend	220.0
I-523220, inside	052322020000	Cover	Inside bend	220.0
A-523246, outside	052324610000	Cover	Outside bend	246.0
I-523246, inside	052324620000	Cover	Inside bend	246.0
A-523296, outside	052329610000	Cover	Outside bend	296.0
I-523296, inside	052329620000	Cover	Inside bend	296.0
A-523346, outside	052334610000	Cover	Outside bend	346.0
I-523346, inside	052334620000	Cover	Inside bend	346.0

**KA 52.1 CHAIN BRACKET FLEXIBLE**

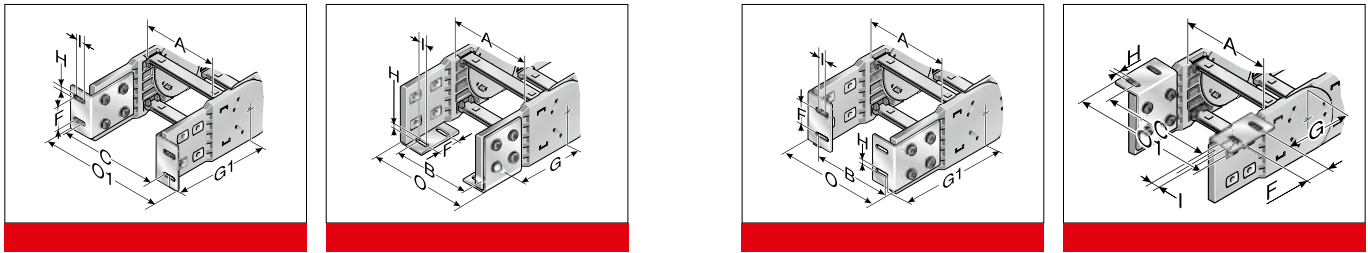


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width							Outside width of KA O mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	
KA 52.1-FB Female end	0521000056	Plastic	with bush	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	8.5	A+36.0
KA 52.1-FB Male end	0521000057	Plastic	with bush	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	8.5	A+36.0
KA 52.1-FG Female end	0521000058	Plastic	with thread	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	M8	A+36.0
KA 52.1-FG Male end	0521000059	Plastic	with thread	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	M8	A+36.0



**KA 52.1 CHAIN BRACKET ANGLE**

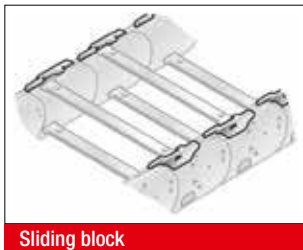


There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is

fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires one male and one female bracket. The brackets should be fastened with M6 screws.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm	Outside width of KA 01 mm
			A mm	B mm	C mm	F mm	G mm	G1 mm	H0 mm	I mm		
KA 52.1 Female end	0521000050	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	95.5	144.0	6.5	14.0	A+32.0	A+71.0
KA 52.1 Male end	0521000051	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	95.5	144.0	6.5	14.0	A+32.0	A+71.0

**GS 52.2 SLIDING BLOCK**

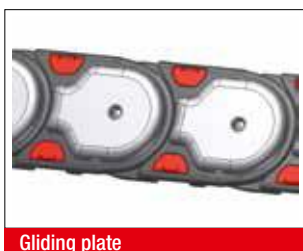


Sliding block

In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Installation site	Min. radius mm	Sliding block height mm
GS 52.2.1 right	052290400302	For right side link	150.0	4.0
GS 52.2.2 left	052290400300	For left side link	150.0	4.0

**GLP 52.2-D GLIDING PLATE**

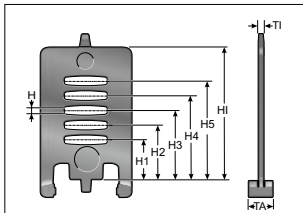


Gliding plate

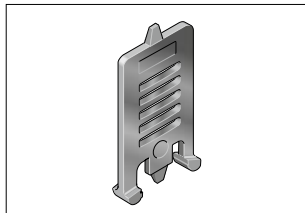
The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 2.5 mm. We recommend replacing the energy chain when this limit has been reached. Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding plates. The energy chain must be placed on its side before opening.

Type	Order No.	Installation site	For radius mm	Gliding plate height mm
SG 52.2-D RK200.2 right with GLP5, mounted	052200020096	Right chain link including gliding plate	200.0	7.0
SG 52.2-D RK200.2 left with GLP5, mounted	052200020094	Left chain link including gliding plate	200.0	7.0

**TR 52 SEPARATOR**



Separator

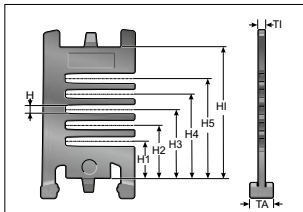


Separator

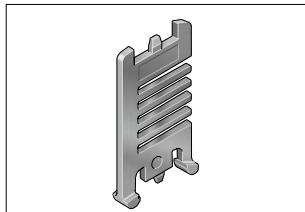
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. The closed separator is used when no shelves are used. This is the recommended design for travel paths of 30 metres or greater.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52	052000009200	TR 52 Separator	lockable	3.5	10.0	4.2	16.3	22.3	28.2	33.8	39.8	52.0

**TR 52.1 SEPARATOR**



Separator

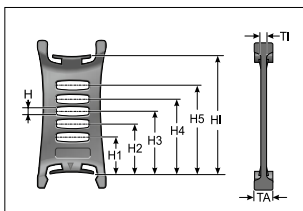


Separator

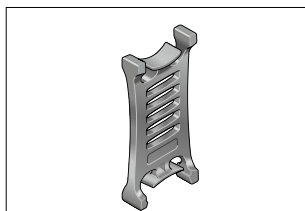
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52.1	052100009200	TR 52.1 Separator	lockable	3.5	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

**TR 52-V SEPARATOR**



Separator

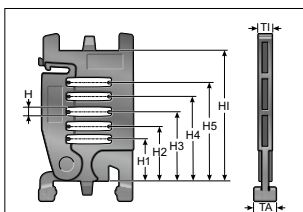


Separator

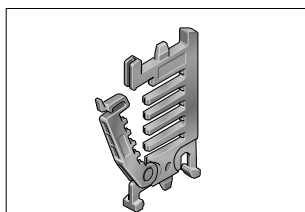
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52-V	052000009300	TR 52-V Separator	moveable	3.5	13.0	4.0	16.3	22.3	28.2	33.8	39.8	52.0

**RTT 52 SHELF SUPPORT, DIVISIBLE**



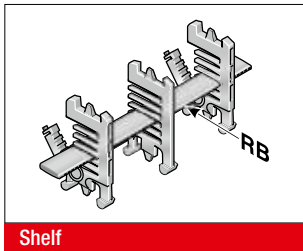
Shelf support



Shelf support

In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
RTT 52	100090522000	Shelf support, divisible	lockable	7.0	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

**RB-5 SHELF**

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	10000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0

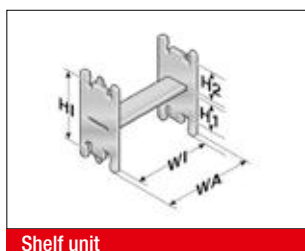
### RSV 52 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	TI mm
RSV 52	052000009600	Crossbar connector	7.5
RSV 52 Alu	052000009800	Crossbar connector for aluminium crossbars	7.5

### RE 52 H-SHAPED SHELF UNIT



One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	H3 mm
RE 36/17	100000361714	H-shaped shelf unit	42.5	36.5	31.0	17.4	52.0
RE 59/24	100000592414	H-shaped shelf unit	65.0	59.0	24.2	24.2	52.0
RE 81/12	100000811214	H-shaped shelf unit	87.5	81.5	36.0	12.4	52.0

### BS-5 BRACKET BAR



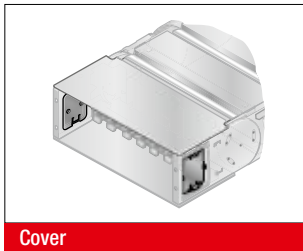
Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

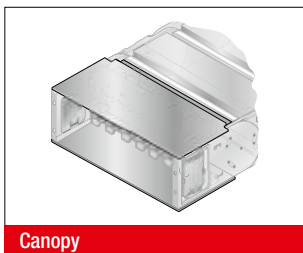
**D5 CHAIN BRACKET COVER**



Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order No.
D5 Cover	0523888002

**MP 52.3 CHAIN BRACKET CANOPY**



Constructed from aluminium, the canopies for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

**Canopy for chain bracket fixed point outside bend: Type and order number configurator**



Type:	KA 52.1 FB/FG AB	Inside width	2-2
Order No.:	0521	Inside width	060

**Canopy for chain bracket fixed point inside bend: Type and order number configurator**



Type:	KA 52.1 FB/FG IB	Inside width	2-2
Order No.:	0521	Inside width	058

**Canopy for chain bracket moving end outside bend: Type and order number configurator**



Type:	KA 52.1 FB/FG AB	Inside width	1-2
Order No.:	0521	Inside width	059

**Canopy for chain bracket moving end inside bend: Type and order number configurator**



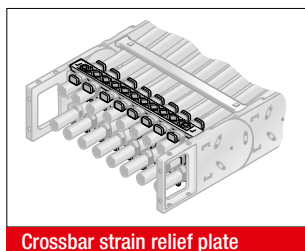
Type:	KA 52.1 FB/FG IB	Inside width	1-2
Order No.:	0521	Inside width	057

**Ordering example:**

0521096058 KA 52.1 FB/FG IB 096 2-2

Chain bracket canopy at fixing point in inside bend, for inside width of 96 mm.

**RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**

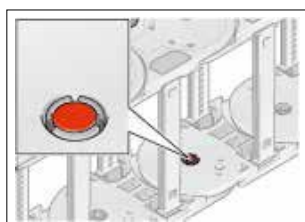


Crossbar strain relief plate

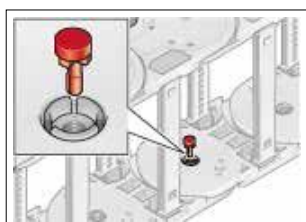
Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

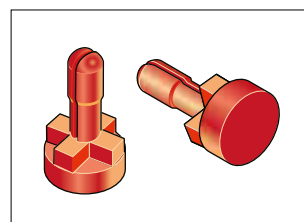
**MP 52/62/72 LOCK BUTTON**



Lock button



Lock button



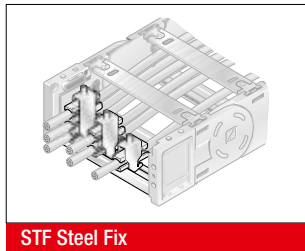
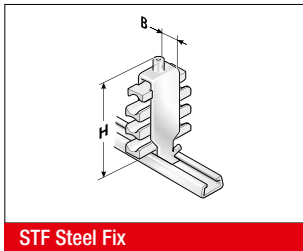
Lock button

To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP52/62/72 lock button	0520000080

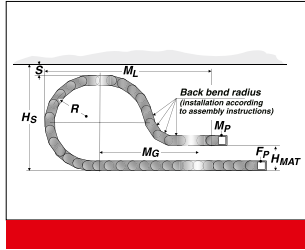
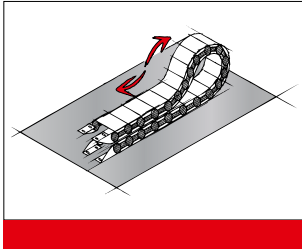
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 52-D LOWERED FIXING POINT**



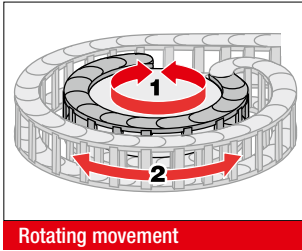
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
200.0	210.0	50.0	565.0	830.0	10	3

**MP 52.2-D REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 52.2 (RÜ200/R200) left	SR 52.2-D (RÜ200/R200) links	200.0	200.0
SR 52.2 (RÜ200/R200) right	SR 52.2-D (RÜ200/R200) rechts	200.0	200.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



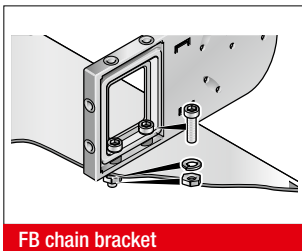
VAW steel galvanised / stainless steel



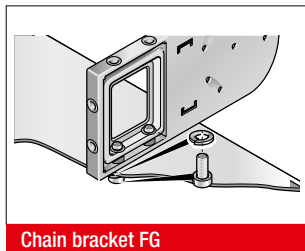
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

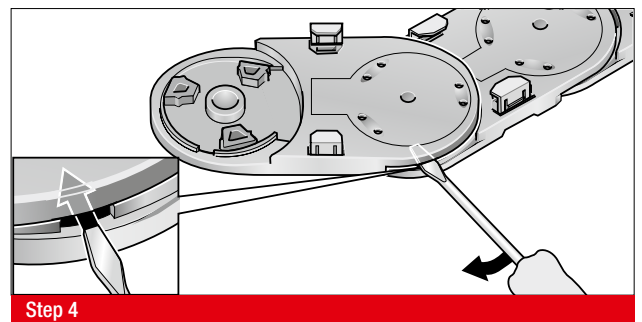
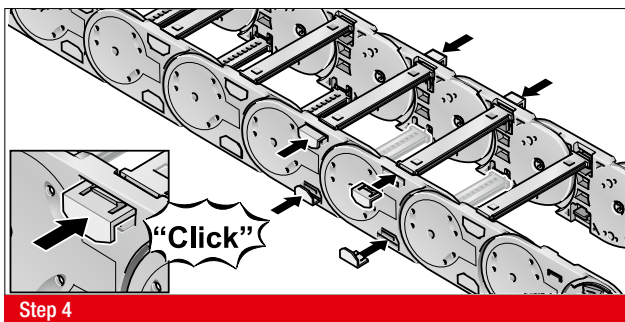
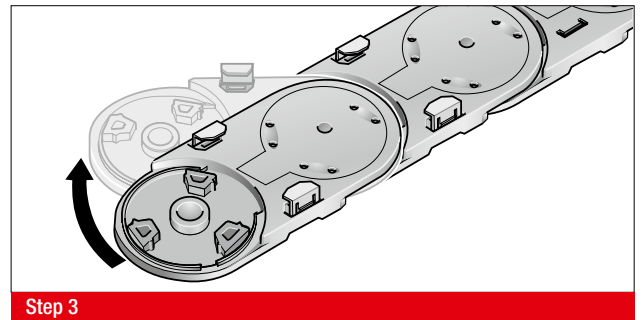
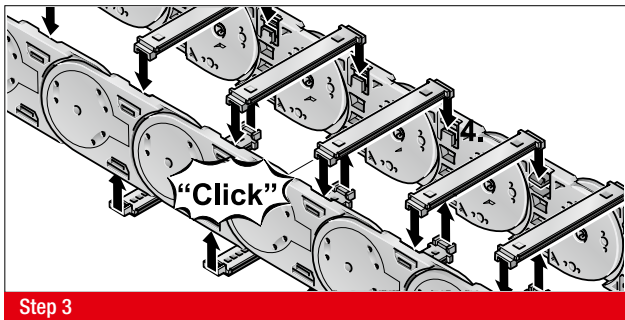
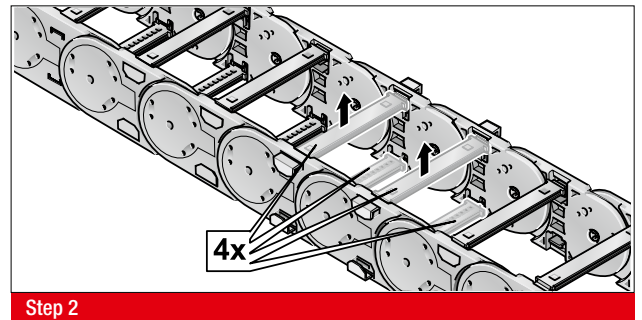
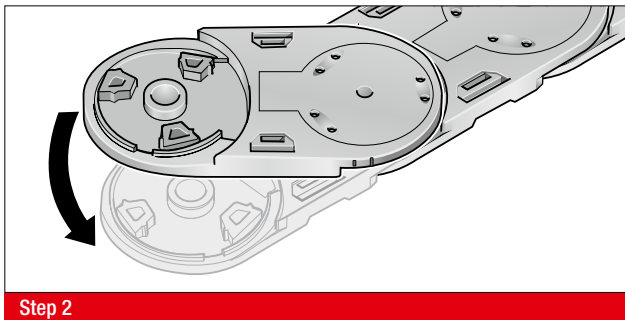
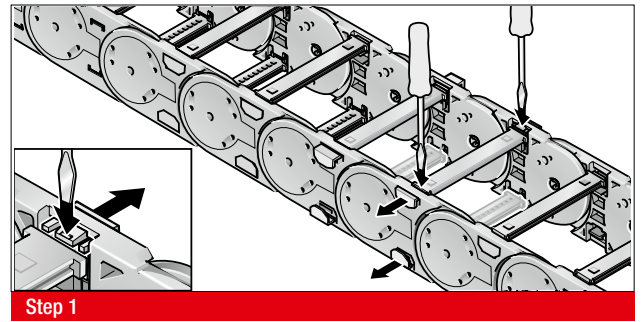
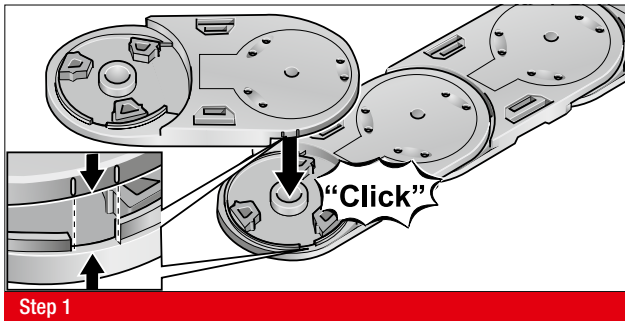
**Version KA-FB:** Integrated through-hole fastened down using screw and nut.

**Version KA-FG:** Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.



**ASSEMBLY**

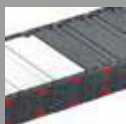
**DISASSEMBLY**



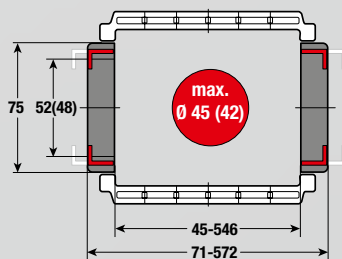
**MP 52.4**  
OPEN



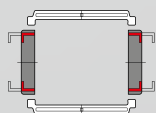
**MP 52.5**  
CLOSED



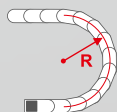
- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- CHAIN BRACKET FLEXIBLE
- BROAD INTERIOR LAYOUT
- PLASTIC OR ALUMINIUM VERSION



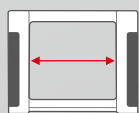
## TECHNICAL DATA



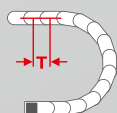
**Loading side**  
Inside and outside bend



**Available radii**  
125.0 – 300.0



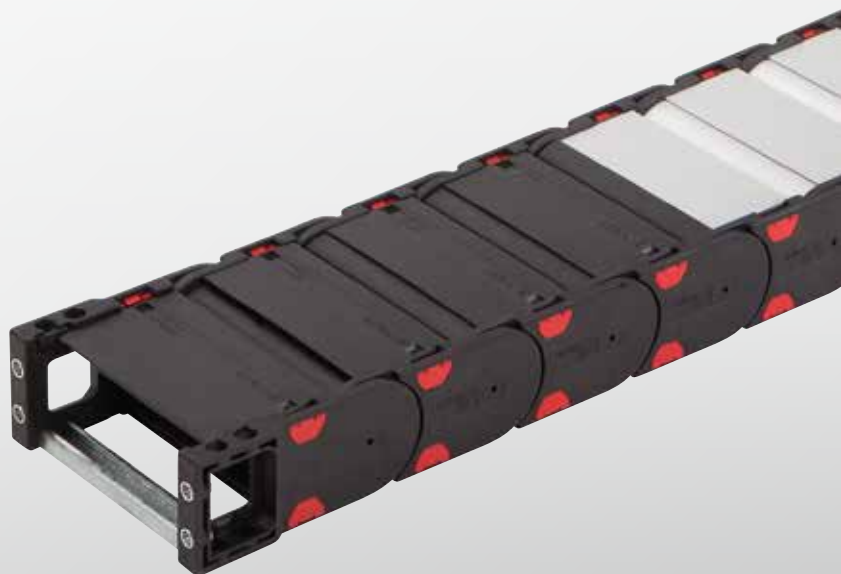
**Available interior widths**  
With plastic crossbar  
45.0 – 546.0  
With alu crossbar / with alu cover  
67.0 – 600.0 mm / 43.0 – 600.0 mm



**Pitch**  
T = 91.0 mm



**Noise attenuator**  
Reduction of the noise emission by up to 10 dB(A) by the use of damping elements in the chain links.





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	50.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 253
Travel distance vertical, hanging $L_{vh}$ max.	50.0 m
Travel distance vertical, upright $L_{vs}$ max.	4.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	30.0 m/s <sup>2</sup>

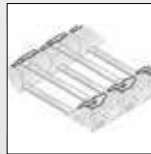
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

## ACCESSORIES

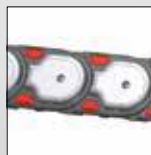


Sliding block

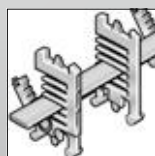
## SHELVING SYSTEM



Separator TR



Gliding plate



RS shelving system



Bracket bar

## CHAIN BRACKET



Crossbar connector RSV

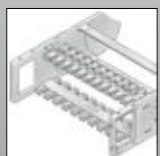


Cover

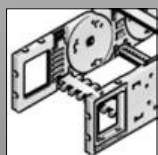
## GUIDE CHANNELS



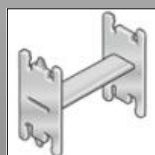
VAW steel galvanised / stainless steel



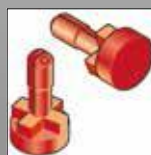
RS-ZL crossbar strain relief



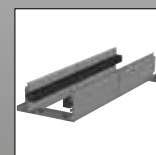
Chain bracket flexible



H-shaped shelf unit RE



Lock button



VAW aluminium



STF Steel Fix

ORDERING KEY

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
0524 30	MP 52.4 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	045 <sup>1)</sup> [1.77]	071 [2.80]	233 [9.17]	259 [10.20]	125 <sup>1)</sup> [4.92]	0 Plastic, full-ridged with bias	2 Polyamide without attenuator (PA/black)	
		057 <sup>1)</sup> [2.24]	083 [3.27]	246 <sup>2)</sup> [9.69]	272 [10.71]				
0525 44 <sup>3)</sup>	MP 52.5 Closed Cover on outside bend Cover on inside bend Opens on inside and outside bend	062 <sup>1)</sup> [2.44]	088 [3.46]	252 [9.92]	278 [10.94]	135 <sup>1)</sup> [5.31]	1 Plastic, full-ridged without bias	3 Polyamide with attenuator (PA/black)	
		071 [2.80]	097 [3.82]	258 [10.16]	284 [11.18]				
		084 [3.31]	110 [4.33]	296 <sup>2)</sup> [11.65]	322 [12.68]	150 [5.91]	2 Plastic, half-ridged with bias	9 Special version (on request)	
		093 [3.66]	119 [4.69]	346 <sup>2)</sup> [13.62]	372 [14.65]				
		096 <sup>2)</sup> [3.78]	122 [4.80]	350 [13.78]	376 [14.80]	175 [6.89]	3 Plastic, half-ridged without bias		
		104 [4.09]	130 [5.12]	358 [14.09]	384 [15.12]				
		107 [4.21]	133 [5.24]	371 [14.61]	397 [15.63]	200 [7.87]	4 Aluminium full-ridged with bias		
		121 <sup>2)</sup> [4.76]	147 [5.79]	396 [15.59]	422 [16.61]				
		133 [5.24]	159 [6.26]	421 [16.57]	447 [17.60]	250 [9.84]	5 Aluminium full-ridged without bias		
		144 [5.67]	170 [6.69]	446 [17.56]	472 [18.58]				
		146 <sup>2)</sup> [5.75]	172 [6.77]	496 [19.53]	522 [20.55]	300 [11.81]	6 Aluminium half-ridged with bias		
		158 [6.22]	184 [7.24]	546 [21.50]	572 [22.52]				
		164 [6.46]	190 [7.48]				7 Aluminium half-ridged without bias		
		171 [6.73]	197 [7.76]						
		182 <sup>2)</sup> [7.17]	208 [8.19]				9 Special version (on request)		
		196 <sup>2)</sup> [7.72]	222 [8.74]						
		208 [8.19]	234 [9.21]						
		220 <sup>2)</sup> [8.66]	246 [9.69]						



ORDERING EXAMPLE: 0524 30 220 150 0 3 2500

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 220 mm, radius 150 mm  
 Plastic, full-ridged with bias, material polyamide with damper (PA/black)  
 Chain length 2500 mm (28 links)

- <sup>1)</sup> Only for variant MP 52.4
- <sup>2)</sup> MP 52.5 also available with plastic cover
- <sup>3)</sup> Reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm .

**Aluminium covers:**

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 43.0 mm – 600.0 mm .

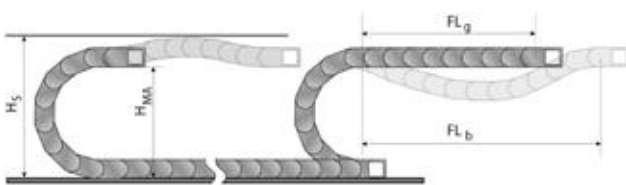
**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminium.

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

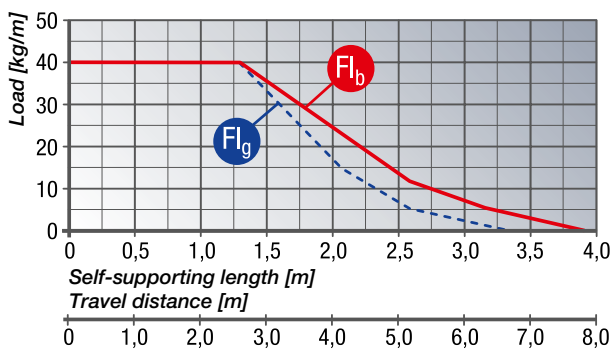
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



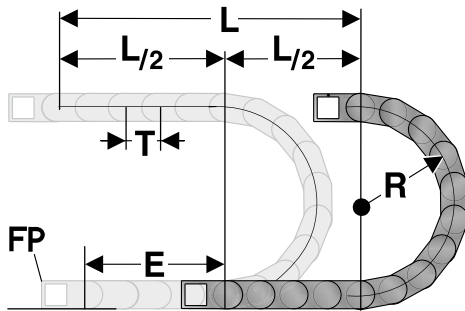
**FL<sub>g</sub> Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**FL<sub>b</sub> Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain. Closed cable drag chains (with covers) have a higher unit weight than open chains (with frame bridges). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 1.5 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**



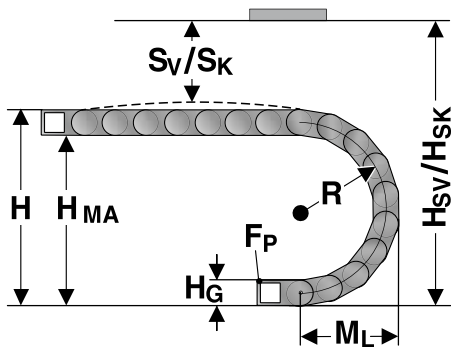
The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 11 \text{ qty. x91.0 mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 91.0 mm

**INSTALLATION DIMENSIONS**



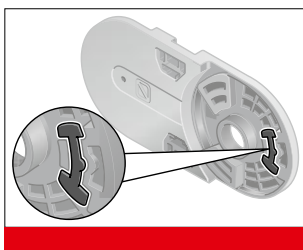
The moving end chain connection is to be screw fixed at height H<sub>MA</sub> for the respective radius.

Concerning the installed dimensions, you must take into consideration whether the chain links are equipped with damping elements or not.

For chain links without damping elements, the value “Installed height with bias H<sub>sv</sub> without damper” or “Installed height without bias H<sub>sk</sub> without damper” must be taken into account. If the chain links are equipped with a damping element, the value “Installed height with bias H<sub>sv</sub> with damper” or “Installed height without bias H<sub>sk</sub> with damper” is to be taken into account.

Radius R	125	135	150	175	200	250	300
Outside height of chain link (H <sub>e</sub> )	75	75	75	75	75	75	75
Height of bend (H)	325	345	375	425	475	575	675
Height of moving end bracket (H <sub>MA</sub> )	250	270	300	350	400	500	600
Safety margin with bias (S <sub>v</sub> )	20	20	20	20	20	20	20
Installation height with bias (H <sub>sv</sub> ) without damper	405	425	455	505	555	655	755
Installation height with bias (H <sub>sv</sub> ) with damper	435	455	485	535	585	685	785
Safety margin without bias (S <sub>k</sub> )	20	20	20	20	20	20	20
Installation height without bias (H <sub>sk</sub> ) without damper	345	365	395	445	495	595	695
Installation height without bias (H <sub>sk</sub> ) with damper	375	395	425	475	525	625	725
Arc projection (M <sub>L</sub> )	254	264	279	304	329	379	429

**DAMPING ELEMENTS FOR THE SIDE LINKS**



The damping elements in the stops facilitate a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

A reduction of the noise emission by up to 10 dB(A) comparing to the variants without the use of damping elements is possible.

## POWERLINE PLASTIC CROSSBAR



Crossbar

The crossbars connect the two side runs of the energy chain. The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

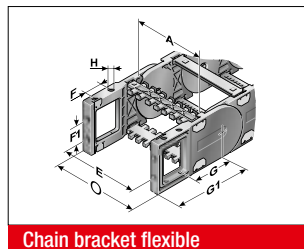
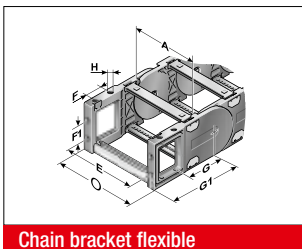
**MP 52.3 / MP 52.5 PLASTIC COVER**



The covers connect the two side runs of the energy chain. The cover length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Installation site	Inside width mm
A-523062, outside	052306210000	Cover	Outside bend	62.0
I-523062, inside	052306220000	Cover	Inside bend	62.0
A-523096, outside	052309610000	Cover	Outside bend	96.0
I-523096, inside	052309620000	Cover	Inside bend	96.0
A-523121, outside	052312110000	Cover	Outside bend	121.0
I-523121, inside	052312120000	Cover	Inside bend	121.0
A-523146, outside	052314610000	Cover	Outside bend	146.0
I-523146, inside	052314620000	Cover	Inside bend	146.0
A-523182, outside	052318210000	Cover	Outside bend	182.0
I-523182, inside	052318220000	Cover	Inside bend	182.0
A-523196, outside	052319610000	Cover	Outside bend	196.0
I-523196, inside	052319620000	Cover	Inside bend	196.0
A-523220, outside	052322010000	Cover	Outside bend	220.0
I-523220, inside	052322020000	Cover	Inside bend	220.0
A-523246, outside	052324610000	Cover	Outside bend	246.0
I-523246, inside	052324620000	Cover	Inside bend	246.0
A-523296, outside	052329610000	Cover	Outside bend	296.0
I-523296, inside	052329620000	Cover	Inside bend	296.0
A-523346, outside	052334610000	Cover	Outside bend	346.0
I-523346, inside	052334620000	Cover	Inside bend	346.0

**KA 52.4 CHAIN BRACKET FLEXIBLE**

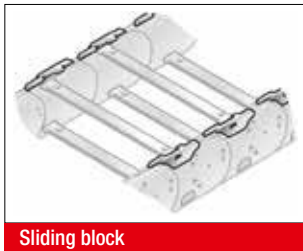


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the energy chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Press-in metal metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 52.4-FB Female end	0524000050	Plastic	with bush	45.0 – 546.0	A+16.0	20.0	30.0	85.0	125.0	9.0	A+34.0	
KA 52.4-FB Female end, pendular	0524000052	Plastic	with bush	45.0 – 546.0	A+16.0	20.0	30.0	85.0	125.0	9.0	A+34.0	
KA 52.4-FB Male end	0524000051	Plastic	with bush	45.0 – 546.0	A+16.0	20.0	30.0	85.0	125.0	9.0	A+34.0	
KA 52.4-FG Female end	0524000053	Plastic	with thread	45.0 – 546.0	A+16.0	20.0	30.0	85.0	125.0	M8	A+34.0	
KA 52.4-FG Female end, pendular	0524000055	Plastic	with thread	45.0 – 546.0	A+16.0	20.0	30.0	85.0	125.0	M8	A+34.0	
KA 52.4-FG Male end	0524000054	Plastic	with thread	45.0 – 546.0	A+16.0	20.0	30.0	85.0	125.0	M8	A+34.0	



**MP 52.4 SLIDING BLOCK**

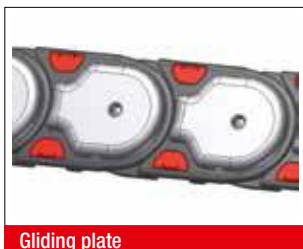


Sliding block

In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Installation site	Min. radius mm	Sliding block height mm
GS 52.4.1 right	052490400302	For right side link	150.0	4.0
GS 52.4.2 left	052490400300	For left side link	150.0	4.0

**GLP 5 (52.4) GLIDING PLATE**

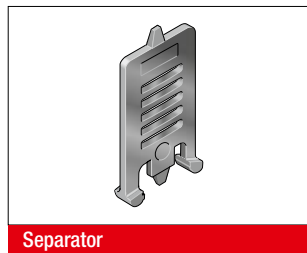
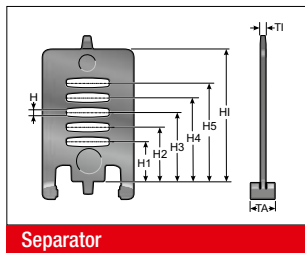


Gliding plate

The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 2.5 mm. We recommend replacing the energy chain when this limit has been reached. Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding plates. The energy chain must be placed on its side before opening.

Type	Order No.	Installation site	For radius mm	Gliding plate height mm
SG 52.4 RK125.1 right with GLP5, mounted	052400012566	Right chain link including gliding plate	125.0	7.0
SG 52.4 RK125.2 left with GLP5, mounted	052400012564	Left chain link including gliding plate	125.0	7.0
SG 52.4 RK135.1 right with GLP5, mounted	052400013566	Right chain link including gliding plate	135.0	7.0
SG 52.4 RK135.2 left with GLP5, mounted	052400013564	Left chain link including gliding plate	135.0	7.0
SG 52.4 RK150.1 right with GLP5, mounted	052400015066	Right chain link including gliding plate	150.0	7.0
SG 52.4 RK150.2 left with GLP5, mounted	052400015064	Left chain link including gliding plate	150.0	7.0
SG 52.4 RK175.1 right with GLP5, mounted	052400017566	Right chain link including gliding plate	175.0	7.0
SG 52.4 RK175.2 left with GLP5, mounted	052400017564	Left chain link including gliding plate	175.0	7.0
SG 52.4 RK200.1 right with GLP5, mounted	052400020066	Right chain link including gliding plate	200.0	7.0
SG 52.4 RK200.2 left with GLP5, mounted	052400020064	Left chain link including gliding plate	200.0	7.0
SG 52.4 RK250.1 right with GLP5, mounted	052400025066	Right chain link including gliding plate	250.0	7.0
SG 52.4 RK250.2 left with GLP5, mounted	052400025064	Left chain link including gliding plate	250.0	7.0
SG 52.4 RK300.1 right with GLP5, mounted	052400030066	Right chain link including gliding plate	300.0	7.0
SG 52.4 RK300.2 left with GLP5, mounted	052400030064	Left chain link including gliding plate	300.0	7.0
SG 52.4-D RK125.1 right with GLP5, mounted	052400012596	Right chain link including gliding plate	125.0	7.0
SG 52.4-D RK125.2 left with GLP5, mounted	052400012594	Left chain link including gliding plate	125.0	7.0
SG 52.4-D RK135.1 right with GLP5, mounted	052400013596	Right chain link including gliding plate	135.0	7.0
SG 52.4-D RK135.2 left with GLP5, mounted	052400013594	Left chain link including gliding plate	135.0	7.0
SG 52.4-D RK150.1 right with GLP5, mounted	052400015096	Right chain link including gliding plate	150.0	7.0
SG 52.4-D RK150.2 left with GLP5, mounted	052400015094	Left chain link including gliding plate	150.0	7.0
SG 52.4-D RK175.1 right with GLP5, mounted	052400017596	Right chain link including gliding plate	175.0	7.0
SG 52.4-D RK175.2 left with GLP5, mounted	052400017594	Left chain link including gliding plate	175.0	7.0
SG 52.4-D RK200.1 right with GLP5, mounted	052400020096	Right chain link including gliding plate	200.0	7.0
SG 52.4-D RK200.2 left with GLP5, mounted	052400020094	Left chain link including gliding plate	200.0	7.0
SG 52.4-D RK250.1 right with GLP5, mounted	052400025096	Right chain link including gliding plate	250.0	7.0
SG 52.4-D RK250.2 left with GLP5, mounted	052400025094	Left chain link including gliding plate	250.0	7.0
SG 52.4-D RK300.1 right with GLP5, mounted	052400030096	Right chain link including gliding plate	300.0	7.0
SG 52.4-D RK300.2 left with GLP5, mounted	052400030094	Left chain link including gliding plate	300.0	7.0

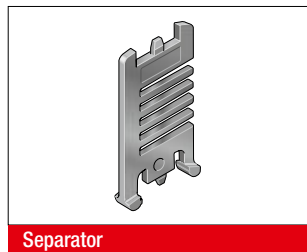
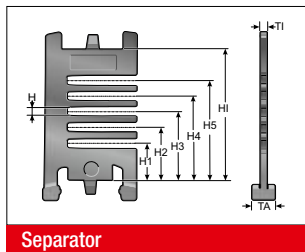
**TR 52 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. The closed separator is used when no shelves are used. This is the recommended design for travel paths of 30 metres or greater.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
TR 52	052000009200	TR 52 Separator	lockable	3.5	10.0	4.2	16.3	22.3	28.2	33.8	39.8	52.0

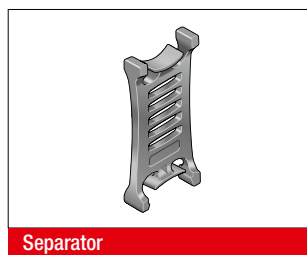
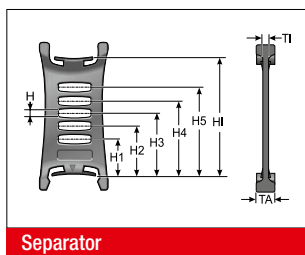
**TR 52.1 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
TR 52.1	052100009200	TR 52.1 Separator	lockable	3.5	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

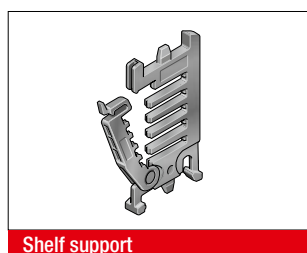
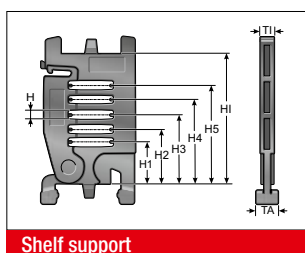
**TR 52-V SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

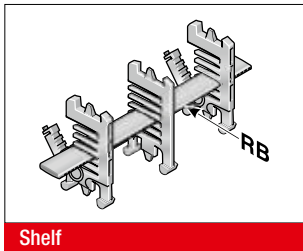
Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
TR 52-V	052000009300	TR 52-V Separator	moveable	3.5	13.0	4.0	16.3	22.3	28.2	33.8	39.8	52.0

**RTT 52 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
RTT 52	100090522000	Shelf support, divisible	lockable	7.0	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

**RB-5 SHELF**

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	10000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0

### RSV 52 CROSSBAR CONNECTOR

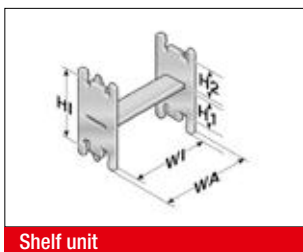


Crossbar connector

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	TI mm
RSV 52	052000009600	Crossbar connector	7.5
RSV 52 Alu	052000009800	Crossbar connector for aluminium crossbars	7.5

### RE 52 H-SHAPED SHELF UNIT



Shelf unit

One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 36/17	100000361714	H-shaped shelf unit	42.5	36.5	31.0	17.4	52.0
RE 59/24	100000592414	H-shaped shelf unit	65.0	59.0	24.2	24.2	52.0
RE 81/12	100000811214	H-shaped shelf unit	87.5	81.5	36.0	12.4	52.0

### BS-5 BRACKET BAR



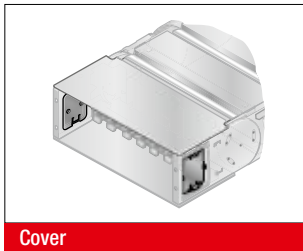
Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

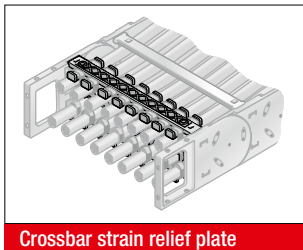
### D4 CHAIN BRACKET COVER



Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order No.
D4 Cover	0413888002

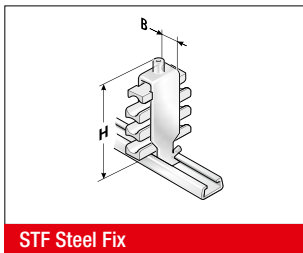
### RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE



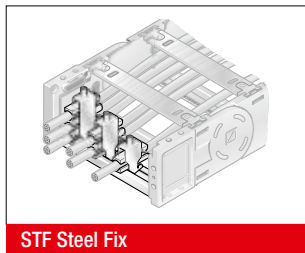
Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

**STRAIN RELIEF WITH STEEL FIX**



STF Steel Fix



STF Steel Fix

C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel

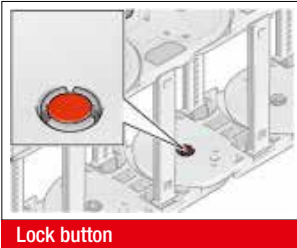


VAW aluminium

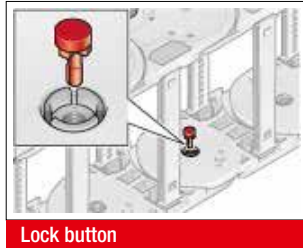
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

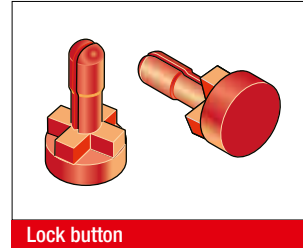
**MP 52/62/72 LOCK BUTTON**



Lock button



Lock button



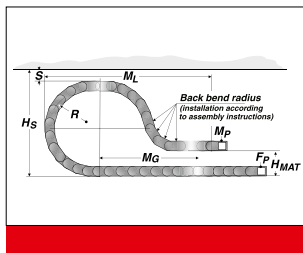
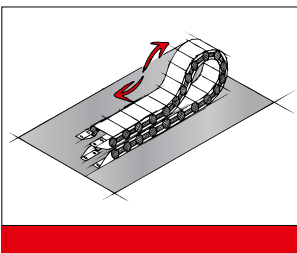
Lock button

To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP52/62/72 lock button	0520000080

**LOWERED FIXING POINT MP 52.4**



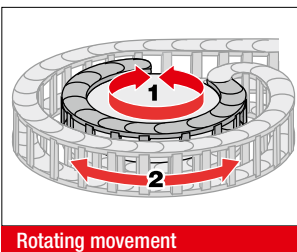
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
175.0	180.0	50.0	475.0	620.0	6	3
200.0	210.0	50.0	525.0	830.0	10	3
250.0	250.0	50.0	625.0	990.0	13	3
300.0	300.0	50.0	725.0	900.0	14	3

**MP 52.4 REARWARD RADII**

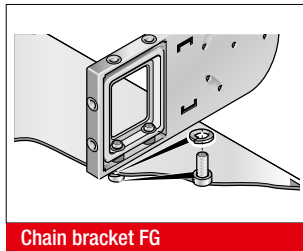
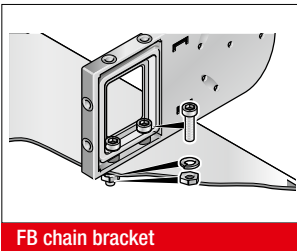


Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 52.4 (RÜ200/R200.1) right	052400020062	200.0	200.0
SR 52.4 (RÜ200/R200.2) left	052400020060	200.0	200.0

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**

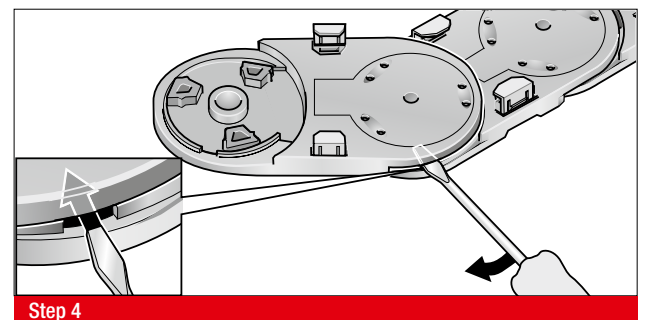
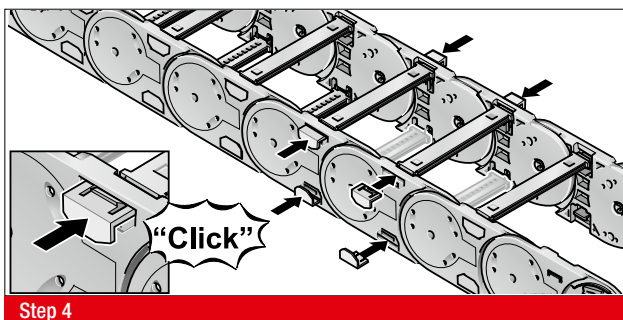
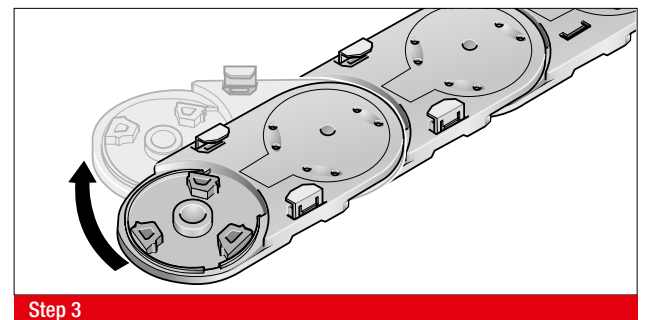
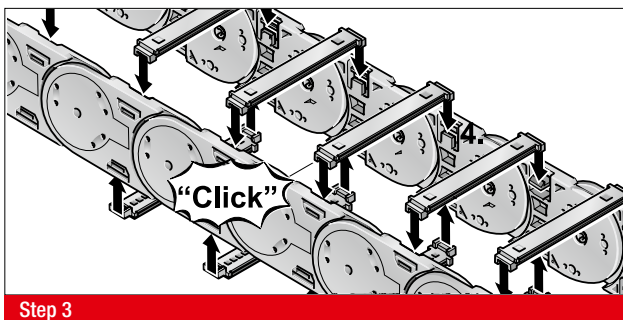
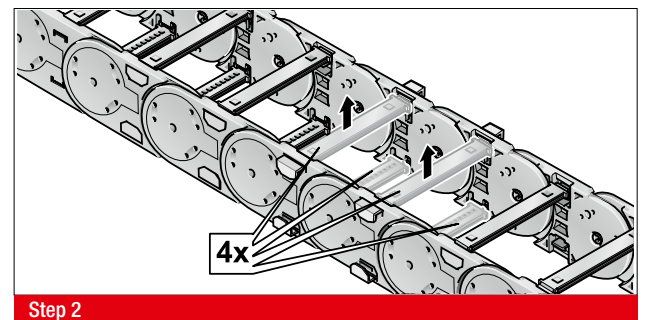
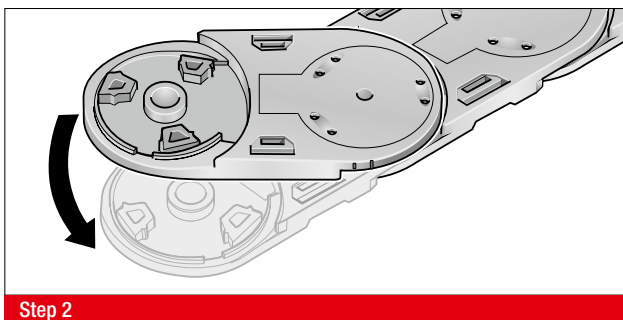
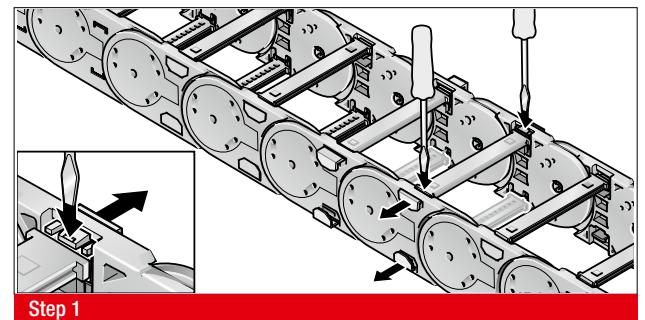
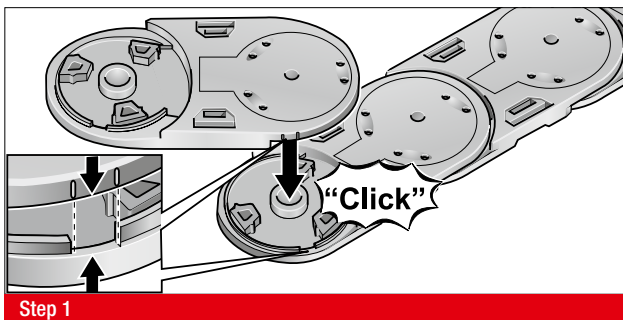
Integrated through-hole fastened down using screw and nut.

**Version KA-FG:**

Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

**ASSEMBLY**

**DISASSEMBLY**







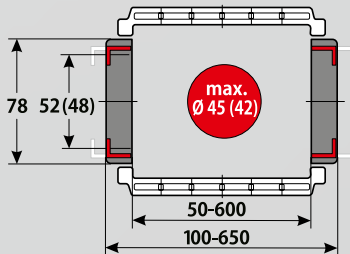
## MP 52.6 OPEN



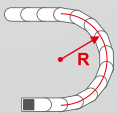
## MP 52.7 CLOSED



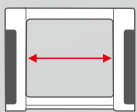
- FOR PARTICULARLY HIGH LOADING QUANTITIES
- FOR VERY LONG, SLIDING APPLICATIONS
- SLIDING BLOCKS FOR LONGER SERVICE LIFE
- CHAIN BRACKET FLEXIBLE



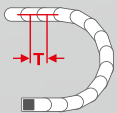
### TECHNICAL DATA



**Available radii**  
150.0 – 300.0 mm



**Available interior widths**  
With plastic crossbar  
50.0 – 600.0 mm  
With alu crossbar / with alu cover  
50.0 – 600.0 mm / 42.0 – 600.0 mm



**Pitch**  
T = 91.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance vertical, hanging $L_{vh}$ max.	80.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90r}$ max.	1.5 m
Speed, gliding $V_g$ max.	6.0 m/s
Acceleration, gliding $a_g$ max.	10.0 m/s <sup>2</sup>

## MATERIAL PROPERTIES

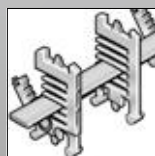
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

## SHELVING SYSTEM

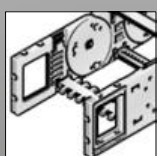


Separator TR



RS shelving system

## CHAIN BRACKET

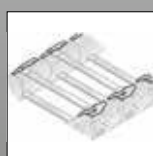


Chain bracket flexible



Crossbar connector RSV

## ACCESSORIES



Sliding block

## GUIDE CHANNELS

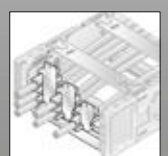


VAW steel galvanised / stainless steel



VAW aluminium

## STRAIN RELIEF



STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0526 30</b>	MP 52.6 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>050</b> [1.97]	<b>100</b> [3.94]	<b>252</b> [9.92]	<b>302</b> [11.89]	<b>150</b> [5.91]	<b>5</b> Aluminium full-ridged without bias	<b>0</b> Polyamide standard (PA/black)	
		<b>071</b> [2.80]	<b>121</b> [4.76]	<b>258</b> [10.16]	<b>308</b> [12.13]				
<b>0527 44<sup>1)</sup></b>	MP 52.7 Closed Cover on outside bend Cover on inside bend Opens on inside and outside bend	<b>084</b> [3.31]	<b>134</b> [5.28]	<b>296</b> [11.65]	<b>346</b> [13.62]	<b>200</b> [7.87]	<b>7</b> Aluminium half-ridged without bias		
		<b>093</b> [3.66]	<b>143</b> [5.63]	<b>346</b> [13.62]	<b>396</b> [15.59]				
		<b>096</b> [3.78]	<b>146</b> [5.75]	<b>350</b> [13.78]	<b>400</b> [15.75]	<b>250</b> [9.84]			
		<b>104</b> [4.09]	<b>154</b> [6.06]	<b>358</b> [14.09]	<b>408</b> [16.06]				
		<b>107</b> [4.21]	<b>157</b> [6.18]	<b>371</b> [14.61]	<b>421</b> [16.57]	<b>300</b> [11.81]			
		<b>121</b> [4.76]	<b>171</b> [6.73]	<b>396</b> [15.59]	<b>446</b> [17.56]				
		<b>133</b> [5.24]	<b>183</b> [7.20]	<b>421</b> [16.57]	<b>471</b> [18.54]				
		<b>144</b> [5.67]	<b>194</b> [7.64]	<b>446</b> [17.56]	<b>496</b> [19.53]				
		<b>146</b> [5.75]	<b>196</b> [7.72]	<b>496</b> [19.53]	<b>546</b> [21.50]				
		<b>158</b> [6.22]	<b>208</b> [8.19]	<b>546</b> [21.50]	<b>596</b> [23.46]				
		<b>164</b> [6.46]	<b>214</b> [8.43]	<b>600</b> [23.62]	<b>650</b> [25.59]				
		<b>171</b> [6.73]	<b>221</b> [8.70]						
		<b>182</b> [7.17]	<b>232</b> [9.13]						
		<b>196</b> [7.72]	<b>246</b> [9.69]						
		<b>208</b> [8.19]	<b>258</b> [10.16]						
		<b>220</b> [8.66]	<b>270</b> [10.63]						
		<b>233</b> [9.17]	<b>283</b> [11.14]						
		<b>246</b> [9.69]	<b>296</b> [11.65]						



**ORDERING EXAMPLE: 0526 30 220 250 5 0 25000**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 220 mm, radius 250 mm  
 Aluminium crossbar, full-ridged without bias, material black-coloured polyamide  
 Chain length 25000 mm (275 links)

<sup>1)</sup> Reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

**NOTE ON CONFIGURATION**

**Crossbars and cover from aluminium:**

This energy chain is suitable for aluminium frame bridges and covers only.

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 50.0 mm – 600.0 mm .

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 42.0 mm – 600.0 mm .

**Crossbar connector and strain relief:**

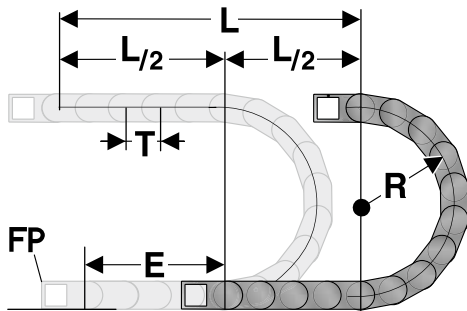
Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV).

Crossbar connectors cannot be used in conjunction with covers made from aluminium.

Steel Fix bow clamps are used for strain relief. The C-rails needed for accommodating the Steel Fix bow clamps can be integrated into the chain brackets.

For detailed information, please consult the corresponding product documentation.

**DETERMINING THE CHAIN LENGTH**



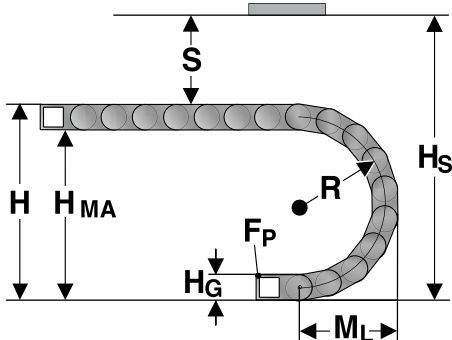
The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 11 \text{ qty. x}91.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 91.0 mm

**INSTALLATION DIMENSIONS**

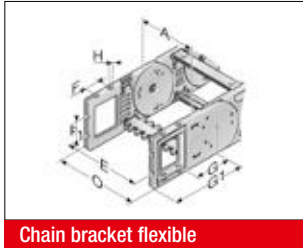


The moving end chain connection is to be screw fixed at height H<sub>MA</sub> for the respective radius.

For the installed dimension the “Installed height H<sub>s</sub>” value has to be taken into account.

Radius R	150	200	250	300
Outside height of chain link (H <sub>e</sub> )	78	78	78	78
Height of bend (H)	378	478	578	678
Height of moving end bracket (H <sub>MA</sub> )	300	400	500	600
Safety margin (S)	12	12	12	12
Installation height (H <sub>s</sub> )	390	490	590	690
Arc projection (M <sub>L</sub> )	280	330	380	430

**KA 52.6 CHAIN BRACKET FLEXIBLE**



Chain bracket flexible

This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Pressed-in metal bushes with a through-hole ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width							Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H0 mm	
KA 52.6-F Hole, completely	0526000050	Plastic	with bush	50.0 – 600.0	A+25.0	35.0	30.0	72.5	131.0	8.5	A+50.0
KA 52.6-F Male end, completely	0526000051	Plastic	with bush	50.0 – 600.0	A+25.0	35.0	30.0	72.5	131.0	8.5	A+50.0

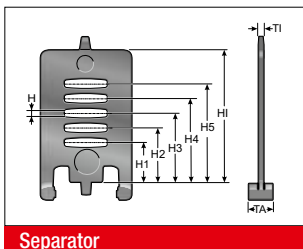
**MP 52.6 SLIDING BLOCK**



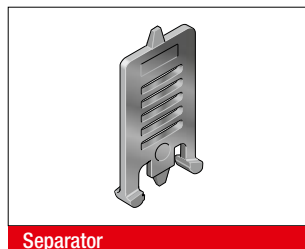
In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend (no tools necessary). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Installation site	Min. radius mm	Sliding block height mm
GS 52.6.1 G	052690400306	For right side link	150.0	4.0
GS 52.6.2 G	052690400304	For left side link	150.0	4.0

**TR 52 SEPARATOR**



Separator

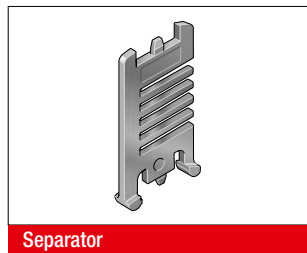
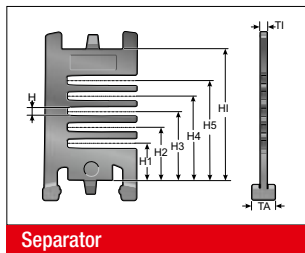


Separator

We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. The closed separator is used when no shelves are used. This is the recommended design for travel paths of 30 metres or greater.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52	052000009200	TR 52 Separator	lockable	3.5	10.0	4.2	16.3	22.3	28.2	33.8	39.8	52.0

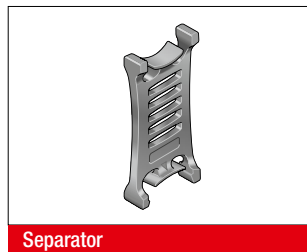
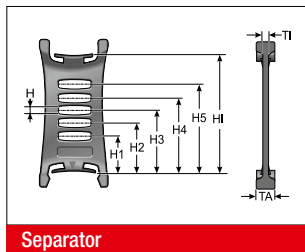
**TR 52.1 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
TR 52.1	052100009200	TR 52.1 Separator	lockable	3.5	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

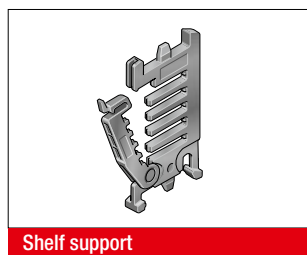
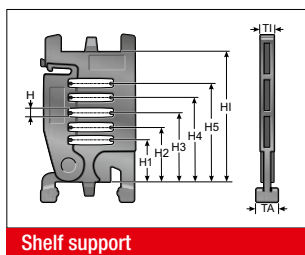
**TR 52-V SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
TR 52-V	052000009300	TR 52-V Separator	moveable	3.5	13.0	4.0	16.3	22.3	28.2	33.8	39.8	52.0

**RTT 52 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

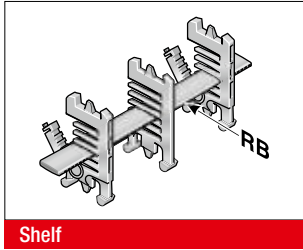
Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
RTT 52	100090522000	Shelf support, divisible	lockable	7.0	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

**RSV 52 CROSSBAR CONNECTOR**



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	TI mm
RSV 52 Alu	052000009800	Crossbar connector for aluminium crossbars	7.5

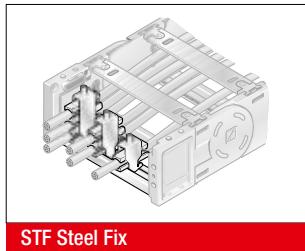
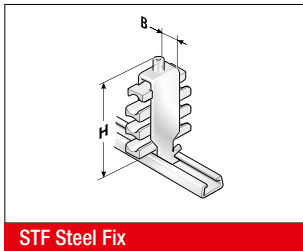
**RB-5 SHELF**

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	10000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0



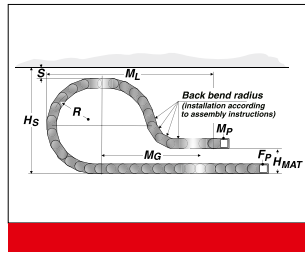
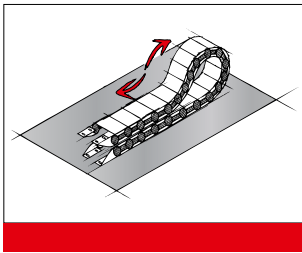
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 52.6 LOWERED FIXING POINT**



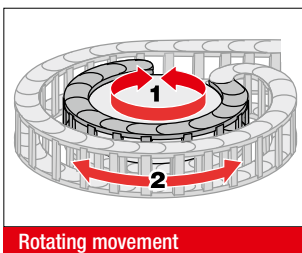
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
200.0	210.0	50.0	528.0	830.0	10	3
250.0	250.0	50.0	628.0	990.0	13	3
300.0	300.0	50.0	728.0	900.0	14	3

**MP 52.6 REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 52.6 RK250.2 (RÜ250/R250) left GS	052600025060	250.0	250.0
SR 52.6 RK250.1 (RÜ250/R250) right GS	052600025062	250.0	250.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



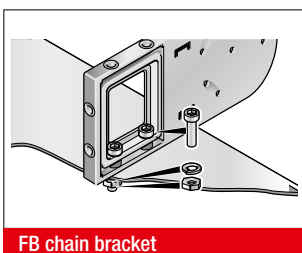
VAW steel galvanised / stainless steel



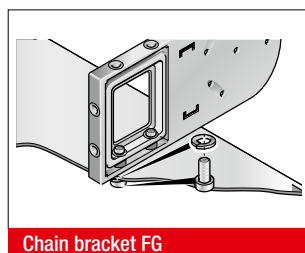
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



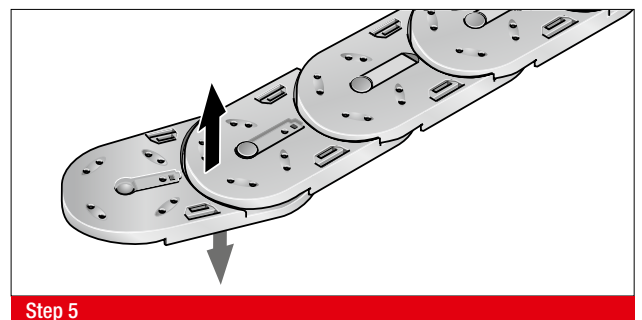
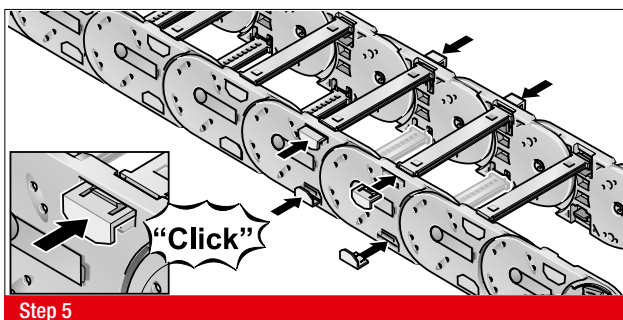
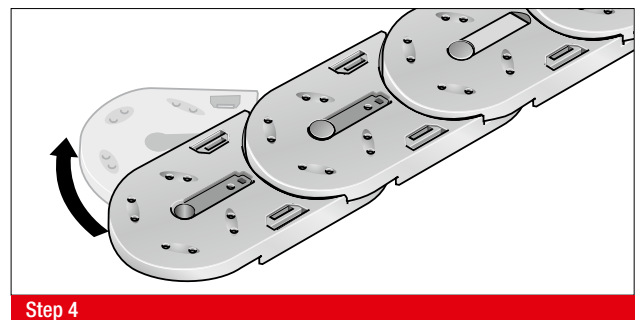
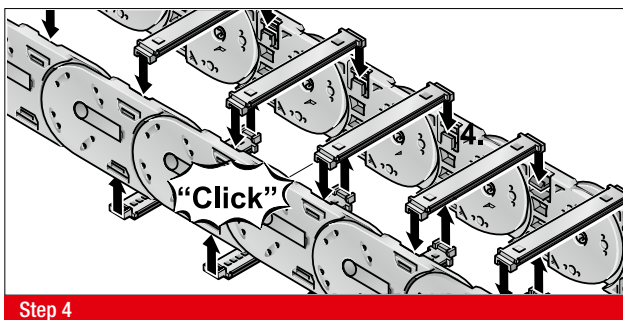
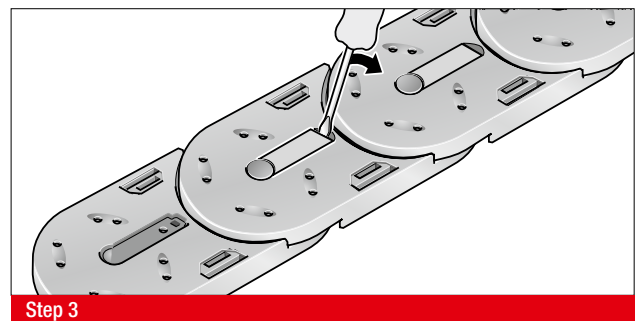
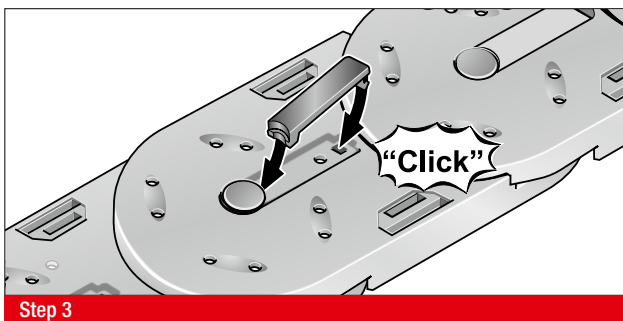
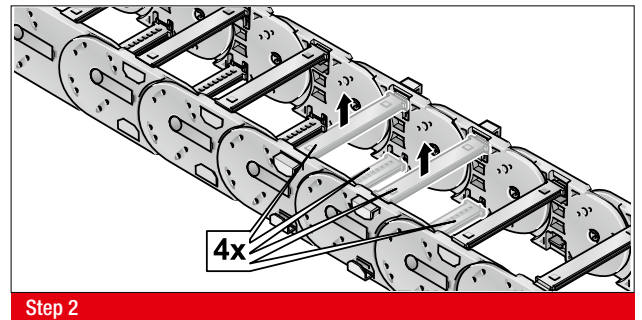
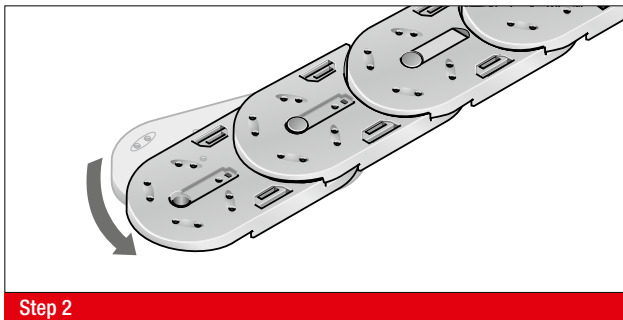
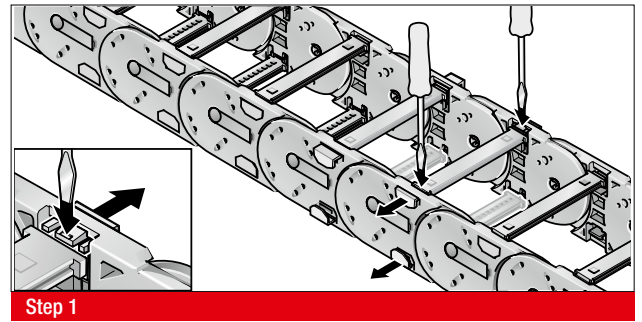
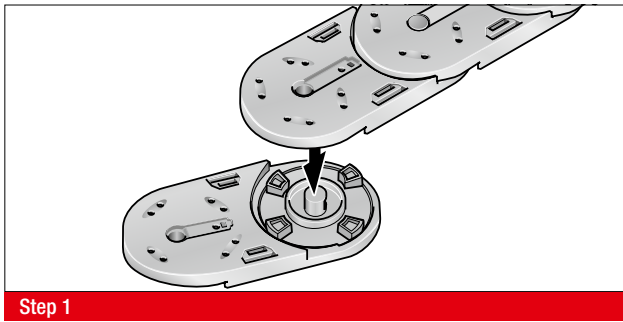
Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**  
Integrated through-hole fastened down using screw and nut.  
**Version KA-FG:**  
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

ASSEMBLY

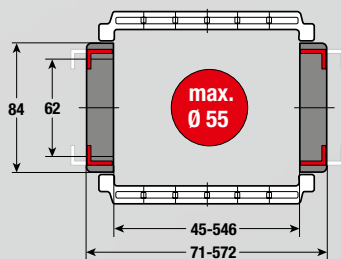
DISASSEMBLY



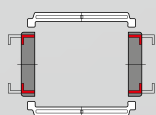
## MP 62.4 OPEN



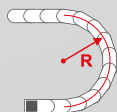
- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- CHAIN BRACKET FLEXIBLE
- BROAD INTERIOR LAYOUT
- PLASTIC OR ALUMINIUM VERSION



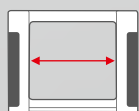
### TECHNICAL DATA



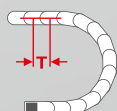
**Loading side**  
Inside and outside bend



**Available radii**  
135.0 – 300.0



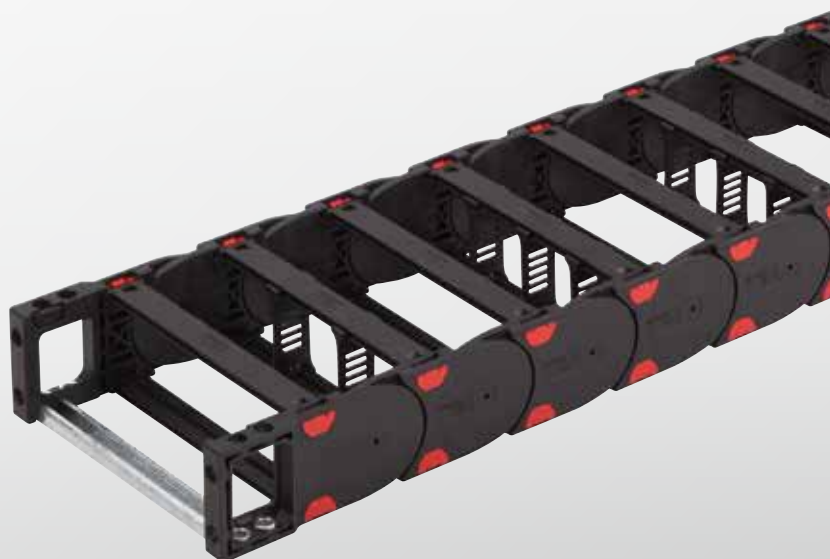
**Available interior widths**  
With plastic crossbar  
45.0 – 546.0  
With alu crossbar / with alu cover  
67.0 – 600.0 mm /



**Pitch**  
T = 91.0 mm



**Noise attenuator**  
Reduction of the noise emission by up to 10 dB(A) by the use of damping elements in the chain links.





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	50.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 276
Travel distance vertical, hanging $L_{vh}$ max.	50.0 m
Travel distance vertical, upright $L_{vs}$ max.	4.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	30.0 m/s <sup>2</sup>

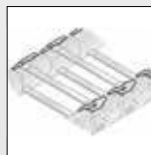
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

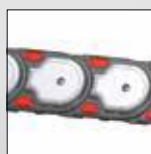
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

## ACCESSORIES



Sliding block



Gliding plate

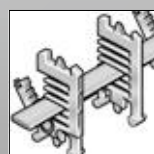
## SHELVING SYSTEM



Separator TR



Bracket bar



RS shelving system

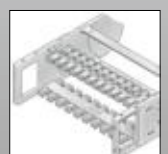


Cover

## GUIDE CHANNELS

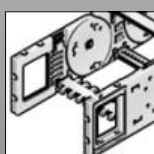


VAW steel galvanised / stainless steel



RS-ZL crossbar strain relief

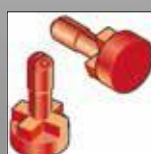
## CHAIN BRACKET



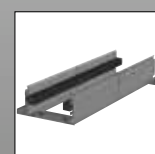
Chain bracket flexible



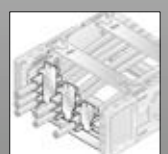
Crossbar connector RSV



Lock button



VAW aluminium

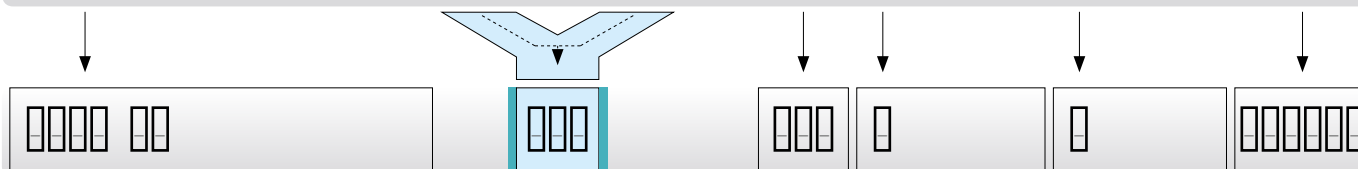


STF Steel Fix

ORDERING KEY

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
0624 30	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	045 <sup>1)</sup> [1.77]	071 [2.80]	233 [9.17]	259 [10.20]	135 [5.31]	0 Plastic, full-ridged with bias	2 Polyamide without attenuator (PA/black)	
		057 <sup>1)</sup> [2.24]	083 [3.27]	246 [9.69]	272 [10.71]				
		062 <sup>1)</sup> [2.44]	088 [3.46]	252 [9.92]	278 [10.94]	150 [5.91]	1 Plastic, full-ridged without bias	3 Polyamide with attenuator (PA/black)	
		071 [2.80]	097 [3.82]	258 [10.16]	284 [11.18]				
		084 [3.31]	110 [4.33]	296 [11.65]	322 [12.68]	175 [6.89]	2 Plastic, half-ridged with bias	9 Special version (on request)	
		093 [3.66]	119 [4.69]	346 [13.62]	372 [14.65]				
		096 [3.78]	122 [4.80]	350 [13.78]	376 [14.80]	200 [7.87]	3 Plastic, half-ridged without bias		
		104 [4.09]	130 [5.12]	358 [14.09]	384 [15.12]				
		107 [4.21]	133 [5.24]	371 [14.61]	397 [15.63]	250 [9.84]	4 Aluminium full-ridged with bias		
		121 [4.76]	147 [5.79]	396 [15.59]	422 [16.61]				
		133 [5.24]	159 [6.26]	421 [16.57]	447 [17.60]	300 [11.81]	5 Aluminium full-ridged without bias		
		144 [5.67]	170 [6.69]	446 [17.56]	472 [18.58]				
		146 [5.75]	172 [6.77]	496 [19.53]	522 [20.55]		6 Aluminium half-ridged with bias		
		158 [6.22]	184 [7.24]	546 [21.50]	572 [22.52]				
		164 [6.46]	190 [7.48]				7 Aluminium half-ridged without bias		
		171 [6.73]	197 [7.76]						
		182 [7.17]	208 [8.19]				9 Special version (on request)		
		196 [7.72]	222 [8.74]						
		208 [8.19]	234 [9.21]						
		220 [8.66]	246 [9.69]						



ORDERING EXAMPLE: 0624 30 144 200 0 3 3000

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 144 mm, radius 200 mm  
 Plastic, full-ridged with bias, material polyamide with damper (PA/black)  
 Chain length 3000 mm (33 links)

<sup>1)</sup> for Variant 30 only

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

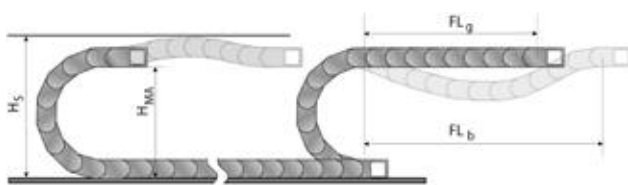
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm.

**Crossbar strain relief plate:**

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

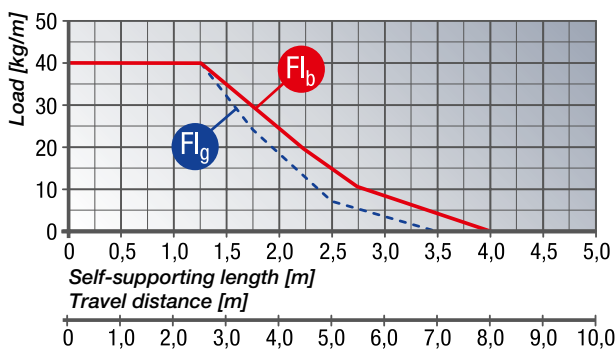
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**

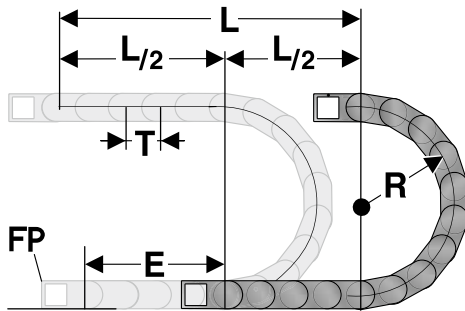
In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

Closed cable drag chains (with covers) have a higher unit weight than open chains (with frame bridges). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 1.5 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**



The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 11 \text{ qty. } \times 91.0 \text{ mm.}$

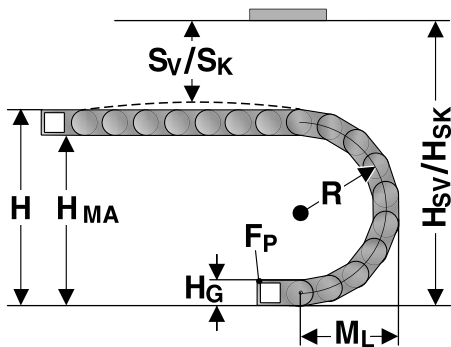
$E$  = Distance between entry point and middle of travel distance

$L$  = Travel distance

$R$  = Radius

$P$  = Pitch 91.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

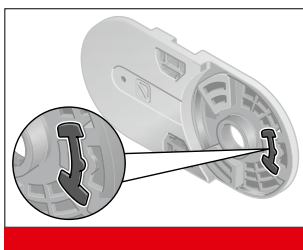
Concerning the installed dimensions, you must take into consideration whether the chain links are equipped with damping elements or not.

For chain links without damping elements, the value “Installed height with bias  $H_{sv}$  without damper” or “Installed height without bias  $H_{sk}$  without damper” must be taken into account.

If the chain links are equipped with a damping element, the value “Installed height with bias  $H_{sv}$  with damper” or “Installed height without bias  $H_{sk}$  with damper” is to be taken into account.

Radius R	135	150	175	200	250	300
Outside height of chain link ( $H_o$ )	84	84	84	84	84	84
Height of bend (H)	354	384	434	484	584	684
Height of moving end bracket ( $H_{MA}$ )	270	300	350	400	500	600
Safety margin with bias ( $S_v$ )	20	20	20	20	20	20
Installation height with bias ( $H_{sv}$ ) without damper	434	464	514	564	664	764
Installation height with bias ( $H_{sv}$ ) with damper	464	494	544	594	694	794
Safety margin without bias ( $S_k$ )	20	20	20	20	20	20
Installation height without bias ( $H_{sk}$ ) without damper	374	404	454	504	604	704
Installation height without bias ( $H_{sk}$ ) with damper	404	434	484	534	634	734
Arc projection ( $M_L$ )	268	283	308	333	383	433

**DAMPING ELEMENTS FOR THE SIDE LINKS**



The damping elements in the stops facilitate a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

A reduction of the noise emission by up to 10 dB(A) comparing to the variants without the use of damping elements is possible.



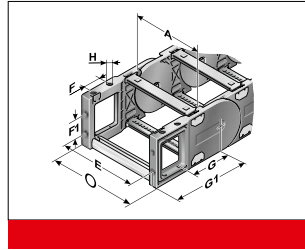
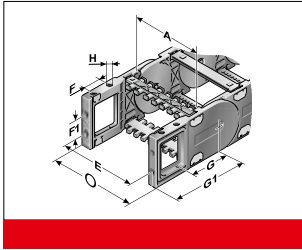
## POWERLINE PLASTIC CROSSBAR



The crossbars connect the two side runs of the energy chain.  
The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

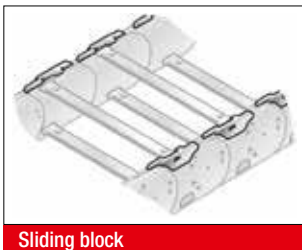
## KA 62.4 CHAIN BRACKET FLEXIBLE



Questo attacco terminale di catena consente possibilità universali di fissaggio (sopra, sotto, frontalmente) e il collegamento alle ai pezzi ad U avviene nello stesso modo che tra pezzi ad U e pezzi ad U, ma alle estremità della catena. In tal modo, la catena è mobile fino al raccordo. Per ogni catena occorre un raccordo con perno e un raccordo con foro. Il fissaggio va eseguito con viti di dimensione M8. Le boccole in metallo incassate con foro passante (-FB) oppure con foro filettato (-FG), assicurano una trasmissione duratura e particolarmente resistente delle forze estreme sulla catena portacavi.

Type	Order No.	Material	Version	Inside width								Outside width of KA 01 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 62.4-FB Female end	0624000050	Plastic	with bush	45.0 – 546.0	A+16.0	20.0	45.0	85.0	125.0	9.0	A+34.0	
KA 62.4-FB Male end	0624000051	Plastic	with bush	45.0 – 546.0	A+16.0	20.0	45.0	85.0	125.0	9.0	A+34.0	
KA 62.4-FB Female end, pendular	0624000052	Plastic	with bush	45.0 – 546.0	A+16.0	20.0	45.0	85.0	125.0	9.0	A+34.0	
KA 62.4-FG Female end	0624000053	Plastic	with thread	45.0 – 546.0	A+16.0	20.0	45.0	85.0	125.0	M8	A+34.0	
KA 62.4-FG Female end, pendular	0624000055	Plastic	with thread	45.0 – 546.0	A+16.0	20.0	45.0	85.0	125.0	M8	A+34.0	
KA 62.4-FG Male end	0624000054	Plastic	with thread	45.0 – 546.0	A+16.0	20.0	45.0	85.0	125.0	M8	A+34.0	

## GS 62.4 SLIDING BLOCK

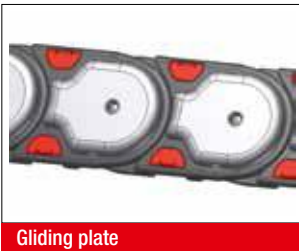


Sliding block

In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Installation site	Min. radius mm	Sliding block height mm
GS 62.4.1 right	062490400302	For right side link	175.0	4.0
GS 62.4.2 left	062490400300	For left side link	175.0	4.0

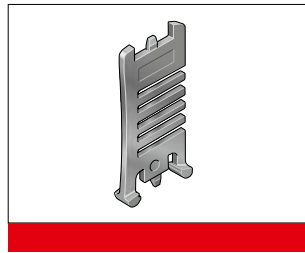
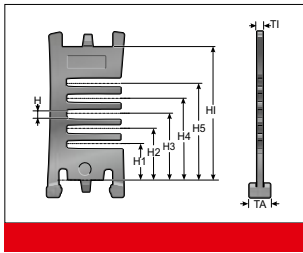
## GLP 5 (62.4) GLIDING PLATE



The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 2.5 mm. We recommend replacing the energy chain when this limit has been reached. Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding plates. The energy chain must be placed on its side before opening.

Type	Order No.	Installation site	For radius mm	Gliding plate height mm
SG 62.4 RK135.1 right with GLP5, mounted	062400013566	Right chain link including gliding plate	135.0	7.0
SG 62.4 RK135.2 left with GLP5, mounted	062400013564	Left chain link including gliding plate	135.0	7.0
SG 62.4 RK150.1 right with GLP5, mounted	062400015066	Right chain link including gliding plate	150.0	7.0
SG 62.4 RK150.2 left with GLP5, mounted	062400015064	Left chain link including gliding plate	150.0	7.0
SG 62.4 RK175.1 right with GLP5, mounted	062400017566	Right chain link including gliding plate	175.0	7.0
SG 62.4 RK175.2 left with GLP5, mounted	062400017564	Left chain link including gliding plate	175.0	7.0
SG 62.4 RK200.1 right with GLP5, mounted	062400020066	Right chain link including gliding plate	200.0	7.0
SG 62.4 RK200.2 left with GLP5, mounted	062400020064	Left chain link including gliding plate	200.0	7.0
SG 62.4 RK250.1 right with GLP5, mounted	062400025066	Right chain link including gliding plate	250.0	7.0
SG 62.4 RK250.2 left with GLP5, mounted	062400025064	Left chain link including gliding plate	250.0	7.0
SG 62.4 RK300.1 right with GLP5, mounted	062400030066	Right chain link including gliding plate	300.0	7.0
SG 62.4 RK300.2 left with GLP5, mounted	062400030064	Left chain link including gliding plate	300.0	7.0
SG 62.4-D RK135.1 right with GLP5, mounted	062400013596	Right chain link including gliding plate	135.0	7.0
SG 62.4-D RK135.2 left with GLP5, mounted	062400013594	Left chain link including gliding plate	135.0	7.0
SG 62.4-D RK150.1 right with GLP5, mounted	062400015096	Right chain link including gliding plate	150.0	7.0
SG 62.4-D RK150.2 left with GLP5, mounted	062400015094	Left chain link including gliding plate	150.0	7.0
SG 62.4-D RK175.1 right with GLP5, mounted	062400017596	Right chain link including gliding plate	175.0	7.0
SG 62.4-D RK175.2 left with GLP5, mounted	062400017594	Left chain link including gliding plate	175.0	7.0
SG 62.4-D RK200.1 right with GLP5, mounted	062400020096	Right chain link including gliding plate	200.0	7.0
SG 62.4-D RK200.2 left with GLP5, mounted	062400020094	Left chain link including gliding plate	200.0	7.0
SG 62.4-D RK250.1 right with GLP5, mounted	062400025096	Right chain link including gliding plate	250.0	7.0
SG 62.4-D RK250.2 left with GLP5, mounted	062400025094	Left chain link including gliding plate	250.0	7.0
SG 62.4-D RK300.1 right with GLP5, mounted	062400030096	Right chain link including gliding plate	300.0	7.0
SG 62.4-D RK300.2 left with GLP5, mounted	062400030094	Left chain link including gliding plate	300.0	7.0

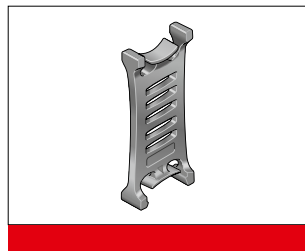
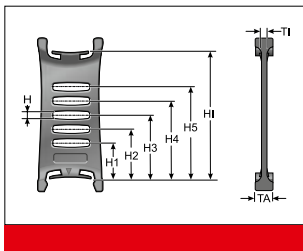
**TR 62.4 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
TR 62.4	062400009200	TR 62.4 Separator	lockable	3.5	11.0	4.0	17.0	24.0	31.0	38.0	45.0	62.0

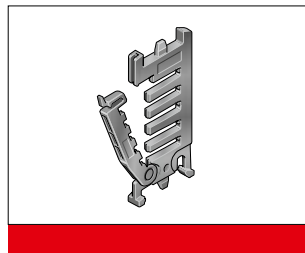
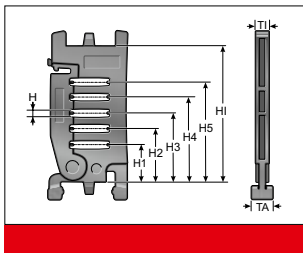
**TR 62.4-V SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
TR 62.4-V	062400009300	TR 62.4-V Separator	moveable	3.5	13.0	4.0	17.0	24.0	31.0	38.0	45.0	62.0

**RTT 62.4 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
RTT 62.4	100090624000	Shelf support, divisible	lockable	7.0	11.0	4.0	17.0	24.0	31.0	38.0	45.0	62.0

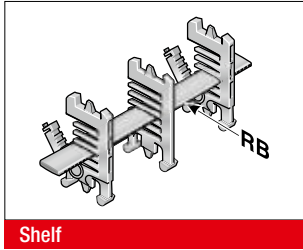
**RSV 62.4 CROSSBAR CONNECTOR**



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Order No.	Description	TI mm
062400009700	Crossbar connector	6.0
062400009800	Crossbar connector for aluminium crossbars	6.0

## RB-5 SHELF



In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	10000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0

### BS-5 BRACKET BAR



Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

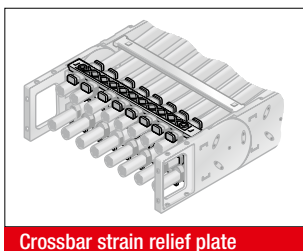
### D5 CHAIN BRACKET COVER



Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order No.
D5 Cover	0523888002

### RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE



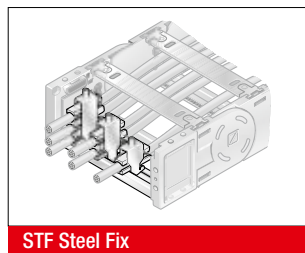
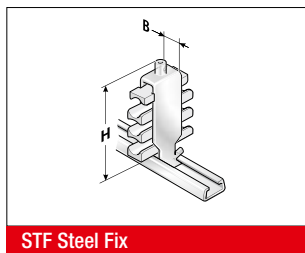
Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0

## RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE

Type	Order No.	Description	Inside width mm
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

## STRAIN RELIEF WITH STEEL FIX



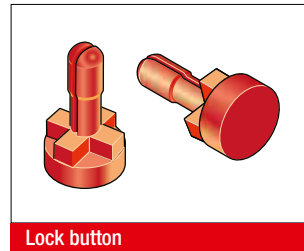
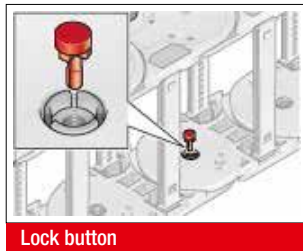
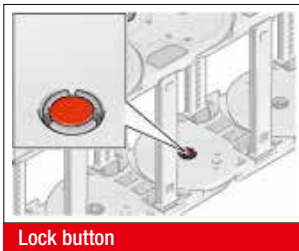
C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Designation	Seats qty.	Cable Ø mm	Width mm	Overall height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0

## MP 62.4 OPEN

Type	Order No.	Designation	Seats qty.	Cable Ø mm	Width mm	Overall height (H) mm
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

## MP 52/62/72 LOCK BUTTON

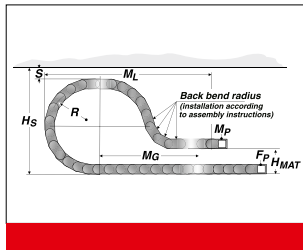
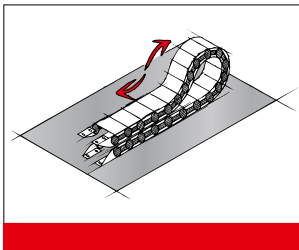


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP52/62/72 lock button	0520000080

## MP 62.4 LOWERED FIXING POINT



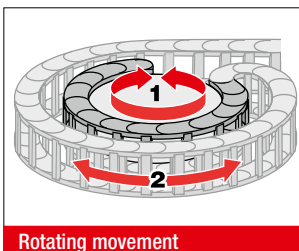
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
175.0	180.0	50.0	484.0	620.0	6	3
200.0	210.0	50.0	534.0	830.0	10	3
250.0	250.0	50.0	634.0	990.0	13	3
300.0	300.0	50.0	734.0	900.0	14	3

## MP 62.4 REARWARD RADII



Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

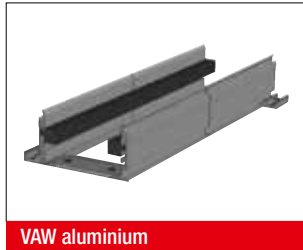
Type	Order No.	Radius mm	Rearward radius mm
SR 62.4 (RÜ200/R150.2) left	062400015060	150.0	200.0
SR 62.4 (RÜ200/R150.1) right	062400015062	150.0	200.0
SR 62.4 (RÜ200/R200.2) left	062400020060	200.0	200.0
SR 62.4 (RÜ200/R200.1) right	062400020062	200.0	200.0



**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel



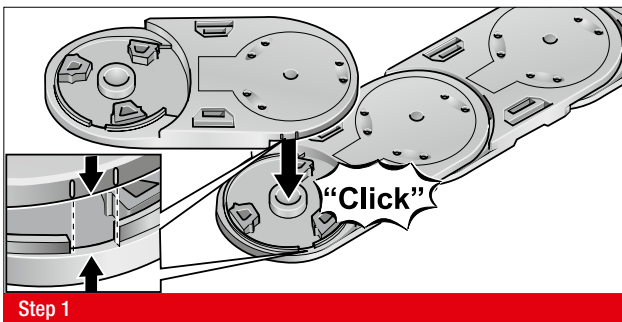
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

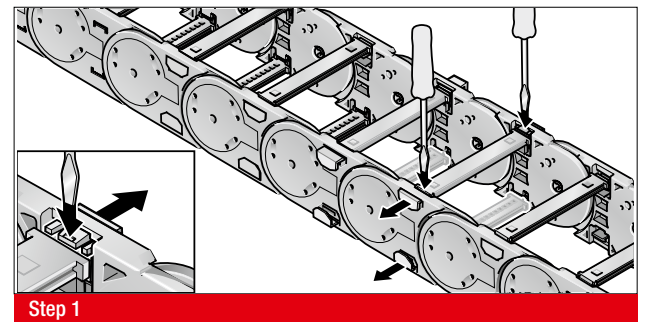
The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY**

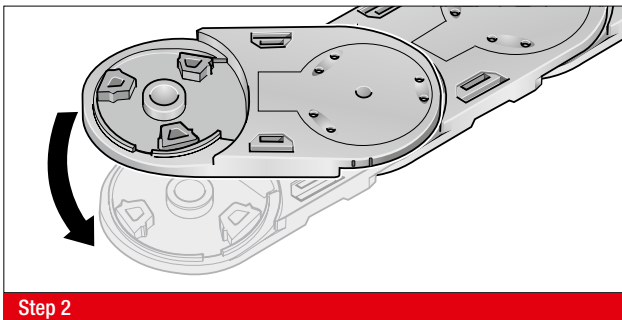
**DISASSEMBLY**



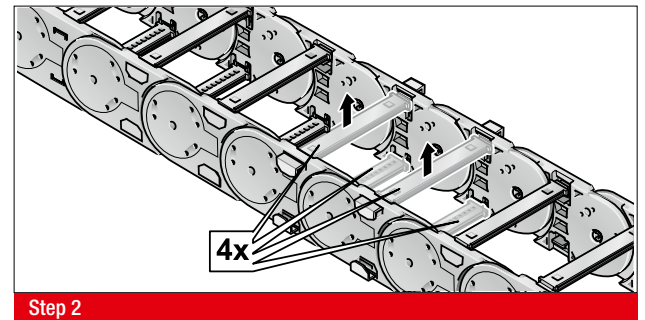
Step 1



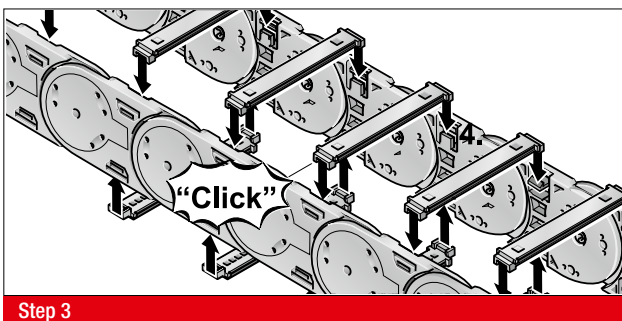
Step 1



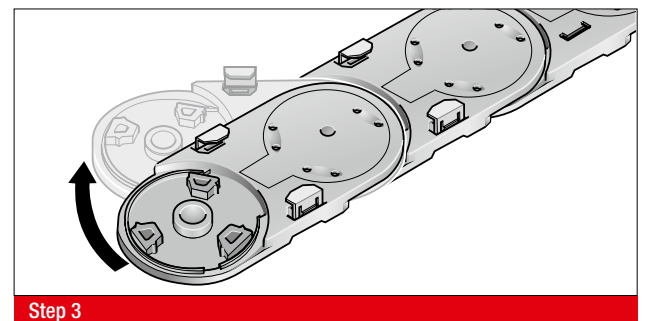
Step 2



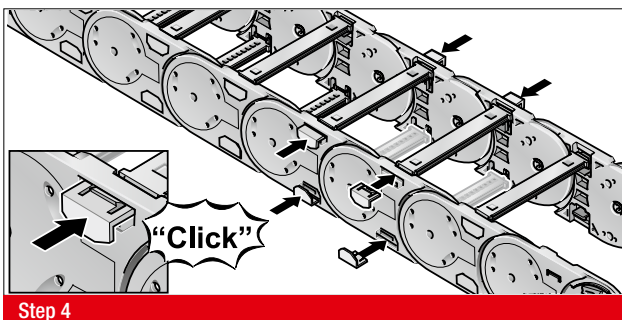
Step 2



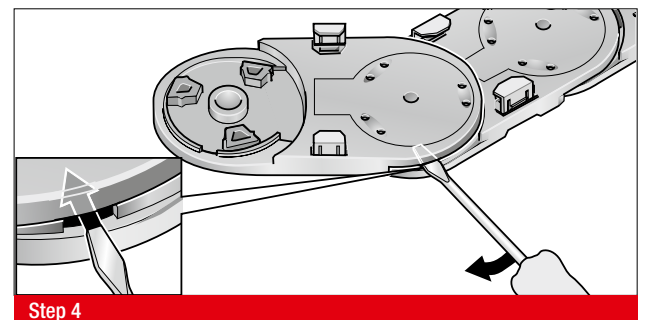
Step 3



Step 3

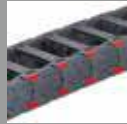


Step 4



Step 4

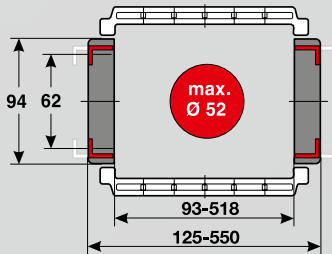
**MP 62.2**  
OPEN



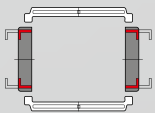
**MP 62.3**  
CLOSED



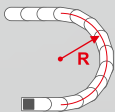
- SLIDING BLOCKS FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- CHAIN BRACKET FLEXIBLE
- PLASTIC OR ALUMINIUM VERSION



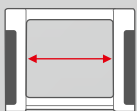
## TECHNICAL DATA



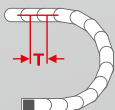
**Loading side**  
Inside and outside bend



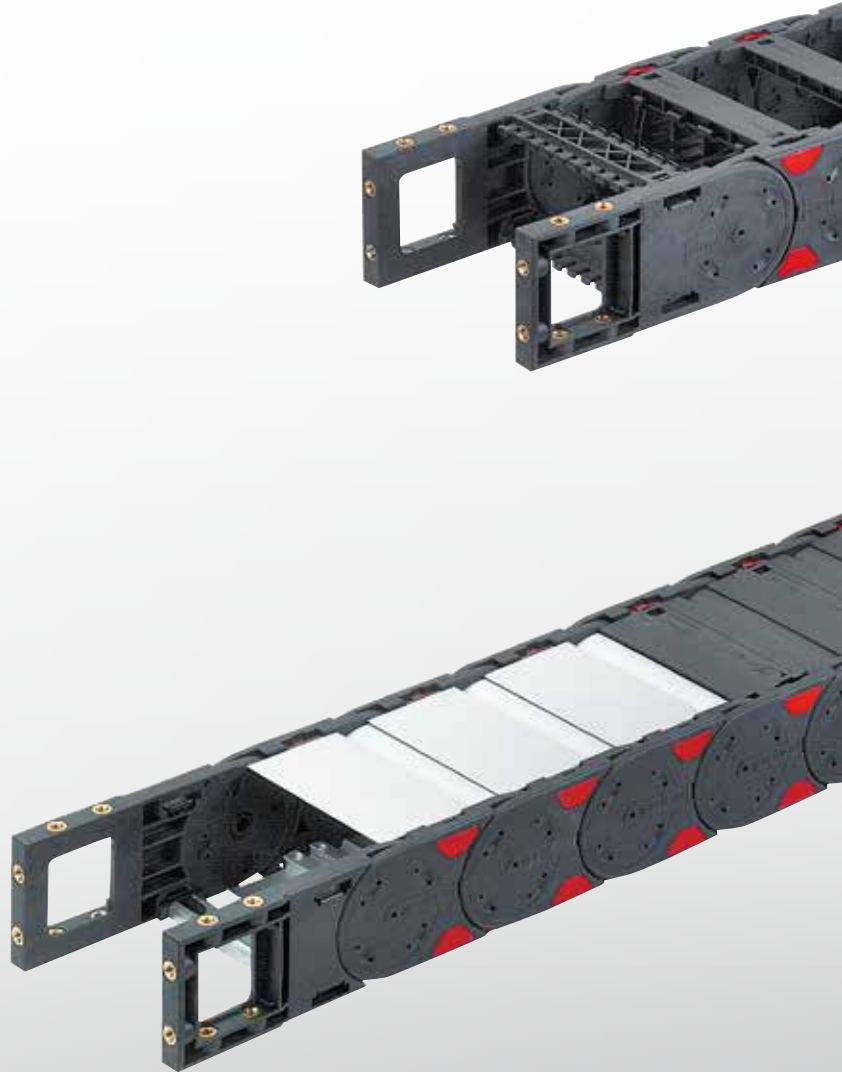
**Available radii**  
150.0 – 500.0 mm



**Available interior widths**  
With plastic crossbar  
93.0 – 518.0 mm  
With alu crossbar / with alu cover  
72.0 – 600.0 mm / 40.0 – 600.0 mm



**Pitch**  
T = 100.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 293
Travel distance vertical, hanging $L_{vh}$ max.	65.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	4.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	40.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

## ACCESSORIES



Sliding block

## SHELVING SYSTEM

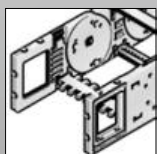


Separator TR

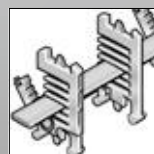


Bracket bar

## CHAIN BRACKET



Chain bracket flexible



RS shelving system

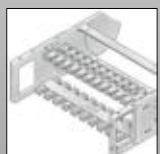


Cover

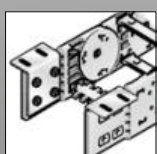
## GUIDE CHANNELS



VAW steel galvanised / stainless steel



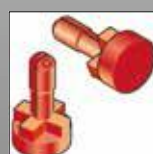
RS-ZL crossbar strain relief



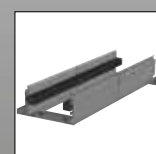
Chain bracket angle



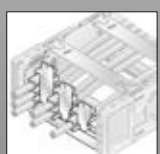
Crossbar connector RSV



Lock button



VAW aluminium



STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0622 30</b>	MP 62.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>093</b> [3.66]	<b>125</b> [4.92]	<b>468</b> [18.43]	<b>500</b> [19.69]	<b>150<sup>1)</sup></b> [5.91]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>106</b> [4.17]	<b>138</b> [5.43]	<b>518</b> [20.39]	<b>550</b> [21.65]				
<b>0623 44</b>	MP 62.3 Closed Cover on outside bend Cover on inside bend Opens on inside and outside bend	<b>118<sup>2)</sup></b> [4.65]	<b>150</b> [5.91]			<b>200</b> [7.87]	<b>1</b> Plastic, full-ridged without bias	<b>5</b> Polypropylene (PP/blue)	
		<b>131</b> [5.16]	<b>163</b> [6.42]						
		<b>143<sup>2)</sup></b> [5.63]	<b>175</b> [6.89]			<b>250</b> [9.84]	<b>2</b> Plastic, half-ridged with bias	<b>7</b> EMC (PA/light grey)	
		<b>156</b> [6.14]	<b>188</b> [7.40]						
		<b>168</b> [6.61]	<b>200</b> [7.87]			<b>300</b> [11.81]	<b>3</b> Plastic, half-ridged without bias	<b>9</b> Special version (on request)	
		<b>181</b> [7.13]	<b>213</b> [8.39]						
		<b>193<sup>2)</sup></b> [7.60]	<b>225</b> [8.86]			<b>350</b> [13.78]	<b>4</b> Aluminium full-ridged with bias		
		<b>206</b> [8.11]	<b>238</b> [9.37]						
		<b>218</b> [8.58]	<b>250</b> [9.84]			<b>400</b> [15.75]	<b>5</b> Aluminium full-ridged without bias		
		<b>231</b> [9.09]	<b>263</b> [10.35]						
		<b>243<sup>2)</sup></b> [9.57]	<b>275</b> [10.83]			<b>500</b> [19.69]	<b>6</b> Aluminium half-ridged with bias		
		<b>256</b> [10.08]	<b>288</b> [11.34]						
		<b>268</b> [10.55]	<b>300</b> [11.81]				<b>7</b> Aluminium half-ridged without bias		
		<b>293<sup>2)</sup></b> [11.54]	<b>325</b> [12.80]						
		<b>318</b> [12.52]	<b>350</b> [13.78]				<b>9</b> Special version (on request)		
		<b>343<sup>2)</sup></b> [13.50]	<b>375</b> [14.76]						
		<b>368</b> [14.49]	<b>400</b> [15.75]						
		<b>418<sup>2)</sup></b> [16.46]	<b>450</b> [17.72]						



**ORDERING EXAMPLE: 0622 30 118 150 0 0 1600**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 118 mm; radius 150 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1600 mm (16 links)

<sup>1)</sup> for Variant 30 only  
<sup>2)</sup> also available with plastic cover

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 72.0 mm – 600.0 mm .

**Aluminium covers:**

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 40.0 mm – 600.0 mm .

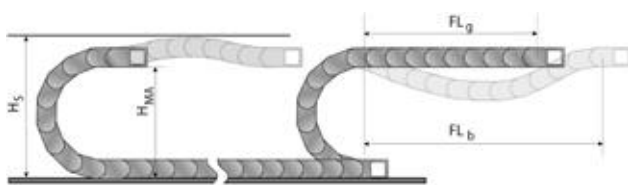
**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 243 mm, we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminium.

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

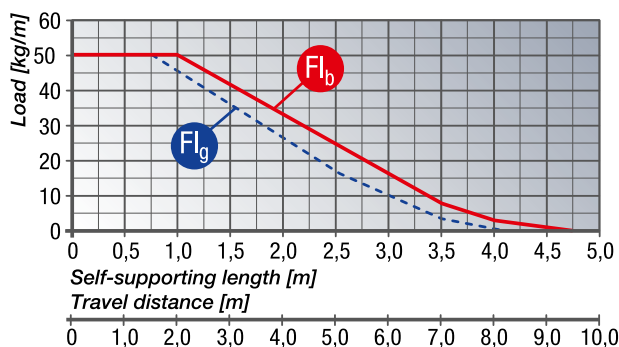
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



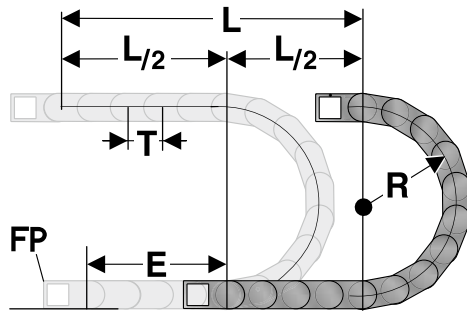
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 80.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 80.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain. Closed energy chains (with covers) have a higher unit weight than open chains (with crossbars). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 3.1 kg/m, to account for the higher weight of closed-cover chains.

### DETERMINING THE CHAIN LENGTH



The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

$$\text{Chain length calculation} = L/2 + \pi * R + E$$

≈ 1 m chain = 10 qty. x100.0 mm.

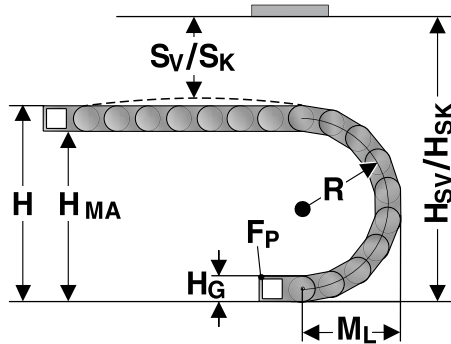
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Pitch 100.0 mm

### INSTALLATION DIMENSIONS



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

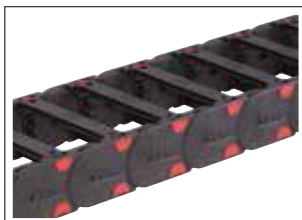
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the "Installed height without bias  $H_{SK}$ " value has to be taken into account.

If the chain links are equipped with a bias, the value "Installed height with bias  $H_{Sv}$ " has to be taken into account.

Radius R	150	200	250	300	350	400	500
Outside height of chain link ( $H_G$ )	94	94	94	94	94	94	94
Height of bend (H)	424	524	624	724	824	924	1124
Height of moving end bracket ( $H_{MA}$ )	330	430	530	630	730	830	1030
Safety margin with bias ( $S_v$ )	50	50	50	50	50	50	50
Installation height with bias ( $H_{Sv}$ )	474	574	674	774	874	974	1174
Safety margin without bias ( $S_r$ )	20	20	20	20	20	20	20
Installation height without bias ( $H_{SK}$ )	444	544	644	744	844	944	1144
Arc projection ( $M_L$ )	312	362	412	462	512	562	662

### HEAVYLINE PLASTIC CROSSBAR



Crossbar

The crossbars connect the two side runs of the energy chain. The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 093-7	072009300000	Crossbar	93.0
RS 106-7	072010600000	Crossbar	106.0
RS 118-7	072011800000	Crossbar	118.0
RS 131-7	072013100000	Crossbar	131.0
RS 143-7	072014300000	Crossbar	143.0

## HEAVYLINE PLASTIC CROSSBAR

Type	Order No.	Description	Inside width mm
RS 156-7	072015600000	Crossbar	156.0
RS 168-7	072016800000	Crossbar	168.0
RS 181-7	072018100000	Crossbar	181.0
RS 193-7	072019300000	Crossbar	193.0
RS 206-7	072020600000	Crossbar	206.0
RS 231-7	072023100000	Crossbar	231.0
RS 243-7	072024300000	Crossbar	243.0
RS 256-7	072025600000	Crossbar	256.0
RS 268-7	072026800000	Crossbar	268.0
RS 293-7	072029300000	Crossbar	293.0
RS 318-7	072031800000	Crossbar	318.0
RS 343-7	072034300000	Crossbar	343.0
RS 368-7	072036800000	Crossbar	368.0
RS 418-7	072041800000	Crossbar	418.0
RS 468-7	072046800000	Crossbar	468.0
RS 518-7	072051800000	Crossbar	518.0

## MP 62.3 PLASTIC COVER

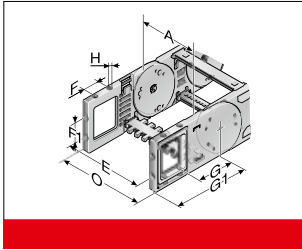


Cover

The covers connect the two side runs of the energy chain. The cover length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Installation site	Inside width mm
A-623118, outside	062311810000	Cover	Outside bend	118.0
I-623118, inside	062311820000	Cover	Inside bend	118.0
A-623143, outside	062314310000	Cover	Outside bend	143.0
I-623143, inside	062314320000	Cover	Inside bend	143.0
A-623193, outside	062319310000	Cover	Outside bend	193.0
I-623193, inside	062319320000	Cover	Inside bend	193.0
A-623243, outside	062324310000	Cover	Outside bend	243.0
I-623243, inside	062324320000	Cover	Inside bend	243.0
A-623293, outside	062329310000	Cover	Outside bend	293.0
I-623293, inside	062329320000	Cover	Inside bend	293.0
A-623343, outside	062334310000	Cover	Outside bend	343.0
I-623343, inside	062334320000	Cover	Inside bend	343.0
A-623418, outside	062341810000	Cover	Outside bend	418.0
I-623418, inside	062341820000	Cover	Inside bend	418.0

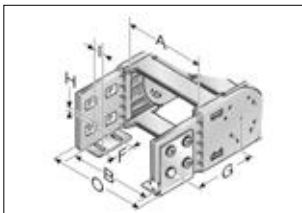
**KA 62.1 CHAIN BRACKET FLEXIBLE**



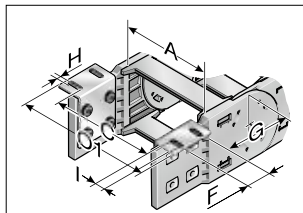
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 62-FB Female end	0620000056	Plastic	with bush	93.0 – 518.0	A+17.0	35.0	45.0	107.0	171.5	8.5	A+36.0	
KA 62-FB male end	0620000057	Plastic	with bush	93.0 – 518.0	A+17.0	35.0	45.0	107.0	171.5	8.5	A+36.0	
KA 62-FG Female end	0620000058	Plastic	with thread	93.0 – 518.0	A+17.0	35.0	45.0	107.0	171.5	M8	A+36.0	
KA 62-FG male end	0620000059	Plastic	with thread	93.0 – 518.0	A+17.0	35.0	45.0	107.0	171.5	M8	A+36.0	

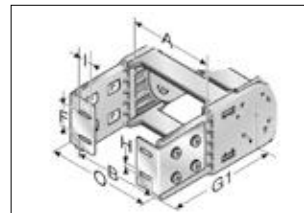
**KA 62.1 CHAIN BRACKET ANGLE**



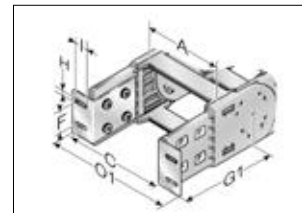
KA 62 (inside up / down)



KA 62 (outside up / down)



KA 62 (front inside)



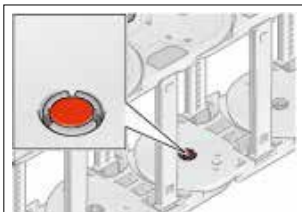
KA 62 (front outside)

This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8

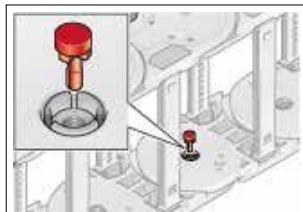
screws are used to secure the brackets in place. Metal inserts (supplied) help to minimise the cold flow properties. This is an enormous advantage, guaranteeing the smooth transfer of high loads to the chain.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm	Outside width of KA 01 mm
			A mm	B mm	C mm	F mm	G mm	G1 mm	H0 mm	I mm		
KA 62 Female end	0620000050	Sheet steel	93.0 – 518.0	A-12.0	A+44.0	45.0	102.0	171.5	9.0	15.0	A+32.0	A+90.0
KA 62 Male end	0620000051	Sheet steel	93.0 – 518.0	A-12.0	A+44.0	45.0	102.0	171.5	9.0	15.0	A+32.0	A+90.0

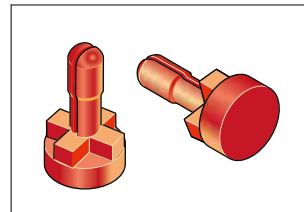
**MP 52/62/72 LOCK BUTTON**



Lock button



Lock button



Lock button

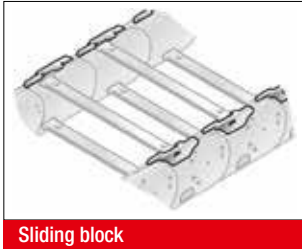
To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP52/62/72 lock button	0520000080



**GS 62.2 SLIDING BLOCK**

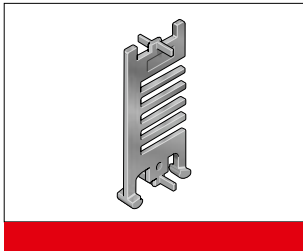
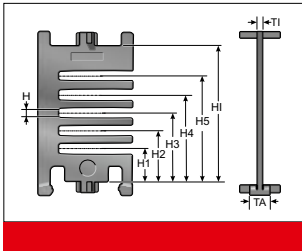


Sliding block

In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Installation site	Min. radius mm	Sliding block height mm
GS 62.2.1 right	062290400302	For right side link	200.0	6.0
GS 62.2.2 left	062290400300	For left side link	200.0	6.0

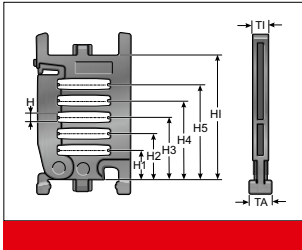
**TR 62 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

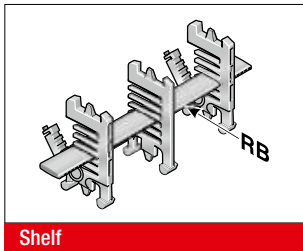
Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 62	062000009200	Separator	lockable	3.5	13.0	5.5	14.8	23.1	31.4	39.7	48.0	62.0

**RTT 62 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
RTT 62	100090622000	Shelf support, divisible	lockable	8.0	8.0	5.5	14.8	23.1	31.4	39.7	48.0	62.0

**RB-7 SHELF**

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 056-7	100000005600	Shelf	56.0	93.0
RB 061-7	1000006107	Shelf	61.0	93.0
RB 066-7	100000006600	Shelf	66.0	93.0
RB 071-7	1000007107	Shelf	71.0	93.0
RB 076-7	1000007607	Shelf	76.0	93.0
RB 081-7	100000008100	Shelf	81.0	93.0
RB 086-7	1000008607	Shelf	86.0	93.0
RB 091-7	1000009107	Shelf	91.0	106.0
RB 096-7	1000009607	Shelf	96.0	106.0
RB 101-7	1000010107	Shelf	101.0	106.0
RB 106-7	100000010600	Shelf	106.0	106.0
RB 111-7	1000011107	Shelf	111.0	118.0
RB 116-7	100000011600	Shelf	116.0	118.0
RB 121-7	1000012107	Shelf	121.0	131.0
RB 126-7	1000012607	Shelf	126.0	131.0
RB 131-7	1000013107	Shelf	131.0	143.0
RB 136-7	1000013607	Shelf	136.0	143.0
RB 141-7	1000014107	Shelf	141.0	143.0
RB 146-7	1000014607	Shelf	146.0	156.0
RB 151-7	1000015107	Shelf	151.0	156.0
RB 156-7	1000015607	Shelf	156.0	156.0
RB 161-7	1000016107	Shelf	161.0	168.0
RB 166-7	100000016600	Shelf	166.0	168.0
RB 171-7	1000017107	Shelf	171.0	181.0
RB 176-7	1000017607	Shelf	176.0	181.0
RB 181-7	1000018107	Shelf	181.0	193.0
RB 186-7	1000018607	Shelf	186.0	193.0
RB 191-7	1000019107	Shelf	191.0	193.0
RB 196-7	1000019607	Shelf	196.0	206.0
RB 201-7	1000020107	Shelf	201.0	206.0
RB 206-7	1000020607	Shelf	206.0	206.0
RB 211-7	1000021107	Shelf	211.0	218.0
RB 216-7	100000021600	Shelf	216.0	218.0

## RSV 62 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	TI mm
RSV 62	062000009600	Crossbar connector	8.0
RSV 62 Alu	062000009800	Crossbar connector for aluminium crossbars	8.0

## BS-5 BRACKET BAR



Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
Assembly set	052400000001	Assembly set			

## D6 CHAIN BRACKET COVER



Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order No.
Cover D6 KA 62.1-FB/FG	0623888002

**MP 62.3 CHAIN BRACKET CANOPY**



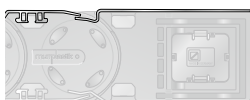
Constructed from aluminium, the canopies for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

**Canopy for chain bracket fixed point outside bend: Type and order number configurator**



Type:	KA 62.1 FB/FG AB	Inside width	2-2
Order No.:	0621	Inside width	060

**Canopy for chain bracket fixed point inside bend: Type and order number configurator**



Type:	KA 62.1 FB/FG IB	Inside width	2-2
Order No.:	0621	Inside width	058

**Canopy for chain bracket moving end outside bend: Type and order number configurator**



Type:	KA 62.1 FB/FG AB	Inside width	1-2
Order No.:	0621	Inside width	059

**Canopy for chain bracket moving end inside bend: Type and order number configurator**



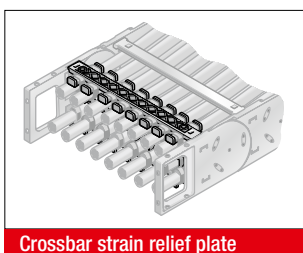
Type:	KA 62.1 FB/FG IB	Inside width	1-2
Order No.:	0621	Inside width	057

**Ordering example:**

0621096058 KA 62.1 FB/FG IB 118 2-2

Chain bracket canopy at fixing point in inside bend, for inside width of 118 mm.

**RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**



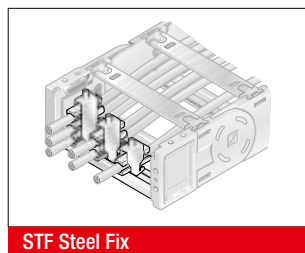
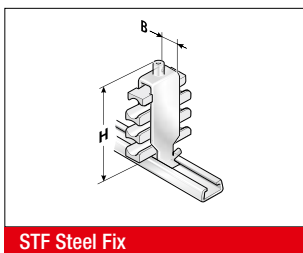
Fixed integrated frame bridge strain relief plates in the chain brackets. Accommodated to all widths of the frame bridges, up to 256 mm in size. May be assembled on the inside and outside flexure curves at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 093-7	072009300010	Crossbar strain relief plate	93.0
RS-ZL 106-7	072010600010	Crossbar strain relief plate	106.0
RS-ZL 118-7	072011800010	Crossbar strain relief plate	118.0
RS-ZL 131-7	072013100010	Crossbar strain relief plate	131.0
RS-ZL 143-7	072014300010	Crossbar strain relief plate	143.0
RS-ZL 156-7	072015600010	Crossbar strain relief plate	156.0
RS-ZL 168-7	072016800010	Crossbar strain relief plate	168.0
RS-ZL 181-7	072018100010	Crossbar strain relief plate	181.0

**RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**

Type	Order No.	Description	Inside width mm
RS-ZL 193-7	072019300010	Crossbar strain relief plate	193.0
RS-ZL 206-7	072020600010	Crossbar strain relief plate	206.0
RS-ZL 218-7	072021800010	Crossbar strain relief plate	218.0
RS-ZL 231-7	072023100010	Crossbar strain relief plate	231.0
RS-ZL 243-7	072024300010	Crossbar strain relief plate	243.0
RS-ZL 256-7	072025600010	Crossbar strain relief plate	256.0

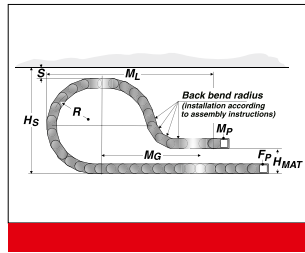
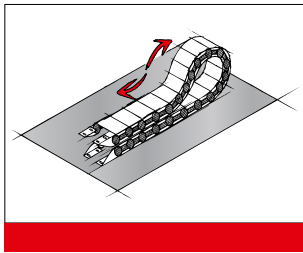
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Designation	Seats qty.	Cable Ø mm	Width mm	Overall height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**LOWERED FIXING POINT MP 62**



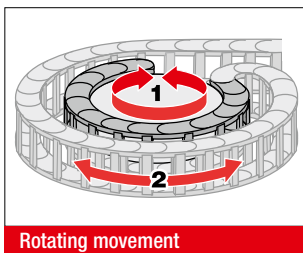
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>s</sub> ) mm	Projection (M <sub>l</sub> ) mm	Additional links qty.	of which additional back chain links qty.
200.0	230.0	60.0	564.0	850.0	11	2
250.0	270.0	60.0	664.0	990.0	12	2
300.0	320.0	60.0	764.0	1060.0	12	3
400.0	380.0	90.0	694.0	1060.0	14	3
500.0	440.0	60.0	1164.0	1520.0	17	3

**MP 62.2 REARWARD RADII**



Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

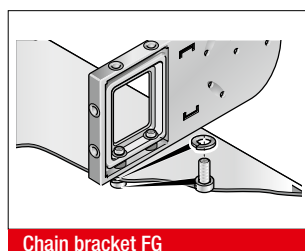
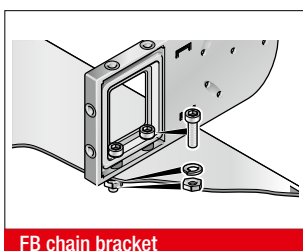
Type	Order No.	Radius mm	Rearward radius mm
SR 62.2 (RÜ300/R300) left	062200030060	300.0	300.0
SR 62.2 (RÜ300/R300) right	062200030062	300.0	300.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**

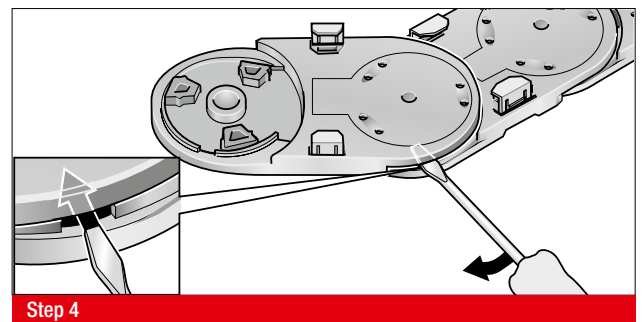
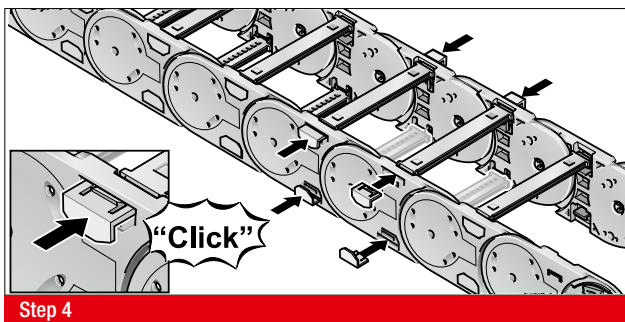
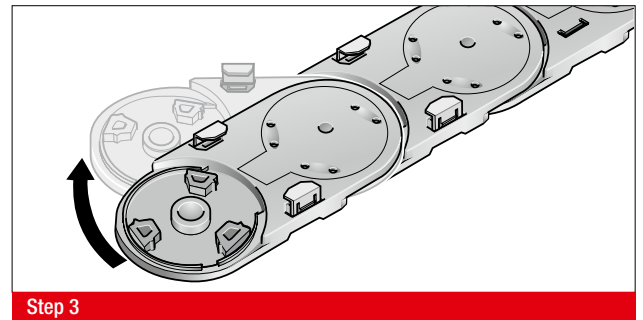
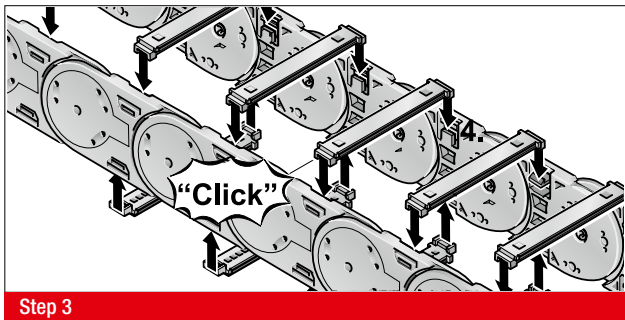
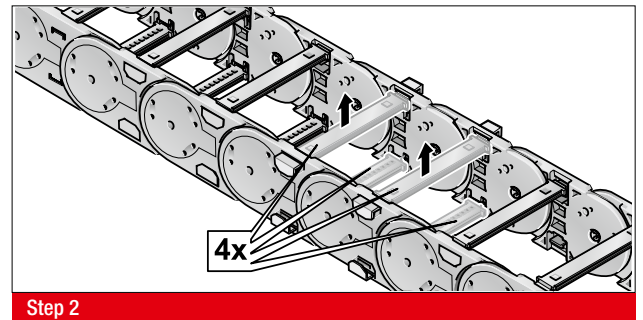
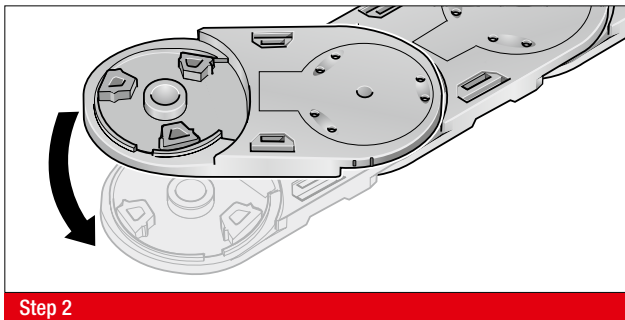
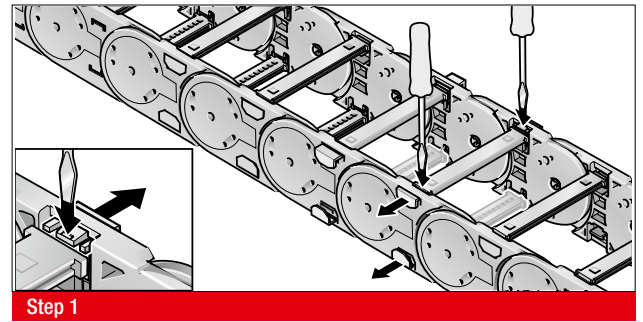
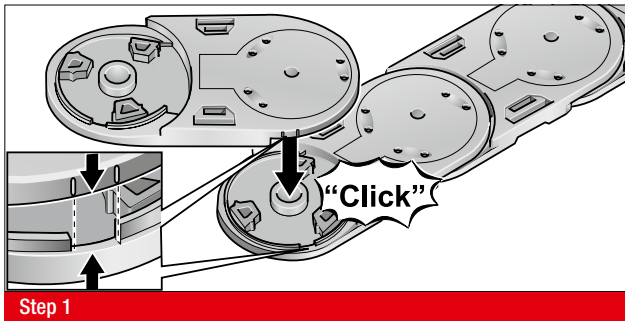


Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**  
Integrated through-hole fastened down using screw and nut.  
**Version KA-FG:**  
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

**ASSEMBLY**

**DISASSEMBLY**



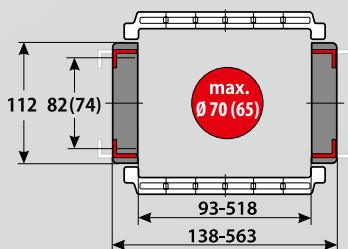
**MP 82.2**  
OPEN



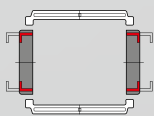
**MP 82.3**  
CLOSED



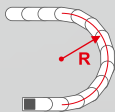
- SLIDING BLOCKS FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- CHAIN BRACKET FLEXIBLE
- PLASTIC OR ALUMINIUM VERSION
- SIDE LINK LOCK



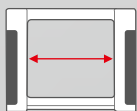
## TECHNICAL DATA



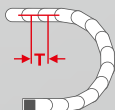
**Loading side**  
Inside and outside bend



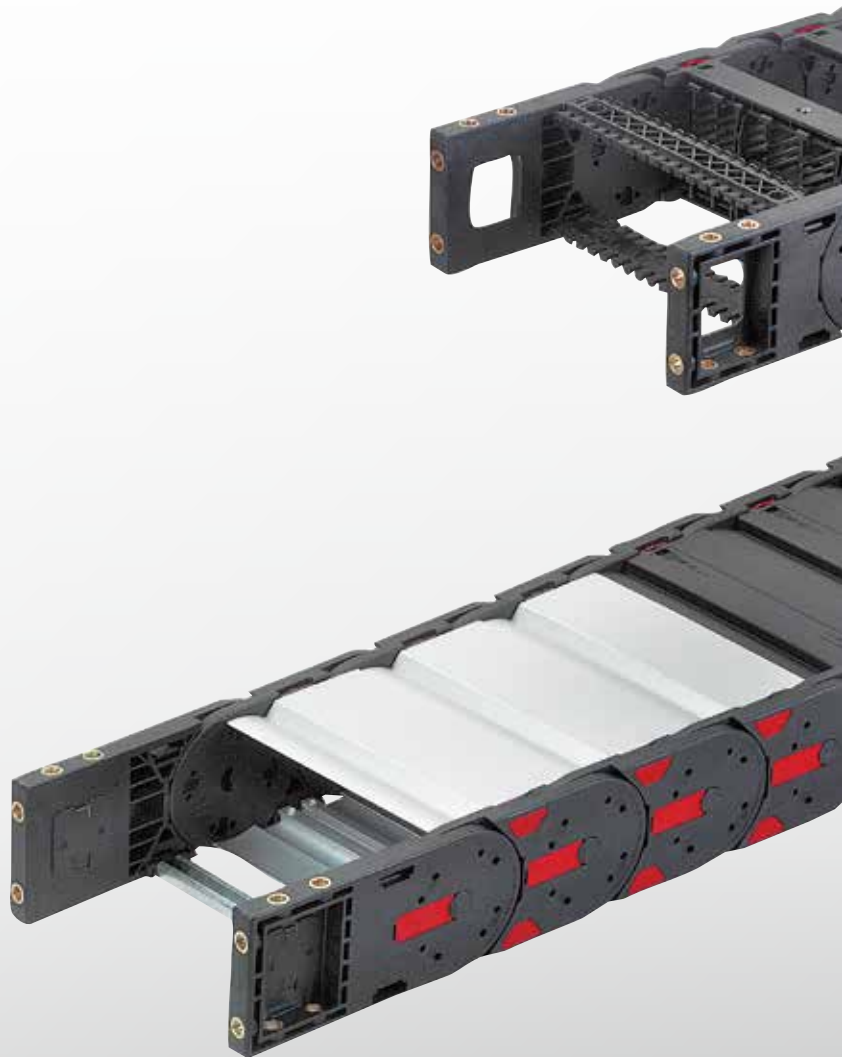
**Available radii**  
150.0 – 650.0 mm



**Available interior widths**  
With plastic crossbar  
93.0 – 518.0 mm  
With alu crossbar / with alu cover  
72.0 – 600.0 mm / 40.0 – 600.0 mm



**Pitch**  
T = 118.0 mm







## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 307
Travel distance vertical, hanging $L_{vh}$ max.	80.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	3.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	40.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

## ACCESSORIES

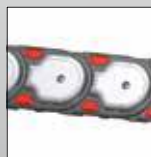


Sliding block

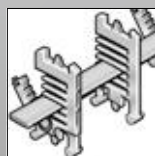
## SHELVING SYSTEM



Separator TR



Gliding plate



RS shelving system



Bracket bar

## GUIDE CHANNELS

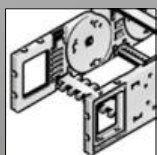


VAW steel galvanised / stainless steel



RS-ZL crossbar strain relief

## CHAIN BRACKET



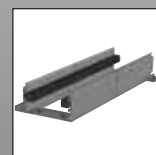
Chain bracket flexible



Crossbar connector RSV



Cover



VAW aluminium

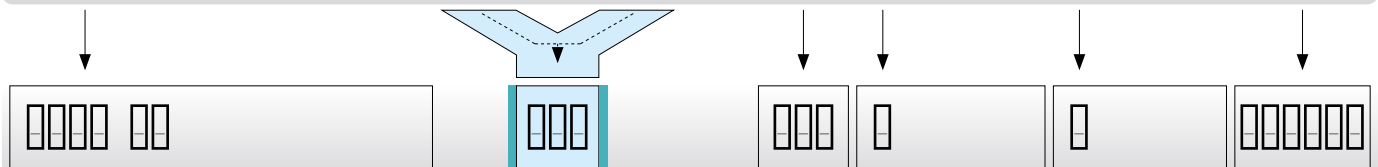


STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0822 30</b>	MP 82.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>093</b> [3.66]	<b>138</b> [5.43]	<b>468</b> [18.43]	<b>513</b> [20.20]	<b>150<sup>1)</sup></b> [5.91]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>106</b> [4.17]	<b>151</b> [5.94]	<b>518</b> [20.39]	<b>563</b> [22.17]				
<b>0823 44<sup>2)</sup></b>	MP 82.3 Closed Cover on outside bend Cover on inside bend Opens on inside and outside bend	<b>118</b> [4.65]	<b>163</b> [6.42]			<b>200</b> [7.87]	<b>1</b> Plastic, full-ridged without bias	<b>5</b> Polypropylene (PP/blue)	
		<b>131</b> [5.16]	<b>176</b> [6.93]						
		<b>143</b> [5.63]	<b>188</b> [7.40]			<b>250</b> [9.84]	<b>2</b> Plastic, half-ridged with bias	<b>7</b> EMC (PA/light grey)	
		<b>156</b> [6.14]	<b>201</b> [7.91]						
		<b>168</b> [6.61]	<b>213</b> [8.39]			<b>300</b> [11.81]	<b>3</b> Plastic, half-ridged without bias	<b>9</b> Special version (on request)	
		<b>181</b> [7.13]	<b>226</b> [8.90]						
		<b>193</b> [7.60]	<b>238</b> [9.37]			<b>350</b> [13.78]	<b>4</b> Aluminium full-ridged with bias		
		<b>206</b> [8.11]	<b>251</b> [9.88]						
		<b>218</b> [8.58]	<b>263</b> [10.35]			<b>400</b> [15.75]	<b>5</b> Aluminium full-ridged without bias		
		<b>231</b> [9.09]	<b>276</b> [10.87]						
		<b>243<sup>3)</sup></b> [9.57]	<b>288</b> [11.34]			<b>500</b> [19.69]	<b>6</b> Aluminium half-ridged with bias		
		<b>256</b> [10.08]	<b>301</b> [11.85]						
		<b>268</b> [10.55]	<b>313</b> [12.32]			<b>650</b> [25.59]	<b>7</b> Aluminium half-ridged without bias		
		<b>293</b> [11.54]	<b>338</b> [13.31]						
		<b>318</b> [12.52]	<b>363</b> [14.29]				<b>9</b> Special version (on request)		
		<b>343</b> [13.50]	<b>388</b> [15.28]						
		<b>368</b> [14.49]	<b>413</b> [16.26]						
		<b>418</b> [16.46]	<b>463</b> [18.23]						



**ORDERING EXAMPLE: 0822 30 118 150 0 0 1534**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 118 mm; radius 150 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1534 mm (13 links)

<sup>1)</sup> for Variant 30 only  
<sup>2)</sup> reduced inner height, reduced max. cable diameter, see chain window drawing on previous page  
<sup>3)</sup> also available with plastic cover

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 72.0 mm – 600.0 mm .

**Aluminium covers:**

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 40.0 mm – 600.0 mm .

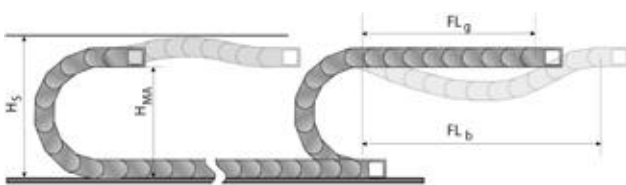
**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 243 mm, we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminium.

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

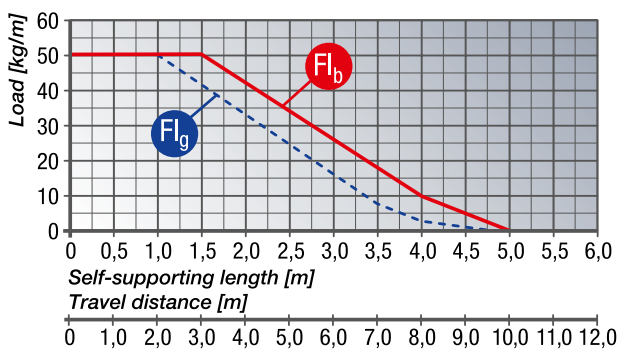
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



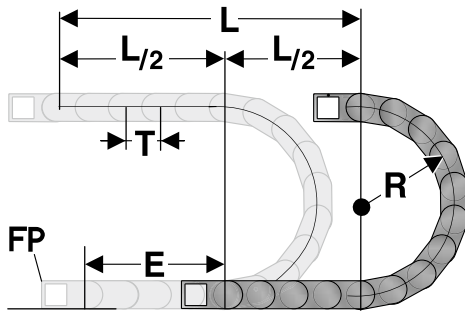
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 80.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 80.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain. Closed energy chains (with covers) have a higher unit weight than open chains (with crossbars). This higher weight must be taken into account when calculating the self-supporting length. To the weight of the cabling (cable load, in kg/m), you must add 3.1 kg/m, to account for the higher weight of closed-cover chains.

**DETERMINING THE CHAIN LENGTH**



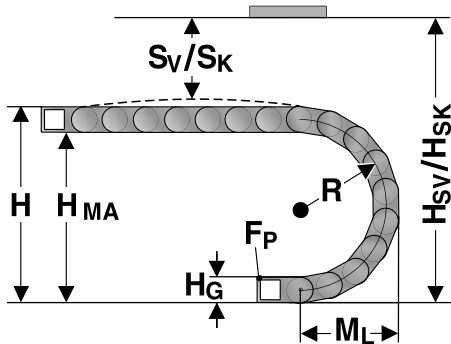
The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 9 \text{ qty. } \times 118.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 118.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the "Installed height without bias  $H_{SK}$ " value has to be taken into account.

If the chain links are equipped with a bias, the value "Installed height with bias  $H_{SV}$ " has to be taken into account.

Radius R	150	200	250	300	350	400	500	650
Outside height of chain link ( $H_o$ )	112	112	112	112	112	112	112	112
Height of bend (H)	422	522	622	722	822	922	1122	1422
Height of moving end bracket ( $H_{MA}$ )	310	410	510	610	710	810	1010	1310
Safety margin (S)	50	50	50	50	50	50	50	50
Installation height ( $H_s$ )	452	552	652	752	852	952	1152	1452
Safety margin without bias ( $S_R$ )	30	30	30	30	30	30	30	30
Installation height without bias ( $H_{SK}$ )	452	552	652	752	852	952	1152	1452
Arc projection ( $M_L$ )	329	379	429	479	529	579	679	829

## HEAVYLINE PLASTIC CROSSBAR



The crossbars connect the two side runs of the energy chain. The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 093-7	072009300000	Crossbar	93.0
RS 106-7	072010600000	Crossbar	106.0
RS 118-7	072011800000	Crossbar	118.0
RS 131-7	072013100000	Crossbar	131.0
RS 143-7	072014300000	Crossbar	143.0
RS 156-7	072015600000	Crossbar	156.0
RS 168-7	072016800000	Crossbar	168.0
RS 181-7	072018100000	Crossbar	181.0
RS 193-7	072019300000	Crossbar	193.0
RS 206-7	072020600000	Crossbar	206.0
RS 231-7	072023100000	Crossbar	231.0
RS 243-7	072024300000	Crossbar	243.0
RS 256-7	072025600000	Crossbar	256.0
RS 268-7	072026800000	Crossbar	268.0
RS 293-7	072029300000	Crossbar	293.0
RS 318-7	072031800000	Crossbar	318.0
RS 343-7	072034300000	Crossbar	343.0
RS 368-7	072036800000	Crossbar	368.0
RS 418-7	072041800000	Crossbar	418.0
RS 468-7	072046800000	Crossbar	468.0
RS 518-7	072051800000	Crossbar	518.0

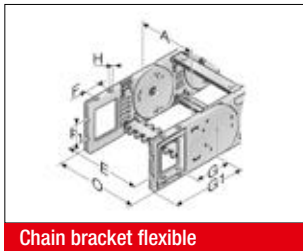
## MP 82.3 PLASTIC COVER



The covers connect the two side runs of the energy chain. The cover length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Installation site	Inside width mm
A-823243, outside	082324310000	Cover	Outside bend	243.0
I-823243, inside	082324320000	Cover	Inside bend	243.0

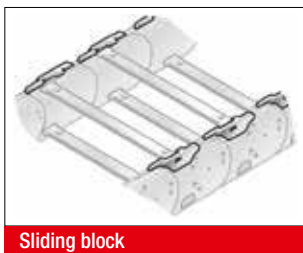
**KA 82.2 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Pressed-in metal bushes with a through-hole ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 82-FB Female end	0820000056	Plastic	with bush	93.0 – 518.0	A+23.0	35.0	66.0	117.0	182.0	11.0	A+45.0	
KA 82-FB male end	0820000057	Plastic	with bush	93.0 – 518.0	A+23.0	35.0	66.0	117.0	182.0	11.0	A+45.0	
KA 82-FG Female end	0820000058	Plastic	with thread	93.0 – 518.0	A+23.0	35.0	66.0	117.0	182.0	M10	A+45.0	
KA 82-FG male end	0820000059	Plastic	with thread	93.0 – 518.0	A+23.0	35.0	66.0	117.0	182.0	M10	A+45.0	

**MP 82.2 SLIDING BLOCK**



In the case of energy chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the energy chain may be extended five-fold, by using slide blocks. Information about the minimum bending radius of the energy chain at the sliding block insert is listed in the following table.

Type	Order No.	Installation site	Min. radius mm	Sliding block height mm
GS 82.2.1 right	082290400302	For right side link	200.0	6.0
GS 82.2.2 left	082290400300	For left side link	200.0	6.0

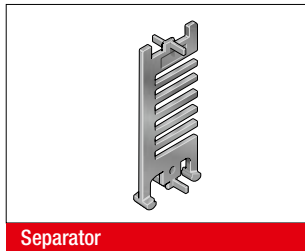
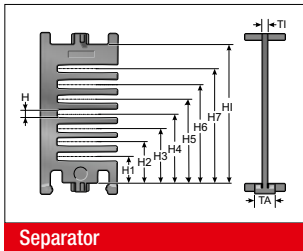
**GLP 8 (82.2) GLIDING PLATE**



The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. The gliding plates are placed onto the side links instead of the usual chain link side locks (no tools required). The wear limit is 2.5 mm. We recommend replacing the energy chain when this limit has been reached. Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding plates. The energy chain must be placed on its side before opening.

Type	Order No.	Installation site	Gliding plate height mm
GLP 8	082290400301	GLP8 gliding plate for the MP82.2, MP82.3	7.0

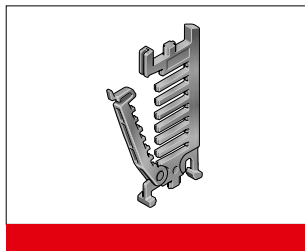
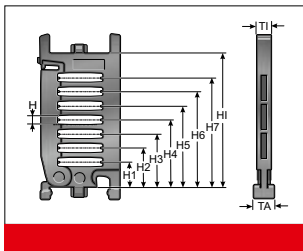
**TR 82 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm	H7 mm	H8 mm
TR 82-S	082000009300	Separator	lockable	4.0	14.8	5.5	23.1	39.7	56.3					
TR 82	082000009200	Separator	lockable	3.5	15.0	5.5	14.9	23.2	31.5	39.8	48.1	56.4	64.7	82.0

**RTT 82 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

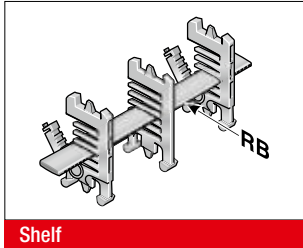
Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm	H7 mm	H8 mm
RTT 82	100090822000	Shelf support, divisible	lockable	8.0	8.0	5.5	14.9	23.2	31.5	39.8	48.1	56.4	64.7	82.0

**RSV 82.2 CROSSBAR CONNECTOR**



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	TI mm
RSV 82	082000009600	Crossbar connector	8.0
RSV 82 Alu	082000009800	Crossbar connector for aluminium crossbars	8.0

**RB-7 SHELF**

In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 056-7	100000005600	Shelf	56.0	93.0
RB 061-7	1000006107	Shelf	61.0	93.0
RB 066-7	100000006600	Shelf	66.0	93.0
RB 071-7	1000007107	Shelf	71.0	93.0
RB 076-7	1000007607	Shelf	76.0	93.0
RB 081-7	100000008100	Shelf	81.0	93.0
RB 086-7	1000008607	Shelf	86.0	93.0
RB 091-7	1000009107	Shelf	91.0	106.0
RB 096-7	1000009607	Shelf	96.0	106.0
RB 101-7	1000010107	Shelf	101.0	106.0
RB 106-7	100000010600	Shelf	106.0	106.0
RB 111-7	1000011107	Shelf	111.0	118.0
RB 116-7	100000011600	Shelf	116.0	118.0
RB 121-7	1000012107	Shelf	121.0	131.0
RB 126-7	1000012607	Shelf	126.0	131.0
RB 131-7	1000013107	Shelf	131.0	143.0
RB 136-7	1000013607	Shelf	136.0	143.0
RB 141-7	1000014107	Shelf	141.0	143.0
RB 146-7	1000014607	Shelf	146.0	156.0
RB 151-7	1000015107	Shelf	151.0	156.0
RB 156-7	1000015607	Shelf	156.0	156.0
RB 161-7	1000016107	Shelf	161.0	168.0
RB 166-7	100000016600	Shelf	166.0	168.0
RB 171-7	1000017107	Shelf	171.0	181.0
RB 176-7	1000017607	Shelf	176.0	181.0
RB 181-7	1000018107	Shelf	181.0	193.0
RB 186-7	1000018607	Shelf	186.0	193.0
RB 191-7	1000019107	Shelf	191.0	193.0
RB 196-7	1000019607	Shelf	196.0	206.0
RB 201-7	1000020107	Shelf	201.0	206.0
RB 206-7	1000020607	Shelf	206.0	206.0
RB 211-7	1000021107	Shelf	211.0	218.0
RB 216-7	100000021600	Shelf	216.0	218.0



**BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
Assembly set	052400000001	Assembly set			

**D8 CHAIN BRACKET COVER**



Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).

Type	Order No.
Cover D8 KA 82.1 -FB/FG	0823888002

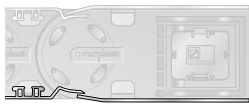
**MP 82.3 CHAIN BRACKET CANOPY**



Constructed from aluminium, the canopies for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

**MP 82.3 CHAIN BRACKET CANOPY**

Canopy for: chain bracket, fixed point outside bend: Type and order number configurator



Type:	KA 82.1 FB/FG AB	Inside width	2-2
Order no.:	0821	Inside width	060

Cover for: Bracket fixed point inside bend: Type and order number configurator



Type:	KA 82.1 FB/FG IB	Inside width	2-2
Order no.:	0821	Inside width	058

Cover for: Bracket moving end outside bend: Type and order number configurator



Type:	KA 82.1 FB/FG AB	Inside width	1-2
Order no.:	0821	Inside width	059

Cover for: Bracket moving end inside bend: Type and order number configurator



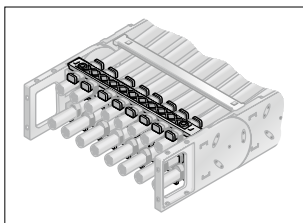
Type:	KA 82.1 FB/FG IB	Inside width	1-2
Order no.:	0821	Inside width	057

**Ordering example:**

0821118058 KA 82.1 FB/FG IB 118 2-2

Chain bracket canopy at fixing point in inside bend, for inside width of 118 mm.

**RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**

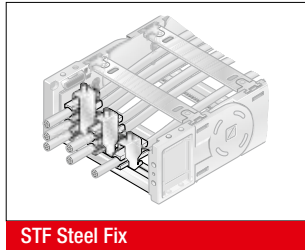
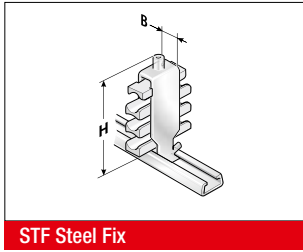


Crossbar strain relief plate

Fixed integrated frame bridge strain relief plates in the chain brackets. Accommodated to all widths of the frame bridges, up to 256 mm in size. May be assembled on the inside and outside flexure curves at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 093-7	072009300010	Crossbar strain relief plate	93.0
RS-ZL 106-7	072010600010	Crossbar strain relief plate	106.0
RS-ZL 118-7	072011800010	Crossbar strain relief plate	118.0
RS-ZL 131-7	072013100010	Crossbar strain relief plate	131.0
RS-ZL 143-7	072014300010	Crossbar strain relief plate	143.0
RS-ZL 156-7	072015600010	Crossbar strain relief plate	156.0
RS-ZL 168-7	072016800010	Crossbar strain relief plate	168.0
RS-ZL 181-7	072018100010	Crossbar strain relief plate	181.0
RS-ZL 193-7	072019300010	Crossbar strain relief plate	193.0
RS-ZL 206-7	072020600010	Crossbar strain relief plate	206.0
RS-ZL 218-7	072021800010	Crossbar strain relief plate	218.0
RS-ZL 231-7	072023100010	Crossbar strain relief plate	231.0
RS-ZL 243-7	072024300010	Crossbar strain relief plate	243.0
RS-ZL 256-7	072025600010	Crossbar strain relief plate	256.0

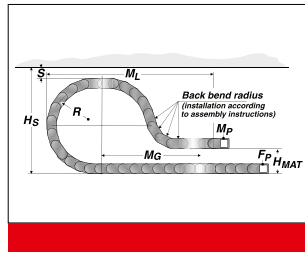
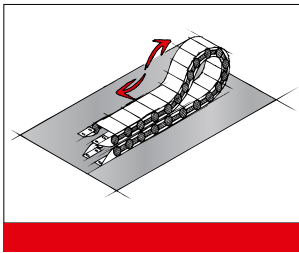
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 82.2 LOWERED FIXING POINT**



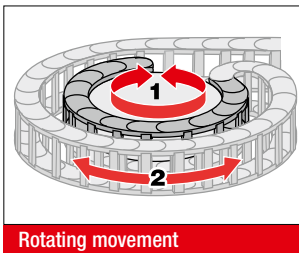
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
200.0	240.0	60.0	582.0	900.0	8	2
250.0	260.0	60.0	682.0	1050.0	10	2
300.0	290.0	60.0	782.0	1130.0	11	2
350.0	330.0	60.0	942.0	1250.0	12	2
400.0	420.0	60.0	982.0	1340.0	13	2
500.0	400.0	60.0	1182.0	1620.0	16	4

**MP 82.2 REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No	Radius mm	Rearward radius mm
SR 82.2 (RÜ300/R300) left	082200030060	300.0	300.0
SR 82.2 (RÜ300/R300) right	082200030062	300.0	300.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



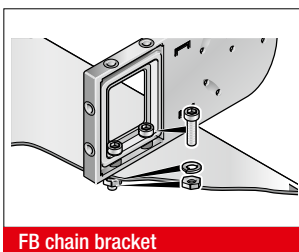
VAW steel galvanised / stainless steel



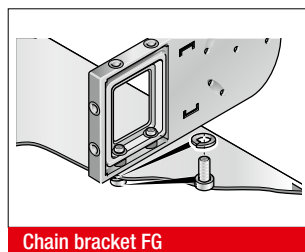
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

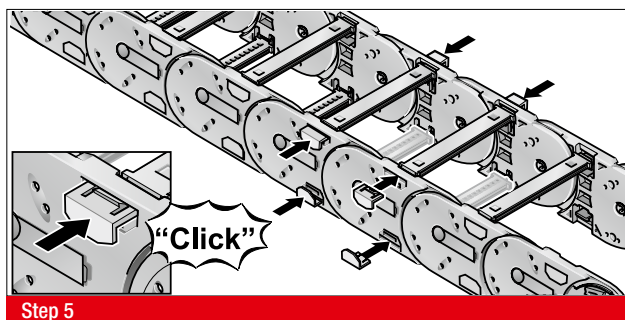
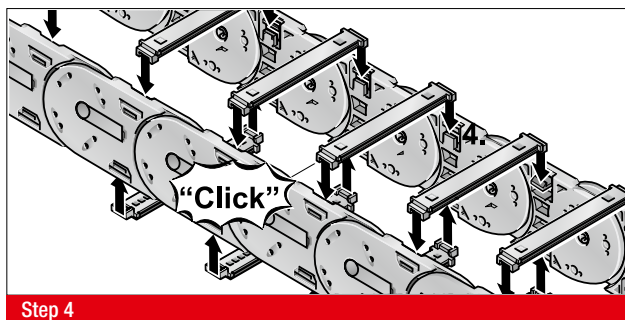
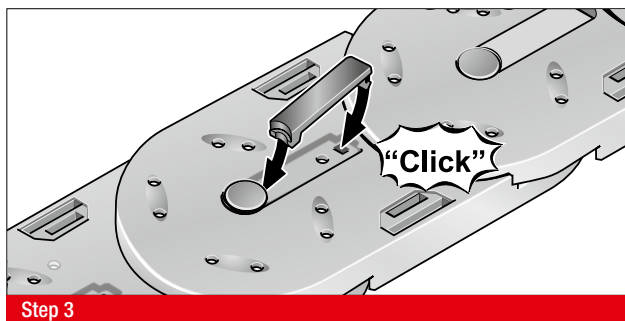
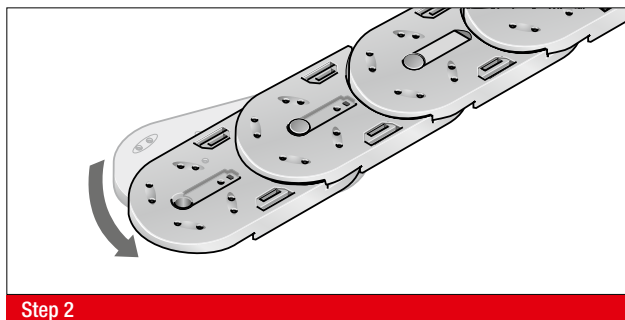
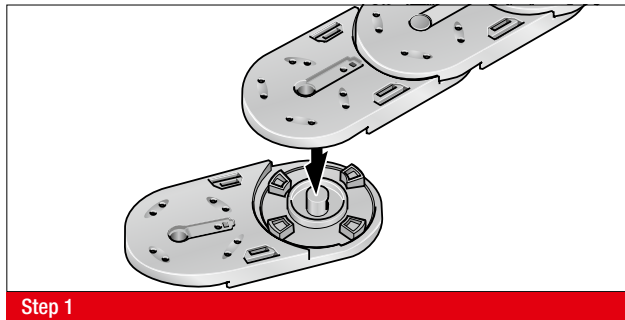
**Version KA-FB:**

Integrated through-hole fastened down using screw and nut.

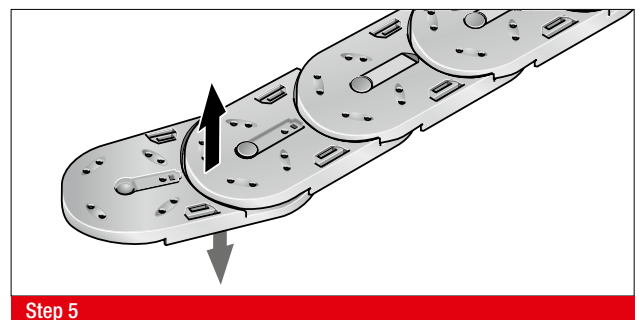
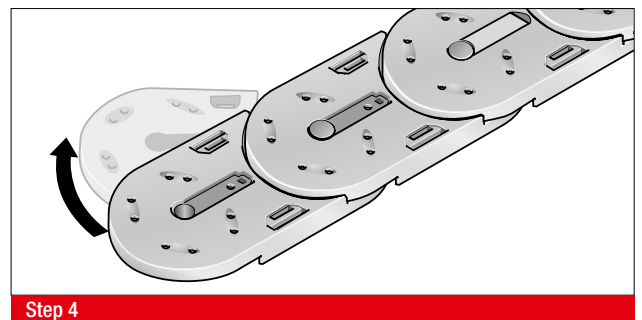
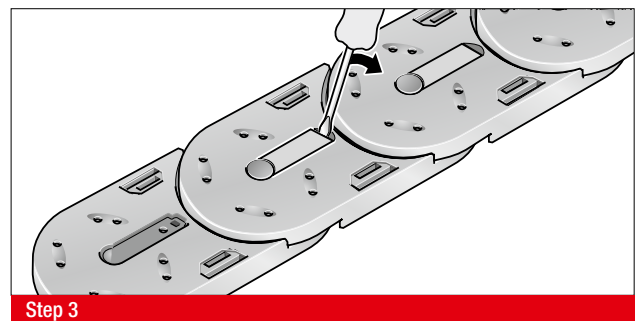
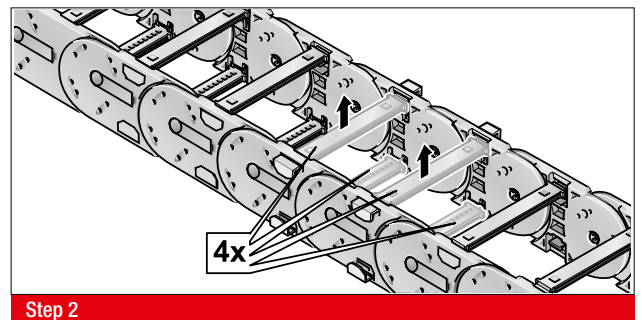
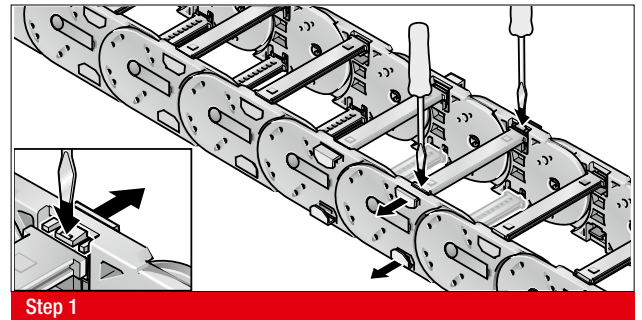
**Version KA-FG:**

Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

ASSEMBLY



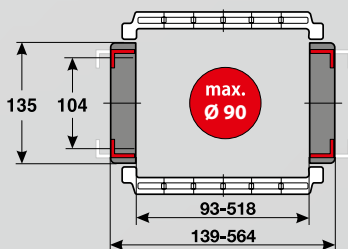
DISASSEMBLY



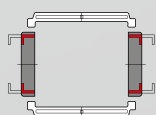
## MP 102.2 OPEN



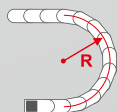
- BROAD INTERIOR LAYOUT
- STEEL ANGLE CHAIN BRACKET
- PLASTIC OR ALUMINIUM VERSION
- SIDE LINK LOCK



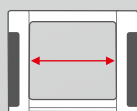
### TECHNICAL DATA



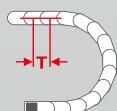
**Loading side**  
Inside and outside bend



**Available radii**  
250.0 – 500.0 mm



**Available interior widths**  
With plastic crossbar  
93.0 – 518.0 mm  
With alu crossbar / with alu cover  
72.0 – 600.0 mm /



**Pitch**  
T = 141.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 321
Travel distance vertical, hanging $L_{vh}$ max.	80.0 m
Travel distance vertical, upright $L_{vs}$ max.	8.0 m
Rotated 90°, unsupported $L_{90f}$ max.	8.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	40.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

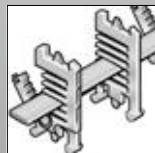
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

### SHELVING SYSTEM

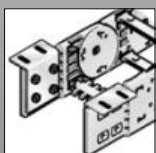


Separator TR



RS shelving system

### CHAIN BRACKET

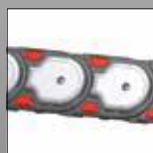


Chain bracket angle



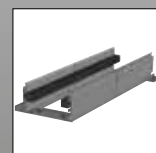
Crossbar connector RSV

### ACCESSORIES



Gliding plate

### GUIDE CHANNELS



VAW aluminium

### STRAIN RELIEF



RS-ZL crossbar strain relief

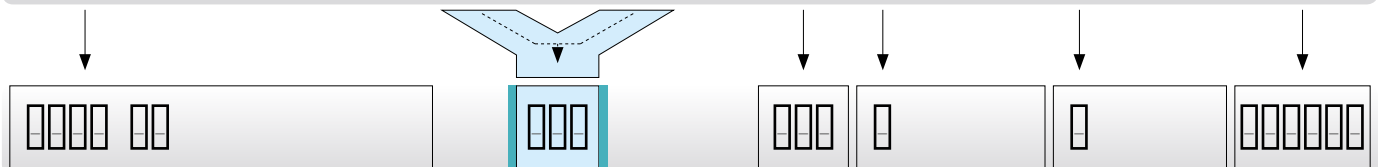


STF Steel Fix

**ORDERING KEY**

Dimensions in mm [US inch]

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>1022 30</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>093</b> [3.66]	<b>139</b> [5.47]	<b>468</b> [18.43]	<b>514</b> [20.24]	<b>250</b> [9.84]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>106</b> [4.17]	<b>152</b> [5.98]	<b>518</b> [20.39]	<b>564</b> [22.20]				
		<b>118</b> [4.65]	<b>164</b> [6.46]			<b>300</b> [11.81]	<b>2</b> Plastic, half-ridged with bias	<b>9</b> Special version (on request)	
		<b>131</b> [5.16]	<b>177</b> [6.97]						
		<b>143</b> [5.63]	<b>189</b> [7.44]			<b>400</b> [15.75]	<b>4</b> Aluminium full-ridged with bias		
		<b>156</b> [6.14]	<b>202</b> [7.95]						
		<b>168</b> [6.61]	<b>214</b> [8.43]			<b>500</b> [19.69]	<b>6</b> Aluminium half-ridged with bias		
		<b>181</b> [7.13]	<b>227</b> [8.94]						
		<b>193</b> [7.60]	<b>239</b> [9.41]				<b>9</b> Special version (on request)		
		<b>206</b> [8.11]	<b>252</b> [9.92]						
		<b>218</b> [8.58]	<b>264</b> [10.39]						
		<b>231</b> [9.09]	<b>277</b> [10.91]						
		<b>243</b> [9.57]	<b>289</b> [11.38]						
		<b>256</b> [10.08]	<b>302</b> [11.89]						
		<b>268</b> [10.55]	<b>314</b> [12.36]						
		<b>293</b> [11.54]	<b>339</b> [13.35]						
		<b>318</b> [12.52]	<b>364</b> [14.33]						
		<b>343</b> [13.50]	<b>389</b> [15.31]						
		<b>368</b> [14.49]	<b>414</b> [16.30]						
		<b>418</b> [16.46]	<b>464</b> [18.27]						



**ORDERING EXAMPLE: 1022 30 118 250 0 0 1974**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 118 mm; radius 250 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1974 mm (14 links)



**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

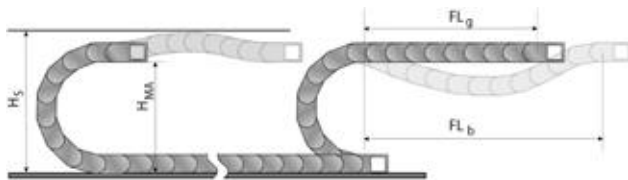
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm.

**Crossbar strain relief plate:**

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

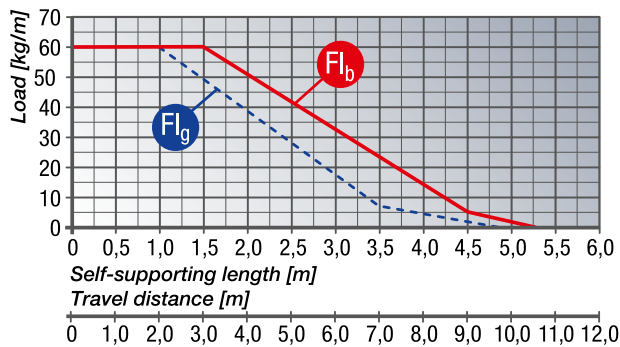
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



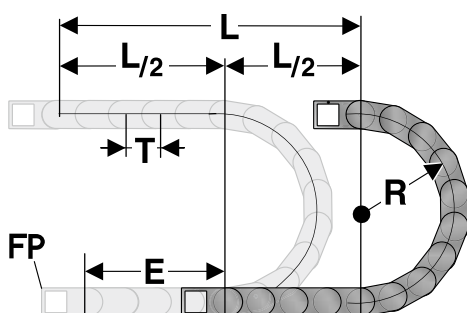
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 80.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 80.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**



The fixed point of the energy chain should be connected in the middle of the travel distance.

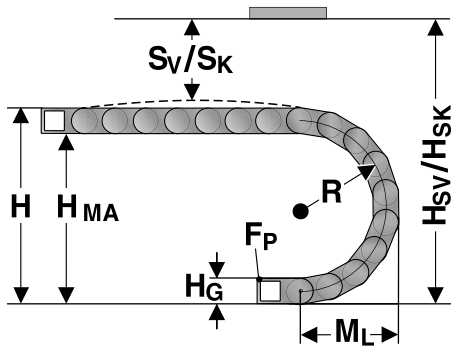
This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

$$\text{Chain length calculation} = L/2 + \pi * R + E$$

$$\approx 1 \text{ m chain} = 7 \text{ qty. } \times 141.0 \text{ mm.}$$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 141.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_s$ ” value has to be taken into account.

Radius R	250	300	400	500
Outside height of chain link ( $H_o$ )	135	135	135	135
Height of bend (H)	655	755	955	1155
Height of moving end bracket ( $H_{MA}$ )	520	620	820	1020
Installation height ( $H_g$ )	705	805	1005	1205
Safety margin without bias ( $S_k$ )	50	50	50	50
Installation height without bias ( $H_{SK}$ )	705	805	1005	1205
Arc projection ( $M_l$ )	469	519	619	719

**HEAVYLINE PLASTIC CROSSBAR**



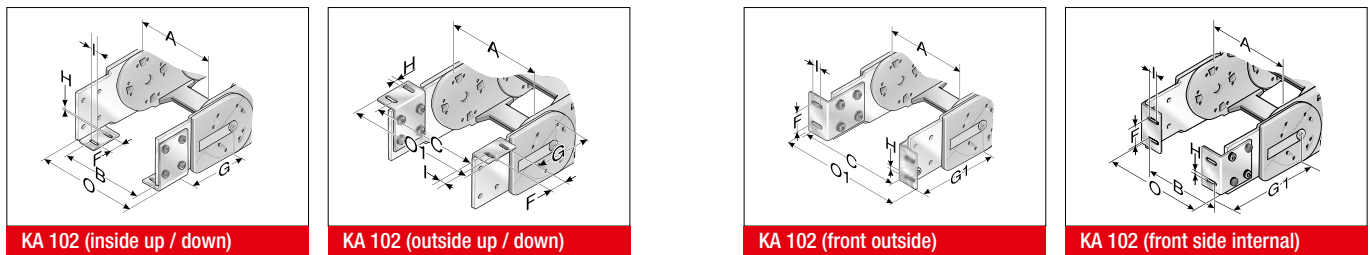
The crossbars connect the two side runs of the energy chain.  
The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 093-7	072009300000	Crossbar	93.0
RS 106-7	072010600000	Crossbar	106.0
RS 118-7	072011800000	Crossbar	118.0
RS 131-7	072013100000	Crossbar	131.0
RS 143-7	072014300000	Crossbar	143.0
RS 156-7	072015600000	Crossbar	156.0
RS 168-7	072016800000	Crossbar	168.0
RS 181-7	072018100000	Crossbar	181.0
RS 193-7	072019300000	Crossbar	193.0
RS 206-7	072020600000	Crossbar	206.0
RS 231-7	072023100000	Crossbar	231.0
RS 243-7	072024300000	Crossbar	243.0
RS 256-7	072025600000	Crossbar	256.0
RS 268-7	072026800000	Crossbar	268.0
RS 293-7	072029300000	Crossbar	293.0
RS 318-7	072031800000	Crossbar	318.0
RS 343-7	072034300000	Crossbar	343.0

**HEAVYLINE PLASTIC CROSSBAR**

Type	Order No.	Description	Inside width mm
RS 368-7	072036800000	Crossbar	368.0
RS 418-7	072041800000	Crossbar	418.0
RS 468-7	072046800000	Crossbar	468.0
RS 518-7	072051800000	Crossbar	518.0

**KA 102 CHAIN BRACKET ANGLE**

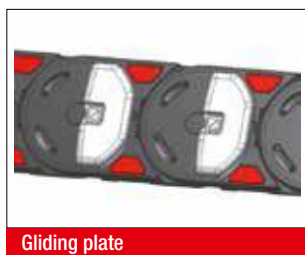


There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is

fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires one male and one female bracket. The brackets should be fastened with M12 screws.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm	Outside width of KA 01 mm
			A mm	B mm	C mm	F mm	G mm	G1 mm	H0 mm	I mm		
KA 102 Female end	1020000050	Sheet steel	93.0 – 518.0	A+2.0	A+38.0	50.0	236.0	328.5	13.0	25.0	A+28.0	A+107.0
KA 102 Male end	1020000051	Sheet steel	93.0 – 518.0	A+2.0	A+38.0	50.0	236.0	328.5	13.0	25.0	A+28.0	A+107.0

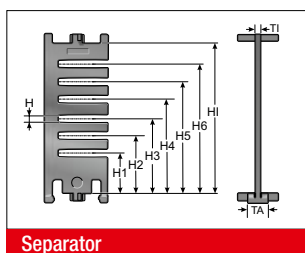
**GLP 10 (102.2) GLIDING PLATE**



The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. The gliding plates are placed onto the side links instead of the usual chain link side locks (no tools required). The wear limit is 2.5 mm. We recommend replacing the energy chain when this limit has been reached. Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding plates. The energy chain must be placed on its side before opening.

Type	Order No.	Installation site	Gliding plate height mm
GLP10	102290400301	GLP10 gliding plate for the MP102.2	7.0

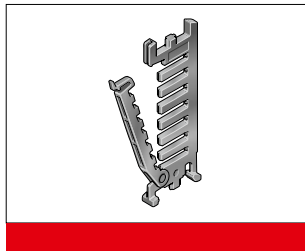
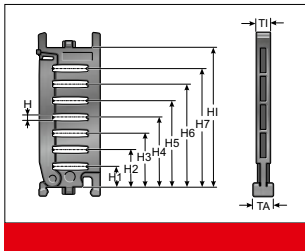
**TR 102 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm	H1 mm
TR 102	1020000092	Separator	lockable	4.0	13.0	5.5	27.6	39.9	52.4	64.7	77.0	89.3	104.0

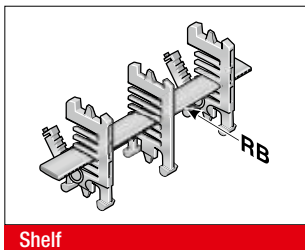
**RTT 102 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm	H7 mm	HI mm
RTT 102	100091022000	Shelf support, divisible	lockable	8.0	8.0	5.5	15.4	27.6	39.9	52.4	64.7	77.0	89.3	104.0

**RB-7 SHELF**



In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 056-7	100000005600	Shelf	56.0	93.0
RB 061-7	1000006107	Shelf	61.0	93.0
RB 066-7	100000006600	Shelf	66.0	93.0
RB 071-7	1000007107	Shelf	71.0	93.0
RB 076-7	1000007607	Shelf	76.0	93.0
RB 081-7	100000008100	Shelf	81.0	93.0
RB 086-7	1000008607	Shelf	86.0	93.0
RB 091-7	1000009107	Shelf	91.0	106.0
RB 096-7	1000009607	Shelf	96.0	106.0
RB 101-7	1000010107	Shelf	101.0	106.0
RB 106-7	100000010600	Shelf	106.0	106.0
RB 111-7	1000011107	Shelf	111.0	118.0
RB 116-7	100000011600	Shelf	116.0	118.0
RB 121-7	1000012107	Shelf	121.0	131.0
RB 126-7	1000012607	Shelf	126.0	131.0
RB 131-7	1000013107	Shelf	131.0	143.0
RB 136-7	1000013607	Shelf	136.0	143.0
RB 141-7	1000014107	Shelf	141.0	143.0
RB 146-7	1000014607	Shelf	146.0	156.0
RB 151-7	1000015107	Shelf	151.0	156.0
RB 156-7	1000015607	Shelf	156.0	156.0
RB 161-7	1000016107	Shelf	161.0	168.0
RB 166-7	100000016600	Shelf	166.0	168.0
RB 171-7	1000017107	Shelf	171.0	181.0
RB 176-7	1000017607	Shelf	176.0	181.0
RB 181-7	1000018107	Shelf	181.0	193.0
RB 186-7	1000018607	Shelf	186.0	193.0

**RB-7 SHELF**

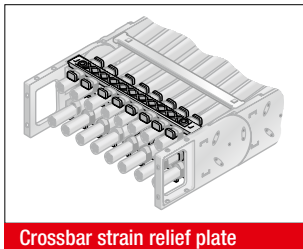
Type	Order No.	Description	Width mm	Inside width mm
RB 191-7	1000019107	Shelf	191.0	193.0
RB 196-7	1000019607	Shelf	196.0	206.0
RB 201-7	1000020107	Shelf	201.0	206.0
RB 206-7	1000020607	Shelf	206.0	206.0
RB 211-7	1000021107	Shelf	211.0	218.0
RB 216-7	100000021600	Shelf	216.0	218.0

**RSV 102 CROSSBAR CONNECTOR**

Crossbar connector

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

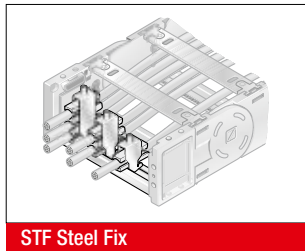
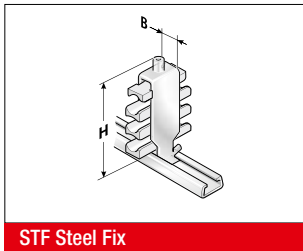
Type	Order No.	Description	TI mm
RSV 102	1020000096	Crossbar connector	8.0
RSV 102 Alu	1020000098	Crossbar connector for aluminium crossbars	8.0

**RS-ZL CROSSBAR STRAIN RELIEF MP102.2**

Crossbar strain relief plate

Type	Order No.	Description	Inside width mm
RS-ZL 093-7 MP102.2	80980291	Crossbar strain relief plate	93.0
RS-ZL 106-7 MP102.2	80980292	Crossbar strain relief plate	106.0
RS-ZL 118-7 MP102.2	80980204	Crossbar strain relief plate	118.0
RS-ZL 131-7 MP102.2	80980293	Crossbar strain relief plate	131.0
RS-ZL 143-7 MP102.2	80980160	Crossbar strain relief plate	143.0
RS-ZL 156-7 MP102.2	80980294	Crossbar strain relief plate	156.0
RS-ZL 168-7 MP102.2	80980205	Crossbar strain relief plate	168.0
RS-ZL 181-7 MP102.2	80980295	Crossbar strain relief plate	181.0
RS-ZL 193-7 MP102.2	80980206	Crossbar strain relief plate	193.0
RS-ZL 206-7 MP102.2	80980296	Crossbar strain relief plate	206.0
RS-ZL 218-7 MP102.2	80980207	Crossbar strain relief plate	218.0
RS-ZL 231-7 MP102.2	80980297	Crossbar strain relief plate	231.0
RS-ZL 243-7 MP102.2	80980208	Crossbar strain relief plate	243.0
RS-ZL 256-7 MP102.2	80980298	Crossbar strain relief plate	256.0

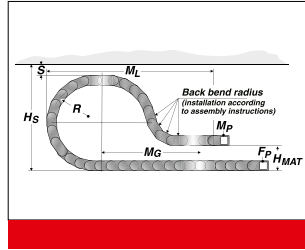
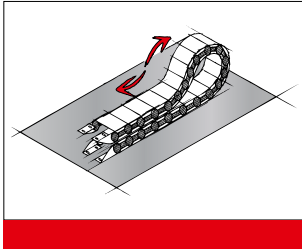
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 102.2 LOWERED FIXING POINT**



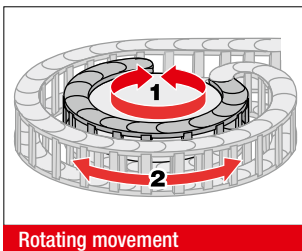
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>s</sub> ) mm	Projection (M <sub>1</sub> ) mm	Additional links qty.	of which additional back chain links qty.
250.0	250.0	60.0	695.0	880.0	9	3
300.0	270.0	60.0	795.0	1020.0	10	3
400.0	390.0	60.0	995.0	1220.0	12	3
500.0	420.0	60.0	1200.0	1490.0	15	3

**MP 102 REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 102 (RÜ400/R400) left	10200040060	400.0	400.0
SR 102 (RÜ400/R400) right	10200040062	400.0	400.0

**GUIDE CHANNEL VAW (ALUMINIUM)**

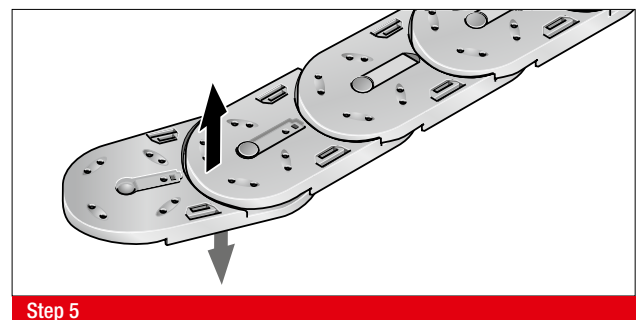
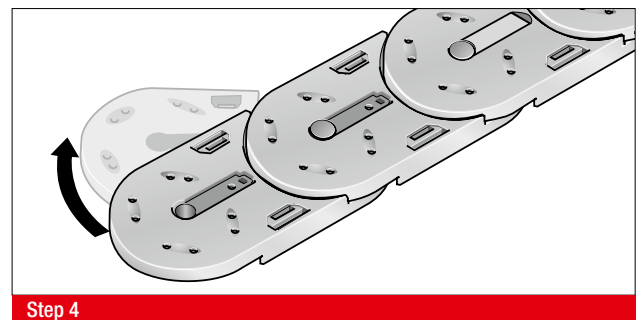
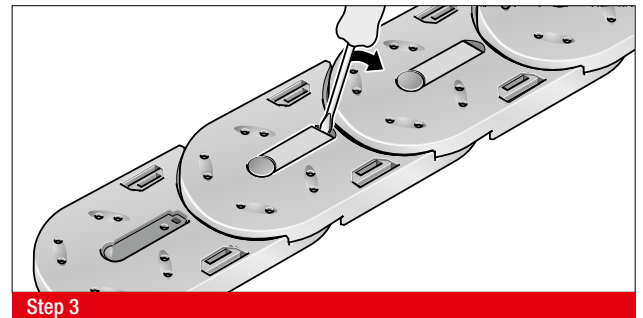
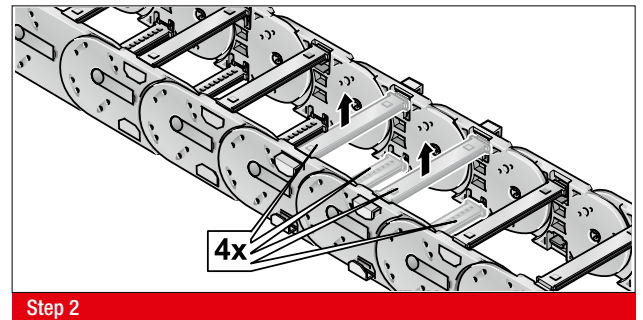
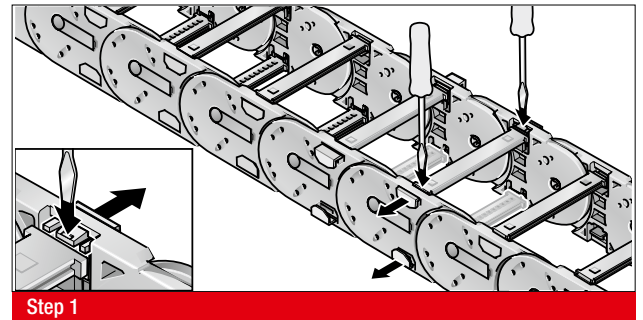
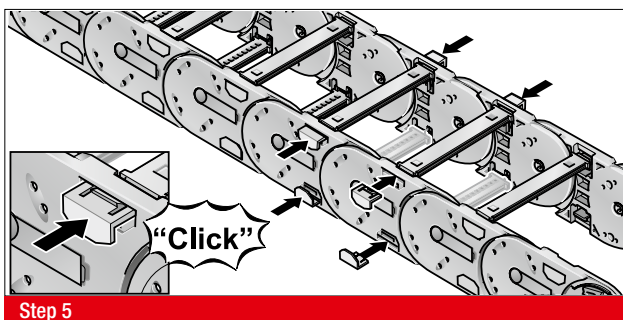
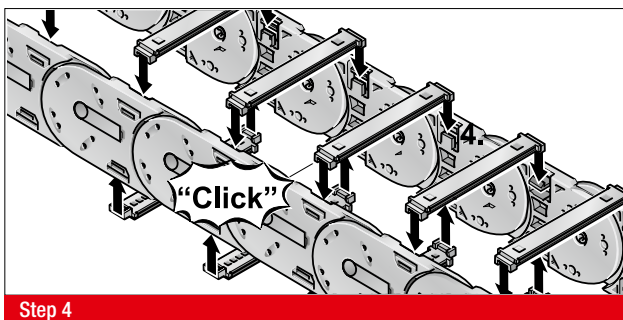
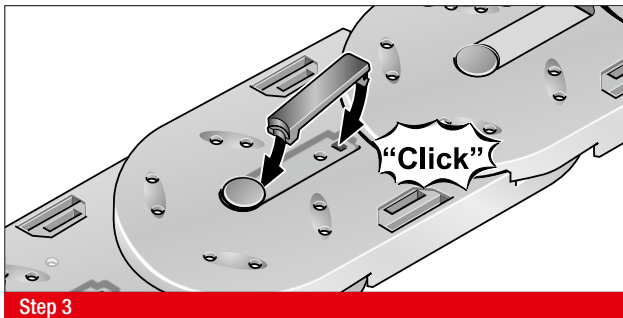
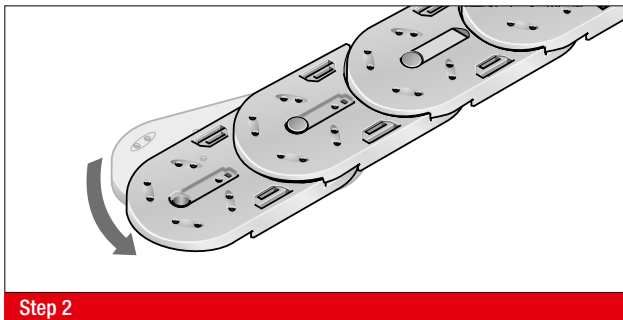
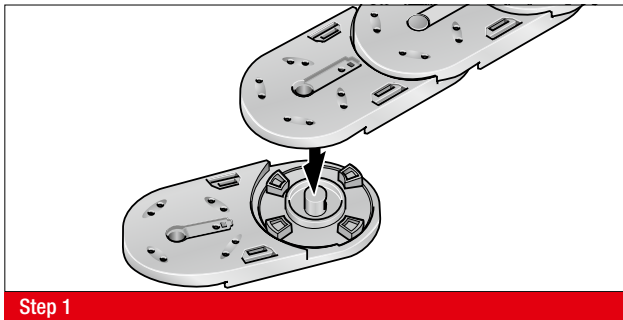


VAW aluminium

A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

DISASSEMBLY



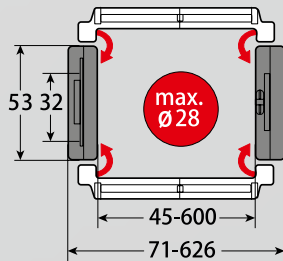




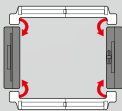
## MP 32 OPEN



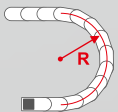
- PLASTIC OR ALUMINIUM VERSION
- CHAIN BRACKET FLEXIBLE
- BROAD INTERIOR LAYOUT



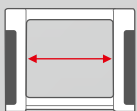
### TECHNICAL DATA



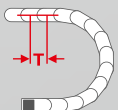
**Loading side**  
Inside and outside bend



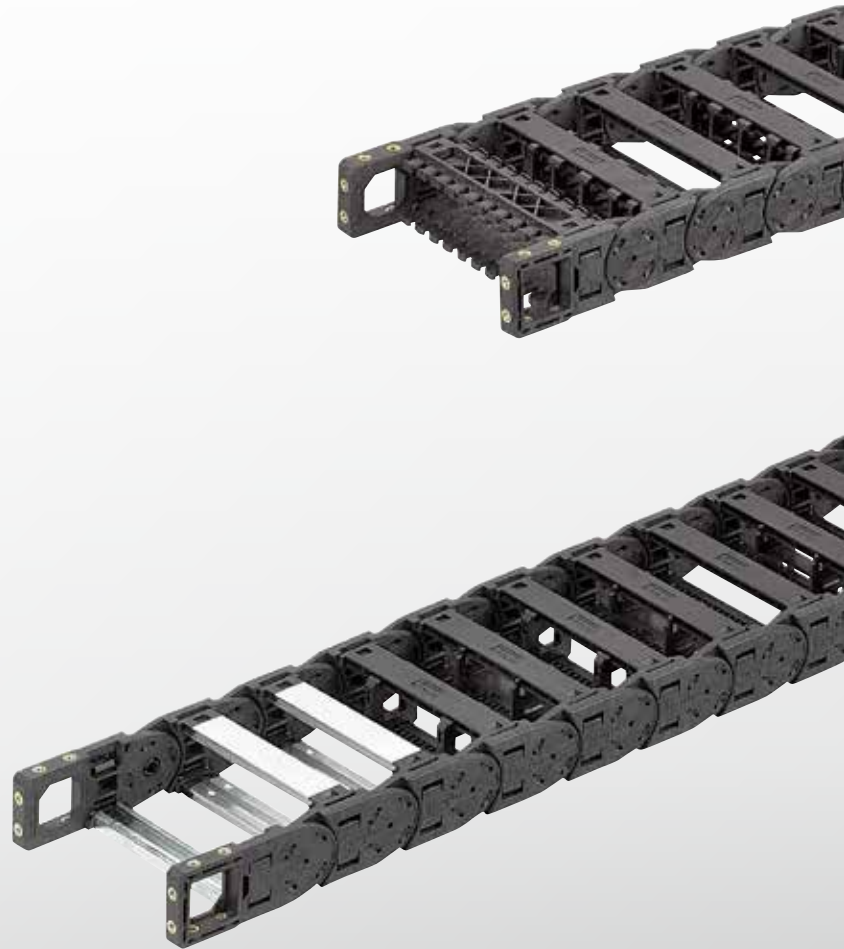
**Available radii**  
80.0 – 250.0 mm



**Available interior widths**  
With plastic crossbar  
45.0 – 546.0 mm  
With alu crossbar / with alu cover  
67.0 – 600.0 mm /



**Pitch**  
T = 64.5 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	100.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 333
Travel distance vertical, hanging $L_{vh}$ max.	40.0 m
Travel distance vertical, upright $L_{vs}$ max.	5.0 m
Rotated 90°, unsupported $L_{90f}$ max.	2.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	30.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

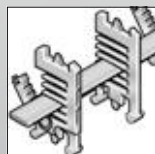
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

## SHELVING SYSTEM



Separator TR

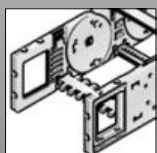


RS shelving system

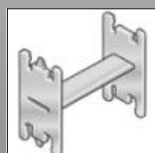


Crossbar connector RSV

## CHAIN BRACKET



Chain bracket flexible

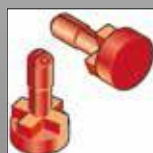


H-shaped shelf unit RE

## ACCESSORIES



Bracket bar

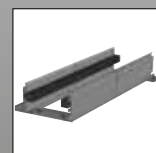


Lock button

## GUIDE CHANNELS

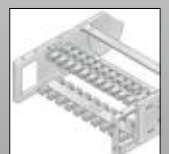


VAW steel galvanised / stainless steel



VAW aluminium

## STRAIN RELIEF



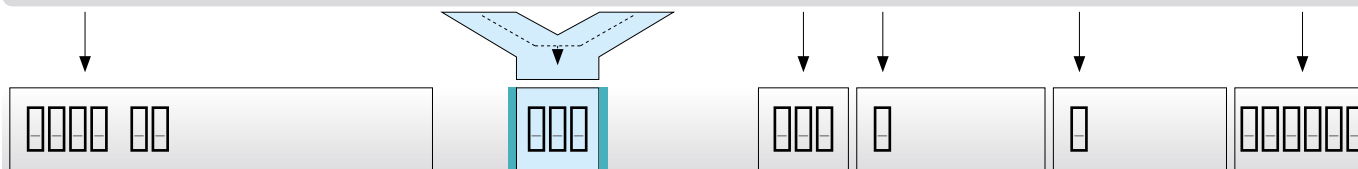
RS-ZL crossbar strain relief



STF Steel Fix

**ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0320 30</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>045</b> [1.77]	<b>071</b> [2.80]	<b>233</b> [9.17]	<b>259</b> [10.20]	<b>080</b> [3.15]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>057</b> [2.24]	<b>083</b> [3.27]	<b>246</b> [9.69]	<b>272</b> [10.71]				
		<b>062</b> [2.44]	<b>088</b> [3.46]	<b>252</b> [9.92]	<b>278</b> [10.94]	<b>100</b> [3.94]	<b>2</b> Plastic, half-ridged with bias	<b>9</b> Special version (on request)	
		<b>071</b> [2.80]	<b>097</b> [3.82]	<b>258</b> [10.16]	<b>284</b> [11.18]				
		<b>084</b> [3.31]	<b>110</b> [4.33]	<b>296</b> [11.65]	<b>322</b> [12.68]	<b>120</b> [4.72]	<b>4</b> Aluminium full-ridged with bias		
		<b>093</b> [3.66]	<b>119</b> [4.69]	<b>346</b> [13.62]	<b>372</b> [14.65]				
		<b>096</b> [3.78]	<b>122</b> [4.80]	<b>350</b> [13.78]	<b>376</b> [14.80]	<b>150</b> [5.91]	<b>6</b> Aluminium half-ridged with bias		
		<b>104</b> [4.09]	<b>130</b> [5.12]	<b>358</b> [14.09]	<b>384</b> [15.12]				
		<b>107</b> [4.21]	<b>133</b> [5.24]	<b>371</b> [14.61]	<b>397</b> [15.63]	<b>200</b> [7.87]	<b>9</b> Special version (on request)		
		<b>121</b> [4.76]	<b>147</b> [5.79]	<b>396</b> [15.59]	<b>422</b> [16.61]				
		<b>133</b> [5.24]	<b>159</b> [6.26]	<b>421</b> [16.57]	<b>447</b> [17.60]	<b>250</b> [9.84]			
		<b>144</b> [5.67]	<b>170</b> [6.69]	<b>446</b> [17.56]	<b>472</b> [18.58]				
		<b>146</b> [5.75]	<b>172</b> [6.77]	<b>496</b> [19.53]	<b>522</b> [20.55]				
		<b>158</b> [6.22]	<b>184</b> [7.24]	<b>546</b> [21.50]	<b>572</b> [22.52]				
		<b>164</b> [6.46]	<b>190</b> [7.48]						
		<b>171</b> [6.73]	<b>197</b> [7.76]						
		<b>182</b> [7.17]	<b>208</b> [8.19]						
		<b>196</b> [7.72]	<b>222</b> [8.74]						
		<b>208</b> [8.19]	<b>234</b> [9.21]						
		<b>220</b> [8.66]	<b>246</b> [9.69]						



**ORDERING EXAMPLE: 0320 30 045 080 0 0 1290**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 45 mm; radius 80 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1290 mm (20 links)

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm .

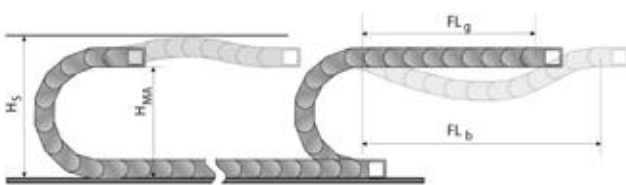
**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV).

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

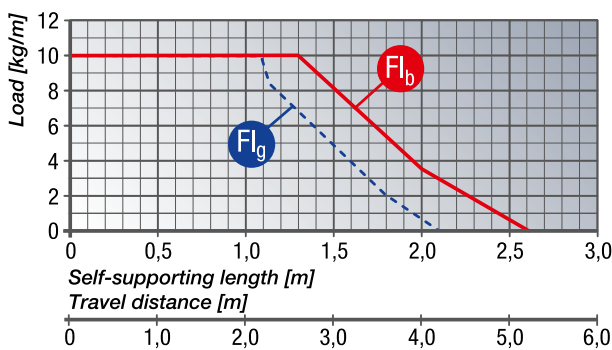
$H_s$  = Installation height plus safety

$H_{MA}$  = Height of moving end connection

$FL_g$  = Self-supporting length, upper run straight

$FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



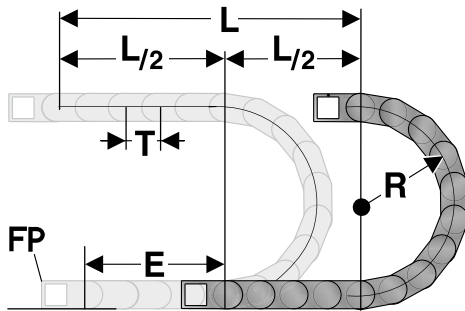
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

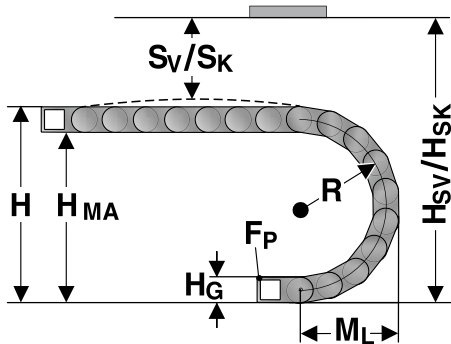


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 16 \text{ qty. } \times 64.5 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 64.5 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius. For the installed dimension the "Installed height  $H_s$ " value has to be taken into account.

Radius R	80	100	120	150	200	250
Outside height of chain link ( $H_o$ )	53	53	53	53	53	53
Height of bend (H)	233	273	313	373	473	573
Height of moving end bracket ( $H_{MA}$ )	180	220	260	320	420	520
Safety margin (S)	30	30	30	30	30	30
Installation height ( $H_s$ )	263	303	343	403	503	603
Arc projection ( $M_L$ )	181	201	221	251	301	351

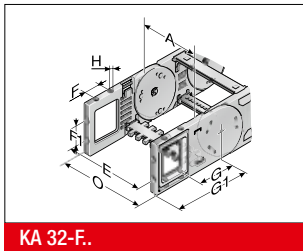
## POWERLINE PLASTIC CROSSBAR



The crossbars connect the two side runs of the energy chain.  
The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

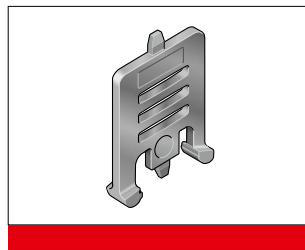
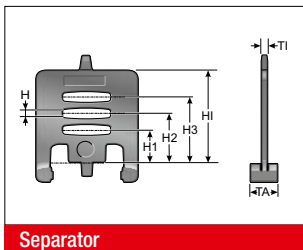
**KA 32 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M5 bolts are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 32-FB	0321000054	Plastic	with bush	45.0 – 546.0	A+14.0	22.5	22.0	57.8	95.5	5.5	A+28.0	
KA 32-FG	0321000055	Plastic	with thread	45.0 – 546.0	A+14.0	22.5	22.0	57.8	95.5	M5	A+28.0	

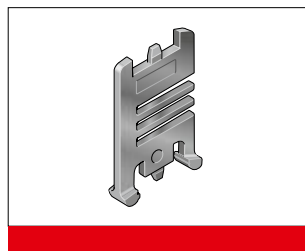
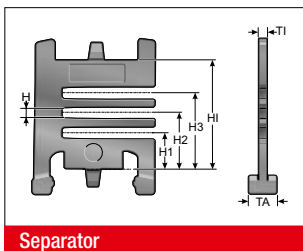
**TR 32 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H1 mm
TR 32	032000009200	Separator	lockable	3.0	10.0	4.2	10.4	16.2	22.0	32.0

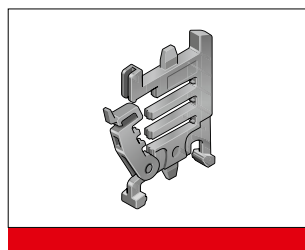
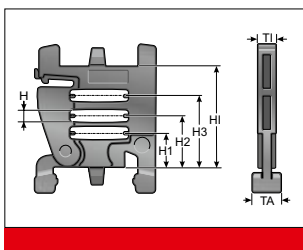
**TR 32.1 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H1 mm
TR 32.1	032200009200	Separator	lockable	3.5	8.0	4.0	10.5	16.5	22.5	32.0

**RTT 32 SHELF SUPPORT, DIVISIBLE**

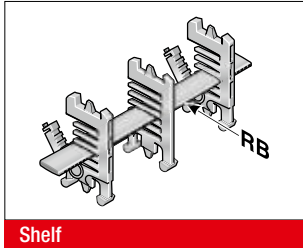


In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H1 mm
RTT 32	100090322000	Shelf support, divisible	lockable	7.0	8.0	4.0	10.5	16.5	22.5	32.0



## RB-5 SHELF



In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	10000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0

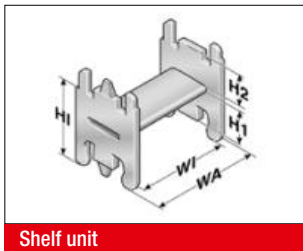
**RSV 32 CROSSBAR CONNECTOR**



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	T1 mm
RSV 32	032000009600	Crossbar connector	7.5
RSV 32 Alu	032000009800	Crossbar connector for aluminium crossbars	7.5

**RE 32 H-SHAPED SHELF UNIT**



One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	H3 mm
RE 32/35	100000322010	H-shaped shelf unit	43.2	35.2	14.2	14.2	32.4
RE 32/52	100000323510	H-shaped shelf unit	60.0	52.0	14.2	14.2	32.4
RE 32/75	100000327510	H-shaped shelf unit	82.4	74.4	16.4	12.0	32.4

**BS-5 BRACKET BAR**



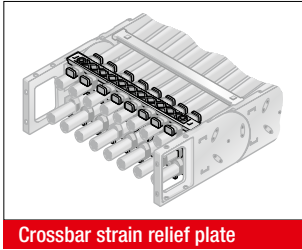
Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

## RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE

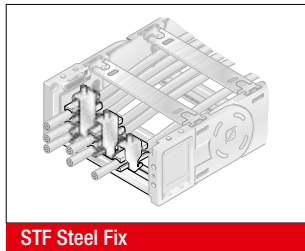
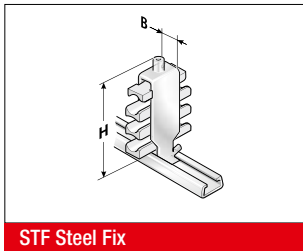


Crossbar strain relief plate

Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

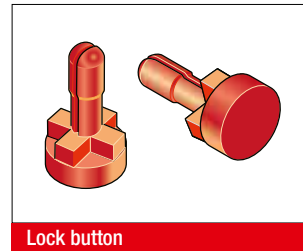
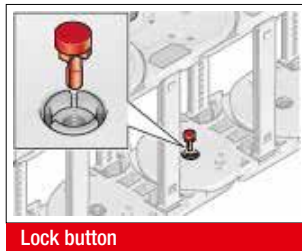
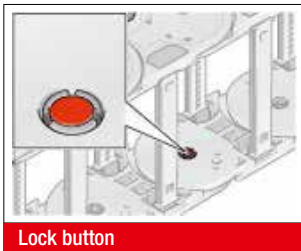
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 32/41 LOCK BUTTON**

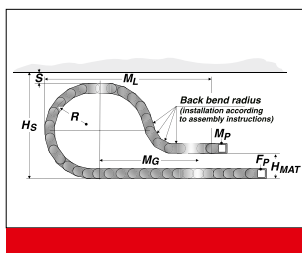
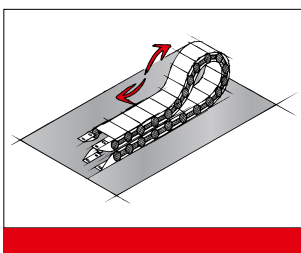


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP32/41 lock button	041000008000

**MP 32 LOWERED FIXING POINT**



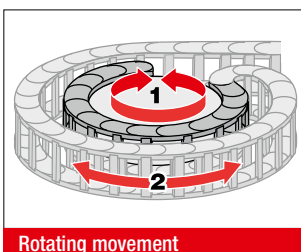
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>s</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
200.0	210.0	50.0	523.0	720.0	14	3
250.0	230.0	50.0	623.0	880.0	17	3

**MP 32 REARWARD RADII**



Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 32 (RÜ200/R120)	032000008060	120.0	200.0
SR 32 (RÜ200/R135)	032000010060	135.0	200.0
SR 32 (RÜ200/R150)	032000012060	150.0	200.0
SR 32 (RÜ200/R170)	032000015060	170.0	200.0
SR 32 (RÜ200/R200)	032000020060	200.0	200.0
SR 32 (RÜ200/R250)	032000025060	250.0	200.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



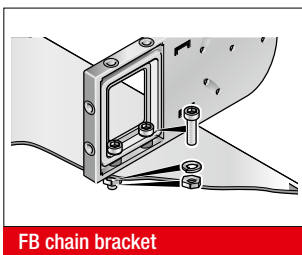
VAW steel galvanised / stainless steel



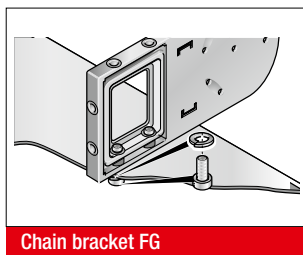
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**

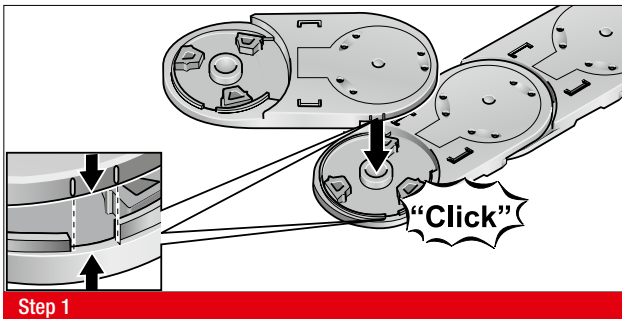
Integrated through-hole fastened down using screw and nut.

**Version KA-FG:**

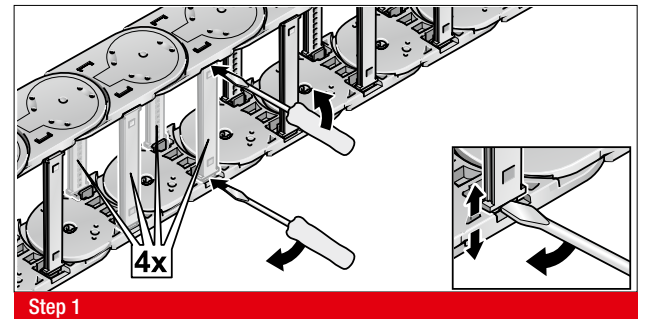
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

**ASSEMBLY**

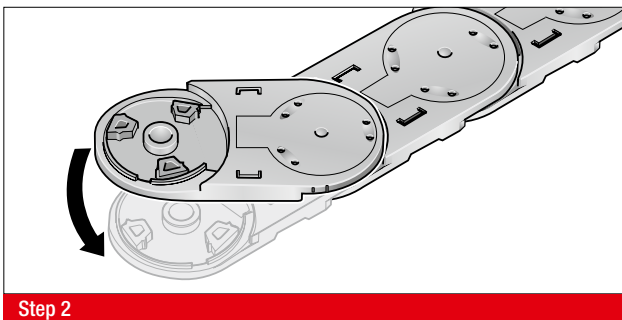
**DISASSEMBLY**



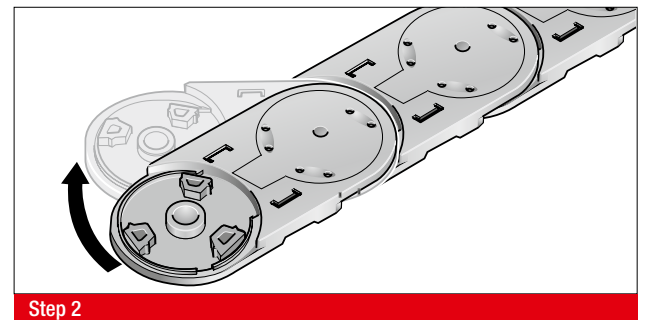
Step 1



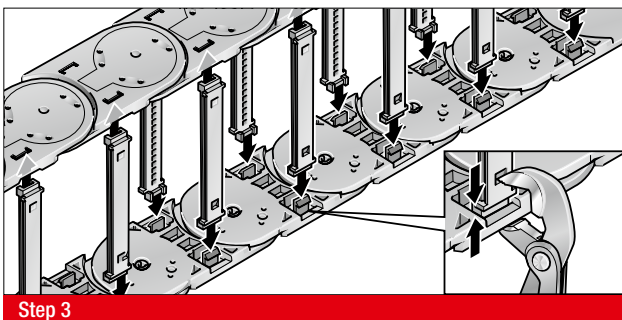
Step 1



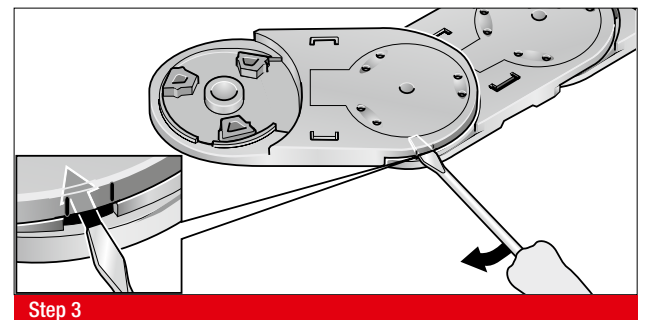
Step 2



Step 2



Step 3



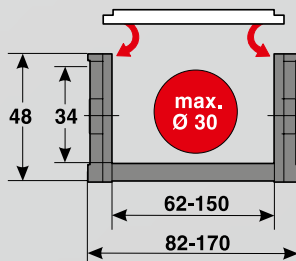
Step 3



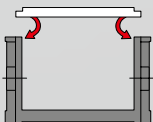
## MP 35 OPEN



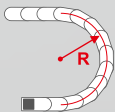
- METAL CHAIN BRACKET
- LOW-COST VARIANT



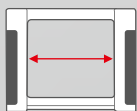
### TECHNICAL DATA



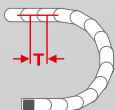
**Loading side**  
Inside bend



**Available radii**  
70.0 – 300.0 mm



**Available interior widths**  
With plastic crossbar  
62.0 – 150.0 mm



**Pitch**  
T = 58.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	80.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 347
Travel distance vertical, hanging $L_{vh}$ max.	40.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	3.0 m/s
Speed, self-supporting $V_s$ max.	10.0 m/s
Acceleration, gliding $a_g$ max.	15.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	20.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)



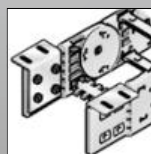
## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

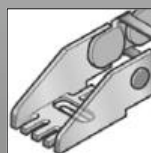
Other material properties on request.

## SHELVING SYSTEM

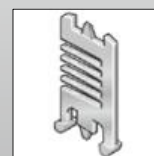
### CHAIN BRACKET



Chain bracket angle



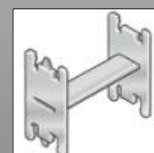
Chain bracket U-part



Separator TR



RS shelving system



H-shaped shelf unit RE

### GUIDE CHANNELS



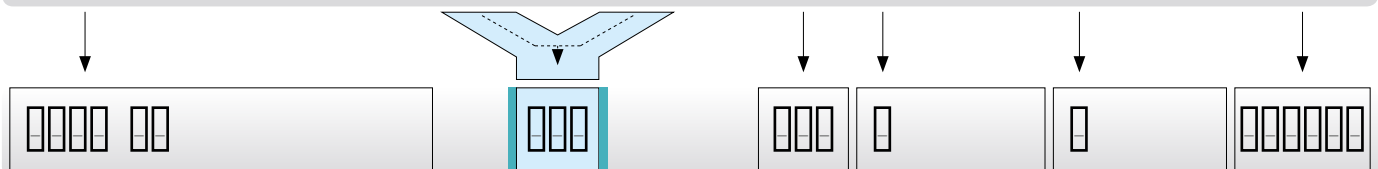
VAW steel galvanised / stainless steel



VAW aluminium

**ORDERING KEY**

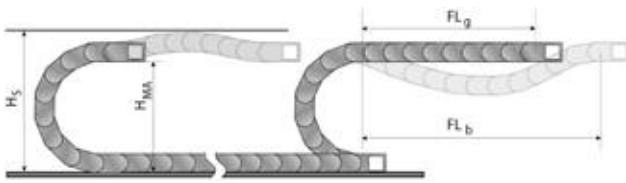
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0350 02</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside bend	<b>062</b> [2.44]	<b>082</b> [3.23]			<b>070</b> [2.76]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>086</b> [3.39]	<b>106</b> [4.17]						
		<b>102</b> [4.02]	<b>122</b> [4.80]			<b>100</b> [3.94]	<b>1</b> Plastic, full-ridged without bias	<b>9</b> Special version (on request)	
		<b>125</b> [4.92]	<b>145</b> [5.71]						
		<b>150</b> [5.91]	<b>170</b> [6.69]			<b>150</b> [5.91]			
						<b>200</b> [7.87]			
						<b>300</b> [11.81]			



**ORDERING EXAMPLE: 0350 02 062 070 0 0 1276**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside bend  
 Inside width 62 mm; radius 70 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1276 mm (22 links)

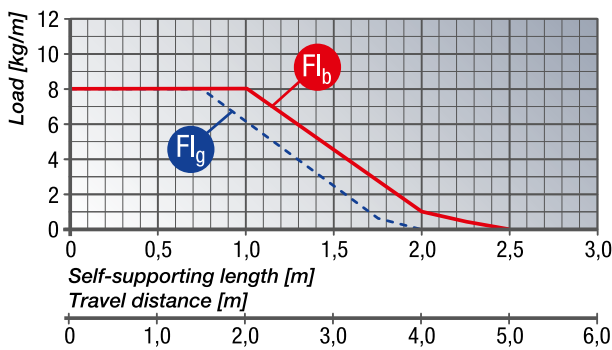
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
 The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
 The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

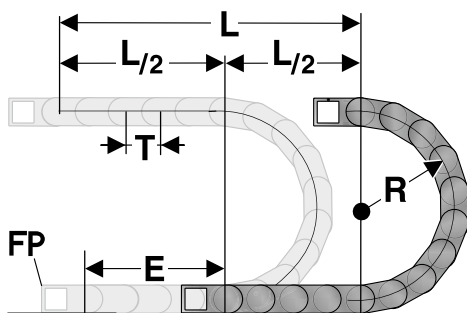
**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



**$FL_g$  Self-supporting length, upper run straight**  
 In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**  
 In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

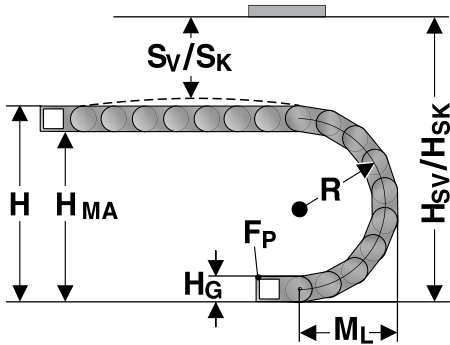


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E$   
 $\approx 1 \text{ m chain} = 17 \text{ qty. } \times 58.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 58.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

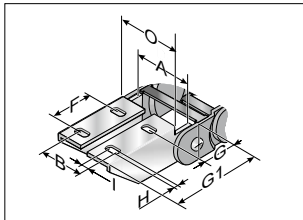
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.

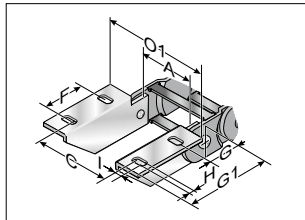
If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	70	100	150	200	300
Outside height of chain link ( $H_G$ )	48	48	48	48	48
Height of bend (H)	188	248	348	448	648
Height of moving end bracket ( $H_{MA}$ )	140	200	300	400	600
Safety margin with bias ( $S_v$ )	40	40	40	40	40
Installation height with bias ( $H_{sv}$ )	228	288	388	488	688
Safety margin without bias ( $S_k$ )	15	15	15	15	15
Installation height without bias ( $H_{sk}$ )	203	263	363	463	663
Arc projection ( $M_L$ )	152	182	232	282	382

**KA 35 CHAIN BRACKET ANGLE**



KA 35... (Inside up / down)

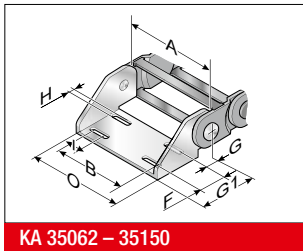


KA 35... (Outside up / down)

The chain bracket can be supplied either in galvanised sheet steel or stainless steel. To secure one energy chain, you will need two angle brackets (left and right) with a drilled hole and two angle brackets (left and right) with a bolt. The order numbers given below each comprise a left and right angle bracket.

Type	Order No.	Material	Inside width							Outside width of KA 0 mm	Outside width of KA 01 mm
			A mm	B mm	C mm	F mm	G mm	HØ mm	I mm		
KA 3508 Female end	0350000054	Sheet steel	62.0 – 150.0	A-7.0	A+28.0	25.0	20.0	7.0	8.0	A+20.0	A+52.0
KA 3508 Male end	0350000055	Sheet steel	62.0 – 150.0	A-12.0	A+38.5	25.0	20.0	7.0	8.0	A+10.0	A+52.0
KA 3509 Female end	0350000056	Stainless steel 1.4301	62.0 – 150.0	A-7.0	A+28.0	25.0	20.0	7.0	8.0	A+20.0	A+52.0
KA 3509 Male end	0350000057	Stainless steel 1.4301	62.0 – 150.0	A-12.0	A+38.5	25.0	20.0	7.0	8.0	A+10.0	A+52.0

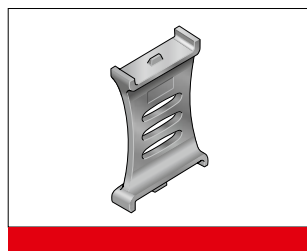
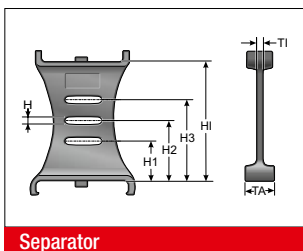
**KA 35 CHAIN BRACKET U-PART**



The metal connection (U-section) is precisely adjusted to the respective chain width. It only needs to be snapped in the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M6 screws.

Type	Order No.	Material	Inside width A mm	B mm	F mm	G mm	G1 mm	H0 mm	I mm	Outside width of KA 0 mm
KA 35062 Female end	035000007000	Sheet steel	62.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35062 Male end	035000007100	Sheet steel	62.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35086 Female end	035000007200	Sheet steel	86.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35086 Male end	035000007300	Sheet steel	86.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35102 Female end	035000007400	Sheet steel	102.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35102 Male end	035000007500	Sheet steel	102.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35125 Female end	035000007600	Sheet steel	125.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35125 Male end	035000007700	Sheet steel	125.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35150 Female end	035000007800	Sheet steel	150.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35150 Male end	035000007900	Sheet steel	150.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35062 Female end	035000008000	Stainless steel 1.4301	62.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35062 Male end	035000008100	Stainless steel 1.4301	62.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35086 Female end	035000008200	Stainless steel 1.4301	86.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35086 Male end	035000008300	Stainless steel 1.4301	86.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35102 Female end	035000008400	Stainless steel 1.4301	102.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35102 Male end	035000008500	Stainless steel 1.4301	102.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35125 Female end	035000008600	Stainless steel 1.4301	125.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35125 Male end	035000008700	Stainless steel 1.4301	125.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35150 Female end	035000008800	Stainless steel 1.4301	150.0	A-7.0	25.0	20.0	55.0	7.0	15.0	A+20.0
KA 35150 Male end	035000008900	Stainless steel 1.4301	150.0	A-12.0	25.0	20.0	55.0	7.0	15.0	A+20.0

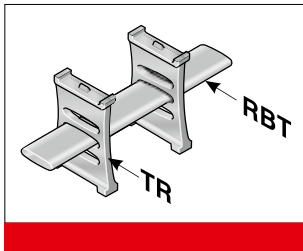
**TR 35 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	T1 mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 35	035000009200	Separator	lockable	2.0	13.0	2.5	10.9	16.9	22.9	33.8

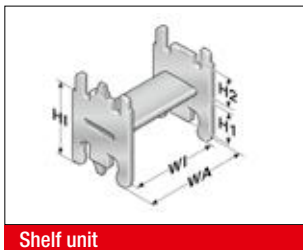
**MP 35 SHELVING SYSTEM**



The shelf must be used with a minimum of two separators to create a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them. The shelves are matched to the available chain widths.

Type	Order No.	Description	Width mm	Pitch mm
RBT 062	100000006200	Shelf	62.0	3.0
RBT 086	100000008600	Shelf	86.0	3.0
RBT 101	100000010100	Shelf	101.0	3.0
RBT 125	100000012500	Shelf	125.0	3.0
RBT 150	100000015000	Shelf	150.0	3.0

**RE 35 H-SHAPED SHELF UNIT**



One-piece shelving system, the shelf cannot be varied in height.

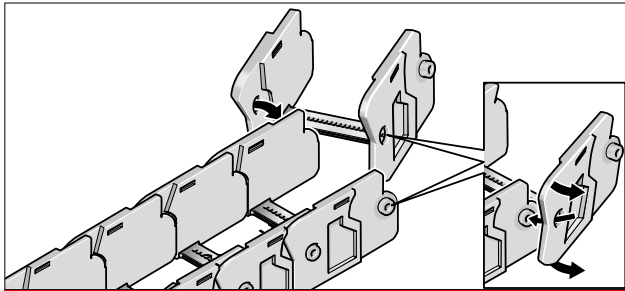
Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 35/33	100000353310	H-shaped shelf unit	35.5	30.5	18.0	12.0	33.0
RE 35/48	100000354810	H-shaped shelf unit	50.5	45.5	18.0	12.0	33.0
RE 35/57	100000355710	H-shaped shelf unit	59.5	54.5	18.0	12.0	33.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**

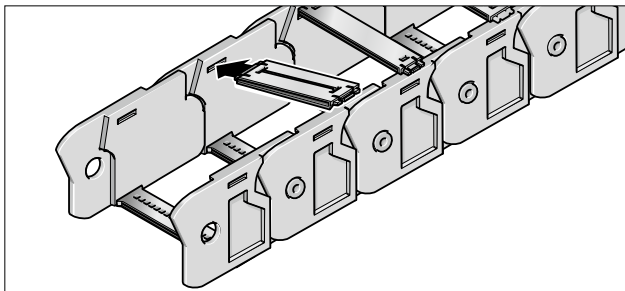


A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

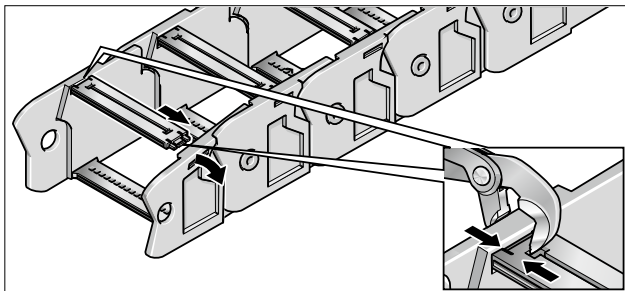
**ASSEMBLY**



Step 1

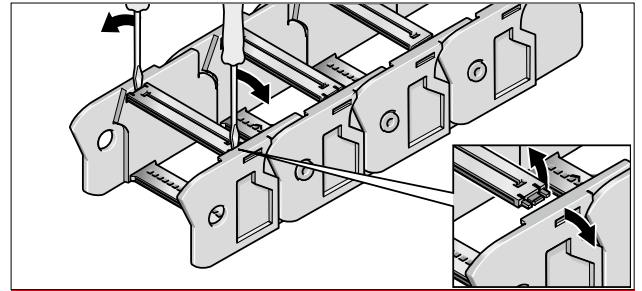


Step 2

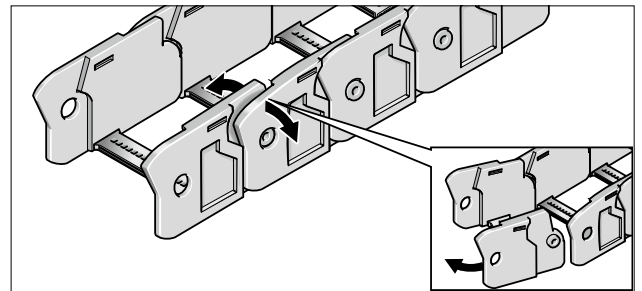


Step 3

**DISASSEMBLY**



Step 1

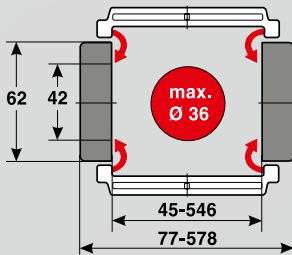


Step 2

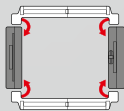
## MP 41 OPEN



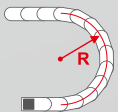
- PLASTIC OR ALUMINIUM VERSION
- CHAIN BRACKET FLEXIBLE



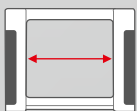
### TECHNICAL DATA



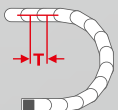
**Loading side**  
Inside and outside bend



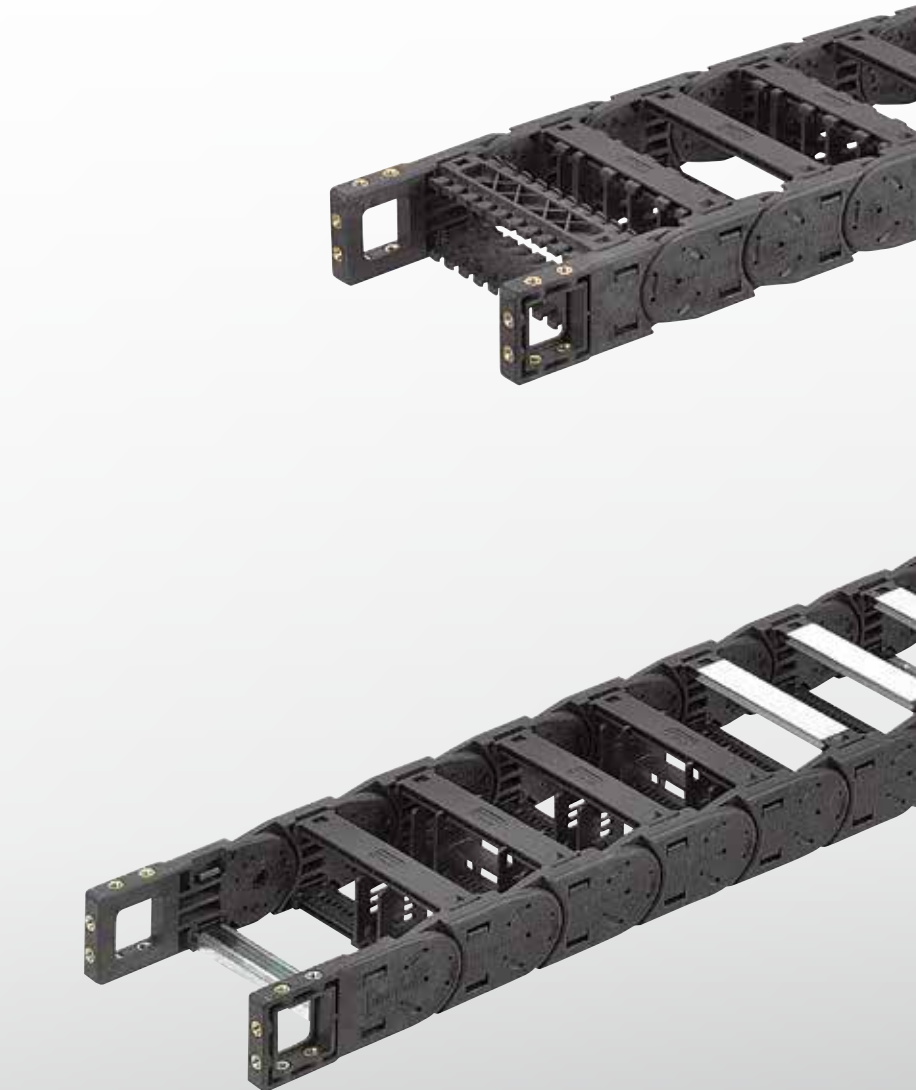
**Available radii**  
90.0 – 350.0 mm



**Available interior widths**  
With plastic crossbar  
45.0 – 546.0 mm  
With alu crossbar / with alu cover  
67.0 – 600.0 mm /



**Pitch**  
T = 77.0 mm







## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	120.0 m
Travel distance self-supporting $L_f$ max.	see diagram on page 355
Travel distance vertical, hanging $L_{vh}$ max.	50.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	2.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_f$ max.	30.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

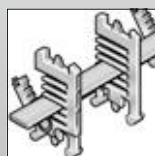
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

### SHELVING SYSTEM

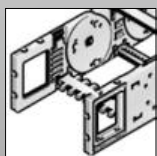


Separator TR

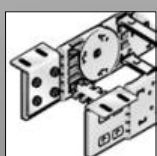


RS shelving system

### CHAIN BRACKET



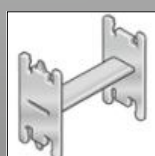
Chain bracket flexible



Chain bracket angle



Crossbar connector RSV

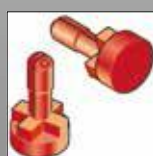


H-shaped shelf unit RE

### ACCESSORIES



Bracket bar

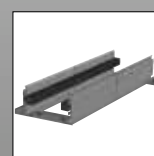


Lock button

### GUIDE CHANNELS



VAW steel galvanised / stainless steel



VAW aluminium

### STRAIN RELIEF



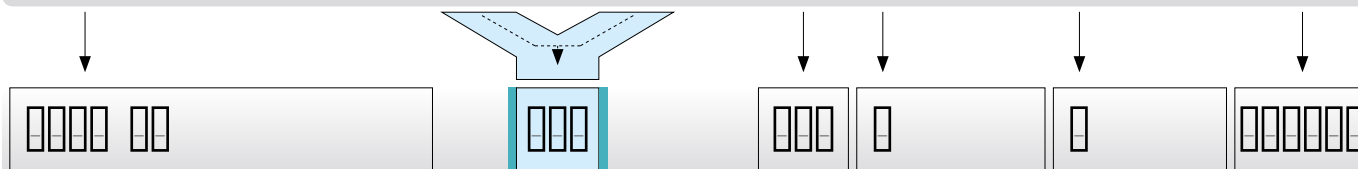
RS-ZL crossbar strain relief



STF Steel Fix

ORDERING KEY

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0410 30</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>045</b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	<b>090</b> [3.54]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>057</b> [2.24]	<b>089</b> [3.50]	<b>246</b> [9.69]	<b>278</b> [10.94]				
		<b>062</b> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]	<b>120</b> [4.72]	<b>2</b> Plastic, half-ridged with bias	<b>9</b> Special version (on request)	
		<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]				
		<b>084</b> [3.31]	<b>116</b> [4.57]	<b>296</b> [11.65]	<b>328</b> [12.91]	<b>150</b> [5.91]	<b>4</b> Aluminium full-ridged with bias		
		<b>093</b> [3.66]	<b>125</b> [4.92]	<b>346</b> [13.62]	<b>378</b> [14.88]				
		<b>096</b> [3.78]	<b>128</b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]	<b>200</b> [7.87]	<b>6</b> Aluminium half-ridged with bias		
		<b>104</b> [4.09]	<b>136</b> [5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]				
		<b>107</b> [4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	<b>403</b> [15.87]	<b>250</b> [9.84]	<b>9</b> Special version (on request)		
		<b>121</b> [4.76]	<b>153</b> [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]				
		<b>133</b> [5.24]	<b>165</b> [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]	<b>300</b> [11.81]			
		<b>144</b> [5.67]	<b>176</b> [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]				
		<b>146</b> [5.75]	<b>178</b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]	<b>350</b> [13.78]			
		<b>158</b> [6.22]	<b>190</b> [7.48]	<b>546</b> [21.50]	<b>578</b> [22.76]				
		<b>164</b> [6.46]	<b>196</b> [7.72]						
		<b>171</b> [6.73]	<b>203</b> [7.99]						
		<b>182</b> [7.17]	<b>214</b> [8.43]						
		<b>196</b> [7.72]	<b>228</b> [8.98]						
		<b>208</b> [8.19]	<b>240</b> [9.45]						
		<b>220</b> [8.66]	<b>252</b> [9.92]						



ORDERING EXAMPLE: 0410 30 045 090 0 0 1386

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 45 mm; radius 90 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1386 mm (18 links)

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm .

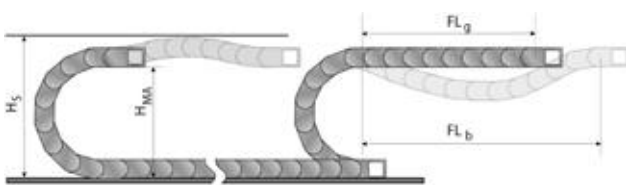
**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV).

If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

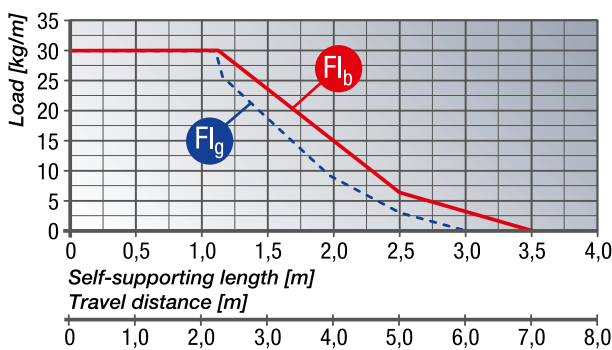
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



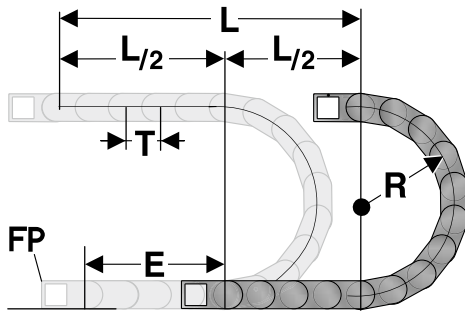
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

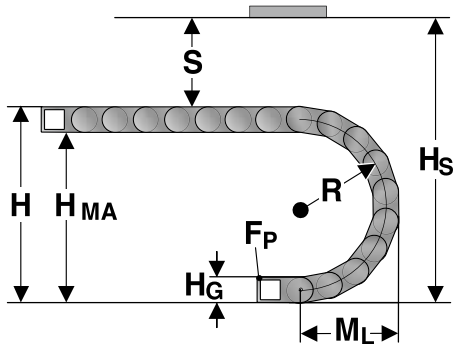


The fixed point of the energy chain should be connected in the middle of the travel distance.  
 This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 13 \text{ qty. x}77.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 77.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
 For the installed dimension the "Installed height  $H_S$ " value has to be taken into account.

Radius R	90	120	150	200	250	300	350
Outside height of chain link ( $H_o$ )	62	62	62	62	62	62	62
Height of bend (H)	252	312	372	472	572	672	772
Height of moving end bracket ( $H_{MA}$ )	190	250	310	410	510	610	710
Safety margin (S)	30	30	30	30	30	30	30
Installation height ( $H_s$ )	282	342	402	502	602	702	802
Arc projection ( $M_L$ )	203	233	263	313	363	413	463

## POWERLINE PLASTIC CROSSBAR

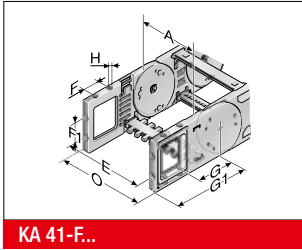


Crossbar

The crossbars connect the two side runs of the energy chain.  
The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

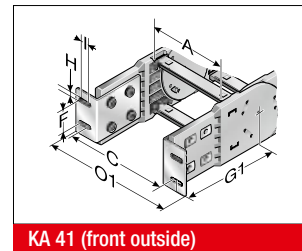
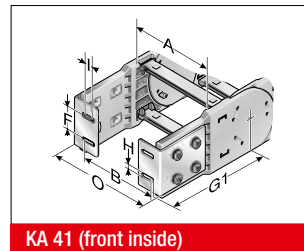
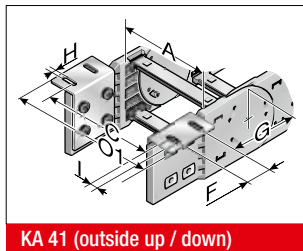
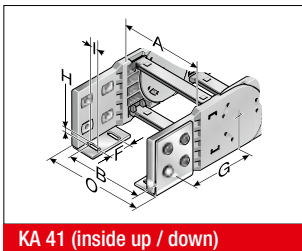
**KA 41 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M6 bolts are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 41.1-FB	0411000054	Plastic	with bush	45.0 – 546.0	A+20.0	22.5	22.0	79.0	120.0		6.5	A+34.0
KA 41.1-FG	0411000055	Plastic	with thread	45.0 – 546.0	A+20.0	22.5	22.0	79.0	120.0	M6		A+34.0

**KA 41 CHAIN BRACKET ANGLE**

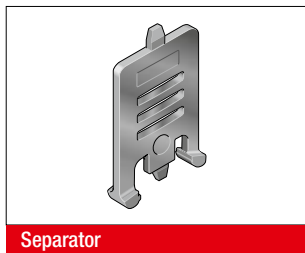
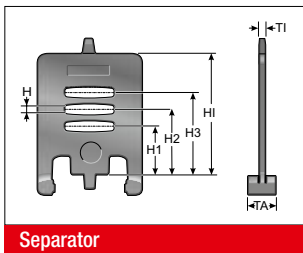


There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is fas-

tened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires two chain brackets. The brackets should be fastened with M6 screws.

Type	Order No.	Material	Inside width						Outside width of KA 0 mm	Outside width of KA 01 mm	
			A mm	B mm	C mm	F mm	G mm	G1 mm			H0 mm
KA 41	0410000051	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	79.0	125.7	6.5	A+32.0	A+71.0

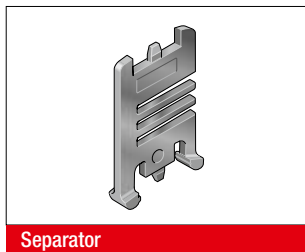
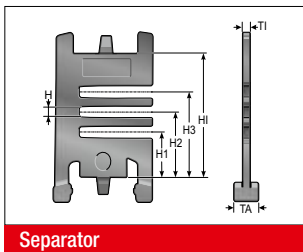
**TR 41 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41	041000009200	Separator	lockable	3.5	10.0	4.2	16.1	22.9	28.9	42.0

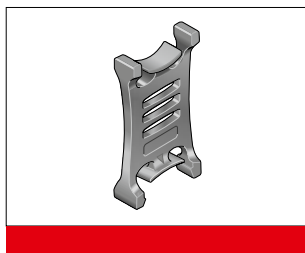
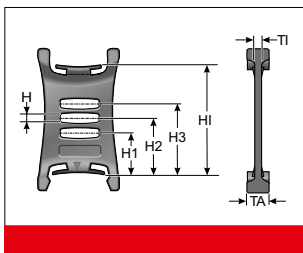
**TR 41.1 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41.1	041200009200	Separator	lockable	3.5	8.0	4.0	16.1	22.9	28.9	42.0

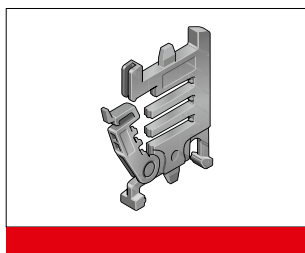
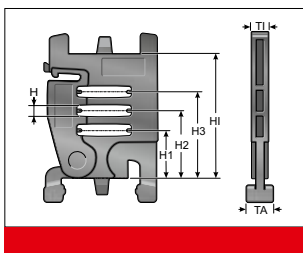
**TR 41-V SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41-V	041000009300	Separator	moveable	3.5	12.0	4.0	16.1	22.9	28.9	42.0

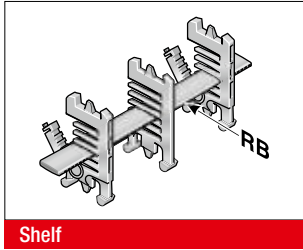
**RTT 41 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
RTT 41	100090412000	Shelf support, divisible	lockable	7.0	8.0	4.0	16.1	22.9	28.9	42.0

## RB-5 SHELF



In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	10000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0



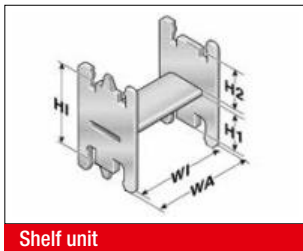
**RSV 41 CROSSBAR CONNECTOR**



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	T1 mm
RSV 41	041000009600	Crossbar connector	7.5
RSV 41 Alu	041000009800	Crossbar connector for aluminium crossbars	7.5

**RE 41 H-SHAPED SHELF UNIT**



One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 36/11	100000361112	H-shaped shelf unit	42.5	36.5	26.2	11.5	42.0
RE 59/18	100000591812	H-shaped shelf unit	65.0	59.0	18.8	18.8	42.0
RE 81/11	100000811112	H-shaped shelf unit	87.5	81.5	26.2	11.5	42.0

**BS-5 BRACKET BAR**



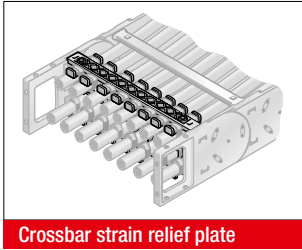
Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

## RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE

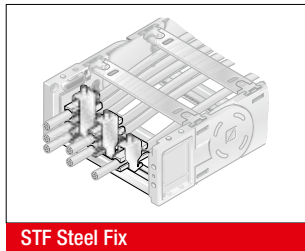
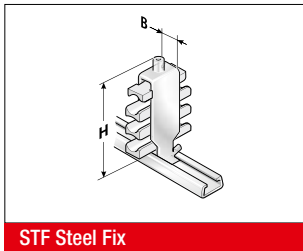


Crossbar strain relief plate

Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

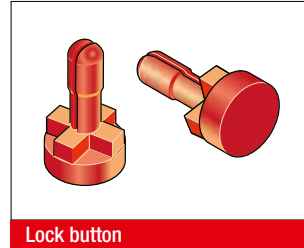
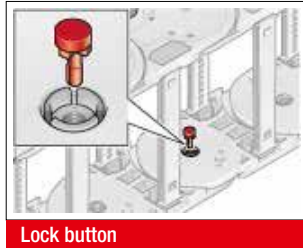
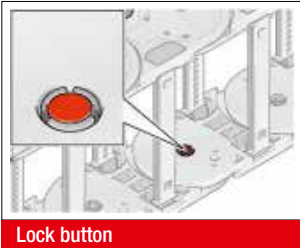
**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**MP 32/41 LOCK BUTTON**

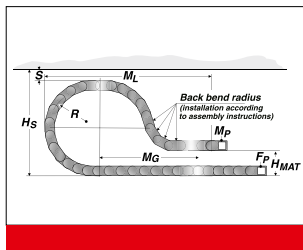
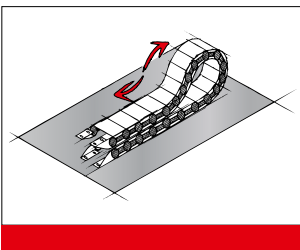


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP32/41 lock button	04100008000

**MP 41 LOWERED FIXING POINT**



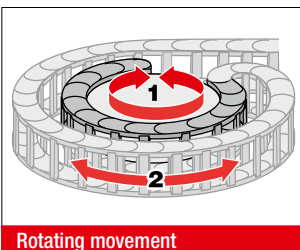
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>s</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
175.0	160.0	50.0	472.0	640.0	6	2
200.0	190.0	50.0	522.0	770.0	13	2
250.0	220.0	50.0	622.0	910.0	15	2
300.0	280.0	50.0	722.0	1180.0	19	2
350.0	320.0	50.0	822.0	1140.0	19	3

**MP 41 REARWARD RADII**



Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 41 (RÜ200/R125)	04100009060	125.0	200.0
SR 41 (RÜ200/R160)	041000012060	160.0	200.0
SR 41 (RÜ200/R175)	041000015060	175.0	200.0
SR 41 (RÜ200/R200)	041000020060	200.0	200.0
SR 41 (RÜ200/R250)	041000025060	250.0	200.0
SR 41 (RÜ200/R300)	041000030060	300.0	200.0
SR 41 (RÜ200/R350)	041000035060	350.0	200.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



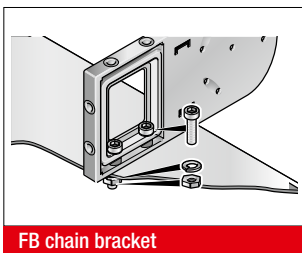
VAW steel galvanised / stainless steel



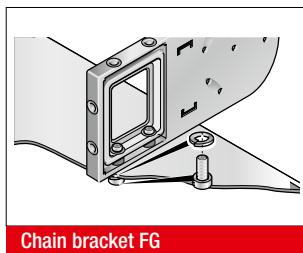
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**

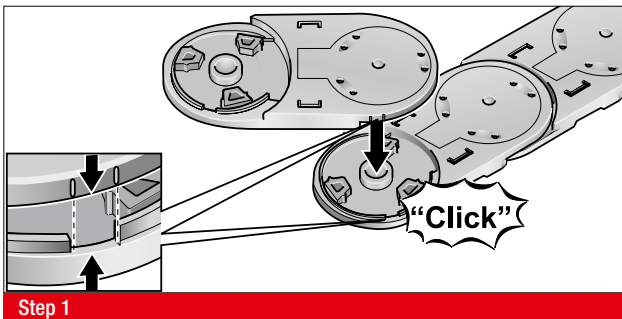
Integrated through-hole fastened down using screw and nut.

**Version KA-FG:**

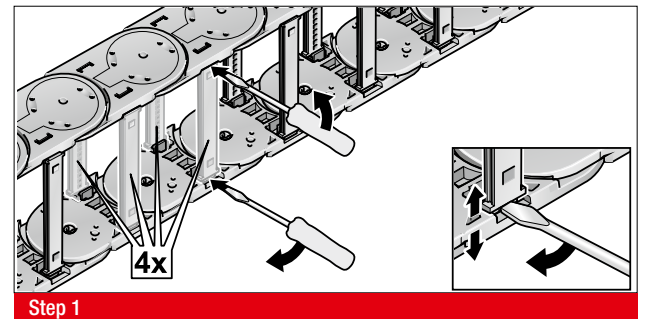
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

**ASSEMBLY**

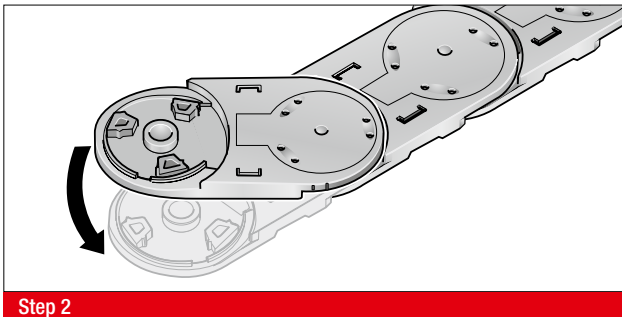
**DISASSEMBLY**



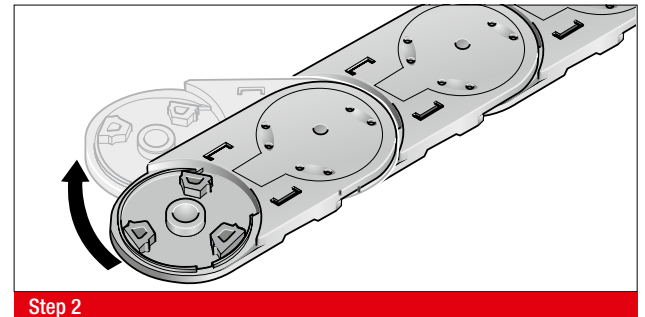
Step 1



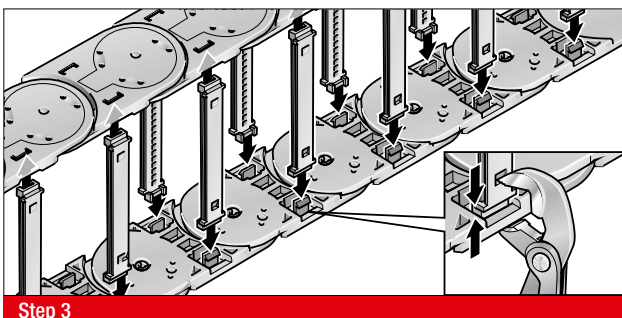
Step 1



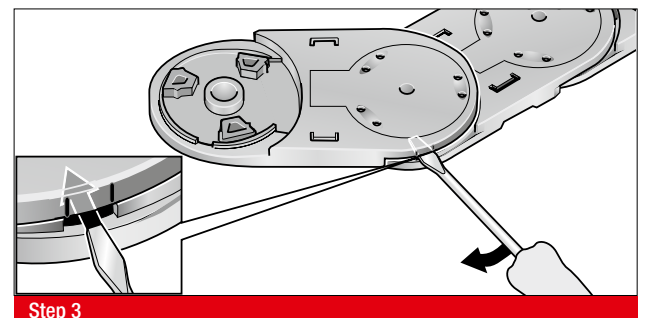
Step 2



Step 2



Step 3

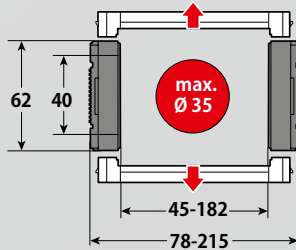


Step 3

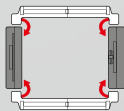
## MP 44 OPEN



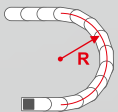
- PLASTIC OR ALUMINIUM VERSION
- METAL CHAIN BRACKET
- OPENS ON OUTSIDE BEND



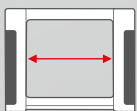
### TECHNICAL DATA



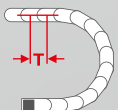
**Loading side**  
Inside and outside bend



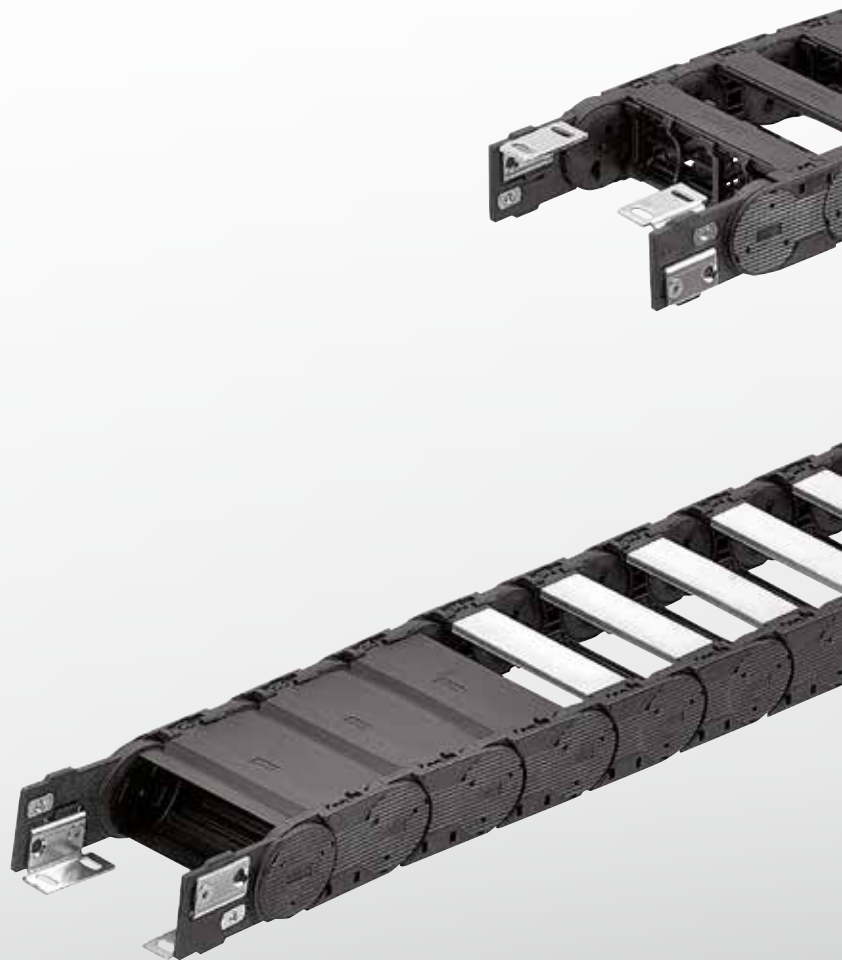
**Available radii**  
90.0 – 400.0 mm



**Available interior widths**  
With plastic crossbar  
45.0 – 182.0 mm  
With alu crossbar / with alu cover  
77.0 – 600.0 mm /



**Pitch**  
T = 75.5 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	50.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 369
Travel distance vertical, hanging $L_{vh}$ max.	40.0 m
Travel distance vertical, upright $L_{vs}$ max.	3.0 m
Rotated 90°, unsupported $L_{90f}$ max.	1.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_s$ max.	15.0 m/s
Acceleration, gliding $a_g$ max.	15.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	20.0 m/s <sup>2</sup>

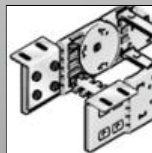
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

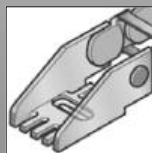
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request.

### CHAIN BRACKET

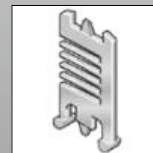


Chain bracket angle



Chain bracket U-part

### SHELVING SYSTEM



Separator TR



RS shelving system

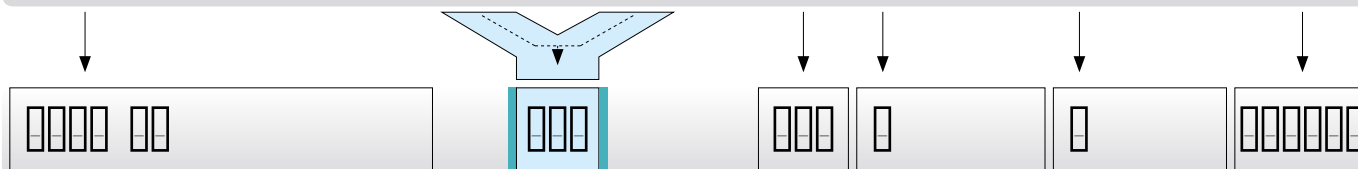
### GUIDE CHANNELS



VAW aluminium

ORDERING KEY

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
0440 30	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	045 <small>[1.77]</small>	078 <small>[3.07]</small>			090 <small>[3.54]</small>	0 Plastic, full-ridged with bias	0 Polyamide standard (PA/black)	
		062 <small>[2.44]</small>	095 <small>[3.74]</small>						
		084 <small>[3.31]</small>	117 <small>[4.61]</small>						
		105 <small>[4.13]</small>	138 <small>[5.43]</small>			125 <small>[4.92]</small>	1 Plastic, full-ridged without bias	9 Special version (on request)	
		144 <small>[5.67]</small>	177 <small>[6.97]</small>			150 <small>[5.91]</small>	2 Plastic, half-ridged with bias		
		182 <small>[7.17]</small>	215 <small>[8.46]</small>			200 <small>[7.87]</small>	3 Plastic, half-ridged without bias		
						250 <small>[9.84]</small>	4 Aluminium full-ridged with bias		
						300 <small>[11.81]</small>	5 Aluminium full-ridged without bias		
						400 <small>[15.75]</small>	6 Aluminium half-ridged with bias		
							7 Aluminium half-ridged without bias		
							9 Special version (on request)		



ORDERING EXAMPLE: 0440 30 045 090 0 0 1359

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 45 mm; radius 90 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1359 mm (18 links)



**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

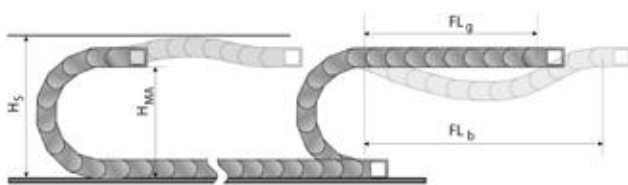
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 77.0 mm – 600.0 mm .

**Strain relief:**

The end brackets utilise strain relief plates (ZL) for cable strain relief.

For detailed information, please consult the corresponding product documentation.

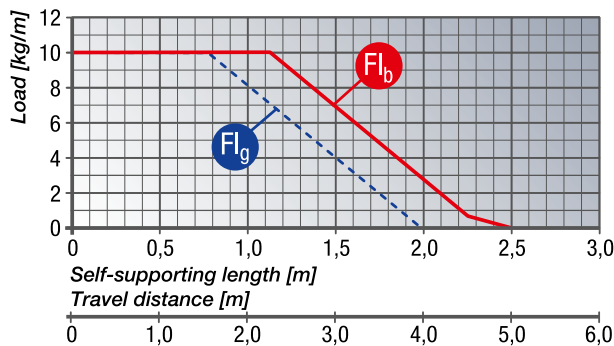
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



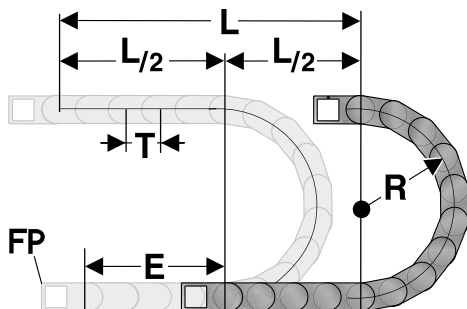
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**

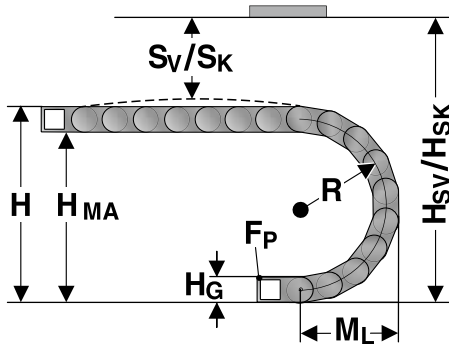


The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 13 \text{ qty. } \times 75.5 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 75.5 mm

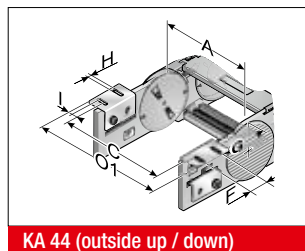
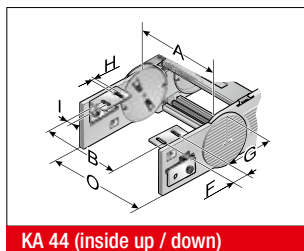
**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius. Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account. If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	90	125	150	200	250	300	400
Outside height of chain link ( $H_G$ )	62	62	62	62	62	62	62
Height of bend (H)	242	312	362	462	562	662	862
Height of moving end bracket ( $H_{MA}$ )	180	250	300	400	500	600	800
Safety margin with bias ( $S_v$ )	38	38	38	38	38	38	38
Installation height with bias ( $H_{sv}$ )	280	350	400	500	600	700	900
Safety margin without bias ( $S_k$ )	13	13	13	13	13	13	13
Installation height without bias ( $H_{sk}$ )	255	325	375	475	575	675	875
Arc projection ( $M_L$ )	197	232	257	307	357	407	507

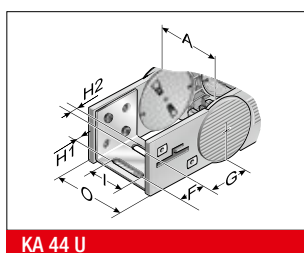
**KA 44 CHAIN BRACKET ANGLE**



There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires two chain brackets. The brackets should be fastened with M6 screws.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm	Outside width of KA 01 mm	
			A mm	B mm	C mm	E mm	F mm	G mm	G1 mm	H0 mm			I mm
KA 44	0440000050	Sheet steel	62.0 – 182.0	A-14.5	A+38.5	A+32.0	32.0	43.2	86.0	6.5	12.5	A+33.0	A+64.0
KA 44	0440000052	Stainless steel 1.4301	62.0 – 182.0	A-14.5	A+38.5	A+32.0	32.0	43.2	86.0	6.5	12.5	A+33.0	A+64.0

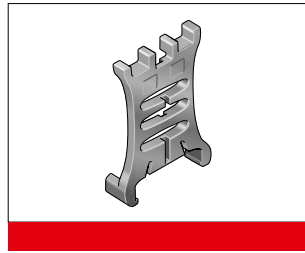
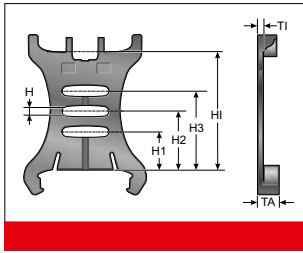
**KA 44 CHAIN BRACKET U-PART**



The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width						Outside width of KA 0 mm
			A mm	F mm	G mm	H1 mm	H2 mm	I mm	
KA 44 U	0440000054	Stainless steel 1.4301	45.0	28.0	45.0	6.5	8.5	33.0	A+33.0

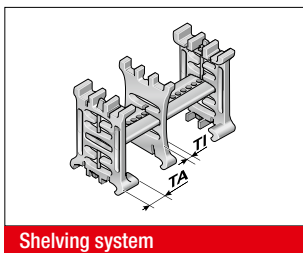
**TR 44 SEPARATOR**



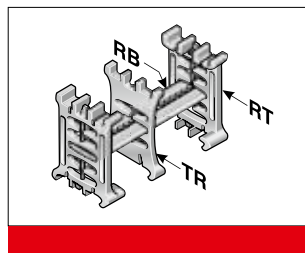
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. For applications with aluminium frame bridges or when movable separators are to be used, the TL 44 separator should be used.

Type	Order No.	Description	T1 mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm
TF 44	044000009400	Separator	4.0	8.5	4.3	13.3	20.5	27.7	41.0
TL 44	044000009200	Separator for aluminium frame bridges	4.0	8.5	4.3	13.3	20.5	27.7	41.0

**MP 44 SHELVING SYSTEM**



Shelving system



The shelf must be used with a minimum of two separators to create a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them. The shelving system may be preassembled on request.

Type	Order No.	Description	Width mm	Clearance width mm	Pitch mm	T1 mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm
RB 031	100000003100	Shelf	42.0	31.0	1.6						
RB 048	100000004800	Shelf	59.0	48.0	1.6						
RB 070	100000007000	Shelf	81.0	70.0	1.6						
RB 092	100000009200	Shelf	103.0	92.0	1.6						
RB 100	100000010000	Shelf	111.0	100.0	1.6						
RB 128	100000012800	Shelf	139.0	128.0	1.6						
RB 167	100000016700	Shelf	178.0	167.0	1.6						
RT 44	1000902100	Shelf support	4.3		1.6	6.5	6.4	13.3	20.5	27.7	34.8

**GUIDE CHANNEL VAW (ALUMINIUM)**

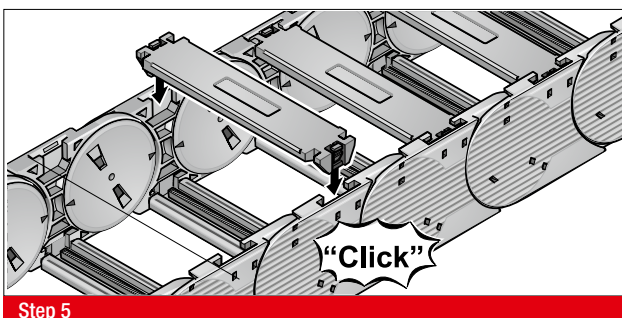
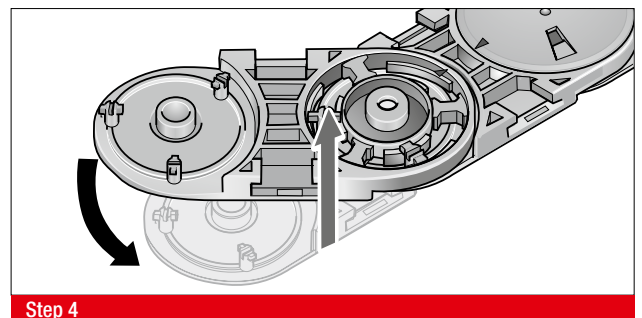
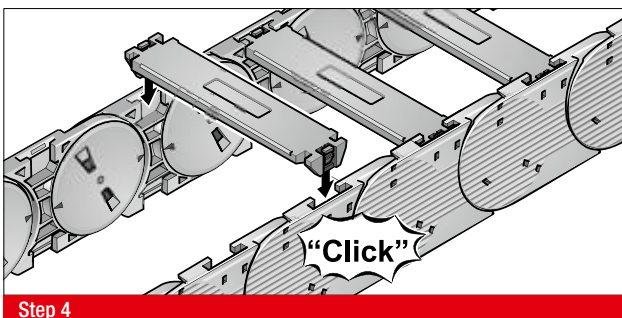
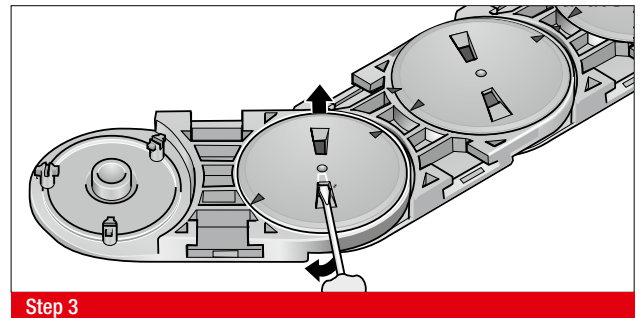
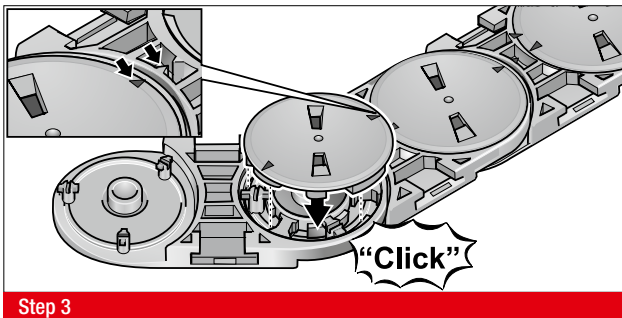
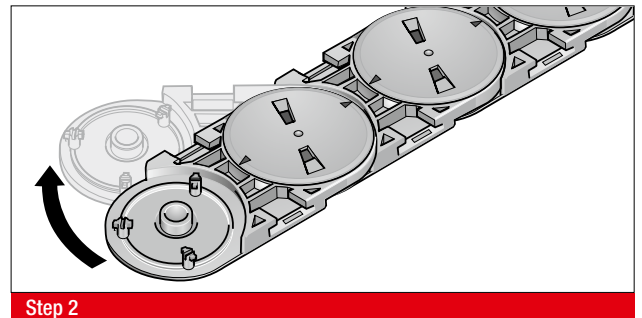
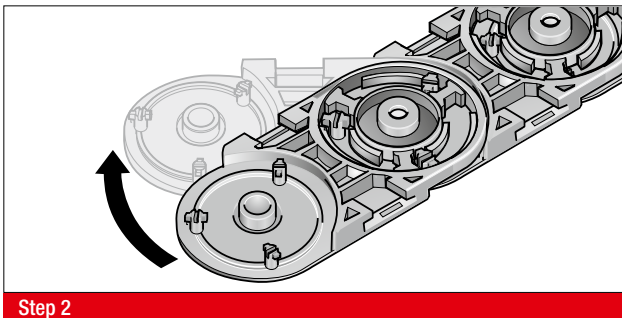
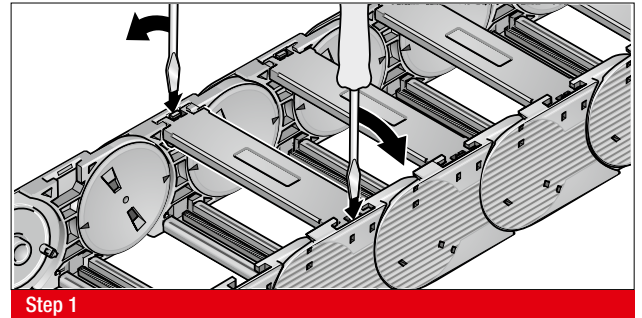
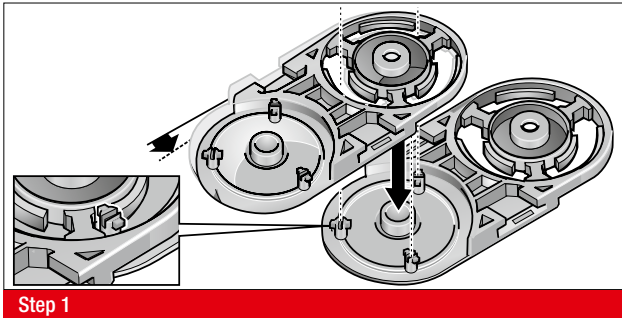


VAW aluminium

A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

DISASSEMBLY

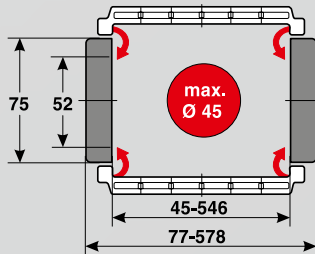




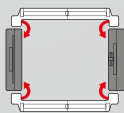
## MP 52.1 OPEN



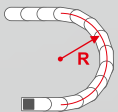
- PLASTIC OR ALUMINIUM VERSION
- CHAIN BRACKET FLEXIBLE



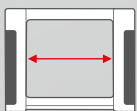
### TECHNICAL DATA



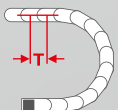
**Loading side**  
Inside and outside bend



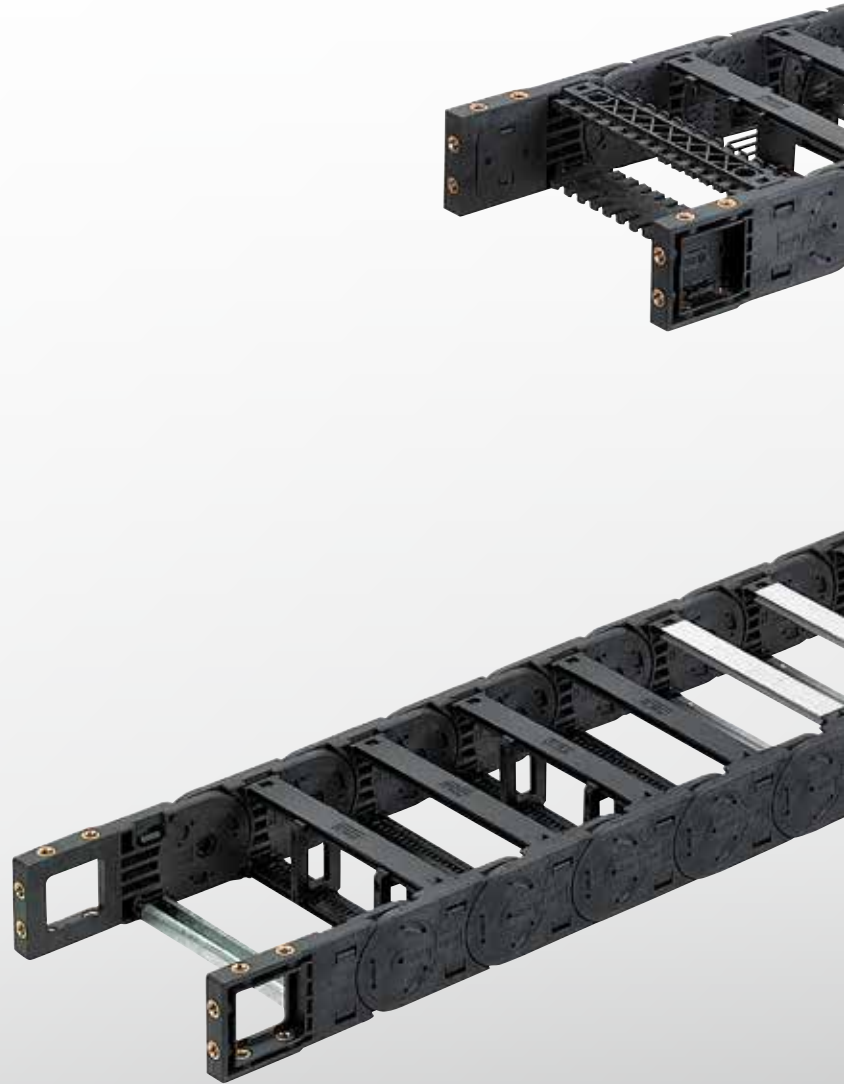
**Available radii**  
100.0 – 350.0 mm



**Available interior widths**  
With plastic crossbar  
45.0 – 546.0 mm  
With alu crossbar / with alu cover  
67.0 – 600.0 mm /



**Pitch**  
T = 91.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 377
Travel distance vertical, hanging $L_{vh}$ max.	60.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	3.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	30.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

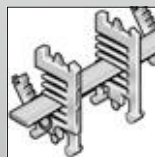
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

### SHELVING SYSTEM

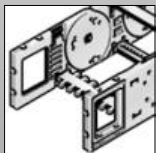


Separator TR

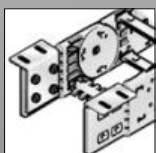


RS shelving system

### CHAIN BRACKET



Chain bracket flexible



Chain bracket angle



Crossbar connector RSV

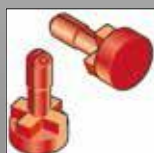


H-shaped shelf unit RE

### ACCESSORIES



Bracket bar

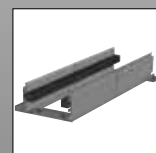


Lock button

### GUIDE CHANNELS

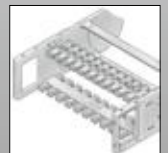


VAW steel galvanised / stainless steel

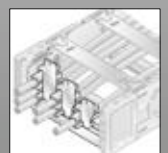


VAW aluminium

### STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix

**ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0521 30</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>045</b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	<b>100</b> [3.94]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>057</b> [2.24]	<b>089</b> [3.50]	<b>246</b> [9.69]	<b>278</b> [10.94]				
		<b>062</b> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]				
		<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]				
		<b>084</b> [3.31]	<b>116</b> [4.57]	<b>296</b> [11.65]	<b>328</b> [12.91]	<b>200</b> [7.87]	<b>2</b> Plastic, half-ridged with bias		
		<b>093</b> [3.66]	<b>125</b> [4.92]	<b>346</b> [13.62]	<b>378</b> [14.88]				
		<b>096</b> [3.78]	<b>128</b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]	<b>250</b> [9.84]	<b>3</b> Plastic, half-ridged without bias		
		<b>104</b> [4.09]	<b>136</b> [5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]				
		<b>107</b> [4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	<b>403</b> [15.87]	<b>300</b> [11.81]	<b>4</b> Aluminium full-ridged with bias		
		<b>121</b> [4.76]	<b>153</b> [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]				
		<b>133</b> [5.24]	<b>165</b> [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]	<b>350</b> [13.78]	<b>5</b> Aluminium full-ridged without bias		
		<b>144</b> [5.67]	<b>176</b> [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]				
		<b>146</b> [5.75]	<b>178</b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]		<b>6</b> Aluminium half-ridged with bias		
		<b>158</b> [6.22]	<b>190</b> [7.48]	<b>546</b> [21.50]	<b>578</b> [22.76]				
		<b>164</b> [6.46]	<b>196</b> [7.72]				<b>7</b> Aluminium half-ridged without bias		
		<b>171</b> [6.73]	<b>203</b> [7.99]						
		<b>182</b> [7.17]	<b>214</b> [8.43]				<b>9</b> Special version (on request)		
		<b>196</b> [7.72]	<b>228</b> [8.98]						
		<b>208</b> [8.19]	<b>240</b> [9.45]						
		<b>220</b> [8.66]	<b>252</b> [9.92]						



**ORDERING EXAMPLE: 0521 30 045 100 0 0 1365**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 45 mm; radius 100 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1365 mm (15 links)



**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

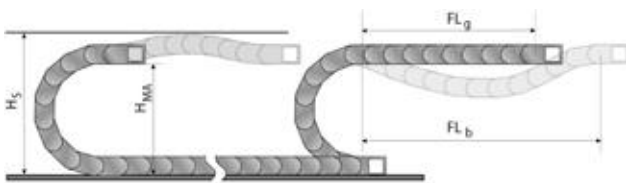
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0 mm .

**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV).  
If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

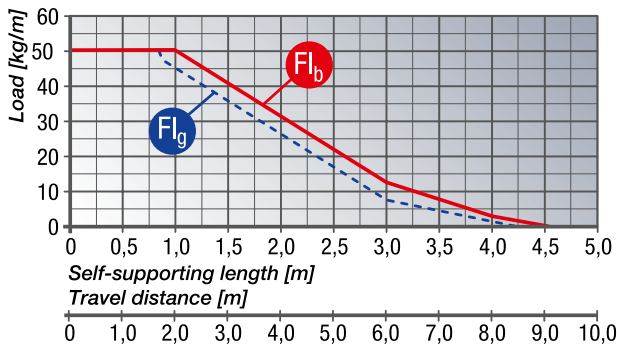
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



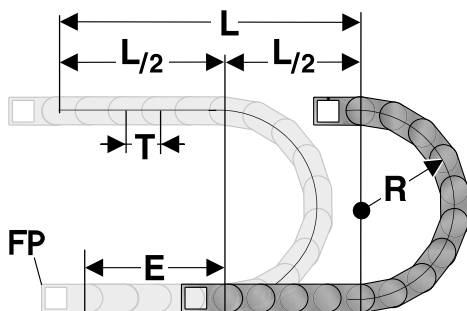
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 70.0 mm, but this is still less than the maximum sag.  
Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**



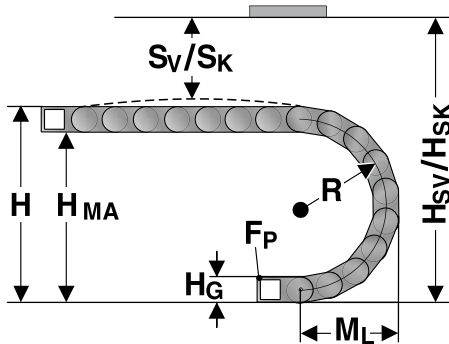
The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 11 \text{ qty. } \times 91.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 91.0 mm

## INSTALLATION DIMENSIONS



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the "Installed height without bias  $H_{SK}$ " value has to be taken into account.

If the chain links are equipped with a bias, the value "Installed height with bias  $H_{SV}$ " has to be taken into account.

Radius R	100	150	200	250	300	350
Outside height of chain link ( $H_G$ )	75	75	75	75	75	75
Height of bend (H)	305	405	505	605	705	805
Height of moving end bracket ( $H_{MA}$ )	230	330	430	530	630	730
Safety margin with bias ( $S_v$ )	46	46	46	46	46	46
Installation height with bias ( $H_{sv}$ )	351	451	551	651	751	851
Safety margin without bias ( $S_k$ )	16	16	16	16	16	16
Installation height without bias ( $H_{sk}$ )	321	421	521	621	721	821
Arc projection ( $M_L$ )	244	294	344	394	444	494

## POWERLINE PLASTIC CROSSBAR



Crossbar

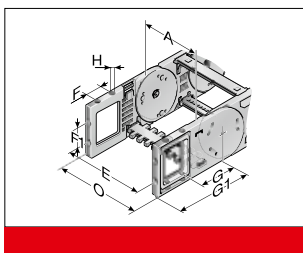
The crossbars connect the two side runs of the energy chain. The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 045-5	052004500000	Crossbar	45.0
RS 057-5	052005700000	Crossbar	57.0
RS 062-5	052006200000	Crossbar	62.0
RS 071-5	052007100000	Crossbar	71.0
RS 084-5	052008400000	Crossbar	84.0
RS 093-5	052009300000	Crossbar	93.0
RS 096-5	052009600000	Crossbar	96.0
RS 104-5	052010400000	Crossbar	104.0
RS 107-5	052010700000	Crossbar	107.0
RS 121-5	052012100000	Crossbar	121.0
RS 133-5	052013300000	Crossbar	133.0
RS 144-5	052014400000	Crossbar	144.0
RS 146-5	052014600000	Crossbar	146.0
RS 158-5	052015800000	Crossbar	158.0
RS 164-5	052016400000	Crossbar	164.0

**POWERLINE PLASTIC CROSSBAR**

Type	Order No.	Description	Inside width mm
RS 171-5	052017100000	Crossbar	171.0
RS 182-5	052018200000	Crossbar	182.0
RS 196-5	052019600000	Crossbar	196.0
RS 208-5	052020800000	Crossbar	208.0
RS 220-5	052022000000	Crossbar	220.0
RS 233-5	052023300000	Crossbar	233.0
RS 246-5	052024600000	Crossbar	246.0
RS 252-5	052025200010	Crossbar	252.0
RS 258-5	052025800000	Crossbar	258.0
RS 296-5	052029600000	Crossbar	296.0
RS 346-5	052034600000	Crossbar	346.0
RS 350-5	052035000000	Crossbar	350.0
RS 358-5	052035800000	Crossbar	358.0
RS 371-5	052037100000	Crossbar	371.0
RS 396-5	052039600000	Crossbar	396.0
RS 421-5	052042100000	Crossbar	421.0
RS 446-5	052044600000	Crossbar	446.0
RS 496-5	052049600000	Crossbar	496.0
RS 546-5	052054600000	Crossbar	546.0

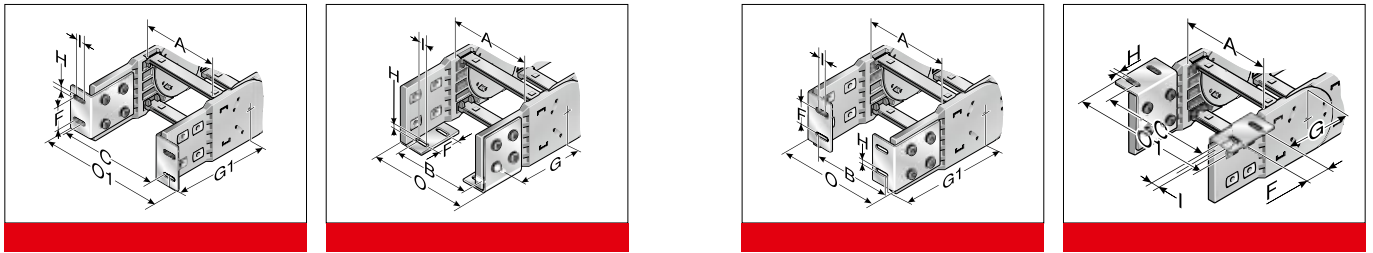
**KA 52.1 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 52.1-FB Female end	0521000056	Plastic	with bush	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	8.5	A+36.0	
KA 52.1-FB Male end	0521000057	Plastic	with bush	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	8.5	A+36.0	
KA 52.1-FG Female end	0521000058	Plastic	with thread	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	M8	A+36.0	
KA 52.1-FG Male end	0521000059	Plastic	with thread	45.0 – 546.0	A+16.0	35.0	30.0	89.0	146.0	M8	A+36.0	

**KA 52.1 CHAIN BRACKET ANGLE**

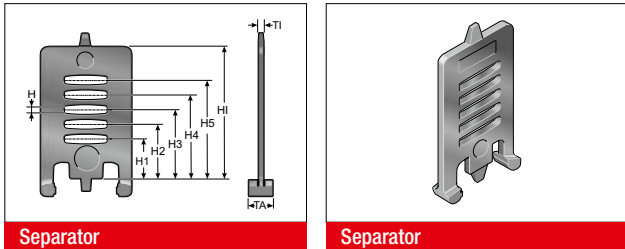


There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is

fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires one male and one female bracket. The brackets should be fastened with M6 screws.

Type	Order No.	Material	Inside width								Outside width	
			A mm	B mm	C mm	F mm	G mm	G1 mm	H0 mm	I mm	of KA 0 mm	of KA 01 mm
KA 52.1 Female end	0521000050	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	95.5	144.0	6.5	14.0	A+32.0	A+71.0
KA 52.1 Male end	0521000051	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	95.5	144.0	6.5	14.0	A+32.0	A+71.0

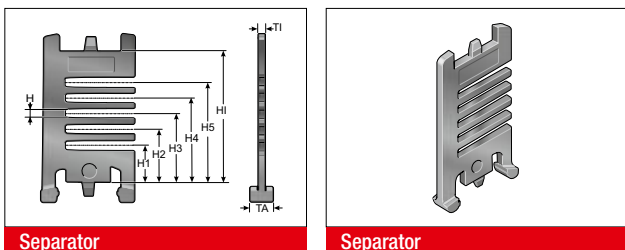
**TR 52 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. The closed separator is used when no shelves are used. This is the recommended design for travel paths of 30 metres or greater.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52	052000009200	TR 52 Separator	lockable	3.5	10.0	4.2	16.3	22.3	28.2	33.8	39.8	52.0

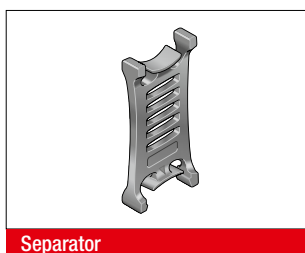
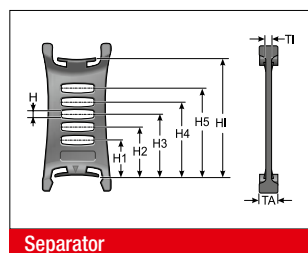
**TR 52.1 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H1 mm
TR 52.1	052100009200	TR 52.1 Separator	lockable	3.5	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

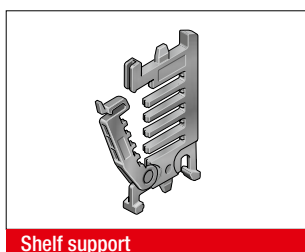
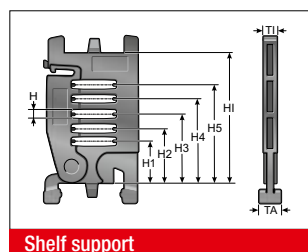
**TR 52-V SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
TR 52-V	052000009300	TR 52-V Separator	moveable	3.5	13.0	4.0	16.3	22.3	28.2	33.8	39.8	52.0

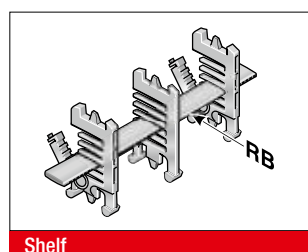
**RTT 52 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
RTT 52	100090522000	Shelf support, divisible	lockable	7.0	8.0	4.0	15.6	22.0	28.2	34.6	41.0	52.0

**RB-5 SHELF**



In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 028-5	100000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	10000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	10000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0

**RB-5 SHELF**

Type	Order No.	Description	Width mm	Inside width mm
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 291-5	100000029100	Shelf	291.2	346.0

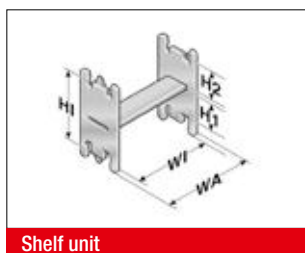
**RSV 52 CROSSBAR CONNECTOR**



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	Tl mm
RSV 52	052000009600	Crossbar connector	7.5
RSV 52 Alu	052000009800	Crossbar connector for aluminium crossbars	7.5

**RE 52 H-SHAPED SHELF UNIT**



One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	H3 mm
RE 36/17	100000361714	H-shaped shelf unit	42.5	36.5	31.0	17.4	52.0
RE 59/24	100000592414	H-shaped shelf unit	65.0	59.0	24.2	24.2	52.0
RE 81/12	100000811214	H-shaped shelf unit	87.5	81.5	36.0	12.4	52.0

## BS-5 BRACKET BAR



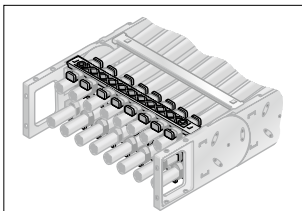
Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

## RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE

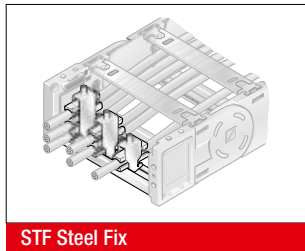
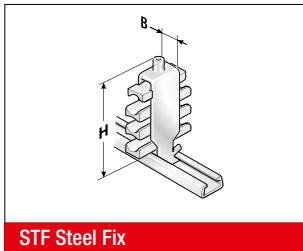


Crossbar strain relief plate

Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all crossbar widths up to 246 mm. May be assembled on the inside and outside bends at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

**STRAIN RELIEF WITH STEEL FIX**

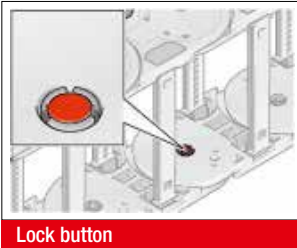


C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

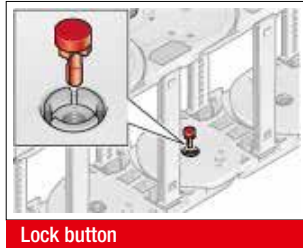
Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0



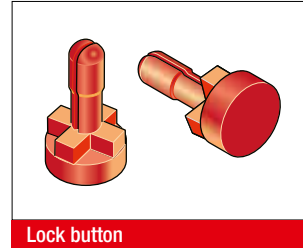
**MP 52/62/72 LOCK BUTTON**



Lock button



Lock button



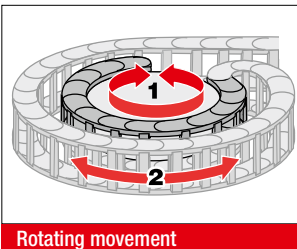
Lock button

To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP52/62/72 lock button	0520000080

**MP 52.1 REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 52.1 (RÜ200/R300) left	052100030060	300.0	200.0
SR 52.1 (RÜ200/R300) right	052100030062	300.0	200.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



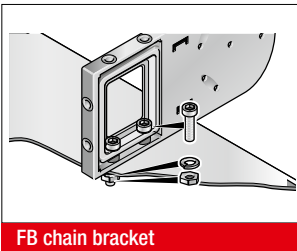
VAW steel galvanised / stainless steel



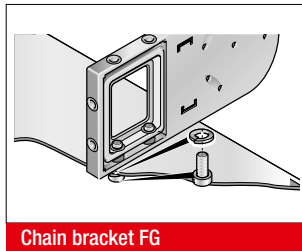
VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

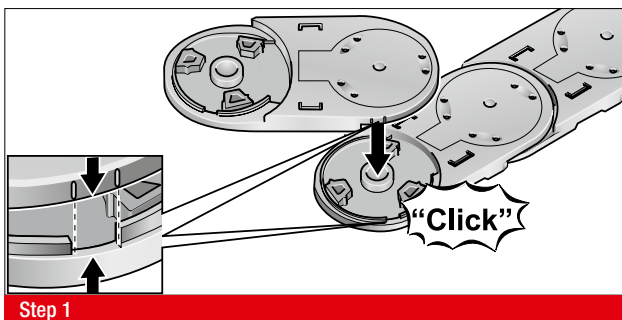
**Version KA-FB:**

Integrated through-hole fastened down using screw and nut.

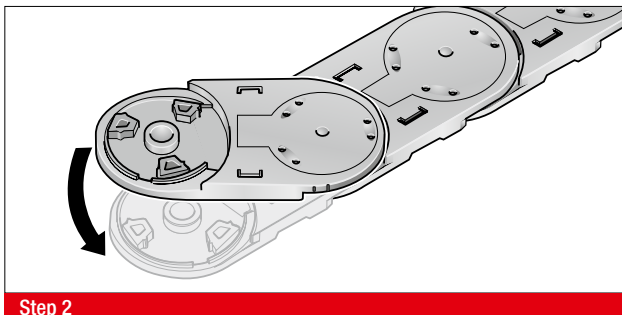
**Version KA-FG:**

Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

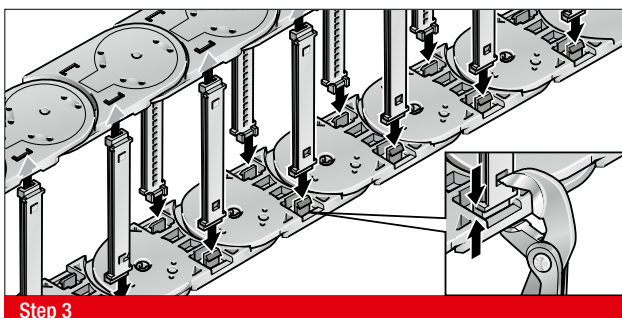
**ASSEMBLY**



Step 1

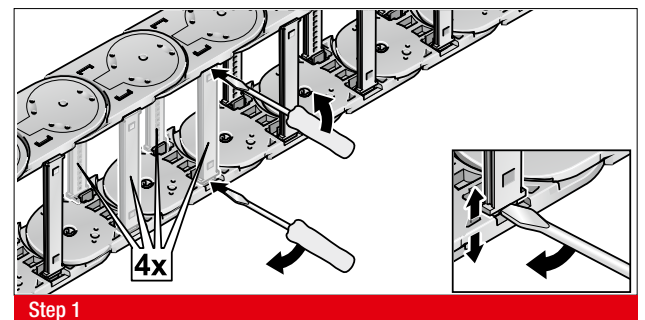


Step 2

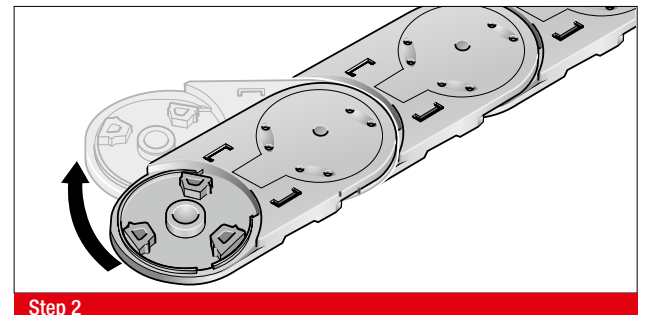


Step 3

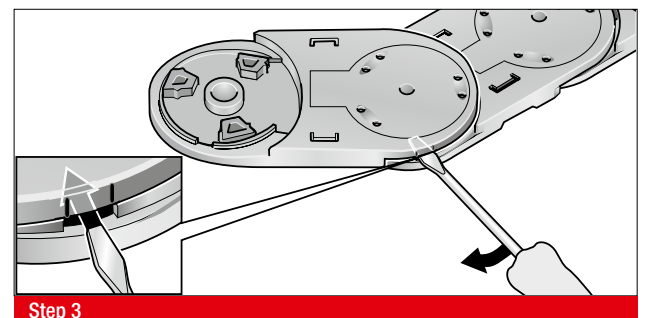
**DISASSEMBLY**



Step 1



Step 2



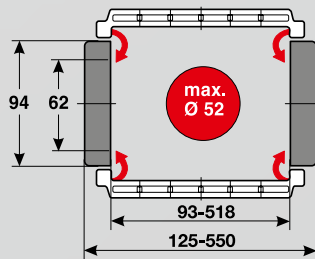
Step 3



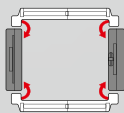
## MP 62.1 OPEN



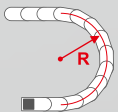
- PLASTIC OR ALUMINIUM VERSION
- CHAIN BRACKET FLEXIBLE



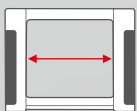
### TECHNICAL DATA



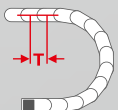
**Loading side**  
Inside and outside bend



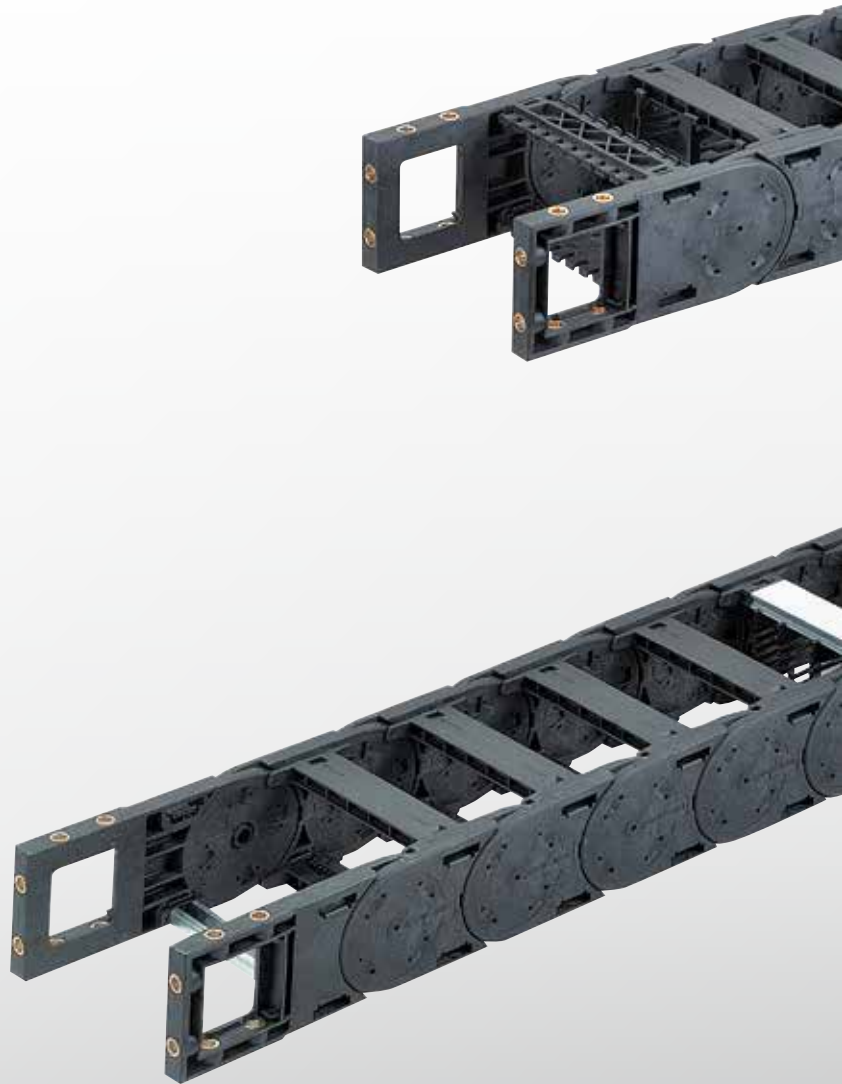
**Available radii**  
150.0 – 500.0 mm



**Available interior widths**  
With plastic crossbar  
93.0 – 518.0 mm  
With alu crossbar / with alu cover  
72.0 – 600.0 mm /



**Pitch**  
T = 100.0 mm





## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 391
Travel distance vertical, hanging $L_{vh}$ max.	65.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	4.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	40.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

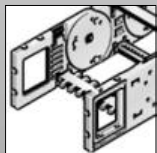
## MATERIAL PROPERTIES

Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

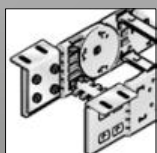
Other material properties on request.

## SHELVING SYSTEM

### CHAIN BRACKET



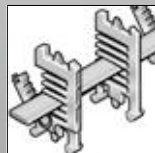
Chain bracket flexible



Chain bracket angle



Separator TR



RS shelving system

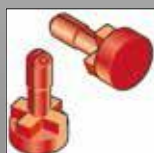


Crossbar connector RSV

### ACCESSORIES



Bracket bar

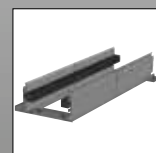


Lock button

### GUIDE CHANNELS



VAW steel galvanised / stainless steel



VAW aluminium

### STRAIN RELIEF



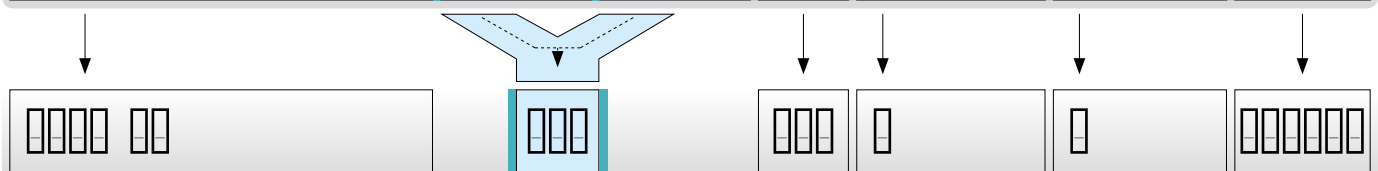
RS-ZL crossbar strain relief



STF Steel Fix

**ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0621 30</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>093</b> [3.66]	<b>125</b> [4.92]	<b>468</b> [18.43]	<b>500</b> [19.69]	<b>150</b> [5.91]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>106</b> [4.17]	<b>138</b> [5.43]	<b>518</b> [20.39]	<b>550</b> [21.65]				
		<b>118</b> [4.65]	<b>150</b> [5.91]			<b>200</b> [7.87]	<b>1</b> Plastic, full-ridged without bias	<b>9</b> Special version (on request)	
		<b>131</b> [5.16]	<b>163</b> [6.42]						
		<b>143</b> [5.63]	<b>175</b> [6.89]			<b>250</b> [9.84]	<b>2</b> Plastic, half-ridged with bias		
		<b>156</b> [6.14]	<b>188</b> [7.40]						
		<b>168</b> [6.61]	<b>200</b> [7.87]			<b>300</b> [11.81]	<b>3</b> Plastic, half-ridged without bias		
		<b>181</b> [7.13]	<b>213</b> [8.39]						
		<b>193</b> [7.60]	<b>225</b> [8.86]			<b>400</b> [15.75]	<b>4</b> Aluminium full-ridged with bias		
		<b>206</b> [8.11]	<b>238</b> [9.37]						
		<b>218</b> [8.58]	<b>250</b> [9.84]			<b>500</b> [19.69]	<b>5</b> Aluminium full-ridged without bias		
		<b>231</b> [9.09]	<b>263</b> [10.35]						
		<b>243</b> [9.57]	<b>275</b> [10.83]				<b>6</b> Aluminium half-ridged with bias		
		<b>256</b> [10.08]	<b>288</b> [11.34]						
		<b>268</b> [10.55]	<b>300</b> [11.81]				<b>7</b> Aluminium half-ridged without bias		
		<b>293</b> [11.54]	<b>325</b> [12.80]						
		<b>318</b> [12.52]	<b>350</b> [13.78]				<b>9</b> Special version (on request)		
		<b>343</b> [13.50]	<b>375</b> [14.76]						
		<b>368</b> [14.49]	<b>400</b> [15.75]						
		<b>418</b> [16.46]	<b>450</b> [17.72]						



**ORDERING EXAMPLE: 0623 30 118 150 0 0 1600**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 118 mm; radius 150 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1600 mm (16 links)

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

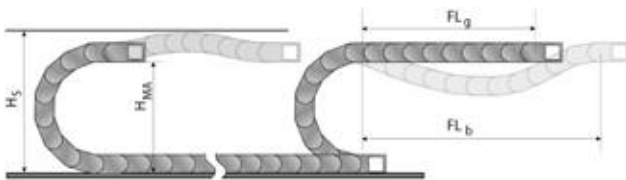
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 72.0 mm – 600.0 mm .

**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV).  
If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

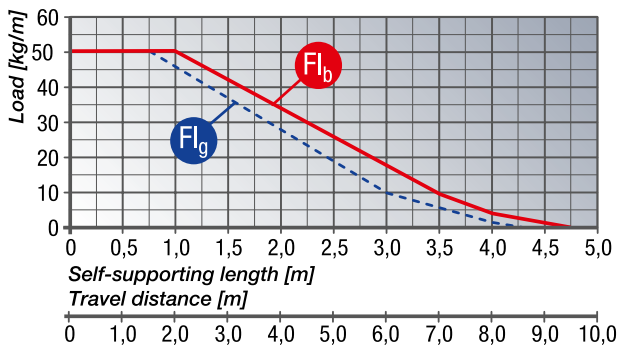
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



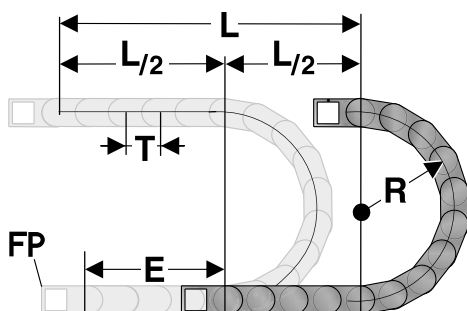
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 80.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 80.0 mm, but this is still less than the maximum sag.  
Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**



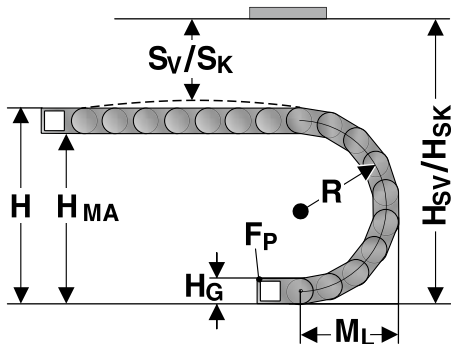
The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 10 \text{ qty. } \times 100.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 100.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias  $H_{SK}$ ” value has to be taken into account.

If the chain links are equipped with a bias, the value “Installed height with bias  $H_{SV}$ ” has to be taken into account.

Radius R	150	200	250	300	400	500
Outside height of chain link ( $H_G$ )	94	94	94	94	94	94
Height of bend (H)	424	524	624	724	924	1124
Height of moving end bracket ( $H_{MA}$ )	330	430	530	630	830	1030
Safety margin with bias ( $S_v$ )	50	50	50	50	50	50
Installation height with bias ( $H_{sv}$ )	474	574	674	774	974	1174
Safety margin without bias ( $S_k$ )	20	20	20	20	20	20
Installation height without bias ( $H_{sk}$ )	444	544	644	744	944	1144
Arc projection ( $M_L$ )	312	362	412	462	562	662

**HEAVYLINE PLASTIC CROSSBAR**



Crossbar

The crossbars connect the two side runs of the energy chain. The crossbar length is synonymous with the inside width of the energy chain.

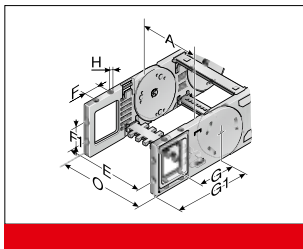
Type	Order No.	Description	Inside width mm
RS 093-7	072009300000	Crossbar	93.0
RS 106-7	072010600000	Crossbar	106.0
RS 118-7	072011800000	Crossbar	118.0
RS 131-7	072013100000	Crossbar	131.0
RS 143-7	072014300000	Crossbar	143.0
RS 156-7	072015600000	Crossbar	156.0
RS 168-7	072016800000	Crossbar	168.0
RS 181-7	072018100000	Crossbar	181.0
RS 193-7	072019300000	Crossbar	193.0
RS 206-7	072020600000	Crossbar	206.0
RS 231-7	072023100000	Crossbar	231.0
RS 243-7	072024300000	Crossbar	243.0
RS 256-7	072025600000	Crossbar	256.0
RS 268-7	072026800000	Crossbar	268.0



**HEAVYLINE PLASTIC CROSSBAR**

Type	Order No.	Description	Inside width mm
RS 293-7	072029300000	Crossbar	293.0
RS 318-7	072031800000	Crossbar	318.0
RS 343-7	072034300000	Crossbar	343.0
RS 368-7	072036800000	Crossbar	368.0
RS 418-7	072041800000	Crossbar	418.0
RS 468-7	072046800000	Crossbar	468.0
RS 518-7	072051800000	Crossbar	518.0

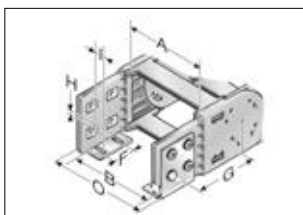
**KA 62.1 CHAIN BRACKET FLEXIBLE**



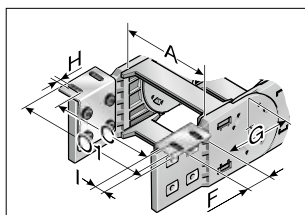
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the energy chain.

Type	Order No.	Material	Version	Inside width								Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	H mm	H0 mm	
KA 62-FB Female end	0620000056	Plastic	with bush	93.0 – 518.0	A+17.0	35.0	45.0	107.0	171.5	8.5	A+36.0	
KA 62-FB male end	0620000057	Plastic	with bush	93.0 – 518.0	A+17.0	35.0	45.0	107.0	171.5	8.5	A+36.0	
KA 62-FG Female end	0620000058	Plastic	with thread	93.0 – 518.0	A+17.0	35.0	45.0	107.0	171.5	M8	A+36.0	
KA 62-FG male end	0620000059	Plastic	with thread	93.0 – 518.0	A+17.0	35.0	45.0	107.0	171.5	M8	A+36.0	

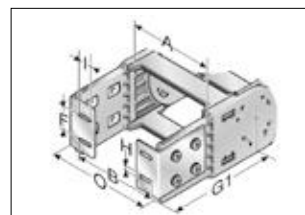
**KA 62.1 CHAIN BRACKET ANGLE**



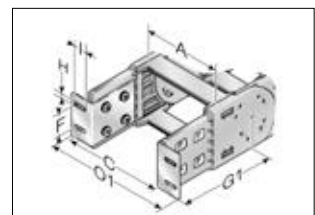
KA 62 (inside up / down)



KA 62 (outside up / down)



KA 62 (front inside)



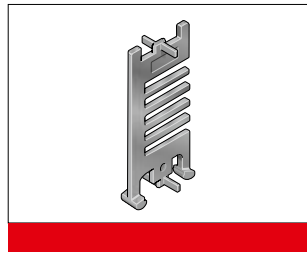
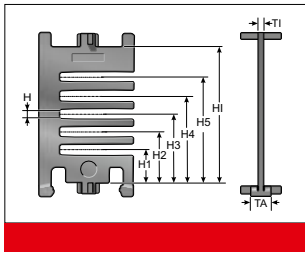
KA 62 (front outside)

This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8

screws are used to secure the brackets in place. Metal inserts (supplied) help to minimise the cold flow properties. This is an enormous advantage, guaranteeing the smooth transfer of high loads to the chain.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm	Outside width of KA 01 mm
			A mm	B mm	C mm	F mm	G mm	G1 mm	H0 mm	I mm		
KA 62 Female end	0620000050	Sheet steel	93.0 – 518.0	A-12.0	A+44.0	45.0	102.0	171.5	9.0	15.0	A+32.0	A+90.0
KA 62 Male end	0620000051	Sheet steel	93.0 – 518.0	A-12.0	A+44.0	45.0	102.0	171.5	9.0	15.0	A+32.0	A+90.0

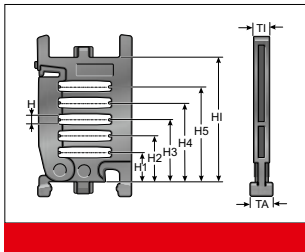
**TR 62 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
TR 62	062000009200	Separator	lockable	3.5	13.0	5.5	14.8	23.1	31.4	39.7	48.0	62.0

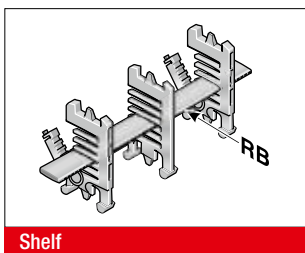
**RTT 62 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	Hl mm
RTT 62	100090622000	Shelf support, divisible	lockable	8.0	8.0	5.5	14.8	23.1	31.4	39.7	48.0	62.0

**RB-7 SHELF**



In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 056-7	100000005600	Shelf	56.0	93.0
RB 061-7	1000006107	Shelf	61.0	93.0
RB 066-7	100000006600	Shelf	66.0	93.0
RB 071-7	1000007107	Shelf	71.0	93.0
RB 076-7	1000007607	Shelf	76.0	93.0
RB 081-7	10000008100	Shelf	81.0	93.0
RB 086-7	1000008607	Shelf	86.0	93.0
RB 091-7	1000009107	Shelf	91.0	106.0
RB 096-7	1000009607	Shelf	96.0	106.0
RB 101-7	1000010107	Shelf	101.0	106.0
RB 106-7	100000010600	Shelf	106.0	106.0
RB 111-7	1000011107	Shelf	111.0	118.0
RB 116-7	100000011600	Shelf	116.0	118.0
RB 121-7	1000012107	Shelf	121.0	131.0
RB 126-7	1000012607	Shelf	126.0	131.0

## RB-7 SHELF

Type	Order No.	Description	Width mm	Inside width mm
RB 131-7	1000013107	Shelf	131.0	143.0
RB 136-7	1000013607	Shelf	136.0	143.0
RB 141-7	1000014107	Shelf	141.0	143.0
RB 146-7	1000014607	Shelf	146.0	156.0
RB 151-7	1000015107	Shelf	151.0	156.0
RB 156-7	1000015607	Shelf	156.0	156.0
RB 161-7	1000016107	Shelf	161.0	168.0
RB 166-7	100000016600	Shelf	166.0	168.0
RB 171-7	1000017107	Shelf	171.0	181.0
RB 176-7	1000017607	Shelf	176.0	181.0
RB 181-7	1000018107	Shelf	181.0	193.0
RB 186-7	1000018607	Shelf	186.0	193.0
RB 191-7	1000019107	Shelf	191.0	193.0
RB 196-7	1000019607	Shelf	196.0	206.0
RB 201-7	1000020107	Shelf	201.0	206.0
RB 206-7	1000020607	Shelf	206.0	206.0
RB 211-7	1000021107	Shelf	211.0	218.0
RB 216-7	100000021600	Shelf	216.0	218.0

## CROSSBAR CONNECTOR RSV 62



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	Tl mm
RSV 62	062000009600	Crossbar connector	8.0
RSV 62 Alu	062000009800	Crossbar connector for aluminium crossbars	8.0

## BS-5 BRACKET BAR



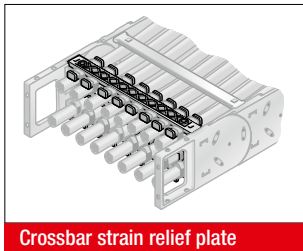
Large-diameter conduits are routed securely by using a bracket bar (BS). This bar is installed on the crossbars or the covers of the energy chain.

The bracket bar can be installed on both the inside and outside bend.

The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

Type	Order No.	Description	Conduit diameter max. mm	Installation height mm	Inner chain width min. mm
BS 120-5	052412000000	Bracket bar	115.0	140.0	164.0
BS 153-5	052415300000	Bracket bar	148.0	170.0	208.0
BS 187-5	052418700000	Bracket bar	182.0	205.0	233.0
Assembly set	052400000001	Assembly set			

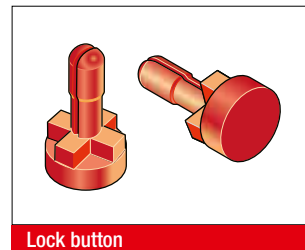
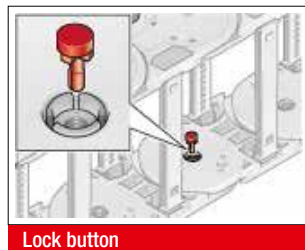
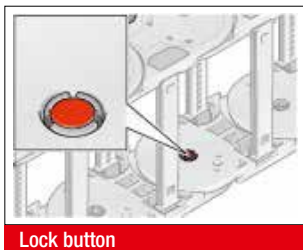
## RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE



Fixed integrated frame bridge strain relief plates in the chain brackets. Accommodated to all widths of the frame bridges, up to 256 mm in size. May be assembled on the inside and outside flexure curves at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 093-7	072009300010	Crossbar strain relief plate	93.0
RS-ZL 106-7	072010600010	Crossbar strain relief plate	106.0
RS-ZL 118-7	072011800010	Crossbar strain relief plate	118.0
RS-ZL 131-7	072013100010	Crossbar strain relief plate	131.0
RS-ZL 143-7	072014300010	Crossbar strain relief plate	143.0
RS-ZL 156-7	072015600010	Crossbar strain relief plate	156.0
RS-ZL 168-7	072016800010	Crossbar strain relief plate	168.0
RS-ZL 181-7	072018100010	Crossbar strain relief plate	181.0
RS-ZL 193-7	072019300010	Crossbar strain relief plate	193.0
RS-ZL 206-7	072020600010	Crossbar strain relief plate	206.0
RS-ZL 218-7	072021800010	Crossbar strain relief plate	218.0
RS-ZL 231-7	072023100010	Crossbar strain relief plate	231.0
RS-ZL 243-7	072024300010	Crossbar strain relief plate	243.0
RS-ZL 256-7	072025600010	Crossbar strain relief plate	256.0

## MP 52/62/72 LOCK BUTTON

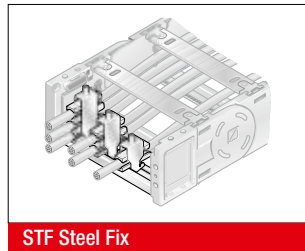
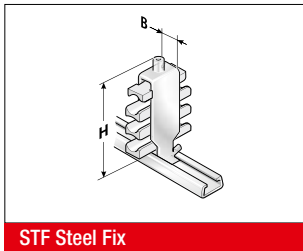


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP52/62/72 lock button	0520000080

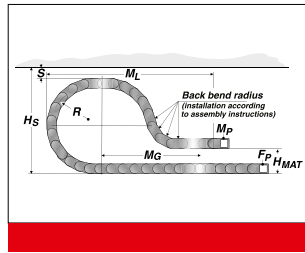
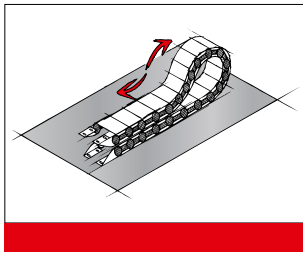
## STRAIN RELIEF WITH STEEL FIX



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

**LOWERED FIXING POINT MP 62**



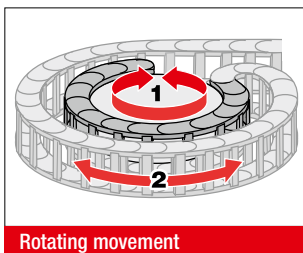
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>S</sub> ) mm	Projection (M <sub>L</sub> ) mm	Additional links qty.	of which additional back chain links qty.
200.0	230.0	60.0	564.0	850.0	11	2
250.0	270.0	60.0	664.0	990.0	12	2
300.0	320.0	60.0	764.0	1060.0	12	3
400.0	380.0	90.0	694.0	1060.0	14	3
500.0	440.0	60.0	1164.0	1520.0	17	3

**MP 62.1 REARWARD RADII**



Rotating movement

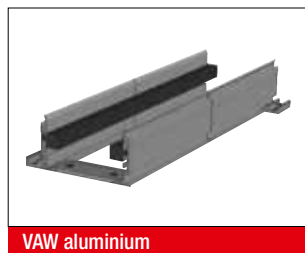
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 62.1 (RÜ300/R300) left	062100030060	300.0	300.0
SR 62.1 (RÜ300/R300) right	062100030062	300.0	300.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel

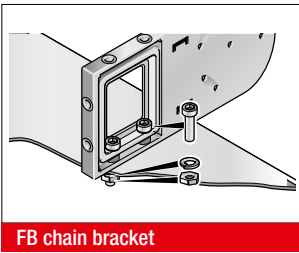


VAW aluminium

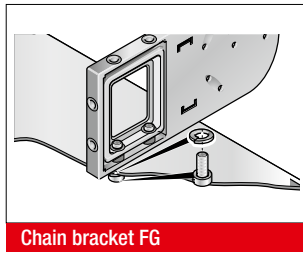
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



FB chain bracket



Chain bracket FG

Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

**Version KA-FB:**

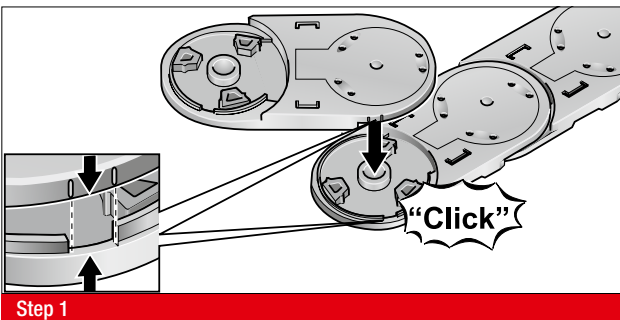
Integrated through-hole fastened down using screw and nut.

**Version KA-FG:**

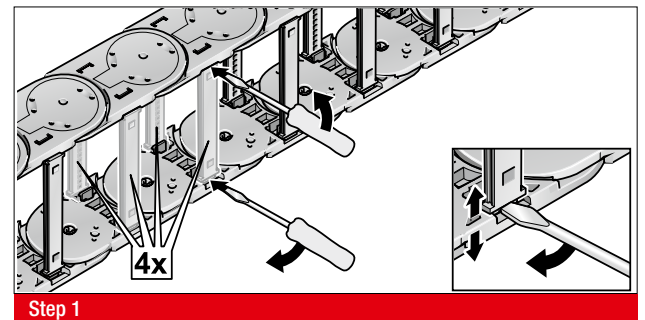
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

**ASSEMBLY**

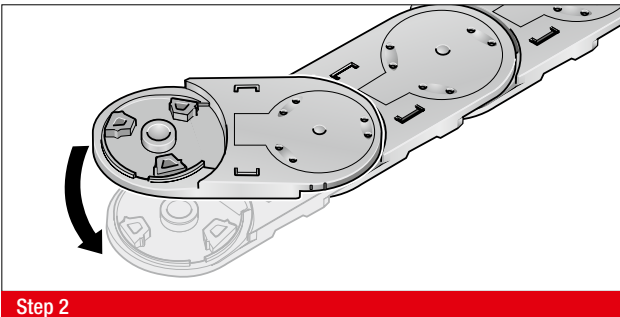
**DISASSEMBLY**



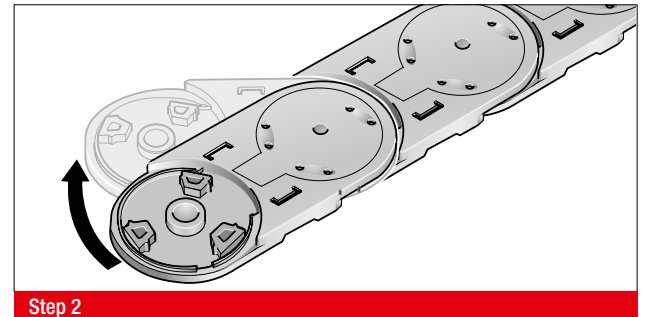
Step 1



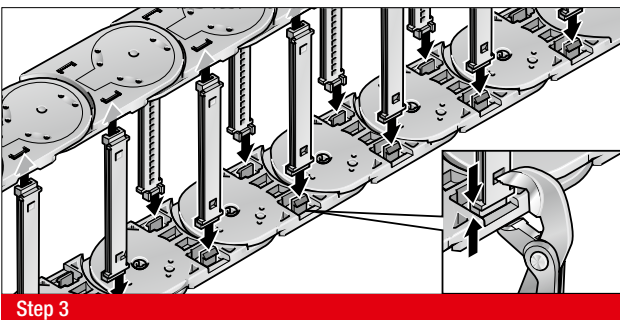
Step 1



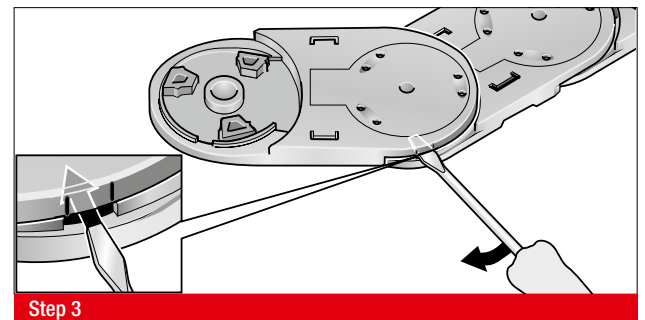
Step 2



Step 2



Step 3

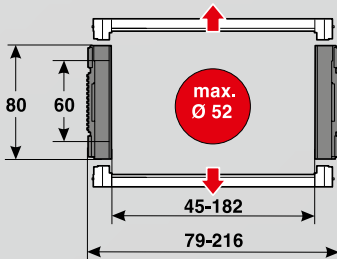


Step 3

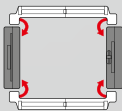
## MP 66 OPEN



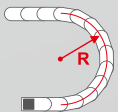
- PLASTIC OR ALUMINIUM VERSION
- METAL CHAIN BRACKET
- OPENS ON INSIDE AND OUTSIDE BEND



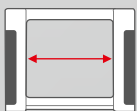
### TECHNICAL DATA



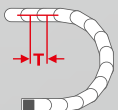
**Loading side**  
Inside and outside bend



**Available radii**  
150.0 – 400.0 mm



**Available interior widths**  
With plastic crossbar  
45.0 – 182.0 mm  
With alu crossbar / with alu cover  
77.0 – 600.0 mm /



**Pitch**  
T = 91.5 mm







## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	60.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 403
Travel distance vertical, hanging $L_{vh}$ max.	50.0 m
Travel distance vertical, upright $L_{vs}$ max.	5.0 m
Rotated 90°, unsupported $L_{90f}$ max.	2.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	15.0 m/s
Acceleration, gliding $a_g$ max.	15.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	20.0 m/s <sup>2</sup>

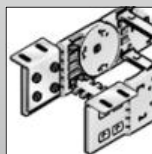
Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

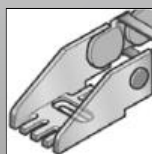
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request.

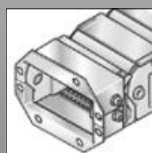
### CHAIN BRACKET



Chain bracket angle

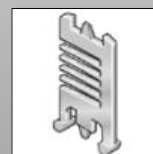


Chain bracket U-part



End brackets flange

### SHELVING SYSTEM



Separator TR



RS shelving system

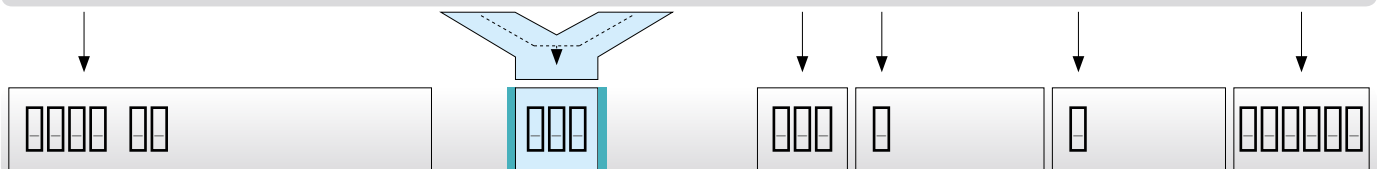
### GUIDE CHANNELS



VAW aluminium

**ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length																																																																																																																										
<b>0660 30</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>045</b> [1.77]	<b>079</b> [3.11]			<b>150</b> [5.91]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)																																																																																																																											
		<b>062</b> [2.44]	<b>096</b> [3.78]									<b>084</b> [3.31]	<b>118</b> [4.65]			<b>200</b> [7.87]	<b>1</b> Plastic, full-ridged without bias	<b>9</b> Special version (on request)				<b>105</b> [4.13]	<b>139</b> [5.47]					<b>144</b> [5.67]	<b>178</b> [7.01]			<b>240</b> [9.45]	<b>2</b> Plastic, half-ridged with bias					<b>182</b> [7.17]	<b>216</b> [8.50]									<b>280</b> [11.02]	<b>3</b> Plastic, half-ridged without bias															<b>350</b> [13.78]	<b>4</b> Aluminium full-ridged with bias															<b>400</b> [15.75]	<b>5</b> Aluminium full-ridged without bias																<b>6</b> Aluminium half-ridged with bias																<b>7</b> Aluminium half-ridged without bias																<b>9</b> Special version (on request)		
		<b>084</b> [3.31]	<b>118</b> [4.65]			<b>200</b> [7.87]	<b>1</b> Plastic, full-ridged without bias	<b>9</b> Special version (on request)																																																																																																																											
		<b>105</b> [4.13]	<b>139</b> [5.47]									<b>144</b> [5.67]	<b>178</b> [7.01]			<b>240</b> [9.45]	<b>2</b> Plastic, half-ridged with bias					<b>182</b> [7.17]	<b>216</b> [8.50]									<b>280</b> [11.02]	<b>3</b> Plastic, half-ridged without bias															<b>350</b> [13.78]	<b>4</b> Aluminium full-ridged with bias															<b>400</b> [15.75]	<b>5</b> Aluminium full-ridged without bias																<b>6</b> Aluminium half-ridged with bias																<b>7</b> Aluminium half-ridged without bias																<b>9</b> Special version (on request)																		
		<b>144</b> [5.67]	<b>178</b> [7.01]			<b>240</b> [9.45]	<b>2</b> Plastic, half-ridged with bias																																																																																																																												
		<b>182</b> [7.17]	<b>216</b> [8.50]													<b>280</b> [11.02]	<b>3</b> Plastic, half-ridged without bias															<b>350</b> [13.78]	<b>4</b> Aluminium full-ridged with bias															<b>400</b> [15.75]	<b>5</b> Aluminium full-ridged without bias																<b>6</b> Aluminium half-ridged with bias																<b>7</b> Aluminium half-ridged without bias																<b>9</b> Special version (on request)																																		
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**ORDERING EXAMPLE: 0660 30 045 150 0 0 1556**

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 45 mm; radius 150 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1556 mm (17 links)

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

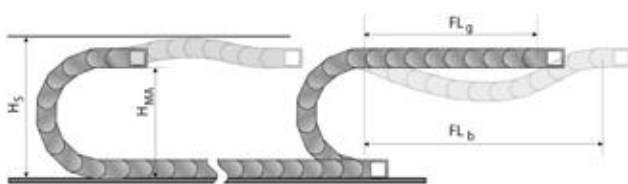
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 77.0 mm – 600.0 mm .

**Strain relief:**

The end brackets utilise strain relief plates (ZL) for cable strain relief.

For detailed information, please consult the corresponding product documentation.

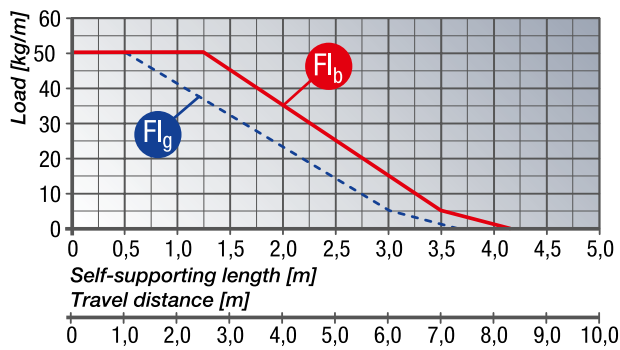
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the energy chain. The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



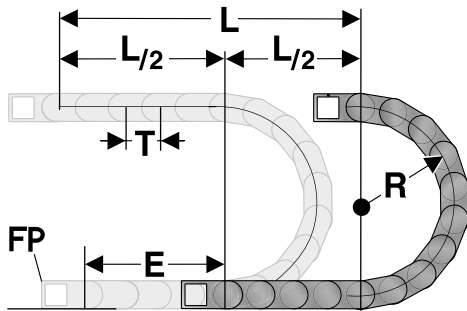
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 60.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 60.0 mm, but this is still less than the maximum sag. Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**



The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 11 \text{ qty. } \times 91.5 \text{ mm.}$

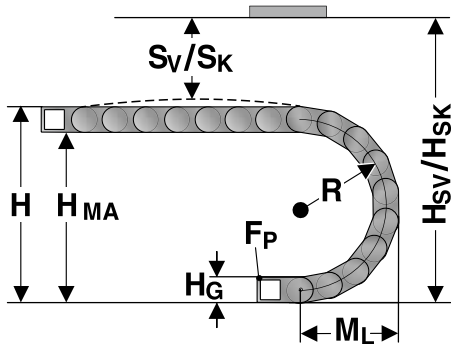
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Pitch 91.5 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height H<sub>MA</sub> for the respective radius.

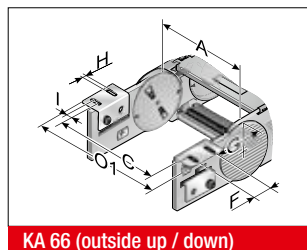
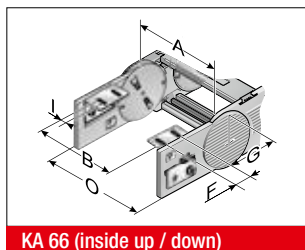
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “Installed height without bias H<sub>SK</sub>” value has to be taken into account.

If the chain links are equipped with a bias, the value “Installed height with bias H<sub>SV</sub>” has to be taken into account.

Radius R	150	200	240	280	350	400
Outside height of chain link (H <sub>o</sub> )	80	80	80	80	80	80
Height of bend (H)	380	480	560	640	780	880
Height of moving end bracket (H <sub>MA</sub> )	300	400	480	560	700	800
Safety margin with bias (S <sub>v</sub> )	50	50	50	50	50	50
Installation height with bias (H <sub>SV</sub> )	430	530	610	690	830	930
Safety margin without bias (S <sub>k</sub> )	15	15	15	15	15	15
Installation height without bias (H <sub>SK</sub> )	395	495	575	655	795	895
Arc projection (M <sub>L</sub> )	282	332	372	412	482	532

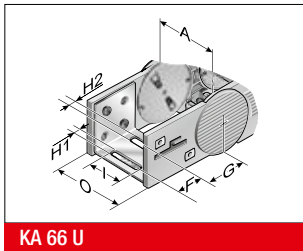
**CHAIN BRACKET ANGLE KA 66**



There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires two chain brackets. The brackets should be fastened with M8 screws.

Type	Order No.	Material	Inside width							Outside width of KA 0 mm	Outside width of KA 01 mm	
			A mm	B mm	C mm	F mm	G mm	G1 mm	HØ mm			I mm
KA 66	0660000050	Sheet steel	62.0 – 182.0	A-17.0	A+51.0	45.0	50.5	86.0	9.0	10.0	A+34.0	A+64.0
KA 66	0660000060	Stainless steel 1.4301	62.0 – 182.0	A-17.0	A+51.0	45.0	50.5	86.0	9.0	10.0	A+34.0	A+64.0

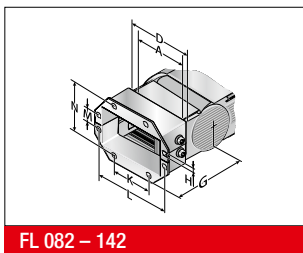
**CHAIN BRACKET U-PART KA 66**



The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fastened with cable ties on the integrated strain relief of the chain bracket.

Type	Order No.	Material	Inside width						Outside width of KA 0 mm
			A mm	F mm	G mm	H1 mm	H2 mm	I mm	
KA 66 U	0660000054	Sheet steel	45.0	28.0	58.5	6.5	8.5	33.0	A+34.0

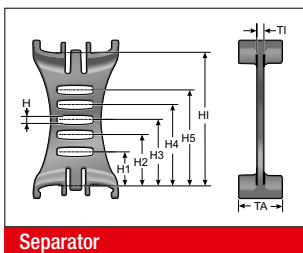
**END BRACKETS FLANGE KA 65 G**



An energy chain requires two chain brackets. The divisible flange connection has been specifically designed for commissioning and re-installation. This keeps the chain in the installed position.

Type	Order No.	Material	Inside width						
			A mm	G mm	HØ mm	K mm	L mm	M mm	N mm
FL 082	0650000070	Sheet steel	86.0	136.0	7.0	78.0	141.5	40.0	105.0
FL 107	0650000072	Sheet steel	102.0	136.0	7.0	100.0	163.5	40.0	105.0
FL 142	0650000074	Sheet steel	125.0	136.0	7.0	138.0	201.5	40.0	105.0
FL 082	0650000080	Stainless steel 1.4301	86.0	136.0	7.0	78.0	141.5	40.0	105.0
FL 107	0650000082	Stainless steel 1.4301	102.0	136.0	7.0	100.0	163.5	40.0	105.0
FL 142	0650000084	Stainless steel 1.4301	125.0	136.0	7.0	138.0	201.5	40.0	105.0

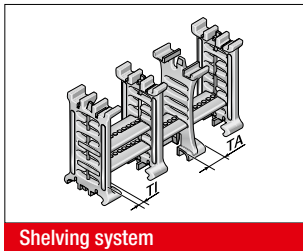
**SEPARATOR TR 66**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	Dimensions								
				TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
TV 66	066000009000	Separator	lockable	3.5	20.0	4.4	15.8	22.9	30.0	37.1	44.2	60.0

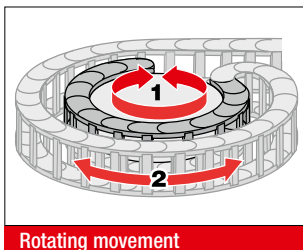
**SHELVING SYSTEM MP 66**



The shelf must be used with a minimum of two shelf supports to create a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them. The shelving system may be preassembled on request.

Type	Order No.	Description	Width mm	Clearance width mm	Pitch mm	T1 mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm	H7 mm
RB 031	100000003100	Shelf	42.0	31.0	1.6								
RB 048	100000004800	Shelf	59.0	48.0	1.6								
RB 070	100000007000	Shelf	81.0	70.0	1.6								
RB 092	100000009200	Shelf	103.0	92.0	1.6								
RB 100	100000010000	Shelf	111.0	100.0	1.6								
RB 128	100000012800	Shelf	139.0	128.0	1.6								
RB 167	100000016700	Shelf	178.0	167.0	1.6								
RT 66	1000900100	Shelf support	4.3		1.6	6.5	8.7	15.8	22.9	30.0	37.1	44.2	51.3

**MP 66 REARWARD RADII**



Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

Type	Order No.	Rearward radius mm	Version
SR 66 (RÜ240)	066000000060	240.0	Available for radii 150, 200, 240, 280 and 350 mm

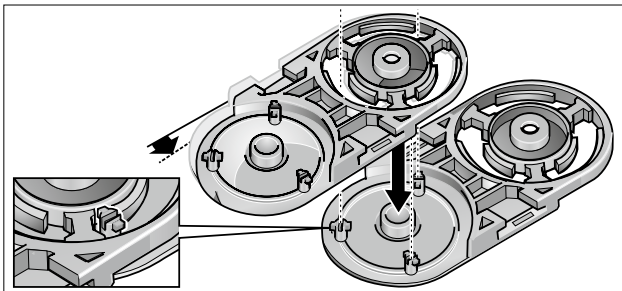
**GUIDE CHANNEL VAW (ALUMINIUM)**



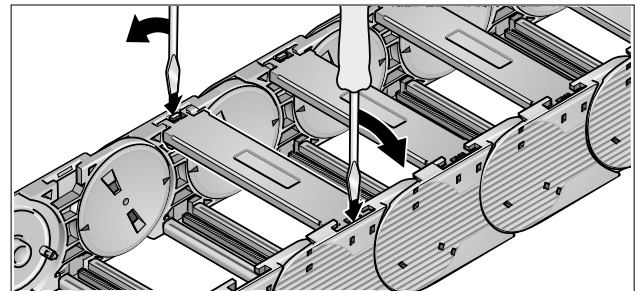
A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

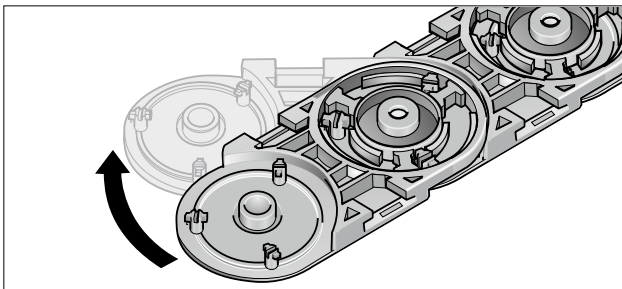
DISASSEMBLY



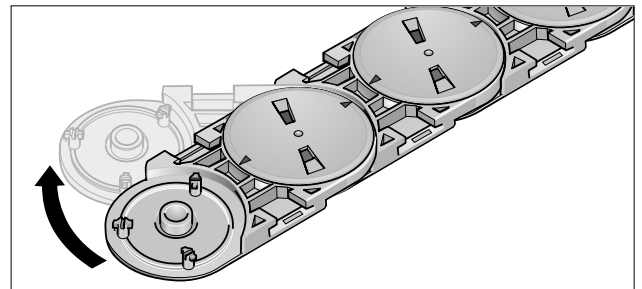
Step 1



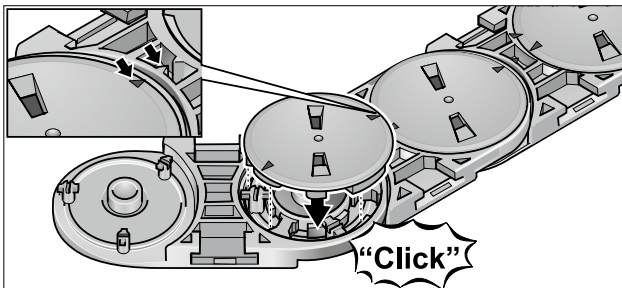
Step 1



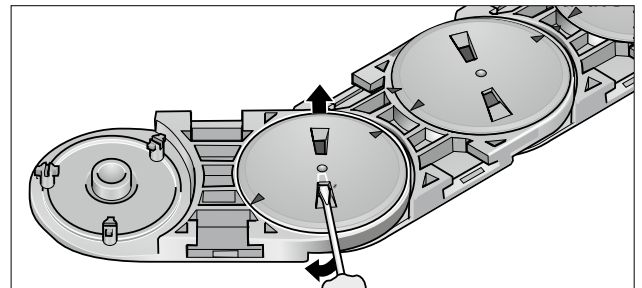
Step 2



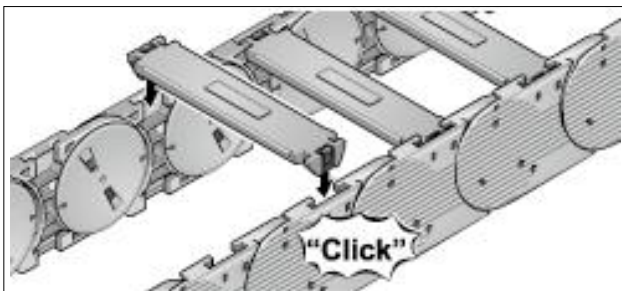
Step 2



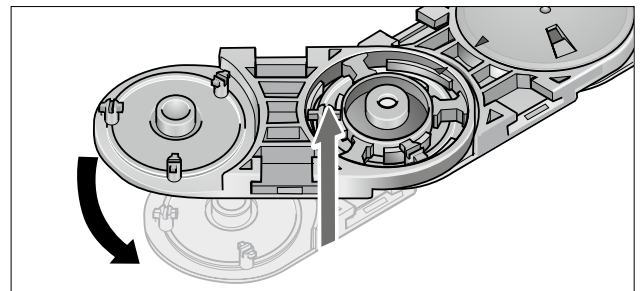
Step 3



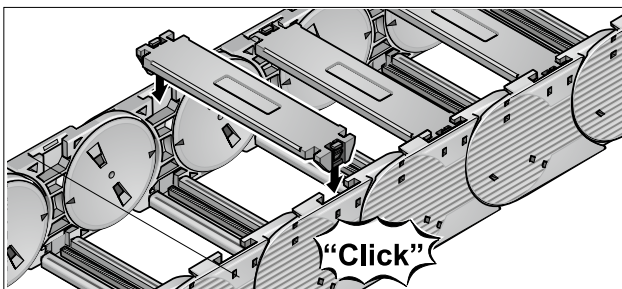
Step 3



Step 4



Step 4

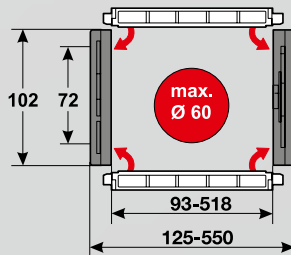


Step 5

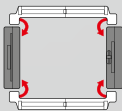
## MP 72 OPEN



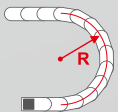
- PLASTIC OR ALUMINIUM VERSION
- CHAIN BRACKET FLEXIBLE



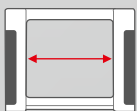
### TECHNICAL DATA



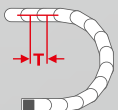
**Loading side**  
Inside and outside bend



**Available radii**  
150.0 – 500.0 mm



**Available interior widths**  
With plastic crossbar  
93.0 – 518.0 mm  
With alu crossbar / with alu cover  
72.0 – 600.0 mm /



**Pitch**  
T = 100.0 mm







## TECHNICAL SPECIFICATIONS

Travel distance gliding $L_g$ max.	150.0 m
Travel distance self-supporting $L_s$ max.	see diagram on page 411
Travel distance vertical, hanging $L_{vh}$ max.	80.0 m
Travel distance vertical, upright $L_{vs}$ max.	6.0 m
Rotated 90°, unsupported $L_{90f}$ max.	6.0 m
Speed, gliding $V_g$ max.	5.0 m/s
Speed, self-supporting $V_f$ max.	20.0 m/s
Acceleration, gliding $a_g$ max.	25.0 m/s <sup>2</sup>
Acceleration, self-supporting $a_s$ max.	40.0 m/s <sup>2</sup>

Contact our engineering department to meet any higher requirements: [efk@murrplastik.de](mailto:efk@murrplastik.de)

## MATERIAL PROPERTIES

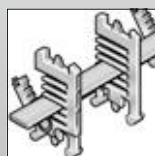
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

### SHELVING SYSTEM

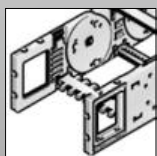


Separator TR



RS shelving system

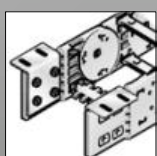
### CHAIN BRACKET



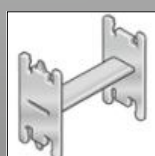
Chain bracket flexible



Crossbar connector RSV

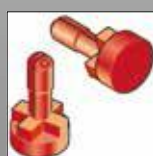


Chain bracket angle



H-shaped shelf unit RE

### ACCESSORIES



Lock button

### GUIDE CHANNELS

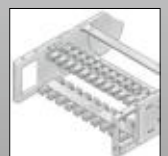


VAW steel galvanised / stainless steel

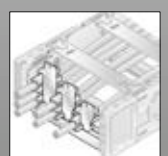


VAW aluminium

### STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix

ORDERING KEY

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Crossbar variant	Material	Chain length
<b>0720 30</b>	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside bend	<b>093</b> [3.66]	<b>125</b> [4.92]	<b>468</b> [18.43]	<b>500</b> [19.69]	<b>150</b> [5.91]	<b>0</b> Plastic, full-ridged with bias	<b>0</b> Polyamide standard (PA/black)	
		<b>106</b> [4.17]	<b>138</b> [5.43]	<b>518</b> [20.39]	<b>550</b> [21.65]				
		<b>118</b> [4.65]	<b>150</b> [5.91]			<b>200</b> [7.87]	<b>2</b> Plastic, half-ridged with bias	<b>9</b> Special version (on request)	
		<b>131</b> [5.16]	<b>163</b> [6.42]						
		<b>143</b> [5.63]	<b>175</b> [6.89]			<b>250</b> [9.84]	<b>4</b> Aluminium full-ridged with bias		
		<b>156</b> [6.14]	<b>188</b> [7.40]						
		<b>168</b> [6.61]	<b>200</b> [7.87]			<b>300</b> [11.81]	<b>6</b> Aluminium half-ridged with bias		
		<b>181</b> [7.13]	<b>213</b> [8.39]						
		<b>193</b> [7.60]	<b>225</b> [8.86]			<b>400</b> [15.75]	<b>9</b> Special version (on request)		
		<b>206</b> [8.11]	<b>238</b> [9.37]						
		<b>218</b> [8.58]	<b>250</b> [9.84]			<b>500</b> [19.69]			
		<b>231</b> [9.09]	<b>263</b> [10.35]						
		<b>243</b> [9.57]	<b>275</b> [10.83]						
		<b>256</b> [10.08]	<b>288</b> [11.34]						
		<b>268</b> [10.55]	<b>300</b> [11.81]						
		<b>293</b> [11.54]	<b>325</b> [12.80]						
		<b>318</b> [12.52]	<b>350</b> [13.78]						
		<b>343</b> [13.50]	<b>375</b> [14.76]						
		<b>368</b> [14.49]	<b>400</b> [15.75]						
		<b>418</b> [16.46]	<b>450</b> [17.72]						



ORDERING EXAMPLE: 0720 30 118 150 0 0 1600

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend  
 Inside width 118 mm; radius 150 mm  
 Plastic crossbar, full-ridged with bias, material black-coloured polyamide  
 Chain length 1600 mm (16 links)

**NOTE ON CONFIGURATION**

**Aluminium crossbars:**

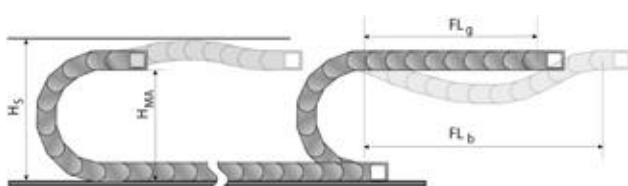
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 72.0 mm – 600.0 mm .

**Crossbar connector and crossbar strain relief plate:**

Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV).  
If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

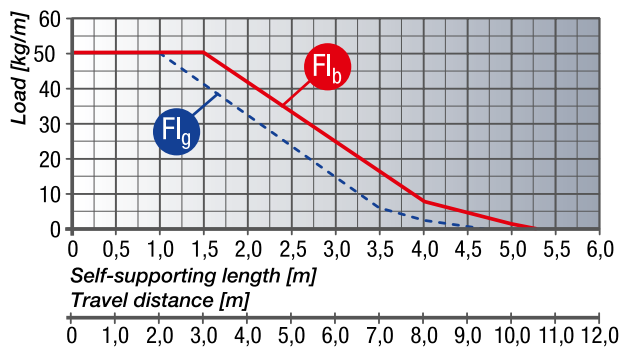
**SELF-SUPPORTING LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch.  
The installation variant  $FL_g$  offers the lowest load and wear for the energy chain.  
The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_b$  = Self-supporting length, upper run bent

**LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS**



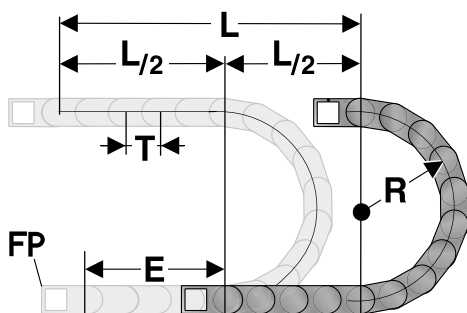
**$FL_g$  Self-supporting length, upper run straight**

In the  $FL_g$  range, the chain upper run still has a bias, is straight or has a maximum sag of 80.0 mm.

**$FL_b$  Self-supporting length, upper run bent**

In the  $FL_b$  range, the chain upper run has a sag of more than 80.0 mm, but this is still less than the maximum sag.  
Where the sag is greater than that permitted in the  $FL_b$  range, the application is critical and should be avoided. The self-supporting length can be optimised by using a support for the upper run or a more stable energy chain.

**DETERMINING THE CHAIN LENGTH**



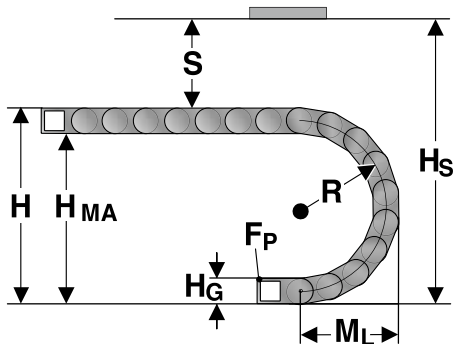
The fixed point of the energy chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$   
 $\approx 1 \text{ m chain} = 10 \text{ qty. } \times 100.0 \text{ mm.}$

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Pitch 100.0 mm

**INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.  
For the installed dimension the “Installed height  $H_s$ ” value has to be taken into account.

Radius R	150	200	250	300	400	500
Outside height of chain link ( $H_G$ )	102	102	102	102	102	102
Height of bend (H)	422	522	622	722	922	1122
Height of moving end bracket ( $H_{MA}$ )	320	420	520	620	820	1020
Safety margin (S)	20	20	20	20	20	20
Installation height ( $H_s$ )	442	542	642	742	942	1142
Arc projection ( $M_L$ )	311	361	411	461	561	661

**HEAVYLINE PLASTIC CROSSBAR**

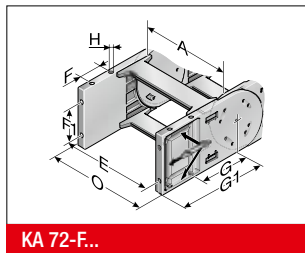


Crossbar

The crossbars connect the two side runs of the energy chain.  
The crossbar length is synonymous with the inside width of the energy chain.

Type	Order No.	Description	Inside width mm
RS 093-7	072009300000	Crossbar	93.0
RS 106-7	072010600000	Crossbar	106.0
RS 118-7	072011800000	Crossbar	118.0
RS 131-7	072013100000	Crossbar	131.0
RS 143-7	072014300000	Crossbar	143.0
RS 156-7	072015600000	Crossbar	156.0
RS 168-7	072016800000	Crossbar	168.0
RS 181-7	072018100000	Crossbar	181.0
RS 193-7	072019300000	Crossbar	193.0
RS 206-7	072020600000	Crossbar	206.0
RS 231-7	072023100000	Crossbar	231.0
RS 243-7	072024300000	Crossbar	243.0
RS 256-7	072025600000	Crossbar	256.0
RS 268-7	072026800000	Crossbar	268.0
RS 293-7	072029300000	Crossbar	293.0
RS 318-7	072031800000	Crossbar	318.0
RS 343-7	072034300000	Crossbar	343.0
RS 368-7	072036800000	Crossbar	368.0
RS 418-7	072041800000	Crossbar	418.0
RS 468-7	072046800000	Crossbar	468.0
RS 518-7	072051800000	Crossbar	518.0

**KA 72 CHAIN BRACKET FLEXIBLE**

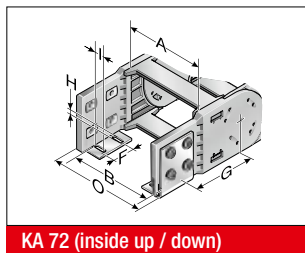


KA 72-F...

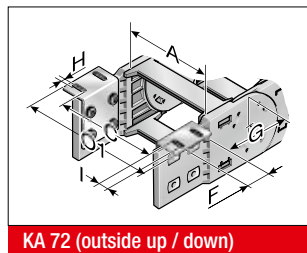
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M10 bolts are used to secure the brackets in place. Metal inserts (supplied) help to minimize the cold flow properties. This is an enormous advantage, guaranteeing the smooth transfer of high loads to the chain.

Type	Order No.	Material	Version	Inside width							Outside width of KA 0 mm
				A mm	E mm	F mm	F1 mm	G mm	G1 mm	HØ mm	
KA 72-F Female end	0720000054	Plastic	with bush	93.0 – 518.0	A+11.0	35.0	45.0	107.0	171.5	11.0	A+32.0
KA 72-F male end	0720000055	Plastic	with bush	93.0 – 518.0	A+11.0	35.0	45.0	107.0	171.5	11.0	A+32.0

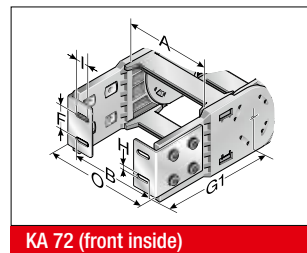
**CHAIN BRACKET ANGLE KA 72**



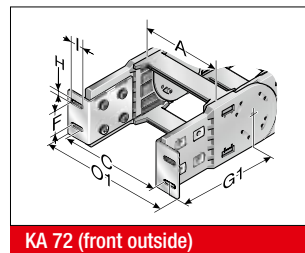
KA 72 (inside up / down)



KA 72 (outside up / down)



KA 72 (front inside)



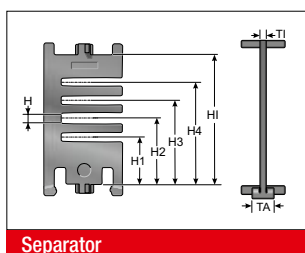
KA 72 (front outside)

There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is

fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires one male and one female bracket. The brackets should be fastened with M8 screws.

Type	Order No.	Material	Inside width								Outside width of KA 0 mm	Outside width of KA 01 mm
			A mm	B mm	C mm	F mm	G mm	G1 mm	HØ mm	I mm		
KA 72 Female end	0720000050	Sheet steel	93.0 – 518.0	A-16.0	A+48.0	45.0	106.0	179.5	9.0	32.0	A+32.0	A+126.0
KA 72 Male end	0720000051	Sheet steel	93.0 – 518.0	A-16.0	A+48.0	45.0	106.0	179.5	9.0	32.0	A+32.0	A+126.0

**SEPARATOR TR 72**

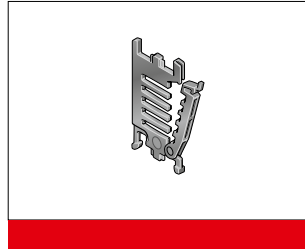
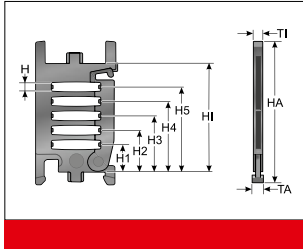


Separator

We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	HI mm
TR 72	072000009200	Separator	lockable	3.5	13.0	5.5	25.5	36.0	46.5	57.0	72.0

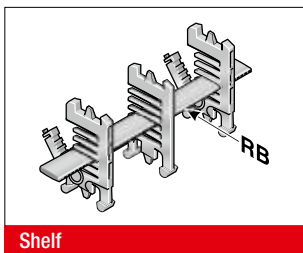
**RTT 72 SHELF SUPPORT, DIVISIBLE**



In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	HI mm
RTT 72	100090722000	Shelf support, divisible	lockable	8.0	8.0	5.5	15.0	25.5	36.0	46.5	57.0	72.0

**RB-7 SHELF**



In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

Type	Order No.	Description	Width mm	Inside width mm
RB 056-7	100000005600	Shelf	56.0	93.0
RB 061-7	1000006107	Shelf	61.0	93.0
RB 066-7	100000006600	Shelf	66.0	93.0
RB 071-7	1000007107	Shelf	71.0	93.0
RB 076-7	1000007607	Shelf	76.0	93.0
RB 081-7	100000008100	Shelf	81.0	93.0
RB 086-7	1000008607	Shelf	86.0	93.0
RB 091-7	1000009107	Shelf	91.0	106.0
RB 096-7	1000009607	Shelf	96.0	106.0
RB 101-7	1000010107	Shelf	101.0	106.0
RB 106-7	100000010600	Shelf	106.0	106.0
RB 111-7	1000011107	Shelf	111.0	118.0
RB 116-7	100000011600	Shelf	116.0	118.0
RB 121-7	1000012107	Shelf	121.0	131.0
RB 126-7	1000012607	Shelf	126.0	131.0
RB 131-7	1000013107	Shelf	131.0	143.0
RB 136-7	1000013607	Shelf	136.0	143.0
RB 141-7	1000014107	Shelf	141.0	143.0
RB 146-7	1000014607	Shelf	146.0	156.0
RB 151-7	1000015107	Shelf	151.0	156.0

**RB-7 SHELF**

Type	Order No.	Description	Width mm	Inside width mm
RB 156-7	1000015607	Shelf	156.0	156.0
RB 161-7	1000016107	Shelf	161.0	168.0
RB 166-7	100000016600	Shelf	166.0	168.0
RB 171-7	1000017107	Shelf	171.0	181.0
RB 176-7	1000017607	Shelf	176.0	181.0
RB 181-7	1000018107	Shelf	181.0	193.0
RB 186-7	1000018607	Shelf	186.0	193.0
RB 191-7	1000019107	Shelf	191.0	193.0
RB 196-7	1000019607	Shelf	196.0	206.0
RB 201-7	1000020107	Shelf	201.0	206.0
RB 206-7	1000020607	Shelf	206.0	206.0
RB 211-7	1000021107	Shelf	211.0	218.0
RB 216-7	100000021600	Shelf	216.0	218.0

**CROSSBAR CONNECTOR RSV 72**

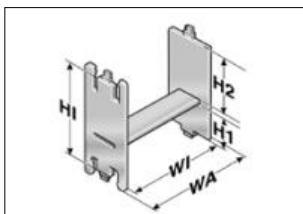


Crossbar connector

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Type	Order No.	Description	Tl mm
RSV 72	072000009600	Crossbar connector	8.0
RSV 72 Alu	072000009800	Crossbar connector for aluminium crossbars	8.0

**RE 72 H-SHAPED SHELF UNIT**

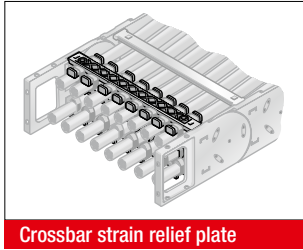


Shelf unit

One-piece shelving system, the shelf cannot be varied in height.

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 75/24	100000752418	H-shaped shelf unit	75.0	67.5	43.0	24.0	72.0
RE 75/36	100000753618	H-shaped shelf unit	75.0	67.5	33.5	33.5	72.0

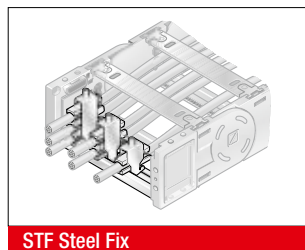
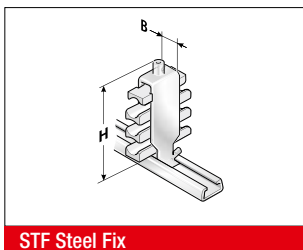
**RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**



Fixed integrated frame bridge strain relief plates in the chain brackets. Accommodated to all widths of the frame bridges, up to 256 mm in size. May be assembled on the inside and outside flexure curves at both chain endings.

Type	Order No.	Description	Inside width mm
RS-ZL 093-7	072009300010	Crossbar strain relief plate	93.0
RS-ZL 106-7	072010600010	Crossbar strain relief plate	106.0
RS-ZL 118-7	072011800010	Crossbar strain relief plate	118.0
RS-ZL 131-7	072013100010	Crossbar strain relief plate	131.0
RS-ZL 143-7	072014300010	Crossbar strain relief plate	143.0
RS-ZL 156-7	072015600010	Crossbar strain relief plate	156.0
RS-ZL 168-7	072016800010	Crossbar strain relief plate	168.0
RS-ZL 181-7	072018100010	Crossbar strain relief plate	181.0
RS-ZL 193-7	072019300010	Crossbar strain relief plate	193.0
RS-ZL 206-7	072020600010	Crossbar strain relief plate	206.0
RS-ZL 218-7	072021800010	Crossbar strain relief plate	218.0
RS-ZL 231-7	072023100010	Crossbar strain relief plate	231.0
RS-ZL 243-7	072024300010	Crossbar strain relief plate	243.0
RS-ZL 256-7	072025600010	Crossbar strain relief plate	256.0

**STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanised) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

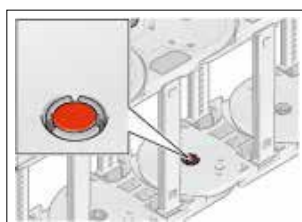
Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
<b>Single clamp (for one cable)</b>						
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	16.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	18.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	20.0	54.0
STF 18-1 Steel Fix	81661804	Hooped clamp	1	16.0 – 18.0	22.0	56.0
STF 20-1 Steel Fix	81661805	Hooped clamp	1	18.0 – 20.0	24.0	59.0



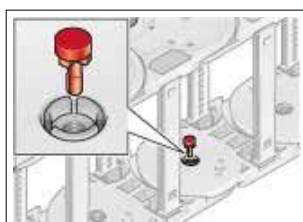
## STRAIN RELIEF WITH STEEL FIX

Type	Order No.	Description	Seats qty.	Cable Ø mm	Width mm	Total height (H) mm
STF 22-1 Steel Fix	81661806	Hooped clamp	1	20.0 – 22.0	26.0	61.0
STF 26-1 Steel Fix	81661807	Hooped clamp	1	22.0 – 26.0	30.0	70.0
STF 30-1 Steel Fix	81661808	Hooped clamp	1	26.0 – 30.0	34.0	74.0
STF 34-1 Steel Fix	81661809	Hooped clamp	1	30.0 – 34.0	38.0	78.0
STF 38-1 Steel Fix	81661810	Hooped clamp	1	34.0 – 38.0	42.0	82.0
STF 42-1 Steel Fix	81661811	Hooped clamp	1	38.0 – 42.0	46.0	91.0
<b>Double clamp (for two cables)</b>						
STF 12-2 Steel Fix	81661821	Hooped clamp	2	6.0 – 12.0	16.0	73.0
STF 14-2 Steel Fix	81661822	Hooped clamp	2	12.0 – 14.0	18.0	74.0
STF 16-2 Steel Fix	81661823	Hooped clamp	2	14.0 – 16.0	20.0	82.0
STF 18-2 Steel Fix	81661824	Hooped clamp	2	16.0 – 18.0	22.0	86.0
STF 20-2 Steel Fix	81661825	Hooped clamp	2	18.0 – 20.0	24.0	91.0
STF 22-2 Steel Fix	81661826	Hooped clamp	2	20.0 – 22.0	26.0	95.0
STF 26-2 Steel Fix	81661827	Hooped clamp	2	22.0 – 26.0	30.0	108.0
STF 30-2 Steel Fix	81661828	Hooped clamp	2	26.0 – 30.0	34.0	121.0
STF 34-2 Steel Fix	81661829	Hooped clamp	2	30.0 – 34.0	38.0	129.0
<b>Triple clamp (for three cables)</b>						
STF 12-3 Steel Fix	81661841	Hooped clamp	3	6.0 – 12.0	16.0	98.0
STF 14-3 Steel Fix	81661842	Hooped clamp	3	12.0 – 14.0	18.0	98.0
STF 16-3 Steel Fix	81661843	Hooped clamp	3	14.0 – 16.0	20.0	105.0
STF 18-3 Steel Fix	81661844	Hooped clamp	3	16.0 – 18.0	22.0	111.0
STF 20-3 Steel Fix	81661845	Hooped clamp	3	18.0 – 20.0	24.0	118.0
STF 22-3 Steel Fix	81661846	Hooped clamp	3	20.0 – 22.0	26.0	130.0

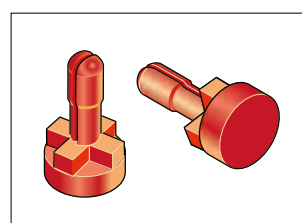
## MP 52/62/72 LOCK BUTTON



Lock button



Lock button



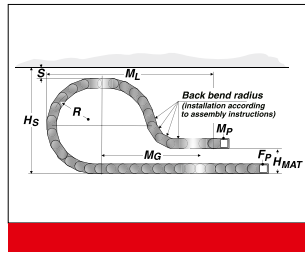
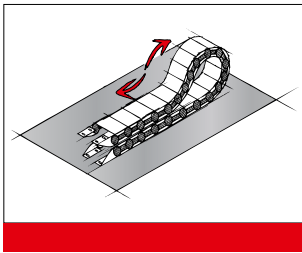
Lock button

To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

“laying on the side (turned 90°) without support”.

Type	Order No.
MP52/62/72 lock button	0520000080

**MP 72 LOWERED FIXING POINT**



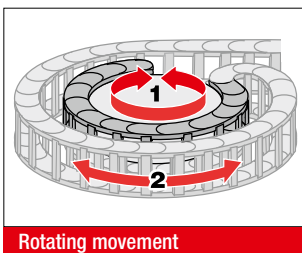
It is sometimes necessary to lower the height of the moving attachment point.

In such cases, modifications to the chain layout should be noted (e.g. extension of chain).

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H <sub>MA</sub> ) mm	Safety margin (S) mm	Installation height incl. safety (H <sub>s</sub> ) mm	Projection (M <sub>1</sub> ) mm	Additional links qty.	of which additional back chain links qty.
200.0	240.0	60.0	580.0	850.0	9	2
250.0	260.0	60.0	680.0	1010.0	12	3
300.0	290.0	60.0	780.0	1150.0	13	3
400.0	350.0	60.0	980.0	1360.0	16	3
500.0	400.0	60.0	1180.0	1620.0	20	3

**MP 72 REARWARD RADII**



Rotating movement

Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 72 (RÜ300/R300) left	072000030060	300.0	300.0
SR 72 (RÜ300/R300) right	072000030062	300.0	300.0

**GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)**



VAW steel galvanised / stainless steel

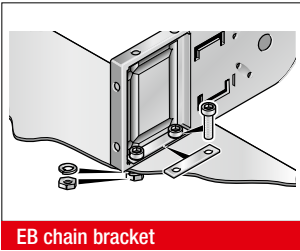


VAW aluminium

A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

The variable guide channel ensures that the energy chain is supported and guided securely.

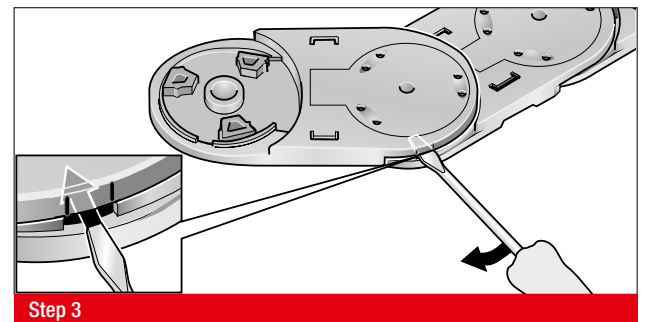
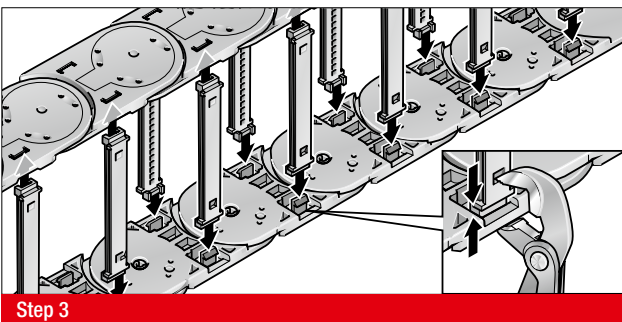
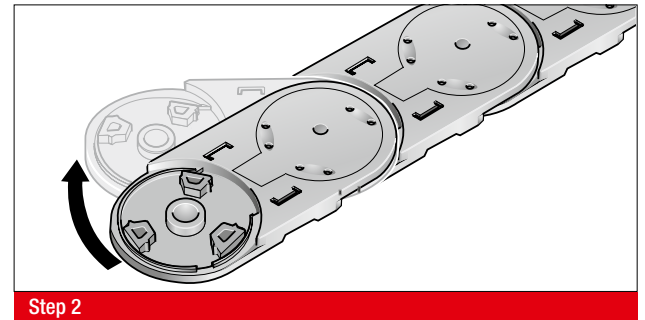
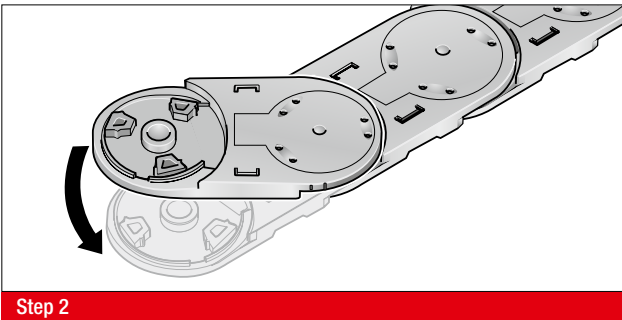
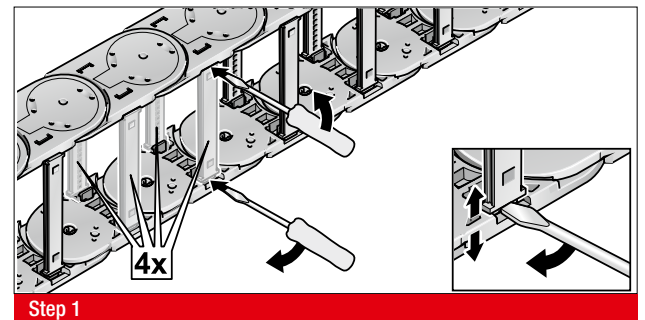
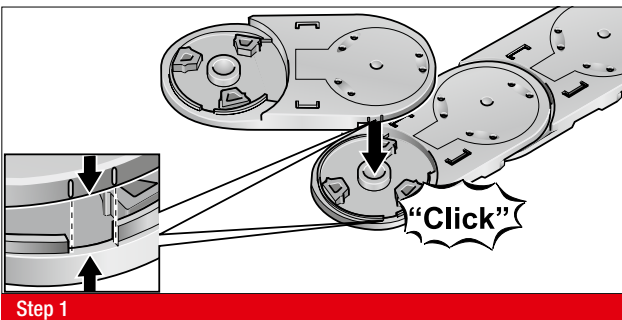
**ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET EB**



The flexible chain bracket is delivered with insert panels to prevent cold flow by the plastic.

**ASSEMBLY**

**DISASSEMBLY**

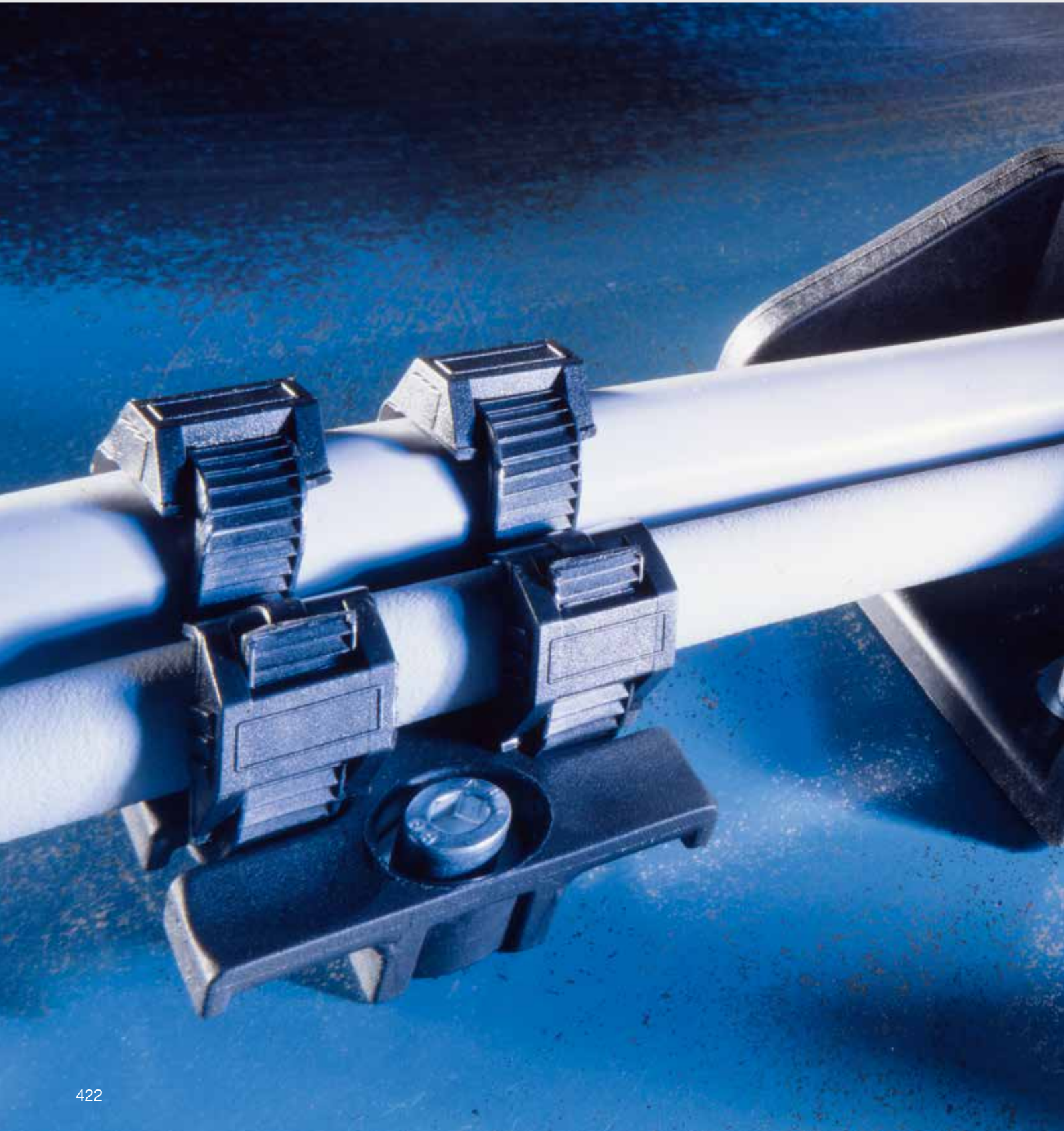




## Strain relief systems



## Introduction





**For every system:**

**The right strain relief**

Cables and conduits that are to be routed in a cable drag chain should always be secured using a strain relief mechanism.

The right strain relief mechanism has a positive effect on the durability of the cables and conduits.

**ZL (strain relief plate)**

This strain relief mechanism offers a safe and cost-effective system using cable ties. The insertable bushing (ELB) stops the cold extrusion characteristic of plastic from affecting the secure fixing of the plate. The spacer sleeve (DH) enables a double-deck mounting option.

**RS-ZL (crossbar strain relief plate)**

The crossbar strain relief plate is snapped-in to the cable drag chain's chain brackets. Two RS-ZL units can be mounted on each of the two chain ends (on the inside and the outside bend). The cables are secured using cable ties.

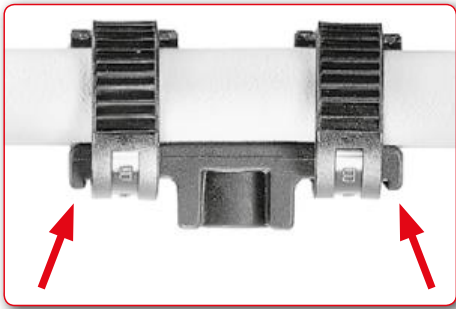
**Steel Fix bow clamp**

A C-rail (slot width 11 mm), integrated into the chain bracket, serves to secure the Steel Fix bow clamps. The bow clamps can be used for strain relief of one, two or three cables arranged on top of each other. In the standard design, the housing body is protected against corrosion by cathodic dip painting. A stainless steel model is also available.

*Strain relief plate (ZL) mounted in a cable drag chain's chain bracket.*

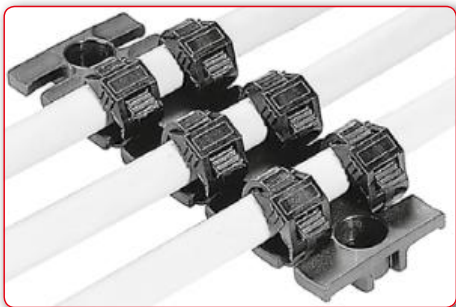


## Benefits



### Secure hold

The undercut on the underside of the plate prevents the cable tie from slipping off – even with very large cable diameters.



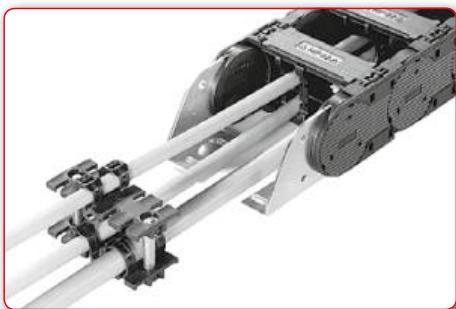
### Longer life

Each cable is secured by two power cable ties on each end. This spreads the pressure on the cable and thereby minimizes the risk of damage to the cable core.



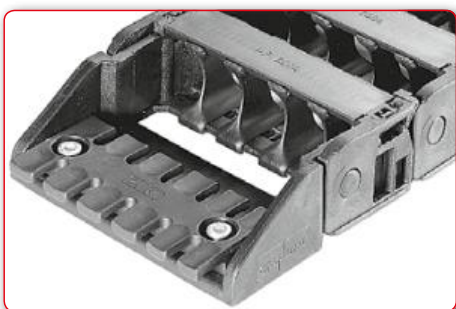
### Wide support face on the individual plate tongues

The cables are optimally secured by the wide supporting surfaces of the individual strain relief tongues. The wide power cable ties help to facilitate strain relief which is quick and simple but gentle on the cables.



### Two-tier assembly

The DH spacer sleeves allow mounting one above the other.



### Compatible fixing holes

The dimensions of the holes on the plates system match those on the chain brackets.

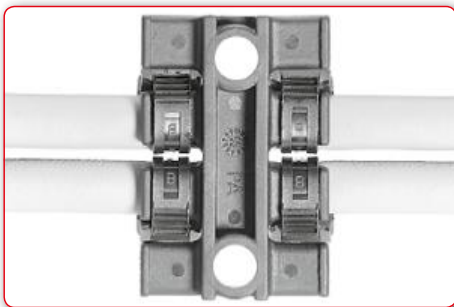
Please note the dimension of the holes on the strain relief plate when using strain relief in the chain bracket.





**Durable fastening with metal bushing.**

The metal bushings inhibit cold flow properties. Metal is screwed onto metal. The screws are prevented from working loose. (Please order separately.)



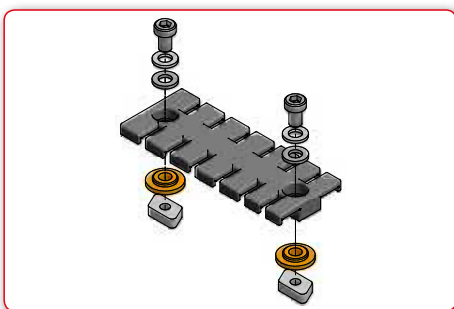
**Easy assembly**

Even if two cables are immediately next to each other, it is possible to secure them with two power cable ties.



**Different cable diameters**

The flexible use of power cable ties provides strain relief which is quick and simple but very gentle on the cables, even for cables of very different diameters with extremely high packing density.



**Single or as a complete set**

Our strain relief plates are available singly or in a set, e.g. for mounting on a C-rail:

A strain relief plate, complete with cylinder head bolt, plain and serrated washer, insert bushings and T-slot nut.



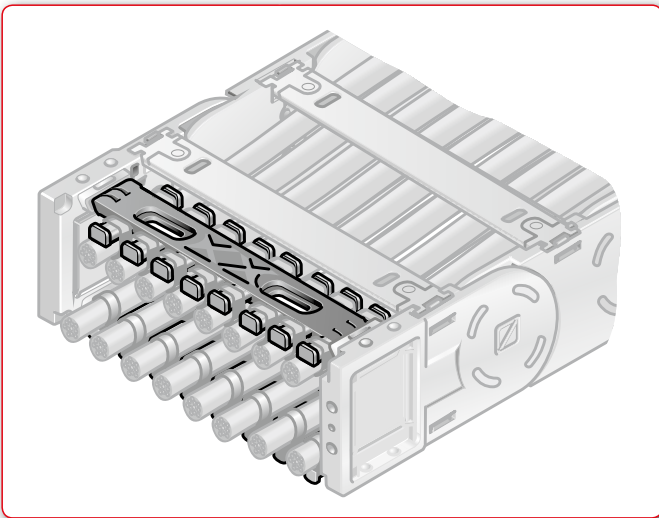
**Steel Fix bow clamps**

- for C-rails with a groove width of 11 mm
- for one, two or three cables on top of each other
- Corrosion protection via cathodic dip painting (CDP)
- Trough elements with low-wear cable design
- Stainless steel design available on request

## Selection criteria / engineering notes

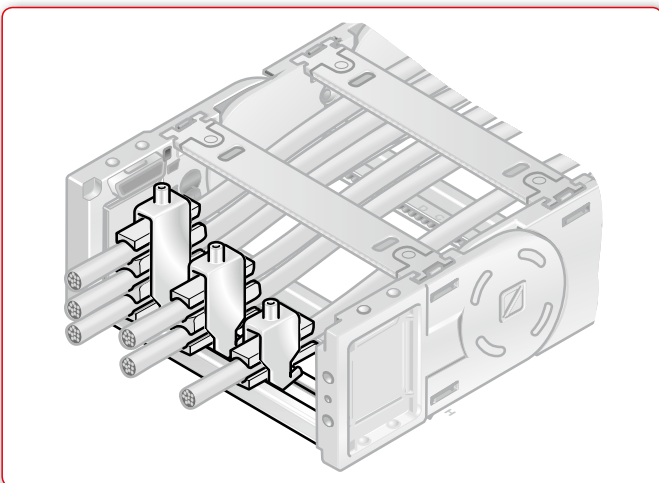
### Where is the strain relief made?

For cable drag chains with standard inside widths of up to 243 mm, crossbar strain relief plates (RS-ZL) are the ideal solution for relieving power cabling and media conduits from strain in a space-saving, secure way. They are supplied in the same widths as the crossbars for the respective chain type.



They are secured in much the same way as the crossbars themselves, by snapping them into pre-cut recesses in the chain brackets. This enables two strain relief plates to be integrated into the cable drag chain per cable end, both for the inside bend and the outside bend.

As an alternative, the same recesses that accept a crossbar strain relief plate can also be used for the fixed integration of a C-rail. This enables the



provision of rapid and reliable strain relief even for individual chain inside widths that differ from the grid spacings.

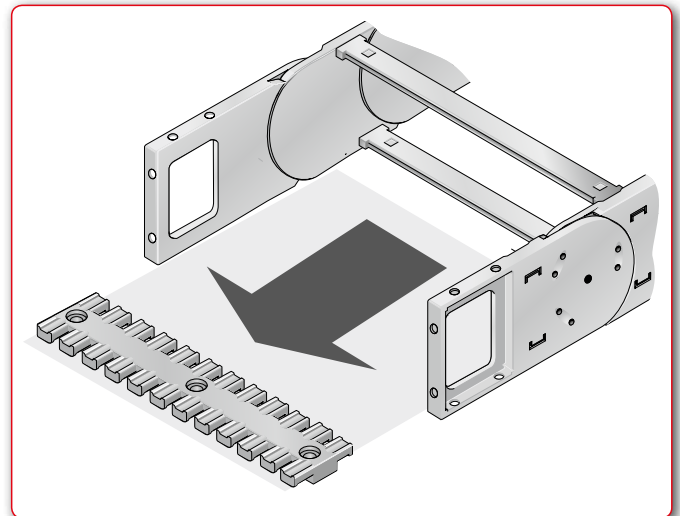
We offer two separate strain relief systems for this specific application:

The first is to use our Steel Fix bow clamps, which accept up to three power cables on top of one another per fixing element. The second option is ZL-format strain relief plates, which match crossbar strain relief plates in form and function.

The options described above assume that the distance from the last movable point of the cable drag chain to the strain relief mechanism is sufficient for all of the installed power cabling/media conduits (depends on the minimum bending radius).

If this is not the case, then you will need to use one of the options as described below:

### 1. Reposition strain relief in front of chain



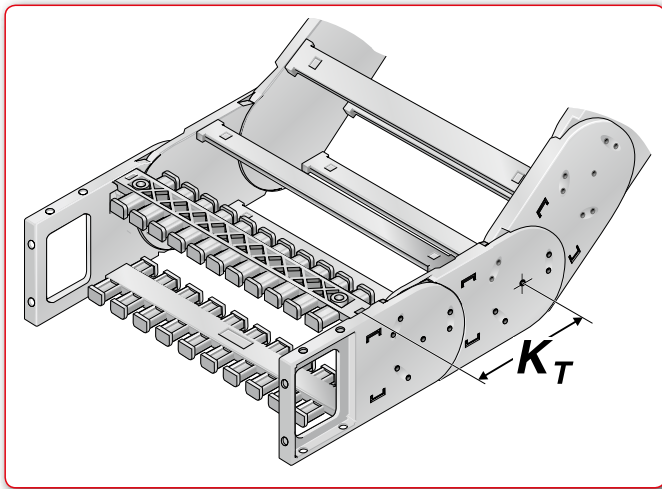
To increase the distance from the strain relief to the first movable point, the strain relief can be moved to a position outside the chain bracket. To do so, you can utilise our Steel Fix bow clamps and ZL-C strain relief plates, which are mounted on C-rails. The ZL strain relief plates can also be secured to a load-bearing substrate directly, without using C-rails.

A further positive effect of this option is that the chain bracket itself remains free of additional pulling forces.

## Design / structure

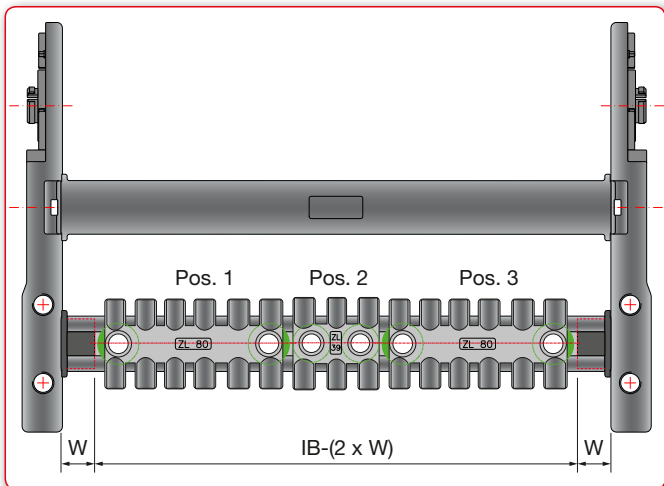
### 2. Lengthening the chain

If the installation space available permits and the circular arc distance may be increased still further, then the installation of additional chain links can also be used to achieve the necessary distance between the strain relief and the first movable point of the chain.



**Note on installation width when using a permanently installed C-rail.**

To secure a C-rail within the chain bracket (order no.: 81661610), one fixing clip is inserted into the C-rail on both sides. This slightly reduces the installation space available for strain relief plates or for bow clamps. The space required for the mounting clip depends on the chain type deployed and is in the range 4–15 mm. Please contact our layout experts.



### Solutions for inside widths over 243 mm

For our *HeavyLine* and *PowerLine* chains, the RS-ZL strain relief plate offers standard solutions up to an inside width of 243 mm. For larger inside widths, multiple strain relief plates are combined together and mounted on a C-rail (order no.: 81661610). We recommend the following solutions:

Nominal	Inside width in mm		Recommended ZL combinations			
	-2xW	Effective	Item 1	Item 2	Item 3	Item 4
246	30	216	ZL 87	ZL 39	ZL 87	
252	30	222	ZL 39	ZL 121	ZL 60	
256	30	226	ZL 87	ZL 140		
258	30	228	ZL 87	ZL 140		
268	30	238	ZL 60	ZL 87	ZL 87	
293	30	263	ZL 87	ZL 87	ZL 87	
296	30	266	ZL 87	ZL 180		
318	30	288	ZL 60	ZL 87	ZL 140	
343	30	313	ZL 87	ZL 103	ZL 121	
346	30	316	ZL 87	ZL 87	ZL 140	
350	30	320	ZL 180	ZL 140		
358	30	328	ZL 121	ZL 103	ZL 103	
368	30	338	ZL 80	ZL 80	ZL 180	
371	30	341	ZL 140	ZL 121	ZL 39	ZL 39
396	30	366	ZL 121	ZL 103	ZL 140	
418	30	388	ZL 87	ZL 121	ZL 180	
421	30	391	ZL 140	ZL 121	ZL 87	ZL 39
446	30	416	ZL 87	ZL 121	ZL 121	ZL 87
468	30	438	ZL 87	ZL 87	ZL 87	ZL 180
496	30	466	ZL 121	ZL 121	ZL 103	ZL 121
518	30	488	ZL 87	ZL 103	ZL 121	ZL 180
546	30	516	ZL 39	ZL 121	ZL 180	ZL 180

### How is the strain relief applied?

The strain relief itself should be fitted with two power cable ties on each side of the cable and secured approx. 20 to 30 x cable diameters away from the last moving chain link.

The strain relief is suitable for cables up to approx. 40 mm in diameter.

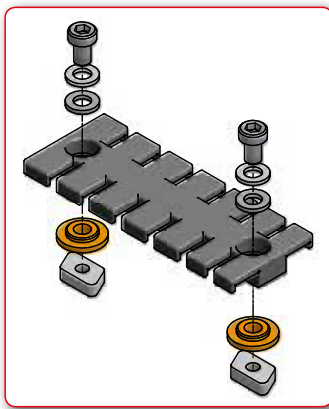
All electric cables must be relieved of strain at both the moving and fixed end. For longer travel distances (and gliding applications), strain relief on one side at the moving end is recommended. Care must be taken to ensure pressure on the power cabling is applied broadly across its outer jacket.

## Strain relief plate, type ZL-C set and ZL

The ZL-C set and ZL type strain relief plates are used for strain relief when laying various different cables on machines and installations. When used in cable drag chains, the cables are secured to the strain relief plates on both sides of the chain with type KB 28 power cable ties (order no.: 87661258).

The undercut on the strain relief plates prevent the power cable ties from slipping off, even when the routed cable diameter is itself larger than the plate tongue. Every cable is clamped twice at each end with cable ties.

The actual strain relief is accomplished using cable ties. We recommend using our own type KB power cable ties. These are equipped with a special locking mechanism and are especially suitable for heavy-duty applications. Wide, highly flexible power cable ties increase the surface pressure and ensure longer service life.



### ZL-C set

In addition to a type ZL strain relief plate, the ZL-C sets contain a complete set of installation materials, such as washers, serrated and spacer washers, plus T-slot nuts for installation in the C-rail.

Type	ZL-C 39 set	Type	ZL 39
Order no.	87702810	Order no.	87701014
A = 38.5 mm	X = 9.0 mm		
B = 40.0 mm	Y = 9.0 mm		
C = 19.5 mm			
D = 12.0 mm	G = 10.0 mm		
E = 9.0 mm	H = 3.1 mm		
F = 14 mm			

Type	ZL-C 60 set	Type	ZL 60
Order no.	87702812	Order no.	87701016
A = 59.5 mm	X = 9.0 mm		
B = 40.0 mm	Y = 7.0 mm		
C = 43.5 mm	Z = 61.5 mm		
D = 12.0 mm	G = 10.0 mm		
E = 9.0 mm	H = 3.1 mm		
F = 14 mm			

Type	ZL-C 80 set	Type	ZL 80
Order no.	87702814	Order no.	87701015
A = 79.5 mm	X = 5.7 mm		
B = 40.0 mm	Y = 5.7 mm		
C = 68.0 mm	Z = 86.0 mm		
D = 12.0 mm	G = 10.0 mm		
E = 9.0 mm	H = 3.1 mm		
F = 14 mm			

Type	ZL-C 87 set	Type	ZL 87
Order no.	87702816	Order no.	87701018
A = 86.5 mm	X = 9.0 mm		
B = 40.0 mm	Y = 9.5 mm		
C = 68.5 mm			
D = 12.0 mm	G = 10.0 mm		
E = 9.0 mm	H = 3.1 mm		
F = 14 mm			

Type	ZL-C 103 set	Type	ZL 103
Order no.	87702818	Order no.	87701020
A = 102.5 mm	X = 9.0 mm	D = 12.0 mm	G = 10.0 mm
B = 40.0 mm	Y = 9.5 mm	E = 9.0 mm	H = 3.1 mm
C = 19.5 mm		F = 14 mm	

Legend for dimensions	Cross-section
Z = Installation width = C+X+Y	
A = Length	
B = Width	
C = Hole spacing	
X = Hole spacing to edge	
Y = Hole spacing to edge	
Z = Installation width	
D = Inside diameter (above)	
E = Inside diameter (below)	
F = Outside diameter (below)	
G = Assembly height	
H = Material thickness	

## Strain relief plate, type ZL / two-tier strain relief plate

Type	ZL-C 121 set	Type	ZL 121
Order no.	87702820	Order no.	87701022
A = 121.0 mm	X = 9.0 mm	D = 12.0 mm	G = 10.0 mm
B = 40.0 mm	Y = 9.5 mm	E = 9.0 mm	H = 3.1 mm
C = 102.5 mm		F = 14 mm	

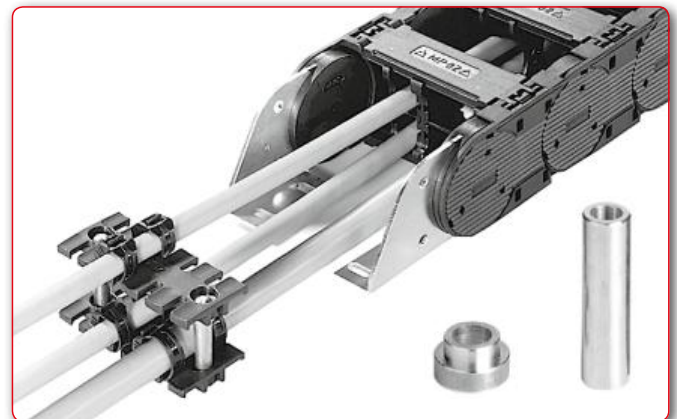
Type	ZL-C 140 set	Type	ZL 140
Order no.	87702822	Order no.	87701024
A = 139.5 mm	X = 9.0 mm	D = 12.0 mm	G = 10.0 mm
B = 40.0 mm	Y = 9.5 mm	E = 9.0 mm	H = 3.1 mm
C = 121.5 mm		F = 14 mm	

Type	ZL-Cset 180/6	Type	ZL 180/6
Order no.	87702824	Order no.	87701026
A = 177.9 mm	X = 9.0-11.7	D = 12.0 mm	G = 11.5 mm
B = 42.0 mm	Y = 9.0-11.7	E = 9.0 mm	H = 3.2 mm
C = 154.5-160 mm		F = 16 mm	

Type	Not a set	Type	ZL 180/8
Order no.	--	Order no.	87701027
A = 177.9 mm	X = 9.0-11.7	D = 13.5 mm	G = 11.5 mm
B = 42.0 mm	Y = 9.0-11.7	E = 11.0 mm	H = 3.2 mm
C = 154.5-160 mm		F = 16 mm	

### Two-tier installation

When deploying a shelving system and to achieve highed packing densities, you can also installtwo strain relief plates above each other. The necessary distance between the levels is ensured by using spacer sleeves type DH.



Type	ELB/6
Order no.	87701050
A = 6.5 / B = 12.0 / C = 6.2	

Type	ELB/8
Order no.	87701060
A = 6.5 / B = 13.4 / C = 8.2	

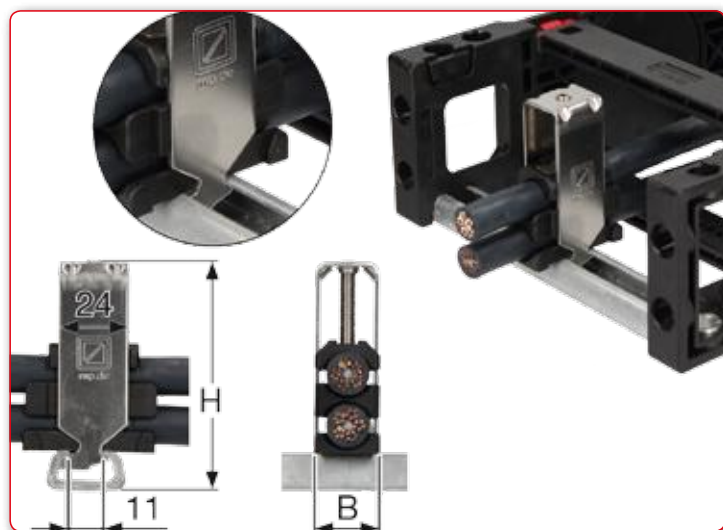
*Dimensions in mm*

Type	DH 32/6
Order no.	87701052
A = 32.0 / B = 12.0 / C = 6.3	

Type	DH 32/8
Order no.	87701062
A = 32.0 / B = 13.0 / C = 8.3	

*Dimensions in mm*

## Steel Fix bow clamp



A permanently integrated C-rail (dip galvanised, order no. 81661610) for accommodating the Steel Fix bow clamps in the chain brackets.

The bow clamps can take up to 3 cables and are suitable for C-rails with a slot width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. Adjusted to all chain inside widths up to 200 mm in size. May be assembled on the inside and outside bends at both chain endings.

A stainless steel model is also available.

The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Type	Order no.	Cable Ø	Width (B)	Height (H)*	Pitch (T)
<b>Single bow clamp (for 1 cable)</b>					
STF 12-1 Steel Fix	81661801	6 – 12	16	55	24
STF 14-1 Steel Fix	81661802	12 – 14	18	52	24
STF 16-1 Steel Fix	81661803	14 – 16	20	54	24
STF 18-1 Steel Fix	81661804	16 – 18	22	56	24
STF 20-1 Steel Fix	81661805	18 – 20	24	59	24
STF 22-1 Steel Fix	81661806	20 – 22	26	61	24
STF 26-1 Steel Fix	81661807	22 – 26	30	70	24
STF 30-1 Steel Fix	81661808	26 – 30	34	74	24
STF 34-1 Steel Fix	81661809	30 – 34	38	78	24
STF 38-1 Steel Fix	81661810	34 – 38	42	82	24
STF 42-1 Steel Fix	81661811	38 – 42	46	91	24
<b>Double bow clamp (for 2 cables)</b>					
STF 12-2 Steel Fix	81661821	6 – 12	16	73	24
STF 14-2 Steel Fix	81661822	12 – 14	18	74	24
STF 16-2 Steel Fix	81661823	14 – 16	20	82	24
STF 18-2 Steel Fix	81661824	16 – 18	22	86	24
STF 20-2 Steel Fix	81661825	18 – 20	24	91	24
STF 22-2 Steel Fix	81661826	20 – 22	26	95	24
STF 26-2 Steel Fix	81661827	22 – 26	30	108	24
STF 30-2 Steel Fix	81661828	26 – 30	34	121	24
STF 34-2 Steel Fix	81661829	30 – 34	38	129	24
<b>Triple bow clamp (for 3 cables)</b>					
STF 12-3 Steel Fix	81661841	6 – 12	16	98	24
STF 14-3 Steel Fix	81661842	12 – 14	18	98	24
STF 16-3 Steel Fix	81661843	14 – 16	20	105	24
STF 18-3 Steel Fix	81661844	16 – 18	22	111	24
STF 20-3 Steel Fix	81661845	18 – 20	24	118	24
STF 22-3 Steel Fix	81661846	20 – 22	26	130	24

\* Total height with max. cable diameter, including C-rail



## Appendix





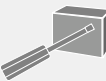












## Protection classes EN 60529

An important element for housings is protection of integrated elements against drilling, foreign particles and water. The various protection properties are divided into IP classes (IP = international protection). The framework conditions that a protection class must guarantee are laid out in DIN 40050 and IEC-EN 60529.

IP protection classes are indicated through a two digit code (IPXX). The first digit indicates protection against contact and foreign particles, the second the water protection factor.

Accordingly the class IP65 is completely protected against contacts, dustproof (1st digit = 6) and is protected against jets of water from a nozzle in all directions (2nd digit = 5).

First index number	Contact protection	Foreign particle protection	Second index number	Brief description	Water protection
0	No protection		0	No protection	
1	Protected against solid foreign objects of 50 mm and larger	The object probe, a sphere of 50 mm in diameter, must not fully penetrate. 	1	Protected against vertical falling drops of water	Drops which fall vertically must not have any harmful effect. 
2	Protected against solid foreign substances of 12.5 mm dia. and above.	The object probe, a sphere of 12.5 mm in diameter, must not fully penetrate. 	2	Protected against diagonally falling (up to 15°) drops of water	Drops which fall vertically must not have any harmful effects if the housing is inclined at an angle of up to 15° at either side of the perpendicular. 
3	Protected against solid foreign substances of 2.5 mm dia. and above.	The object probe of diameter 2.5 mm must not penetrate at all. 	3	Protected against diagonally falling spray (up to 60°)	Water which is sprayed at an angle of up to 60° from either side of the perpendicular must not have any harmful effects. 
4	Protected against solid foreign substances of 1.0 mm dia. and above.	The object probe of diameter 1.0 mm must not penetrate at all. 	4	Protected against spray from all directions	Water splashing against the enclosure from one direction shall have no harmful effect. 
5	Dust-protected	The ingress of dust is not fully prevented; however, it must not penetrate to such an extent that satisfactory operation or safety are impaired. 	5	Protected against jets of water (nozzle)	Water which is sprayed in a jet against the housing from any direction must not have any harmful effects. 
6	Dust-tight	No ingress of dust. 	6	Protected against strong water jets (flooding)	Water projected in powerful jets from any direction against the housing shall have no harmful effects. 
			7	Protected against the effect of temporary submersion in water	Water must not penetrate to an extent that will cause harmful effects, if the housing is temporarily submerged in water, under pressure and under time conditions. 
			8	Protected against the effect of permanent immersion in water	Water must not penetrate to such an extent that it will cause harmful effects if the housing is permanently submerged in water. 
			9k	Protection against highly pressurised water/steam jet cleaning	IP x9K according to DIN 40050 Water jet at 0°, 30°, 60° and 90° Cycle: 30 seconds each Distance: 10 - 15 cm Water volume: 14 - 16 litres per min. Water temperature: 80 °C +/- 5 °C Water pressure: 80-100 bar 



## Description of fire classifications according to UL 94



### Fire classification HB

The material burns slowly in the horizontal combustion test. The rate of combustion must not exceed 3 inch/min. for wall thicknesses of up to 3 mm, and 1.5 inches/min. for wall thicknesses over 3 mm. Any materials exceeding these combustion rate limits are not registered by UL.



### Fire classification V2

In the vertical combustion test, self-extinguishing must occur after an average of 25 seconds (individual values not to exceed 30 seconds). Any dripping material may ignite cotton wool located underneath. However, any afterglow must not exceed 60 seconds.



### Fire classification V1

In the vertical combustion test, self-extinguishing must also occur after an average of 25 seconds (individual values not to exceed 30 seconds). However, any possible dripping material must not ignite the cotton wool. Any afterglow must not exceed 30 seconds.



### Fire classification V0

In the vertical combustion test, self-extinguishing must occur after an average of less than 5 seconds (individual values not to exceed 10 seconds). Any material dropping off must not ignite cotton wool placed underneath and any afterglow must not exceed 30 seconds.

## Description of fire classifications according to DIN 5510



### Combustion class S4

Test procedure: acc. to DIN 54837

Requirements:

- Length of the destroyed area:  $\leq 20$  cm
- No afterburning

Products may also be assigned to combustion class S4 if afterburning occurs within the burnt testing area and the average duration of afterburning does not exceed 10 seconds. If afterburning occurs in the undamaged area

of the test piece, the product must not be assigned to combustion class S4.

Products must not be assigned to combustion class S4 if an afterburning time of more than 120 seconds is observed for a test specimen.

## Material characteristics



### Burning behaviour

The flame-retardant properties of Murrplastik cable drag chains meet various classifications:

Test procedures acc. to VDE 0304 Parts 3/5.70

Classification: IIc

Testing based on "UL 94 – Standard Tests for Flammability of Plastic Materials for Parts in Devices and Appliances"

Classification: 94 HB with a 3.2 and 1.6 mm body thickness

Tested acc. to DIN 4102 "Fire behaviour of building materials and elements"

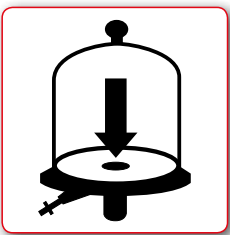
Classification: Materials class B 2

In case of more stringent applications please contact us.



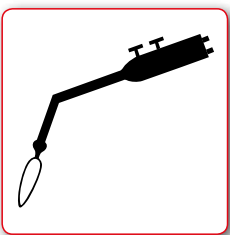
### Radiation resistance

Murrplastik cable drag chains are very resistant to high-energy radiation. In the range of  $8 \times 10^6$  Gy gamma radiation, the mechanical properties change very little.



### Vacuum

Murrplastik plastic cable drag chains may be safely used in a vacuum. Gas will only be given off in very low amounts.



### Welding flashes and hot sparks

For cables on robotic welding machines, Murrplastik cable drag chains offer the best line protection possible. This has been demonstrated both in laboratory testing and numerous references. The material may appear optically impaired but in no way will its function be reduced. Murrplastik cable drag chains have successfully passed tests involving medium-sized hot metal swarf at 500 °C.



### Use in EX explosion proof areas

The Murrplastik cable drag chain may be used in explosion proof areas if manufactured to specification with a special material and if the standard regulations are observed. All Murrplastik cable drag chains are certified in accordance with ATEX European Directive 94/9 EC and can therefore be used in the relevant areas without hesitation.



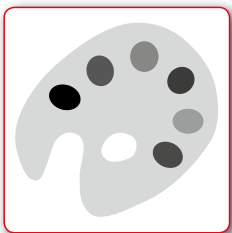
### Weatherproof

Murrplastik cable drag chains are suitable for outdoor applications. Experience has shown that the mechanical properties are not impaired.



### Use in clean rooms

Murrplastik uses a special material. This reduces even further the very low wear of a normal chain. In many applications in which difficult special conditions apply, the cable drag chain can still be used. An intensive test program can be set up to verify its suitability in self-supporting and gliding applications.



### Special colours

Cable drag chains can be supplied in colours other than black on request. Several colours can also be combined where colour-psychological effects are desired. Minimum order quantities and special prices apply.



### Use in cold storage

A special material is used for cold storage resistant cable drag chains.

## Parts made of plastic / standard material



Murrplastik cable drag chains have been developed for use in extreme conditions. The standard material is glass fibre reinforced plastic in standard black.

### Properties

The PA (polyamide) we have developed meets stringent requirements for high mechanical capability regarding strain, pressure, torsion and free running. For specific, problematic scenarios (e.g. clean-room applications, specific climatic requirements, deployment in hygienically demanding environments), we draw on our long-standing experience to offer modified materials and can hence offer a solution to match almost any scenario.

The cable drag chain plastic is free of halogens, silicones and hard metals such as lead and cadmium. No formaldehydes are used in manufacturing.

Mechanical properties		Test	Test value	Unit
Tensile strength (DIN 53 455)		dry	190	N/mm <sup>2</sup>
		humidity	120	N/mm <sup>2</sup>
Crack resistance (DIN 53 455)		dry	4	%
		humidity	6	%
Elasticity module	Tensile test	dry	7000	N/mm <sup>2</sup>
		humidity	10000	N/mm <sup>2</sup>
Impact resistance (DIN 53 455)	23 °C	dry	60	kJ/m <sup>2</sup>
	23 °C	humidity	75	kJ/m <sup>2</sup>
	-40 °C	dry	50	kJ/m <sup>2</sup>
Creep module E	23 ... 50 °C	humidity	5400	N/mm <sup>2</sup>
	120 °C	dry	2100	N/mm <sup>2</sup>
Heat conductivity			0.3	W/k x m
Static electricity value (DIN 53 455)		dry	3.8	MHz
		humidity	6.8	MHz
Special volume resistance		dry	10 <sup>15</sup>	Ω x cm
		humidity	10 <sup>12</sup>	Ω x cm
Impact resistance	Thickness 0.6 ... 0.8 mm		80	kV/mm
Surface resistance ROA		dry	10 <sup>12</sup>	Ω
		humidity	10 <sup>10</sup>	Ω
Moisture absorption	23 ... 25 °C		1.8±0.2	%
<b>Temperature limits</b>				
permissible temperature -30 ... 100 °C				
5000 hours up to 135 °C				
several hours up to 170 °C				
<b>Other properties</b>				
Density	dry		1.4 g/cm <sup>3</sup>	
Coefficient of sliding friction	unlubricated		0.3–0.45	
Combustion profile	DIN VDE 0304 Part 3			
Fire classification acc. to UL	HB			

## Parts made of metal / standard material

The advantage of using light metal for certain parts lies in the combination of its mechanical strength, resistance to chemical attack and its physical properties.



Murrplastik use a special aluminium alloy with the following properties. It stands out due to the following characteristics:

- Light, stable, hard and smooth
- Visually appealing
- Very low friction and wear profile for this light metal against cabling materials
- No tendency to become brittle at low temperatures
- Brine-resistant

Aluminium is used by Murrplastik for the following products: Cross member profiles and profiles for variable guide channel system VAW.

## Directives: What's meant by these abbreviations?

The use of specific materials in vehicles, as in electric and electronic devices, is restricted and/or forbidden by a set of European directives. Various associations and fabricators have published their own lists of materials considered undesirable.

**RoHS-Directive 2002/95/EG** (RoHS = Restriction of the use of certain Hazardous Substances in electrical and electronic equipment)

The guidelines limiting specific hazardous materials in electric and electronic devices categorised the following materials and their compounds as dangerous: lead, mercury, cadmium, chrome 6, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE).

**VDA Lists** (VDA = Verband der Automobilindustrie in Deutschland, German Automotive Industry Association)

Alongside the legal stipulations, there are also a variety of material and declaration lists prescribed by various associations and fabricators. They contain materials and material groups that are undesirable or forbidden from the corresponding process-

ing branch for a variety of reasons. Several of the most well-known lists are shown in the following, their content drawn from other sources and in some cases expanded: VDA list 232-101 for notifiable materials; Bosch Standard N 2580. The VDA list is part of the ILRS list ("List for materials in automobile manufacture requiring declaration--substances in components and raw materials") that is used in the IMDS (International Material Data System).

**ELV Directive 2000/53/EC**  
(ELV = End-of-Life Vehicles)

The heavy metals listed in the ordinance (ELV) are a portion of those named in the RoHS guidelines, including lead, mercury, cadmium, chrome 6.

**WEEE Directive 2002/96/EC** (WEEE = Waste from Electric and Electronic Equipment)

Goal of the guidelines is the avoidance of waste from electric and electronic devices, as well as their recovery and recycling. They require selective handling of used devices with specific critical materials, as named in the guideline appendices.

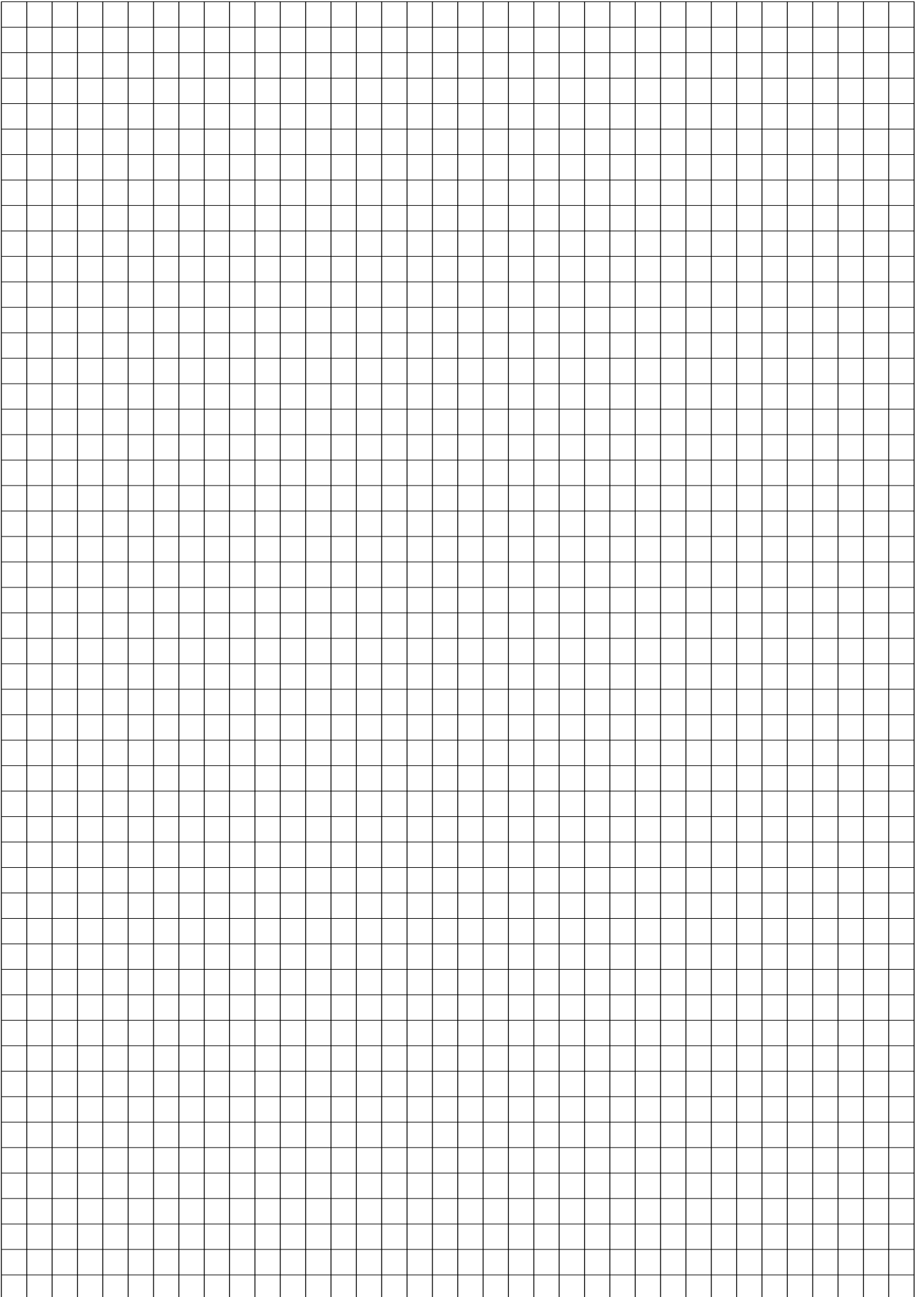
## Chemical resistance of plastics

Reagent	Concentration %	At + °C	Polyethylene PE	Polyamide PA6	Polyamide PA 12	Polypropylene PP	Polyurethane PU
Acetaldehyde	100	20	+	40% o	+		+
Acetic acid	10	20	+	o	o	+	o
Acetone	100	20	+	+	+	+	-
Allyl alcohol	96	20		30% o	o	+	-
Alum, aqueous	diluted	40			+	+	
Aluminium chloride, aqueous	diluted	40	+		+	+	+
Aluminium sulphate, aqueous	diluted	40	+			+	+
Ammonia, aqueous	any	20	+	20% +		+	o
Ammonium chloride, aqueous	any	60	+		o	+	+
Ammonium nitrate, aqueous	diluted	40	+			+	+
Ammonium sulphate, aqueous	diluted	40	+			+	+
Aniline chlorohydrate, aqueous	saturated	20					
Aniline, pure	100	20	+	o	o	+	-
Benzaldehyde, aqueous	0.3	20	-	pure o	o	+	
Benzene	100	20	-	+	+	o	+
Benzoic acid	any	40	+		o	+	+
Benzol	100	20	-	+	+	o	-
Bleaching lye	12.5 Cl	20		-	o	o	
Boracic acid, aqueous	diluted	40	+	o	+	+	-
Borax, aqueous	diluted	40		o	+	+	
Boron	50	40		o			
Bromine, liquid	100	20	-	-	o	-	-
Butane diol	10	20		pure +		+	o
Butanol	100	20				+	+
Butyl acetate	100	20				o	-
Butyl alcohol	100	20	-			+	o
Calcium chloride, aqueous	any	40	+	+	o	+	+
Calcium nitrate, aqueous	50	40	+			+	+
Carbon bisulphide	100	20	-	o	+	+	+
Carbon dioxide	100	60	+			+	+
Carbon oxide	100	60	+			+	+
Carbon tetrachloride	100	20		+	o	o	+
Caustic potash solution	50	20		50% +		+	o
Chlorine	any	20	-	-	-	-	-
Chromic alum, aqueous	diluted	40				+	
Citric acid	10	40	+			+	o
Copper chloride, aqueous	saturated	20	+			+	+
Copper sulphate, aqueous	any	40	+			+	+
Cresol, aqueous	90	20	-	pure -	-	+	-
Crystallisable acetic acid	100	20			o	+	
Cyclohexanol	100	20		+		+	-
Ethyl acrylate/acrylic resin lacquer	100	20	-	30% -	-		
Ethyl alcohol, aqueous	10	20		o		+	+
Ethyl ether	100	20		30% +		o	-
Ethylene chloride	100	20				o	-
Ethylene oxide, liquid	100	20					
Exhaust gases containing carbon dioxide	any	60				+	+
Exhaust gases containing carbon oxide	any	60				+	+
Fluorine	50	40		-			
Formaldehyde, aqueous	diluted	40	+	pure +	o	+	o
Formic acid, aqueous	100	20		10% o	-	+	-

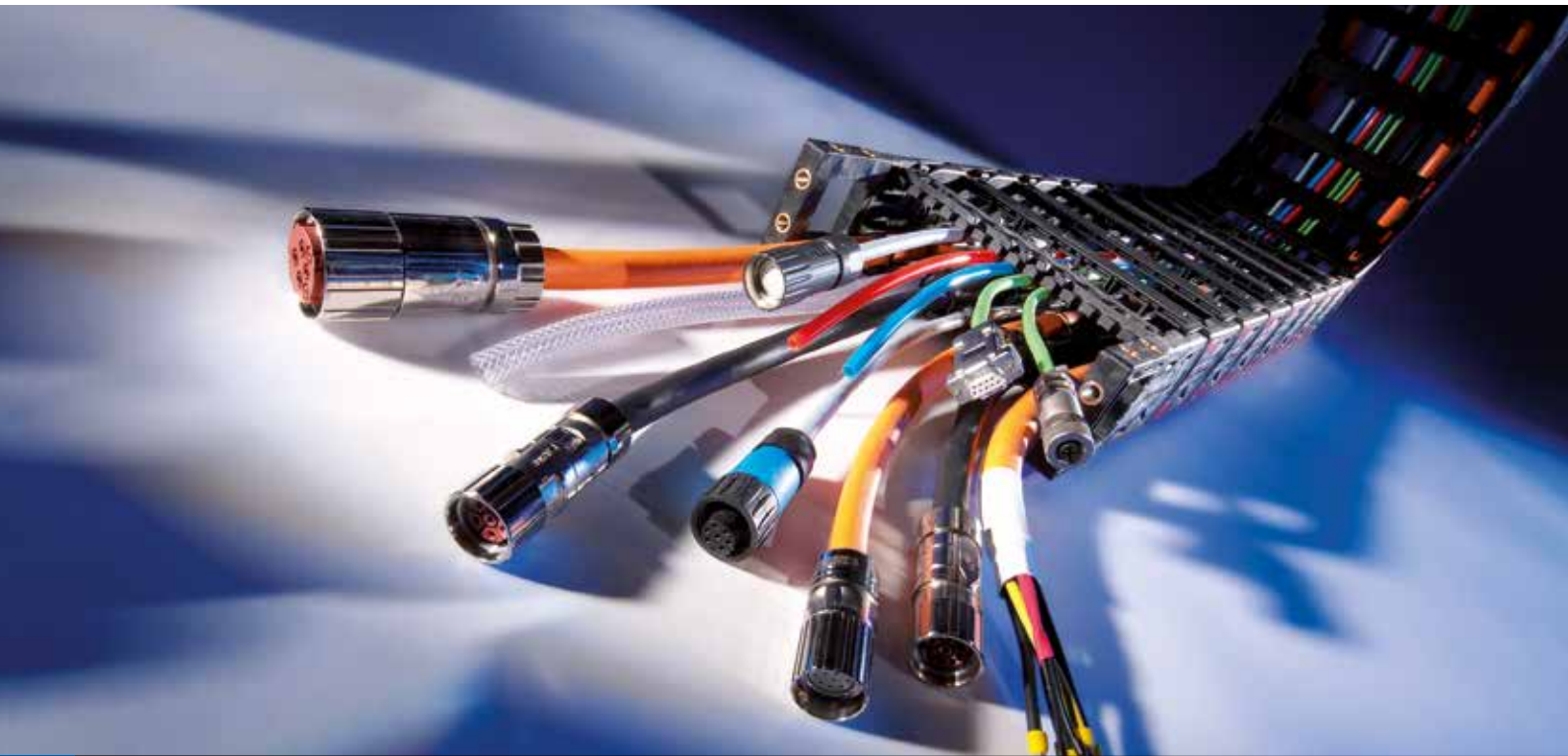
The information provided above enables an initial choice to be made. However, it is not intended as a guarantee of particular properties of the products or their suitability for a particular application. It does not release the buyer from the duty of carrying out suitability checks.

Reagent	Concentration %	At + °C	Polyethylene PE	Polyamide PA6	Polyamide PA 12	Polypropylene PP	Polyurethane PU
Glucose, aqueous	any	20	+			+	+
Hydrobromic acid, aqueous	10	40	+	-		+	-
Hydrochloric acid	10	30-40					
Hydrochloric acid, aqueous	10	20	+	20% -	o	+	-
Hydrogen	100	60		+			+
Hydrosilicofluoric acid	30	20	-				
Hydroxylamine sulphate, aqueous	12	35					+
Iron chloride, aqueous	10	40	+	o	+	+	+
Lactic acid, aqueous	50	20	o	pure +	o	+	o
Magnesium carbonate	any	20					+
Magnesium chloride, aqueous	any	20	+	10% o		+	+
Mercury		60	+	+	+	+	+
Methyl alcohol	100	20	+			+	o
Methyl chloride	100	20					
Methylene chloride	100	20		o	o	-	-
Nickel chloride, aqueous	any	20		10% o		+	+
Nickel sulphate, aqueous	any	20	+	10% o		+	+
Nitric acid, aqueous	6	20	+	50% -	-	+	-
Nitroglycerine	diluted	20					
Oils and greases		20	o	+	+	+	+
Oleic acid	100	20		+		+	o
Oxalic acid	saturated	20	+	10% o		+	o
Ozone	100	20	o	o	+	o	o
Petroleum							+
Phosgene, liquid	100	20					-
Phosphoric acid, aqueous	diluted	20	+	10% -	o	+	o
Phosphorus pentoxide	100	20				+	
Photographic developer		40				+	
Potash, aqueous	saturated	40			+		+
Potassium bromide, aqueous	any	60	+	10% +		+	o
Potassium chloride, aqueous	any	20	+	10% +		+	+
Potassium dichromate, aqueous	40	20				+	+
Potassium ferrocyanide, aqueous	any	60	o			+	
Potassium nitrate	any	20	+	10% +	+	+	+
Potassium permanganate, aqueous	6	20	+		o	+	-
Potassium persulphate, aqueous	diluted	40	-		+	+	+
Salt solution	any	40			+	+	+
Seawater		40	+	+	o	+	+
Soap solution, aqueous	concentrated	20		o		+	+
Soda lye, aqueous	10	20	+	+	+	+	o
Sodium chlorate, aqueous	any	20	+	10% o		+	
Sodium sulphide, aqueous	diluted	40				+	
Sulphuric acid	10	20	+	40-80% -	o	+	+
Tin chloride, aqueous	diluted	40			+	+	+
Toluene	100	20	-	+	+	o	+
Trichloroethylene	100	20	-	o		o	-
Urea, aqueous	10	40		20% +		+	+
Vinyl acetate	100	20					-
Xylene	100	20		+	+	o	+
Zinc chloride, aqueous	diluted	60	+	10% o	o	+	+
Zinc sulphate, aqueous	diluted	60	+			+	+

**+ means: resistant**  
**o means: limited resistance**  
**- means: not resistant**



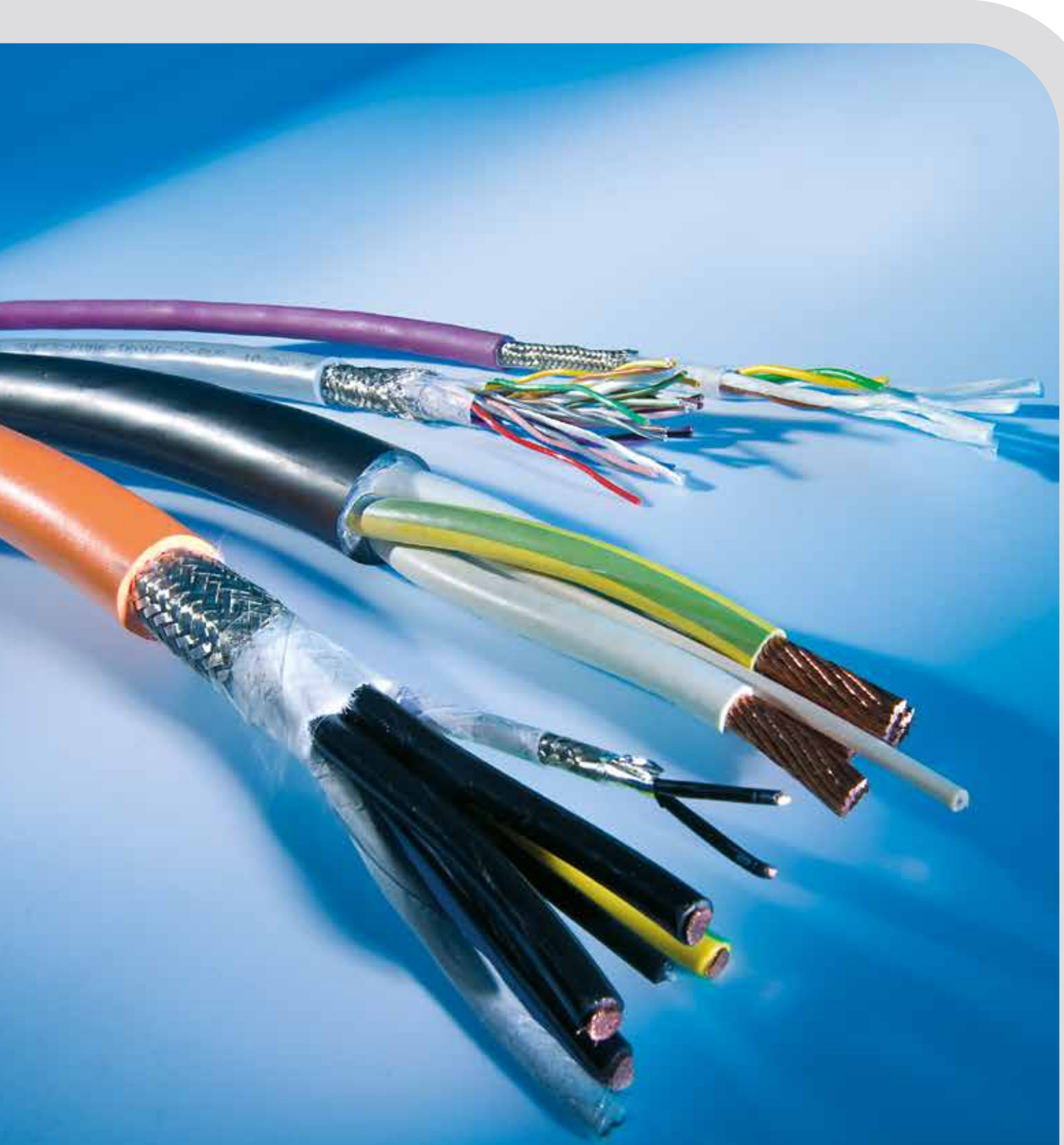




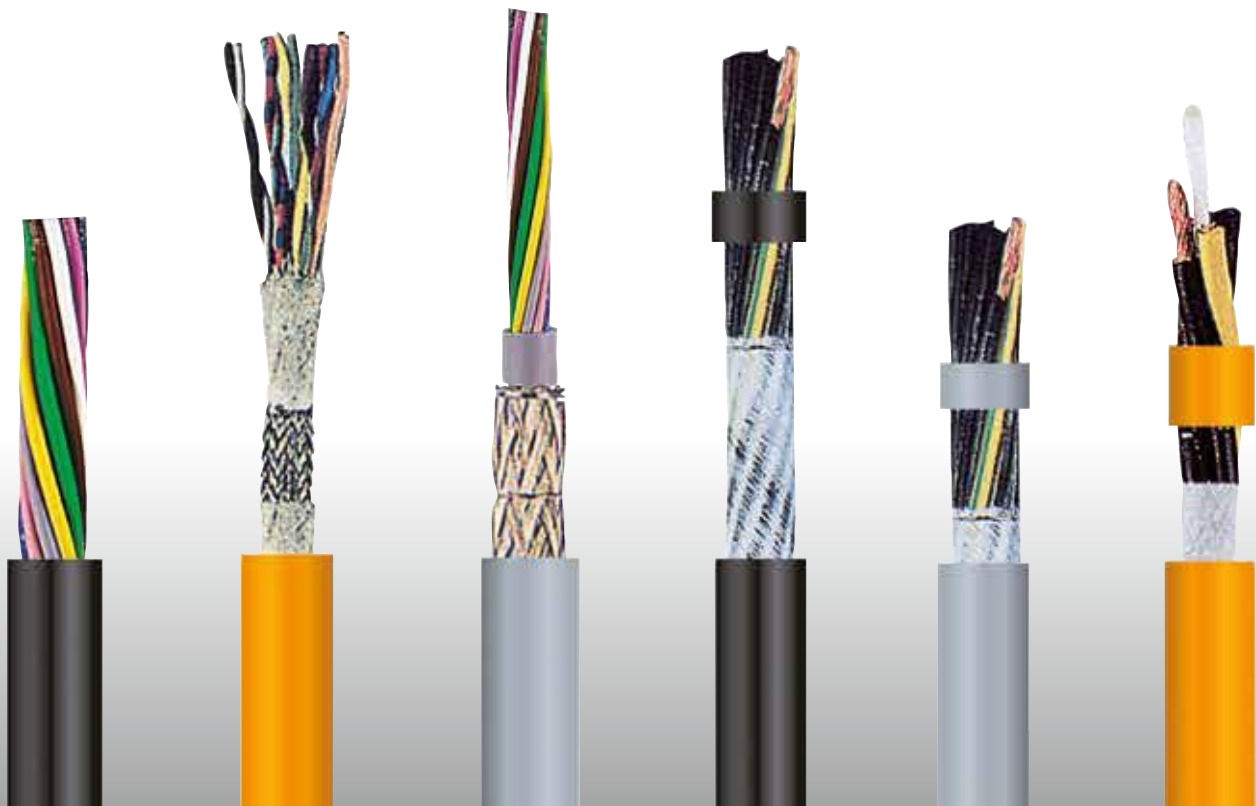
# Leitungsprogramm

# Cable product line catalogue





## Gesamtübersicht / Overview



**Meterware für hochflexible Anwendungen in Energieketten**

### Kapitelbezeichnung

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Auswahltabelle KAWEFLEX® Allround  
Einsatzparameter in Energieketten  
Einsatzparameter KAWEFLEX® ServoDriveQ

BUS-Leitungen  
für Energieketteneinsatz

KAWEFLEX  
Steuer- und Elektronikleitungen  
für Energieketteneinsatz

Motor-, Servomotor-, Mess- & Systemleitungen  
für Energieketteneinsatz

KAWEFLEX® Allround (für höchste Lebensdauer)  
Steuerleitungen  
Elektronikleitungen  
Motorleitungen 0,6/1kV

Optische Daten- und Signalübertragungsleitungen  
für Energieketteneinsatz

**Bulk goods for high dynamic energy chain applications**

### Chapter description

Selection chart KAWEFLEX®  
Selection chart KAWEFLEX® Allround  
Parameter in energy chain applications  
Parameter KAWEFLEX® ServoDriveQ

BUS cables for bus-systems for use in energy chains

KAWEFLEX  
control and electronic cables for use in energy chains

Motor, servo-drives, measurement & system cables for use in energy chains

KAWEFLEX® Allround (for highest lifetime)  
Control cables for use in energy chains  
Electronic cables  
Power cables 0,6/1kV

Cables for optical transmission of data and signals for use in energy chains

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BUS-Leitungen für Energieketteneinsatz  
BUS cables for bus-systems for use in energy chains

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PROFINET® Cat.5e UL/CSA (Typ C) - hochflexibel - .....	456	PROFINET® Cat.5e UL/CSA (Typ C) - high flexible - .....	456
CAN BUS - ControllerAreaNetwork 120 Ω UL/CSA - hochflexibel - .....	458	CAN BUS - ControllerAreaNetwork 120 Ω UL/CSA - high flexible - .....	458
DeviceNet™ 120 Ω Trunk & Drop UL/CSA - hochflexibel - .....	460	DEVICENET™ 120 Ω TRUNK & DROP UL/CSA - HIGH FLEXIBLE - .....	460
ASi-BUS - Aktor Sensor Interface UL/CSA - hochflexibel - .....	462	ASi-BUS - Aktor Sensor Interface UL/CSA - high flexible - .....	462
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Steuer- und Elektronikleitungen für Energieketteneinsatz, (auch mit UL/CSA-Approval)  
Control and electronic cables for use in energy chains, (also with UL/CSA approval)

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KAWEFLEX® 6200 ECO SK-C-PVC UL/CSA .....	476	KAWEFLEX® 6200 ECO SK-C-PVC UL/CSA .....	476
KAWEFLEX® 6210 SK-C-PVC UL/CSA .....	478	KAWEFLEX® 6210 SK-C-PVC UL/CSA .....	478
KAWEFLEX® 6230 SK-C-PUR UL/CSA, kapazitätsarm .....	480	KAWEFLEX® 6230 SK-C-PUR UL/CSA, low capacity .....	480
KAWEFLEX® 6310 SK-C-PVC UL/CSA, kapazitätsarm .....	482	KAWEFLEX® 6310 SK-C-PVC UL/CSA, low capacity .....	482
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Motor-, Servomotor-, Mess- & Systemleitungen (auch mit UL/CSA Approbation)  
Motor, servo-drives, measurement & system cables (also with UL/CSA approval)

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KAWEFLEX® 5268 C-PVC UL/CSA SERVO 0,6/1 kV, kapazitätsarm .....	500	KAWEFLEX® 5268 C-PVC UL/CSA SERVO 0,6/1 kV, low capacity .....	500
KAWEFLEX® 52DSL C-PVC UL/CSA 0,6/1 kV, kapazitätsarm .....	504	KAWEFLEX® 52DSL C-PVC UL/CSA 0,6/1 kV, low capacity .....	504
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KAWEFLEX® Allround (für höchste Lebensdauer)  
KAWEFLEX® Allround (for highest lifetime)

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KAWEFLEX® Allround 7710 SK-TP-C-PVC UL/CSA .....	528	KAWEFLEX® Allround 7710 SK-TP-C-PVC UL/CSA .....	528
KAWEFLEX® Allround 7720 SK-TP-C-PUR UL/CSA .....	530	KAWEFLEX® Allround 7720 SK-TP-C-PUR UL/CSA .....	530
KAWEFLEX® Allround 7730 SK-TP-C-TPE UL/CSA .....	532	KAWEFLEX® Allround 7730 SK-TP-C-TPE UL/CSA .....	532
KAWEFLEX® Allround 7510 SK-TPE UL/CSA .....	534	KAWEFLEX® Allround 7510 SK-TPE UL/CSA .....	534
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KAWEFLEX® Allround 7610 SK-C-TPE UL/CSA .....	538	KAWEFLEX® Allround 7610 SK-C-TPE UL/CSA .....	538
KAWEFLEX® Allround 7310 SK-PVC UL/CSA .....	540	KAWEFLEX® Allround 7310 SK-PVC UL/CSA .....	540
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Optische Daten- und Signalübertragungsleitungen  
Cables for optical transmission of data and signals

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**KAWEFLEX®**

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flexibel, bedingt energiekettenauglich flexible, conditionally capable for energy chain			•																<b>EIGENSCHAFTEN PROPERTIES</b>
energiekettenauglich capable for energy chain	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Gesamtschirm shield	•	•	•	•				•	•	•			•	•	•	•	•	•	
cUL-approbiert cUL-approved	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
kapazitätsarm low capacity	•	•	•	•			•			•									
ölbeständig resistant to oil	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
flammwidrig flame-retardant	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
halogenfrei halogen-free		•		•			•			•		•		•		•			
Elektronikleitung Electronic cable										•	•	•	•	•					<b>KABELTYP CABLE TYPE</b>
Steuerleitung Control cable					•	•	•	•	•										
Servoleitung Motor supply cable	•	•	•	•															
Servoleitung + 3 Adern Motor supply cable + 3 cores		•																	
Servoleitung + 1 Paar geschirmt Motor supply cable + 1 shielded pair	•	•																	
Servoleitung + 2 Paare geschirmt Motor supply cable + 2 shielded pairs		•																	
leichte Anforderung light requirement					•			•											<b>EINSATZ/ VERFAHRWEG METER APPLICATION/ TRAVEL DISTANCE METERS</b>
normale/mittlere Anforderung normal/medium requirement	•				•	•		•	•	•		•			•				
erhöhte Anforderung increased requirement			•	•															
hohe Anforderung high requirement		•					•		•		•		•		•		•		
höchste Anforderung highest requirement																			
z. B. für System SIEMENS e. g. for system SIEMENS	•	•							•										<b>SYSTEM SYSTEM</b>
z. B. für System BOSCH e. g. for system BOSCH		•																	
z. B. für System INDRAMAT e. g. for system INDRAMAT		•																	
z. B. für System HEIDENHAIN e. g. for system HEIDENHAIN		•																	
z. B. für System LENZE e. g. for system LENZE	•																		
z. B. für System SEW e. g. for system SEW		•																	

## Auswahltabelle/selection chart KAWEFLEX® Allround

### KAWEFLEX® Allround

Typ/type	Seite/page	516	518	520	522	524	526	540	542	544	546	534	536	538	528	530	532
		7110 SK-PVC	7130 SK-PUR	7140 SK-TPE	7210 SK-C-PVC	7230 SK-C-PUR	7240 SK-C-TPE	7310 SK-PVC	7320 SK-TPE	7410 SK-C-PVC	7420 SK-C-TPE	7510 SK-TPE	7520 SK-TPE	7610 SK-C-TPE	7710 SK-TP-C-TPE	7720 SK-TP-C-PVC	7730 SK-TP-C-TPE
flexibel, bedingt energiekettenauglich flexible, conditionally capable for energy chain																	
energiekettenauglich capable for energy chain		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Gesamtschirm shield				•	•	•			•	•			•	•	•	•	
cUL-approbiert cUL-approved		•	•	•	•		•	•	•	•	•	•	•	•	•		
kapazitätsarm low capacity																	
ölbeständig resistant to oil		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
flammwidrig flame-retardant		•	•	•	•	•	•	•	•	•	•	•	•	•	•		
halogenfrei halogen-free		•	•		•	•		•		•	•	•	•		•	•	
<b>EIGENSCHAFTEN PROPERTIES</b>																	
Elektronikleitung Electronic cable														•	•	•	
Steuerleitung Control cable		•	•	•	•	•											
Servoleitung Motor supply cable						•	•	•	•	•	•	•					
Servoleitung + 3 Adern Motor supply cable + 3 cores																	
Servoleitung + 1 Paar geschirmt Motor supply cable + 1 shielded pair																	
Servoleitung + 2 Paare geschirmt Motor supply cable + 2 shielded pairs																	
<b>KABELTYP CABLE TYPE</b>																	
leichte Anforderung light requirement																	
normale/mittlere Anforderung normal/medium requirement																	
erhöhte Anforderung increased requirement		•		•									•				
hohe Anforderung high requirement			•			•		•						•			
höchste Anforderung highest requirement			•	•	•		•		•	•	•	•			•		
<b>EINSATZ/ VERFAHRWEG METER APPLICATION/ TRAVEL DISTANCE METERS</b>																	
z. B. für System SIEMENS e. g. for system SIEMENS																	
z. B. für System BOSCH e. g. for system BOSCH																	
z. B. für System INDRAMAT e. g. for system INDRAMAT																	
z. B. für System HEIDENHAIN e. g. for system HEIDENHAIN																	
z. B. für System LENZE e. g. for system LENZE																	
z. B. für System SEW e. g. for system SEW																	
<b>SYSTEM SYSTEM</b>																	



# Einsatzparameter in Energieketten

<b>KAWEFLEX®</b>	Energieketten- leitungen für leichte Anforderungen energy chain cable for light requirements	Energieketten- leitungen für normale, mittlere Anforderungen energy chain cable for normale, medium requirements	Energieketten- leitungen für erhöhte Anforderungen energy chain cable for increased requirements	Energieketten- leitungen für hohe Anforderungen energy chain cable for high requirements	Energieketten- leitungen für extreme Anfor- derungen energy chain cable for extreme requirements	BUS Leitungen für Energieketten  bus cable for energy chain application
min. Biegeradius min. bending radius	10 x d (< 3m VW / TI) 12,5 x d (≥ 3m VW / TI)	7,5 x d	7,5 x d	7,5 x d	5 x d	7,5 x d
max. Verfahrgeschwindigkeit max. traverse speed	3 m/s	4 m/s	6 m/s	10 m/s	10 m/s	4 m/s
max. Fahrweg (VW) max. traverse length (TI)	10 m	10 m	25 m	50 m	100 m	10 m
max. zul. Beschleunigung max. admissible acceleration	10 m/s <sup>2</sup>	5 m/s <sup>2</sup>	10 m/s <sup>2</sup>	10 m/s <sup>2</sup>	10 m/s <sup>2</sup>	5 m/s <sup>2</sup>
Biegezyklen bending cycles	> 1 Mio	3 Mio	3 Mio	5 Mio	5 Mio	3 Mio
Abriebfestigkeit resistant to abrasion	Gering low	Gering low	Hoch High	Hoch High	Hoch High	Hoch High
Ölbeständigkeit resistant to oil	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404
zul. Betriebstemperatur operating temperature	-5 °C / +70 °C	-5 °C / +70 °C	-5 °C / +70 °C	-5 °C / +70 °C	-30 °C / +80 °C	-30 °C / +80 °C

Die ermittelte Zyklenzahl wurde unter standardisierten Bedingungen in Kettensystemen mit programmierbaren Verfahrgeschwindigkeiten und Verfahrwegen ermittelt und ist nur möglich bei fachgerechter Montage, bei einer kontinuierlichen Gleichförmigkeit der Bewegung und gleichbleibenden Temperaturbedingungen.

Für weitere Fragen stehen Ihnen unsere Servicetechniker jederzeit zur Verfügung.

The number of cycles was determined under standardised conditions in power chain systems with programmable traverse speeds and traverse lengths and is only possible if installed correctly and at under continuous motions and constant temperature conditions.

Our service technicians will be glad to answer your further questions.



# Parameter in energy chain applications



KAWEFLEX® Allround	Steuerleitungen / control cables			Elektronikleitungen / electronic cables		
	Energieketten- leitungen für erhöhte Anforderungen energy chain cable for increased requirements	Energieketten- leitungen für hohe Anforderungen energy chain cable for high requirements	Energiekettenlei- tungen für höchste Anforderungen energy chain cable for highest requirements	Energieketten- leitungen für erhöh- te Anforderungen energy chain cable for increased requirements	Energieketten- leitungen für hohe Anforderungen energy chain cable for high requirements	Energieketten- leitungen für höchste Anfor- derungen energy chain cable for highest requirements
Typen types	...7110 SK-PVC ...7210 SK-C-PVC	...7130 SK-PUR ...7230 SK-C-PUR	...7140 SK-TPe ...7240 SK-C-TPe	...7710 SK-TP-C-PVC	...7720 SK-TP-C-PUR	...7730 SK-TP-C-TPe
min. Biegeradius min. bending radius	6,5 x d (< 10m VW / TI) 7,5 x d (≥ 10m VW / TI)	6,5 x d (< 10m VW / TI) 7,5 x d (≥ 10m VW / TI)	5 x d	10 x d	10 x d	10 x d
max. Verfahrgeschwindigkeit max. traverse speed	10 m/s	10 m/s	10 m/s	5 m/s	10 m/s	10 m/s
max. Fahrweg (VW) max. traverse length (TI)	100 m	100 m	400 m	100 m	100 m	400 m
max. zul. Beschleunigung max. admissible acceleration	80 m/s <sup>2</sup>	80 m/s <sup>2</sup>	100 m/s <sup>2</sup>	50 m/s <sup>2</sup>	80 m/s <sup>2</sup>	100 m/s <sup>2</sup>
Abriebfestigkeit resistant to abrasion	Gering low	Hoch High	Hoch High	Gering low	Hoch High	Hoch High
Ölbeständigkeit resistant to oil	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404
zul. Betriebstemperatur operating temperature	-5 °C / +70 °C	-25 °C / +80 °C	-25 °C / +100 °C	-20 °C / +80 °C	-25 °C / +80 °C	-25 °C / +100 °C

KAWEFLEX® Allround	Motorleitungen / motor cables		
	...mehradrig / multi core		... einzelader / single core
	Energiekettenleitungen für hohe Anforderungen energy chain cable for high requirements	Energiekettenleitungen für höchste Anforderungen energy chain cable for highest requirements	Energiekettenleitungen für höchste Anforderungen energy chain cable for highest requirements
Typen types	...7310 SK-PVC ...7410 SK-C-PVC	...7320 SK-TPE ...7420 SK-C-TPE	...7510 SK-TPE, ...7520 SK-TPE ...7610 SK-C-TPE
min. Biegeradius min. bending radius	7,5 x d	7,5 x d	7,5 x d
max. Verfahrgeschwindigkeit max. traverse speed	10 m/s	10 m/s	10 m/s
max. Fahrweg (VW) max. traverse length (TI)	100 m	400 m	400 m
max. zul. Beschleunigung max. admissible acceleration	80 m/s <sup>2</sup>	80 m/s <sup>2</sup>	100 m/s <sup>2</sup>
Abriebfestigkeit resistant to abrasion	Gering low	Hoch High	Hoch High
Ölbeständigkeit resistant to oil	DIN EN 60811-404	DIN EN 60811-404	DIN EN 60811-404
zul. Betriebstemperatur operating temperature	-5 °C / +70 °C	-35 °C / +90 °C	-35 °C / +90 °C



# Einsatzparameter/application parameters KAWEFLEX® ServoDriveQ...

KAWEFLEX® ServoDriveQ...	ServoDriveQ C-PVC	ServoDriveQ FLEX-C-PVC	ServoDriveQ SK-C-PUR	ServoDriveQ Plus SK-C-PUR
	für feste & bed. flex. Verlegung for fixed & limited flexible installation	flexibel & bed. für Einsatz in Energieketten flexible & limited for energy chain applications	für Einsatz in Energieketten for energy chain applications	für Einsatz in Energieketten for energy chain applications
Zulassungen approbation	UL/CSA	UL/CSA	UL/CSA	UL/CSA
Abmessung dimensions	2x2x0,22 (AWG24/7)	2x2x0,22+1x2x0,38 (AWG24/7 - AWG22/19)	2x2x0,15+1x2x0,38 (AWG26/19 - AWG22/19)	2x2x0,20+1x2x0,38 (AWG24/19 - AWG22/19)
Übertragungsrate transfer rate	100 Mbit/s	100 Mbit/s	100 Mbit/s	100 Mbit/s
bei max. Einsatzlänge von at max. length of use	100 m	100 m	50 m	70 m
min. Biegeradius min. bending radius				
einmalig / single mehrfach / multiple	7,5 x d 15 x d	35 mm 125 mm	35 mm 105 mm	35 mm 75 mm
max. Verfahrgeschwindigkeit max. traverse speed	./.	3 m/s	3 m/s	5 m/s
max. Fahrweg max. traverse length	./.	5 m	5 m	10 m
max. zul. Beschleunigung max. admissible acceleration	./.	2 m/s <sup>2</sup>	5 m/s <sup>2</sup> (5 m) 10 m/s <sup>2</sup> (2,5 m)	max. 10 m/s <sup>2</sup> (5 m) max. 30 m/s <sup>2</sup> (2,5 m)
Biegezyklen bending cycles	./.	100.000	5 Mio.	5 Mio.
max. zul. Torsionsbeanspruchung max. admissible torsion	./.	≤ ± 30°/m	≤ ± 30°/m	≤ ± 30°/m
Abriebfestigkeit resistant to abrasion	Gering Low	Gering Low	Hoch High	Hoch High
max. zul. Zugbelastbarkeit max. pulling force				
fest / fixed bewegt / moved	50 N/mm <sup>2</sup> 20 N/mm <sup>2</sup>	50 N/mm <sup>2</sup> 20 N/mm <sup>2</sup>	50 N/mm <sup>2</sup> 20 N/mm <sup>2</sup>	50 N/mm <sup>2</sup> 20 N/mm <sup>2</sup>
Ölbeständigkeit resistant to oil	EN 60811-2-1	EN 60811-2-1	EN 60811-2-1	EN 60811-2-1
zul. Lagertemperatur storage temperature				
min./max.	-40 °C / +80 °C	-40 °C / +80 °C	-40 °C / +80 °C	-40 °C / +80 °C
zul. Betriebstemperatur operating temperature				
fest / fixed min./max. bewegt / moved min./max.	-20 °C / +80 °C	-20 °C / +80 °C 0 °C / +60 °C	-20 °C / +80 °C -20 °C / +60 °C	-20 °C / +80 °C -20 °C / +60 °C

Die ermittelte Anzahl der Biegezyklen wurde unter standardisierten Bedingungen in Kettensystemen mit programmierbaren Verfahrgeschwindigkeiten und Fahrwegen ermittelt und ist nur möglich bei fachgerechter Montage, bei einer kontinuierlichen Gleichförmigkeit der Bewegung und gleichbleibenden Temperaturbedingungen.

Für weitere Fragen stehen Ihnen unsere Servicetechniker jederzeit zur Verfügung.

The number of bending cycles was determined under standardized conditions in power chain systems with programmable traverse speeds and traverse lengths and is only possible if installed correctly and at under continuous motions and constant temperature conditions.

Our service technicians will be glad to answer your further questions.





# BUS-Leitungen für Energieketteneinsatz

## MULTIBUS & INTERBUS 100 - 120 Ω UL/CSA - hochflexibel -

für hochflexible Anwendungen

for high flexible application



### Anwendung

MULTIBUS - als Feldbusleitung für den Einsatz in verschiedensten FeldbusSystemen, wie DIN Messbus, BITBUS (IEEE 1118), Local Operating Network (LON), SUCOnet-P, Modulink-P, VariNet-P, FIP...  
sowie  
INTERBUS - als Fernbusleitung (Type RBC) bzw. Installationsfernbusleitung mit integrierter Stromversorgung (Type INBC) im Bereich der Fertigungsautomatisierung, für hochflexible Anwendungen (z.B. Energieführungsketten, Portalroboter, Pick&Place-Einheiten, Fördersysteme, Werkzeugmaschinen, automat. Fertigungssysteme etc.)

### Application

MULTIBUS - as fieldbus cable for use in a variety of fieldbus systems such as DIN measuring bus, BITBUS (IEEE 1118), Local Operating Network (LON) SUCOnet P, Modulink-P, P-VariNet, FIP ...  
and  
INTERBUS - as remote bus cable (Type RBC) or installation remote bus with integrated power supply (type INBC) in the field of production automation, for high flexible applications (e.g. power chains, gantry robots, pick and place units, conveyors, machine tools, automated production systems, etc.)

### Besonderheiten

- adhäsionsarm
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig: n. DIN EN 60811-2-1
- UV-beständig
- EMV gerechte Abschirmung
- max. Leitungslänge eines Bussegments bei angegeb. Übertragungsrate:  
MULTIBUS: 93,75kbit/s-max.1,2km | 187,5kbit/s-max.1km | 0,5Mbit/s-max.400m  
1,5 Mbit/s-max.200m | 12,0 Mbit/s-max.100m  
INTERBUS: 0,5Mbit/s-max.400m

### Special Features

- low adhesion
- largely resistant to lubricants, coolants fluids and grease
- oil-resistant: acc. to DIN EN 60811-2-1
- UV-resistant
- EMC compliant shielding
- max. cable lengths for a bus segment acc.to PI at stated transmission rate:  
MULTIBUS: 93,75kbit/s-max.1,2km | 187,5kbit/s-max.1km | 0,5Mbit/s-max.400m  
1,5 Mbit/s-max.200m | 12,0 Mbit/s-max.100m  
INTERBUS: 0,5Mbit/s-max.400m

### Hinweise

- RoHS-konform
- DESINA-konform (violett)
- LABS-/silikonfrei (bei Produktion)
- FRNC: Flame Retardant Non Corrosive, halogenfrei

### Remarks

- conform to RoHS
- conform to DESINA (violet)
- LABS-/silicone-free (during production)
- FRNC: Flame Retardant Non Corrosive, halogen free

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	feinstdrähtig nach IEC 60228 cl. 6
Aderisolationwerkstoff	BUSadern: PELON®, Energieadern: PVC
Aderkennung	BUSadern: nach DIN 47100, Energieadern: rt, bl, gnye
Verseilung	BUSadern zum Paar verseilt
Gesamtverseilung	(INBC) BUSelem. u. Leistungsadern verseilt
Gesamtschirm	Cu-Geflecht verzinkt
Außenmantelwerkstoff	PUR
Mantelfarbe	violett RAL 4001 (VT)
Nennspannung	BUSadern: 250 V (nicht für Starkstromzwecke); Leistungsadern: 500 V
Prüfspannung	1,5 kV
Schleifenwiderstand	max. 159,8 Ω/km - 0,25 mm <sup>2</sup> : max. 39,0 Ω/km 1,0 mm <sup>2</sup>
Kapazität	max. 60 nF/km
Wellenwiderstand	MULTIBUS: 100 - 120 Ω; INTERBUS: 100 Ω +/- 15 Ω
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 3mVW*   15 x d ≥ 3mVW*
Verfahrgeschwindigkeit	freitragend: 4 m/s
Verfahrweg	max. 10 m
Beschleunigung	max. 5 m/s <sup>2</sup>
Biegezyklen	> 5 Mio.
Betriebstemp. fest min/max	- 40 °C / +80 °C
Betriebstemp. bew. min/max	- 30 °C / +70 °C
Halogenfreiheit	nach IEC 60754-1 (FRNC Typen)
Brandverhalten	flammwidrig nach IEC 60332-1-2; CMX: nach IEC 60332-1-2, VW-1
Ölbeständigkeit	nach DIN EN 60811-2-1
Approbation	UL/CSA - cULus 300V, 75°C, CMX/SunRes/OilRes

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wired acc. to IEC 60228 cl. 6
core insulation	BUScores: PELON®, supply cores: PVC
core identification	BUScores: acc. to DIN 47100, supply cores: rd, bu, gnye
stranding	BUScores stranded to a pair
overall stranding	(INBC) BUSelem. a. supply cores stranded
shield	copper braid tinned
outer sheath	PUR
sheath colour	violet RAL 4001 (VT)
rated voltage	BUScores: 250 V (not for high voltage purposee); supply cores: 500 V
testing voltage	1,5 kV
loop resistance	max. 159,8 Ω/km - 0,25 mm <sup>2</sup> : max. 39,0 Ω/km 1,0 mm <sup>2</sup>
capacity	max. 60 nF/km
characteristic impedance	MULTIBUS: 100 - 120 Ω; INTERBUS: 100 Ω +/- 15 Ω
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 3mTL*   15 x d ≥ 3mTL*
speed	self-supporting: 4 m/s
traverse length	max. 10 m
acceleration	max. 5 m/s <sup>2</sup>
bending cycles	> 5 Mio.
operat. temp. fixed min/max	- 40 °C / +80 °C
operat. temp. moved min/max	- 30 °C / +70 °C
halogen free	acc. to IEC 60754-1 (FRNC Typen)
burning behavior	flame retardant acc. to IEC 60332-1-2; CMX: acc. to IEC 60332-1-2, VW-1
resistant to oil approvals	acc. to DIN EN 60811-2-1 UL/CSA - cULus 300V, 75°C, CMX/SunRes/OilRes





# BUS-Leitungen für Energieketteneinsatz

## PROFIBUS® DP / FMS / FIP 150 Ω UL/CSA - hochflexibel -

für hochflexible Anwendungen

for high flexible applications



### Anwendung

als Feldbusleitungen für PROFIBUS (Process Field BUS) Systeme, für hochflexible Anwendungen (z.B. Energieführungsketten, Portalroboter, Pick&Place Einheiten, Fördersysteme, Werkzeugmaschinen, automat. Fertigungssysteme etc.)

Die Leitungen sind sowohl für PROFIBUS DP (Dezentrale Peripherie), PROFIBUS FMS (Fieldbus Message Specification) als auch FIP (Factory Instrumentation Protocol) geeignet.

Standard gem. Profibus-Spez.: EN61158 & EN61784 (DIN19245 T3 & EN50170)

### Application

as fieldbus cable for PROFIBUS (Process Field BUS) systems, for high flexible applications (e.g. power chains, gantry robots, pick&place units, conveyors, machine tools, automated production systems, etc.)

These cables are suitable for PROFIBUS DP (Decentralized Peripherals) and PROFIBUS FMS (Fieldbus Message Specification) and also for FIP (Factory Instrumentation Protocol) applications.

Standard acc. to Profibus-Spec.: EN61158 & EN61784 (DIN19245 T3 & EN50170)

### Besonderheiten

- adhäsionsarm
- weitgehend beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel
- ölbeständig: PUR & PVC n. DIN EN 60811-2-1 (PVC nur Mineralöl)
- UV-beständig
- optimierte EMV gerechte Abschirmung
- max. Leitungslänge eines Bussegments nach PNO bei angegeb. Übertragungsrate:  
 PROFIBUS DP: 93,75kbit/s-max.1,2km | 187,5kbit/s-max.1km | 0,5Mbit/s-max.400m  
 1,5 Mbit/s-max.200m | 12,0 Mbit/s-max.100m  
 FIP : 2,5 Mbit/s-max. 200m

### Special Features

- low adhesion
- largely resistant to grease, coolant fluids and lubricants
- oil-resistant: PUR & PVC acc.to DIN EN 60811-2-1 (PVC only mineral oil)
- UV-resistant
- optimized EMC compliant shielding
- max. cable lengths for a bus segment acc.to PI at stated transmission rate:  
 PROFIBUS DP: 93,75kbit/s-max.1,2km | 187,5kbit/s-max.1km | 0,5Mbit/s-max.400m  
 1,5 Mbit/s-max.200m | 12,0 Mbit/s-max.100m  
 FIP : 2,5 Mbit/s-max. 200m

### Hinweise

- RoHS-konform
- DESINA-konform (violett)
- LABS-/silikonfrei (bei Produktion)
- FRNC: Flame Retardant Non Corrosive, halogenfrei
- FC-Type mit 'fast-connect'-Kabelaufbau
- PNO = PROFIBUS Nutzerorganisation e.V.

### Remarks

- conform to RoHS
- conform to DESINA (violet)
- LABS-/silicone-free (during production)
- FRNC: Flame Retardant Non Corrosive, halogen free
- FC-Type = 'fast-connect' construction
- PI = Profibus & Profinet International

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	Ø 0,64L & 0,34 mm <sup>2</sup> : 19-drähtig; 1,0 mm <sup>2</sup> : feindrähtig gem. IEC 60228 cl. 6
Aderisolationswerkstoff	BUS: geschäumtes PE/PP; Leistungsadern: Polyolefin
Aderkennung	BUS: gn, rd; Leistungsadern: sw, bl, gngc (1,0mm <sup>2</sup> )   sw mit Ziffern (1,5mm <sup>2</sup> )
Verseilung	BUSadern zum Paar verseilt
Abschirmung	alu-kaschierte Folie, Metallseite außen, Bedeckung 100% darüber Cu-Geflecht verzinkt
Gesamtverseilung	HYBRID: gesch. BUSselem. u. Leistungsadern verseilt
Außenmantelwerkstoff	PVC bzw. PUR
Außenmantelausführung	violett RAL 4001 (VT) oder petrol (PT)
Nennspannung	BUSadern: 250 V (nicht für Starkstromzwecke); Leistungsadern: 500 V
Schleifenwiderstand	max. 133,0 Ω/km-0,64L & 0,8L, max. 39,0 Ω/km-1 mm <sup>2</sup> , max. 26,6 Ω/km-1,5 mm <sup>2</sup>
Kapazität	nom. 30 nF/km
Wellenwiderstand	150 +/- 15 Ω
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 3mVW*   15 x d ≥ 3mVW*, FESTOON: 10 x d
Verfahrgeschwindigkeit	freitragend: 4 m/s
Verfahrweg	max. 10 m (VW)
Beschleunigung	max. 5 m/s <sup>2</sup>   TORSION: max. 10 m/s <sup>2</sup>
Biegezyklen	PUR: >5 Mio. PVC: >3 Mio.
Torsionswinkel	TORSION: ± 180°/m
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	PVC: -10 °C / +70 °C; PUR: -30 °C / +70 °C
Halogenfreiheit	nach IEC 60754-1 (FRNC Typen)
Brandverhalten	PVC CMG: nach IEC 60332-3-24(Kat.C), FT 4   PUR: nach IEC 60332-1-2   PUR CMX: nach IEC 60332-1-2, VW-1
Approbation	s. Tabelle rechte Seite

### Structure & Specifications

conductor material	bare copper strand
conductor class	Ø 0,64L & 0,34 mm <sup>2</sup> : 19-wired; 1,0 mm <sup>2</sup> : fine wired acc. to IEC 60228 cl. 6
core insulation	BUS: foamed PE/PP; supply cores: Polyolefin
core identification	BUS: gn, rd; supply cores: bk, bu, gnye (1,0mm <sup>2</sup> )   bk with numerals (1,5mm <sup>2</sup> )
stranding	BUScores stranded to a pair
shield	alu-lam. polyester foil, metal side outside, coverage 100% under copper braid tinned
overall stranding	HYBRID: screened BUSselem. a. supply cores stranded
outer sheath	PVC resp. PUR
outer sheath construction	violett RAL 4001 (VT) or petrol (PT)
rated voltage	BUScores: 250 V (not for high voltage purposes); supply cores: 500 V
loop resistance	max. 133,0 Ω/km-0,64L & 0,8L, max. 39,0 Ω/km-1 mm <sup>2</sup> , max. 26,6 Ω/km-1,5 mm <sup>2</sup>
capacity	nom. 30 nF/km
characteristic impedance	150 +/- 15 Ω
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 3mTL*   15 x d ≥ 3mTL*, FESTOON: 10 x d
self-supporting: 4 m/s	self-supporting: 4 m/s
traverse length	max. 10 m (TL)
acceleration	max. 5 m/s <sup>2</sup>   TORSION: max. 10 m/s <sup>2</sup>
bending cycles	PUR: >5 Mio. PVC: >3 Mio.
torsion	TORSION: ± 180°/m
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	PVC: -10 °C / +70 °C; PUR: -30 °C / +70 °C
halogen free	acc. to IEC 60754-1 (FRNC types)
burning behavior	PVC CMG: acc. IEC 60332-3-24(Cat.C), FT 4   PUR: acc. IEC 60332-1-2   PUR CMX: acc. IEC 60332-1-2, VW-1
approvals	see table right side





# BUS-Leitungen für Energieketteneinsatz

## PROFINET® Cat.5e UL/CSA (Typ C) - hochflexibel -

für hochflexible Anwendungen

for high flexible application



### Anwendung

als Datenleitung zur Übertragung digitaler und analoger Signale für PROFINET Systeme, Industrial Ethernet ICT-Netzanwendungen. Geeignet für hochflexible Anwendungen (z.B. Energieführungsketten, Portalroboter, Pick&Place Einheiten, Fördersysteme, Werkzeugmaschinen, etc.), in rauer industrieller Umgebung.

Standard gem. Profinet-Spez. & gem. den Forderungen für industrielle Sekundär- & Tertiärverkabelung: EN 50173, ISO/IEC 11801, TIA/EIA 568, TSB36, EN 50288, IEC 61156-5/-6

### Application

as a data cable for the transmission of digital and analog signals for PROFINET systems, Industrial Ethernet & ICT network applications. For high flexible applications (e.g. power chains, gantry robots, pick&place units, conveyors, machine tools, automated production systems, etc.) in harsh industrial environments.

Standard acc. Profinet Spec. & according the requirements for industrial secondary and tertiary cabling: EN 50173, ISO / IEC 11801, TIA / EIA 568, TSB36, EN 50288, IEC 61156-5/-6

### Besonderheiten

- adhäsionsarm
- weitgehend beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel
- ölbeständig: PUR & PVC n. DIN EN 60811-2-1 (PVC nur Mineralöl)
- UV-beständig
- optimierte EMV gerechte Abschirmung
- 2 paarig: 10/100 Mbit/s für Industrial Ethernet
- HF-Eigenschaften Cat.5e nach IEC 61156-5 (AWG22)
- max. Leitungslänge bei angegeb. Übertragungsrate:  
Type C: 100Mbit/s - 85m | TORSION: 55m

### Special Features

- low adhesion
- largely resistant to grease, coolant fluids and lubricants
- oil-resistant: PUR & PVC acc.to DIN EN 60811-2-1 (PVC only mineral oil)
- UV-resistant
- optimized EMC compliant shielding
- 2 pairs: 10/100 Mbit / s for Industrial Ethernet
- HF-characteristics Cat.5e acc. to IEC 61156-5 (AWG22)
- max. cable lengths at stated transmission rate:  
Type C: 100Mbit/s - 85m | TORSION: 55m

### Hinweise

- RoHS-konform
- LABS-/silikonfrei (bei Produktion)
- FRNC: Flame Retardant Non Corrosive, halogenfrei
- FC-Type mit 'fast-connect'-Kabelaufbau
- IDC - Insulation Displacement Connector, Schneidklemmetechnik

### Remarks

- conform to RoHS
- LABS-/silicone-free (during production)
- FRNC: Flame Retardant, Non Corrosive
- FC-Type = 'fast-connect' construction
- IDC - Insulation Displacement Connector, Insulation displacement technology

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze verzinkt (7-drähtig) bzw. Cu-Litze blank (19-drähtig)
Leiterklasse	7- oder 19-drähtig
Aderisoliationswerkstoff	Polyolefin oder geschäumtes Polyolefin
Aderkennung	ws,ge - bl,or
Gesamtverseilung	4 Adern zum Sternvierer
Abschirmung	SF/UTP: Cu-Geflecht verzinkt über alu-kasch. Folie, Metallseite außen, Bed. 100%   Profinet Torsion = S/UTP: Cu-Geflecht verzinkt
Außenmantelwerkstoff	PVC bzw. PUR
Mantelfarbe	grün, RAL 6018 (GN)
Nennspannung	125 V (nicht für Starkstromzwecke)
Schleifenwiderstand	110,8 Ω x km
Kapazität	nom. 48 nF/km
Wellenwiderstand	100 ± 15 Ω
Datenübertragungsrate	bis zu 100 Mbit/s
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 3mVW*   15 x d ≥ 3mVW*
Verfahrgeschwindigkeit	freitragend: 4 m/s
Verfahrweg	max. 10 m (VW)
Beschleunigung	max. 5 m/s <sup>2</sup>   TORSION: max. 10 m/s <sup>2</sup>
Biegezyklen	PUR: >3 Mio. PVC: >1 Mio
Torsionswinkel	TORSION: ± 180°/m
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	PVC: -10 °C / +70 °C; PUR: -30 °C / +70 °C
Halogenfreiheit	PUR: IEC 60754-1
Brandverhalten	PVC CMG: nach IEC 60332-3-24(Kat.C), FT 4   PUR: nach IEC 60332-1-2   PUR CMX: nach IEC 60332-1-2, VW-1   PUR AWM: Horizontal Flame (UL2556)
Approbation	s. Tabelle rechte Seite

### Structure & Specifications

conductor material	copper stand tinned (7-wired) resp. bare copper strand (19-wired)
conductor class	7- or 19-wired
core insulation	Polyolefin or foamed Polyolefin
core identification	wh,ye - bu,og
overall stranding	4 cores stranded to star quad
shield	SF/UTP: copper braid tinned over alu-lamin. polyester foil, metal side outside, cover. 100%   Profinet Torsion: S/UTP: copper braid tinned
outer sheath	PVC resp. PUR
sheath colour	green, RAL 6018 (GN)
rated voltage	125 V (not for high voltage purposes)
loop resistance	110,8 Ω x km
capacity	nom. 48 nF/km
characteristic impedance	100 ± 15 Ω
transfer rate	up to 100 Mbit/s
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 3mTL*   15 x d ≥ 3mTL*
speed	self-supporting: 4 m/s
traverse length	max. 10 m (TL)
acceleration	max. 5 m/s <sup>2</sup>   TORSION: max. 10 m/s <sup>2</sup>
bending cycles	PUR: >3 Mio. PVC: >1 Mio
torsion	TORSION: ± 180°/m
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	PVC: -10 °C / +70 °C; PUR: -30 °C / +70 °C
halogen free	PUR: IEC 60754-1
burning behavior	PVC CMG: acc. IEC 60332-3-24(Cat.C), FT 4   PUR: acc. IEC 60332-1-2   PUR CMX: acc. IEC 60332-1-2, VW-1   PUR AWM: Horizontal Flame (UL2556)
approvals	s. table right side







# BUS-Leitungen für Energieketteneinsatz

## CAN BUS - ControllerAreaNetwork 120 Ω UL/CSA - hochflexibel -

für hochflexible Anwendungen

for high flexible applications



### Anwendung

als Feldbusleitungen für für CAN (ControllerAreaNetwork) Systeme, im Bereich der Fertigungsautomatisierung, für hochflexible Anwendungen (z.B. Energieführungsketten, Portalroboter, Pick&Place Einheiten, Fördersysteme, Werkzeugmaschinen, automat. Fertigungssysteme etc.)  
Ursprünglich aus dem Automobilbereich hervorgegangenes Bussystem, dass sich auch im Bereich der Automatisierungstechnik etabliert hat.

Standard gem. CAN-Spez.: ISO 11898

### Application

as fieldbus cables for CAN (Controller Area Network) systems, in the field of factory automation, for high flexible applications (e.g. power chains, gantry robots, pick&place units, conveyors, machine tools, automated production systems, etc.)

This bussystem has its origins in the automotive sector and has established itself in the field of production automation.

Standard acc. to CAN Spec.: ISO 11898

### Besonderheiten

- adhäsionsarm
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig: n. DIN EN 60811-2-1
- UV-beständig
- EMV gerechte Abschirmung
- max. Übertragungsrate: 1 Mbit/s bei 40m Buslänge
- max. Leitungslänge eines Bussegments in Abhängigkeit vom Querschnitt  
0- 40 m AWG24, AWG22 | 40-300 m AWG22, AWG20 |  
300-600 m AWG20 | 600-1.000 m AWG19

### Special Features

- low adhesion
- largely resistant to grease, coolant fluids and lubricants
- oil-resistant: acc. to DIN EN 60811-2-1
- UV-resistant
- EMC compliant shielding
- max. transmission rate: 1 Mbit/s at 40m segment length
- max. cable lengths for a bus segment depending on the cross section  
0- 40 m AWG24, AWG22 | 40-300 m AWG22, AWG20 |  
300-600 m AWG20 | 600-1.000 m AWG19

### Hinweise

- RoHS-konform
- DESINA-konform (violett)
- LABS-/silikonfrei (während Produktion)
- FRNC: Flame Retardant Non Corrosive, halogenfrei

### Remarks

- conform to RoHS
- conform to DESINA (violet)
- LABS-/silicone-free (during production)
- FRNC: Flame Retardant Non Corrosive, halogen free

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Leiter blank
Leiterklasse	feinstdrähtig nach IEC 60228 cl. 6
Aderisoliationswerkstoff	geschäumtes PE/PP
Aderkennung	nach DIN 47100
Verseilung	Adern zu Paaren verseilt
Gesamtschirm	Cu-Geflecht verzinkt
Außenmantelwerkstoff	PUR
Mantelfarbe	violett RAL 4001 (VT)
Nennspannung	250 V (nicht für Starkstromzwecke)
Prüfspannung	1,5 kV
Schleifenwiderstand	max. 175,2 Ω/km - AWG 24, max. 110,8 Ω/km - AWG 22; max. 68,8 Ω/km - AWG 20; max 55,0 Ω/km - AWG 19
Kapazität	nom. 40 nF/km
Wellenwiderstand	120 Ω +/- 12 Ω
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 3mVW*   15 x d ≥ 3mVW*
Verfahrgeschwindigkeit	freitragend: 4 m/s
Verfahrweg	max. 10 m
Beschleunigung	max. 5 m/s <sup>2</sup>
Biegezyklen	> 5 Mio.
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-30°C / +70°C
Halogenfreiheit	nach IEC 60754-1 (FRNC Typen)
Brandverhalten	flamwidrig nach IEC 60332-1-2, VW-1
Ölbeständigkeit	nach DIN EN 60811-2-1
Approbation	UL/CSA - cULus 300V, 75°C, CMX

### Structure & Specifications

conductor material	copper conductor blank
conductor class	super fine wire acc. to IEC 60228 cl. 6
core insulation	foamed PE/PP
core identification	acc. to DIN 47100
stranding	cores twisted to pairs
shield	copper braid tinned
outer sheath	PUR
sheath colour	violet RAL 4001 (VT)
rated voltage	250 V (not for high voltage purposes)
testing voltage	1,5 kV
loop resistance	max. 175,2 Ω/km - AWG 24, max. 110,8 Ω/km - AWG 22; max. 68,8 Ω/km - AWG 20; max 55,0 Ω/km - AWG 19
capacity	nom. 40 nF/km
characteristic impedance	120 Ω +/- 12 Ω
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 3mTL*   15 x d ≥ 3mTL*
speed	self-supporting: 4 m/s
traverse length	max. 10 m
acceleration	max. 5 m/s <sup>2</sup>
bending cycles	> 5 Mio.
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-30°C / +70°C
halogen free	acc. to IEC 60754-1 (FRNC Typen)
burning behavior	flame-retardant acc. to IEC 60332-1-2, VW-1
resistant to oil	acc. to DIN EN 60811-2-1
approvals	UL/CSA - cULus 300V, 75°C, CMX





# BUS-Leitungen für Energieketteneinsatz

## DeviceNet™ 120 Ω Trunk & Drop UL/CSA - hochflexibel -

für hochflexible Anwendungen

for high flexible applications



### Anwendung

als Feldbusleitungen für DeviceNet™ Systeme, im Bereich der Fertigungsautomatisierung zur zuverlässigen Daten- & Energieübertragung (z.B. zwischen Sensoren, Aktoren & Steuerungen), für hochflexible Anwendungen (z.B. Energieführungsketten, Portalroboter, Pick&Place Einheiten, Fördersysteme, Werkzeugmaschinen, etc.)

DeviceNet™ ist ein von Allen Bradley (Rockwell Automation) entwickeltes, auf bewährter CAN Technologie basierendes Bussystem. Standard gem. ODVA Spezifikationen

### Application

as fieldbus cables for DeviceNet™ systems in the field of production automation for reliable data and energy transmission (e.g. between sensors, actuators and controllers), for high flexible applications (e.g. power chains, gantry robots, pick&place units, conveyors, machine tools, automated production systems, etc.)

DeviceNet™ is an Allen Bradley (Rockwell Automation) developed, based on proven CAN technology bus system. Standard acc. ODVA specifications

### Besonderheiten

- adhäsionsarm
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig: PUR & PVC n. DIN EN 6081 1-2-1 (PVC nur Mineralöl)
- UV-beständig
- optimierte EMV gerechte Abschirmung
- max. Leitungslänge eines Bussegments bei angegeb. Übertragungsrate als Versorgungsleitung:  
Trunk - thick: 125 kbit/s-max.500m | 250 kbit/s-max.250m | 0,5 Mbit/s-max.100m  
Drop - thin : 125 kbit/s-max.100m | 250 kbit/s-max.100m | 0,5 Mbit/s-max.100m

### Special Features

- low adhesion
- largely resistant to grease, coolant fluids and lubricants
- oil-resistant: PUR & PVC acc.to DIN EN 6081 1-2-1 (PVC only mineral oil)
- UV-resistant
- optimized EMC compliant shielding
- max. cable lengths for a bus segment at stated transmission rate a supply cable:  
Trunk - thick: 125 kbit/s-max.500m | 250 kbit/s-max.250m | 0,5 Mbit/s-max.100m  
Drop - thin : 125 kbit/s-max.100m | 250 kbit/s-max.100m | 0,5 Mbit/s-max.100m

### Hinweise

- RoHS-konform
- DESINA-konform (violett)
- LABS-/silikonfrei (während Produktion)
- FRNC: Flame Retardant Non Corrosive, halogenfrei
- ODVA - Open DeviceNet Vendors Association

### Remarks

- conform to RoHS
- conform to DESINA (violet)
- LABS-/silicone-free (during production)
- FRNC: Flame Retardant Non Corrosive, halogen free
- ODVA - Open DeviceNet Vendors Association

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Leiter verzinkt
Leiterklasse	19-drähtig
Aderisolationswerkstoff	BUSadern: geschäumtes PE, Energieadern: PVC oder Polyolefin
Aderkennung	BUSadern: bl, ws; Energieadern: rt, sw
Verseilung	Adern zu Paaren verseilt
Abschirmung	Paare in alu-kaschierte Folie, Bed. 100%
Gesamtverseilung	Paare in Lagen verseilt
Gesamtschirm	Cu-Geflecht verzinkt, mit darunter liegender verzinnter Beilaufitze
Außenmantelwerkstoff	PVC oder PUR
Mantelfarbe	violett RAL 4001 (VT) oder grau RAL 7001 (GY)
Nennspannung	300 V (nicht für Starkstromzwecke)
Prüfspannung	1,5 kV
Schleifenwiderstand	max. 181,8 Ω/km - AWG24, max. 114,8 Ω/km - AWG22, max. 71,6 Ω/km - AWG18, max. 22,6 Ω/km - AWG15
Wellenwiderstand	120 Ω +/- 12 Ω
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 3mVW*   15 x d ≥ 3mVW
Verfahrgeschwindigkeit	freitragend: 4 m/s
Verfahrweg	max. 10 m (VV)
Beschleunigung	max. 5 m/s²
Biegezyklen	PUR: >3 Mio. PVC: >1 Mio.
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	PVC: -10 °C / +70 °C; PUR: -30 °C / +70 °C
Halogenfreiheit	nach IEC 60754-1 (FRNC Typen)
Brandverhalten	flammwidrig, PVC: nach IEC 60332-3-24(Kat.C), FT4 bzw. PUR: nach IEC 60332-1-2, VW-1
Approbation	UL/CSA: PVC: (Trunk Cable) cULus 300V, 75°C, CMG/PLTC/SunRes/OilRes & cURus 600V, 60°C   (Drop Cable) cULus 300V, 75°C, CMG/CL2/SunRes/OilRes & cURus 600V, 60°C   PUR: cULus 300V, 75°C CMX/CL2X

### Structure & Specifications

conductor material	copper strand tinned
conductor class	19-wired
core insulation	BUScores: foamed PE, supply cores: PVC or polyolefin
core identification	BUScores: bu, wh; supply cores: rd, bk
stranding	cores twisted to pairs
shield	pairs in aluminium clad foil, cover. 100%
overall stranding	pairs stranded in layers
shield	copper braid tinned, with subjacent tinned drain wire
outer sheath	PVC or PUR
sheath colour	violett RAL 4001 (VT) or grey RAL 7001 (GY)
rated voltage	300 V (not for high voltage purposes)
testing voltage	1,5 kV
loop resistance	max. 181,8 Ω/km - AWG24, max. 114,8 Ω/km - AWG22, max. 71,6 Ω/km - AWG18, max. 22,6 Ω/km - AWG15
characteristic impedance	120 Ω +/- 12 Ω
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 3mVW*   15 x d ≥ 3mVW
speed	self-supporting: 4 m/s
traverse length	max. 10 m (TL)
acceleration	max. 5 m/s²
bending cycles	PUR: >3 Mio. PVC: >1 Mio.
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	PVC: -10 °C / +70 °C; PUR: -30 °C / +70 °C
halogen free	nach IEC 60754-1 (FRNC Typen)
burning behavior	flame retardant, PVC: acc. to IEC 60332-3-24 Cat. C, FT4 resp. PUR: acc. to IEC 60332-1-2, VW-1
approvals	UL/CSA: PVC: (Trunk Cable) cULus 300V, 75°C, CMG/PLTC/SunRes/OilRes & cURus 600V, 60°C   (Drop Cable) cULus 300V, 75°C, CMG/CL2/SunRes/OilRes & cURus 600V, 60°C   PUR: cULus 300V, 75°C CMX/CL2X





# BUS-Leitungen für Energieketteneinsatz

## ASi-BUS - Aktor Sensor Interface UL/CSA - hochflexibel -

für hochflexible Anwendungen

for high flexible applications



### Anwendung

als Feldbusleitungen für ASi (Aktor Sensor Interface) Systeme, im Bereich der Fertigungsautomatisierung, zur Verbindung von Geräten auf der untersten Feldebene (Sensoren, Aktoren), für hochflexible Anwendungen (z.B. Energieführungsketten, Portalroboter, Pick&Place Einheiten, Fördersysteme, Werkzeugmaschinen, etc.)

Hierbei werden sowohl Daten als auch Energie über eine die ungeschirmte, geometrisch codierte zweiadrige Flachleitung übertragen.  
Standard gem. EN 50295 / IEC 62026

### Application

as fieldbus cables for ASi (Actuator Sensor Interface) systems, in the field of factory automation, for connecting devices to the lowest field level (sensors, actuators), for high flexible applications (e.g. power chains, gantry robots, pick&place units, conveyors, machine tools, automated production systems, etc.)

Data & energy are transmitted via an unshielded, geometrically coded two-core flat cable.  
Standard acc. to EN 50295 / IEC 62026

### Besonderheiten

- adhäsionsarm
- spez. Geometrie verhindert falsche Kontaktierung (Verpolungssicherheit)
- einfache & schnelle Installation ohne Werkzeug (Durchdringungstechnik)
- ölbeständig: n. DIN EN 60811-2-1
- UV-beständig

### Special Features

- low adhesion
- special geometry prevents incorrect contacting (reverse polarity protection)
- simple & quick installation without tools (piercing technology)
- oil resistant: acc. to DIN EN 60811-2-1
- UV-resistant

### Hinweise

- RoHS-konform
- LABS-/silikonfrei (während Produktion)
- FRNC: Flame Retardant Non Corrosive, halogenfrei
- LD - Long Distance.

### Remarks

- conform to RoHS
- LABS-/silicone-free (during production)
- FRNC: Flame Retardant Non Corrosive, halogen free
- LD - Long Distance

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze verzinkt
Leiterklasse	feinstdrähtig nach IEC 60228 cl. 6
Aderisolationwerkstoff	TPE
Aderkennung	blau, braun
Außenmantelwerkstoff	PUR
Mantelfarbe	gelb RAL 1023 (YE) oder schwarz RAL 9005 (BK)
Nennspannung	300 V (nicht für Starkstromzwecke)
Prüfspannung	2 kV
Leiterwiderstand	13,7 Ω/km - 1,5mm <sup>2</sup> ; 8,21 Ω/km 2,5 mm <sup>2</sup>
Kapazität	nom. 80 nF/km
kleinster Biegeradius fest	12 mm
kleinster Biegeradius bewegt	60 mm
Fahrgeschwindigkeit	freitragend: 4 m/s
Verfahrweg	max. 5 m
Beschleunigung	max. 3 m/s <sup>2</sup>
Biegezyklen	Biegeradius > 17,5 x h > 5 Mio.   > 15 x h > 3 Mio.
Betriebstemp. fest min/max	-40°C / +80°C
Betriebstemp. bew. min/max	-30°C / +70°C
Brandverhalten	nach IEC 60332-1-2, FT2
Ölbeständigkeit	nach IEC 60811-2-1
Approbation	UL/CSA - cURus 300V, 80 °C, AWM

### Structure & Specifications

conductor material	copper strand tinned
conductor class	super fine wire, acc. to IEC 60228 cl. 6
core insulation	TPE
core identification	blue, brown
outer sheath	PUR
sheath colour	yellow RAL 1023 (YE) or black RAL 9005 (BK)
rated voltage	300 V (not for high voltage purposes)
testing voltage	2 kV
conductor resistance	13,7 Ω/km - 1,5mm <sup>2</sup> ; 8,21 Ω/km 2,5 mm <sup>2</sup>
capacity	nom. 80 nF/km
min. bending radius fixed	12 mm
min. bending radius moved	60 mm
speed	self-supporting: 4 m/s
traverse length	max. 5 m
acceleration	max. 3 m/s <sup>2</sup>
bending cycles	bending radius > 17,5 x h > 5 Mio.   > 15 x h > 3 Mio.
operat. temp. fixed min/max	-40°C / +80°C
operat. temp. moved min/max	-30°C / +70°C
burning behavior	acc. to IEC 60332-1-2, FT2
resistant to oil	acc. to IEC 60811-2-1
approvals	UL/CSA - cURus 300V, 80 °C, AWM





# BUS-Leitungen für Energieketteneinsatz

## SafetyBUS 100 - 120 Ω UL/CSA - hochflexibel -

für hochflexible Anwendungen

Typ: SafetyBUS SK-C-PUR UL/CSA - cULus CMX 3x0,75 (YE)

for high flexible application

Typ: SafetyBUS SK-C-PUR UL/CSA - cULus CMX 3x0,75 (YE)



### Anwendung

als Feldbusleitungen für SafetyBUS Systeme, für hochflexible Anwendungen (z.B. Energieführungsketten, Portalroboter, Pick&Place Einheiten, Fördersysteme, Werkzeugmaschinen, automat. Fertigungssysteme etc.), im Bereich der Fertigungsautomatisierung.

SafetyBUS ist ein sicheres, offenes Feldbussystem, das speziell für die Übertragung von Daten mit Bezug auf Maschinensicherheit optimiert wurde: zeitliche und inhaltliche Konsistenz der Daten haben hier höchste Priorität.

### Application

as fieldbus cables for SafetyBUS systems for high flexible applications (e.g. power chains, gantry robots, pick&place units, conveyors, machine tools, automated production systems, etc.), in the field of factory automation.

SafetyBUS is a safe, open fieldbus system, which is optimized for the transmission of data relating to machine safety: timing and content consistency of the data have the highest priority here.

### Besonderheiten

- adhäsionsarm
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig: n. DIN EN 60811-2-1
- EMV gerechte Abschirmung
- max. Leitungslänge eines Bussegments bei angegeb. Übertragungsrate:  
50 kbit/s-max.1,0km | 125 kbit/s-max.500m | 250 kbit/s-max.250 m |  
0,5Mbit/s-max.100m

### Special Features

- low adhesion
- largely resistant to grease, coolant fluids and lubricants
- oil-resistant: acc. to DIN EN 60811-2-1
- EMC compliant shielding
- max. cable lengths for a bus segment at stated transmission rate:  
50 kbit/s-max.1,0km | 125 kbit/s-max.500m | 250 kbit/s-max.250 m |  
0,5Mbit/s-max.100m

### Hinweise

- RoHS-konform
- LABS-/silikonfrei (während Produktion)
- FRNC: Flame Retardant Non Corrosive, halogenfrei

### Remarks

- conform to RoHS
- LABS-/silicone-free (during production)
- FRNC: Flame Retardant Non Corrosive, halogen free

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach IEC 60228 cl.6
Aderisoliationswerkstoff	geschäumtes Polyolefin
Aderkennung	weiß, braun, grün
Verseilung	Adern in Lagen verseilt
Gesamtschirm	Cu-Geflecht verzinkt
Außenmantelwerkstoff	PUR
Mantelfarbe	gelb RAL 1003 (YE)
Nennspannung	250 V (nicht für Starkstromzwecke)
Prüfspannung	1,5 kV
Schleifenwiderstand	max. 26,0 Ω / km
Kapazität	nom. 45 nF/km
Wellenwiderstand	100 - 120 Ω
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	10 x d
Verfahrgeschwindigkeit	freitragend: 4 m/s
Verfahrweg	max. 10 m
Beschleunigung	max. 5 m/s
Biegezyklen	> 5 Mio.
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-30 °C / +70 °C
Halogenfreiheit	nach IEC 60754-1
Brandverhalten	flammwidrig nach IEC 60332-1-2, VW-1
Approbation	UL/CSA - cULus: 300V, 75°C, CMX
Außendurchmesser	8,0 mm
Cu-Zahl	50,0 kg/km
Gewicht	74,0 kg/km

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to IEC 60228 cl.6
core insulation	foamed polyolefin
core identification	white, brown, green
stranding	cores stranded in layers
shield	copper braid tinned
outer sheath	PUR
sheath colour	yellow RAL 1003 (YE)
rated voltage	250 V (not for high voltage purposes)
testing voltage	1,5 kV
loop resistance	max. 26,0 Ω / km
capacity	nom. 45 nF/km
characteristic impedance	100 - 120 Ω
min. bending radius fixed	5 x d
min. bending radius moved	10 x d
speed	self-supporting: 4 m/s
traverse length	max. 10 m
acceleration	max. 5 m/s
bending cycles	> 5 Mio.
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-30 °C / +70 °C
halogen free	acc. to IEC 60754-1
burning behavior	flame-retardant acc. to IEC 60332-1-2, VW-1
approvals	UL/CSA - cULus: 300V, 75°C, CMX
outer diameter	8,0 mm
Cu index	50,0 kg/km
weight	74,0 kg/km





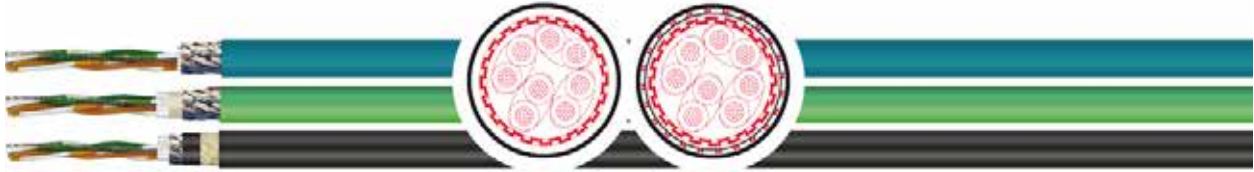


# BUS-Leitungen für Energieketteneinsatz

## INDUSTRIAL ETHERNET Cat.5e, Cat.6, Cat.6A, Cat.7, Cat.7A UL/CSA - hochflexibel -

für hochflexible Anwendungen

for high flexible applications



### Anwendung

als Datenleitung zur Übertragung digitaler und analoger Signale für Industrial Ethernet, ICT-Netzanwendungen sowie in PROFINET-Systemen. Geeignet für hochflexible Anwendungen (z.B. Energieführungsketten, Portalroboter, Pick&Place Einheiten, Förder-systeme, Werkzeugmaschinen, etc.), in rauer industrieller Umgebung.

Standard gem. Industrial Ethernet-Spez. & gem. den Forderungen für industrielle Sekundär- & Tertiärverkabelung: EN 50173, ISO/IEC 11801, ISO/IEC 24702, TIA/EIA 568, TSB36, EN 50288, IEC 61156-5/-6

### Application

as a data cable for the transmission of digital and analog signals for Industrial Ethernet, ICT network applications and also in PROFINET systems. For high flexible applications (e.g. power chains, gantry robots, pick&place units, conveyors, machine tools, automated production systems, etc.) in harsh industrial environments.

Standard acc. Industrial Ethernet Spec. & according the requirements for industrial secondary and tertiary cabling: EN 50173, ISO/IEC 11801, ISO/IEC 24702, TIA/EIA 568, TSB36, EN 50288, IEC 61156-5/-6

### Besonderheiten

- adhäsionsarm
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig: n. DIN EN 60811-2-1
- UV-beständig
- optimierte EMV gerechte Abschirmung
- Reeling: 3 Schichten Außenmantel - PUR+textiles Stützgeflecht+PUR
- 4 paarig: 10/100/1000Mbit/s (Cat.5e,6) & 10Gbit/s (Cat.6A,7,7A) für Industrial Ethernet
- HF-Eigenschaften Cat.5e,6,6A,7 & 7A nach IEC 61156-6
- max. Leitungslänge bei oben angegeb. Übertragungsrate: 85m

### Special Features

- low adhesion
- largely resistant to grease, coolant fluids and lubricants
- oil-resistant: acc. to DIN EN 60811-2-1
- UV-resistant
- optimized EMC compliant shielding
- Reeling: 3 layer outer sheath - PUR+textile supporting braid+PUR
- 4 pairs: 10/100/1000Mbit/s (Cat.5e,6) & 10Gbit/s (Cat.6A,7,7A) for Industrial Ethernet
- HF-characteristics Cat.5e,6,6A,7 & 7A acc.to IEC 61156-6
- max. cable lengths at above stated transmission rate: 85m

### Hinweise

- RoHS-konform
- LABS-/silikonfrei (bei Produktion)
- FRNC: Flame Retardant Non Corrosive, halogenfrei
- FC-Type mit 'fast-connect'-Kabelaufbau
- 7-/19-drähtig: für Patchkabel-Anwendungen (max. 60m)

### Remarks

- conform to RoHS
- LABS-/silicone-free (during production)
- FRNC: Flame Retardant, Non Corrosive
- FC-Type = 'fast-connect' construction
- 7-/19-wired: for patch cable applications(max 60m.)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	7- bzw. 19-drähtig
Aderisolationwerkstoff	Polyolefin bzw. geschäumtes Polyolefin
Aderkennung	wsbl-bl, wsor-or, wsgn-gn, wsbr-br
Verseilung	Adern zu Paaren verseilt
Abschirmung	SF/UTP: Cu-Geflecht verzinkt über alu-kasch. Folie, Metallseite außen, Bed. 100%; S/FTP: Cu-Geflecht verzinkt als Gesamtschirm & alu-kasch. Folie als Paarschirm; S/UTP: Cu-Geflecht verzinkt als Gesamtschirm
Innenmantelwerkstoff	Reeling: PUR unter textilem Stützgeflecht
Außenmantelwerkstoff	PUR
Mantelfarbe	grün RAL6018(GN),petrol RAL5021(PT) o. schwarz(BK)
Nennspannung	125 V (nicht für Starkstromzwecke)
Schleifenwiderstand	max.280,0 Ω/km - AWG26
Kapazität	nom. 48 nF/km
Wellenwiderstand	100 Ω ± 15 Ω
Datenübertragungsrate	Cat.5e,6 bis 1.024Mbit/s   Cat.6A,7,7A bis 10Gbit/s.
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 3mVW*   15 x d ≥ 3mVW*
Verfahrgeschwindigkeit	freitragend: 4 m/s
Verfahrweg	max. 10 m (VW)
Beschleunigung	max. 5 m/s²   TORSION: max. 10 m/s²
Biegezyklen	PUR: >3 Mio.
Torsionswinkel	TORSION: ± 180°/m
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-30 °C / +70 °C
Halogenfreiheit	nach IEC 60754-1 (FRNC Typen)
Brandverhalten	PUR: nach IEC 60332-1-2   PUR CMX: nach IEC 60332-1-2, VW-1   PUR AWM: Horizontal Flame (UL2556)
Approbation	s. Tabelle rechte Seite

### Structure & Specifications

conductor material	bare copper stranded
conductor class	7- resp. 19-wired
core insulation	Polyolefin resp. foamed Polyolefin
core identification	whbu-bu, whog-og, whgn-gn, whbn-bn
stranding	cores twisted to pairs
shield	SF/UTP: copper braid tinned over alu-lamin. polyester foil, metal side outs., cover. 100%; S/FTP: copper braid tinned as overall shield & alu-lamin. polyester foil as pair shield; S/UTP: copper braid tinned as overall shield
inner sheath material	Reeling: PUR under textile supporting braid
outer sheath	PUR
sheath colour	green RAL6018(GN),petrol RAL5021(PT) or black(BK)
rated voltage	125 V (not for high voltage purposes)
loop resistance	max.280,0 Ω/km - AWG26
capacity	nom. 48 nF/km
characteristic impedance	100 Ω ± 15 Ω
transfer rate	Cat.5e,6 up to 1.024Mbit/s   Cat.6A,7,7A up to 10Gbit/s.
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 3mVW*   15 x d ≥ 3mVW*
speed	self-supporting: 4 m/s
traverse length	max. 10 m (TL)
acceleration	max. 5 m/s²   TORSION: max. 10 m/s²
bending cycles	PUR: >3 Mio.
torsion	TORSION: ± 180°/m
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-30 °C / +70 °C
halogen free	acc. to IEC 60754-1 (FRNC types)
burning behavior	PUR: acc. IEC 60332-1-2   PUR CMX: acc. IEC 60332-1-2, VW-1   PUR AWM: Horizontal Flame (UL2556)
approvals	s. table right side



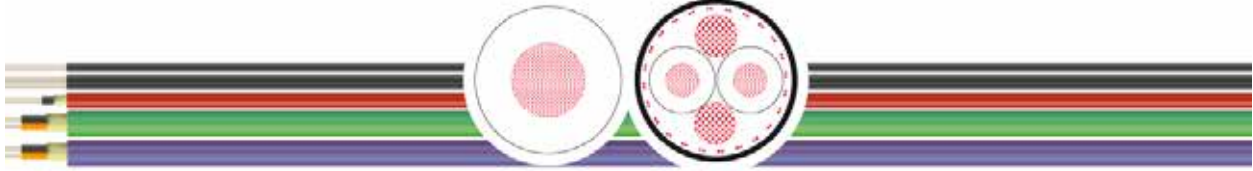


# BUS-Leitungen für Energieketteneinsatz

## POF SIMPLEX, DUPLEX & BUS

für feste Verlegung, bedingt flexible & hochflexible Anwendungen

for fixed installation, limited flexible & high flexible application



### Anwendung

als Datenleitung zur Übertragung optischer Signale für Industrial Ethernet, ICT-Netzwerken, PROFIBUS & PROFINET-Systeme, in rauer industrieller Umgebung.  
 Standard: für feste Verlegung, bei geringer mechanischer Belastung, ...  
 Robust: für feste Verlegung & bedingt flexible Anwendungen, bei mittlerer (PE/PUR) bzw. sehr hoher (PA/PUR) mech. Belastung, ... zur Maschinen-, Geräte und Schaltschrank-Verdrahtung.  
 Trailing: für hochflexible Anwendungen (z.B. Energieführungsketten, Portal-Roboter, Pick&Place Einheiten, Fördersysteme, Werkzeugmaschinen, etc.)

### Application

as data cable for transmission optical signals for Industrial Ethernet, ICT network applications, PROFIBUS & PROFINET systems, in harsh industrial environments.  
 Standard: for fixed installation, with low mechanical stress, ...  
 Robust: for fixed installation & limited flexible applications, at medium (PE/PUR) or very high (PA/PUR) mechanical stress, ...for machines, devices and cabinet wiring.  
 Trailing: for highly flexible applications (e.g. power chains, gantry robots, pick and place units, conveyor systems, machine tools, etc.)

### Besonderheiten

- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig: PUR & PVC n. DIN EN 60811-2-1 (PVC nur Mineralöl)
- UV-beständig
- einfache Installation, geeignet zur Konfektion im Feld
- abhörsicher, Leitungen strahlen nicht ab
- Schutz der Übertragungsstrecke gegen elektromagnetische Störungen
- Echtzeitübertragung hochkomprimierter Informationen auf großen Streckenlängen, mit maximalen Übertragungsraten - Übertragungslänge: max. 80 m
- max. Leitungslänge bei angegeb. Übertragungsraten n. PNO: 100 Mbit/s - max. 50m

### Special Features

- largely resistant to grease, coolant fluids and lubricants
- oil resistant: PUR & PVC acc. to DIN EN 60811-2-1 (PVC mineral oil only)
- UV-resistant
- easy installation, suitable for direct connector installation in the field
- bugproof, cables do not radiate
- protection of the transmission path against electromagnetic interference
- Real-time transmission of highly compressed information on large path lengths, with maximum transfer rates - Transmission length: max. 80 m
- max. cable length at stated transmission rate acc. to PI: 100 Mbit/s - max.50m

### Hinweise

- RoHS-konform
- LABS-/silikonfrei (bei Produktion)
- PNO = PROFIBUS Nutzerorganisation e.V.
- Sonderausführungen nach Ihren Spezifikationen auf Anfrage

### Remarks

- conform to RoHS
- LABS-/silicone-free (during production)
- PI = Profibus & Profinet International
- Special designs according to your specifications on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Faserkern: Polymethylmetacrylat (PMMA)   Fasermantel: fluoriertes Spezialpolymer
Leiterklasse	Stufenindexfaser: 980/1000 µm
Aderisolationswerkstoff	Polyethylen (PE - 2Y) oder Polyamid (PA - 4Y)
Aderisolationdurchmesser	2,2 mm
Aderkennung	schwarz bzw. schwarz/orange
Tragorgan	(ZN) - nichtmetallische Zugentlastungselemente (Aramid)
Außenmantelwerkstoff	PVC bzw. PUR
Mantelfarbe	schwarz RAL9005 (BK), violett RAL4001 (VT), grün RAL6018 (GN), orange RAL2003 (OG) bzw. rot RAL3000 (RD)
Dämpfung	max. 160 dB/km bei 650 nm (Laser); max. 230 dB/km bei 660 nm (LED)
optische Werte (LWL)	Bandbreite 10 MHz x 100 m
kleinster Biegeradius fest	10 x d
kleinster Biegeradius bewegt	10 x d - Trailing: 10 x d < 5m VW*   15 x d ≥ 5m VW*
Verfahrgeschwindigkeit	Trailing: freitragend: 4 m/s
Verfahrweg	Trailing: max. 10 m (VW)
Beschleunigung	Trailing: max. 3 m/s²
Biegezyklen	Trailing: > 5 Mio.
Betriebstemp. fest min/max	-50 °C / +80 °C (J-V2Y)   Robust:-40°C bis +70°C
Betriebstemp. bew. min/max	-20 °C / +70 °C (Trailing & Robust)   Verlegetemperatur: -10 °C / +50 °C
Halogenfreiheit	POF Robust und Trailing: gem. IEC 60754-1 (mit Ausnahme des Fasercoatings)
Brandverhalten	PVC OFNG: nach IEC 60332-3-24(Kat.C), FT 4
Ölbeständigkeit	PUR: nach IEC 60811-2-1
Approbaton	UL/CSA: PVC cULus - OFNG

### Structure & Specifications

conductor material	fiber core: polymethylmetacrylat (PMMA)   fiber coat: fluoridated special polymer
conductor class	step index fibre 980/1000 µm
core insulation	polyethylene (PE - 2Y) or polyamid (PA - 4Y)
core diameter	2,2 mm
core identification	black resp. black/orange
supporting element	(ZN) - non-metallic strain relief elements (aramid)
outer sheath	PVC resp. PUR
sheath colour	black RAL9005 (BK), violet RAL4001 (VT), green RAL6018(GN), orange RAL2003 (OG), resp. red RAL3000 (RD)
attenuation	max. 160 dB/km at 650 nm (Laser); max. 230 dB/km at 660 nm (LED)
optical transfer (LWL)	bandwidth 10 MHz x 100 m
min. bending radius fixed	10 x d
min. bending radius moved	10 x d - Trailing: 10 x d < 5m TL*   15 x d ≥ 5m TL*
speed	Trailing: self-supporting: 4 m/s
traverse length	Trailing: max. 10 m (TL)
acceleration	Trailing: max. 3 m/s²
bending cycles	Trailing: > 5 Mio.
operat. temp. fixed min/max	-50 °C / +80 °C (J-V2Y)   Robust:-40°C bis +70°C
operat. temp. moved min/max	-20 °C / +70 °C (Trailing & Robust)   installation temperature: -10 °C / +50 °C
halogen free	POF Robust und Trailing: acc. to IEC 60754-1 (except the fiber coatings)
burning behavior	PVC OFNG: acc. IEC 60332-3-24(Kat.C), FT 4
resistant to oil	PUR: acc. to IEC 60811-2-1
approvals	UL/CSA: PVC cULus - OFNG





# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6100 ECO SK-PVC UL/CSA

für leichte bis mittlere Anforderungen

for light to medium requirements



### Anwendung

als flexible Anschluss- und Steuerleitung für hohe elektrische und leichte bis mittlere mechanische Anforderungen in Schleppketten und beweglichen Antrieben im Maschinen- und Anlagenbau.

### Application

as flexible power and control cable for high electrical and light to medium mechanical requirements in drag chains and motion drive systems in machine and plant engineering.

### Besonderheiten

- UL/CSA-Approval, DESINA-konform
- adhäsionsarm, silikonfrei
- flammwidrig gem. IEC 60332-1-2, FT1, VW-1
- ölbeständig nach DIN EN 60811-2-1 (nur Mineralöl)
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- durch die UL/CSA-Zulassung bis 600 V ist eine Parallelverlegung mit anderen Leitungen, die ebenfalls eine Betriebsspannung bis 600 V führen, erlaubt

### Special Features

- UL/CSA approved, conform to DESINA
- low adhesion, silicone-free
- flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
- oilresistant acc. to DIN EN 60811-2-1 (only mineral oil)
- largely resistant to grease, coolant fluids and lubricants
- due to 600 V UL/CSA approval parallel laying with other 600 V cables is permitted

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Klasse 5 bzw. IEC 60228 cl. 5
Aderisolationwerkstoff	PVC
Aderkennung	nach DIN VDE 0293 schwarze Adern mit weißen Ziffern, 1 x GNGE
Gesamtverseilung	Adern in Lagen verseilt
Außenmantelwerkstoff	PVC
Mantelfarbe	grau RAL 7001
Nennspannung	nach IEC: 300/500; nach UL: 600 V
Prüfspannung	4 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 5 bzw. IEC 60228 cl. 5
Isolationswiderstand	bei +20 °C $\geq 20 \text{ M}\Omega \times \text{km}$
Strombelastbarkeit	nach DIN VDE
Sonstige Eigenschaften	- Verfahrensgeschwindigkeit freitragend: max. 3 m/s - Verfahrenweg (VW): max. 10 m - zul. Beschleunigung: max. 10 m/s <sup>2</sup> - Biegezyklen: > 1 Mio.
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	10 x d < 3 m VW   12,5 x d $\geq 3 \text{ m VW}$
Betriebstemp. fest min/max	-40 °C / +90 °C
Betriebstemp. bew. min/max	-5 °C / +90 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW-1
Approval	UL/CSA - cURus 600V, 90°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 class 5 resp. IEC 60228 cl. 5
core insulation	PVC
core identification	acc. to DIN VDE 0293 black wires with white numerals, 1 x GNGE
overall stranding	cores stranded in layers
outer sheath	PVC
sheath colour	grey RAL 7001
rated voltage	acc. to IEC: 300/500 V; acc. to UL: 600 V
testing voltage	4 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 5 resp. IEC 60228 cl. 5
insulation resistance	at +20 °C $\geq 20 \text{ M}\Omega \times \text{km}$
current carrying capacity	acc. to DIN VDE
other characteristics	- speed self-supporting: max. 3 m/s - traverse length (TL): max. 10 m - acceleration: max. 10 m/s <sup>2</sup> - bending cycles: > 1 mio.
min. bending radius fixed	4 x d
min. bending radius moved	10 x d < 3m TL   12,5 x d $\geq 3\text{m TL}$
operat. temp. fixed min/max	-40 °C / +90 °C
operat. temp. moved min/max	-5 °C / +90 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
approvals	UL/CSA - cURus 600V, 90°C

# Control and electronic cables for use in energy chains



## KAWEFLEX® 6100 ECO SK-PVC UL/CSA

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85251131	KAWEFLEX 6100 ECO SK-PVC UL/CSA	2 X 0,5 (AWG 20)	5,2	9,6	40,0
85251132	KAWEFLEX 6100 ECO SK-PVC UL/CSA	3 G 0,5 (AWG 20)	5,6	14,4	50,0
85251133	KAWEFLEX 6100 ECO SK-PVC UL/CSA	4 G 0,5 (AWG 20)	6,0	19,2	62,0
85251134	KAWEFLEX 6100 ECO SK-PVC UL/CSA	5 G 0,5 (AWG 20)	6,6	24,0	74,0
85251135	KAWEFLEX 6100 ECO SK-PVC UL/CSA	7 G 0,5 (AWG 20)	8,0	33,6	106,0
85251136	KAWEFLEX 6100 ECO SK-PVC UL/CSA	12 G 0,5 (AWG 20)	9,5	57,6	144,0
85251137	KAWEFLEX 6100 ECO SK-PVC UL/CSA	18 G 0,5 (AWG 20)	11,4	86,4	224,0
85251138	KAWEFLEX 6100 ECO SK-PVC UL/CSA	25 G 0,5 (AWG 20)	13,6	120,0	308,0
85251139	KAWEFLEX 6100 ECO SK-PVC UL/CSA	2 X 0,75 (AWG 19)	5,6	14,4	49,0
85251140	KAWEFLEX 6100 ECO SK-PVC UL/CSA	3 G 0,75 (AWG 19)	6,0	21,6	61,0
85251141	KAWEFLEX 6100 ECO SK-PVC UL/CSA	4 G 0,75 (AWG 19)	6,5	28,8	77,0
85251142	KAWEFLEX 6100 ECO SK-PVC UL/CSA	5 G 0,75 (AWG 19)	7,2	36,0	92,0
85251143	KAWEFLEX 6100 ECO SK-PVC UL/CSA	7 G 0,75 (AWG 19)	8,7	50,4	132,0
85251144	KAWEFLEX 6100 ECO SK-PVC UL/CSA	12 G 0,75 (AWG 19)	10,5	86,4	188,0
85251145	KAWEFLEX 6100 ECO SK-PVC UL/CSA	18 G 0,75 (AWG 19)	12,6	129,6	293,0
85251146	KAWEFLEX 6100 ECO SK-PVC UL/CSA	25 G 0,75 (AWG 19)	15,0	180,0	399,0
85251147	KAWEFLEX 6100 ECO SK-PVC UL/CSA	2 X 1 (AWG 18)	5,9	19,2	58,0
85251148	KAWEFLEX 6100 ECO SK-PVC UL/CSA	3 G 1 (AWG 18)	6,4	28,8	74,0
85251149	KAWEFLEX 6100 ECO SK-PVC UL/CSA	4 G 1 (AWG 18)	6,8	38,4	92,0
85251150	KAWEFLEX 6100 ECO SK-PVC UL/CSA	5 G 1 (AWG 18)	7,8	48,0	116,0
85251151	KAWEFLEX 6100 ECO SK-PVC UL/CSA	7 G 1 (AWG 18)	9,5	67,2	164,0
85251152	KAWEFLEX 6100 ECO SK-PVC UL/CSA	12 G 1 (AWG 18)	11,2	115,2	234,0
85251153	KAWEFLEX 6100 ECO SK-PVC UL/CSA	18 G 1 (AWG 18)	13,6	172,8	363,0
85251154	KAWEFLEX 6100 ECO SK-PVC UL/CSA	25 G 1 (AWG 18)	16,0	240,0	500,0
85251155	KAWEFLEX 6100 ECO SK-PVC UL/CSA	2 X 1,5 (AWG 16)	6,5	28,8	72,0
85251156	KAWEFLEX 6100 ECO SK-PVC UL/CSA	3 G 1,5 (AWG 16)	7,0	43,2	93,0
85251157	KAWEFLEX 6100 ECO SK-PVC UL/CSA	4 G 1,5 (AWG 16)	7,8	57,6	117,0
85251158	KAWEFLEX 6100 ECO SK-PVC UL/CSA	5 G 1,5 (AWG 16)	8,7	72,0	148,0
85251159	KAWEFLEX 6100 ECO SK-PVC UL/CSA	7 G 1,5 (AWG 16)	10,7	100,8	210,0
85251160	KAWEFLEX 6100 ECO SK-PVC UL/CSA	12 G 1,5 (AWG 16)	12,6	172,8	304,0
85251161	KAWEFLEX 6100 ECO SK-PVC UL/CSA	18 G 1,5 (AWG 16)	15,3	259,2	479,0
85251162	KAWEFLEX 6100 ECO SK-PVC UL/CSA	25 G 1,5 (AWG 16)	18,3	360,0	666,0
85251163	KAWEFLEX 6100 ECO SK-PVC UL/CSA	3 G 2,5 (AWG 14)	8,6	72,0	146,0
85251164	KAWEFLEX 6100 ECO SK-PVC UL/CSA	4 G 2,5 (AWG 14)	9,5	96,0	191,0
85251165	KAWEFLEX 6100 ECO SK-PVC UL/CSA	5 G 2,5 (AWG 14)	10,8	120,0	239,0
85251166	KAWEFLEX 6100 ECO SK-PVC UL/CSA	7 G 2,5 (AWG 14)	13,0	168,0	339,0



# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6110 SK-PVC UL/CSA

für normale Anforderungen

for normal requirements



### Anwendung

als hochflexible Anschluss- und Steuerleitung für hohe elektrische und normale mechanische Anforderungen in Schleppketten und beweglichen Antrieben im Maschinen- und Anlagenbau.

### Application

as highly flexible power and control cable for high electrical and normal mechanical requirements in drag chains and motion drive systems in machine and plant engineering.

### Besonderheiten

- UL/CSA-Approval, DESINA-konform
- adhäsionsarm, silikonfrei
- flammwidrig gem. IEC 60332-1-2, FT1, VW-1
- ölbeständig nach DIN EN 60811-2-1 (nur Mineralöl)
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- durch die UL/CSA-Zulassung bis 600 V ist eine Parallelverlegung mit anderen Leitungen, die ebenfalls eine Betriebsspannung bis 600 V führen, erlaubt

### Special Features

- UL/CSA approved, conform to DESINA
- low adhesion, silicone-free
- flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
- oilresistant acc. to DIN EN 60811-2-1 (only mineral oil)
- largely resistant to grease, coolant fluids and lubricants
- due to 600 V UL/CSA approval parallel laying with other 600 V cables is permitted

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Klasse 6 Spalte 4 bzw. IEC 60228 cl. 6 pt. 4
Aderisolationwerkstoff	PVC
Aderkennung	nach DIN VDE 0293 schwarze Adern mit weissen Ziffern, 1 x GNGE
Gesamtverseilung	Adern in Lagen verseilt
Außenmantelwerkstoff	PVC
Mantelfarbe	grau RAL 7001
Nennspannung	nach IEC: 300/500; nach UL: 600 V
Prüfspannung	4 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Isolationswiderstand	bei +20 °C ≥ 20 MΩ x km
Strombelastbarkeit	nach DIN VDE
Sonstige Eigenschaften	- Verfahrsgeschwindigkeit freitragend: max. 5 m/s, gleitend: max. 2,5 m/s - Verfahrweg (VW): max. 25 m - zul. Beschleunigung: max. 10 m/s <sup>2</sup> - Biegezyklen: > 3 Mio.
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW   10 x d ≥ 10m VW
Betriebstemp. fest min/max	-40 °C / +90 °C
Betriebstemp. bew. min/max	-5 °C / +90 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW-1
Approval	UL/CSA - cURus 600V, 90°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 class 6 pt. 4 resp. IEC 60228 cl. 6 pt. 4
core insulation	PVC
core identification	acc. to DIN VDE 0293 black wires with white numerals, 1 x GNGE
overall stranding	cores stranded in layers
outer sheath	PVC
sheath colour	grey RAL 7001
rated voltage	acc. to IEC: 300/500 V; acc. to UL: 600 V
testing voltage	4 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
insulation resistance	at +20 °C ≥ 20 MΩ x km
current carrying capacity	acc. to DIN VDE
other characteristics	- speed self-supporting: max. 5 m/s, gliding: max. 2,5 m/s - traverse length (TL): max. 25 m - acceleration: max. 10 m/s <sup>2</sup> - bending cycles: > 3 mio.
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d < 10m TL   10 x d ≥ 10m TL
operat. temp. fixed min/max	-40 °C / +90 °C
operat. temp. moved min/max	-5 °C / +90 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
approvals	UL/CSA - cURus 600V, 90°C



# Control and electronic cables for use in energy chains



## KAWEFLEX® 6110 SK-PVC UL/CSA

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85251178	KAWEFLEX 6110 SK-PVC UL/CSA	2 X 0,5 (AWG 20)	5,2	9,6	40,0
85251179	KAWEFLEX 6110 SK-PVC UL/CSA	3 G 0,5 (AWG 20)	5,6	14,4	50,0
85251180	KAWEFLEX 6110 SK-PVC UL/CSA	4 G 0,5 (AWG 20)	6,0	19,2	62,0
85251181	KAWEFLEX 6110 SK-PVC UL/CSA	5 G 0,5 (AWG 20)	6,6	24,0	74,0
85251182	KAWEFLEX 6110 SK-PVC UL/CSA	7 G 0,5 (AWG 20)	7,8	33,6	106,0
85251183	KAWEFLEX 6110 SK-PVC UL/CSA	12 G 0,5 (AWG 20)	9,3	57,6	144,0
85251184	KAWEFLEX 6110 SK-PVC UL/CSA	18 G 0,5 (AWG 20)	11,4	86,4	224,0
85251185	KAWEFLEX 6110 SK-PVC UL/CSA	25 G 0,5 (AWG 20)	13,4	120,0	308,0
85251186	KAWEFLEX 6110 SK-PVC UL/CSA	30 G 0,5 (AWG 20)	14,1	144,0	336,0
85251187	KAWEFLEX 6110 SK-PVC UL/CSA	36 G 0,5 (AWG 20)	15,4	172,8	394,0
85251188	KAWEFLEX 6110 SK-PVC UL/CSA	2 X 0,75 (AWG 19)	5,7	14,4	49,0
85251129	KAWEFLEX 6110 SK-PVC UL/CSA	3 G 0,75 (AWG 19)	6,1	21,6	61,0
85251189	KAWEFLEX 6110 SK-PVC UL/CSA	4 G 0,75 (AWG 19)	6,6	28,8	77,0
85251190	KAWEFLEX 6110 SK-PVC UL/CSA	5 G 0,75 (AWG 19)	7,3	36,0	92,0
85251191	KAWEFLEX 6110 SK-PVC UL/CSA	7 G 0,75 (AWG 19)	7,9	50,4	132,0
85251192	KAWEFLEX 6110 SK-PVC UL/CSA	12 G 0,75 (AWG 19)	10,5	86,4	188,0
85251193	KAWEFLEX 6110 SK-PVC UL/CSA	18 G 0,75 (AWG 19)	12,9	129,6	293,0
85251194	KAWEFLEX 6110 SK-PVC UL/CSA	25 G 0,75 (AWG 19)	15,4	180,0	399,0
85251195	KAWEFLEX 6110 SK-PVC UL/CSA	36 G 0,75 (AWG 19)	17,4	259,2	540,0
85251196	KAWEFLEX 6110 SK-PVC UL/CSA	42 G 0,75 (AWG 19)	19,0	302,4	635,0
85251197	KAWEFLEX 6110 SK-PVC UL/CSA	2 X 1 (AWG 18)	5,9	19,2	58,0
85251198	KAWEFLEX 6110 SK-PVC UL/CSA	3 G 1 (AWG 18)	6,4	28,8	74,0
85251199	KAWEFLEX 6110 SK-PVC UL/CSA	4 G 1 (AWG 18)	6,8	38,4	92,0
85251200	KAWEFLEX 6110 SK-PVC UL/CSA	5 G 1 (AWG 18)	7,6	48,0	116,0
85251201	KAWEFLEX 6110 SK-PVC UL/CSA	7 G 1 (AWG 18)	9,8	67,2	164,0
85251202	KAWEFLEX 6110 SK-PVC UL/CSA	12 G 1 (AWG 18)	11,2	115,2	234,0
85251203	KAWEFLEX 6110 SK-PVC UL/CSA	18 G 1 (AWG 18)	13,4	172,8	363,0
85251204	KAWEFLEX 6110 SK-PVC UL/CSA	25 G 1 (AWG 18)	16,4	240,0	500,0
85251205	KAWEFLEX 6110 SK-PVC UL/CSA	36 G 1 (AWG 18)	18,3	346,0	620,0
85251206	KAWEFLEX 6110 SK-PVC UL/CSA	2 X 1,5 (AWG 16)	6,5	28,8	72,0
85251207	KAWEFLEX 6110 SK-PVC UL/CSA	3 G 1,5 (AWG 16)	7,0	43,2	93,0
85251208	KAWEFLEX 6110 SK-PVC UL/CSA	4 G 1,5 (AWG 16)	7,6	57,6	117,0
85251209	KAWEFLEX 6110 SK-PVC UL/CSA	5 G 1,5 (AWG 16)	8,7	72,0	148,0
85251210	KAWEFLEX 6110 SK-PVC UL/CSA	7 G 1,5 (AWG 16)	10,5	100,8	210,0
85251211	KAWEFLEX 6110 SK-PVC UL/CSA	12 G 1,5 (AWG 16)	12,6	172,8	304,0
85251212	KAWEFLEX 6110 SK-PVC UL/CSA	18 G 1,5 (AWG 16)	15,1	259,2	479,0
85251213	KAWEFLEX 6110 SK-PVC UL/CSA	25 G 1,5 (AWG 16)	18,3	360,0	666,0
85251214	KAWEFLEX 6110 SK-PVC UL/CSA	36 G 1,5 (AWG 16)	20,7	518,4	867,0
85251215	KAWEFLEX 6110 SK-PVC UL/CSA	42 G 1,5 (AWG 16)	22,8	604,8	1.020,0
85251216	KAWEFLEX 6110 SK-PVC UL/CSA	3 G 2,5 (AWG 14)	8,6	72,0	146,0
85251217	KAWEFLEX 6110 SK-PVC UL/CSA	4 G 2,5 (AWG 14)	9,3	96,0	191,0
85251218	KAWEFLEX 6110 SK-PVC UL/CSA	5 G 2,5 (AWG 14)	10,6	120,0	239,0
85251219	KAWEFLEX 6110 SK-PVC UL/CSA	7 G 2,5 (AWG 14)	13,0	168,0	339,0
85251220	KAWEFLEX 6110 SK-PVC UL/CSA	12 G 2,5 (AWG 14)	15,6	288,0	499,0



# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6130 SK-PUR UL/CSA, kapazitätsarm

für hohe Anforderungen

for high requirements



### Anwendung

als hochflexible, kapazitätsarme Anschluss- und Steuerleitung für hohe elektrische und mechanische Anforderungen in Schleppketten und beweglichen Antrieben im Maschinen- und Anlagenbau.

### Application

as highly flexible, low capacity power and control cable for high electrical and mechanical requirements in drag chains and motion drive systems in machine and plant engineering.

### Besonderheiten

- UL/CSA-Approval, DESINA-konform
- adhäsionsarm, silikonfrei
- UV-beständig
- halogenfrei, flammwidrig gem. IEC 60332-1-2, FT1
- ölbeständig nach DIN EN 60811-2-1
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- durch die UL/CSA-Zulassung bis 600 V ist eine Parallelverlegung mit anderen Leitungen, die ebenfalls eine Betriebsspannung bis 600 V führen, erlaubt

### Special Features

- UL/CSA approved, conform to DESINA
- low adhesion, silicone-free
- UV-resistant
- halogen free, flame-retardant acc. to IEC 60332-1-2, FT1
- oilresistant acc. to DIN EN 60811-2-1
- largely resistant to grease, coolant fluids and lubricants
- due to 600 V UL/CSA approval parallel laying with other 600 V cables is permitted

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Klasse 6 Sp. 4 bzw. IEC 60228 cl. 6 pt. 4
Aderisolationswerkstoff	PELON®2
Aderkennung	nach DIN VDE 0293 schwarze Adern mit weissen Ziffern, 1 x GNGE
Gesamtverseilung	Adern in Lagen verseilt
Außenmantelwerkstoff	PUR
Mantelfarbe	grau RAL 7001
Nennspannung	nach IEC: 600/1.000V   nach UL: 1.000 V
Prüfspannung	4 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Isolationswiderstand	bei +20 °C ≥ 20 MΩ x km
Strombelastbarkeit	nach DIN VDE
Sonstige Eigenschaften	- Fahrgeschwindigkeit freitragend: max. 10 m/s, gleitend: max. 5 m/s - Fahrweg (VW): max. 50 m - zul. Beschleunigung: max. 20 m/s² - Biegezyklen: > 5 Mio.
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW   10 x d ≥ 10 m VW
Betriebstemp. fest min/max	-50 °C / +80 °C
Betriebstemp. bew. min/max	-40 °C / +80 °C
Halogenfreiheit	halogenfrei nach IEC 60754-1
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1
Approval	UL/CSA - cURus 1.000V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 class 6 pt. 4 resp. IEC 60228 cl. 6 pt. 4
core insulation	PELON®2
core identification	acc. to DIN VDE 0293 black wires with white numerals, 1 x GNGE
overall stranding	cores stranded in layers
outer sheath	PUR
sheath colour	grey RAL 7001
rated voltage	acc. to IEC: 600/1.000V   acc. to UL: 1.000 V
testing voltage	4 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
insulation resistance	at +20 °C ≥ 20 MΩ x km
current carrying capacity	acc. to DIN VDE
other characteristics	- speed self-supporting: max. 10 m/s, gliding: max. 5 m/s - traverse length (TL): max. 50 m - acceleration: max. 20 m/s² - bending cycles: > 5 mio
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d < 10 m TL   10 x d ≥ 10 m TL
operat. temp. fixed min/max	-50 °C / +80 °C
operat. temp. moved min/max	-40 °C / +80 °C
halogen free	halogen-free acc. to IEC 60754-1
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1
approvals	UL/CSA - cURus 1.000V, 80°C

# Control and electronic cables for use in energy chains



## KAWEFLEX® 6130 SK-PUR UL/CSA, low capacity

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85261442	KAWEFLEX 6130 SK-PUR UL/CSA	2 X 0,5 (AWG 20)	5,1	9,6	30,0
85261443	KAWEFLEX 6130 SK-PUR UL/CSA	3 G 0,5 (AWG 20)	5,5	14,4	39,0
85261444	KAWEFLEX 6130 SK-PUR UL/CSA	4 G 0,5 (AWG 20)	5,9	19,2	46,0
85261445	KAWEFLEX 6130 SK-PUR UL/CSA	5 G 0,5 (AWG 20)	6,5	24,0	55,0
85261446	KAWEFLEX 6130 SK-PUR UL/CSA	7 G 0,5 (AWG 20)	7,9	33,6	78,0
85261447	KAWEFLEX 6130 SK-PUR UL/CSA	12 G 0,5 (AWG 20)	9,3	57,6	121,0
85261448	KAWEFLEX 6130 SK-PUR UL/CSA	18 G 0,5 (AWG 20)	11,1	86,4	172,0
85261449	KAWEFLEX 6130 SK-PUR UL/CSA	25 G 0,5 (AWG 20)	13,1	120,0	245,0
85261450	KAWEFLEX 6130 SK-PUR UL/CSA	30 G 0,5 (AWG 20)	13,8	144,0	267,0
85261451	KAWEFLEX 6130 SK-PUR UL/CSA	36 G 0,5 (AWG 20)	15,1	173,0	321,0
85261452	KAWEFLEX 6130 SK-PUR UL/CSA	2 X 0,75 (AWG 19)	5,6	14,4	39,0
85261453	KAWEFLEX 6130 SK-PUR UL/CSA	3 G 0,75 (AWG 19)	6,0	21,6	49,0
85261454	KAWEFLEX 6130 SK-PUR UL/CSA	4 G 0,75 (AWG 19)	6,5	28,8	60,0
85261455	KAWEFLEX 6130 SK-PUR UL/CSA	5 G 0,75 (AWG 19)	7,2	36,0	72,0
85261456	KAWEFLEX 6130 SK-PUR UL/CSA	7 G 0,75 (AWG 19)	8,7	50,4	103,0
85261457	KAWEFLEX 6130 SK-PUR UL/CSA	12 G 0,75 (AWG 19)	10,5	86,4	163,0
85261458	KAWEFLEX 6130 SK-PUR UL/CSA	18 G 0,75 (AWG 19)	12,6	129,6	233,0
85261459	KAWEFLEX 6130 SK-PUR UL/CSA	25 G 0,75 (AWG 19)	15,0	180,0	338,0
85261460	KAWEFLEX 6130 SK-PUR UL/CSA	36 G 0,75 (AWG 19)	17,1	260,0	444,0
85261461	KAWEFLEX 6130 SK-PUR UL/CSA	42 G 0,75 (AWG 19)	18,6	303,0	523,0
85261462	KAWEFLEX 6130 SK-PUR UL/CSA	2 X 1 (AWG 18)	6,0	19,2	46,0
85261463	KAWEFLEX 6130 SK-PUR UL/CSA	3 G 1 (AWG 18)	6,5	28,8	60,0
85261464	KAWEFLEX 6130 SK-PUR UL/CSA	4 G 1 (AWG 18)	7,0	38,4	73,0
85261465	KAWEFLEX 6130 SK-PUR UL/CSA	5 G 1 (AWG 18)	8,0	48,0	92,0
85261466	KAWEFLEX 6130 SK-PUR UL/CSA	7 G 1 (AWG 18)	9,6	67,2	129,0
85261467	KAWEFLEX 6130 SK-PUR UL/CSA	12 G 1 (AWG 18)	11,4	115,2	202,0
85261468	KAWEFLEX 6130 SK-PUR UL/CSA	18 G 1 (AWG 18)	13,8	172,8	296,0
85261469	KAWEFLEX 6130 SK-PUR UL/CSA	25 G 1 (AWG 18)	16,5	240,0	426,0
85261470	KAWEFLEX 6130 SK-PUR UL/CSA	36 G 1 (AWG 18)	18,7	346,0	529,0
85261471	KAWEFLEX 6130 SK-PUR UL/CSA	2 X 1,5 (AWG 16)	6,6	28,8	60,0
85261472	KAWEFLEX 6130 SK-PUR UL/CSA	3 G 1,5 (AWG 16)	7,1	43,2	78,0
85261473	KAWEFLEX 6130 SK-PUR UL/CSA	4 G 1,5 (AWG 16)	7,9	57,6	100,0
85261474	KAWEFLEX 6130 SK-PUR UL/CSA	5 G 1,5 (AWG 16)	9,0	72,0	122,0
85261475	KAWEFLEX 6130 SK-PUR UL/CSA	7 G 1,5 (AWG 16)	10,9	100,8	178,0
85261476	KAWEFLEX 6130 SK-PUR UL/CSA	12 G 1,5 (AWG 16)	12,8	172,8	276,0
85261477	KAWEFLEX 6130 SK-PUR UL/CSA	18 G 1,5 (AWG 16)	15,6	259,2	405,0
85261478	KAWEFLEX 6130 SK-PUR UL/CSA	25 G 1,5 (AWG 16)	18,6	360,0	580,0
85261479	KAWEFLEX 6130 SK-PUR UL/CSA	36 G 1,5 (AWG 16)	21,3	519,0	771,0
85261480	KAWEFLEX 6130 SK-PUR UL/CSA	42 G 1,5 (AWG 16)	23,2	605,0	909,0
85261481	KAWEFLEX 6130 SK-PUR UL/CSA	3 G 2,5 (AWG 14)	8,6	72,0	122,0
85261482	KAWEFLEX 6130 SK-PUR UL/CSA	4 G 2,5 (AWG 14)	9,5	96,0	154,0
85261483	KAWEFLEX 6130 SK-PUR UL/CSA	5 G 2,5 (AWG 14)	10,8	120,0	192,0
85261484	KAWEFLEX 6130 SK-PUR UL/CSA	7 G 2,5 (AWG 14)	13,0	168,0	272,0
85261485	KAWEFLEX 6130 SK-PUR UL/CSA	12 G 2,5 (AWG 14)	15,6	288,0	436,0
85261486	KAWEFLEX 6130 SK-PUR UL/CSA	18 G 2,5 (AWG 14)	18,8	432,0	628,0
85261487	KAWEFLEX 6130 SK-PUR UL/CSA	25 G 2,5 (AWG 14)	22,6	600,0	903,0



# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6200 ECO SK-C-PVC UL/CSA

für leichte bis mittlere Anforderungen

for light to medium requirements



### Anwendung

als flexible, geschirmte Anschluss- und Steuerleitung für EMV-gerechte Verkabelung bei hohen elektrischen und leichten bis mittleren mechanischen Anforderungen in Schleppketten und beweglichen Antrieben im Maschinen- und Anlagenbau.

### Application

as flexible, shielded power and control cable for EMC-compliant connecting at high electrical and light to medium mechanical requirements in drag chains and motion drive systems in machine and plant engineering.

### Besonderheiten

- UL/CSA-Approval
- adhäsionsarm, silikonfrei
- flammwidrig gem. IEC 60332-1-2, FT1, VW-1
- ölbeständig nach DIN EN 60811-2-1 (nur Mineralöl)
- weitgehend beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel
- für EMV-gerechte Anwendung
- durch die UL/CSA-Zulassung bis 600 V ist eine Parallelverlegung mit anderen Leitungen, die ebenfalls eine Betriebsspannung bis 600 V führen, erlaubt

### Special Features

- UL/CSA approved
- low adhesion, silicone-free
- flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
- oilresistant acc. to DIN EN 60811-2-1 (only mineral oil)
- largely resistant to grease, coolant fluids and lubricants
- recommended for EMC-compatible applications
- due to 600 V UL/CSA approval parallel laying with other 600 V cables is permitted

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Klasse 5 bzw. IEC 60228 cl. 5
Aderisolationwerkstoff	PVC
Aderkennung	nach DIN VDE 0293 schwarze Adern mit weissen Ziffern, 1 x GNGE
Gesamtverseilung	Adern in Lagen verseilt
Gesamtschirm	Cu-Geflecht verzinkt; opt. Bedeckung ca. 85%
Außenmantelwerkstoff	PVC
Mantelfarbe	grau RAL 7001
Nennspannung	nach IEC: 300/500; nach UL: 600 V
Prüfspannung	Ader/Ader: 4 kV; Ader/Schirm: 2 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 5 bzw. IEC 60228 cl. 5
Isolationswiderstand	bei +20 °C ≥ 20 MΩ x km
Strombelastbarkeit	nach DIN VDE
Sonstige Eigenschaften	- Verfahrensgeschwindigkeit freitragend: max. 3 m/s - Verfahrensweg (VW): max. 10 m - zul. Beschleunigung: max. 10 m/s <sup>2</sup> - Biegezyklen: > 1 Mio.
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	10 x d < 3 m VW; 12,5 x d ≥ 3 m VW
Betriebstemp. fest min/max	-40 °C / +90 °C
Betriebstemp. bew. min/max	-5 °C / +90 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW-1
Approval	UL/CSA - cURus 600V, 90°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 class 5 resp. IEC 60228 cl. 5
core insulation	PVC
core identification	acc. to DIN VDE 0293 black wires with white numerals, 1 x GNGE
overall stranding	cores stranded in layers
shield	copper braid tinned, coverage approx. 85%
outer sheath	PVC
sheath colour	grey RAL 7001
rated voltage	acc. to IEC: 300/500 V; acc. to UL: 600 V
testing voltage	core/core: 4 kV; core/shield: 2 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 5 resp. IEC 60228 cl. 5
insulation resistance	at +20 °C ≥ 20 MΩ x km
current carrying capacity	acc. to DIN VDE
other characteristics	- speed self-supporting: max. 3 m/s - traverse length (TL): max. 10 m - acceleration: max. 10 m/s <sup>2</sup> - bending cycles: > 1 mio.
min. bending radius fixed	4 x d
min. bending radius moved	10 x d < 3m TL   12,5 x d ≥ 3m TL
operat. temp. fixed min/max	-40 °C / +90 °C
operat. temp. moved min/max	-5 °C / +90 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
approvals	UL/CSA - cURus 600V, 90°C





# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6210 SK-C-PVC UL/CSA

für normale Anforderungen

for normal requirements



### Anwendung

als hochflexible, geschirmte Anschluss- und Steuerleitung für EMV-gerechte Verkabelung bei hohen elektrischen und normalen mechanischen Anforderungen in Schleppketten und beweglichen Antrieben im Maschinen- und Anlagenbau.

### Application

as highly flexible, shielded power and control cable for EMC-compliant connecting at high electrical and normal mechanical requirements in drag chains and motion drive systems in machine and plant engineering.

### Besonderheiten

- UL/CSA-Approval
- adhäsionsarm, silikonfrei
- flammwidrig gem. IEC 60332-1-2, FT1, VW-1
- ölbeständig nach DIN EN 60811-2-1 (nur Mineralöl)
- weitgehend beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel
- für EMV-gerechte Anwendung
- durch die UL/CSA-Zulassung bis 600 V ist eine Parallelverlegung mit anderen Leitungen, die ebenfalls eine Betriebsspannung bis 600 V führen, erlaubt

### Special Features

- UL/CSA approved
- low adhesion, silicone-free
- flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
- oilresistant acc. to DIN EN 60811-2-1 (only mineral oil)
- largely resistant to grease, coolant fluids and lubricants
- recommended for EMC-compatible applications
- due to 600 V UL/CSA approval parallel laying with other 600 V cables is permitted

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Klasse 6 Spalte 4 bzw. IEC 60228 cl. 6 pt. 4
Aderisolationswerkstoff	PVC
Aderkennung	nach DIN VDE 0293 schwarze Adern mit weissen Ziffern, 1 x GNGE
Gesamtverseilung	Adern in Lagen verseilt
Gesamtschirm	Cu-Geflecht verzinkt; opt. Bedeckung ca. 85%
Außenmantelwerkstoff	PVC
Mantelfarbe	grau RAL 7001
Nennspannung	nach IEC: 300/500; nach UL: 600 V
Prüfspannung	Ader/Ader: 4 kV, Ader/Schirm: 2 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Isolationswiderstand	bei +20 °C $\geq 20 \text{ M}\Omega \times \text{km}$
Strombelastbarkeit	nach DIN VDE
Sonstige Eigenschaften	- Fahrgeschwindigkeit freitragend: max. 5 m/s, gleitend: max. 2,5 m/s - Fahrweg (VW): max. 25 m - zul. Beschleunigung: max. 10 m/s <sup>2</sup> - Biegezyklen: > 3 Mio.
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW   10 x d $\geq$ 10m VW
Betriebstemp. fest min/max	-40 °C / +90 °C
Betriebstemp. bew. min/max	-5 °C / +90 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW-1
Approval	UL/CSA - cURus 600V, 90°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 class 6 pt. 4 resp. IEC 60228 cl. 6 pt. 4
core insulation	PVC
core identification	acc. to DIN VDE 0293 black wires with white numerals, 1 x GNGE
overall stranding	cores stranded in layers
shield	copper braid tinned, coverage approx. 85%
outer sheath	PVC
sheath colour	grey RAL 7001
rated voltage	acc. to IEC: 300/500 V; acc. to UL: 600 V
testing voltage	core/core: 4 kV, core/shield: 2 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
insulation resistance	at +20 °C $\geq 20 \text{ M}\Omega \times \text{km}$
current carrying capacity	acc. to DIN VDE
other characteristics	- speed self-supporting: max. 5 m/s, gliding: max. 2,5 m/s - traverse length (TL): max. 25 m - acceleration: max. 10 m/s <sup>2</sup> - bending cycles: > 3 mio.
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d < 10m TL   10 x d $\geq$ 10m TL
operat. temp. fixed min/max	-40 °C / +90 °C
operat. temp. moved min/max	-5 °C / +90 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
approvals	UL/CSA - cURus 600V, 90°C

# Control and electronic cables for use in energy chains



## KAWEFLEX® 6210 SK-C-PVC UL/CSA

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85254057	KAWEFLEX 6210 SK-C-PVC UL/CSA	2 X 0,5 (AWG 20)	5,8	27,0	56,0
85254058	KAWEFLEX 6210 SK-C-PVC UL/CSA	3 G 0,5 (AWG 20)	6,2	32,0	73,0
85254059	KAWEFLEX 6210 SK-C-PVC UL/CSA	4 G 0,5 (AWG 20)	6,6	42,0	83,0
85254060	KAWEFLEX 6210 SK-C-PVC UL/CSA	5 G 0,5 (AWG 20)	7,2	47,0	93,0
85254061	KAWEFLEX 6210 SK-C-PVC UL/CSA	7 G 0,5 (AWG 20)	8,6	62,0	129,0
85254062	KAWEFLEX 6210 SK-C-PVC UL/CSA	12 G 0,5 (AWG 20)	10,1	92,0	193,0
85254063	KAWEFLEX 6210 SK-C-PVC UL/CSA	18 G 0,5 (AWG 20)	12,0	132,0	275,0
85254064	KAWEFLEX 6210 SK-C-PVC UL/CSA	25 G 0,5 (AWG 20)	14,4	191,0	358,0
85254065	KAWEFLEX 6210 SK-C-PVC UL/CSA	36 G 0,5 (AWG 20)	16,2	224,0	449,0
85254066	KAWEFLEX 6210 SK-C-PVC UL/CSA	2 X 0,75 (AWG 19)	6,3	32,0	73,0
85254067	KAWEFLEX 6210 SK-C-PVC UL/CSA	3 G 0,75 (AWG 19)	6,7	45,0	83,0
85254068	KAWEFLEX 6210 SK-C-PVC UL/CSA	4 G 0,75 (AWG 19)	7,2	52,0	96,0
85254069	KAWEFLEX 6210 SK-C-PVC UL/CSA	5 G 0,75 (AWG 19)	8,1	65,0	122,0
85254070	KAWEFLEX 6210 SK-C-PVC UL/CSA	7 G 0,75 (AWG 19)	9,7	85,0	177,0
85254071	KAWEFLEX 6210 SK-C-PVC UL/CSA	12 G 0,75 (AWG 19)	11,3	126,0	234,0
85254072	KAWEFLEX 6210 SK-C-PVC UL/CSA	18 G 0,75 (AWG19)	13,9	181,0	336,0
85254073	KAWEFLEX 6210 SK-C-PVC UL/CSA	25 G 0,75 (AWG19)	16,2	261,0	441,0
85254074	KAWEFLEX 6210 SK-C-PVC UL/CSA	36 G 0,75 (AWG19)	18,4	315,0	592,0
85254075	KAWEFLEX 6210 SK-C-PVC UL/CSA	42 G 0,75 (AWG19)	20	362,0	691,0
85254056	KAWEFLEX 6210 SK-C-PVC UL/CSA	2 X 1 (AWG 18)	6,5	42,0	80,0
85254076	KAWEFLEX 6210 SK-C-PVC UL/CSA	3 G 1 (AWG 18)	7,0	52,0	93,0
85254077	KAWEFLEX 6210 SK-C-PVC UL/CSA	4 G 1 (AWG 18)	7,4	62,0	122,0
85254078	KAWEFLEX 6210 SK-C-PVC UL/CSA	5 G 1 (AWG 18)	8,4	77,0	139,0
85254079	KAWEFLEX 6210 SK-C-PVC UL/CSA	7 G 1 (AWG 18)	10,1	101,0	206,0
85254080	KAWEFLEX 6210 SK-C-PVC UL/CSA	12 G 1 (AWG 18)	11,8	161,0	291,0
85254081	KAWEFLEX 6210 SK-C-PVC UL/CSA	18 G 1 (AWG 18)	14,4	244,0	414,0
85254082	KAWEFLEX 6210 SK-C-PVC UL/CSA	25 G 1 (AWG 18)	17,0	321,0	542,0
85254083	KAWEFLEX 6210 SK-C-PVC UL/CSA	2 X 1,5 (AWG 16)	7,1	52,0	92,0
85254084	KAWEFLEX 6210 SK-C-PVC UL/CSA	3 G 1,5 (AWG 16)	7,6	72,0	123,0
85254085	KAWEFLEX 6210 SK-C-PVC UL/CSA	4 G 1,5 (AWG 16)	8,4	87,0	144,0
85254086	KAWEFLEX 6210 SK-C-PVC UL/CSA	5 G 1,5 (AWG 16)	9,5	107,0	193,0
85254087	KAWEFLEX 6210 SK-C-PVC UL/CSA	7 G 1,5 (AWG 16)	11,3	141,0	247,0
85254053	KAWEFLEX 6210 SK-C-PVC UL/CSA	12 G 1,5 (AWG 16)	13,2	224,0	355,0
85254088	KAWEFLEX 6210 SK-C-PVC UL/CSA	18 G 1,5 (AWG 16)	16,1	340,0	534,0
85254089	KAWEFLEX 6210 SK-C-PVC UL/CSA	25 G 1,5 (AWG 16)	19,1	461,0	699,0
85254090	KAWEFLEX 6210 SK-C-PVC UL/CSA	36 G 1,5 (AWG 16)	21,7	588,0	941,0
85254091	KAWEFLEX 6210 SK-C-PVC UL/CSA	42 G 1,5 (AWG 16)	23,6	679,0	1.099,0
85254092	KAWEFLEX 6210 SK-C-PVC UL/CSA	3 G 2,5 (AWG 14)	9,2	106,0	169,0
85254093	KAWEFLEX 6210 SK-C-PVC UL/CSA	4 G 2,5 (AWG 14)	10,1	131,0	231,0
85254055	KAWEFLEX 6210 SK-C-PVC UL/CSA	5 G 2,5 (AWG 14)	11,4	160,0	287,0
85254094	KAWEFLEX 6210 SK-C-PVC UL/CSA	7 G 2,5 (AWG 14)	14,0	219,0	386,0
85254095	KAWEFLEX 6210 SK-C-PVC UL/CSA	12 G 2,5 (AWG 14)	16,4	339,0	479,0



# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6230 SK-C-PUR UL/CSA, kapazitätsarm

für hohe Anforderungen

for high requirements



### Anwendung

als hochflexible, kapazitätsarme, geschirmte Anschluss- und Steuerleitung für EMV-gerechte Verkabelung bei hohen elektrischen und mechanischen Anforderungen in Schleppketten und beweglichen Antrieben im Maschinen- und Anlagenbau.

### Application

as highly flexible, low capacity, shielded power and control cable for EMC-compliant connecting at high electrical and mechanical requirements in drag chains and motion drive systems in machine and plant engineering.

### Besonderheiten

- UL/CSA-Approval
- adhäsionsarm, silikonfrei
- UV-beständig
- halogenfrei, flammwidrig gem. IEC 60332-1-2, FT1
- ölbeständig nach DIN EN 60811-2-1
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- für EMV-gerechte Anwendung
- durch die UL/CSA-Zulassung bis 600 V ist eine Parallelverlegung mit anderen Leitungen, die ebenfalls eine Betriebsspannung bis 600 V führen, erlaubt

### Special Features

- UL/CSA approved
- low adhesion, silicone-free
- UV-resistant
- halogen free, flame-retardant acc. to IEC 60332-1-2, FT1
- oilresistant acc. to DIN EN 60811-2-1
- largely resistant to grease, coolant fluids and lubricants
- recommended for EMC-compatible applications
- due to 600 V UL/CSA approval parallel laying with other 600 V cables is permitted

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- Leitungen für Torsionsbeanspruchungen s. Kapitel 4.20
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline
- cables for torsional stress see chapter 4.20
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Klasse 6 Spalte 4 bzw. IEC 60228 cl. 6 pt. 4
Aderisolationswerkstoff	PELON®2
Aderkennung	nach DIN VDE 0293 schwarze Adern mit weissen Ziffern, 1 x GNGE
Gesamtverseilung	Adern in Lagen verseilt
Gesamtschirm	Cu-Geflecht verzinkt, opt. Bedeckung ca. 85%
Außenmantelwerkstoff	PUR
Mantelfarbe	grau RAL 7001
Nennspannung	nach IEC: 600/1000 V; nach UL: 1000 V
Prüfspannung	Ader/Ader: 4 kV, Ader/Schirm: 2 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Isolationswiderstand	bei +20 °C ≥ 20 MΩ x km
Strombelastbarkeit	nach DIN VDE
Sonstige Eigenschaften	- Fahrgeschwindigkeit freitragend: max. 10 m/s, gleitend: max. 5 m/s - Fahrweg (VW): max. 50 m - zul. Beschleunigung: max. 20 m/s <sup>2</sup> - Biegezyklen: > 5 Mio.
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW   10 x d ≥ 10m VW
Betriebstemp. fest min/max	-50 °C / +80 °C
Betriebstemp. bew. min/max	-40 °C / +80 °C
Halogenfreiheit	halogenfrei nach IEC 60754-1
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1
Approval	UL/CSA - cURus 1.000V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 class 6 pt. 4 resp. IEC 60228 cl. 6 pt. 4
core insulation	PELON®2
core identification	acc. to DIN VDE 0293 black wires with white numerals, 1 x GNGE
overall stranding	cores stranded in layers
shield	copper braid tinned, coverage approx. 85%
outer sheath	PUR
sheath colour	grey RAL 7001
rated voltage	acc. to IEC: 600/1000 V; acc. to UL: 1000 V
testing voltage	core/core: 4 kV, core/shield: 2 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
insulation resistance	at +20 °C ≥ 20 MΩ x km
current carrying capacity	acc. to DIN VDE
other characteristics	- speed self-supporting: max. 10 m/s, gliding: max. 5 m/s - traverse length (TL): max. 50 m - acceleration: max. 20 m/s <sup>2</sup> - bending cycles: > 5 mio.
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d < 10m TL   10 x d ≥ 10m TL
operat. temp. fixed min/max	-50 °C / +80 °C
operat. temp. moved min/max	-40 °C / +80 °C
halogen free	halogen-free acc. to IEC 60754-1
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1
approvals	UL/CSA - cURus 1.000V, 80°C



# Control and electronic cables for use in energy chains



## KAWEFLEX® 6230 SK-C-PUR UL/CSA, low capacity

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85263305	KAWEFLEX 6230 SK-C-PUR UL/CSA	2 X 0,5 (AWG 20)	5,7	27,0	45,0
85263306	KAWEFLEX 6230 SK-C-PUR UL/CSA	3 G 0,5 (AWG 20)	6,1	32,0	52,0
85263307	KAWEFLEX 6230 SK-C-PUR UL/CSA	4 G 0,5 (AWG 20)	6,5	43,0	65,0
85263308	KAWEFLEX 6230 SK-C-PUR UL/CSA	5 G 0,5 (AWG 20)	7,1	47,0	72,0
85263309	KAWEFLEX 6230 SK-C-PUR UL/CSA	7 G 0,5 (AWG 20)	8,5	62,0	99,0
85263310	KAWEFLEX 6230 SK-C-PUR UL/CSA	12 G 0,5 (AWG 20)	9,9	92,0	140,0
85263311	KAWEFLEX 6230 SK-C-PUR UL/CSA	18 G 0,5 (AWG 20)	11,9	132,0	204,0
85263312	KAWEFLEX 6230 SK-C-PUR UL/CSA	25 G 0,5 (AWG 20)	14,1	191,0	286,0
85263313	KAWEFLEX 6230 SK-C-PUR UL/CSA	36 G 0,5 (AWG 20)	14,9	219,0	370,0
85263314	KAWEFLEX 6230 SK-C-PUR UL/CSA	2 X 0,75 (AWG 19)	6,2	32,0	52,0
85263315	KAWEFLEX 6230 SK-C-PUR UL/CSA	3 G 0,75 (AWG 19)	6,6	45,0	66,0
85263316	KAWEFLEX 6230 SK-C-PUR UL/CSA	4 G 0,75 (AWG 19)	7,1	52,0	77,0
85263317	KAWEFLEX 6230 SK-C-PUR UL/CSA	5 G 0,75 (AWG 19)	8,0	65,0	96,0
85263318	KAWEFLEX 6230 SK-C-PUR UL/CSA	7 G 0,75 (AWG 19)	9,5	85,0	129,0
85263319	KAWEFLEX 6230 SK-C-PUR UL/CSA	12 G 0,75 (AWG 19)	11,1	126,0	185,0
85263320	KAWEFLEX 6230 SK-C-PUR UL/CSA	18 G 0,75 (AWG 19)	13,4	181,0	261,0
85263321	KAWEFLEX 6230 SK-C-PUR UL/CSA	25 G 0,75 (AWG 19)	15,8	261,0	375,0
85263322	KAWEFLEX 6230 SK-C-PUR UL/CSA	36 G 0,75 (AWG 19)	18,1	315,0	496,0
85263323	KAWEFLEX 6230 SK-C-PUR UL/CSA	42 G 0,75 (AWG 19)	19,6	363,0	579,0
85263324	KAWEFLEX 6230 SK-C-PUR UL/CSA	2 X 1 (AWG 18)	6,6	43,0	65,0
85263300	KAWEFLEX 6230 SK-C-PUR UL/CSA	3 G 1 (AWG 18)	7,1	52,0	75,0
85263325	KAWEFLEX 6230 SK-C-PUR UL/CSA	4 G 1 (AWG 18)	7,8	67,0	97,0
85263326	KAWEFLEX 6230 SK-C-PUR UL/CSA	5 G 1 (AWG 18)	8,6	77,0	111,0
85263327	KAWEFLEX 6230 SK-C-PUR UL/CSA	7 G 1 (AWG 18)	10,4	102,0	150,0
85263328	KAWEFLEX 6230 SK-C-PUR UL/CSA	12 G 1 (AWG 18)	12,2	161,0	229,0
85263329	KAWEFLEX 6230 SK-C-PUR UL/CSA	18 G 1 (AWG 18)	14,8	244,0	343,0
85263330	KAWEFLEX 6230 SK-C-PUR UL/CSA	25 G 1 (AWG 18)	17,3	331,0	462,0
85263331	KAWEFLEX 6230 SK-C-PUR UL/CSA	2 X 1,5 (AWG 16)	7,2	52,0	76,0
85263332	KAWEFLEX 6230 SK-C-PUR UL/CSA	3 G 1,5 (AWG 16)	7,9	72,0	100,0
85263333	KAWEFLEX 6230 SK-C-PUR UL/CSA	4 G 1,5 (AWG 16)	8,5	86,0	121,0
85263334	KAWEFLEX 6230 SK-C-PUR UL/CSA	5 G 1,5 (AWG 16)	9,6	106,0	148,0
85263335	KAWEFLEX 6230 SK-C-PUR UL/CSA	7 G 1,5 (AWG 16)	11,5	141,0	199,0
85263303	KAWEFLEX 6230 SK-C-PUR UL/CSA	12 G 1,5 (AWG 16)	13,8	244,0	323,0
85263336	KAWEFLEX 6230 SK-C-PUR UL/CSA	18 G 1,5 (AWG 16)	16,6	340,0	455,0
85263337	KAWEFLEX 6230 SK-C-PUR UL/CSA	25 G 1,5 (AWG 16)	19,6	461,0	620,0
85263338	KAWEFLEX 6230 SK-C-PUR UL/CSA	36 G 1,5 (AWG 16)	22,3	588,0	844,0
85263339	KAWEFLEX 6230 SK-C-PUR UL/CSA	42 G 1,5 (AWG 16)	24,2	679,0	978,0
85263301	KAWEFLEX 6230 SK-C-PUR UL/CSA	3 G 2,5 (AWG 14)	9,4	106,0	144,0
85263304	KAWEFLEX 6230 SK-C-PUR UL/CSA	4 G 2,5 (AWG 14)	10,1	131,0	177,0
85263340	KAWEFLEX 6230 SK-C-PUR UL/CSA	5 G 2,5 (AWG 14)	11,4	160,0	214,0
85263302	KAWEFLEX 6230 SK-C-PUR UL/CSA	7 G 2,5 (AWG 14)	14,0	219,0	301,0
85263341	KAWEFLEX 6230 SK-C-PUR UL/CSA	12 G 2,5 (AWG 14)	16,6	339,0	479,0
85263342	KAWEFLEX 6230 SK-C-PUR UL/CSA	18 G 2,5 (AWG 14)	19,8	492,0	685,0
85263343	KAWEFLEX 6230 SK-C-PUR UL/CSA	25 G 2,5 (AWG 14)	23,6	674,0	981,0



# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6310 SK-C-PVC UL/CSA, kapazitätsarm

für normale Anforderungen

for normal requirements



### Anwendung

als Elektronikschiepleitung zur Daten- und Signalübertragung für normale Anforderungen in Energieführungsketten und an beweglichen Antrieben.

### Application

electronic drag chain cable for data and signal transmission for normal requirements in drag chains and moving drive systems.

### Besonderheiten

- UL/CSA-Approval, DESINA-konform
- adhäsionsarm, silikonfrei
- flammwidrig gem. IEC 60332-1-2, FT1, VW1
- ölbeständig nach DIN EN 60811-2-1 (nur Mineralöl)
- weitgehend beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel

### Special Features

- UL/CSA approved, conform to DESINA
- low adhesion, silicone-free
- flame-retardant acc. to IEC 60332-1-2, FT1, VW1
- oilresistant acc. to DIN EN 60811-2-1 (only mineral oil)
- largely resistant to grease, coolant fluids and lubricants

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	feinstdrähtig gem.VDE 0295 Kl. 6 Sp. 4 bzw. IEC60228 cl. 6 pt. 4
Aderisolationswerkstoff	PELON®2
Aderkennung	farbig nach DIN 47100
Gesamtverseilung	Adern in Lagen verseilt
Außenmantelwerkstoff	PVC
Mantelfarbe	grau RAL 7001
Nennspannung	nach VDE: 300/300 V; nach UL: 300 V
Prüfspannung	Ader/Ader: 1.500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl.6 bzw. IEC60228 cl.6
Isolationswiderstand	bei +20 °C $\geq 500 \text{ M}\Omega \times \text{km}$
Strombelastbarkeit	gem. DIN VDE
Kapazität	Ader/Ader: ca. 55 pF/m
Induktivität	ca. 0,6 mH/km
Sonstige Eigenschaften	- Fahrgeschwindigkeit freitragend: max. 5 m/s, gleitend: max. 2,5 m/s - Verfahrweg (VW): max. 25 m - zul. Beschleunigung: max. 10 m/s <sup>2</sup> - Biegezyklen: > 3 Mio.
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW; 10 x d $\geq 10\text{m VW}$
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-5 °C / +80 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW1
Ölbeständigkeit	nach DIN EN 60811-2-1 (nur Mineralöl)
Approval	UL/CSA - cURus 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc.to VDE 0295 cl. 6 pt. 4 resp. IEC60228 cl. 6 pt. 4
core insulation	PELON®2
core identification	coloured acc. to DIN 47100
overall stranding	cores stranded in layers
outer sheath	PVC
sheath colour	grey RAL 7001
rated voltage	acc. to VDE: 300/300V; acc. to UL: 300 V
testing voltage	core/core: 1.500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl.6 resp. IEC60228 cl.6
insulation resistance	at +20 °C $\geq 500 \text{ M}\Omega \times \text{km}$
current carrying capacity	acc. to DIN VDE
capacity	core/core: approx. 55 pF/m
inductivity	approx. 0,6 mH/km
other characteristics	- speed self-supporting: max. 5 m/s, gliding: max. 2,5 m/s - traverse length (TL): max. 25 m - acceleration: max. 10 m/s <sup>2</sup> - bending cycles: > 3 mio
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 10m TL; 10 x d $\geq 10\text{m TL}$
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-5 °C / +80 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW1
resistant to oil	acc. to DIN EN 60811-2-1 (only mineral oil)
approvals	UL/CSA - cURus 300V, 80°C





# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6330 SK-PUR UL/CSA, kapazitätsarm

für hohe Anforderungen

for high requirements



### Anwendung

als Elektronikschleppleitung zur Daten- und Signalübertragung für hohe Anforderungen in Energieführungsketten und an beweglichen Antrieben.

### Application

electronic drag chain cable for data and signal transmission for high requirements in drag chains and moving drive systems.

### Besonderheiten

- UL/CSA-Approval, DESINA-konform
- adhäsionsarm, silikonfrei
- UV-beständig
- halogenfrei, flammwidrig gem. IEC 60332-1-2
- ölbeständig nach DIN EN 60811-2-1, FT2
- weitgehend beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel

### Special Features

- UL/CSA approved, conform to DESINA
- low adhesion, silicone-free
- UV-resistant
- halogen free, flame-retardant acc. to IEC 60332-1-2
- oilresistant acc. to DIN EN 60811-2-1, FT2
- largely resistant to grease, coolant fluids and lubricants

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	feinstdrähtig gem.VDE 0295 Kl. 6 Sp. 4 bzw. IEC60228 cl. 6 pt. 4
Aderisolationswerkstoff	PELON®2
Aderkennung	farbig nach DIN 47100
Gesamtverseilung	Adern in Lagen verseilt
Außenmantelwerkstoff	PUR
Mantelfarbe	grau RAL 7001
Nennspannung	nach VDE: 300/300 V; nach UL: 300 V
Prüfspannung	Ader/Ader: 1.500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl.6 bzw. IEC60228 cl.6
Isolationswiderstand	bei +20 °C $\geq 500 \text{ M}\Omega \times \text{km}$
Strombelastbarkeit	gem. DIN VDE
Kapazität	Ader/Ader: ca. 55 pF/m
Induktivität	ca. 0,6 mH/km
Sonstige Eigenschaften	- Fahrgeschwindigkeit freitragend: max. 10 m/s, gleitend: max. 5 m/s - Fahrweg (VW): max. 50 m - zul. Beschleunigung: max. 20 m/s <sup>2</sup> - Biegezyklen: > 5 Mio.
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW; 10 x d $\geq 10\text{m VW}$
Betriebstemp. fest min/max	-50 °C / +80 °C
Betriebstemp. bew. min/max	-40 °C / +80 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT2
Ölbeständigkeit	nach DIN EN 60811-2-1
Approval	UL/CSA - cURus 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc.to VDE 0295 cl. 6 pt. 4 resp. IEC60228 cl. 6 pt. 5
core insulation	PELON®2
core identification	coloured acc. to DIN 47100
overall stranding	cores stranded in layers
outer sheath	PUR
sheath colour	grey RAL 7001
rated voltage	acc. to VDE: 300/300V; acc. to UL: 300 V
testing voltage	core/core: 1.500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl.6 resp. IEC60228 cl.6
insulation resistance	at +20 °C $\geq 500 \text{ M}\Omega \times \text{km}$
current carrying capacity	acc. to DIN VDE
capacity	core/core: approx. 55 pF/m
inductivity	approx. 0,6 mH/km
other characteristics	- speed self-supporting: max. 10 m/s, gliding: max. 5 m/s - traverse length (TL): max. 50 m - acceleration: max. 20 m/s <sup>2</sup> - bending cycles: > 5 mio
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 10m TL; 10 x d $\geq 10\text{m TL}$
operat. temp. fixed min/max	-50 °C / +80 °C
operat. temp. moved min/max	-40 °C / +80 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT2
resistant to oil	acc. to DIN EN 60811-2-1
approvals	UL/CSA - cURus 300V, 80°C





# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6410 SK-C-PVC UL/CSA, kapazitätsarm

für normale Anforderungen

for normal requirements



### Anwendung

als geschirmte Elektronikschlepleitung zur Daten- und Signalübertragung für normale Anforderungen in Energieführungsketten und an beweglichen Antrieben.

### Application

shielded electronic drag chain cable for data and signal transmission for normal requirements in drag chains and moving drive systems.

### Besonderheiten

- flammwidrig, adhäsionsarm und selbstverlöschend
- UL/CSA-Approbatation
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig gem. DIN EN 60811-2-1 (nur Mineralöl)

### Special Features

- flame-retardant, low adhesion and self-extinguishing
- UL/CSA approval
- largely resistant to grease, coolant fluids and lubricants
- oil-resistant acc. to DIN EN 60811-2-1 (only mineral oil)

### Hinweise

- RoHS-konform
- sehr lange Lebensdauer, optimales Kosten-Nutzen-Verhältnis
- empfohlen für EMV-gerechte Anwendung

### Remarks

- conform to RoHS
- very long lifetime, optimal cost-value ratio
- recommended for EMC-applications

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	feinstdrähtig gem. VDE 0295 Kl. 6 Sp. 4 bzw. IEC60228 cl. 6 pt. 4
Aderisolationswerkstoff	PELON®2
Aderkennung	farbig nach DIN 47100
Gesamtverseilung	Adern in Lagen mit Füllern verseilt
Gesamtschirm	Cu-Geflecht vz.; opt. Bedeckung 85 % ± 5 %
Außenmantelwerkstoff	PVC
Mantelfarbe	grau RAL 7001
Nennspannung	nach VDE: 300/300 V; nach UL: 300 V
Prüfspannung	Ader/Ader: 1.500 V; Ader/Schirm: 500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl.6 bzw. IEC60228 cl.6
Isolationswiderstand	bei +20 °C ≥ 500 MΩ x km
Strombelastbarkeit	gem. DIN VDE
Kapazität	Ader/Ader: ca. 65 pF/m
Induktivität	ca. 0,6 mH/km
Sonstige Eigenschaften	Verfahrgeschw. freitragend: 5 m/s, gleitend: 2,5 m/s; Verfahrweg (VW) max. 25 m; Beschl. max. 10 m/s²; Zyklenzahl 3 Mio.
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 10mVW; 10 x d ≥ 10m VW
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-5 °C / +80 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1
Ölbeständigkeit	nach DIN EN 60811-2-1 (nur Mineralöl)
Approbatation	UL/CSA - cURus 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to VDE 0295 cl. 6 pt. 4 resp. IEC60228 cl. 6 pt. 4
core insulation	PELON®2
core identification	coloured acc. to DIN 47100
overall stranding	cores stranded in layers with filler
shield	copper braid tinned, coverage approx. 85% ± 5%
outer sheath	PVC
sheath colour	grey RAL 7001
rated voltage	acc. to VDE: 300/300V; acc. to UL: 300 V
testing voltage	core/core: 1.500 V; core/shield: 500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl.6 resp. IEC60228 cl.6
insulation resistance	at +20 °C ≥ 500 MΩ x km
current carrying capacity	acc. to DIN VDE
capacity	core/core: approx. 65 pF/m
inductivity	approx. 0,6 mH/km
other characteristics	traverse speed max. self-supporting: 5 m/s, gliding: 2,5 m/s; traverse length (TL) max. 25 m; speed up max. 10 m/s²; cycles 3 mio.
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 10m TL; 10 x d ≥ 10m TL
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-5 °C / +80 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1
resistant to oil	acc. to DIN EN 60811-2-1 (only mineral oil)
approvals	UL/CSA - cURus 300V, 80°C





# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6430 SK-C-PUR UL/CSA, kapazitätsarm

für hohe Anforderungen

for high requirements



### Anwendung

als geschirmte Elektronikleitung zur Signalübertragung für hohe mechanische Anforderungen in Energieführungsketten, an beweglichen elektrischen Einrichtungen, Maschinenteilen und an Handhabungsautomaten.

### Application

shielded electronic cable for data and signal transmission for high mechanical requirements in drag chains, in electrical motion facilities, machine tools and handling automats.

### Besonderheiten

- UL/CSA-Approval
- adhäsionsarm, silikonfrei
- UV-beständig
- halogenfrei, flammwidrig gem. IEC 60332-1-2, FT1, VW1
- ölbeständig nach DIN EN 60811-2-1
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- für EMV-gerechte Anwendung

### Special Features

- UL/CSA approved
- low adhesion, silicone-free
- UV-resistant
- halogen free, flame-retardant acc. to IEC 60332-1-2, FT1, VW1
- oilresistant acc. to DIN EN 60811-2-1
- largely resistant to grease, coolant fluids and lubricants
- recommended for EMC-compatible applications

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- Leitungen für Torsionsbeanspruchungen s. Kapitel 4.20
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline
- cables for torsional stress see chapter 4.20
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	feinstdrähtig gem. VDE 0295 Kl. 6 Sp. 4 bzw. IEC60228 cl. 6 pt. 4
Aderisolationwerkstoff	PELON®2
Aderkennung	farbig nach DIN 47100
Gesamtverseilung	Adern in Lagen verseilt
Gesamtschirm	Cu-Geflecht vz.; opt. Bedeckung 85 % ± 5 %
Außenmantelwerkstoff	PUR
Mantelfarbe	grau RAL 7001
Nennspannung	nach VDE: 300/300 V; nach UL: 300 V
Prüfspannung	Ader/Ader: 1.500 V; Ader/Schirm: 500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl.6 bzw. IEC60228 cl.6
Isolationswiderstand	bei +20 °C ≥ 500 MΩ x km
Strombelastbarkeit	gem. DIN VDE
Kapazität	Ader/Ader: ca. 65 pF/m
Induktivität	ca. 0,6 mH/km
Sonstige Eigenschaften	- Fahrgeschwindigkeit freitragend: max. 10 m/s, gleitend: max. 5 m/s - Fahrweg (VW): max. 50 m - zul. Beschleunigung: max. 20 m/s <sup>2</sup> - Biegezyklen: > 5 Mio.
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW; 10 x d ≥ 10m VW
Betriebstemp. fest min/max	-50 °C / +80 °C
Betriebstemp. bew. min/max	-40 °C / +80 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW1
Ölbeständigkeit	nach DIN EN 60811-2-1
Approval	UL/CSA - cURus 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to VDE 0295 cl. 6 pt. 4 resp. IEC60228 cl. 6 pt. 4
core insulation	PELON®2
core identification	coloured acc. to DIN 47100
overall stranding	cores stranded in layers
shield	copper braid tinned, coverage approx. 85% ± 5%
outer sheath	PUR
sheath colour	grey RAL 7001
rated voltage	acc. to VDE: 300/300V; acc. to UL: 300 V
testing voltage	core/core: 1.500 V; core/shield: 500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl.6 resp. IEC60228 cl.6
insulation resistance	at +20 °C ≥ 500 MΩ x km
current carrying capacity	acc. to DIN VDE
capacity	core/core: approx. ca. 65 pF/m
inductivity	approx. 0,6 mH/km
other characteristics	- speed self-supporting: max. 10 m/s, gliding: max. 5 m/s - traverse length (TL): max. 50 m - acceleration: max. 20 m/s <sup>2</sup> - bending cycles: > 5 mio
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 10m TL; 10 x d ≥ 10m TL
operat. temp. fixed min/max	-50 °C / +80 °C
operat. temp. moved min/max	-40 °C / +80 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW1
resistant to oil	acc. to DIN EN 60811-2-1
approvals	UL/CSA - cURus 300V, 80°C







# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6510 SK-TP-C-PVC UL/CSA, kapazitätsarm

für normale Anforderungen

for normal requirements



### Anwendung

als paarverseilte geschirmte Elektronikleitung zur zuverlässigen Signalübertragung für normale Anforderungen in Energieführungsketten, an beweglichen Antrieben, Maschinenteilen, in der Robotertechnik und an Handhabungsautomaten.

### Application

twisted pair shielded electronic cable for data and signal transmission for normal requirements in drag chains, in electrical motion facilities, machine tools and handling automats.

### Besonderheiten

- UL/CSA-Approval
- adhäsionsarm, silikonfrei
- flammwidrig gem. IEC 60332-1-2, FT1, VW-1
- ölbeständig nach DIN EN 60811-2-1 (nur Mineralöl)
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- für EMV-gerechte Anwendung

### Special Features

- UL/CSA approved
- low adhesion, silicone-free
- flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
- oilresistant acc. to DIN EN 60811-2-1 (only mineral oil)
- largely resistant to grease, coolant fluids and lubricants
- recommended for EMC-compatible applications

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	feinstdrähtig gem. VDE 0295 Kl. 6 Sp. 4 bzw. IEC60228 cl. 6 pt. 4
Aderisolationswerkstoff	PELON®2
Aderkennung	farbig nach DIN 47100
Gesamtverseilung	Adern zu Paaren verseilt, Paare in Lagen verseilt
Gesamtschirm	Cu-Geflecht vz.; opt. Bedeckung 85 % ± 5 %
Außenmantelwerkstoff	PVC
Mantelfarbe	grau RAL 7001
Nennspannung	nach VDE: 300/300 V; nach UL: 300 V
Prüfspannung	Ader/Ader: 1.500 V; Ader/Schirm: 500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl.6 bzw. IEC60228 cl.6
Isolationswiderstand	bei +20 °C ≥ 500 MΩ x km
Strombelastbarkeit	gem. DIN VDE
Kapazität	Ader/Ader: ca. 65 pF/m
Induktivität	ca. 0,6 mH/km
Sonstige Eigenschaften	- Verfahrensgeschwindigkeit freitragend: max. 5 m/s, gleitend: max. 2,5 m/s - Fahrweg (VW): max. 25 m - zul. Beschleunigung: max. 10 m/s <sup>2</sup> - Biegezyklen: > 3 Mio.
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW; 10 x d ≥ 10m VW
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-5 °C / +80 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW1
Ölbeständigkeit	nach DIN EN 60811-2-1 (nur Mineralöl)
Approval	UL/CSA - cURus 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to VDE 0295 cl. 6 pt. 4 resp. IEC60228 cl. 6 pt. 4
core insulation	PELON®2
core identification	coloured acc. to DIN 47100
overall stranding	cores twisted to pairs, pairs stranded in layers
shield	copper braid tinned, coverage approx. 85% ± 5%
outer sheath	PVC
sheath colour	grey RAL 7001
rated voltage	acc. to VDE: 300/300V; acc. to UL: 300 V
testing voltage	core/core: 1.500 V; core/shield: 500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl.6 resp. IEC60228 cl.6
insulation resistance	at +20 °C ≥ 500 MΩ x km
current carrying capacity	acc. to DIN VDE
capacity	core/core: approx. 65 pF/m
inductivity	approx. 0,6 mH/km
other characteristics	- speed self-supporting: max. 5 m/s, gliding: max. 2,5 m/s - traverse length (TL): max. 25 m - acceleration: max. 10 m/s <sup>2</sup> - bending cycles: > 3 mio
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 10m TL; 10 x d ≥ 10m TL
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-5 °C / +80 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW1
resistant to oil	acc. to DIN EN 60811-2-1 (only mineral oil)
approvals	UL/CSA - cURus 300V, 80°C





# Steuer- und Elektronikleitungen für Energieketteneinsatz

## KAWEFLEX® 6530 SK-TP-C-PUR UL/CSA, kapazitätsarm

für hohe Anforderungen

for high requirements



### Anwendung

als paarverseilte geschirmte Elektronikleitung zur zuverlässigen Signalübertragung für hohe elektrische und mechanische Anforderungen in Energieführungsnetzen, an beweglichen Antrieben, Maschinenteilen, in der Robotertechnik und an Handhabungsautomaten.

### Application

twisted pair shielded electronic cable for data and signal transmission for high electrical and mechanical requirements in drag chains, in electrical motion facilities, machine tools and handling automats.

### Besonderheiten

- UL/CSA-Approval
- adhäsionsarm, silikonfrei
- UV-beständig
- halogenfrei, flammwidrig gem. IEC 60332-1-2, FT1, VW1
- ölbeständig nach DIN EN 60811-2-1
- weitgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- für EMV-gerechte Anwendung

### Special Features

- UL/CSA approved
- low adhesion, silicone-free
- UV-resistant
- halogen free, flame-retardant acc. to IEC 60332-1-2, FT1, VW1
- oilresistant acc. to DIN EN 60811-2-1
- largely resistant to grease, coolant fluids and lubricants
- recommended for EMC-compatible applications

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	feinstdrähtig gem. VDE 0295 Kl. 6 Sp. 4 bzw. IEC60228 cl. 6 pt. 4
Aderisolationwerkstoff	PELON®2
Aderkennung	farbig nach DIN 47100
Gesamtverseilung	Adern zu Paaren verseilt, Paare in Lagen verseilt
Gesamtschirm	Cu-Geflecht vz.; opt. Bedeckung 85% ± 5%
Außenmantelwerkstoff	PUR
Mantelfarbe	grau RAL 7001
Nennspannung	nach VDE: 300/300 V; nach UL: 300 V
Prüfspannung	Ader/Ader: 1.500 V; Ader/Schirm: 500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl.6 bzw. IEC60228 cl.6
Isolationswiderstand	bei +20 °C ≥ 500 MΩ x km
Strombelastbarkeit	gem. DIN VDE
Kapazität	Ader/Ader: ca. 65 pF/m
Induktivität	ca. 0,6 mH/km
Sonstige Eigenschaften	- Fahrgeschwindigkeit freitragend: max. 10 m/s, gleitend: max. 5 m/s - Fahrweg (VW): max. 50 m - zul. Beschleunigung: max. 20 m/s <sup>2</sup> - Biegezyklen: > 5 Mio.
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW; 10 x d ≥ 10m VW
Betriebstemp. fest min/max	-50 °C / +80 °C
Betriebstemp. bew. min/max	-40 °C / +80 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW1
Ölbeständigkeit	nach DIN EN 60811-2-1
Approval	UL/CSA - cURus 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to VDE 0295 cl. 6 pt. 4 resp. IEC60228 cl. 6 pt. 5
core insulation	PELON®2
core identification	coloured acc. to DIN 47100
overall stranding	cores twisted to pairs, pairs stranded in layers
shield	copper braid tinned, coverage approx. 85% ± 5%
outer sheath	PUR
sheath colour	grey RAL 7001
rated voltage	acc. to VDE: 300/300V; acc. to UL: 300 V
testing voltage	core/core: 1.500 V; core/shield: 500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl.6 resp. IEC60228 cl.6
insulation resistance	at +20 °C ≥ 500 MΩ x km
current carrying capacity	acc. to DIN VDE
capacity	core/core: approx. 65 pF/m
inductivity	approx. 0,6 mH/km
other characteristics	- speed self-supporting: max. 10 m/s, gliding: max. 5 m/s - traverse length (TL): max. 50 m - acceleration: max. 20 m/s <sup>2</sup> - bending cycles: > 5 mio
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 10m TL; 10 x d ≥ 10m TL
operat. temp. fixed min/max	-50 °C / +80 °C
operat. temp. moved min/max	-40 °C / +80 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW1
resistant to oil	acc. to DIN EN 60811-2-1
approvals	UL/CSA - cURus 300V, 80°C

# Control and electronic cables for use in energy chains



## KAWEFLEX® 6530 SK-TP-C-PUR UL/CSA, low capacity

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85365112	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	2 X 2 X 0,14 (AWG 26)	5,9	17,0	30,0
85365113	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	3 X 2 X 0,14 (AWG 26)	6,2	21,0	37,0
85365114	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	4 X 2 X 0,14 (AWG 26)	6,6	25,0	42,0
85365115	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	6 X 2 X 0,14 (AWG 26)	7,4	34,0	68,0
85365116	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	8 X 2 X 0,14 (AWG 26)	8,8	42,0	90,0
85365117	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	10 X 2 X 0,14 (AWG 26)	10,1	50,0	102,0
85365118	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	1 X 2 X 0,25 (AWG 24)	4,7	15,0	30,0
85365119	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	2 X 2 X 0,25 (AWG 24)	6,3	26,0	43,0
85365120	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	3 X 2 X 0,25 (AWG 24)	6,6	32,0	51,0
85365121	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	4 X 2 X 0,25 (AWG 24)	7,2	41,0	62,0
85365122	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	5 X 2 X 0,25 (AWG 24)	7,8	46,0	71,0
85365123	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	6 X 2 X 0,25 (AWG 24)	8,6	54,0	82,0
85365124	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	8 X 2 X 0,25 (AWG 24)	10,3	67,0	102,0
85365125	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	10 X 2 X 0,25 (AWG 24)	11,7	87,0	127,0
85365126	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	14 X 2 X 0,25 (AWG 24)	11,9	110,0	176,0
85365127	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	1 X 2 X 0,34 (AWG 22)	4,9	17,0	37,0
85365128	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	2 X 2 X 0,34 (AWG 22)	6,7	31,0	59,0
85365129	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	3 X 2 X 0,34 (AWG 22)	7,1	42,0	68,0
85365130	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	4 X 2 X 0,34 (AWG 22)	7,7	50,0	75,0
85365131	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	6 X 2 X 0,34 (AWG 22)	9,3	77,0	113,0
85365132	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	8 X 2 X 0,34 (AWG 22)	11,5	96,0	134,0
85365133	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	10 X 2 X 0,34 (AWG 22)	12,5	113,0	164,0
85365134	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	1 X 2 X 0,5 (AWG 20)	5,2	28,0	44,0
85365135	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	2 X 2 X 0,5 (AWG 20)	7,3	42,0	60,0
85365136	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	3 X 2 X 0,5 (AWG 20)	7,7	55,0	74,0
85365137	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	4 X 2 X 0,5 (AWG 20)	8,6	67,0	90,0
85365138	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	5 X 2 X 0,5 (AWG 20)	9,3	80,0	112,0
85365139	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	6 X 2 X 0,5 (AWG 20)	10,3	99,0	125,0
85365140	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	8 X 2 X 0,5 (AWG 20)	12,2	127,0	169,0
85365141	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	10 X 2 X 0,5 (AWG 20)	14,2	152,0	198,0
85365142	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	14 X 2 X 0,5 (AWG 20)	14,4	197,0	258,0
85365143	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	2 X 2 X 0,75 (AWG 19)	8,3	54,0	90,0
85365144	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	3 X 2 X 0,75 (AWG 19)	8,7	69,0	128,0
85365145	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	4 X 2 X 0,75 (AWG 19)	9,5	94,0	178,0
85365146	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	6 X 2 X 0,75 (AWG 19)	11,6	134,0	234,0
85365147	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	8 X 2 X 0,75 (AWG 19)	13,7	169,0	243,0
85365148	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	10 X 2 X 0,75 (AWG 19)	15,3	213,0	279,0
85365149	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	14 X 2 X 0,75 (AWG 19)	15,7	281,0	420,0
85365150	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	2 X 2 X 1 (AWG 18)	9,0	68,0	101,0
85365151	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	4 X 2 X 1 (AWG 18)	10,5	113,0	185,0
85365152	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	6 X 2 X 1 (AWG 18)	12,6	167,0	260,0
85365153	KAWEFLEX 6530 SK-TP-C-PUR UL/CSA	6 X 2 X 1,5 (AWG 16)	14,5	250,0	380,0



# Motor- und Servoleitungen für Energieketten

## KAWEFLEX® 5288 SK-C-PUR UL/CSA SERVO 0,6/1 kV, kapazitätsarm

für hohe Anforderungen  
4 Versorgungsadern + 1 bzw. 2 geschirmte Paare,  
bzw. + 1 geschirmtes Dreier Element

for high requirements  
4 power cores + 1 resp. 2 shielded pairs,  
resp. + 1 shielded triple bundle



### Anwendung

als geschirmte, kapazitätsarme Motoranschlussleitung, auch mit 2, 3 bzw. 4 Steueradern für z.B. Thermofühler oder Bremse zur EMV-gerechten Verkabelung zwischen Motor und Frequenzrichter für hohe elektrische und mechanische Anforderungen in Energieführungsketten, an beweglichen Antrieben, in der Robotertechnik, in Fertigungsanlagen sowie in trockenen und feuchten Räumen.

### Application

shielded, low capacity power cable, also with 2, 3 resp. 4 control cores for temperature sensors or brake for EMC-compatible connecting between drives and frequency converter for high requirements in drag chain applications, moving drive systems, in the field of robotic technology, in manufacturing plants as well as in dry and humid rooms.

### Besonderheiten

- DESINA-konform, UL/CSA-Approval
- flammwidrig, UV-beständig, halogenfrei, adhäsionsarm und abriebfest
- weitestgehend beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel
- ölbeständig nach VDE 0473-811-404
- silikonfrei
- FCKW-frei nach DIN 472815/IEC 60754-1
- durch 600 V UL Zulassung ist die Parallelverlegung mit anderen Leitungen, die eine Nennspannung von 600 V führen, erlaubt

### Special Features

- conform to DESINA, UL/CSA approved
- flame-retardant, UV-resistant, halogen-free, low adhesion and low abrasion
- largely resistant to grease, coolant fluids and lubricants
- resistant to oil acc. to VDE 0473-811-404
- silicone-free
- CFC-free nach DIN 472815/IEC 60754-1
- with the 600 V UL approval, the parallel laying with other cables that are equally approved for 600 V, is permitted

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE
- sehr lange Lebensdauer, ein optimales Kosten-Nutzen-Verhältnis
- platz- und gewichtssparend
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- very long lifetime, optimal cost-value ratio
- platz- und gewichtssparend
- We are pleased to produce special versions, other dimensions, core and jacket co-

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®2
Aderkennung	Leistungsadern: SW mit WS Druck U/L1/C/L+; V/L2; W/L3/D/L- und GNGE; Steueradern: einpaarig, SW und WS; zweipaarig: SW mit WS Ziffern 5, 6, 7, 8; Dreier: sw mit ws Ziffern 1, 2, 3
Abschirmung	Steuerpaare bzw. Dreier mit verz. Cu-Schirm
Gesamtverseilung	Adern und Paare bzw. Dreier gemeinsam mit hochflexiblen Zwickelfüllern verseilt
Gesamtschirm	Cu-Geflecht verz., opt. Bedeckung ca. 85 %
Außenmantelwerkstoff	PUR, halogenfrei, flammwidrig
Mantelfarbe	orange, RAL 2003
Aufdruck	ja
Nennspannung	Leistungsadern/Steueradern: Uo/U 600/1.000 V; UL & CSA: 1.000 V
Prüfspannung	Ader/Ader: 4 kV; Ader/Schirm: 4 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Isolationswiderstand	bei +20 °C ≥ 20 GΩ x km
Kapazität	Werte auf Anfrage
Sonstige Eigenschaften	Beschleunigung bis zu 50 m/s <sup>2</sup> Verfahrensgeschwindigkeit bis zu 300 m/min Verfahrwege horiz.: ≤ 16mm <sup>2</sup> bis zu 50 m / ≥ 25mm <sup>2</sup> bis zu 20 m Verfahrweg vertikal: max. 5 m
Kleinster Biegeradius fest	4 x d - nach Installation
Kleinster Biegeradius bewegt	7,5 x D (≤ 16 mm <sup>2</sup> ) / 10 x D (≥ 25 mm <sup>2</sup> )
Betriebstemp. fest min/max	-50 °C / +80 °C
Betriebstemp. bew. min/max	-40 °C / +80 °C
Brandverhalten	nach VDE 0482-332-2-1 bzw. DIN EN 60332-2-1, flammwidrig, FT1, VW11
Approval	UL/CSA - cURus 1.000 V, 80 °C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2
core identification	supply cores: BK with WH print U/L1/C/L+; V/L2; W/L3/D/L- and GNGYE; control cores: 1-pair, BK and WH; 2-pair: BK with WH print 5, 6, 7, 8; triple: bk with wh numerals 1, 2, 3
shield	control pairs resp. triple with tinned copper shield
overall stranding	all cores and elements stranded together with high flexible fillers
shield	copper braid tinned, opt. coverage appr. 85 %
outer sheath	PUR, halogen-free, flame retardant
sheath colour	orange, RAL 2003
printing	yes
rated voltage	Power cores/control cores: Uo/U 600/1.000 V; UL & CSA: 1.000 V
testing voltage	core/core: 4 kV; core/shield: 4 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 and IEC 60228 cl. 6
insulation resistance	at +20 °C ≥ 20 GΩ x km
capacity	values on request
other characteristics	accelerations up to 50 m/s <sup>2</sup> speeds up to 300 m/min path length, horiz.: ≤ 16mm <sup>2</sup> up to 50 m / ≥ 25mm <sup>2</sup> up to 20 m path length, vertical: max. 5 m
min. bending radius fixed	4 x d - after installation
min. bending radius moved	7,5 x D (≤ 16 mm <sup>2</sup> ) / 10 x D (≥ 25 mm <sup>2</sup> )
operat. temp. fixed min/max	-50 °C / +80 °C
operat. temp. moved min/max	-40 °C / +80 °C
burning behavior	acc. to VDE 0482-332-2-1 and DIN EN 60332-2-1, flame-retardant, FT1, VW1
approvals	UL/CSA - cURus 1.000 V, 80 °C

# Power and control cables for use in energy chains



## KAWEFLEX® 5288 SK-C-PUR UL/CSA SERVO 0,6/1 kV, low capacity

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
<b>nach / acc. to Standard Siemens MC 800PLUS: V, U, W, GNGE</b>					
85563051	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1,5	9,2	90,0	163,0
85563052	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 2,5	10,6	135,0	233,0
<b>nach / acc. to Standard Siemens MC 800PLUS: U, V, W, GNGE</b>					
85563053	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 4	11,9	205,0	314,0
85563054	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 6	14,7	296,0	437,0
85563055	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4G 10	17,5	488,0	654,0
85563056	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 16	21,6	769,0	1.016,0
85563057	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 25	25,2	1.098,0	1.440,0
85563058	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 35	28,7	1.525,0	1.991,0
85563059	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 50	33,4	2.131,0	2.604,0
<b>nach / acc. to Standard Siemens MC 800PLUS: V, U, W, SW-WS, GNGE</b>					
85563060	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1,5 + (2 X 1,5)	11,7	163,5	251,0
85563061	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 2,5 + (2 X 1,5)	13,4	196,0	316,0
<b>nach / acc. to Standard Siemens MC 800PLUS: U, V, W, SW-WS, GNGE</b>					
85563062	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 4 + (2 X 1,5)	14,9	260,5	408,0
85563063	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 6 + (2 X 1,5)	16,8	365,0	535,0
85563064	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 10 + (2 X 1,5)	19,9	560,0	755,0
85563065	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 16 + (2 X 1,5)	22,7	816,0	1.090,0
85563066	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 25 + (2 X 1,5)	26,3	1.172,0	1.570,0
85563067	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 35 + (2 X 1,5)	31,2	1.595,0	2.073,0
85563068	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 50 + (2 X 1,5)	34,7	2.214,0	2.800,0
<b>nach / acc. Standard Bosch Rexroth: U, V, W, SW-WS, GNGE</b>					
85563086	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 0,75 + (2 X 0,5)	9,4	99,0	165,0
<b>nach / acc. Standard Bosch Rexroth: U, V, 5, 6, W, GNGE, 7, 8</b>					
85563078	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1 + 2 X (2 X 0,75)	12,0	130,0	203,0
85563069	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1,5 + 2 X (2 X 0,75)	13,0	151,0	228,0
85563070	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 2,5 + 2 X (2 X 1)	14,8	213,9	343,0
85563071	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 4 + (2 X 1) + (2 X 1,5)	16,3	336,0	449,0
85563072	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 6 + (2 X 1) + (2 X 1,5)	18,6	438,0	572,0
85563073	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 10 + (2 X 1) + (2 X 1,5)	22,0	602,0	881,0
85563074	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 16 + (2 X 1) + (2 X 1,5)	25,5	834,0	1.155,0
		4 G 16 + 2 X (2 X 1,5)	25,9	838,0	1.169,0
85563075	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 25 + 2 X (2 X 1,5)	28,9	1.217,0	1.513,0
85563076	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 35 + 2 X (2 X 1,5)	31,4	1.640,0	1.969,0
85563077	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 50 + 2 X (2 X 2,5)	37,0	2.273,0	2.875,0
<b>nach / acc. Standard SEW: U, V, W, 1, 2, 3, GNGE</b>					
85563080	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1,5 + (3 X 1)	11,6	163,5	213,0
85563081	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 2,5 + (3 X 1)	13,4	196,0	284,0
85563082	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 4 + (3 X 1)	14,8	260,5	366,0
85563083	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 6 + (3 X 1,5)	17,4	367,0	492,0
85563084	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 10 + (3 X 1,5)	20,3	563,0	717,0
85563085	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 16 + (3 X 1,5)	23,7	821,0	1.052,0
					Fortsetzung: Nächste Seite



# Motor- und Servoleitungen für Energieketten

## KAWEFLEX® 5288 SK-C-PUR UL/CSA SERVO 0,6/1 kV, kapazitätsarm

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
<b>nach / acc. Standard Lenze: WWW, VV, U, SW-WS, GNGE</b>					
85563088	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1 + (2 X 0,5)	9,8	81,0	134,0
85563089	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1,5 + (2 X 0,5)	11,6	114,0	180,0
85563090	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 2,5 + (2 X 0,5)	11,8	145,0	229,0
85563091	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 4 + (2 X 1)	14,3	244,0	361,0
85563092	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 6 + (2 X 1)	16,6	325,0	451,0
85563093	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 10 + (2 X 1)	19,7	517,0	670,0
85563094	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 16 + (2 X 1)	22,5	760,0	978,0
<b>nach / acc. Diverse: WWW, VV, U, SW-WS, GNGE</b>					
85563096	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1,5 + (2 X 1)	11,5	117,0	200,0
<b>nach / acc. Diverse: U, V, 5, 6, W, GNGE, 7, 8</b>					
85563095	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 0,75 + 2 X (2 X 0,34)	9,7	79,0	132,0
85563097	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1,5 + 2 X (2 X 0,5)	12,0	123,0	211,0
85563098	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 1,5 + 2 X (2 X 1)	13,0	149,0	249,0
85563099	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 2,5 + 2 X (2 X 0,75)	14,6	199,0	340,0
85563100	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 2,5 + 2 X (2 X 1,5)	15,6	243,0	377,0
85563101	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 4 + 2 X (2 X 1)	16,1	273,0	423,0
85563102	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 4 + 2 X (2 X 1,5)	16,7	312,0	450,0
85563103	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 6 + 2 X (2 X 1)	18,4	384,0	535,0
85563104	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 6 + 2 X (2 X 1,5)	19,4	424,0	57,8
85563105	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 10 + 2 X (2 X 1)	21,8	549,0	746,0
85563106	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 10 + 2 X (2 X 1,5)	22,5	589,0	810,0
85563107	KAWEFLEX 5288 SK-C-PUR UL/CSA SERVO	4 G 16 + 2 X (2 X 1)	25,3	801,0	1.107,0



# Power and control cables for use in energy chains



**KAWEFLEX® 5288 SK-C-PUR UL/CSA SERVO 0,6/1 kV, low capacity**



# Motor- und Servoleitungen für Energieketten

## KAWEFLEX® 5278 SK-C-PVC UL/CSA SERVO 0,6/1 kV, kapazitätsarm

für normale Anforderungen  
4 Versorgungsadern + 1 geschirmtes Paar

for normale requirements  
4 power cores + 1 shielded pair



### Anwendung

als geschirmte, kapazitätsarme Motoranschlussleitung mit Steueradern für z.B. Thermofühler oder Bremse und zur EMV-gerechten Verkabelung zwischen Motor und Frequenzumrichter für normale elektrische und mechanische Anforderungen in Energieführungsnetzen, an beweglichen Antrieben, in der Robotertechnik und in Fertigungsanlagen. Einsetzbar in trockenen und feuchten Räumen.

### Application

shielded, low capacity power cable with control cores for temperature sensors or brake for EMC-compatible connecting between drives and frequency converter for normal requirements in drag chain applications, moving drive systems, in the field of robotic technology and manufacturing plants. Suitable for use in dry and humid rooms.

### Besonderheiten

- DESINA-konform, UL/CSA-Approval
- weitestgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- silikonfrei
- durch 600 V Zulassung nach UL ist die Parallelverlegung mit anderen Leitungen, die ebenfalls eine Nennspannung von 600 V führen, erlaubt

### Special Features

- conform to DESINA, UL/CSA approved
- largely resistant to grease, coolant fluids and lubricants
- silicone-free
- with the 600 V UL approval, the parallel laying with other cables that are equally approved for 600 V, is permitted

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE
- optimales Kosten-Nutzen-Verhältnis
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- optimal cost-value ratio
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	feinstdrähtig nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationswerkstoff	PELON®2, PP
Aderkennung	Leistungsad.: SW mit WS Druck U/L1/C/L+; V/L2; W/L3/D/L- u. GNGE; Steuerad.: einpaarig, SW u. WS
Abschirmung	Steuerpaar mit verz. Cu-Geflecht
Gesamtverseilung	Adern u. Paar gemeinsam mit hochflexiblen Zwickelfüllern verseilt
Gesamtshield	Cu-Geflecht verz., opt. Bedeckung 85 %
Außenmantelwerkstoff	PVC
Mantelfarbe	orange, RAL 2003
Nennspannung	Leistungsadern/Steueradern: U <sub>0</sub> /U 600/1.000 V; UL & CSA: 1.000 V
Prüfspannung	4 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Isolationswiderstand	bei 20° C ≥ 20 GOhm x km
Sonstige Eigenschaften	Beschleun. bis zu 20 m/s <sup>2</sup> ; Verfahrgeschw. bis zu 120 m/min; Fahrweg: bis 50 m
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	10 x d
Betriebstemp. fest min/max	-30 °C / +80 °C
Betriebstemp. bew. min/max	-5 °C / +80 °C
Brandverhalten	selbstverlöschend und flammwidrig nach IEC 60332-1; UL: VW1; CSA: FT1
Ölbeständigkeit	gem. ISO 6722, EN 60811-2-1 (nur Mineralöl)
Approval	UL/CSA - cURus 1.000 V, 80 °C

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2, PP
core identification	supply cores: BK w. WH print U/L1/C/L+; V/L2; W/L3/D/L- & GNGE; control cores: 1 pair, BK & WH
shield	control pair with tinned copper braid
overall stranding	cores & element stranded together with high flexible fillers
shield	copper braid tinned, opt. coverage 85 %
outer sheath	PVC
sheath colour	orange, RAL 2003
rated voltage	supply cores/control cores: U <sub>0</sub> /U 600/1.000 V; UL & CSA: 1.000 V
testing voltage	4 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 and IEC 60228 cl. 6
insulation resistance	at 20° C ≥ 20 GOhm x km
other characteristics	accelerations up to 20 m/s <sup>2</sup> ; speeds up to 120 m/min; path length: up to 50 m
min. bending radius fixed	5 x d
min. bending radius moved	10 x d
operat. temp. fixed min/max	-30 °C / +80 °C
operat. temp. moved min/max	-5 °C / +80 °C
burning behavior	self-extinguishing and flame-retardant acc. to IEC 60332-1; UL: VW1; CSA: FT1
resistant to oil approvals	acc. to ISO 6722, EN 60811-2-1 (only mineral oil) UL/CSA - cURus 1.000 V, 80 °C





# Motor- und Servoleitungen für Energieketten

## KAWEFLEX® 5268 C-PVC UL/CSA SERVO 0,6/1 kV, kapazitätsarm

für flexiblen Einsatz und feste Verlegung  
4 Versorgungsadern + 1 geschirmtes Paar,  
bzw. + 1 geschirmtes Dreier Element

for flexible use and fixed installation  
4 power cores + 1 shielded pair,  
resp. + 1 shielded triple bundle



### Anwendung

als geschirmte, kapazitätsarme Motoranschlussleitung mit Steueradern für z.B. Thermofühler oder Bremse und zur EMV-gerechten Verkabelung zwischen Motor und Frequenzrichter für normale elektrische und mechanische Anforderungen. Einsetzbar in trockenen und feuchten Räumen.

### Application

shielded, low capacity power cable with control cores for temperature sensors or brake for EMC-compatible connecting between drives and frequency converter for normal electrical and mechanical requirements. Suitable for dry and humid rooms.

### Besonderheiten

- DESINA-konform, UL/CSA-Approval
- weitestgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- silikonfrei
- durch 600 V Zulassung nach UL ist die Parallelverlegung mit anderen Leitungen, die ebenfalls eine Nennspannung von 600 V führen, erlaubt
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.

### Special Features

- conform to DESINA, UL/CSA approved
- largely resistant to grease, coolant fluids and lubricants
- silicone-free
- with the 600 V UL approval, the parallel laying with other cables that are equally approved for 600 V, is permitted
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU Richtlinie ("Niederspannungsrichtlinie") CE
- optimales Kosten-Nutzen-Verhältnis
- ab Fertigungsdatum August 2016 mit aktualisierten Außendurchmessern (alter Wert)

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- optimal cost-value ratio
- up from production date August 2016 with updated outer diameters (old value)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 5 bzw. IEC 60228 cl. 5
Aderisolationwerkstoff	PELON®2
Aderkennung	Leistungsad.: SW mit WS Druck U/L1/C/L+; V/L2; W/L3/D/L- u. GNGE; Steuerad.: einpaarig, SW u. WS; Dreier: sw mit ws Ziffern 1, 2, 3
Abschirmung	Steuerpaar bzw. Dreierelement mit verz. Cu-Schirm
Gesamtverseilung	Adern und Paar bzw. Dreier gemeinsam mit hochflexiblen Zwickelfüllern verseilt
Gesamtschirm	Cu-Geflecht verz., opt. Bedeckung ca. 80 %
Außenmantelwerkstoff	PVC
Mantelfarbe	orange, RAL 2003
Nennspannung	Leistungsadern/Steueradern: U <sub>o</sub> /U 600/1.000 V; UL & CSA: 1.000 V
Prüfspannung	4 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 5 bzw. IEC 60228 cl. 5
Isolationswiderstand	bei 20° C ≥ 20 GOhm x km
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	10 x d
Betriebstemp. fest min/max	-30°C / +80°C
Betriebstemp. bew. min/max	-5°C / +80°C
Brandverhalten	selbstverlöschend und flammwidrig nach IEC 60332-1; UL: VW1; CSA: FT1
Ölbeständigkeit	gem. ISO 6722, EN 60811-2-1 (nur Mineralöl)
Sonstige Eigenschaften	- Fahrgeschwindigkeit freitragend: max. 30 m/min. - Verfahrensweg (VW): max. 5 m - zul. Beschleunigung: max. 2 m/s <sup>2</sup> - min. Biegeradius bewegt: 15 x d - Biegezyklen: > 100.000
Approval	UL/CSA - cURus 1.000 V, 80 °C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 5 resp. IEC 60228 cl. 5
core insulation	PELON®2
core identification	supply cores: BK w. WH print U/L1/C/L+; V/L2; W/L3/D/L- & GNGYE; control cores: 1 pair, BK & WH; triple: bk with wh numerals 1, 2, 3
shield	control pair resp. triple bundle with tinned copper shield
overall stranding	cores and pair resp. triple element stranded together with high flexible fillers
shield	copper braid tinned, opt. coverage appr. 80 %
outer sheath	PVC
sheath colour	orange, RAL 2003
rated voltage	supply cores/control cores: U <sub>o</sub> /U 600/1.000 V; UL & CSA: 1.000 V
testing voltage	4 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 5 and IEC 60228 cl. 5
insulation resistance	at 20° C ≥ 20 GOhm x km
min. bending radius fixed	5 x d
min. bending radius moved	10 x d
operat. temp. fixed min/max	-30°C / +80°C
operat. temp. moved min/max	-5°C / +80°C
burning behavior	self-extinguishing and flame-retardant acc. to IEC 60332-1; UL: VW1; CSA: FT1
resistant to oil	acc. to ISO 6722, EN 60811-2-1 (only mineral oil)
other characteristics	- speed self-supporting: max. 30 m/min. - traverse length (TL): max. 5 m - acceleration: max. 2 m/s <sup>2</sup> - min. bending radius moved: 15 x d - bending cycles: > 100.000
approvals	UL/CSA - cURus 1.000 V, 80 °C

# Power and control cables for use in energy chains



## KAWEFLEX® 5268 C-PVC UL/CSA SERVO 0,6/1 kV, low capacity

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
<b>nach / acc. to Standard Siemens MC 500: V, U, W, GNGE</b>					
85254121	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 1,5	8,4 (8,5)	77,0	143,0
85254122	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 2,5	9,8 (10,0)	120,0	213,0
<b>nach / acc. to Standard Siemens MC 500: U, V, W, GNGE</b>					
85254123	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 4	11,9 (11,8)	182,0	287,0
85254127	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 6	14,7 (14,0)	285,0	424,0
85254128	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 10	17,5 (17,3)	449,0	631,0
85254136	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 16	21,6	724,0	927,0
85254137	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 25	25,4	1.092,0	1.329,0
85254138	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 35	29,5	1.497,0	1.831,0
85254139	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 50	33,4	2.099,0	2.488,0
<b>nach / acc. to Standard Siemens MC 500: V, U, W, SW-WS, GNGE</b>					
85254124	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 1,5 + (2 X 1,5)	10,6 (10,2)	126,5	231,0
85254125	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 2,5 + (2 X 1,5)	12,4 (11,8)	171,4	298,0
<b>nach / acc. to Standard Siemens MC 500: U, V, W, SW-WS, GNGE</b>					
85254126	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 4 + (2 X 1,5)	13,9 (13,4)	249,5	398,0
85254129	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 6 + (2 X 1,5)	16,1 (15,7)	337,2	517,0
85254130	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 10 + (2 X 1,5)	19,3 (19,0)	525,3	720,0
85254140	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 16 + (2 X 1,5)	22,5	772,0	1.018,2
85254141	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 25 + (2 X 1,5)	26,5	1.137,0	1.446,0
85254142	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 35 + (2 X 1,5)	31,0	1.546,0	1.949,0
85254143	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 50 + (2 X 1,5)	34,0	2.143,0	2.622,0
85254144	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 16 + (3 X 1,5)	23,7	794,0	1.059,0
<b>nach / acc. Standard SEW: U, V, W, 1, 2, 3, GNGE</b>					
85254131	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 1,5 + (3 X 1)	11,4	135,0	214,0
85254132	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 2,5 + (3 X 1)	13,4 (12,7)	178,0	282,0
85254133	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 4 + (3 X 1)	14,8 (14,2)	254,0	378,0
85254134	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 6 + (3 X 1,5)	17,4 (16,6)	379,0	528,0
85254135	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 10 + (3 X 1,5)	20,3 (18,8)	565,0	758,0
<b>nach / acc. Standard Bosch Rexroth: U, V, 5, 6, W, GNGE, 7, 8</b>					
85254154	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 1 + 2 X (2 X 0,75)	12,0	124,0	216,0
85254152	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 1,5 + 2 X (2 X 0,75)	13,0	143,0	245,0
85254153	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 2,5 + 2 X (2 X 1)	14,0	211,0	334,0
85254155	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 4 + (2 X 1) + (2 X 1,5)	16,3	294,0	438,0
85254156	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 6 + (2 X 1) + (2 X 1,5)	19,2	405,0	604,0
85254157	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 10 + (2 X 1) + (2 X 1,5)	22,0	570,0	796,0
85254158	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 16 + 2 X (2 X 1,5)	25,5	818,0	1.134,0
85254159	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 25 + 2 X (2 X 1)	27,6	1.210,0	1.460,0
85254160	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 35 + 2 X (2 X 1)	30,4	1.624,0	1.882,0
<b>nach / acc. Diverse: U, V, 5, 6, W, GNGE, 7, 8</b>					
85254161	KAWEFLEX 5268 C-PVC UL/CSA SERVO	4 G 2,5 + 2 X (2 X 0,75)	13,8	201,0	311,0
Fortsetzung: Nächste Seite					



# Power and control cables for use in energy chains



**KAWEFLEX® 5268 C-PVC UL/CSA SERVO 0,6/1 kV, low capacity**



# Motor- und Servoleitungen für Energieketten

## KAWEFLEX® 52DSL C-PVC UL/CSA 0,6/1 kV, kapazitätsarm

für feste und bedingt flexible Anwendungen

for fixed and conditionally flexible requirements



### Anwendung

als geschirmte, kapazitätsarme Hybridleitung für Anwendungen bei fester oder bedingt flexibler Verlegung in der elektrischen Antriebstechnik, als Verbindungsleitung zwischen Servoregler und Motor, in Montage- und Bestückungsautomaten, speziell für den Nassbereich von Transferstraßen oder Werkzeugmaschinen geeignet.

### Application

shielded, low capacity hybrid cable for applications with fixed or conditionally flexible installation in electrical drive technology, as a connection cable servo controller and motor, in assembly and insertion machines, especially for the wet area of transfer lines or machine tools.

### Besonderheiten

- für HIPERFACE DSL® Motor-Feedback-Systeme - HighPERformance InterFACE Digital Servo Link
- weitestgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-2-1 (nur Mineralöl)
- silikonfrei (bei Produktion)
- platz- und gewichtssparend
- durch 600 V UL Zulassung ist die Parallelverlegung mit anderen Leitungen, die eine Nennspannung von 600 V führen, erlaubt
- DESINA-konform

### Special Features

- for HIPERFACE DSL® motor-feedback-systems - HighPERformance InterFACE Digital Servo Link
- largely resistant to grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-2-1 (only mineral oil)
- silicone-free (by production)
- space and weight saving
- with the 600 V UL approval, the parallel laying with other cables that are equally approved for 600 V, is permitted
- conform to DESINA

### Hinweise

- RoHS-konform
- konform zu 2014/35/EG-Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage
- HIPERFACE DSL® ist ein registriertes Warenzeichen der SICK AG<

### Remarks

- conform to RoHS
- conform to 2014/35/EC-Guideline (CE marking)
- We are pleased to produce special versions, other dimensions, core and jacket colours on request
- HIPERFACE DSL® is a registered trademark of SICK AG

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank, Leiterkl.: gem. DIN VDE 0295 Kl. 5 bzw. IEC 60228 cl. 5
Leiterklasse	nach DIN VDE 0295 Klasse 5 bzw. IEC 60228 cl. 5
Aderisolationwerkstoff	PELON®2
Aderkennung	SW mit WS Druck: U/L1/C/L+/V/L2;W/L3/D/L- & 1 Ader GNGE; Signalpaar: WS,BL, Steuerpaar(optional): SW mit WS Ziffern 5+6
Abschirmung	Signalpaar/Steuerpaar: jeweils mit verz. Cu-Geflechtschirm, opt. Bedeck. ca. 85%
Gesamtverseilung	Adern und Elemente gemeinsam verseilt
Gesamtschirm	Cu-Geflecht verzinkt; opt. Bedeckung ca. 85%
Außenmantelwerkstoff	PVC
Mantelfarbe	orange, RAL 2003
Nennspannung	Leistungs-/ Steueradern: IEC: 0,6/1kV; UL/CSA: 1kV; Signalpaar: max. 300V
Prüfspannung	Leistungs- / Steueradern: 4 kV, Signalpaar: 1 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 5 bzw. IEC 60228 cl. 5
Isolationswiderstand	bei +20 °C ≥ 20 MΩ x km
Strombelastbarkeit	nach DIN VDE
Wellenwiderstand	Signalpaar: ca. 100 Ohm
Datenübertragungsrate	9,375 Mbaud bis 100 m
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	15 x d
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-5 °C / +80 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW-1
Approbation	UL/CSA - cURus 1.000V / 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand, cond.class: acc. to DIN VDE 0295 Cl. 5 resp. IEC 60228 cl. 5
conductor class	acc. to DIN VDE 0295 class 5 resp. IEC 60228 cl. 5
core insulation	PELON®2
core identification	BK with WH print U/L1/C/L+/V/L2;W/L3/D/L- & 1core GNGYE; signalpair: WH,BU, controlpair (optional): BK w. WH numerals 5+6
shield	signal pair/control pair: each pair shielded with tinned copper braid, optic. cover. appr. 85%
overall stranding	cores & elements stranded together
shield	copper braid tinned, coverage approx. 85%
outer sheath	PVC
sheath colour	orange, RAL 2003
rated voltage	power- & control cores: IEC: 0,6/1kV; UL/CSA: 1kV; signal pair: max. 300V
testing voltage	power- & control cores: 4 kV, signal pair: 1 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 5 resp. IEC 60228 cl. 5
insulation resistance	at +20 °C ≥ 20 MΩ x km
current carrying capacity	acc. to DIN VDE
characteristic impedance	signal pair: approx. 100 Ohm
transfer rate	9.375 Mbaud until 100 m
min. bending radius fixed	5 x d
min. bending radius moved	15 x d
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-5 °C / +80 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
approvals	UL/CSA - cURus 1.000 / 300V, 80°C



# Power and control cables for use in energy chains



## KAWEFLEX® 52DSL C-PVC UL/CSA 0,6/1 kV, low capacity

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
<b>Aderkennung / core identification: U, V, W, GNYE, (WH+BU)</b>					
85254167	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 1,5 + (2 X AWG 22/7)C	11,6	116,0	198,0
85254168	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 2,5 + (2 X AWG 22/7)C	12,8	168,0	269,0
85254169	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 4 + (2 X AWG 22/7)C	14,3	235,0	343,0
<b>Aderkennung / core identification: U, V, (5+6), W, GNYE, (WH+BU)</b>					
85254173	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 0,5 + (2 X 0,34)C + (2 X AWG 26/7)C	9,4	77,0	123,0
85254174	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 0,75 + (2 X 0,34)C + (2 X AWG 26/7)C	9,9	97,0	138,0
85254175	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 1 + (2 X 0,75)C + (2 X AWG 22/7)C	11,6	129,0	208,0
85254176	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 1,5 + (2 X 0,75)C + (2 X AWG 22/7)C	12,8	152,0	248,0
85254170	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 1,5 + (2 X 1)C + (2 X AWG 22/7)C	13,2	164,0	256,0
85254171	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 2,5 + (2 X 1)C + (2 X AWG 22/7)C	14,5	208,0	313,0
85254172	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 4 + (2 X 1)C + (2 X AWG 22/7)C	16,2	276,0	407,0
85254177	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 6 + (2 X 1)C + (2 X AWG 22/7)C	18,6	364,0	538,0
85254178	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 10 + (2 X 1,5)C + (2 X AWG 22/7)C	21,6	571,0	752,0
85254179	KAWEFLEX 52DSL C-PVC UL/CSA 0,6/1KV	4 G 16 + (2 X 1,5)C + (2 X AWG 22/7)C	24,6	833,0	1.005,0



# Motor- und Servoleitungen für Energieketten

## KAWEFLEX® 52DSL SK-C-PUR UL/CSA 0,6/1 kV, kapazitätsarm

für hohe Anforderungen

for high requirements



### Anwendung

als geschirmte, kapazitätsarme Hybridleitung für Anwendungen in Schleppketten in der elektrischen Antriebstechnik, als Verbindungsleitung zwischen Servoregler und Motor, in Montage- und Bestückungsautomaten, speziell für den Nassbereich von Transferstraßen oder Werkzeugmaschinen geeignet.

### Application

shielded, low capacity hybrid cable for drag chain applications in electrical drive technology, as a connection cable servo controller and motor, in assembly and insertion machines, especially for the wet area of transfer lines or machine tools.

### Besonderheiten

- für HIPERFACE DSL® Motor-Feedback-Systeme - HighPERformance InterFACE Digital Servo Link
- weitestgehend beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-2-1
- silikonfrei (bei Produktion)
- platz- und gewichtssparend
- UV-beständig, halogenfrei, abriebfest
- durch 600 V UL Zulassung ist die Parallelverlegung mit anderen Leitungen, die eine Nennspannung von 600 V führen, erlaubt
- DESINA-konform

### Special Features

- for HIPERFACE DSL® motor-feedback-systems - HighPERformance InterFACE Digital Servo Link
- largely resistant to grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-2-1
- silicone-free (by production)
- space and weight saving
- UV-resistant, halogen-free, low abrasion
- with the 600 V UL approval, the parallel laying with other cables that are equally approved for 600 V, is permitted
- conform to DESINA

### Hinweise

- RoHS-konform
- konform zu 2014/35/EG-Richtlinie ("Niederspannungsrichtlinie") CE
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage
- HIPERFACE DSL® ist ein registriertes Warenzeichen der SICK AG

### Remarks

- conform to RoHS
- conform to 2014/35/EC-Guideline (CE marking)
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.
- HIPERFACE DSL® is a registered trademark of SICK AG

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	gem. DIN VDE 0295 Kl. 6 Sp. 4 bzw. IEC 60228 cl. 6, col. 4
Aderisolationswerkstoff	PELON®2
Aderkennung	SW mit WS Druck: U/L1/C/L+;V/L2;W/L3/D/L- & 1 Ader GNGE; Signalpaar: WS,BL, Steuerpaar(optional): SW mit WS Ziffern 5+6
Abschirmung	Signalpaar/Steuerpaar: jeweils mit verz. Cu-Geflechtschirm, opt. Bedeck. ca. 85%
Gesamtverseilung	Adern und Elemente gemeinsam verseilt
Gesamtschirm	Cu-Geflecht verz.; opt. Bedeck. ca. 85%
Außenmantelwerkstoff	PUR
Mantelfarbe	orange, RAL 2003
Nennspannung	Leistungs- / Steueradern: IEC: 0,6/1kV; UL/CSA: 1kV; Signalpaar: max. 300V
Prüfspannung	Leistungs- / Steueradern: 4 kV, Signalpaar: 1 kV
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Isolationswiderstand	bei +20 °C $\geq 20 \text{ M}\Omega \times \text{km}$
Strombelastbarkeit	nach DIN VDE
Wellenwiderstand	Signalpaar: ca. 100 Ohm
Datenübertragungsrate	9,375 Mbaud bis 100 m
Sonstige Eigenschaften	- Verfahrensgeschwindigkeit freitragend: max. 5 m/s, - Verfahrweg (VW): max. 25 m - zul. Beschleunigung: max. 10 m/s <sup>2</sup> - Biegezyklen: > 5 Mio.
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	7,5 x d < 10m VW   10 x d $\geq 10\text{m VW}$
Betriebstemp. fest min/max	-50°C / +80°C
Betriebstemp. bew. min/max	-40 °C / +80 °C
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW-1
Approbation	UL/CSA - cURus 1.000V / 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 Cl. 6 col. 4 resp. IEC 60228 cl. 6 col. 4
core insulation	PELON®2
core identification	BK with WH print U/L1/C/L+;V/L2;W/L3/D/L- & 1core GNGYE; signalpair: WH,BU, controlpair (optional): BK with WH numerals 5+6
shield	signal pair/control pair: each pair shielded with tinned copper braid, optic. cover. appr. 85%
overall stranding	cores & elements stranded together
shield	copper braid tinned, cover. appr. 85%
outer sheath	PUR
sheath colour	orange, RAL 2003
rated voltage	power- & control cores: IEC: 0,6/1kV; UL/CSA: 1kV; signal pair: max. 300V
testing voltage	power- & control cores: 4 kV, signal pair: 1 kV
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
insulation resistance	at +20 °C $\geq 20 \text{ M}\Omega \times \text{km}$
current carrying capacity	acc. to DIN VDE
characteristic impedance	signal pair: approx. 100 Ohm
transfer rate	9.375 Mbaud until 100 m
other characteristics	- speed self-supporting: max. 5 m/s - traverse length (TL): max. 25 m - acceleration: max. 10 m/s <sup>2</sup> - bending cycles: > 5 mio
min. bending radius fixed	5 x d
min. bending radius moved	7,5 x d < 10m TL   10 x d $\geq 10\text{m TL}$
operat. temp. fixed min/max	-50°C / +80°C
operat. temp. moved min/max	-40 °C / +80 °C
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
approvals	UL/CSA - cURus 1.000 / 300V, 80°C

# Power and control cables for use in energy chains



## KAWEFLEX® 52DSL SK-C-PUR UL/CSA 0,6/1 kV, low capacity

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
<b>Aderkennung / core identification: U, V, W, GNYE, (WH+BU)</b>					
85263440	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 1,5 + (2 X AWG 22/19)C	11,6	116,0	194,0
85263441	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 2,5 + (2 X AWG 22/19)C	12,8	168,0	253,0
85263442	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 4 + (2 X AWG 22/19)C	14,3	235,0	332,0
<b>Aderkennung / core identification: U, V, (5+6), W, GNYE, (WH+BU)</b>					
85263446	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 0,5 + (2 X 0,34)C + (2 X AWG 26/19)C	9,3	77,0	127,0
85263447	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 0,75 + (2 X 0,34)C + (2 X AWG 26/19)C	9,9	98,0	142,0
85263448	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 1 + (2 X 0,75)C + (2 X AWG 22/19)C	11,6	133,0	212,0
85263449	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 1,5 + (2 X 0,75)C + (2 X AWG 24/19)C	11,8	152,0	230,0
85263450	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 1,5 + (2 X 0,75)C + (2 X AWG 22/19)C	12,8	155,0	269,0
85263443	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 1,5 + (2 X 1)C + (2 X AWG 22/19)C	13,2	166,0	250,0
85263451	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 1,5 + (2 X 1,5)C + (2 X AWG 22/19)C	13,8	179,0	272,0
85263444	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 2,5 + (2 X 1)C + (2 X AWG 22/19)C	14,5	211,0	285,0
85263452	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 2,5 + (2 X 1,5)C + (2 X AWG 22/19)C	15,1	230,0	220,0
85263445	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 4 + (2 X 1)C + (2 X AWG 22/19)C	16,2	274,0	390,0
85263453	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 6 + (2 X 1)C + (2 X AWG 22/19)C	18,6	367,0	540,0
85263454	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 10 + (2 X 1,5)C + (2 X AWG 22/19)C	21,6	573,0	760,0
85263455	KAWEFLEX 52DSL SK-C-PUR UL/CSA 0,6/1KV	4 G 16 + (2 X 1,5)C + (2 X AWG 22/19)C	24,6	836,0	1.020,0



# Mess- & Systemleitungen für Energieketten

## KAWEFLEX® 5488 SK-C-PUR UL/CSA, kapazitätsarm

für hohe Anforderungen  
für Einsatz in Energieführungsketten

for high requirements  
for drag chain application



### Anwendung

als geschirmte, kapazitätsarme Feedback-, Encoder-, Resolver-, Tachogeber-, Signal Systemleitungen zur EMV-gerechten Verkabelung im Anlagen- und Maschinenbau, sowie in der Steuerungs- und Automatisierungstechnik für hohe elektrische und mechanische Anforderungen in Energieführungsketten an bewegten Antrieben und in der Robotertechnologie.

### Application

as shielded, low capacity feedback, encoder, resolver, speedo sensor, signal & system cables for EMC compatible connecting in machine and plant engineering, as well as in drive and control technology, for high electrical and mechanical requirements in drag chain applications, moving drive systems and in the field of robotic technology.

### Besonderheiten

- DESINA-konform (Mantelfarbe grün RAL 6018)
- cURus Approbation 300 V, 80 °C
- halogenfrei und flammwidrig gem. IEC 60332-1-2, FT1, VW-1
- weitgehend beständig gegen, Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-404 (VDE 0473-811-404)
- UV-beständig
- adhäsionsarm, silikonfrei, platz- und gewichtssparend

### Special Features

- DESINA-conform (sheath colour green RAL 6018)
- cURus Approbationen 300V, 80°C
- halogen free and flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
- largely resistant to, grease, coolant fluids and lubricants
- resistant to oil, IEC 60811-404 (VDE 0473-811-404)
- UV-resistant
- low adhesion, silicone-free, space- and weight-saving

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie (Niederspannungsrichtlinie) CE
- optimales Kosten-Nutzen-Verhältnis
- sehr lange Lebensdauer
- 2-paarige Abmessungen in Sternvierer-Verseilung

### Remarks

- conform to RoHS
- conform to 2006/95/EG guideline (CE marking)
- optimal cost-value ratio
- very long life time
- 2-pair dimensions stranded as star quad

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®2
Aderkennung	gem. System Spezifikation (auf Anfrage)
Verseilung	Adern zum Paar oder Lagen verseilt
Abschirmung	Elemente: C: Cu-Geflecht vz. bzw. D: Cu-Umlegung vz., opt. Bedeckung ca. 85%
Elementmantelwerkstoff	TPE - schwarz (wenn angegeben 12Y)
Gesamtverseilung	Elemente gem. verseilt
Gesamtschirm	Cu-Geflecht verzinnnt, opt. Bedeckung ca. 85%
Außenmantelwerkstoff	PUR
Mantelfarbe	GN - RAL 6018 (DESINA), OR - RAL 2003 oder SW - RAL 9005
Nennspannung	300 V, nicht für Starkstromzwecke geeignet
Prüfspannung	500 V
Leiterwiderstand	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Isolationswiderstand	min. 20 MΩ x km
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d < 10 m VW   10 x d ≥ 10 m VW
Verfahrgeschwindigkeit	freitragend - max. 5 m/s
Verfahrweg	max. 50 m
Beschleunigung	max. 50 m/s²
Biegezyklen	> 5 Mio
Betriebstemp. fest min/max	- 50 °C / +80 °C
Betriebstemp. bew. min/max	- 40 °C / +80 °C
Halogenfreiheit	Ja
Brandverhalten	flammwidrig gem. IEC 60332-1-2, FT1, VW-1
Standard	UL/CSA: cURus 300V, 80°C

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2
core identification	acc. to system specification (on request)
stranding	cores stranded to pairs or layers
shield	elements: C: copper braid tinned resp. D: spiral copper shield tinned, opt. coverage appr. 85%
element sheath material	TPE - black (if mentioned 12Y)
overall stranding	elements strand. together
shield	copper braid tinned, opt. coverage appr. 85%
outer sheath	PUR
sheath colour	GN - RAL 6018 (DESINA), OR - RAL 2003 or BK - RAL 9005
rated voltage	300 V, no high-voltage purpose
testing voltage	500 V
conductor resistance	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
insulation resistance	min. 20 MΩ x km
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d < 10 m TL   10 x d ≥ 10 m TL
speed	self-supporting - max. 5 m/s
traverse length	max. 50 m
acceleration	max. 50 m/s²
bending cycles	> 5 Mio
operat. temp. fixed min/max	- 50 °C / +80 °C
operat. temp. moved min/max	- 40 °C / +80 °C
halogen free	Yes
burning behavior	flame-retardant acc. to IEC 60332-1-2, FT1, VW-1
standard	UL/CSA: cURus 300V, 80°C

# Measurement & System cables for use in energy chains



## KAWEFLEX® 5488 SK-C-PUR UL/CSA, low capacity

MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km	Mantelfarbe sheath colour
<b>nach/acc. to Siemens Standard MC 800 Plus</b>						
85563150	KAWEFLEX 5488 SK-C-PUR UL/CSA	(8 X 2 X 0,18)C	7,8	54,0	85,0	grün / green
85563151	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,34 + 4X0,5)C	8,9	77,0	129,0	grün / green
85563152	KAWEFLEX 5488 SK-C-PUR UL/CSA	(3 X (2 X 0,14)D12Y + 2X(0,5)D12Y)C	9,0	69,0	120,0	grün / green
85563153	KAWEFLEX 5488 SK-C-PUR UL/CSA	(3 X (2 X 0,14)D12Y + 4X0,14 + 2X0,5)C	8,9	66,0	120,0	grün / green
85563154	KAWEFLEX 5488 SK-C-PUR UL/CSA	(3X(2X0,14)D12Y + 4X0,14 + 4X0,25 + 2X0,5)C	9,6	86,0	135,0	grün / green
85563155	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,18)C	6,4	35,0	61,0	grün / green
85563156	KAWEFLEX 5488 SK-C-PUR UL/CSA	(2 X 2 X 0,18)C	5,0	24,0	39,0	grün / green
85563157	KAWEFLEX 5488 SK-C-PUR UL/CSA	(12 X 0,22)C	6,9	49,0	77,0	grün / green
<b>nach/acc. to Bosch Rexroth Standard</b>						
85563158	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,25 + 2 X 0,5)C	8,5	61,0	105,0	grün / green
85563159	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,25 + 2 X 1)C	8,8	66,0	119,0	grün / green
85563160	KAWEFLEX 5488 SK-C-PUR UL/CSA	(9 X 0,5)C	8,8	69,0	127,0	grün / green
85563161	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,25 + 2 X 0,5)C	8,5	52,0	105,0	orange
85563162	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,25 + 2 X 1)C	8,8	66,0	119,0	orange
85563163	KAWEFLEX 5488 SK-C-PUR UL/CSA	(9 X 0,5)C	8,8	69,0	127,0	orange
85563164	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 1 + 4 X 2 X 0,14 + (4 X 0,14)D)C	9,5	90,0	145,0	orange
85563165	KAWEFLEX 5488 SK-C-PUR UL/CSA	(3 X (2 X 0,25)D + 3 X 0,25 + 2 X 1)C	9,0	95,0	151,0	orange
85563166	KAWEFLEX 5488 SK-C-PUR UL/CSA	(2 X 2 X 0,25 + 2 X 0,5)C	7,2	52,0	151,0	orange
<b>nach/acc. to Lenze Standard</b>						
85563167	KAWEFLEX 5488 SK-C-PUR UL/CSA	3 X (2 X 0,14)C + (2 X 0,5)C	9,9	54,0	124,0	grün / green
85563168	KAWEFLEX 5488 SK-C-PUR UL/CSA	4 X (2 X 0,14)C + 2 X (1,0)C	11,0	73,0	168,0	grün / green
85563169	KAWEFLEX 5488 SK-C-PUR UL/CSA	3 X (2 X 0,14)C + (3 X 0,14)C	9,2	43,0	120,0	grün / green
<b>nach/acc. to B &amp; R Standard</b>						
85563170	KAWEFLEX 5488 SK-C-PUR UL/CSA	(3 X 2 X AWG24)C	6,5	31,0	57,0	grün / green
85563171	KAWEFLEX 5488 SK-C-PUR UL/CSA	(5 X 2 X 0,14 + 2 X 0,5)C	7,8	48,0	79,0	grün / green
<b>nach/acc. to Heidenhain Standard</b>						
85563172	KAWEFLEX 5488 SK-C-PUR UL/CSA	(3 X (2 X 0,14)D12Y + 2 X (0,5)D12Y)C	8,4	75,0	103,0	schwarz / black
85563173	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,14 + 4 X 0,5)C	8,5	52,0	103,0	schwarz / black
85563174	KAWEFLEX 5488 SK-C-PUR UL/CSA	(3 X (2 X 0,14)D12Y + 2 X (1,0)D12Y)C	9,1	81,0	132,0	schwarz / black
85563175	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,14 + (4 X 0,14)D + 4 X 0,5)C	9,0	81,0	123,0	schwarz / black
85563182	KAWEFLEX 5488 SK-C-PUR UL/CSA	(10 X 0,14 + 2 X 0,5)C	7,2	43,0	79,0	schwarz / black
<b>nach/acc. to SEW Standard</b>						
85563176	KAWEFLEX 5488 SK-C-PUR UL/CSA	(5 X 2 X 0,25)C	7,6	47,0	82,0	grün / green
85563177	KAWEFLEX 5488 SK-C-PUR UL/CSA	(6 X 2 X 0,25)C	7,9	52,0	108,0	grün / green
<b>DIVERSE</b>						
85563178	KAWEFLEX 5488 SK-C-PUR UL/CSA	(3 X (2 X 0,25)D)C	7,2	58,0	80,0	grün / green
85563179	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X (2 X 0,25)C + 2 X 0,5)C	10,2	116,0	162,0	grün / green
85563180	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X (2 X 0,25)C + 2 X 1)C	10,5	133,0	185,0	grün / green
85563181	KAWEFLEX 5488 SK-C-PUR UL/CSA	(4 X 2 X 0,14 + 4 X 0,25)C	6,1	41,0	70,0	schwarz / black



# Motor- und Servoleitungen für Energieketten

## KAWEFLEX® ServoDriveQ C-PVC UL/CSA 2x2x0,22 mm<sup>2</sup> (AWG24)

für feste und bedingt flexible Verlegung  
nach SIEMENS Standard MOTION-CONNECT 200

for fixed and limited flexible installation  
acc. to SIEMENS Standard MOTION-CONNECT 200



### Anwendung

Zur Übertragung digitaler Signale für verschiedene Antriebskomponenten an DRIVE-CLiQ<sup>®</sup> Schnittstellen, mit einer Übertragungsrate von bis zu 100Mbit/s.

### Application

For transmitting digital signals for various drive components to DRIVE-CLiQ<sup>®</sup> interfaces, with a transfer rate up to 100Mbit/s.

### Besonderheiten

- flammwidrig
- ölbeständig gemäß IEC 60811-2-1
- LBS-frei/silikonfrei (bei Produktion)
- Approbation UL/CSA, 80°C 30V
- HF-Eigenschaften Cat.5e gemäß IEC 61156-6

### Special features

- flame retardant
- oil resistant acc. to IEC 60811-2-1
- free from lacquer damaging substances and silicone (during production)
- approbation UL/CSA, 80°C 30V
- HF-characteristics Cat.5e acc. to IEC 61156-6

### Hinweise

- MP Art.-Nr. 85351034
- RoHS und WEEE - konform
- alternativ als c(UL)us Listing Type CMG gem. UL444 lieferbar
- weitere Ausführungen auf Anfrage.
- DRIVE-CLiQ<sup>®</sup> ist eingetragenes Warenzeichen der Fa. Siemens AG

### Remarks

- MP Art.-Nr. 85351034
- conform to RoHS and WEEE
- alternatively as c(UL)us Listing Type CMG acc. UL444 available
- further types upon request
- DRIVE-CLiQ<sup>®</sup> is registered Trademark of Siemens AG

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	7-drähtig
Aderisolationswerkstoff	geschäumtes Polyethylen
Aderkennung	GN/GE, RS/BL
Verseilung	Adern mit Füllern zu Paaren verseilt
Gesamtverseilung	2 Paare mit Füllern verseilt
Berührungsschutz	Kunststoffvlies/-folie
Gesamtschirm	alu-k. Folie, Metallseite aussen, Bed.100%, verz. Cu-Geflecht, opt.Bed. ≥85%
Berührungsschutz	Trennschicht
Außenmantelwerkstoff	PVC
Mantelfarbe	grau, ähnlich RAL 7032
Nennspannung	max. 30 V
Prüfspannung	500 V
Leiterwiderstand	AWG24 max. 87,6 Ω/km
Isolationswiderstand	bei 20 °C ≥ 1 GΩ/km
Kapazität	nom. 50 nF/km bei 800 Hz
Wellenwiderstand	100 ± 15 Ω von 1 bis 100 MHz
Datenübertragungsrate	100 Mbit/s
kleinster Biegeradius fest	7,5 x d
kleinster Biegeradius bewegt	15 x d
Betriebstemp. fest min/max	-20 °C / +80 °C
Brandverhalten	gem. IEC60332-1-2, UL VW-1 bzw. CSA FT1
Sonstige Eigenschaften	siehe Anhang > KAWEFLEX <sup>®</sup> ServoDriveQ... Einsatzparameter <
Außendurchmesser	ca. 6,85 mm
Cu-Zahl	28,0 kg/km
Gewicht	ca. 60,0 kg/km

### Structure & Specifications

conductor material	bare copper
conductor class	7-wires
core insulation	foam Polyethylen
core identification	GN/YE, PK/BU
stranding	cores and fillers twisted to pairs
overall stranding	2 pairs stranded with fillers
protection against contact	plastic-fleece/-foil tape
overall shield	alu-clad PET foil, metalside with contact to braid, cover.100%,tinned copper braid, opt.cover. ≥85%
protection against contact	separating layer
outer sheath	PVC
sheath colour	grey, similar RAL 7032
rated voltage	max. 30 V
testing voltage	500 V
conductor resistance	AWG24 max. 87,6 Ω/km
insulation resistance	at 20 °C ≥ 1 GΩ/km
capacity	nom. 50 nF/km at 800 Hz
characteristic impedance	100 ± 15 Ω from 1 to 100 MHz
transfer rate	100 Mbit/s
min. bending radius fixed	7,5 x d
min. bending radius moved	15 x d
operat. temp. fixed min/max	-20 °C / +80 °C
burning behavior	acc. to IEC60332-1-2, UL VW-1 resp. CSA FT1
other characteristics	see appendix > KAWEFLEX <sup>®</sup> ServoDriveQ ... application parameters <
outer diameter	ca. 6,85 mm
copper weight	28,0 kg/km
weight	ca. 60,0 kg/km

# Power and control cables for use in energy chains



## KAWEFLEX® ServoDriveQ FLEX-C-PVC UL/CSA 2x2x0,22 mm<sup>2</sup> (AWG24)+1x2x0,38 mm<sup>2</sup> (AWG22)

flexible & bedingt für Energieführungsketten  
nach SIEMENS Standard MOTION-CONNECT 500

flexible and limited for drag chain applications  
acc. to SIEMENS Standard MOTION-CONNECT 500



### Anwendung

Für den flexiblen Einsatz mit hohen elektrische Anforderungen, zur Ansteuerung verschiedener Antriebskomponenten an DRIVE-CLiQ® Schnittstellen und Übertragung digitaler Signale, mit einer Übertragungsrates von bis zu 100Mbit/s.

### Application

For flexible use in applications with high electrical requirements for controlling of various drive components on DRIVE-CLiQ® interfaces and digital signals, with a transfer rate of up to 100Mbit/s.

### Besonderheiten

- flammwidrig
- ölbeständig gemäß IEC 60811-2-1
- LBS-frei/silikonfrei (bei Produktion)
- Approbation UL/CSA, 80°C 30V
- DESINA konform
- HF-Eigenschaften Cat.5e gemäß IEC 61156-6

### Special features

- flame retardant
- oil resistant acc. to IEC 60811-2-1
- free from lacquer damaging substances and silicone (during production)
- approbation UL/CSA, 80°C 30V
- conform to DESINA
- HF-characteristics Cat.5e acc. to IEC 61156-6

### Hinweise

- MP Art.-Nr. 85351033
- RoHS und WEEE - konform
- alternativ als c(UL)us Listing Type CMG gem. UL444 lieferbar
- weitere Ausführungen auf Anfrage.
- DRIVE-CLiQ® ist eingetragenes Warenzeichen der Fa. Siemens AG

### Remarks

- MP Art.-Nr. 85351033
- conform to RoHS and WEEE
- alternatively as c(UL)us Listing Type CMG acc. UL444 available
- further types upon request
- DRIVE-CLiQ® is registered Trademark of Siemens AG

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank (AWG24), Cu-Litze verzinkt (AWG22)
Leiterklasse	7-drähig (AWG24), 19-drähig (AWG22)
Aderisolationswerkstoff	geschäumtes Polyethylen (AWG24), Polyolefin (AWG22)
Aderkennung	Paare AWG24 GN/GE, RS/BL Paar AWG22 RT/SW
Verseilung	Adern mit Füllern zu Paaren verseilt
Gesamtverseilung	3 Elemente mit Füllern verseilt
Berührungsschutz	Vliesband
Gesamtschirm	alu-k. Folie, Metallseite aussen, Bed.100%, verz.Cu-Geflecht, opt.Bed. ≥85%
Berührungsschutz	Vliesbandierung
Außenmantelwerkstoff	PVC
Mantelfarbe	grün, ähnlich RAL 6018
Nennspannung	max. 30 V
Prüfspannung	500 V
Leiterwiderstand	AWG24 max. 90 Ω/km , AWG22 max. 55 Ω/km
Isolationswiderstand	bei 20 °C ≥ 1 GΩ/km
Kapazität	Datenpaare: nom. 50 nF/km bei 800 Hz
Wellenwiderstand	100 ± 15 Ω von 1 bis 100 MHz
Datenübertragungsrate	100 Mbit/s
kleinster Biegeradius fest	35,0 mm
kleinster Biegeradius bewegt	125,0 mm
Betriebstemp. fest min/max	- 20 °C / +80 °C
Betriebstemp. bew. min/max	- 0 °C / +60 °C
Brandverhalten	gem. IEC60332-1-2, UL VW-1 bzw. CSA FT1
Sonstige Eigenschaften	siehe Anhang > KAWEFLEX® ServoDriveQ... Einsatzparameter <
Außendurchmesser	ca. 6,95 mm
Cu-Zahl	41,0 kg/km
Gewicht	ca. 68 kg/km

### Structure & Specifications

conductor material	bare copper (AWG24), tinned copper (AWG22)
conductor class	7-wires (AWG24), 19-wires (AWG22)
core insulation	foam Polyethylen (AWG24), Polyolefin (AWG22)
core identification	pairs AWG24 GN/YE, PK/BU pair AWG22 RD/BK
stranding	cores and fillers twisted to pairs
overall stranding	3 elements stranded with fillers
protection against contact	fleece tape
overall shield	alu-clad PET foil, metalside with contact to braid cover.100%, tinned copper braid, opt.cover.≥85%
protection against contact	fleece wrapping
outer sheath	PVC
sheath colour	green, similar RAL 6018
rated voltage	max. 30 V
testing voltage	500 V
conductor resistance	AWG24 max. 90 Ω/km , AWG22 max. 55 Ω/km
insulation resistance	at 20 °C ≥ 1 GΩ/km
capacity	data pairs: nom. 50 nF/km at 800 Hz
characteristic impedance	100 ± 15 Ω from 1 to 100 MHz
transfer rate	100 Mbit/s
min. bending radius fixed	35,0 mm
min. bending radius moved	125,0 mm
operat. temp. fixed min/max	- 20 °C / +80 °C
operat. temp. moved min/max	- 0 °C / +60 °C
burning behavior	acc. to IEC60332-1-2, UL VW-1 resp. CSA FT1
other characteristics	see appendix > KAWEFLEX® ServoDriveQ ... application parameters <
outer diameter	ca. 6,95 mm
copper weight	41,0 kg/km
weight	ca. 68 kg/km



# Motor- und Servoleitungen für Energieketten

**KAWEFLEX® ServoDriveQ SK-C-PUR UL/CSA** 2x2x0,15mm<sup>2</sup>(AWG26)+1x2x0,38mm<sup>2</sup>(AWG22)

für Energieführungsketten  
nach SIEMENS Standard MOTION-CONNECT 800

for drag chain applications  
acc. to SIEMENS Standard MOTION-CONNECT 800



## Anwendung

Für den Einsatz in dynamischen Anwendungen in Energieführungsketten, mit hohen elektrischen und mechanischen Anforderungen, zur Ansteuerung verschiedener Antriebskomponenten an DRIVE-CLiQ® Schnittstellen und Übertragung digitaler Signale, mit einer Übertragungsrate von bis zu 100Mbit/s.

## Application

For use in dynamic applications in energy supply chains, with high electrical and mechanical requirements for controlling of various drive components on DRIVE-CLiQ® interfaces and transmitting digital signals, with a transfer rate up to 100Mbit/s.

## Besonderheiten

- halogenfrei, flammwidrig
- ölbeständig gemäß IEC 60811-2-1
- LBS-frei/silikonfrei (bei Produktion)
- Approbation UL/CSA, 80°C 30V
- DESINA konform
- HF-Eigenschaften Cat.5e gemäß IEC 61156-6

## Special features

- halogen-free, flame retardant
- oil resistant acc. to IEC 60811-2-1
- free from lacquer damaging substances and silicone (during production)
- approbation UL/CSA, 80°C 30V
- conform to DESINA
- HF-characteristics Cat.5e acc. to IEC 61156-6

## Hinweise

- MP Art.-Nr. 85563079
- RoHS und WEEE - konform
- alternativ als c(UL)us Listing Type CMX gem. UL444 lieferbar
- weitere Ausführungen auf Anfrage.
- DRIVE-CLiQ® ist eingetragenes Warenzeichen der Fa. Siemens AG

## Remarks

- MP Art.-Nr. 85563079
- conform to RoHS and WEEE
- alternatively as c(UL)us Listing Type CMX acc. UL444 available
- further types upon request
- DRIVE-CLiQ® is registered Trademark of Siemens AG

## Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank (AWG26), Cu-Litze verzinkt (AWG22)
Leiterklasse	19-drähtig
Aderisolationswerkstoff	Polyolefin
Aderkennung	Paare AWG26 GN/GE, RS/BL Paar AWG22 RT/SW
Verseilung	Adern mit Füllern zu Paaren verseilt
Gesamtverseilung	3 Elemente mit Füllern verseilt
Berührungsschutz	Vliesband
Gesamtschirm	alu-k. Folie, Metallseite aussen, Bed.100%, verz. Cu-Geflecht, opt.Bed. ≥85%
Berührungsschutz	Vliesbandierung
Außenmantelwerkstoff	PUR
Mantelfarbe	grün, ähnlich RAL 6018
Nennspannung	max. 30 V
Prüfspannung	500 V
Leiterwiderstand	AWG26 max. 135 Ω/km, AWG22 max. 55 Ω/km
Isolationswiderstand	bei 20 °C ≥ 1 GΩ/km
Kapazität	Datenpaare: nom. 50 nF/km bei 800 Hz
Wellenwiderstand	100 ± 15 Ω von 1 bis 100 MHz
Datenübertragungsrate	100 Mbit/s
kleinster Biegeradius fest	35,0 mm
kleinster Biegeradius bewegt	105,0 mm
Betriebstemp. fest min/max	-20 °C / +80 °C
Betriebstemp. bew. min/max	-20 °C / +60 °C
Brandverhalten	gem. IEC60332-1-2 bzw. UL VW1 + CSA FT1
Sonstige Eigenschaften	siehe Anhang > KAWEFLEX® ServoDriveQ... Einsatzparameter <
Außendurchmesser	ca. 6,95 mm
Cu-Zahl	37,5 kg/km
Gewicht	ca. 65 kg/km

## Structure & Specifications

conductor material	bare copper (AWG26), tinned copper (AWG22)
conductor class	19-wires
core insulation	Polyolefin
core identification	pairs AWG26 YE/GN, PK/BU pair AWG22 RD/BK
stranding	cores and fillers twisted to pairs
overall stranding	3 elements stranded with fillers
protection against contact	fleece tape
overall shield	alu-clad PET foil, metalside with contact to braid cover. 100%, tinned copper braid, opt.cover. ≥85%
protection against contact	fleece wrapping
outer sheath	PUR
sheath colour	green, similar RAL 6018
rated voltage	max. 30 V
testing voltage	500 V
conductor resistance	AWG26 max. 135 Ω/km, AWG22 max. 55 Ω/km
insulation resistance	at 20 °C ≥ 1 GΩ/km
capacity	data pairs: nom. 50 nF/km at 800 Hz
characteristic impedance	100 ± 15 Ω from 1 to 100 MHz
transfer rate	100 Mbit/s
min. bending radius fixed	35,0 mm
min. bending radius moved	105,0 mm
operat. temp. fixed min/max	-20 °C / +80 °C
operat. temp. moved min/max	-20 °C / +60 °C
burning behavior	acc. to IEC60332-1-2 resp. UL VW1 + CSA FT1
other characteristics	see appendix > KAWEFLEX® ServoDriveQ... application parameters <
outer diameter	ca. 6,95 mm
copper weight	37,5 kg/km
weight	ca. 65 kg/km



# Power and control cables for use in energy chains



## KAWEFLEX® ServoDriveQ FLEX-C-PVC UL/CSA 2x2x0,20 mm<sup>2</sup> (AWG24)+1x2x0,38 mm<sup>2</sup> (AWG22)

für Energieführungsketten  
nach SIEMENS Standard MOTION-CONNECT  
800PLUS



for drag chain applications  
acc. to SIEMENS Stand. MOTION-CONNECT 800PLUS



### Anwendung

Für den Einsatz in hoch dynamischen Anwendungen in Energieführungsketten, mit hohen elektrischen und mechanischen Anforderungen, zur Ansteuerung verschiedener Antriebskomponenten an DRIVE-CLiQ® Schnittstellen und Übertragung digitaler Signale, mit einer Übertragungsrate von bis zu 100Mbit/s.

### Application

For use in highly dynamic applications in energy supply chains, with high electrical and mechanical requirements for controlling of various drive components on DRIVE-CLiQ® interfaces and transmitting digital signals, with a transfer rate up to 100Mbit/s.

### Besonderheiten

- halogenfrei, flammwidrig
- ölbeständig gemäß IEC 60811-2-1
- LBS-frei/silikonfrei (bei Produktion)
- Approbation UL/CSA, 80°C 30V
- DESINA konform
- HF-Eigenschaften Cat.5e gemäß IEC 61156-6

### Special features

- halogen-free, flame retardant
- oil resistant acc. to IEC 60811-2-1
- free from lacquer damaging substances and silicone ( during production)
- approbation UL/CSA, 80°C 30V
- conform to DESINA
- HF-characteristics Cat.5e acc. to IEC 61156-6

### Hinweise

- MP Art.-Nr. 85363069
- RoHS und WEEE - konform
- alternativ als c(UL)us Listing Type CMX gem. UL444 lieferbar
- weitere Ausführungen auf Anfrage.
- DRIVE-CLiQ® ist eingetragenes Warenzeichen der Fa. Siemens AG

### Remarks

- MP Art.-Nr. 85363069
- conform to RoHS and WEEE
- alternatively as c(UL)us Listing Type CMX acc. UL444 available
- further types upon request
- DRIVE-CLiQ® is registered Trademark of Siemens AG

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank (AWG24), Cu-Litze verzinkt (AWG22)
Leiterklasse	19-drähtig
Aderisolationswerkstoff	Polyolefin
Aderkennung	Paare AWG24 GN/GE, RS/BL Paar AWG22 RT/SW
Verseilung	Adern mit Füllern zu Paaren verseilt
Gesamtverseilung	3 Elemente mit Füllern verseilt
Berührungsschutz	Vliesband
Gesamtschirm	alu-k. Folie, Metallseite aussen, Bed.100%, verz. Cu-Geflecht, opt.Bed. ≥85%
Berührungsschutz	Vliesbandierung
Außenmantelwerkstoff	PUR
Mantelfarbe	grün, ähnlich RAL 6018
Nennspannung	max. 30 V
Prüfspannung	500 V
Leiterwiderstand	AWG24 max. 95 Ω/km , AWG22 max. 55 Ω/km
Isolationswiderstand	bei 20 °C ≥ 1 GΩ/km
Kapazität	Datenpaare: nom. 50 nF/km bei 800 Hz
Wellenwiderstand	100 ± 15 Ω von 1 bis 100 MHz
Datenübertragungsrate	100 Mbit/s
kleinster Biegeradius fest	35,0 mm
kleinster Biegeradius bewegt	75,0 mm
Betriebstemp. fest min/max	- 20 °C / +80 °C
Betriebstemp. bew. min/max	- 20 °C / +60 °C
Brandverhalten	gem. IEC60332-1-2, UL VW-1 bzw. CSA FT1
Sonstige Eigenschaften	siehe Anhang > KAWEFLEX® ServoDriveQ... Einsatzparameter <
Außendurchmesser	ca. 6,9 mm
Cu-Zahl	40,0 kg/km
Gewicht	ca. 67 kg/km

### Structure & Specifications

conductor material	bare copper (AWG24), tinned copper (AWG22)
conductor class	19-wires
core insulation	Polyolefin
core identification	pairs AWG24 GN/YE, PK/BU pair AWG22 RD/BK
stranding	cores and fillers twisted to pairs
overall stranding	3 elements stranded with fillers
protection against contact	fleece tape
overall shield	alu-clad PET foil, metalside with contact to braid cover. 100%, tinned copper braid, opt.cover. ≥85%
protection against contact	fleece wrapping
outer sheath	PUR
sheath colour	green, similar RAL 6018
rated voltage	max. 30 V
testing voltage	500 V
conductor resistance	AWG24 max. 95 Ω/km , AWG22 max. 55 Ω/km
insulation resistance	at 20 °C ≥ 1 GΩ/km
capacity	data pairs: nom. 50 nF/km at 800 Hz
characteristic impedance	100 ± 15 Ω from 1 to 100 MHz
transfer rate	100 Mbit/s
min. bending radius fixed	35,0 mm
min. bending radius moved	75,0 mm
operat. temp. fixed min/max	- 20 °C / +80 °C
operat. temp. moved min/max	- 20 °C / +60 °C
burning behavior	acc. to IEC60332-1-2, UL VW-1 resp. CSA FT1
other characteristics	see appendix > KAWEFLEX® ServoDriveQ ... application parameters <
outer diameter	ca. 6,9 mm
copper weight	40,0 kg/km
weight	ca. 67 kg/km



# Motor- und Servoleitungen für Energieketten

## KAWEFLEX® ServoDriveQ PLUS SK-C-PUR UL/CSA 2x2x0,22mm<sup>2</sup>(AWG24)+1x2x0,38mm<sup>2</sup>(AWG22)

für Energieführungsketten  
nach SIEMENS Standard MOTION-CONNECT 800PLUS

for drag chain applications  
acc. to SIEMENS Stand. MOTION-CONNECT 800PLUS



### Anwendung

Für den Einsatz in hoch dynamischen Anwendungen in Energieführungsketten, mit hohen elektrischen und mechanischen Anforderungen, zur Ansteuerung verschiedener Antriebskomponenten an DRIVE-CLiQ® Schnittstellen und Übertragung digitaler Signale, mit einer Übertragungsrate von bis zu 100Mbit/s. Einsetzbar in trockenen und feuchten Räumen. Verwendung im Freien nur mit UV-Schutz.

### Application

For use in highly dynamic applications in energy supply chains, with high electrical and mechanical requirements for controlling of various drive components on DRIVE-CLiQ® interfaces and transmitting digital signals, with a transfer rate up to 100Mbit/s. Suitable for use in dry and humid rooms. Outdoor use only with UV-protection.

### Besonderheiten

- halogenfrei, flammwidrig
- ölbeständig gemäß IEC 60811-2-1
- LBS-frei/silikonfrei (bei Produktion)
- Approbation UL/CSA, 300V, 80°C
- durch UL/CSA Zulassung bis 300V ist eine Parallelverlegung mit anderen Leitungen die ebenfalls eine Betriebsspannung bis 300V führen erlaubt.
- DESINA konform
- HF-Eigenschaften Cat.5e gemäß IEC 61156-6

### Special Features

- halogen-free, flame retardant
- oil resistant acc. to IEC 60811-2-1
- free from lacquer damaging substances and silicone (during production)
- approbation UL/CSA, 300V, 80°C
- due to 300V UL/CSA approval parallel laying with other 300V cables is permitted
- conform to DESINA
- HF-characteristics Cat.5e acc. to IEC 61156-6

### Hinweise

- RoHS und WEEE - konform
- alternativ als c(UL)us Listing Type CMX gem. UL444 lieferbar
- weitere Ausführungen auf Anfrage.
- Einsatzparameter - KAWEFLEX® ServoDriveQ... Einsatzparameter -
- DRIVE-CLiQ® ist eingetragenes Warenzeichen der Fa. Siemens AG

### Remarks

- conform to RoHS and WEEE
- alternatively as c(UL)us Listing Type CMX acc. UL444 available
- further types upon request
- application parameters s. app. - KAWEFLEX® ServoDriveQ...application parameters -
- DRIVE-CLiQ® is registered Trademark of Siemens AG

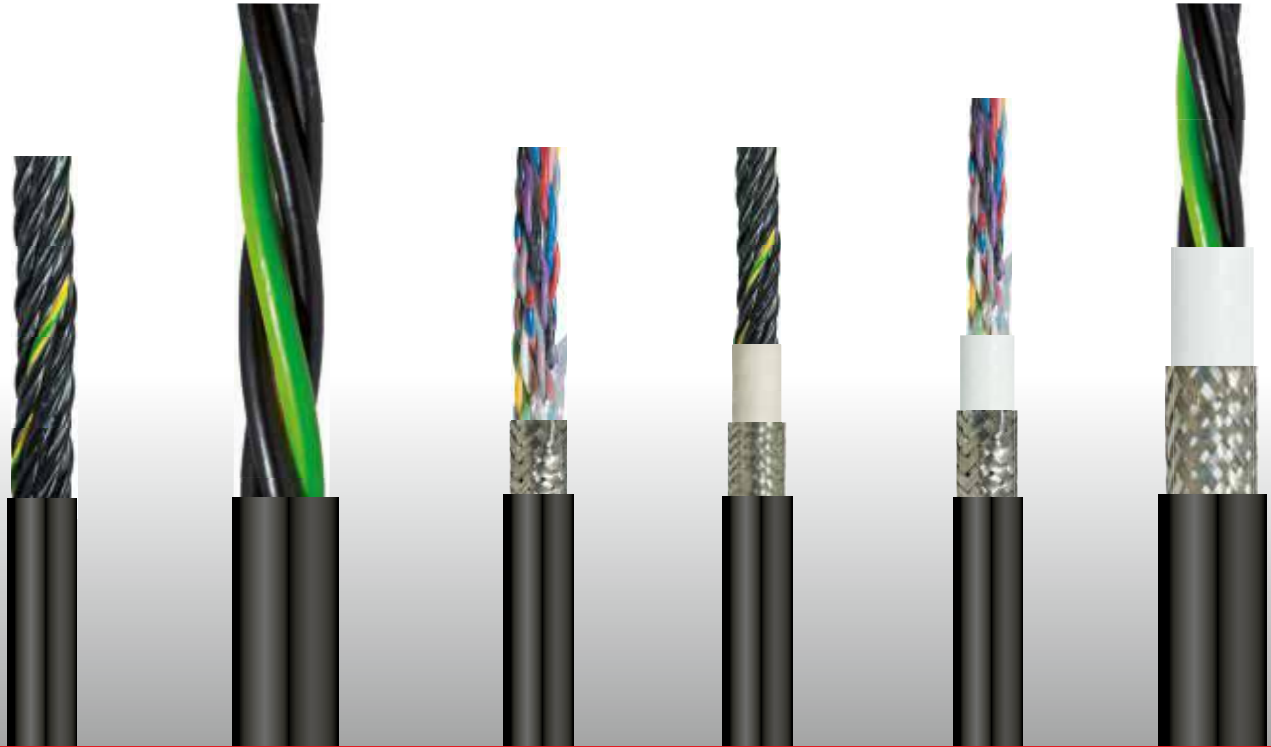
### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank (AWG24), Cu-Litze verzinkt (AWG22)
Leiterklasse	19-drähtig
Aderisolationwerkstoff	Polyolefin
Aderkennung	Paare AWG24 GN/GE, RS/BL Paar AWG22 RT/SW
Verseilung	Adern mit Füllern zu Paaren verseilt
Gesamtverseilung	3 Elemente mit Füllern verseilt
Berührungsschutz	Vliesband
Gesamtschirm	alu-k. Folie, Metallseite aussen, Bed.100%, verz. Cu-Geflecht, opt.Bed. ≥85%
Berührungsschutz	Vliesbandierung
Außenmantelwerkstoff	PUR
Mantelfarbe	grün, RAL 6018
Nennspannung	300 V
Prüfspannung	500 V
Leiterwiderstand	AWG24 max. 95 Ω/km , AWG22 max. 55 Ω/km
Isolationswiderstand	bei 20 °C ≥ 1 GΩ/km
Kapazität	Datenpaare: nom. 50 nF/km bei 800 Hz
Wellenwiderstand	100 ± 15 Ω von 1 bis 100 MHz
Datenübertragungsrate	100 Mbit/s
kleinster Biegeradius fest	35,0 mm
kleinster Biegeradius bewegt	75,0 mm
Betriebstemp. fest min/max	- 40 °C / +80 °C
Betriebstemp. bew. min/max	- 20 °C / +60 °C
Brandverhalten	gem. IEC60332-1-2, UL VW-1 bzw. CSA FT1
Approbation	UL/CSA - cURus 300 V, 80°C
Außendurchmesser	ca. 6,9 mm
MP Art.-Nr.	85351033

### Structure & Specifications

conductor material	bare copper (AWG24), tinned copper (AWG22)
conductor class	19-wires
core insulation	Polyolefin
core identification	pairs AWG24 GN/YE, PK/BU pair AWG22 RD/BK
stranding	cores and fillers twisted to pairs
overall stranding	3 elements stranded with fillers
protection against contact	fleece tape
shield	alu-clad PET foil, metalside with contact to braid cover.100%, tinned copper braid, opt.cover. ≥85%
protection against contact	fleece wrapping
outer sheath	PUR
sheath colour	green, RAL 6018
rated voltage	300 V
testing voltage	500 V
conductor resistance	AWG24 max. 95 Ω/km , AWG22 max. 55 Ω/km
insulation resistance	at 20 °C ≥ 1 GΩ/km
capacity	data pairs: nom. 50 nF/km at 800 Hz
characteristic impedance	100 ± 15 Ω from 1 to 100 MHz
transfer rate	100 Mbit/s
min. bending radius fixed	35,0 mm
min. bending radius moved	75,0 mm
operat. temp. fixed min/max	- 40 °C / +80 °C
operat. temp. moved min/max	- 20 °C / +60 °C
burning behavior	acc. to IEC60332-1-2, UL VW-1 resp. CSA FT1
approvals	UL/CSA - cURus 300 V, 80°C
outer diameter	ca. 6,9 mm
MP Art.-Nr.	85351033

**KAWEFLEX® Allround** für höchste Lebensdauer / for highest lifetime



**KAWEFLEX® Allround**  
für höchste Lebensdauer  
für Energieketteneinsatz

for highest lifetime  
for use in energy chains

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## KAWEFLEX® Allround 7110 SK-PVC UL/CSA



für erhöhte Anforderungen

for increased requirements



### Anwendung

als flexible Anschluss- und Steuerleitung für erhöhte elektrische und mechanische Anforderungen in Energieführungsketten und beweglichen Antrieben im Maschinen- und Anlagenbau, in Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible power and control cable for increased electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering and in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approval
- flammwidrig und adhäsionsarm
- ölbeständig nach DIN EN 60811-2-1 bzw. UL 1581, 168 h bei +80 °C
- UV und witterungsbeständig
- silikonfrei
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln

### Special Features

- UL/CSA-Approval
- flame-retardant and low adhesion
- resistant to oil acc. to DIN EN 60811-2-1 bzw. UL 1581, 168 h at +80 °C
- UV and weather resistant
- silicone-free
- NEW: with Ripcord, for faster and core protected dismantling

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- NEU: mit reduzierten Außendurchmessern, für leichtere Bauweise, kleinere Biegeradien und geringeres Gewicht; ab Fertigungsdatum Jan. 2016, (alte Ausführung)

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline (CE marking)
- NEW: with reduced outer diameters, for lower weight, smaller design and lower bending radii; up from production date Jan. 2016 (old value)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	≤ 0,5 mm <sup>2</sup> - PELON®2, ≥ 0,75 mm <sup>2</sup> - PVC
Aderkennung	SW mit Zifferndruck + 1x GNGE
Gesamtverseilung	≤ 11 Adern in Lagen verseilt, ≥ 12 Adern Bündelverseilung um zugfesten Kern, opt. Schlaglänge für Schleppketteneinsatz
Außenmantelwerkstoff	PVC, mit Reißfaden
Mantelfarbe	schwarz, RAL 9005
Aufdruck	nach TKD Printnorm
Nennspannung	600 V AC
Prüfspannung	2.000 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. bis zu 80 m/s <sup>2</sup> ; Verfahrensgeschw. freitragend bis zu 10 m/s; gleitend bis zu 5 m/s; max. Verfahrensweg freitragend/gleitend bis 100 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	6,5 x D (< 10 m) / 7,5 x D (≥ 10 m)
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-5 °C / +70 °C
Brandverhalten	nach IEC 60332-1, cable flame test + FT1
Approbation	UL 80°C, 600 V, cURus 80°C, 600 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	≤ 0,5 mm <sup>2</sup> - PELON®2, ≥ 0,75 mm <sup>2</sup> - PVC
core identification	BK with numerals + 1x GNGE
overall stranding	≤ 11 cores stranded in layers, ≥ 12 cores stranding in bundles around tensile strength center, opt. lay length for drag chains
outer sheath	PVC, with ripcord
sheath colour	black, RAL 9005
printing	acc. to TKD printnorm
rated voltage	600 V AC
testing voltage	2.000 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 and IEC 60228 cl. 6
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s; gliding up to 5 m/s; max. path self-supporting/gliding to 100 m
min. bending radius fixed	4 x d
min. bending radius moved	6,5 x D (< 10 m) / 7,5 x D (≥ 10 m)
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-5 °C / +70 °C
burning behavior	acc. to IEC 60332-1, cable flame test + FT1
approvals	UL 80°C, 600 V, cURus 80°C, 600 V

## KAWEFLEX® Allround 7110 SK-PVC UL/CSA



MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85252001	KAWEFLEX 7110 SK-PVC UL/CSA	2 X 0,5 (AWG 20)	4,8 (6,0)	10,0	34,0
85252002	KAWEFLEX 7110 SK-PVC UL/CSA	3 G 0,5 (AWG 20)	5,1 (6,4)	15,0	40,0
85252003	KAWEFLEX 7110 SK-PVC UL/CSA	4 G 0,5 (AWG 20)	5,5 (6,9)	20,0	47,0
85252004	KAWEFLEX 7110 SK-PVC UL/CSA	5 G 0,5 (AWG 20)	5,9 (7,5)	25,0	55,5
85252005	KAWEFLEX 7110 SK-PVC UL/CSA	7 G 0,5 (AWG 20)	7,2 (9,3)	35,0	78,6
85252006	KAWEFLEX 7110 SK-PVC UL/CSA	12 G 0,5 (AWG 20)	10,4 (12,8)	60,0	139,0
85252007	KAWEFLEX 7110 SK-PVC UL/CSA	18 G 0,5 (AWG 20)	13,0 (16,5)	90,0	211,0
85252008	KAWEFLEX 7110 SK-PVC UL/CSA	25 G 0,5 (AWG 20)	14,2 (18,6)	125,0	271,0
85252009	KAWEFLEX 7110 SK-PVC UL/CSA	30 G 0,5 (AWG 20)	15,9 (21,0)	150,0	330,0
85252010	KAWEFLEX 7110 SK-PVC UL/CSA	36 G 0,5 (AWG 20)	18,0 (22,0)	180,0	411,0
85252011	KAWEFLEX 7110 SK-PVC UL/CSA	2 X 0,75 (AWG 19)	5,4 (6,4)	15,0	46,5
85252012	KAWEFLEX 7110 SK-PVC UL/CSA	3 G 0,75 (AWG 19)	5,7 (6,8)	23,0	55,7
85252013	KAWEFLEX 7110 SK-PVC UL/CSA	4 G 0,75 (AWG 19)	6,2 (7,6)	30,0	67,3
85252014	KAWEFLEX 7110 SK-PVC UL/CSA	5 G 0,75 (AWG 19)	6,7 (8,1)	38,0	80,2
85252015	KAWEFLEX 7110 SK-PVC UL/CSA	7 G 0,75 (AWG 19)	7,7 (9,3)	53,0	106,5
85252016	KAWEFLEX 7110 SK-PVC UL/CSA	12 G 0,75 (AWG 19)	11,8 (15,0)	90,0	204,5
85252017	KAWEFLEX 7110 SK-PVC UL/CSA	18 G 0,75 (AWG 19)	15,3 (18,4)	135,0	314,0
85252018	KAWEFLEX 7110 SK-PVC UL/CSA	25 G 0,75 (AWG 19)	16,7 (20,3)	188,0	426,5
85252019	KAWEFLEX 7110 SK-PVC UL/CSA	36 G 0,75 (AWG 19)	20,8 (24,9)	270,0	630,0
85252020	KAWEFLEX 7110 SK-PVC UL/CSA	42 G 0,75 (AWG 19)	21,5 (26,3)	315,0	705,0
85252021	KAWEFLEX 7110 SK-PVC UL/CSA	2 X 1 (AWG 18)	5,6 (6,5)	20,0	54,5
85252022	KAWEFLEX 7110 SK-PVC UL/CSA	3 G 1 (AWG 18)	5,9 (7,3)	30,0	66,8
85252023	KAWEFLEX 7110 SK-PVC UL/CSA	4 G 1 (AWG 18)	6,4 (7,8)	40,0	78,6
85252024	KAWEFLEX 7110 SK-PVC UL/CSA	5 G 1 (AWG 18)	7,0 (8,5)	50,0	95,0
85252025	KAWEFLEX 7110 SK-PVC UL/CSA	7 G 1 (AWG 18)	8,0 (9,8)	70,0	125,7
85252026	KAWEFLEX 7110 SK-PVC UL/CSA	12 G 1 (AWG 18)	12,8 (15,5)	120,0	223,5
85252027	KAWEFLEX 7110 SK-PVC UL/CSA	18 G 1 (AWG 18)	15,6 (19,2)	180,0	370,0
85252028	KAWEFLEX 7110 SK-PVC UL/CSA	25 G 1 (AWG 18)	18,0 (20,7)	250,0	525,0
85252029	KAWEFLEX 7110 SK-PVC UL/CSA	36 G 1 (AWG 18)	22,0 (25,1)	360,0	743,8
85252030	KAWEFLEX 7110 SK-PVC UL/CSA	42 G 1 (AWG 18)	23,3 (27,3)	420,0	844,4
85252031	KAWEFLEX 7110 SK-PVC UL/CSA	2 X 1,5 (AWG 16)	6,4 (7,4)	30,0	72,0
85252032	KAWEFLEX 7110 SK-PVC UL/CSA	3 G 1,5 (AWG 16)	6,8 (7,8)	45,0	103,0
85252033	KAWEFLEX 7110 SK-PVC UL/CSA	4 G 1,5 (AWG 16)	7,4 (8,5)	60,0	109,0
85252034	KAWEFLEX 7110 SK-PVC UL/CSA	5 G 1,5 (AWG 16)	8,1 (9,2)	75,0	132,0
85252035	KAWEFLEX 7110 SK-PVC UL/CSA	7 G 1,5 (AWG 16)	9,5 (10,7)	105,0	183,0
85252036	KAWEFLEX 7110 SK-PVC UL/CSA	12 G 1,5 (AWG 16)	15,4 (17,4)	180,0	368,0
85252037	KAWEFLEX 7110 SK-PVC UL/CSA	18 G 1,5 (AWG 16)	19,0 (21,4)	270,0	534,0
85252038	KAWEFLEX 7110 SK-PVC UL/CSA	25 G 1,5 (AWG 16)	21,4 (23,1)	375,0	732,0
85252039	KAWEFLEX 7110 SK-PVC UL/CSA	36 G 1,5 (AWG 16)	25,0 (28,4)	540,0	1.008,0
85252040	KAWEFLEX 7110 SK-PVC UL/CSA	42 G 1,5 (AWG 16)	27,2 (30,2)	630,0	1.184,0
85252041	KAWEFLEX 7110 SK-PVC UL/CSA	3 G 2,5 (AWG 14)	8,3 (9,0)	75,0	138,0
85252042	KAWEFLEX 7110 SK-PVC UL/CSA	4 G 2,5 (AWG 14)	9,0 (9,8)	100,0	170,0
85252043	KAWEFLEX 7110 SK-PVC UL/CSA	5 G 2,5 (AWG 14)	10,1 (10,7)	125,0	125,0
85252044	KAWEFLEX 7110 SK-PVC UL/CSA	7 G 2,5 (AWG 14)	12,0 (12,5)	175,0	291,0
85252045	KAWEFLEX 7110 SK-PVC UL/CSA	12 G 2,5 (AWG 14)	18,6 (20,6)	300,0	565,0
85252046	KAWEFLEX 7110 SK-PVC UL/CSA	18 G 2,5 (AWG 14)	22,3 (24,9)	450,0	807,0
		25 G 2,5 (AWG 14)	25,0 (28,2)	625,0	1.090,0

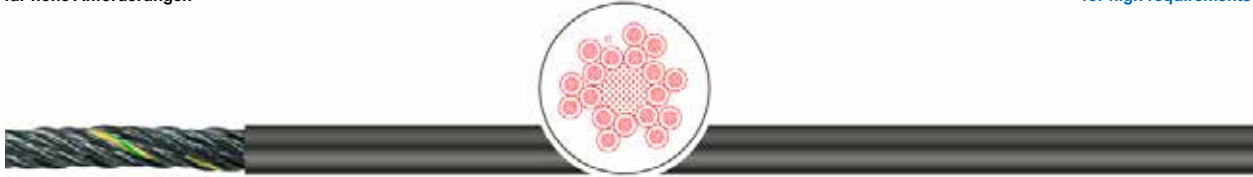


## KAWEFLEX® Allround 7130 SK-PUR UL/CSA



für hohe Anforderungen

for high requirements



### Anwendung

als flexible Anschluss- und Steuerleitung für hohe elektrische und mechanische Anforderungen in Energieführungsketten und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible power and control cable for high electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering and in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approbatation
- flammwidrig, halogenfrei und adhäsionsarm
- beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-2-1 168 h / +100 °C
- UV- und Witterungsbeständig
- silikonfrei
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln

### Special Features

- UL/CSA approved
- flame-retardant, halogen-free and low adhesion
- resistant to grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-2-1 168 h / +100 °C
- UV and weather resistant
- silicone-free
- NEW: with Ripcord, for faster and core protected dismantling

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- sehr lange Lebensdauer, optimales Kosten-Nutzen-Verhältnis
- NEU: mit reduzierten Außendurchmessern, für leichtere Bauweise, kleinere Biegeradien und geringeres Gewicht; ab Fertigungsdatum Feb. 2016, (alte Ausführung)

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline (CE marking)
- very long lifetime, optimal cost-value ratio
- NEW: with reduced outer diameters, for lower weight, smaller design and lower bending radii; up from production date Feb. 2016 (old value)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®2
Aderkennung	SW mit Zifferndruck + 1x GNGE
Gesamtverseilung	≤ 11 Adern in einer Lage, ≥ 12 Adern Bündelverseilung um zugfesten Kern, opt. Schlaglänge
Außenmantelwerkstoff	PUR, mit Reißfaden
Mantelfarbe	schwarz, RAL 9005
Aufdruck	nach TKD Printnorm
Nennspannung	1.000 V AC UL / cUL 600 V
Prüfspannung	3.000 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. 80 m/s <sup>2</sup> ; max. Verfahrensgeschw. Freitragend bis 10 m/s, gleitend bis 5 m/s; max. Verfahrensweg freitragend/gleitend bis 100 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	6,5 x d (< 10 m) / 7,5 x (≥ 10)
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-25 °C / +80 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approbatation	UL 80°C, 1.000 V, cURus 80 °C, 1.000 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2
core identification	BK with numerals print + 1x GNGE
overall stranding	≤ 11 cores stranded in single layer, ≥ 12 cores stranding in bundles around tensile strength, opt. lay length
outer sheath	PUR, with Rip cord
sheath colour	black, RAL 9005
printing	acc. to TKD printnorm
rated voltage	1.000 V AC UL / cUL 600 V
testing voltage	3.000 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 and IEC 60228 cl. 6
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; max. speed self-supporting up to 10 m/s, gliding up to 5 m/s; max. path length self-supporting/gliding to 100 m
min. bending radius fixed	4 x d
min. bending radius moved	6,5 x d (< 10 m) / 7,5 x (≥ 10)
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-25 °C / +80 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80°C, 1.000 V, cURus 80 °C, 1.000 V

## KAWEFLEX® Allround 7130 SK-PUR UL/CSA



MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85267102	KAWEFLEX 7130 SK-PUR UL/CSA	4 G 0,5 (AWG 20)	5,5 (5,7)	20,0	40,0
85267103	KAWEFLEX 7130 SK-PUR UL/CSA	5 G 0,5 (AWG 20)	5,9 (6,2)	25,0	51,0
85267104	KAWEFLEX 7130 SK-PUR UL/CSA	7 G 0,5 (AWG 20)	6,8 (7,4)	35,0	69,0
85267105	KAWEFLEX 7130 SK-PUR UL/CSA	12 G 0,5 (AWG 20)	10,0 (11,0)	60,0	123,0
85267143	KAWEFLEX 7130 SK-PUR UL/CSA	16 G 0,5 (AWG 20)	11,8 (12,4)	80,0	161,0
85267106	KAWEFLEX 7130 SK-PUR UL/CSA	18 G 0,5 (AWG 20)	12,3 (13,7)	90,0	183,0
85267107	KAWEFLEX 7130 SK-PUR UL/CSA	25 G 0,5 (AWG 20)	14,3 (15,6)	125,0	264,0
85267108	KAWEFLEX 7130 SK-PUR UL/CSA	30 G 0,5 (AWG 20)	15,2 (17,7)	150,0	305,0
85267144	KAWEFLEX 7130 SK-PUR UL/CSA	36 G 0,5 (AWG 20)	16,8 (19,2)	180,0	349,0
85267111	KAWEFLEX 7130 SK-PUR UL/CSA	3 G 0,75 (AWG 19)	5,5 (5,9)	23,0	43,0
85267112	KAWEFLEX 7130 SK-PUR UL/CSA	4 G 0,75 (AWG 19)	5,9 (6,4)	30,0	56,0
85267113	KAWEFLEX 7130 SK-PUR UL/CSA	5 G 0,75 (AWG 19)	6,5 (7,0)	38,0	69,0
85267114	KAWEFLEX 7130 SK-PUR UL/CSA	7 G 0,75 (AWG 19)	7,4 (8,4)	53,0	91,0
85267115	KAWEFLEX 7130 SK-PUR UL/CSA	12 G 0,75 (AWG 19)	11,5 (12,0)	90,0	170,0
85267116	KAWEFLEX 7130 SK-PUR UL/CSA	18 G 0,75 (AWG 19)	14,1 (15,5)	135,0	299,0
85267145	KAWEFLEX 7130 SK-PUR UL/CSA	25 G 0,75 (AWG 19)	16,2 (17,6)	188,0	364,0
85267119	KAWEFLEX 7130 SK-PUR UL/CSA	36 G 0,75 (AWG 19)	18,6 (22,0)	270,0	631,0
85267121	KAWEFLEX 7130 SK-PUR UL/CSA	2 X 1 (AWG 18)	5,8	20,0	45,0
85267122	KAWEFLEX 7130 SK-PUR UL/CSA	3 G 1 (AWG 18)	6,1	30,0	55,0
85267123	KAWEFLEX 7130 SK-PUR UL/CSA	4 G 1 (AWG 18)	6,7	40,0	69,0
85267124	KAWEFLEX 7130 SK-PUR UL/CSA	5 G 1 (AWG 18)	7,5	50,0	88,0
85267125	KAWEFLEX 7130 SK-PUR UL/CSA	7 G 1 (AWG 18)	8,4	70,0	146,0
85267126	KAWEFLEX 7130 SK-PUR UL/CSA	12 G 1 (AWG 18)	12,4	120,0	212,0
85267127	KAWEFLEX 7130 SK-PUR UL/CSA	18 G 1 (AWG 18)	15,9	180,0	329,0
85267128	KAWEFLEX 7130 SK-PUR UL/CSA	25 G 1 (AWG 18)	18,0	250,0	460,0
85267146	KAWEFLEX 7130 SK-PUR UL/CSA	36 G 1 (AWG 18)	21,9	360,0	642,0
85267147	KAWEFLEX 7130 SK-PUR UL/CSA	42 G 1 (AWG 18)	23,5	420,0	742,0
85267130	KAWEFLEX 7130 SK-PUR UL/CSA	3 G 1,5 (AWG 16)	6,8	45,0	75,0
85267131	KAWEFLEX 7130 SK-PUR UL/CSA	4 G 1,5 (AWG 16)	7,4	60,0	101,0
85267132	KAWEFLEX 7130 SK-PUR UL/CSA	5 G 1,5 (AWG 16)	8,1	75,0	123,0
85267133	KAWEFLEX 7130 SK-PUR UL/CSA	7 G 1,5 (AWG 16)	9,4	105,0	170,0
85267134	KAWEFLEX 7130 SK-PUR UL/CSA	12 G 1,5 (AWG 16)	14,5	180,0	303,0
85267135	KAWEFLEX 7130 SK-PUR UL/CSA	18 G 1,5 (AWG 16)	18,2	270,0	404,0
85267148	KAWEFLEX 7130 SK-PUR UL/CSA	25 G 1,5 (AWG 16)	20,2	375,0	628,0
85267149	KAWEFLEX 7130 SK-PUR UL/CSA	36 G 1,5 (AWG 16)	25,2	540,0	729,0
85267150	KAWEFLEX 7130 SK-PUR UL/CSA	42 G 1,5 (AWG 16)	26,6	630,0	1.052,0
85267248	KAWEFLEX 7130 SK-PUR UL/CSA	3 G 2,5 (AWG 14)	7,9	75,0	121,0
85267139	KAWEFLEX 7130 SK-PUR UL/CSA	4 G 2,5 (AWG 14)	8,6	100,0	160,0
85267140	KAWEFLEX 7130 SK-PUR UL/CSA	5 G 2,5 (AWG 14)	9,4	125,0	190,0
85267141	KAWEFLEX 7130 SK-PUR UL/CSA	7 G 2,5 (AWG 14)	11,0	175,0	265,0
85267151	KAWEFLEX 7130 SK-PUR UL/CSA	10 G 2,5 (AWG 14)	13,7 (15,1)	250,0	368,0
85267142	KAWEFLEX 7130 SK-PUR UL/CSA	12 G 2,5 (AWG 14)	17,2	300,0	411,0
85267152	KAWEFLEX 7130 SK-PUR UL/CSA	14 G 2,5 (AWG 14)	19,4	350,0	476,0
		18 G 2,5 (AWG 14)	21,3	450,0	607,0
85267153	KAWEFLEX 7130 SK-PUR UL/CSA	25 G 2,5 (AWG 14)	23,9	625,0	837,0
85267154	KAWEFLEX 7130 SK-PUR UL/CSA	36 G 2,5 (AWG 14)	29,1	900,0	1.198,0

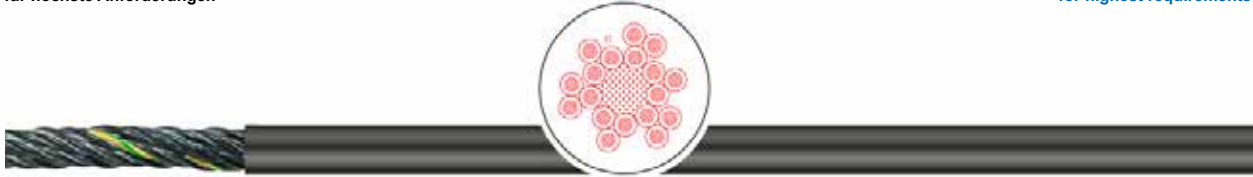


## KAWEFLEX® Allround 7140 SK-TPE UL/CSA



für höchste Anforderungen

for highest requirements



### Anwendung

als Anschluss- und Steuerleitung für höchste Anforderungen in Energieführungsketten, für Bearbeitungszentren, im Maschinen- und Anlagenbau, in Kran- und Förderanlagen, in Kompostier-, Klär- und Autowaschanlagen, Wäschereien, in der chemischen Industrie sowie in der Lebensmittel- und Getränkeindustrie. Einsetzbar in trockenen und feuchten Räumen sowie im Freien.

### Application

power and control cable for highest requirements in drag chain applications, for machining centers, machine and plant engineering in the field of crane and conveyor facilities, in compost-, sewage and car wash facility, laundries, in the chemical industries as well as in the food- and beverage industrie. Applicable in dry and humid rooms also outdoor.

### Besonderheiten

- ölbeständig nach DIN EN 60811-404 4 h bei +100 °C
- silikonfrei
- UV-, Ozon- und witterungsbeständig n. EN 50396 und HD 605 S2
- beständig gegen Kühlmittel, Mikroben, Flußsäure, Salzsäure und verdünnte Schwefelsäure
- Unempfindlich bei Kontakt mit Bioölen, Fetten, Wachsen und deren Emulsionen auf pflanzlicher, tierischer oder synth. Basis
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln
- NEU: ab Fertigungsdatum August 2016 mit UL/CSA-Approval

### Special Features

- resistant to oil acc. to DIN EN 60811-404 4 h at +100 °C
- silicone-free
- UV-, ozone- and weather resistant acc. EN 50396 und HD 605 S2
- resistant to coolant fluids, microbes, hydrofluoric acid, salt acid and weakened sulfuric
- immune at contact with bio oil, grease, waxing and whose emulsion on herbal, animal or synth. base
- NEW: with Ripcord, for faster and core protected dismantling
- NEW: up from production date August 2016 with UL/CSA-approval

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU Richtlinie ("Niederspannungsrichtlinie") CE
- (vor Fertigungsdatum August 2016 - Außendurchmesser in alter Ausführung)

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- (forward production date August 2016 - outer diameter in old execution)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®2
Aderkennung	< 0,75 mm <sup>2</sup> : n. DIN 47100, ≥ 0,75 mm <sup>2</sup> : SW mit Zifferndruck + 1x GNGE
Gesamtverseilung	≤ 11 Adern in Lagen, ≥ 12 Adern Bündelverseilung um zugfesten Kern, opt. Schlaglänge
Außenmantelwerkstoff	TPE, mit Reißfaden, hochabriebfest, kerbzäh, adhäsionsarm
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	1.000 V
Prüfspannung	3.000 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. 100 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 5 m/s; max. Verfahrweg freitragend/gleitend bis 400 m
kleinster Biegeradius fest	3 x d
kleinster Biegeradius bewegt	5 x d
Betriebstemp. fest min/max	-40 °C / +100 °C (UL: 90 °C)
Betriebstemp. bew. min/max	-25 °C / +100 °C (UL: 90 °C)
Halogenfreiheit	ja
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approval	UL 90°C, 1000 V, cURus 90°C, 1000 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2
core identification	< 0,75 mm <sup>2</sup> : acc. to DIN 47100, ≥ 0,75 mm <sup>2</sup> : BK with numerals + 1x GNYE
overall stranding	≤ 11 cores stranded in layers, ≥ 12 cores stranded in bundles around tensile strength center, opt. lay length
outer sheath	TPE, with Rip Cord, low abrasion, cutproof, low adhesion
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	1.000 V
testing voltage	3.000 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 and IEC 60228 cl. 6
other characteristics	max. acceleration 100 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 5 m/s; max. path length self-supporting/gliding to 400 m
min. bending radius fixed	3 x d
min. bending radius moved	5 x d
operat. temp. fixed min/max	-40 °C / +100 °C (UL: 90 °C)
operat. temp. moved min/max	-25 °C / +100 °C (UL: 90 °C)
halogen free	yes
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 90°C, 1000 V, cURus 90°C, 1000 V



## KAWEFLEX® Allround 7140 SK-TPE UL/CSA



MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
<b>KAWEFLEX Allround 7140 SK-TPE - DIN47100</b>					
85272001	KAWEFLEX 7140 SK-TPE UL/CSA	2 X 0,5 (AWG 20)	5,5 (4,8)	10,0	33,0
85272002	KAWEFLEX 7140 SK-TPE UL/CSA	3 X 0,5 (AWG 20)	5,8 (5,1)	15,0	40,0
85272003	KAWEFLEX 7140 SK-TPE UL/CSA	4 X 0,5 (AWG 20)	6,2 (5,5)	20,0	47,0
85272004	KAWEFLEX 7140 SK-TPE UL/CSA	5 X 0,5 (AWG 20)	6,6 (5,9)	25,0	55,0
85272005	KAWEFLEX 7140 SK-TPE UL/CSA	7 X 0,5 (AWG 20)	7,5 (6,9)	35,0	72,0
85272006	KAWEFLEX 7140 SK-TPE UL/CSA	12 X 0,5 (AWG 20)	10,7 (10,3)	60,0	124,0
85272007	KAWEFLEX 7140 SK-TPE UL/CSA	18 X 0,5 (AWG 20)	12,8 (12,5)	90,0	179,0
85272008	KAWEFLEX 7140 SK-TPE UL/CSA	25 X 0,5 (AWG 20)	14,4	125,0	245,0
85272009	KAWEFLEX 7140 SK-TPE UL/CSA	36 X 0,5 (AWG 20)	18,0 (17,9)	180,0	357,0
<b>KAWEFLEX Allround 7140 SK-TPE - JZ/OZ</b>					
85272010	KAWEFLEX 7140 SK-TPE UL/CSA	2 X 0,75 (AWG 19)	5,9 (5,2)	15,0	41,0
85272011	KAWEFLEX 7140 SK-TPE UL/CSA	3 G 0,75 (AWG 19)	6,2 (5,5)	23,0	50,0
85272012	KAWEFLEX 7140 SK-TPE UL/CSA	4 G 0,75 (AWG 19)	6,6 (5,9)	30,0	60,0
85272013	KAWEFLEX 7140 SK-TPE UL/CSA	5 G 0,75 (AWG 19)	7,2 (6,5)	38,0	72,0
85272014	KAWEFLEX 7140 SK-TPE UL/CSA	7 G 0,75 (AWG 19)	8,1 (7,7)	53,0	94,0
85272015	KAWEFLEX 7140 SK-TPE UL/CSA	12 G 0,75 (AWG 19)	11,8 (11,4)	90,0	168,0
85272016	KAWEFLEX 7140 SK-TPE UL/CSA	18 G 0,75 (AWG 19)	14,7 (14,1)	135,0	253,0
85272017	KAWEFLEX 7140 SK-TPE UL/CSA	25 G 0,75 (AWG 19)	16,4 (16,2)	188,0	344,0
85272018	KAWEFLEX 7140 SK-TPE UL/CSA	36 G 0,75 (AWG 19)	20,2	270,0	499,0
85272019	KAWEFLEX 7140 SK-TPE UL/CSA	42 G 0,75 (AWG 19)	21,3 (21,6)	315,0	564,0
85272020	KAWEFLEX 7140 SK-TPE UL/CSA	2 X 1 (AWG 18)	6,3 (5,6)	20,0	50,0
85272021	KAWEFLEX 7140 SK-TPE UL/CSA	3 G 1 (AWG 18)	6,6 (5,9)	30,0	61,0
85272022	KAWEFLEX 7140 SK-TPE UL/CSA	4 G 1 (AWG 18)	7,1 (6,4)	40,0	74,0
85272023	KAWEFLEX 7140 SK-TPE UL/CSA	5 G 1 (AWG 18)	7,7 (7,0)	50,0	89,0
85272024	KAWEFLEX 7140 SK-TPE UL/CSA	7 G 1 (AWG 18)	8,7 (8,4)	70,0	118,0
85272025	KAWEFLEX 7140 SK-TPE UL/CSA	8 G 1 (AWG 18)	9,2	80,0	127,0
85272026	KAWEFLEX 7140 SK-TPE UL/CSA	12 G 1 (AWG 18)	12,8 (12,4)	120,0	213,0
85272027	KAWEFLEX 7140 SK-TPE UL/CSA	18 G 1 (AWG 18)	15,9 (15,5)	180,0	317,0
85272028	KAWEFLEX 7140 SK-TPE UL/CSA	25 G 1 (AWG 18)	17,4 (17,8)	250,0	428,0
85272029	KAWEFLEX 7140 SK-TPE UL/CSA	36 G 1 (AWG 18)	22,0	360,0	637,0
85272030	KAWEFLEX 7140 SK-TPE UL/CSA	42 G 1 (AWG 18)	23,8	420,0	762,0
85272031	KAWEFLEX 7140 SK-TPE UL/CSA	2 X 1,5 (AWG 16)	6,9 (6,2)	30,0	64,0
85272032	KAWEFLEX 7140 SK-TPE UL/CSA	3 G 1,5 (AWG 16)	7,3 (6,6)	45,0	81,0
85272033	KAWEFLEX 7140 SK-TPE UL/CSA	4 G 1,5 (AWG 16)	7,8 (7,1)	60,0	99,0
85272034	KAWEFLEX 7140 SK-TPE UL/CSA	5 G 1,5 (AWG 16)	8,5 (7,8)	75,0	125,0
85272035	KAWEFLEX 7140 SK-TPE UL/CSA	7 G 1,5 (AWG 16)	10,0 (9,6)	105,0	164,0
85272036	KAWEFLEX 7140 SK-TPE UL/CSA	12 G 1,5 (AWG 16)	14,8 (14,0)	180,0	301,0
85272037	KAWEFLEX 7140 SK-TPE UL/CSA	18 G 1,5 (AWG 16)	18,3 (17,5)	270,0	446,0
85272038	KAWEFLEX 7140 SK-TPE UL/CSA	25 G 1,5 (AWG 16)	20,3	375,0	609,0
85272039	KAWEFLEX 7140 SK-TPE UL/CSA	36 G 1,5 (AWG 16)	25,1 (24,7)	540,0	886,0
85272040	KAWEFLEX 7140 SK-TPE UL/CSA	42 G 1,5 (AWG 16)	27,2 (26,8)	630,0	1.039,0
85272041	KAWEFLEX 7140 SK-TPE UL/CSA	2 X 2,5 (AWG 14)	8,1 (7,4)	50,0	96,0
85272042	KAWEFLEX 7140 SK-TPE UL/CSA	3 G 2,5 (AWG 14)	8,6 (7,9)	75,0	123,0
85272043	KAWEFLEX 7140 SK-TPE UL/CSA	4 G 2,5 (AWG 14)	9,3 (9,0)	100,0	153,0
85272044	KAWEFLEX 7140 SK-TPE UL/CSA	5 G 2,5 (AWG 14)	10,2 (9,8)	125,0	187,0
85272045	KAWEFLEX 7140 SK-TPE UL/CSA	7 G 2,5 (AWG 14)	12,0 (11,6)	175,0	255,0
85272046	KAWEFLEX 7140 SK-TPE UL/CSA	12 G 2,5 (AWG 14)	18,7	300,0	494,0
85272047	KAWEFLEX 7140 SK-TPE UL/CSA	18 G 2,5 (AWG 14)	22,6	450,0	705,0
85272048	KAWEFLEX 7140 SK-TPE UL/CSA	25 G 2,5 (AWG 14)	25,3	625,0	976,0



## KAWEFLEX® Allround 7210 SK-C-PVC UL/CSA



für erhöhte Anforderungen

for increased requirements



### Anwendung

als flexible geschirmte Anschluss- und Steuerleitung zur EMV-gerechten Verkabelung für erhöhte elektrische und mechanische Anforderungen in Energieführungsnetzen und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible shielded power and control cable for EMC-compatible connecting at increased electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering and in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approval
- flammwidrig und adhäsionsarm
- ölbeständig nach DIN EN 60811-2-1 bzw. UL 1581, 168 h bei +80 °C
- UV und witterungsbeständig
- silikonfrei
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln

### Special Features

- UL/CSA-Approval
- flame-retardant and low adhesion
- resistant to oil acc. to DIN EN 60811-2-1 bzw. UL 1581, 168 h at +80 °C
- UV and weather resistant
- silicone-free
- NEW: with Ripcord, for faster and core protected dismantling

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- NEU: mit reduzierten Außendurchmessern, für leichtere Bauweise, kleinere Biegeradien und geringeres Gewicht; ab Fertigungsdatum Jan. 2016, (alte Ausführung)

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline (CE marking)
- NEW: with reduced outer diameters, for lower weight, smaller design and lower bending radii; up from production date Jan. 2016 (old value)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	≤ 0,5 mm <sup>2</sup> - PELON®2 ≥ 0,75 mm <sup>2</sup> - PVC
Aderkennung	SW mit Zifferndruck + 1x GNGE
Gesamtverseilung	≤ 11 Adern in Lagen, ≥ 12 Adern Bündelverseilung um zugfesten Kern, opt. Schlaglänge für Schleppketteneinsatz
Innenmantelwerkstoff	PVC, mit Reißfaden
Gesamtschirm	Cu-Geflecht verz., opt. Bedeckung min. 85%
Außenmantelwerkstoff	PVC
Mantelfarbe	schwarz, RAL 9005
Aufdruck	nach TKD Printnorm
Nennspannung	600 V AC
Prüfspannung	2.000 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Klasse 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. 80 m/s <sup>2</sup> ; max. Verfahrensgeschw. freitragend bis zu 10 m/s, gleitend bis zu 5 m/s; max. Verfahrensw. freitragend/gleitend bis 100 m
Kleinsten Biegeradius fest	4 x d
Kleinsten Biegeradius bewegt	6,5 x d (< 10 m) / 7,5 x d (≥ 10 m)
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-5 °C / +70 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approval	UL 80°C, 600 V, cURus 80°C, 600 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	≤ 0,5 mm <sup>2</sup> - PELON®2 ≥ 0,75 mm <sup>2</sup> - PVC
core identification	BK with numerals + 1x GNGE
overall stranding	≤ 11 cores in layers, ≥ 12 cores stranding in bundles around tensile strength center, opt. lay length for drag chains
inner sheath material	PVC, with Ripcord
shield	copper braid tinned, opt. coverage min. 85%
outer sheath	PVC
sheath colour	black, RAL 9005
printing	acc. to TKD printnorm
rated voltage	600 V AC
testing voltage	2.000 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 class 6 and IEC 60228 cl. 6
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 5 m/s; path length self-supporting/ gliding to 100 m
min. bending radius fixed	4 x d
min. bending radius moved	6,5 x d (< 10 m) / 7,5 x d (≥ 10 m)
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-5 °C / +70 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80°C, 600 V, cURus 80°C, 600 V

## KAWEFLEX® Allround 7210 SK-C-PVC UL/CSA



MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85254001	KAWEFLEX 7210 SK-C-PVC UL/CSA	2 X 0,5 (AWG 20)	6,2 (7,5)	26,0	68,0
85254002	KAWEFLEX 7210 SK-C-PVC UL/CSA	3 G 0,5 (AWG 20)	6,5 (7,8)	32,0	69,0
85254003	KAWEFLEX 7210 SK-C-PVC UL/CSA	4 G 0,5 (AWG 20)	6,9 (8,3)	38,0	78,0
85254004	KAWEFLEX 7210 SK-C-PVC UL/CSA	5 G 0,5 (AWG 20)	7,3 (8,8)	45,0	89,0
85254005	KAWEFLEX 7210 SK-C-PVC UL/CSA	7 G 0,5 (AWG 20)	8,2 (9,9)	58,0	110,0
85254006	KAWEFLEX 7210 SK-C-PVC UL/CSA	12 G 0,5 (AWG 20)	13,0 (15,0)	125,0	241,0
85254007	KAWEFLEX 7210 SK-C-PVC UL/CSA	18 G 0,5 (AWG 20)	15,7 (19,1)	180,0	333,0
85254008	KAWEFLEX 7210 SK-C-PVC UL/CSA	25 G 0,5 (AWG 20)	17,0 (21,4)	240,0	411,0
85254009	KAWEFLEX 7210 SK-C-PVC UL/CSA	2 X 0,75 (AWG 19)	6,8 (7,9)	32,0	77,0
85254010	KAWEFLEX 7210 SK-C-PVC UL/CSA	3 G 0,75 (AWG 19)	7,1 (8,2)	41,0	88,0
85254011	KAWEFLEX 7210 SK-C-PVC UL/CSA	4 G 0,75 (AWG 19)	7,6 (8,7)	50,0	103,0
85254012	KAWEFLEX 7210 SK-C-PVC UL/CSA	5 G 0,75 (AWG 19)	8,1 (9,3)	59,0	117,0
85254013	KAWEFLEX 7210 SK-C-PVC UL/CSA	7 G 0,75 (AWG 19)	9,5 (10,8)	86,0	158,0
85254014	KAWEFLEX 7210 SK-C-PVC UL/CSA	12 G 0,75 (AWG 19)	15,0 (17,0)	156,0	338,0
85254015	KAWEFLEX 7210 SK-C-PVC UL/CSA	18 G 0,75 (AWG 19)	18,3 (21,6)	260,0	477,0
85254016	KAWEFLEX 7210 SK-C-PVC UL/CSA	25 G 0,75 (AWG 19)	20,3 (23,3)	340,0	645,0
85254017	KAWEFLEX 7210 SK-C-PVC UL/CSA	36 G 0,75 (AWG 19)	24,4 (27,6)	430,0	895,0
85254018	KAWEFLEX 7210 SK-C-PVC UL/CSA	42 G 0,75 (AWG 19)	26,1 (29,5)	478,0	1.043,0
85254019	KAWEFLEX 7210 SK-C-PVC UL/CSA	2 X 1 (AWG 18)	7,0 (8,3)	39,0	85,0
85254020	KAWEFLEX 7210 SK-C-PVC UL/CSA	3 G 1 (AWG 18)	7,3 (8,6)	50,0	98,0
85254021	KAWEFLEX 7210 SK-C-PVC UL/CSA	4 G 1 (AWG 18)	7,8 (9,2)	62,0	115,0
85254022	KAWEFLEX 7210 SK-C-PVC UL/CSA	5 G 1 (AWG 18)	8,6 (9,8)	74,0	138,0
85254023	KAWEFLEX 7210 SK-C-PVC UL/CSA	7 G 1 (AWG 18)	9,8 (11,4)	107,0	179,0
85254024	KAWEFLEX 7210 SK-C-PVC UL/CSA	12 G 1 (AWG 18)	15,7 (17,6)	201,0	389,0
85254025	KAWEFLEX 7210 SK-C-PVC UL/CSA	18 G 1 (AWG 18)	19,0 (22,2)	292,0	552,0
85254026	KAWEFLEX 7210 SK-C-PVC UL/CSA	25 G 1 (AWG 18)	21,4 (24,5)	380,0	743,0
85254027	KAWEFLEX 7210 SK-C-PVC UL/CSA	36 G 1 (AWG 18)	26,0 (29,1)	491,0	1.047,0
85254028	KAWEFLEX 7210 SK-C-PVC UL/CSA	42 G 1 (AWG 18)	27,5 (31,1)	583,0	1.181,0
85254029	KAWEFLEX 7210 SK-C-PVC UL/CSA	2 X 1,5 (AWG 16)	7,8 (8,8)	50,0	108,0
85254030	KAWEFLEX 7210 SK-C-PVC UL/CSA	3 G 1,5 (AWG 16)	8,2 (9,2)	66,0	127,0
85254031	KAWEFLEX 7210 SK-C-PVC UL/CSA	4 G 1,5 (AWG 16)	9,2 (9,8)	83,0	159,0
85254032	KAWEFLEX 7210 SK-C-PVC UL/CSA	5 G 1,5 (AWG 16)	10,1 (10,7)	109,0	190,0
85254033	KAWEFLEX 7210 SK-C-PVC UL/CSA	7 G 1,5 (AWG 16)	11,5 (12,2)	145,0	250,0
85254034	KAWEFLEX 7210 SK-C-PVC UL/CSA	12 G 1,5 (AWG 16)	18,6 (19,9)	278,0	542,0
85254035	KAWEFLEX 7210 SK-C-PVC UL/CSA	18 G 1,5 (AWG 16)	22,6 (25,0)	399,0	783,0
85254036	KAWEFLEX 7210 SK-C-PVC UL/CSA	25 G 1,5 (AWG 16)	25,2 (27,7)	530,0	1.029,0
85254037	KAWEFLEX 7210 SK-C-PVC UL/CSA	36 G 1,5 (AWG 16)	29,4 (32,2)	728,0	1.394,0
85254038	KAWEFLEX 7210 SK-C-PVC UL/CSA	42 G 1,5 (AWG 16)	(34,2)	825,0	1.603,0
85254039	KAWEFLEX 7210 SK-C-PVC UL/CSA	2 X 2,5 (AWG 14)	9,4 (10,0)	73,0	157,0
85254040	KAWEFLEX 7210 SK-C-PVC UL/CSA	3 G 2,5 (AWG 14)	10,1 (10,6)	108,0	192,0
85254041	KAWEFLEX 7210 SK-C-PVC UL/CSA	4 G 2,5 (AWG 14)	11,2 (11,4)	136,0	238,0
85254042	KAWEFLEX 7210 SK-C-PVC UL/CSA	5 G 2,5 (AWG 14)	12,5 (12,4)	164,0	292,0
85254043	KAWEFLEX 7210 SK-C-PVC UL/CSA	7 G 2,5 (AWG 14)	(14,3)	220,0	419,0
85254044	KAWEFLEX 7210 SK-C-PVC UL/CSA	12 G 2,5 (AWG 14)	21,8 (23,7)	440,0	786,0
85254045	KAWEFLEX 7210 SK-C-PVC UL/CSA	18 G 2,5 (AWG 14)	25,9 (29,5)	622,0	1.102,0
85254046	KAWEFLEX 7210 SK-C-PVC UL/CSA	25 G 2,5 (AWG 14)	29,8 (32,0)	810,0	1.504,0



## KAWEFLEX® Allround 7230 SK-C-PUR UL/CSA



für hohe Anforderungen

for high requirements



### Anwendung

als flexible, geschirmte Anschluss- und Steuerleitung für EMV-gerechte Verkabelung bei hohen elektrischen und mechanischen Anforderungen in Energieführungsketten und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible, shielded power and control cable for EMC compatible connecting at high electrical and mechanical requirements in drag chain applications and motion drive systems for machine and plant engineerings in the field of in crane and conveyor facilities in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approbation
- flammwidrig, halogenfrei und adhäsionsarm
- beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-2-1 168 h / +100 °C
- UV- und Witterungsbeständig
- empfohlen für EMV-gerechte Anwendung
- silikonfrei
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln

### Special Features

- UL/CSA approved
- flame-retardant, halogen-free and low adhesion
- resistant to grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-2-1 168 h / +100 °C
- UV and weather resistant
- recommended for EMC-compatible applications
- silicone-free
- NEW: with Ripcord, for faster and core protected dismantling

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- sehr lange Lebensdauer, optimales Kosten-Nutzen-Verhältnis
- NEU: mit reduzierten Außendurchmessern, für leichtere Bauweise, kleinere Biegeradien und geringeres Gewicht; ab Fertigungsdatum Feb. 2016, (alte Ausführung)

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline (CE marking)
- very long lifetime, optimal cost-value ratio
- NEW: with reduced outer diameters, for lower weight, smaler design and lower bending radii; up from production date Jan. 2016 (old value)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®2
Aderkennung	SW mit Zifferndruck + 1x GNGE
Gesamtverseilung	≤ 11 Adern in Lagen, ≥ 12 Adern Bündelverseilung um zugfesten Kern, opt. Schlaglänge
Innenmantelwerkstoff	PUR, mit Reißfaden
Gesamtschirm	Cu-Geflecht verz., opt. Bedeckung min. 85 %
Außenmantelwerkstoff	PUR
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	UL 1.000 V AC, cUL 600 V
Prüfspannung	3.000 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. 80 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 5 m/s; max. Verfahrweg freitragend/gleitend bis 100 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	6,5 x d (< 10 m) / 7,5 x d (≥ 10 m)
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-25 °C / +80 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approbation	UL 80°C, 1000 V, cURus 80°C, 1000 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2
core identification	BK with numerals print + 1x GNGYE
overall stranding	≤ 11 cores stranded in layers, ≥ 12 cores stranding in bundles around tensile strength, opt. lay length
inner sheath material	PUR, with Rip cord
shield	copper braid tinned, opt. coverage min. 85 %
outer sheath	PUR
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	UL 1.000 V AC, cUL 600 V
testing voltage	3.000 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 and IEC 60228 cl. 6
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; max. speed self-supporting up to 10 m/s, gliding up to 5 m/s; max. path length self-supporting/gliding to 100 m
min. bending radius fixed	4 x d
min. bending radius moved	6,5 x d (< 10 m) / 7,5 x d (≥ 10 m)
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-25 °C / +80 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80°C, 1000 V, cURus 80°C, 1000 V

## KAWEFLEX® Allround 7230 SK-C-PUR UL/CSA



MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85267202	KAWEFLEX 7230 SK-C-PUR UL/CSA	4 G 0,5 (AWG 20)	7,1 (7,9)	38,0	78,0
85267203	KAWEFLEX 7230 SK-C-PUR UL/CSA	5 G 0,5 (AWG 20)	7,5 (8,5)	44,0	89,0
85267204	KAWEFLEX 7230 SK-C-PUR UL/CSA	7 G 0,5 (AWG 20)	8,4 (9,7)	58,0	120,0
85267205	KAWEFLEX 7230 SK-C-PUR UL/CSA	9 G 0,5 (AWG 20)	10,8 (11,1)	71,0	151,0
85267206	KAWEFLEX 7230 SK-C-PUR UL/CSA	12 G 0,5 (AWG 20)	12,7 (14,0)	110,0	225,0
85267207	KAWEFLEX 7230 SK-C-PUR UL/CSA	18 G 0,5 (AWG 20)	15,2 (16,7)	165,0	310,0
85267208	KAWEFLEX 7230 SK-C-PUR UL/CSA	25 G 0,5 (AWG 20)	17,1 (19,2)	214,0	411,0
85267209	KAWEFLEX 7230 SK-C-PUR UL/CSA	30 G 0,5 (AWG 20)	18,2 (21,1)	267,0	498,0
85267210	KAWEFLEX 7230 SK-C-PUR UL/CSA	36 G 0,5 (AWG 20)	20,8 (23,1)	336,0	652,0
85267212	KAWEFLEX 7230 SK-C-PUR UL/CSA	3 G 0,75 (AWG 19)	7,3 (7,5)	40,0	74,0
85267213	KAWEFLEX 7230 SK-C-PUR UL/CSA	4 G 0,75 (AWG 19)	7,8 (8,2)	48,0	88,0
85267214	KAWEFLEX 7230 SK-C-PUR UL/CSA	5 G 0,75 (AWG 19)	8,4 (8,9)	58,0	108,0
85267215	KAWEFLEX 7230 SK-C-PUR UL/CSA	7 G 0,75 (AWG 19)	10,0	78,0	139,0
85267216	KAWEFLEX 7230 SK-C-PUR UL/CSA	12 G 0,75 (AWG 19)	14,6 (15,1)	147,0	290,0
85267217	KAWEFLEX 7230 SK-C-PUR UL/CSA	18 G 0,75 (AWG 19)	17,7 (18,3)	221,0	388,0
85267218	KAWEFLEX 7230 SK-C-PUR UL/CSA	25 G 0,75 (AWG 19)	19,8 (21,4)	385,0	521,0
85267219	KAWEFLEX 7230 SK-C-PUR UL/CSA	36 G 0,75 (AWG 19)	23,3 (25,2)	489,0	820,0
85267220	KAWEFLEX 7230 SK-C-PUR UL/CSA	42 G 0,75 (AWG 19)	25,0 (27,0)	526,0	990,0
85267222	KAWEFLEX 7230 SK-C-PUR UL/CSA	3 G 1 (AWG 18)	7,9	51,0	94,0
85267223	KAWEFLEX 7230 SK-C-PUR UL/CSA	4 G 1 (AWG 18)	8,7	64,0	116,0
85267224	KAWEFLEX 7230 SK-C-PUR UL/CSA	5 G 1 (AWG 18)	9,5	75,0	140,0
85267225	KAWEFLEX 7230 SK-C-PUR UL/CSA	7 G 1 (AWG 18)	10,9	99,0	186,0
85267226	KAWEFLEX 7230 SK-C-PUR UL/CSA	12 G 1 (AWG 18)	15,4	180,0	363,0
85267227	KAWEFLEX 7230 SK-C-PUR UL/CSA	18 G 1 (AWG 18)	19,3	272,0	535,0
85267228	KAWEFLEX 7230 SK-C-PUR UL/CSA	25 G 1 (AWG 18)	22,2	366,0	712,0
85263180	KAWEFLEX 7230 SK-C-PUR UL/CSA	36 G 1 (AWG 18)	25,3	493,0	898,0
85263181	KAWEFLEX 7230 SK-C-PUR UL/CSA	42 G 1 (AWG 18)	26,7	565,0	1.001,0
85267230	KAWEFLEX 7230 SK-C-PUR UL/CSA	3 G 1,5 (AWG 16)	8,4	70,0	116,0
85267231	KAWEFLEX 7230 SK-C-PUR UL/CSA	4 G 1,5 (AWG 16)	9,0	87,0	144,0
85267232	KAWEFLEX 7230 SK-C-PUR UL/CSA	5 G 1,5 (AWG 16)	9,8	136,0	171,0
85267233	KAWEFLEX 7230 SK-C-PUR UL/CSA	7 G 1,5 (AWG 16)	11,4	171,0	240,0
85267234	KAWEFLEX 7230 SK-C-PUR UL/CSA	12 G 1,5 (AWG 16)	17,1	247,0	460,0
85267235	KAWEFLEX 7230 SK-C-PUR UL/CSA	18 G 1,5 (AWG 16)	21,4	381,0	630,0
85267236	KAWEFLEX 7230 SK-C-PUR UL/CSA	25 G 1,5 (AWG 16)	23,8	496,0	894,0
85267237	KAWEFLEX 7230 SK-C-PUR UL/CSA	36 G 1,5 (AWG 16)	28,8	764,0	1.230,0
85263182	KAWEFLEX 7230 SK-C-PUR UL/CSA	42 G 1,5 (AWG 16)	30,1	830,0	1.312,0
85267238	KAWEFLEX 7230 SK-C-PUR UL/CSA	3 G 2,5 (AWG 14)	9,5	102,0	161,0
85267239	KAWEFLEX 7230 SK-C-PUR UL/CSA	4 G 2,5 (AWG 14)	10,4	134,0	206,0
85267240	KAWEFLEX 7230 SK-C-PUR UL/CSA	5 G 2,5 (AWG 14)	11,2	156,0	238,0
85267241	KAWEFLEX 7230 SK-C-PUR UL/CSA	7 G 2,5 (AWG 14)	13,5	232,0	350,0
85267242	KAWEFLEX 7230 SK-C-PUR UL/CSA	12 G 2,5 (AWG 14)	22,7	420,0	745,0
85267243	KAWEFLEX 7230 SK-C-PUR UL/CSA	18 G 2,5 (AWG 14)	27,5	637,0	1.114,0
85267244	KAWEFLEX 7230 SK-C-PUR UL/CSA	25 G 2,5 (AWG 14)	30,1	805,0	1.380,0

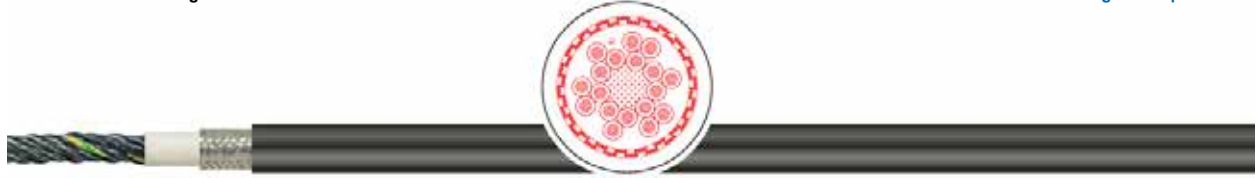


## KAWEFLEX® Allround 7240 SK-C-TPE UL/CSA



für höchste Anforderungen

for highest requirements



### Anwendung

als Anschluss- und Steuerleitung für höchste Anforderungen in Energieführungsketten, für Bearbeitungszentren, im Maschinen- und Anlagenbau, in Kran- und Förderanlagen, in Kompostier-, Klär- und Autowaschanlagen, Wäschereien, in der chemischen Industrie sowie in der Lebensmittel- und Getränkeindustrie. Einsetzbar in trockenen und feuchten Räumen sowie im Freien.

### Application

power and control cable for highest requirements in drag chain applications, for machining centers, machine and plant engineering in the field of crane and conveyor facilities, in compost-, sewage and car wash facility, laundries, in the chemical industries as well as in the food- and beverage industrie. Applicable in dry and humid rooms also outdoor.

### Besonderheiten

- ölbeständig nach DIN EN 60811-404 4 h bei +100 °C
- silikonfrei
- UV-, Ozon- und witterungsbeständig n. EN 50396 und HD 605 S2
- beständig gegen Kühlmittel, Mikroben, Flußsäure, Salzsäure und verdünnte Schwefelsäure
- Unempfindlich bei Kontakt mit Bioölen, Fetten, Wachsen und deren Emulsionen auf pflanzlicher, tierischer oder synth. Basis
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln
- NEU: ab Fertigungsdatum August 2016 mit UL/CSA-Approval

### Special Features

- resistant to oil acc. to DIN EN 60811-404 4 h at +100 °C
- silicone-free
- UV-, ozone- and weather resistant acc. EN 50396 und HD 605 S2
- resistant to coolant fluids, microbes, hydrofluoric acid, salt acid and weakened sulfuric
- immune at contact with bio oil, grease, waxing and whose emulsion on herbal, animal or synth. base
- NEW: with Ripcord, for faster and core protected dismantling
- NEW: up from production date August 2016 with UL/CSA-approval

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU Richtlinie ("Niederspannungsrichtlinie") CE
- (vor Fertigungsdatum August 2016 - Außendurchmesser in alter Ausführung)

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- (forward production date August 2016 - outer diameter in old execution)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®2
Aderkennung	< 0,75 mm <sup>2</sup> : n. DIN 47100, ≥ 0,75 mm <sup>2</sup> : SW mit Zifferndruck + 1x GNGE
Gesamtverseilung	≤ 11 Adern in Lagen, ≥ 12 Adern Bündelverseilung um zugfesten Kern, opt. Schlaglänge
Innenmantelwerkstoff	TPE, mit Reißfaden
Gesamtshield	Cu-Geflecht verz., opt. Bedeckung min. 85 %
Außenmantelwerkstoff	TPE
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	1.000 V
Prüfspannung	3.000 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. 100 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 5 m/s; max. Verfahrweg freitragend/gleitend bis 400 m
kleinster Biegeradius fest	3 x d
kleinster Biegeradius bewegt	5 x d
Betriebstemp. fest min/max	-40 °C / +100 °C (UL: 90 °C)
Betriebstemp. bew. min/max	-25 °C / +100 °C (UL: 90 °C)
Halogenfreiheit	ja
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approval	UL 90°C, 1000 V, cURus 90°C, 1000 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2
core identification	< 0,75 mm <sup>2</sup> : acc. to DIN 47100, ≥ 0,75 mm <sup>2</sup> : BK with numerals print + 1x GNGE
overall stranding	≤ 11 cores stranded in layers, ≥ 12 cores stranded in bundles around tensile strength center, opt. lay length
inner sheath material	TPE, with Rip cord
shield	copper braid tinned, opt. coverage min. 85 %
outer sheath	TPE
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	1.000 V
testing voltage	3.000 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 and IEC 60228 cl. 6
other characteristics	max. acceleration 100 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 5 m/s; max. path length self-supporting/gliding to 400 m
min. bending radius fixed	3 x d
min. bending radius moved	5 x d
operat. temp. fixed min/max	-40 °C / +100 °C (UL: 90 °C)
operat. temp. moved min/max	-25 °C / +100 °C (UL: 90 °C)
halogen free	yes
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 90°C, 1000 V, cURus 90°C, 1000 V

## KAWEFLEX® Allround 7240 SK-C-TPE UL/CSA



MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x mm <sup>2</sup> dimension n x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
<b>KAWEFLEX Allround 7240 SK-C-TPE - DIN47100</b>					
85274001	KAWEFLEX 7240 SK-C-TPE	2 X 0,5 (AWG 20)	7,1 (6,6)	24,0	59,0
85274002	KAWEFLEX 7240 SK-C-TPE	3 X 0,5 (AWG 20)	7,4 (6,9)	30,0	68,0
85274003	KAWEFLEX 7240 SK-C-TPE	4 X 0,5 (AWG 20)	7,8 (7,5)	37,0	78,0
85274004	KAWEFLEX 7240 SK-C-TPE	5 X 0,5 (AWG 20)	8,2 (7,9)	43,0	88,0
85274005	KAWEFLEX 7240 SK-C-TPE	7 X 0,5 (AWG 20)	9,5 (9,1)	57,0	109,0
85274006	KAWEFLEX 7240 SK-C-TPE	12 X 0,5 (AWG 20)	12,4 (12,1)	114,0	219,0
85274007	KAWEFLEX 7240 SK-C-TPE	18 X 0,5 (AWG 20)	15,0 (14,8)	149,0	280,0
85274008	KAWEFLEX 7240 SK-C-TPE	25 X 0,5 (AWG 20)	16,7 (16,3)	190,0	356,0
85274010	KAWEFLEX 7240 SK-C-TPE	36 X 0,5 (AWG 20)	21,0 (20,3)	285,0	542,0
<b>KAWEFLEX Allround 7240 SK-C-TPE - JZ/OZ</b>					
85274011	KAWEFLEX 7240 SK-C-TPE	2 X 0,75 (AWG 19)	7,5 (7,0)	31,0	70,0
85274012	KAWEFLEX 7240 SK-C-TPE	3 G 0,75 (AWG 19)	8,0 (7,3)	40,0	84,0
85274013	KAWEFLEX 7240 SK-C-TPE	4 G 0,75 (AWG 19)	8,2 (7,9)	48,0	92,0
85274014	KAWEFLEX 7240 SK-C-TPE	5 G 0,75 (AWG 19)	8,8 (8,5)	57,0	110,0
85274015	KAWEFLEX 7240 SK-C-TPE	7 G 0,75 (AWG 19)	9,9 (9,7)	76,0	138,0
85274016	KAWEFLEX 7240 SK-C-TPE	12 G 0,75 (AWG 19)	14,8 (14,2)	143,0	270,0
85274017	KAWEFLEX 7240 SK-C-TPE	18 G 0,75 (AWG 19)	17,9 (17,6)	200,0	381,0
85274018	KAWEFLEX 7240 SK-C-TPE	25 G 0,75 (AWG 19)	19,0 (19,3)	284,0	490,0
85274019	KAWEFLEX 7240 SK-C-TPE	36 G 0,75 (AWG 19)	22,8 (23,2)	384,0	695,0
85274020	KAWEFLEX 7240 SK-C-TPE)	42 G 0,75 (AWG 19)	24,6	441,0	779,0
85274021	KAWEFLEX 7240 SK-C-TPE	2 X 1 (AWG 18)	7,7 (7,6)	37,0	78,0
85274022	KAWEFLEX 7240 SK-C-TPE	3 G 1 (AWG 18)	8,0 (7,7)	48,0	90,0
85274023	KAWEFLEX 7240 SK-C-TPE	4 G 1 (AWG 18)	8,7 (8,4)	59,0	109,0
85274024	KAWEFLEX 7240 SK-C-TPE	5 G 1 (AWG 18)	9,3 (9,2)	72,0	127,0
85274025	KAWEFLEX 7240 SK-C-TPE	7 G 1 (AWG 18)	10,4 (10,6)	95,0	161,0
85274026	KAWEFLEX 7240 SK-C-TPE	12 G 1 (AWG 18)	15,2 (15,1)	179,0	310,0
85274027	KAWEFLEX 7240 SK-C-TPE	18 G 1 (AWG 18)	18,7 (17,9)	249,0	451,0
85274028	KAWEFLEX 7240 SK-C-TPE	25 G 1 (AWG 18)	21,1 (19,6)	354,0	611,0
85274029	KAWEFLEX 7240 SK-C-TPE	36 G 1 (AWG 18)	24,7 (24,0)	486,0	836,0
85274030	KAWEFLEX 7240 SK-C-TPE	42 G 1 (AWG 18)	26,6 (25,3)	554,0	963,0
85274031	KAWEFLEX 7240 SK-C-TPE	3 G 1,5 (AWG 16)	9,1 (8,4)	67,0	120,0
85274032	KAWEFLEX 7240 SK-C-TPE	4 G 1,5 (AWG 16)	9,7 (9,3)	83,0	142,0
85274033	KAWEFLEX 7240 SK-C-TPE	5 G 1,5 (AWG 16)	10,4 (10,0)	166,0	166,0
85274034	KAWEFLEX 7240 SK-C-TPE	7 G 1,5 (AWG 16)	11,9 (12,0)	134,0	218,0
85274035	KAWEFLEX 7240 SK-C-TPE	12 G 1,5 (AWG 16)	18,3 (18,1)	249,0	436,0
85274036	KAWEFLEX 7240 SK-C-TPE	18 G 1,5 (AWG 16)	21,6 (22,2)	382,0	614,0
85274037	KAWEFLEX 7240 SK-C-TPE	25 G 1,5 (AWG 16)	24,6 (24,3)	501,0	837,0
85274038	KAWEFLEX 7240 SK-C-TPE	36 G 1,5 (AWG 16)	30,8	732,0	1.275,0
85274039	KAWEFLEX 7240 SK-C-TPE	42 G 1,5 (AWG 16)	32,6	839,0	1.454,0
85274040	KAWEFLEX 7240 SK-C-TPE	3 G 2,5 (AWG 14)	10,4 (9,7)	100,0	167,0
85274041	KAWEFLEX 7240 SK-C-TPE	4 G 2,5 (AWG 14)	11,4 (11,0)	128,0	196,0
85274042	KAWEFLEX 7240 SK-C-TPE	5 G 2,5 (AWG 14)	12,3 (12,2)	155,0	244,0
85274043	KAWEFLEX 7240 SK-C-TPE	7 G 2,5 (AWG 14)	15,1 (14,4)	230,0	359,0
85274044	KAWEFLEX 7240 SK-C-TPE	12 G 2,5 (AWG 14)	21,7 (23,1)	413,0	670,0
85274045	KAWEFLEX 7240 SK-C-TPE	18 G 2,5 (AWG 14)	27,9	592,0	973,0



## KAWEFLEX® Allround 7710 SK-TP-C-PVC UL/CSA



für erhöhte Anforderungen

for increased requirements



### Anwendung

als paarverseilte geschirmte Elektronikleitung zur zuverlässigen Signalübertragung für erhöhte Anforderungen in Energieführungsketten, an beweglichen Antrieben, Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

twisted pair shielded electronic cable for data and signal transmission for increased requirements in drag chains, in electrical motion facilities, machine and plant engineering in the field of crane and conveyor facilities in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA Approbation
- ölbeständig nach EN 60811-2-1, 168 h bei +80 °C
- flammwidrig
- UV- und Witterungsbeständig
- silikonfrei
- empfohlen für EMV gerechte Anwendung

### Special Features

- UL/CSA approved
- resistant to oil acc. to EN 60811-2-1, 168 h bei +80 °C
- flame-retardant
- UV and weather resistant
- silicone-free
- recommended for EMC-applications

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline (CE marking)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®
Aderkennung	nach DIN 47100
Gesamtverseilung	Paare um zugfesten Kern verseilt, opt. Schlaglängen
Gesamtschirm	Cu-Geflecht verz., opt. Bedeckung min. 85%
Außenmantelwerkstoff	PVC
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	300/300 V
Prüfspannung	1.500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Klasse 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. 50 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 5 m/s, gleitend bis zu 3 m/s; max. Verfahrweg freitragend/gleitend bis 100 m
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	10 x d
Betriebstemp. fest min/max	-20 °C / +80 °C
Betriebstemp. bew. min/max	-5 °C / +80 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Sonstige Eigenschaften	2 paarige Abmessungen in Sternvierer -Verseilung
Approbation	UL 80 °C, 300 V, cULus 80 °C, 300 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®
core identification	acc. to DIN 47100
overall stranding	pairs stranded around tensile strength center, opt. lay length
shield	copper braid tinned, opt. coverage min. 85%
outer sheath	PVC
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	300/300 V
testing voltage	1.500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 class 6 and IEC 60228 cl. 6
other characteristics	max. acceleration 50 m/s <sup>2</sup> ; speed self-supporting up to 5 m/s, gliding up to 3 m/s; max. path length self-supporting/gliding to 100 m
min. bending radius fixed	5 x d
min. bending radius moved	10 x d
operat. temp. fixed min/max	-20 °C / +80 °C
operat. temp. moved min/max	-5 °C / +80 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
other characteristics	2-pair dimensions stranded as star quad
approvals	UL 80 °C, 300 V, cULus 80 °C, 300 V



## KAWEFLEX® Allround 7710 SK-TP-C-PVC UL/CSA



MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x 2 x mm <sup>2</sup> dimension n x 2 x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85355001	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	2 X 2 X 0,25	5,1	21,0	80,0
85355002	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	3 X 2 X 0,25	6,7	32,0	94,0
85355003	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	4 X 2 X 0,25	7,6	38,0	107,0
85355004	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	5 X 2 X 0,25	8,2	47,0	121,0
85355005	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	6 X 2 X 0,25	9,3	52,0	142,0
85355006	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	8 X 2 X 0,25	10,3	66,0	172,0
85355007	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	10 X 2 X 0,25	11,9	82,0	195,0
85355008	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	14 X 2 X 0,25	12,5	102,0	229,0
85355009	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	2 X 2 X 0,34	6,0	25,0	94,0
85355010	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	3 X 2 X 0,34	7,5	38,0	104,0
85355011	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	4 X 2 X 0,34	8,1	45,0	120,0
85355012	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	5 X 2 X 0,34	8,7	56,0	143,0
85355013	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	6 X 2 X 0,34	9,6	67,0	162,0
85355014	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	8 X 2 X 0,34	11,0	81,0	195,0
85355015	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	10 X 2 X 0,34	12,7	101,0	224,0
85355016	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	14 X 2 X 0,34	12,7	128,0	277,0
85355017	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	2 X 2 X 0,5	6,4	33,0	114,0
85355018	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	3 X 2 X 0,5	8,0	48,0	129,0
85355019	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	4 X 2 X 0,5	8,6	62,0	166,0
85355020	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	5 X 2 X 0,5	9,8	76,0	178,0
85355021	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	6 X 2 X 0,5	10,5	86,0	202,0
85355022	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	8 X 2 X 0,5	12,2	111,0	248,0
85355023	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	10 X 2 X 0,5	14,1	143,0	296,0
85355024	KAWEFLEX 7710 SK-TP-C-PVC UL/CSA	14 X 2 X 0,5	14,5	183,0	361,0



## KAWEFLEX® Allround 7720 SK-TP-C-PUR UL/CSA



für hohe Anforderungen

for high requirements



### Anwendung

als paarverseilte geschirmte Elektronikleitung zur zuverlässigen Signalübertragung für hohe Anforderungen in Energieführungsketten, an beweglichen Antrieben, Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

twisted pair shielded electronic cable for data and signal transmission for high requirements in drag chains, in electrical motion facilities, machine and plant engineering in the field of crane and conveyor facilities in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA Approbation
- ölbeständig nach DIN EN 60811-2-1 168 h bei +100 °C
- flammwidrig und halogenfrei
- UV- und Witterungsbeständig
- silikonfrei
- empfohlen für EMV gerechte Anwendung

### Special Features

- UL/CSA approved
- resistant to oil acc. to DIN EN 60811-2-1 168 h at +100 °C
- flame-retardant and halogen-free
- UV and weather resistant
- silicone-free
- recommended for EMC-application

### Hinweise

- RoHS-konform
- konform zur 2006/95/EG Richtlinie ("Niederspannungsrichtlinie") CE
- sehr lange Lebensdauer, optimales Kosten-Nutzen-Verhältnis

### Remarks

- conform to RoHS
- conform to 2006/95/EC-Guideline (CE marking)
- very long lifetime, optimal cost-value ratio

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®
Aderkennung	nach DIN 47100
Gesamtverseilung	Paare um zugfesten Kern verseilt, opt. Schlaglängen
Innenmantelwerkstoff	PUR
Gesamtschirm	Cu-Geflecht verz., opt. Bedeckung min. 85%
Außenmantelwerkstoff	PUR
Mantelfarbe	schwarz, RAL 9005
Aufdruck	nach TKD Printnorm
Nennspannung	300/300 V
Prüfspannung	1.500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Klasse 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. 80 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 5 m/s; max. Verfahrweg freitragend/gleitend bis 100 m
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	10 x d
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-25 °C / +80 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Sonstige Eigenschaften	2 paarige Abmessungen in Sternvierer -Verseilung
Approbation	UL 80 °C, 300 V, cULus 80 °C, 300 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®
core identification	acc. to DIN 47100
overall stranding	pairs stranded around tensile strength center, opt. lay length
inner sheath material	PUR
shield	copper braid tinned, opt. coverage min. 85%
outer sheath	PUR
sheath colour	black, RAL 9005
printing	acc. to TKD printnorm
rated voltage	300/300 V
testing voltage	1.500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 class 6 and IEC 60228 cl. 6
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 5 m/s; max. path length self-supporting/gliding to 100 m
min. bending radius fixed	5 x d
min. bending radius moved	10 x d
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-25 °C / +80 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
other characteristics	2-pair dimensions stranded as star quad
approvals	UL 80 °C, 300 V, cULus 80 °C, 300 V

## KAWEFLEX® Allround 7720 SK-TP-C-PUR UL/CSA



MP Artikel-Nr. MP Article-No.	MP Typ MP type	Abmessung, n x 2 x mm <sup>2</sup> dimension n x 2 x mm <sup>2</sup>	Außen-Ø mm outer-Ø mm	Cu-Zahl kg/km Copper weight kg/km	Gewicht kg/km weight kg/km
85365040	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	2 X 2 X 0,25	6,5	26,0	76,0
85365041	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	3 X 2 X 0,25	8,1	37,0	85,0
85365042	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	4 X 2 X 0,25	8,8	42,0	97,0
85365043	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	5 X 2 X 0,25	9,5	52,0	110,0
85365044	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	6 X 2 X 0,25	10,1	57,0	130,0
85365045	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	8 X 2 X 0,25	11,3	72,0	158,0
85365046	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	10 X 2 X 0,25	12,9	93,0	179,0
85365047	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	14 X 2 X 0,25	13,1	124,0	212,0
85365048	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	2 X 2 X 0,34	7,0	33,0	84,0
85365049	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	3 X 2 X 0,34	8,5	41,0	94,0
85365050	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	4 X 2 X 0,34	9,2	49,0	109,0
85365051	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	5 X 2 X 0,34	9,9	61,0	131,0
85365052	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	6 X 2 X 0,34	10,5	67,0	149,0
85365053	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	8 X 2 X 0,34	12,2	87,0	180,0
85365054	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	10 X 2 X 0,34	13,8	112,4	207,0
85365055	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	14 X 2 X 0,34	14,0	139,0	258,0
85365056	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	2 X 2 X 0,5	7,5	38,0	103,0
85365057	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	3 X 2 X 0,5	9,3	54,0	117,0
85365058	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	4 X 2 X 0,5	9,9	66,0	143,0
85365059	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	5 X 2 X 0,5	11,0	79,0	154,0
85365060	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	6 X 2 X 0,5	11,6	89,0	187,0
85365061	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	8 X 2 X 0,5	13,5	122,0	230,0
85365062	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	10 X 2 X 0,5	15,4	152,0	278,0
85365063	KAWEFLEX 7720 SK-TP-C-PUR UL/CSA	14 X 2 X 0,5	15,8	192,0	340,0



## KAWEFLEX® Allround 7730 SK-TP-C-TPE UL/CSA



für höchste Anforderungen

for highest requirements



### Anwendung

als paarverseilte geschirmte Elektronikleitung zur zuverlässigen Signalübertragung für höchste Anforderungen in Energieführungsketten, an beweglichen Antrieben, Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

twisted pair shielded electronic cable for data and signal transmission for highest requirements in drag chains, in electrical motion facilities, machine and plant engineering in the field of crane and conveyor facilities in dry and humid rooms also outdoor.

### Besonderheiten

- ölbeständig nach DIN EN 60811-2-1 4 h bei +100 °C
- halogenfrei gemäß IEC 60754-2
- UV-, Ozon- und witterungsbeständig nach EN50396 und HD 605 S2
- beständig gegen Kühlmittel, Mikroben, Flußsäure, Salzsäure und verdünnte Schwefelsäure
- unempfindlich bei Kontakt mit Bioölen, Fetten, Wachsen und deren Emulsionen auf pflanzlicher, tierischer oder synth. Basis
- NEU: mit Reißfäden, zum schnellen und aderschonenden Abmanteln
- NEU: ab Fertigungsdatum August 2016 mit UL/CSA Approbation

### Special Features

- resistant to oil acc. to DIN EN 60811-2-1 4 h at +100 °C
- halogen-free acc. to IEC 60754-2
- UV, Ozone and weather resistant acc. EN 50396 and HD 605 S2
- resistant to coolant fluids, microbes, hydrofluoric acid, salt acid and weakened sulfuric
- immune at contact with bio oil, grease, waxing and whose emulsion on herbal, animal or synth. base
- NEW: with Ripcord, for faster and core protected dismantling
- NEW: up from production date August 2016 with UL/CSA-approval

### Hinweise

- silikonfrei, frei von lackbenetzungsstörenden Substanzen
- RoHS-konform
- konform zur 2014/35/EU Richtlinie ("Niederspannungsrichtlinie") CE
- empfohlen für EMV gerechte Anwendung

### Remarks

- free from lacquer damaging substances and silicone (during production)
- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE
- recommended for EMC-applications

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank
Leiterklasse	nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	PELON®2
Aderkennung	≤ 0,75 mm <sup>2</sup> nach DIN 47100, > 0,75 mm <sup>2</sup> SW mit WS Ziffern
Gesamtverseilung	Paare um zugfesten Kern verseilt, opt. Schlaglängen
Innenmantelwerkstoff	TPE, mit Reißfäden
Gesamtshield	Cu-Geflecht verz., opt. Bedeckung min. 85 %
Außenmantelwerkstoff	TPE
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	300/300 V
Prüfspannung	1.500 V
Leiterwiderstand	bei +20 °C nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Sonstige Eigenschaften	max. Beschleun. 100 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 5 m/s; max. Verfahrweg freitragend/gleitend bis 400 m
kleinster Biegeradius fest	5 x d
kleinster Biegeradius bewegt	10 x d
Betriebstemp. fest min/max	-40 °C / +100 °C
Betriebstemp. bew. min/max	-25 °C / +100 °C
Sonstige Eigenschaften	2 paarige Abmessungen in Sternvierer -Verseilung
Approbation	UL 80 °C, 300 V, cURus 80 °C, 300 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2
core identification	≤ 0,75 mm <sup>2</sup> acc. DIN 47100, > 0,75 mm <sup>2</sup> BK with WH numerals
overall stranding	pairs stranded around tensile strength center, opt. lay length
inner sheath material	TPE, with Rip cord
shield	copper braid tinned, opt. coverage min. 85 %
outer sheath	TPE
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	300/300 V
testing voltage	1.500 V
conductor resistance	at +20 °C acc. to DIN VDE 0295 cl. 6 and IEC 60228
other characteristics	max. acceleration 100 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 5 m/s; max. path length self-supporting/gliding to 400 m
min. bending radius fixed	5 x d
min. bending radius moved	10 x d
operat. temp. fixed min/max	-40 °C / +100 °C
operat. temp. moved min/max	-25 °C / +100 °C
other characteristics	2-pair dimensions stranded as star quad
approvals	UL 80 °C, 300 V, cURus 80 °C, 300 V





## KAWEFLEX® Allround 7510 SK-TPE UL/CSA



für höchste Anforderungen

for highest requirements



### Anwendung

als 1 adrige flexible Motorleitung für höchste elektrische und mechanische Anforderungen in Energieführungsnetzen und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible single core power cable for highest electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- DESINA-konform
- UL/CSA-Approval
- halogenfrei, flammwidrig, abriebfest, hydrolyse- und mikrobenbeständig
- beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-2-1
- silikonfrei
- UV-Beständigkeit

### Special Features

- conform to DESINA
- UL/CSA approved
- flame-retardant, low abrasion, resistant to hydrolysis and microbe
- resistant to grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-2-1
- silicone-free
- UV-resistant

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank, bündelverseilt
Leiterklasse	feinstdrähtig nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisoliationswerkstoff	TPE
Aderkennung	natur
Außenmantelwerkstoff	TPE
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	600/1.000 V
Prüfspannung	4.000 V
Sonstige Eigenschaften	max. Beschleun. 100 m/s <sup>2</sup> ; Verfahrensgeschw. freitragend bis zu 10 m/s, gleitend bis zu 6 m/s; max. Verfahrensweg freitragend/gleitend bis 400 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d
Betriebstemp. fest min/max	-50 °C / +90 °C
Betriebstemp. bew. min/max	-40 °C / +90 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approval	UL 80 °C, 1.000 V, cULus 80 °C, 1.000 V

### Structure & Specifications

conductor material	bare copper bundle strand
conductor class	super fine wires acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	TPE
core identification	nature
outer sheath	TPE
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	600/1.000 V
testing voltage	4.000 V
other characteristics	max. acceleration 100 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 6 m/s; max. path length self-supporting/gliding to 400 m
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d
operat. temp. fixed min/max	-50 °C / +90 °C
operat. temp. moved min/max	-40 °C / +90 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80 °C, 1.000 V, cULus 80 °C, 1.000 V





## KAWEFLEX® Allround 7520 SK-TPE UL/CSA



für höchste Anforderungen

for highest requirements



### Anwendung

als 1 adrige flexible Motorleitung für höchste elektrische und mechanische Anforderungen in Energieführungsketten und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible single core power cable for highest electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approval
- flammwidrig, abriebfest, hydrolyse- und mikrobebeständig
- beständig gegen Fette, Kühlfüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-404
- silikonfrei
- UV-Beständigkeit

### Special Features

- UL/CSA approved
- flame-retardant, low abrasion, resistant to hydrolysis and microbe
- resistant to grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-404
- silicone-free
- UV-resistant

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank, bündelverseilt
Leiterklasse	feinstdrähtig nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisoliationswerkstoff	TPE
Aderkennung	GNGYE
Außenmantelwerkstoff	TPE
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	600/1.000 V
Prüfspannung	4.000 V
Sonstige Eigenschaften	max. Beschleun. 100 m/s <sup>2</sup> ; max. Verfahrensgeschw. freitragend bis zu 10 m/s, gleitend bis zu 6 m/s; max. Verfahrensweg freitragend/gleitend bis 400 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d
Betriebstemp. fest min/max	-50 °C / +90 °C
Betriebstemp. bew. min/max	-40 °C / +90 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approbation	UL 80 °C, 1.000 V, cURus 80 °C, 1.000 V

### Structure & Specifications

conductor material	bare copper bundle strand
conductor class	super fine wires acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	TPE
core identification	GNGYE
outer sheath	TPE
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	600/1.000 V
testing voltage	4.000 V
other characteristics	max. acceleration 100 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 6 m/s; max. path length self-supporting/gliding to 400 m
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d
operat. temp. fixed min/max	-50 °C / +90 °C
operat. temp. moved min/max	-40 °C / +90 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80 °C, 1.000 V, cURus 80 °C, 1.000 V





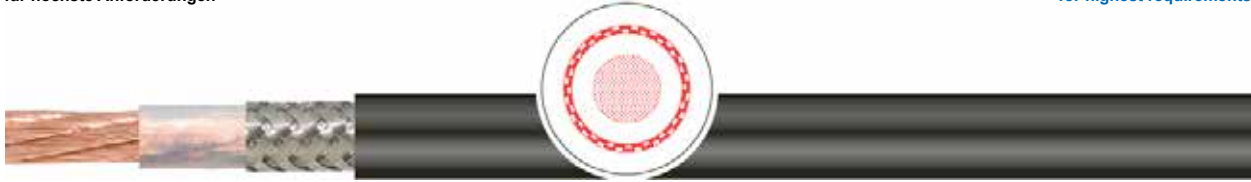


## KAWEFLEX® Allround 7610 SK-C-TPE UL/CSA



für höchste Anforderungen

for highest requirements



### Anwendung

als flexible 1 adrige geschirmte Motorleitung zur EMV-gerechten Verkabelung für höchste elektrische und mechanische Anforderungen in Energieführungsnetzen und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible shielded single core power cable for EMC-compatible connecting at highest electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approval
- halogenfrei, flammwidrig, abriebfest, hydrolyse- und mikrobenbeständig
- beständig gegen Fette, Kühlflüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-2-1
- silikonfrei
- UV-Beständigkeit

### Special Features

- UL/CSA approved
- halogen-free, flame-retardant, low abrasion, resistant to hydrolysis and microbe
- resistant to grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-2-1
- silicone-free
- UV-resistant

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze blank, bündelweiseit
Leiterklasse	feinstdrähtig nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	TPE
Aderkennung	natur
Gesamtschirm	Cu-Geflecht verzinkt, opt. Bedeckung ca. 85 %
Außenmantelwerkstoff	TPE
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	600/1.000 V
Prüfspannung	4.000 V
Sonstige Eigenschaften	max. Beschleun. 100 m/s <sup>2</sup> ; Verfahrensgeschw. freitragend bis zu 10 m/s, gleitend bis zu 6 m/s; max. Verfahrensweg freitragend/gleitend bis 400 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d
Betriebstemp. fest min/max	-50 °C / +90 °C
Betriebstemp. bew. min/max	-40 °C / +90 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approval	UL 80 °C, 1.000 V, cULus 80 °C, 1.000 V

### Structure & Specifications

conductor material	bare copper bundle strand
conductor class	super fine wires acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	TPE
core identification	nature
shield	copper braid tinned, opt. coverage appr. 85 %
outer sheath	TPE
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	600/1.000 V
testing voltage	4.000 V
other characteristics	max. acceleration 100 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 6 m/s; max. path length self-supporting/gliding to 400 m
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d
operat. temp. fixed min/max	-50 °C / +90 °C
operat. temp. moved min/max	-40 °C / +90 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80 °C, 1.000 V, cULus 80 °C, 1.000 V



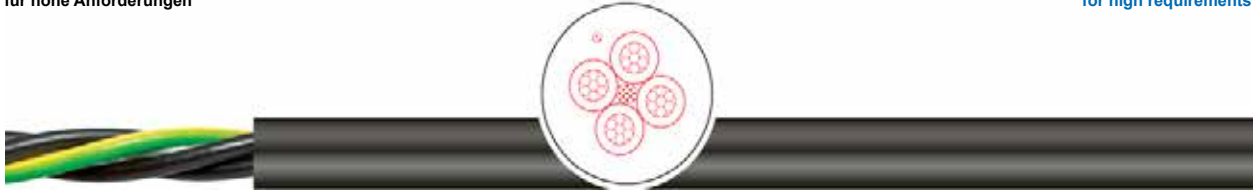


## KAWEFLEX® Allround 7310 SK-PVC UL/CSA



für hohe Anforderungen

for high requirements



### Anwendung

als flexible Motoranschlussleitung für hohe elektrische und mechanische Anforderungen in Energieführungsnetzen und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible power cable for high electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approbaton
- flammwidrig
- ölbeständig nach DIN EN 50363-4-1, cl. 2
- silikonfrei
- UV-beständig
- adhäsionsarm
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln ab Fertigungsdatum September 2016

### Special Features

- UL/CSA approved
- flame-retardant
- resistant to oil acc. to DIN EN 50363-4-1, cl. 2
- silicone-free
- UV-resistant
- low adhesion
- NEW: with Ripcord, for faster and core protected dismantling up from production date september 2016

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze, blank
Leiterklasse	feinstdrähtig nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationwerkstoff	TPE
Aderkennung	schwarz SW mit WS Ziffern, eine Ader GNGE 1.Ader: U / L1 / C / L+ *** 2.Ader: V / L2 3.Ader: W / L3 / D / L- *** 4.Ader: 4 / N
Verseilung	Adern mit opt. Schlaglänge um einen zugfesten Kern verseilt
Außenmantelwerkstoff	PVC, mit Reißfaden
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	600/1.000 V
Prüfspannung	4.000 V
Sonstige Eigenschaften	max. Beschleun. 80 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 5 m/s; max. Verfahrensweg freitragend/gleitend bis zu 100 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d
Betriebstemp. fest min/max	-20 °C / +70 °C
Betriebstemp. bew. min/max	-5 °C / +70 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approbaton	UL 80 °C, 1.000 V, cURus 80 °C, 1.000 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	TPE
core identification	BK with WH numerals, one core GNGYE 1.core: U / L1 / C / L+ *** 2.core: V / L2 3.core: W / L3 / D / L- *** 4.core: 4 / N
stranding	cores stranded in opt. lay length around tensile strength center
outer sheath	PVC, with Rip cord
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	600/1.000 V
testing voltage	4.000 V
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 5 m/s; max. path length self-supporting/gliding to 100 m
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d
operat. temp. fixed min/max	-20 °C / +70 °C
operat. temp. moved min/max	-5 °C / +70 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80 °C, 1.000 V, cURus 80 °C, 1.000 V



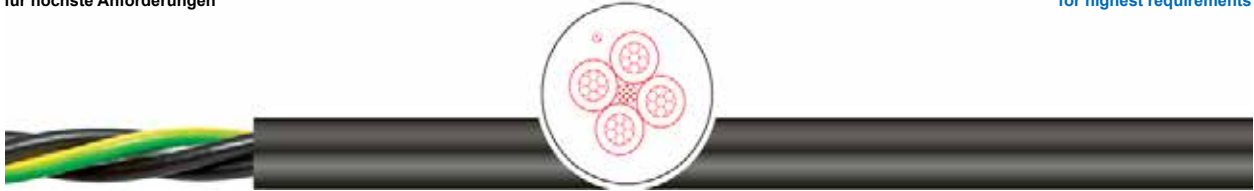


## KAWEFLEX® Allround 7320 SK-TPE UL/CSA



für höchste Anforderungen

for highest requirements



### Anwendung

als flexible Motoranschlussleitung für höchste elektrische und mechanische Anforderungen in Energieführungsketten und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible power cable for highest mechanical and electrical requirements in drag chain applications and moving drive systems in machine and plant engineering in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- DESINA-konform,
- UL/CSA-Approval
- halogenfrei, flammwidrig, adhäsionsarm
- beständig gegen Öle, Fette, Kühlfüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-2-1, 168 h bei +100 °C
- silikonfrei
- UV-Beständigkeit
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln

### Special Features

- conform to DESINA
- UL/CSA approved
- halogen-free, flame-retardant, low adhesion
- resistant to oil, grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-2-1, 168 h bei +100 °C
- silicone-free
- UV-resistant
- NEW: with Ripcord, for faster and core protected dismantling

### Hinweise

- RoHS-konform
- konform zur 2014/35/EG Richtlinie ("Niederspannungsrichtlinie") CE
- NEU: mit reduzierten Außendurchmessern, für leichtere Bauweise, kleinere Biegeradien und geringeres Gewicht; ab Fertigungsdatum Juni 2016, (alte Ausführung)

### Remarks

- conform to RoHS
- conform to 2014/35/EC-Guideline (CE marking)
- NEW: with reduced outer diameters, for lower weight, smaller design and lower bending radii; up from production date June 2016 (old value)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze, blank
Leiterklasse	feinstdrähtig nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationswerkstoff	TPE
Aderkennung	schwarz SW mit WS Ziffern, eine Ader GNGE 1.Ader: U / L1 / C / L+ *** 2.Ader: V / L2 3.Ader: W / L3 / D / L- *** 4.Ader: 4 / N
Verseilung	Adern mit opt. Schlaglänge um einen zugfesten Kern verseilt
Außenmantelwerkstoff	TPE, mit Reißfaden
Mantelfarbe	schwarz (RAL 9005)
Aufdruck	nach TKD Printnorm
Nennspannung	600/1.000 V
Prüfspannung	4.000 V
Sonstige Eigenschaften	max. Beschleun. 80 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 6 m/s; max. Verfahrensweg freitragend/gleitend bis 400 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d
Betriebstemp. fest min/max	-50 °C / +90 °C
Betriebstemp. bew. min/max	-40 °C / +90 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approval	UL 80 °C, 1.000 V, cURus 80 °C, 1.000 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	TPE
core identification	BK with WH numerals, one core GNYE 1.core: U / L1 / C / L+ *** 2.core: V / L2 3.core: W / L3 / D / L- *** 4.core: 4 / N
stranding	cores stranded in opt. lay length around tensile strength center
outer sheath	TPE, with rip cord
sheath colour	black (RAL 9005)
printing	acc. to TKD printnorm
rated voltage	600/1.000 V
testing voltage	4.000 V
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 6 m/s; max. path length self-supporting/gliding to 400 m
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d
operat. temp. fixed min/max	-50 °C / +90 °C
operat. temp. moved min/max	-40 °C / +90 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80 °C, 1.000 V, cURus 80 °C, 1.000 V





## KAWEFLEX® Allround 7410 SK-C-PVC UL/CSA



für hohe Anforderungen

for high requirements



### Anwendung

als flexible geschirmte Motoranschlussleitung zur EMV-gerechten Verkabelung für hohe elektrische und mechanische Anforderungen in Energieführungsketten und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible shielded power cable for EMC-compatible connecting at high electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approbaton
- flammwidrig
- ölbeständig nach DIN EN 50363-4-1, cl. 2
- silikonfrei
- UV-beständig
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln ab Fertigungsdatum September 2016

### Special Features

- UL/CSA approved
- flame-retardant
- resistant to oil acc. to DIN EN 50363-4-1, cl. 2
- silicone-free
- UV-resistant
- NEW: with Ripcord, for faster and core protected dismantling up from production date september 2016

### Hinweise

- RoHS-konform
- konform zur 2014/35/EU-Richtlinie ("Niederspannungsrichtlinie") CE

### Remarks

- conform to RoHS
- conform to 2014/35/EU-Guideline ("Low-Voltage Directive") CE

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze, blank
Leiterklasse	feindrähtig nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationswerkstoff	PELON®2
Aderkennung	schwarz SW mit WS Ziffern, eine Ader GNGE 1.Ader: U / L1 / C / L+ *** 2.Ader: V / L2 3.Ader: W / L3 / D / L- *** 4.Ader: 4 / N
Verseilung	Adern mit opt. Schlaglänge um einen zugfesten Kern verseilt
Innenmantelwerkstoff	PVC, mit Reißfaden
Gesamtschirm	Cu-Geflecht verzinkt, opt. Bedeckung ca. 85%
Außenmantelwerkstoff	PVC, adhäsionsarm
Mantelfarbe	schwarz, RAL 9005
Aufdruck	nach TKD Printnorm
Nennspannung	600/1.000 V
Prüfspannung	4.000 V
Sonstige Eigenschaften	max. Beschleun. 80 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 5 m/s; max. Verfahrweg freitragend/gleitend bis 100 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d
Betriebstemp. fest min/max	-20 °C / +70 °C
Betriebstemp. bew. min/max	-5 °C / +70 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approbaton	UL 80°C, 1.000 V, cURus 80°C, 1.000 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	PELON®2
core identification	BK with WH numerals, one core GNGYE 1.core: U / L1 / C / L+ *** 2.core: V / L2 3.core: W / L3 / D / L- *** 4.core: 4 / N
stranding	cores stranded in opt. lay length around tensile strength center
inner sheath material	PVC, with Rip cord
shield	copper braid tinned, opt. coverage appr. 85%
outer sheath	PVC, low adhesion
sheath colour	black, RAL 9005
printing	acc. to TKD printnorm
rated voltage	600/1.000 V
testing voltage	4.000 V
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 5 m/s; max. path length self-supporting/gliding to 100 m
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d
operat. temp. fixed min/max	-20 °C / +70 °C
operat. temp. moved min/max	-5 °C / +70 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80°C, 1.000 V, cURus 80°C, 1.000 V







## KAWEFLEX® Allround 7420 SK-C-TPE UL/CSA



für höchste Anforderungen

for highest requirements



### Anwendung

als flexible geschirmte Motoranschlussleitung zur EMV-gerechten Verkabelung für höchste elektrische und mechanische Anforderungen in Energieführungsketten und beweglichen Antrieben im Maschinen- und Anlagenbau, Kran- und Förderanlagen in trockenen und feuchten Räumen sowie im Freien.

### Application

flexible shielded power cable for EMC-compatible connecting at highest electrical and mechanical requirements in drag chain and motion drive systems in machine and plant engineering in the field of crane and conveyor technology in dry and humid rooms also outdoor.

### Besonderheiten

- UL/CSA-Approbatation
- halogenfrei, flammwidrig, adhäsionsarm
- beständig gegen Öle, Fette, Kühlfüssigkeiten und Schmiermittel
- ölbeständig nach DIN EN 60811-2-1, 168 h bei +100 °C
- silikonfrei
- UV-beständig
- NEU: mit Reißfaden, zum schnellen und aderschonenden Abmanteln

### Special Features

- UL/CSA approved
- flame-retardant, low abrasion, resistant to hydrolysis and microbe
- resistant to oil, grease, coolant fluids and lubricants
- resistant to oil acc. to DIN EN 60811-2-1, 168 h bei +100 °C
- silicone-free
- UV-resistant
- NEW: with Ripcord, for faster and core protected dismantling

### Hinweise

- RoHS-konform
- konform zur 2014/35/EG Richtlinie ("Niederspannungsrichtlinie") CE
- NEU: mit reduzierten Außendurchmessern, für leichtere Bauweise, kleinere Biegeradien und geringeres Gewicht; ab Fertigungsdatum Juni 2016, (alte Ausführung)

### Remarks

- conform to RoHS
- conform to 2014/35/EC-Guideline (CE marking)
- NEW: with reduced outer diameters, for lower weight, smaler design and lower bending radii; up from production date June 2016 (old value)

### Aufbau & Technische Daten

Leiter Werkstoff	Cu-Litze, blank
Leiterklasse	feinstdrähtig nach DIN VDE 0295 Kl. 6 bzw. IEC 60228 cl. 6
Aderisolationswerkstoff	TPE
Aderkennung	schwarz SW mit WS Ziffern, eine Ader GNGE 1.Ader: U / L1 / C / L+ *** 2.Ader: V / L2 3.Ader: W / L3 / D / L- *** 4.Ader: 4 / N
Verseilung	Adern mit opt. Schlaglänge um einen zugfesten Kern verseilt
Innenmantelwerkstoff	TPE, mit Reißfaden
Gesamtschirm	Cu-Geflecht verzinkt, opt. Bedeckung ca. 85 %
Außenmantelwerkstoff	TPE
Mantelfarbe	schwarz, RAL 9005
Aufdruck	nach TKD Printnorm
Nennspannung	600/1.000 V
Prüfspannung	4.000 V
Sonstige Eigenschaften	max. Beschleun. 80 m/s <sup>2</sup> ; Verfahrgeschw. freitragend bis zu 10 m/s, gleitend bis zu 6 m/s; max. Verfahrweg freitragend/gleitend bis 400 m
kleinster Biegeradius fest	4 x d
kleinster Biegeradius bewegt	7,5 x d
Betriebstemp. fest min/max	-50 °C / +90 °C
Betriebstemp. bew. min/max	-40 °C / +90 °C
Brandverhalten	nach IEC 60332-1, cable flame test, FT1
Approbatation	UL 80°C, 1000 V, cURus 80°C, 1000 V

### Structure & Specifications

conductor material	bare copper strand
conductor class	super fine wires acc. to DIN VDE 0295 cl. 6 resp. IEC 60228 cl. 6
core insulation	TPE
core identification	BK with WH numerals, one core GNYE 1.core: U / L1 / C / L+ *** 2.core: V / L2 3.core: W / L3 / D / L- *** 4.core: 4 / N
stranding	cores stranded in opt. lay length around tensile strength center
inner sheath material	TPE, with Rip cord
shield	copper braid tinned, opt. coverage appr. 85 %
outer sheath	TPE
sheath colour	black, RAL 9005
printing	acc. to TKD printnorm
rated voltage	600/1.000 V
testing voltage	4.000 V
other characteristics	max. acceleration 80 m/s <sup>2</sup> ; speed self-supporting up to 10 m/s, gliding up to 6 m/s; max. path length self-supporting/gliding to 400 m
min. bending radius fixed	4 x d
min. bending radius moved	7,5 x d
operat. temp. fixed min/max	-50 °C / +90 °C
operat. temp. moved min/max	-40 °C / +90 °C
burning behavior	acc. to IEC 60332-1, cable flame test, FT1
approvals	UL 80°C, 1000 V, cURus 80°C, 1000 V





# Optische Daten- und Signalübertragungsleitung für Energieketten

## FESTOONFIBERFLEX PUR-HF



### Anwendung

als Leitung für die optische Daten- und Signalübertragung bei sehr hohen mechanischen Beanspruchungen, betriebsmäßig großen Biegehäufigkeiten, insbesondere für den Einsatz auf Leitungswagen, Schleppketten an beweglichen Teilen von Werkzeugmaschinen, Förderanlagen u.ä. in trockenen, feuchten und nassen Räumen, im Freien sowie in explosionsgefährdeten Bereichen.

### Application

cable for optical transmission of data and signals for very high mechanical requirements, frequently bendings, especially for use in trolley systems, drag chains on moving parts of machines, conveyor facilities. Suitable for dry, humid and wet rooms, for outdoor use and also for explosive environment.

### Besonderheiten

- für den einfachen Trommelbetrieb zugelassen
- LBS-frei/silikonfrei (bei Produktion)
- beständig gegen Ozon, UV und Feuchtigkeit
- halogenfrei
- auf Anfrage auch als Variante für den ständigen Einsatz im Wasser (kein Trinkwasser) bis 50 m Tauchtiefe erhältlich

### Special Features

- for low reeling operation requirements
- free from lacquer damaging substances and silicone (during production)
- resistant to ozone, UV radiation and humidity
- halogen-free
- also available on request for permanent use in water (no drinking water) up to 50 m diving depth

### Hinweise

- RoHS-konform
- für Fahrgeschwindigkeiten auf Leitungswagen bis max. 240 m/min
- Sonderausführungen, andere Abmessungen, Querschnitte, Ader- und Mantelfarben fertigen wir auf Anfrage.
- Wir können Ihnen die Leitungen auch konfektioniert mit ST-Steckern anbieten.

### Remarks

- conform to RoHS
- for travelling speed on cable trolleys up to 240 m/min
- We are pleased to produce special versions, other dimensions, core and jacket colours on request.
- We are pleased to offer you the cables assembled with ST connectors.

### Aufbau & Technische Daten

Leiter Werkstoff	Lichtwellenleiter Type 9/125, 50/125 oder 62,5/125
Aderisolationwerkstoff	PETP-Röhrchen mit Gel gefüllt
Gesamtverseilung	Lichtwellenleiter in gelgefüllten PETP-Röhrchen verseilt mit 2 Füllern in einer Hülle aus wärmebeständigem Kunststoff, umwickelt mit einer Zugentlastung aus Aramidfäden und einem Geflecht aus Polyesterfäden
Außenmantelwerkstoff	PUR
Mantelfarbe	schwarz
Aufdruck	ja
Sonstige Eigenschaften	Type Dämpfung Bandbreite Apertur Brechungsindex E9-1310 nm 0,5 dB/km 3,5 ps/nm*km - 1,425 E9-1550 nm 0,3 dB/km 18 ps/nm*km - 1,425 50-850 nm 3 dB/km 400 MHz km 0,2±0,02 1,47 50-1300 nm 1 dB/km 60-1500 MHz km 0,2±0,02 1,47 62,5-850 nm 3,5 dB/km 200 MHz km 0,27±0,02 - 62,5-1300 nm 1,5 dB/km 600 MHz km 0,27±0,02 -
kleinster Biegeradius fest	6 x d
kleinster Biegeradius bewegt	10 x d
Betriebstemp. fest min/max	-40 °C / +80 °C
Betriebstemp. bew. min/max	-30 °C / +70 °C
Brandverhalten	in Anlehnung an IEC 60332-2-1
Ölbeständigkeit	nach EN 60811-2-1

### Structure & Specifications

conductor material	fiber optics type 9/125, 50/125 or 62,5/125
core insulation	PETP tubes filled with jelly
overall stranding	fiber optics in PETP-tubes filled with jelly, stranded with fillers in an envelope of heat resistant compound, wrapped with a strain relief of aramide rovings and braid of polyester fibres
outer sheath	PUR
sheath colour	black
printing	yes
other characteristics	type attenuation bandwidth aperture refraction index E9-1310 nm 0,5 dB/km 3,5 ps/nm*km - 1,425 E9-1550 nm 0,3 dB/km 18 ps/nm*km - 1,425 50-850 nm 3 dB/km 400 MHz km 0,2±0,02 1,47 50-1300 nm 1 dB/km 60-1500 MHz km 0,2±0,02 1,47 62,5-850 nm 3,5 dB/km 200 MHz km 0,27±0,02 - 62,5-1300 nm 1,5 dB/km 600 MHz km 0,27±0,02 -
min. bending radius fixed	6 x d
min. bending radius moved	10 x d
operat. temp. fixed min/max	-40 °C / +80 °C
operat. temp. moved min/max	-30 °C / +70 °C
burning behavior	similar to IEC 60332-2-1
resistant to oil	acc. to EN 60811-2-1







# Cable protection conduits and fitting systems

## MATERIAL CHARACTERISTICS



Materials used

## MECHANICAL PROPERTIES



Protection classes



Crush resistance

## THERMAL CHARACTERISTICS



Temperature / temperature range

## FIRE PROPERTIES



Fire classification

## GENERAL TECHNICAL DATA



Additional information

## APPROVALS AND OPERATING PERMITS



EU railway approval  
EN 45545-2



CSA approval



cULus approval



cURus approval



VDE approval



EX approval



ROBI approval

## TECHNICAL INFORMATION



Halogen-free  
DIN 53474



UV-resistant

## CONFORMITY



RoHS (EC Directive 2002/95/EC)



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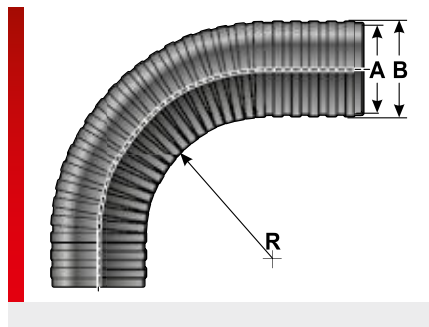
## **Murrflex cable protection conduits**





**Murrflex cable protection conduit closed**

## Type EW



### PRODUCT INFORMATION

The EW cable protection conduits are made of specially modified polyethylene. The material is halogen, phosphor and cadmium-free. The EW cable protection conduits are characterised by excellent flexibility and good flexural fatigue strength.

- Applications:
- Light mechanical loads
  - Plant engineering
  - Mechanical engineering
  - Control cabinet construction

### SPECIFICATIONS

- 20 – 70 °C short term 90 °C
- Mod. polyethylene
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 200 N
- In conformity with IEC EN 61386  
Cycles: > 4000 ~

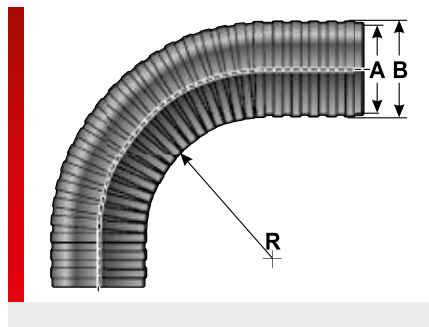
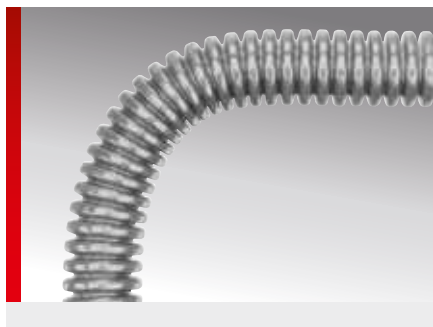


Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EW-M10/P7	83101050	Black	8.40	11.40	30.00	2.2	50
EW-M12/P9	83101052	Black	9.80	12.80	40.00	2.4	50
EW-M16/P11	83101054	Black	12.00	15.70	45.00	3.4	50
EW-M20/P16	83101056	Black	15.90	21.00	55.00	5.4	50
EW-M25/P21	83101060	Black	22.40	28.30	70.00	8.2	50
EW-M32/P29	83101062	Black	27.90	34.00	80.00	11.0	25
EW-M40/P36	83101064	Black	35.60	42.70	100.00	12.4	25
EW-M50/P48	83101066	Black	47.20	53.90	115.00	19.5	25
EW-70 Jumbo	83101070	Black	66.80	79.20	180.00	48.0	25
EW-95 Jumbo	83101074	Black	90.40	105.50	200.00	75.0	10
EW-M10/P7	83101010	Grey	8.40	11.40	30.00	2.2	50
EW-M12/P9	83101012	Grey	9.80	12.80	40.00	2.4	50
EW-M16/P11	83101014	Grey	12.00	15.70	45.00	3.4	50
EW-M20/P16	83101016	Grey	15.90	21.00	55.00	5.4	50
EW-M25/P21	83101022	Grey	22.40	28.30	70.00	8.2	50
EW-M32/P29	83101026	Grey	27.90	34.00	80.00	11.0	25
EW-M40/P36	83101030	Grey	35.60	42.70	100.00	12.4	25
EW-M50/P48	83101032	Grey	47.20	53.90	115.00	19.5	25
EW-70 Jumbo	83101036	Grey	66.80	79.20	180.00	48.0	25
EW-95 Jumbo	83101040	Grey	90.40	105.50	200.00	75.0	10





## Type EWX (high corrugation)



### PRODUCT INFORMATION

The EWX cable protection conduits are made of specially modified polyethylene. The material is halogen, phosphor and cadmium-free. For medium mechanical loads in mechanical and plant engineering (e.g. bundling of cables on machines).

The EWX cable protection conduits have a higher corrugation and feature the following advantages:

- Excellent flexibility
- Less wear
- Good crush resistance

### SPECIFICATIONS

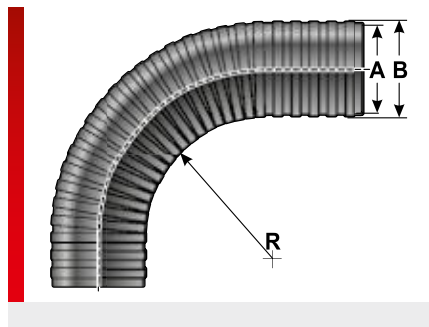
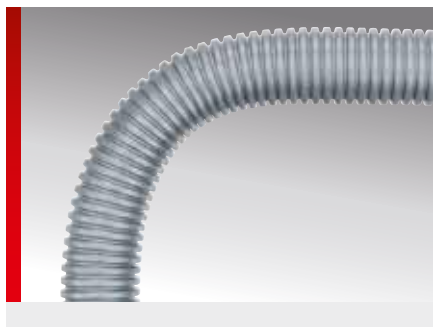
- 20 – 70 °C short term 90 °C
- Mod. polyethylene
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 600 N
- In conformity with IEC EN 61386  
Cycles: > 1600 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>High corrugation</b>							
EWX-M25/P21	83102018	Grey	18.00	28.00	49.00	9.0	50
EWX-M32/P29	83102020	Grey	22.60	33.90	57.00	11.5	25
EWX-M40/P36 <sup>1)</sup>	83102022	Grey	29.00	41.80	71.00	16.0	25
EWX-M50/P48 <sup>1)</sup>	83102024	Grey	37.00	53.80	87.00	26.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWS



### PRODUCT INFORMATION

The EWS cable protection conduits are made of specially modified polyethylene. The material is halogen, phosphor and cadmium-free. They are characterised by excellent flexibility and good resetting characteristics.

The EWS Cable conduits are suitable for light mechanical loads in control cabinet construction and wherever cables are bundled.

- Applications:
- Control cabinet construction

### SPECIFICATIONS

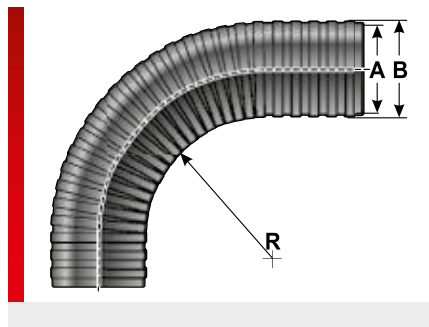
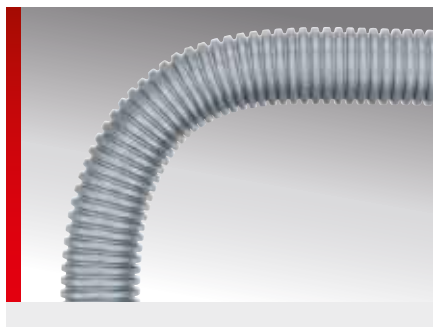
- 20 – 70 °C short term 90 °C
- Mod. polyethylene
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 400 N
- In conformity with IEC EN 61386  
Cycles: > 40000 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWS-M20/P16	83101610	Grey	15.90	20.90	55.00	5.4	50
EWS-M25/P21	83101612	Grey	22.40	28.30	70.00	8.2	50
EWS-M32/P29	83101614	Grey	27.90	34.00	80.00	9.5	25
EWS-M40/P36	83101616	Grey	35.60	42.50	100.00	12.4	25
EWS-M50/P48	83101618	Grey	47.20	53.90	115.00	19.5	25
<b>Narrow corrugation</b>							
EWS-M32/P29S <sup>1)</sup>	83101620	Grey	28.40	33.80	80.00	9.5	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EWF



### PRODUCT INFORMATION

The EWF cable protection conduits are made of specially modified polyethylene. The material is halogen, phosphor and cadmium-free.

The self-extinguishing EWF cable protection conduits are characterised by excellent flexibility and good flexural fatigue strength. For light mechanical loads in mechanical and plant engineering (e.g. bundling of cables at the control cabinet door).

Applications:

- Plant engineering
- Mechanical engineering
- Control cabinet construction

### SPECIFICATIONS

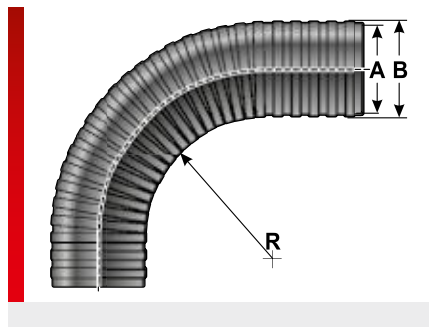
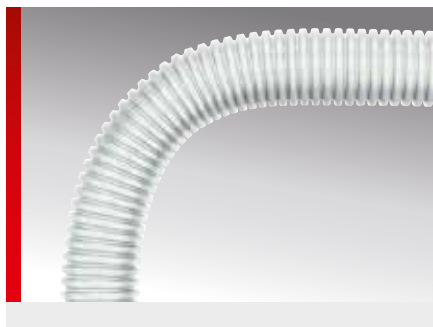
- 20 – 90 °C short term 120 °C
- Mod. polyethylene
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 400 N
- In conformity with IEC EN 61386  
Cycles: > 2500 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWF-M12/P9 <sup>1)</sup>	83101410	Grey	9.80	12.80	35.00	2.4	50
EWF-M16/P11 <sup>1)</sup>	83101412	Grey	12.00	15.70	40.00	3.4	50
EWF-M20/P16	83101414	Grey	15.90	21.00	55.00	5.4	50
EWF-M25/P21	83101416	Grey	22.40	28.30	65.00	8.2	50
EWF-M32/P29	83101418	Grey	27.90	34.00	75.00	11.0	25
EWF-M40/P36	83101420	Grey	35.60	42.70	85.00	12.4	25
EWF-M50/P48 <sup>1)</sup>	83101422	Grey	47.20	53.90	95.00	19.5	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWS/F



### PRODUCT INFORMATION

The EWS/F cable protection conduits are made of specially modified polyethylene. The material is halogen, phosphor and cadmium-free.

The self-extinguishing EWS/F cable protection conduits are characterised by excellent flexibility, flexural fatigue strength and by their special colouration of RAL 7035 light grey.

For very light mechanical loads in mechanical and plant engineering (e.g. bundling of cables at the control cabinet door).

Applications:

- Control cabinet construction
- Plant engineering

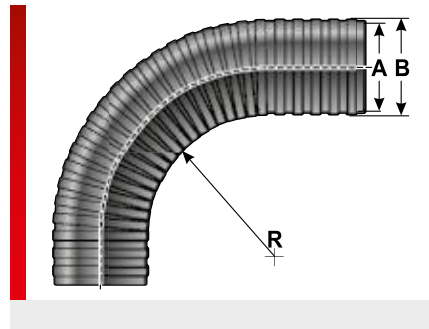
### SPECIFICATIONS

- 20 – 90 °C short term 120 °C
- Mod. polyethylene
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 100 N
- In conformity with IEC EN 61386  
Cycles: > 2500 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Narrow corrugation</b>							
EWS/F-M20/P16S	83101814	RAL 7035	16.50	20.80	55.00	5.4	25
EWS/F-M25/P21S	83101816	RAL 7035	22.70	28.10	65.00	6.0	25
EWS/F-M32/P29S	83101818	RAL 7035	28.40	33.80	75.00	10.0	25
EWS/F-M40/P36S	83101820	RAL 7035	36.20	42.30	85.00	11.0	25
EWS/F-M50/P48S	83101822	RAL 7035	47.80	53.70	95.00	14.5	25

## Type EW-PP



### PRODUCT INFORMATION

The self-extinguishing EW-PP cable protection conduits are made of specially modified polypropylene. The material is phosphor and cadmium-free.

The EW-PP cable protection conduits are characterised by outstanding chemical resistance, good crush and impact resistance. For static and dynamic applications involving medium to high mechanical loads.

Applications:

- Plant engineering
- Mechanical engineering
- Chemical plants

### SPECIFICATIONS

- 40 – 130 °C short term 150 °C
- Mod. Polypropylene
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 900 N
- In conformity with IEC EN 61386  
Cycles: > 3100000 ~



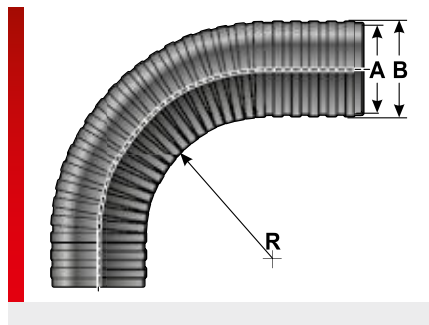
Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-PP-M10/P7	83201050	Black	8.20	11.50	21.00	70.00	1.8	50
EW-PP-M12/P9	83201052	Black	9.60	12.80	26.00	80.00	2.4	50
EW-PP-M16/P11	83201054	Black	11.90	15.70	33.00	100.00	3.5	50
EW-PP-M20/P16	83201056	Black	15.60	21.00	46.00	180.00	5.0	50
EW-PP-M25/P21	83201058	Black	22.50	28.30	59.00	230.00	9.3	50
EW-PP-M32/P29	83201060	Black	27.80	34.30	72.00	280.00	11.0	25
EW-PP-M40/P36	83201062	Black	34.70	42.20	86.00	310.00	15.8	25
EW-PP-M50/P48	83201064	Black	46.70	54.00	107.00	350.00	20.5	25
EW-PP 56	83201067	Black	56.20	67.80	140.00	480.00	38.5	25
EW-PP-70 Jumbo	83201066	Black	67.80	79.80	160.00	600.00	40.0	25
EW-PP-95 Jumbo	83201068	Black	89.60	106.30	200.00	800.00	67.0	10
<b>Grey</b>								
EW-PP-M10/P7 <sup>1)</sup>	83201010	Grey	8.20	11.50	21.00	70.00	1.3	50
EW-PP-M12/P9	83201012	Grey	9.60	12.80	26.00	80.00	2.4	50
EW-PP-M16/P11	83201014	Grey	11.90	15.70	33.00	100.00	3.5	50
EW-PP-M20/P16	83201016	Grey	15.60	21.00	46.00	180.00	5.2	50
EW-PP-M25/P21	83201018	Grey	21.60	28.30	59.00	230.00	9.3	50
EW-PP-M32/P29	83201020	Grey	27.80	34.30	72.00	280.00	11.0	25
EW-PP-M40/P36	83201022	Grey	34.70	42.20	86.00	310.00	16.0	25
EW-PP-M50/P48	83201024	Grey	46.70	54.00	107.00	350.00	20.5	25
EW-PP-70 Jumbo <sup>1)</sup>	83201026	Grey	67.80	79.80	160.00	600.00	41.0	25
EW-PP-95 Jumbo	83201028	Grey	89.60	106.30	200.00	800.00	67.0	10

**Type EW-PP** (Continued...)

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Narrow corrugation</b>								
EW-PP-M20/P16S	83201057	Black	16.40	20.90	41.00	170.00	5.6	50

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EWL-PP



### PRODUCT INFORMATION

The self-extinguishing EWL-PP cable protection conduits are made of specially modified polypropylene. The material is phosphor and cadmium-free.

The EWL-PP cable protection conduits are characterised by outstanding chemical resistance, good crush and impact resistance. For static and dynamic applications involving medium mechanical loads.

Applications:

- Plant engineering
- Mechanical engineering
- Chemical industry

### SPECIFICATIONS

- 40 – 130 °C short term 150 °C
- Mod. Polypropylene
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 700 N
- In conformity with IEC EN 61386  
Cycles: > 300000 ~
- In conformity with IEC EN 61386  
Tier: 3



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWL-PP-06	83204052	Black	6.60	9.80	14.00	1.5	100
EWL-PP-M10/P07	83204054	Black	8.40	11.50	17.00	1.5	100
EWL-PP-M12/P09	83204056	Black	9.80	12.80	20.00	2.0	100
EWL-PP-M16/P11	83204058	Black	12.10	15.70	30.00	3.0	100
EWL-PP-M18/P13	83204060	Black	14.30	18.30	30.00	4.0	50
EWL-PP-M20/P16	83204062	Black	15.80	21.00	50.00	4.3	100
EWL-PP-19	83204064	Black	19.20	24.00	52.00	6.0	50
EWL-PP-M25/P21	83204066	Black	21.80	28.30	60.00	8.2	100
EWL-PP-26	83204076	Black	25.80	31.20	65.00	9.2	50
EWL-PP-M32/P29	83204068	Black	28.00	34.30	70.00	7.7	50
EWL-PP-M40/P36	83204070	Black	34.90	42.10	80.00	13.5	25
EWL-PP-M50/P48	83204072	Black	46.90	54.00	95.00	17.4	25
EWL-PP-M10/P07 <sup>1)</sup>	83204014	Grey	8.40	11.50	17.00	1.5	100
EWL-PP-M12/P09	83204016	Grey	9.80	12.80	20.00	1.6	100
EWL-PP-M16/P11 <sup>1)</sup>	83204018	Grey	12.10	15.70	30.00	2.0	100
EWL-PP-M20/P16	83204022	Grey	15.80	21.00	50.00	3.4	100
EWL-PP-M25/P21 <sup>1)</sup>	83204026	Grey	21.80	28.30	60.00	6.5	100
EWL-PP-M32/P29	83204028	Grey	28.00	34.30	70.00	8.6	50
EWL-PP-M40/P36 <sup>1)</sup>	83204030	Grey	34.90	42.20	80.00	12.5	25
EWL-PP-M50/P48	83204032	Grey	46.90	54.00	95.00	17.4	25

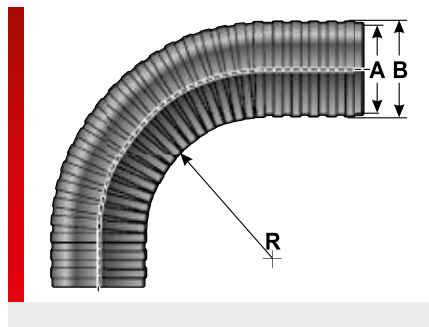


**Type EWL-PP** (Continued...)

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Narrow corrugation</b>							
EWL-PP-M16/P11S	83204059	Black	12.80	15.70	25.00	2.8	100
EWL-PP-M20/P16S	83204063	Black	16.60	20.90	45.00	4.8	100
EWL-PP-M25/P21S	83204067	Black	22.70	28.30	55.00	6.5	100
EWL-PP-M32/P29S	83204069	Black	29.00	34.30	65.00	7.9	50
EWL-PP-M40/P36S	83204071	Black	35.90	42.10	75.00	13.5	25
EWL-PP-M50/P48S	83204073	Black	47.10	54.00	90.00	16.0	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EWX-PP (high corrugation)



### PRODUCT INFORMATION

The self-extinguishing EWX-PP cable protection conduits are made of specially modified polypropylene. The material is phosphor and cadmium-free.

The EWX-PP cable protection conduits are characterised by outstanding chemical resistance, good crush and impact resistance. For static and dynamic applications involving medium to high mechanical loads.

Applications:

- Plant engineering
- Mechanical engineering
- Chemical plants

### SPECIFICATIONS

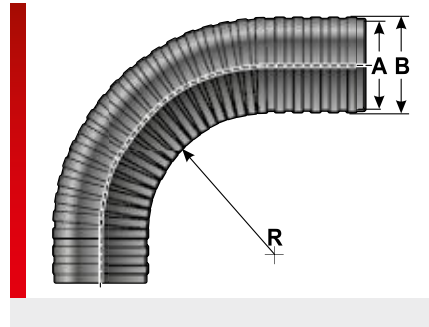
- 40 – 130 °C short term 150 °C
- Mod. Polypropylene
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 1500 N
- In conformity with IEC EN 61386  
Cycles: > 2000000 ~
- In conformity with IEC EN 61386  
Tier: 3



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-PP-M25/P21 <sup>1)</sup>	83202858	Black	18.30	28.00	50.00	110.00	9.0	50
EWX-PP-M32/P29 <sup>1)</sup>	83202860	Black	22.60	34.20	60.00	120.00	12.2	25
EWX-PP-M40/P36	83202862	Black	28.40	42.00	70.00	150.00	14.0	25
EWX-PP-M50/P48 <sup>1)</sup>	83202864	Black	37.00	53.80	90.00	170.00	22.5	25
EWX-PP-56 Jumbo <sup>1)</sup>	83202866	Black	52.30	67.60	95.00	220.00	40.0	25
EWX-PP-70 Jumbo <sup>1)</sup>	83202868	Black	63.90	80.50	115.00	235.00	55.0	25
EWX-PP-95 Jumbo <sup>1)</sup>	83202870	Black	88.00	105.80	220.00	670.00	70.0	10

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EW-PA



### PRODUCT INFORMATION

The EW-PA cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The conduits are for universal use in both mechanical and plant engineering and vehicle engineering.

The EW-PA cable protection conduits feature the following advantages:

- High crush resistance
- Good flexibility
- Medium to high loads in static applications

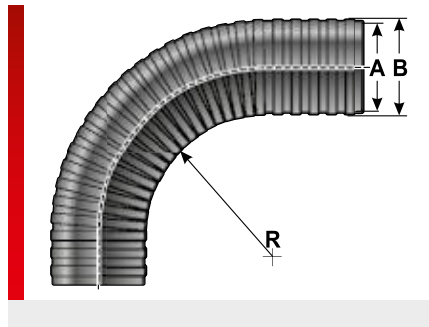
### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 800 N
- In conformity with IEC EN 61386  
Cycles: > 24000 ~
- In conformity with IEC EN 61386  
System tear-out strength: > 350 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EW-PA-4,5	83161051	Black	5.00	7.10	20.00	1.8	100
EW-PA-06	83161050	Black	6.50	9.90	21.00	2.2	50
EW-PA-M10/P7	83161052	Black	8.50	11.60	24.00	2.5	50
EW-PA-M12/P9	83161054	Black	9.60	12.90	26.00	2.8	50
EW-PA-M12/P09 <sup>1)</sup>	83988294	Black	9.60	12.90	26.00	2.8	3000
EW-PA-M16/P11	83161056	Black	11.90	15.70	38.00	3.8	50
EW-PA-M16/P11 <sup>1)</sup>	83988293	Black	11.90	15.70	38.00	3.8	2300
EW-PA-M20/P16	83161060	Black	15.50	21.00	55.00	5.8	50
EW-PA-M20/P16 <sup>1)</sup>	83988292	Black	15.50	21.00	55.00	5.8	1100
EW-PA-M25/P21	83161064	Black	21.80	28.50	64.00	9.0	50
EW-PA-M25/P21 <sup>1)</sup>	83988291	Black	21.80	28.50	64.00	9.0	700
EW-PA-M32/P29	83161072	Black	27.80	34.60	72.00	13.5	25
EW-PA-M32/P29 <sup>1)</sup>	83988290	Black	27.80	34.60	72.00	13.5	400
EW-PA-M40/P36 <sup>2)</sup>	83161076	Black	34.90	42.30	81.00	15.0	25
EW-PA-M50/P48	83161078	Black	46.90	54.30	97.00	22.0	25
EW-PA-56 Jumbo	83161081	Black	56.00	67.60	115.00	38.5	25
EW-PA-70 Jumbo	83161082	Black	67.40	79.70	160.00	46.0	25
EW-PA-95 Jumbo	83161086	Black	89.70	106.30	200.00	80.0	10
EW-PA-06	83161010	Grey	6.50	9.90	21.00	2.2	50
EW-PA-M10/P7	83161012	Grey	8.50	11.60	24.00	2.5	50
EW-PA-M12/P9	83161014	Grey	9.60	12.90	26.00	2.8	50

**Type EW-PA** (Continued...)



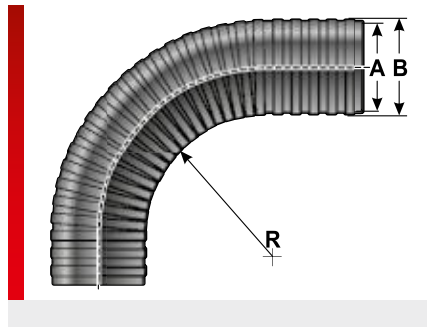
Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
EW-PA-M16/P11	83161016	Grey	11.90	15.70	38.00	3.8	50
EW-PA-M20/P16	83161018	Grey	15.50	21.00	55.00	5.8	50
EW-PA-M25/P21	83161022	Grey	21.80	28.50	64.00	9.0	50
EW-PA-M32/P29	83161026	Grey	27.80	34.60	72.00	13.5	25
EW-PA-M40/P36 <sup>2)</sup>	83161028	Grey	34.90	42.30	81.00	15.0	25
EW-PA-M50/P48	83161030	Grey	46.90	54.30	97.00	22.0	25
EW-PA-56 Jumbo <sup>3)</sup>	83161031	Grey	56.00	67.60	115.00	38.5	25
EW-PA-70 Jumbo	83161032	Grey	67.40	79.70	160.00	46.0	25
EW-PA-95 Jumbo <sup>3)</sup>	83161034	Grey	89.70	106.30	200.00	80.0	10
<b>Narrow corrugation</b>							
EW-PA-M20/P16S	83162062	Black	16.60	21.00	50.00	6.3	50
EW-PA-M25/P21S	83162064	Black	22.80	28.30	59.00	9.0	50
EW-PA-M32/P29S	83162072	Black	28.40	34.40	67.00	13.5	25
EW-PA-M40/P36S	83162076	Black	36.00	42.00	76.00	15.0	25
EW-PA-M50/P48S	83162080	Black	47.30	54.20	92.00	22.0	25
EW-PA-M20/P16S	83162020	Grey	16.60	21.00	50.00	6.3	50
EW-PA-M25/P21S	83162022	Grey	22.80	28.30	59.00	9.0	50
EW-PA-M32/P29S	83162026	Grey	28.40	34.40	67.00	13.5	25
EW-PA-M40/P36S	83162030	Grey	36.00	42.00	76.00	15.0	25
EW-PA-M50/P48S	83162034	Grey	47.30	54.20	92.00	22.0	25

<sup>1)</sup> One piece corrugated conduit in the Octabin container

<sup>2)</sup> With CSA approval

<sup>3)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWL-PA



### PRODUCT INFORMATION

The EWL-PA cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.







The affordable EWL-PA cable protection conduits are characterised by their good crush and impact resistance.

For static applications involving low to medium mechanical loads.

Applications:

- Plant engineering
- Mechanical engineering
- Vehicle engineering

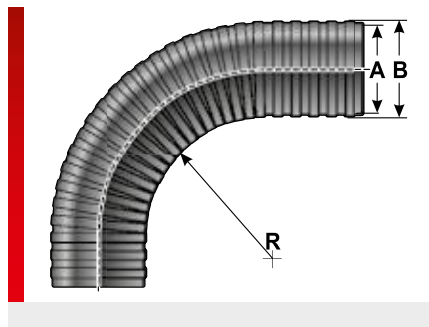
### SPECIFICATIONS

-  -40 – 120 °C short term 160 °C
-  Mod. polyamide PA 6
-  Acc. to UL94 HB
-  In conformity with IEC EN 61386  
Crush resistance: > 600 N
-  In conformity with IEC EN 61386  
Cycles: > 16000 ~
-  In conformity with IEC EN 61386  
System tear-out strength: > 350 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWL-PA-M10/P07	83164054	Black	8.60	11.60	17.00	2.1	100
EWL-PA-M12/P09	83164056	Black	9.80	12.90	20.00	2.4	100
EWL-PA-M16/P11	83164058	Black	12.10	15.70	25.00	3.3	100
EWL-PA-M20/P16	83164062	Black	15.80	21.00	50.00	5.0	100
EWL-PA-M25/P21	83164066	Black	22.00	28.00	60.00	8.2	100
EWL-PA-M32/P29	83164068	Black	28.00	34.60	70.00	12.0	50
EWL-PA-M40/P36	83164070	Black	35.10	42.30	80.00	12.8	25
EWL-PA-M50/P48	83164072	Black	47.20	54.30	95.00	19.0	25
<b>Grey</b>							
EWL-PA-M10/P07	83164014	Grey	8.60	11.60	17.00	2.1	100
EWL-PA-M12/P09	83164016	Grey	9.80	12.90	20.00	2.4	100
EWL-PA-M16/P11	83164018	Grey	12.10	15.70	25.00	3.3	100
EWL-PA-M20/P16	83164022	Grey	15.80	21.00	50.00	5.0	100
EWL-PA-M25/P21	83164026	Grey	22.00	28.50	60.00	8.2	100
EWL-PA-M32/P29	83164028	Grey	28.00	34.60	70.00	12.0	50
EWL-PA-M40/P36	83164030	Grey	35.10	42.30	80.00	12.8	25
EWL-PA-M50/P48	83164032	Grey	47.20	54.30	95.00	19.0	25
<b>Narrow corrugation</b>							
EWL-PA-06S <sup>1)</sup>	83164053	Black	6.70	10.00	13.00	1.8	100
EWL-PA-M16/P11S	83164060	Black	12.80	15.90	25.00	3.3	100
EWL-PA-M20/P16S	83164081	Black	16.80	21.00	45.00	5.0	100

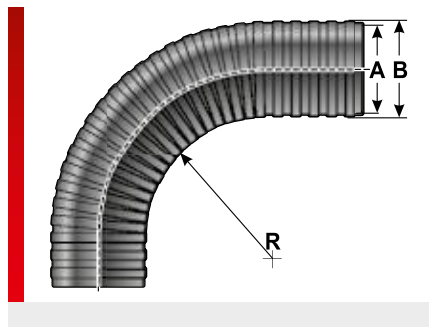
**Type EWL-PA** (Continued...)



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
EWL-PA-M25/P21S	83164082	Black	23.00	28.30	50.00	8.2	100
EWL-PA-M32/P29S	83164067	Black	28.60	34.40	60.00	12.0	50
EWL-PA-M40/P36S	83164069	Black	36.20	42.00	75.00	14.0	25
EWL-PA-M50/P48S	83164071	Black	47.50	54.20	90.00	19.0	25
EWL-PA-M20/P16S	83164021	Grey	16.80	21.00	45.00	5.0	100
EWL-PA-M25/P21S	83164025	Grey	23.00	28.30	50.00	8.2	100
EWL-PA-M32/P29S	83164027	Grey	28.60	34.40	60.00	12.0	50
EWL-PA-M40/P36S	83164029	Grey	36.20	42.00	75.00	12.8	25
EWL-PA-M50/P48S	83164031	Grey	47.50	54.20	90.00	19.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWX-PA (high corrugation)



### PRODUCT INFORMATION

The EWX-PA cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The conduits are for universal use in both mechanical and plant engineering and vehicle engineering.

The EWX-PA cable protection conduits feature the following advantages:

- High crush resistance
- Good flexibility
- Less wear
- High to extreme loads in static applications

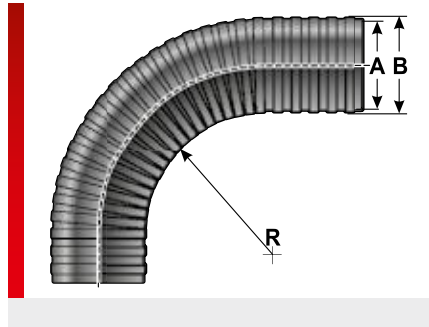
### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 1600 N
- In conformity with IEC EN 61386  
Cycles: > 13000 ~
- In conformity with IEC EN 61386  
System tear-out strength: > 150 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>High corrugation</b>							
EWX-PA-M25/P21	83162858	Black	18.50	28.20	49.00	10.5	50
EWX-PA-M32/P29	83162860	Black	22.90	34.50	57.00	12.7	25
EWX-PA-M40/P36	83162862	Black	28.70	42.70	71.00	20.5	25
EWX-PA-M50/P48	83162864	Black	36.60	53.90	87.00	23.0	25

## Type EW-PAB



### PRODUCT INFORMATION

The EW-PAB cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.

The EW-PAB cable protection conduits feature excellent crush resistance, self-extinguish extremely well and produce very low levels of smoke gas.

For static applications involving medium to high mechanical loads.

Applications:

- Building technologies
- Mechanical engineering
- Plant engineering

Specification:

- GOST R 53313-2009

### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing S4
- In conformity with IEC EN 61386  
Crush resistance: > 1100 N
- In conformity with IEC EN 61386  
Cycles: > 1200 ~
- In conformity with IEC EN 61386  
Tier: 4
- In conformity with IEC EN 61386  
System tear-out strength: > 540 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EW-PAB-06	83162250	Black	6.60	9.90	23.00	2.1	50
EW-PAB-M12/P9	83162254	Black	9.60	12.90	26.00	2.6	50
EW-PAB-M16/P11	83162256	Black	11.90	15.70	38.00	3.4	50
EW-PAB-M20/P16	83162258	Black	15.50	21.00	56.00	6.3	50
EW-PAB-M25/P21	83162262	Black	21.70	28.50	64.00	9.6	50
EW-PAB-M32/P29	83162266	Black	27.80	34.60	77.00	12.5	25
EW-PAB-M40/P36 <sup>1)</sup>	83162268	Black	35.20	42.60	91.00	15.0	25
EW-PAB-M50/P48	83162270	Black	46.80	54.30	117.00	20.0	25
EW-PAB-70 Jumbo	83162278	Black	67.00	80.00	200.00	46.0	25
EW-PAB-95 Jumbo <sup>2)</sup>	83162282	Black	89.50	106.00	265.00	88.0	10
EW-PAB-M12/P9	83162214	Grey	9.80	13.00	26.00	2.8	50
EW-PAB-M16/P11	83162216	Grey	12.00	15.80	38.00	3.4	50
EW-PAB-M25/P21	83162222	Grey	22.40	28.50	64.00	9.6	50
EW-PAB-M32/P29	83162226	Grey	28.50	34.50	77.00	12.5	25
EW-PAB-M40/P36 <sup>1)</sup>	83162228	Grey	36.00	42.50	91.00	15.5	25
EW-PAB-M50/P48	83162230	Grey	46.50	54.40	117.00	20.0	25
EW-PAB-70 Jumbo	83162238	Grey	67.50	80.00	200.00	46.0	25
EW-PAB-95 Jumbo <sup>2)</sup>	83162242	Grey	91.50	106.00	265.00	80.0	10



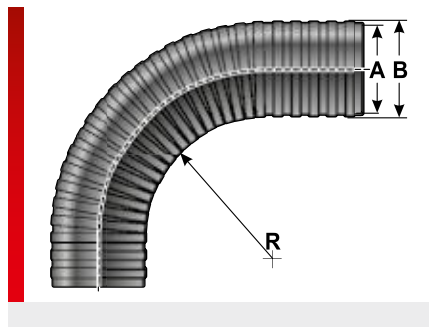
**Type EW-PAB** (Continued...)

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Narrow corrugation</b>							
EW-PAB-M20/P16S	83162260	Black	16.60	21.00	56.00	6.3	50
EW-PAB-M25/P21S	83162462	Black	22.80	28.30	64.00	8.7	50
EW-PAB-M32/P29S	83162466	Black	28.40	34.40	77.00	12.5	25
EW-PAB-M20/P16S	83162220	Grey	16.80	21.00	56.00	6.6	50
EW-PAB-M25/P21S <sup>2)</sup>	83162422	Grey	23.00	28.50	64.00	8.8	50
EW-PAB-M32/P29S <sup>2)</sup>	83162426	Grey	28.90	34.50	77.00	14.0	25

<sup>1)</sup> With CSA approval

<sup>2)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWL-PAB



### PRODUCT INFORMATION

The EWL-PAB cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.

The affordable EWL-PAB cable protection conduits are characterised by their excellent self-extinguishing properties and high crush and impact resistance.

For static applications involving low to medium mechanical loads.

Applications:

- Plant engineering
- Mechanical engineering
- Vehicle engineering

### SPECIFICATIONS

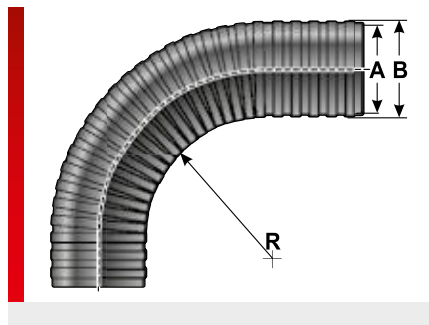
- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 1100 N
- In conformity with IEC EN 61386  
Cycles: > 500 ~
- In conformity with IEC EN 61386  
Tier: 4
- In conformity with IEC EN 61386  
System tear-out strength: > 540 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWL-PAB-M16/P11	83164158	Black	12.00	15.70	25.00	2.65	100
EWL-PAB-M20/P16	83164162	Black	15.80	21.00	50.00	5.4	100
EWL-PAB-M25/P21 <sup>1)</sup>	83164166	Black	21.90	28.50	55.00	7.0	100
EWL-PAB-M32/P29	83164168	Black	28.00	34.60	70.00	10.8	50
EWL-PAB-M40/P36	83164170	Black	35.40	42.60	80.00	12.8	25
<b>Narrow corrugation</b>							
EWL-PAB-M20/P16S <sup>1)</sup>	83164164	Black	16.80	21.00	45.00	5.4	100
EWL-PAB-M25/P21S <sup>1)</sup>	83164167	Black	23.00	28.30	50.00	7.4	100
EWL-PAB-M32/P29S <sup>1)</sup>	83164169	Black	28.60	34.40	60.00	10.6	50
EWL-PAB-M40/P36S <sup>1)</sup>	83164171	Black	36.70	42.00	75.00	12.8	25
EWL-PAB-M50/P48S <sup>1)</sup>	83164173	Black	47.40	54.20	90.00	17.0	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EW-PAT



### PRODUCT INFORMATION

The EW-PAT cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.

The EW-PAT cable protection conduits feature excellent crush resistance, self-extinguish very well and produce very low levels of smoke gas.

For static applications involving medium to high mechanical loads.

This product's excellent fire safety properties make it suitable for use in both rail transport systems and exposed layouts in building service applications.

Specification:

- EN 45545-2 3x HL3
- GOST R 53313-2009

### SPECIFICATIONS

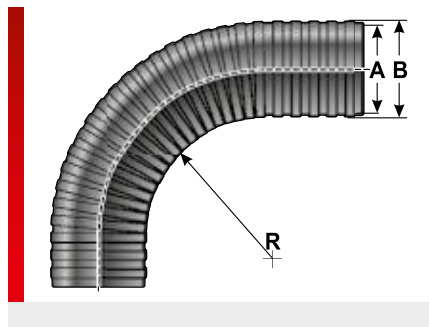
- 40 – 120 °C short term 180 °C
- Mod. polyamide PA 6
- Acc. to UL94 V2 self-extinguishing S4
- In conformity with IEC EN 61386  
Crush resistance: > 1400 N
- In conformity with IEC EN 61386  
Cycles: > 1200 ~
- In conformity with IEC EN 61386  
Tier: 3
- In conformity with IEC EN 61386  
System tear-out strength: > 500 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
EW-PAT-06 <sup>1)</sup>	83165050	Black	6.50	10.00	20.00	2.2	50
EW-PAT-M10/P7	83165051	Black	8.30	11.60	24.00	2.4	50
EW-PAT-M12/P9	83165052	Black	9.90	13.00	26.00	3.0	50
EW-PAT-M16/P11	83165054	Black	12.00	16.00	38.00	3.8	50
EW-PAT-M20/P16	83165056	Black	15.50	21.00	56.00	7.0	50
EW-PAT-M25/P21	83165058	Black	21.80	28.40	64.00	10.5	50
EW-PAT-M32/P29	83165060	Black	27.80	34.70	77.00	13.5	25
EW-PAT-M40/P36	83165062	Black	35.60	42.80	91.00	16.0	25
EW-PAT-M50/P48	83165064	Black	46.70	54.30	117.00	22.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWL-PAT



### PRODUCT INFORMATION

The EWL-PAT cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.

The EWL-PAT cable protection conduits feature good crush resistance, self-extinguish well and produce very low levels of smoke gas.

For static applications involving light to medium mechanical loads.

This product's excellent fire safety properties make it suitable for use in both rail transport systems and exposed layouts in building service applications.

- Specification:
- EN 45545-2 3x HL3

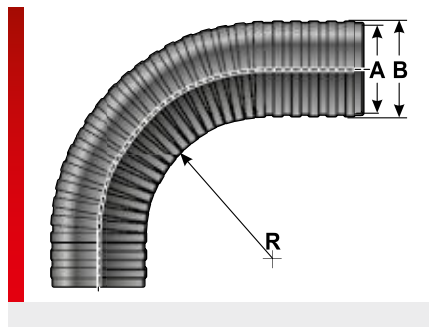
### SPECIFICATIONS

- 40 – 120 °C short term 180 °C
- Mod. polyamide PA 6
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 1000 N
- In conformity with IEC EN 61386  
Cycles: > 1200 ~
- In conformity with IEC EN 61386  
Tier: 3
- In conformity with IEC EN 61386  
System tear-out strength: > 500 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWL-PAT-M12/P9	83155252	Black	10.10	13.00	26.00	2.3	50
EWL-PAT-M16/P11	83155254	Black	12.20	16.00	38.00	3.1	50
EWL-PAT-M20/P16	83155256	Black	15.50	21.00	56.00	5.6	50
EWL-PAT-M25/P21	83155258	Black	22.00	28.40	64.00	8.6	50
EWL-PAT-M32/P29	83155260	Black	28.00	34.70	77.00	11.2	25
EWL-PAT-M40/P36	83155262	Black	35.80	42.80	91.00	13.6	25
EWL-PAT-M50/P48	83155264	Black	46.90	54.30	117.00	19.0	25

## Type EW-PA-UL



### PRODUCT INFORMATION

The EW-PA-UL cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.

The EW-PA-UL cable protection conduits feature very high crush resistance, self-extinguish extremely well and produce very low levels of smoke gas.

For static applications involving high mechanical loads.

Applications:

- Plant engineering
- Mechanical engineering
- Mining
- Vehicle engineering

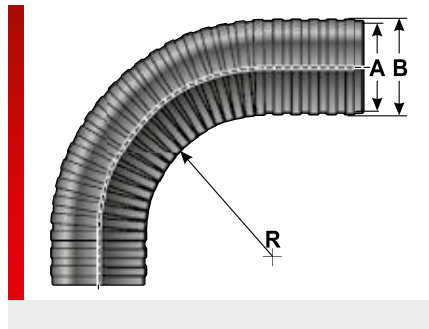
### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 1700 N
- In conformity with IEC EN 61386  
Cycles: > 1300 ~
- In conformity with IEC EN 61386  
Tier: 3
- In conformity with IEC EN 61386  
System tear-out strength: > 700 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EW-PA-UL-06	83161250	Black	6.40	9.90	23.00	2.4	50
EW-PA-UL-M10/P7	83161252	Black	8.30	11.60	26.00	2.7	50
EW-PA-UL-M12/P9	83161254	Black	9.40	12.90	36.00	3.6	50
EW-PA-UL-M16/P11	83161256	Black	11.70	15.70	48.00	4.7	50
EW-PA-UL-M20/P16	83161258	Black	15.30	21.00	55.00	8.0	50
EW-PA-UL-M25/P21	83161262	Black	21.50	28.50	65.00	14.0	50
EW-PA-UL-M32/P29	83161264	Black	27.50	34.60	77.00	17.0	25
EW-PA-UL-M40/P36 <sup>1)</sup>	83161266	Black	34.90	42.60	96.00	22.5	25
EW-PA-UL-M50/P48	83161268	Black	46.60	54.30	112.00	30.0	25
EW-PA-UL 70 Jumbo	83161280	Black	66.60	80.00	160.00	60.0	25
EW-PA-UL-06 <sup>2)</sup>	83161210	Grey	6.40	9.90	23.00	2.3	50
EW-PA-UL-M10/P7	83161212	Grey	8.30	11.60	26.00	2.7	50
EW-PA-UL-M12/P9	83161214	Grey	9.40	12.90	36.00	3.5	50
EW-PA-UL-M16/P11	83161216	Grey	11.70	15.70	48.00	4.7	50
EW-PA-UL-M20/P16	83161218	Grey	15.30	21.00	55.00	7.5	50
EW-PA-UL-M25/P21	83161222	Grey	21.50	28.50	65.00	14.0	50
EW-PA-UL-M32/P29	83161224	Grey	27.50	34.60	77.00	18.0	25
EW-PA-UL-M40/P36 <sup>1)</sup>	83161226	Grey	34.90	42.60	96.00	24.0	25

**Type EW-PA-UL** (Continued...)

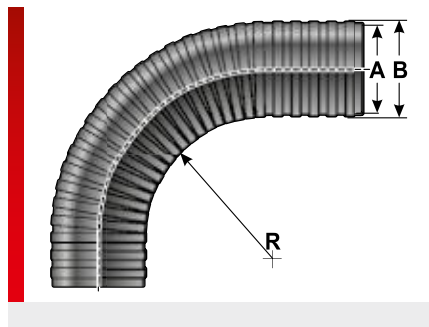


Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
EW-PA-UL-M50/P48	83161228	Grey	46.60	54.30	112.00	30.0	25
<b>Narrow corrugation</b>							
EW-PA-UL-M20/P16S	83161260	Black	16.40	21.00	58.00	9.4	50
EW-PA-UL-M20/P16S <sup>2)</sup>	83161220	Grey	16.40	21.00	58.00	9.4	50
EW-PA-UL-M25/P21S <sup>2)</sup>	83163222	Grey	22.60	28.30	65.00	14.0	50

<sup>1)</sup> With CSA approval

<sup>2)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWX-PA-UL (high corrugation)



### PRODUCT INFORMATION

The EWX-PA-UL cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.

The EWX-PA-UL cable protection conduits are characterised by extremely high mechanical strength, but at the same time offering excellent flexibility. With their extremely high angle consistency, the conduits are suitable for use where cables require extreme

mechanical protection. A real alternative to expensively installed metal conduits.

Applications:

- Plant engineering
- Mechanical engineering
- Mining
- Vehicle engineering

### SPECIFICATIONS

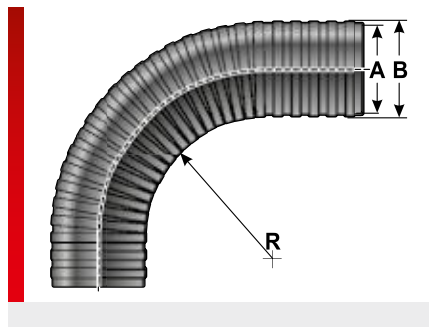
- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 2200 N
- In conformity with IEC EN 61386  
Tier: 3



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>High corrugation</b>							
EWX-PA-UL-M25/P21	83163458	Black	18.20	28.20	49.00	10.0	50
EWX-PA-UL-M32/P29 <sup>1)</sup>	83163460	Black	22.30	34.20	57.00	13.0	25
EWX-PA-UL-M40/P36	83163462	Black	28.60	42.40	71.00	16.0	25
EWX-PA-UL-M50/P48 <sup>1)</sup>	83163464	Black	36.80	53.30	87.00	26.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EW-PRF



### PRODUCT INFORMATION

The EW-PRF cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free.

The conduits are suitable for dynamic applications involving medium to high mechanical loads. The EW-PRF cable protection conduits are used both in the robotics engineering as well as in the aviation industry.

They feature the following advantages:

- High flexibility
- Excellent impact strength
- Excellent self-extinguishing properties
- Very low levels of smoke gas

### SPECIFICATIONS

- 40 – 105 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 1100 N
- In conformity with IEC EN 61386  
Cycles: > 16000 ~
- In conformity with IEC EN 61386  
Tier: 4
- In conformity with IEC EN 61386  
System tear-out strength: > 520 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-PRF-M10/P7	83181252	Black	8.50	11.60	21.00	46.00	2.0	50
EW-PRF-M12/P9	83181254	Black	9.80	13.00	22.00	51.00	2.5	50
EW-PRF-M16/P11	83181256	Black	11.80	15.90	28.00	68.00	3.6	50
EW-PRF-M20/P16	83181258	Black	15.60	21.10	38.00	95.00	5.5	50
EW-PRF-M25/P21	83181262	Black	21.60	28.50	49.00	109.00	10.0	50
EW-PRF-M32/P29	83181264	Black	28.00	34.50	67.00	142.00	12.0	25
EW-PRF-M40/P36	83181266	Black	35.00	42.50	81.00	191.00	17.0	25
EW-PRF-M50/P48	83181268	Black	47.00	54.30	102.00	237.00	23.0	25
EW-PRF-70 Jumbo	83181272	Black	68.40	80.00	200.00	390.00	44.0	25
EW-PRF-95 Jumbo <sup>1)</sup>	83181274	Black	89.40	106.10	265.00	500.00	80.5	10
EW-PRF-M10/P7	83181212	Grey	8.50	11.60	21.00	46.00	2.1	50
EW-PRF-M12/P9 <sup>1)</sup>	83181214	Grey	9.80	13.00	22.00	51.00	2.5	50
EW-PRF-M16/P11 <sup>1)</sup>	83181216	Grey	11.80	15.90	28.00	68.00	3.6	50
EW-PRF-M20/P16 <sup>1)</sup>	83181218	Grey	15.60	21.10	38.00	95.00	5.8	50
EW-PRF-M25/P21	83181222	Grey	21.60	28.50	49.00	109.00	9.5	50
EW-PRF-M32/P29	83181224	Grey	28.00	34.50	67.00	142.00	12.0	25
EW-PRF-M40/P36 <sup>1)</sup>	83181226	Grey	35.00	42.50	81.00	191.00	16.5	25
EW-PRF-M50/P48 <sup>1)</sup>	83181228	Grey	47.00	54.30	102.00	237.00	23.0	25
EW-PRF-70 Jumbo <sup>1)</sup>	83181232	Grey	68.40	80.00	200.00	390.00	48.0	25

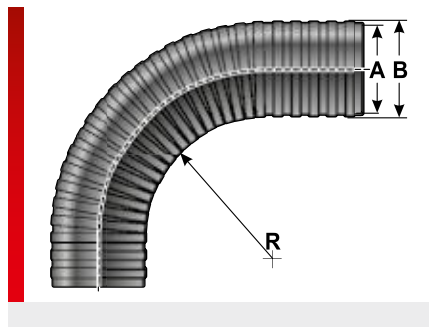


**Type EW-PRF** (Continued...)

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
EW-PRF-95 Jumbo <sup>1)</sup>	83181234	Grey	89.40	106.10	265.00	500.00	81.0	10
<b>Narrow corrugation</b>								
EW-PRF-M20/P16S	83181260	Black	16.70	21.10	35.00	90.00	5.6	50
EW-PRF-M25/P21S <sup>1)</sup>	83181462	Black	23.00	28.30	44.00	104.00	10.0	50
EW-PRF-M32/P29S	83181464	Black	28.50	34.30	62.00	132.00	14.0	25
EW-PRF-M20/P16S <sup>1)</sup>	83181220	Grey	16.70	21.10	35.00	90.00	5.6	50
EW-PRF-M25/P21S <sup>1)</sup>	83181422	Grey	23.00	28.30	44.00	104.00	9.5	50
EW-PRF-M32/P29S <sup>1)</sup>	83181424	Grey	28.50	34.30	62.00	132.00	14.0	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EW-PRT



### PRODUCT INFORMATION

The EW-PRT cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free.

The EW-PRT cable protection conduits feature excellent crush resistance, self-extinguish very well and produce very low levels of smoke gas.

For static and dynamic applications involving medium to high mechanical loads.

This product's excellent fire safety properties make it suitable for use in both rail transport systems and exposed layouts in building service applications.

#### Specification

- EN 45545-2 3x HL3
- GOST R 53313-2009

### SPECIFICATIONS

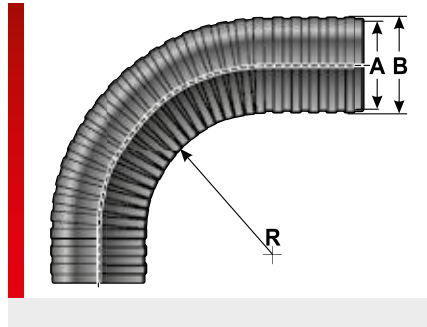
- 40 – 120 °C short term 140 °C
- Mod. polyamide PA 12
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 600 N
- In conformity with IEC EN 61386  
Cycles: > 700000 ~
- In conformity with IEC EN 61386  
Tier: 4,5
- In conformity with IEC EN 61386  
System tear-out strength: > 230 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-PRT-06 <sup>1)</sup>	83181850	Black	6.70	10.00	20.00	68.00	2.0	50
EW-PRT-M10/P07	83181852	Black	8.40	11.60	22.00	75.00	2.8	50
EW-PRT-M12/P09	83181854	Black	9.60	12.90	26.00	85.00	3.0	50
EW-PRT-M16/P11	83181856	Black	11.90	15.80	38.00	105.00	3.8	50
EW-PRT-M20/P16	83181858	Black	15.40	21.00	52.00	185.00	6.0	50
EW-PRT-M25/P21	83181862	Black	21.60	28.40	64.00	235.00	9.9	50
EW-PRT-M32/P29	83181866	Black	27.60	34.40	77.00	285.00	13.5	25
EW-PRT-M40/P36	83181868	Black	35.00	42.50	91.00	315.00	17.0	25
EW-PRT-M50/P48	83181870	Black	46.80	54.30	112.00	355.00	22.5	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EW-PAE



### PRODUCT INFORMATION

The EW-PAE cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free.

The EW-PAE cable protection conduits are characterised by excellent flexibility, flexural fatigue strength and good crush resistance. For extremely dynamic applications involving medium mechanical loads.

Applications:

- Robotics
- Handling systems
- In cable drag chains

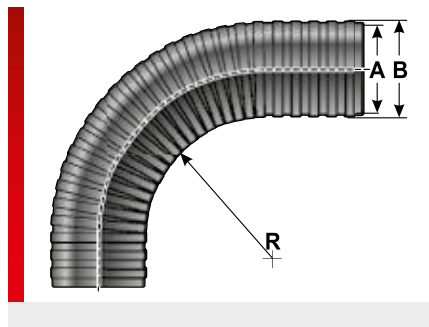
### SPECIFICATIONS

- 40 – 120 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 500 N
- In conformity with IEC EN 61386  
Cycles: > 5000000 ~
- In conformity with IEC EN 61386  
Tier: 4
- In conformity with IEC EN 61386  
System tear-out strength: > 150 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-PAE-06	83181650	Black	6.50	9.80	15.00	40.00	1.8	50
EW-PAE-M10/P7	83181652	Black	8.50	11.50	20.00	45.00	2.1	50
EW-PAE M12/P09, 200m	83988262	Black	9.60	12.80	21.00	51.00	2.8	200
EW-PAE-M12/P9	83181654	Black	9.60	12.80	21.00	51.00	2.8	50
EW-PAE-M16/P11	83181656	Black	11.90	15.60	28.00	68.00	3.8	50
EW-PAE-M20/P16	83181658	Black	15.50	20.80	36.00	70.00	5.8	50
EW-PAE M20/P16, 200m	83988263	Black	15.50	20.80	36.00	70.00	5.8	200
EW-PAE-M25/P21	83181660	Black	21.80	28.30	49.00	109.00	9.5	50
EW-PAE-M32/P29	83181662	Black	27.80	34.40	67.00	142.00	12.6	25
EW-PAE M32/P29, 200m	83988264	Black	27.80	34.40	67.00	142.00	12.6	200
EW-PAE-M40/P36	83181664	Black	34.90	42.00	81.00	191.00	17.0	25
EW-PAE-M50/P48	83181666	Black	47.00	54.00	102.00	237.00	22.8	25
EW-PAE-56 Jumbo	83181678	Black	56.00	67.30	110.00	310.00	40.0	25
EW-PAE-70 Jumbo	83181680	Black	67.40	79.00	200.00	390.00	48.0	25
EW-PAE-95 Jumbo	83181682	Black	89.70	105.00	265.00	500.00	83.0	10
EW-PAE-06 <sup>1)</sup>	83181610	Grey	6.50	9.80	15.00	40.00	2.0	50
EW-PAE-M10/P7	83181612	Grey	8.50	11.50	20.00	45.00	2.1	50
EW-PAE-M12/P9	83181614	Grey	9.60	12.80	21.00	51.00	2.6	50
EW-PAE-M16/P11	83181616	Grey	11.90	15.60	28.00	68.00	3.6	50

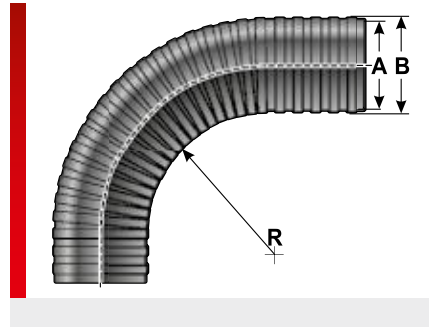
**Type EW-PAE** (Continued...)



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
EW-PAE-M20/P16	83181618	Grey	15.50	20.80	36.00	70.00	5.8	50
EW-PAE-M25/P21	83181620	Grey	21.80	28.30	49.00	109.00	9.5	50
EW-PAE-M32/P29	83181622	Grey	27.80	34.40	67.00	142.00	12.6	25
EW-PAE-M40/P36	83181624	Grey	34.90	42.00	81.00	191.00	17.0	25
EW-PAE-M50/P48	83181626	Grey	47.00	54.00	102.00	237.00	22.8	25
EW-PAE-56 Jumbo <sup>1)</sup>	83181638	Grey	56.00	67.30	110.00	310.00	35.0	25
EW-PAE-70 Jumbo <sup>1)</sup>	83181640	Grey	67.40	79.30	200.00	390.00	56.0	25
EW-PAE-95 Jumbo <sup>1)</sup>	83181642	Grey	89.70	105.80	265.00	500.00	80.0	10

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWX-PAE (high corrugation)



### PRODUCT INFORMATION

The EWX-PAE cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free.

With its excellent flexural fatigue strength, this product is ideal for robotics engineering and in the area of handling systems. For extremely dynamic applications involving medium to high mechanical loads.

The EWX-PAE cable protection conduits have a higher corrugation and feature the following advantages:

- Very good flexibility
- Excellent flexural fatigue strength
- Less wear
- Good crush resistance

### SPECIFICATIONS

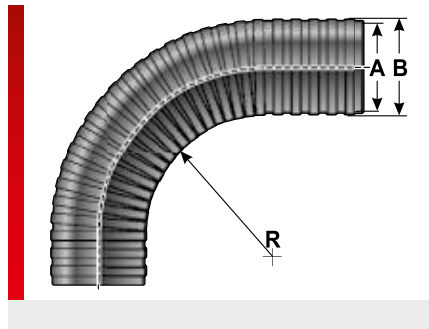
- 40 – 120 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 1200 N
- In conformity with IEC EN 61386  
Cycles: > 5000000 ~
- In conformity with IEC EN 61386  
Tier: 4
- In conformity with IEC EN 61386  
System tear-out strength: > 100 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-PAE-M25/P21	83182058	Black	18.20	28.10	49.00	104.00	13.0	50
EWX-PAE-M32/P29	83182060	Black	22.80	34.10	57.00	117.00	22.0	25
EWX-PAE-M40/P36	83182062	Black	28.70	42.40	71.00	146.00	28.0	25
EWX-PAE-M50/P48	83182064	Black	36.70	53.50	87.00	167.00	36.0	25
EWX-PAE-56 Jumbo	83182078	Black	52.20	67.70	95.00	220.00	40.0	25
EWX-PAE-70 Jumbo	83182080	Black	64.00	80.30	115.00	235.00	56.0	25
EWX-PAE-70 Jumbo	83182084	Black	64.00	80.30	115.00	235.00	52.0	110
EWX-PAE-80 Jumbo	83182081	Black	76.00	92.80	195.00	380.00	66.0	15
EWX-PAE-95 Jumbo	83182082	Black	88.20	105.50	220.00	450.00	92.5	10
EWX-PAE-M25/P21	83182018	Grey	18.20	28.10	49.00	104.00	11.0	50
EWX-PAE-M32/P29	83182020	Grey	22.80	34.10	57.00	117.00	22.0	25
EWX-PAE-M40/P36 <sup>1)</sup>	83182022	Grey	28.70	42.40	71.00	146.00	28.0	25
EWX-PAE-M50/P48 <sup>1)</sup>	83182024	Grey	36.70	53.50	87.00	167.00	36.0	25
EWX-PAE-70 Jumbo <sup>1)</sup>	83182040	Grey	64.00	80.30	115.00	235.00	56.0	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EW-HY



### PRODUCT INFORMATION

The EW-HY cable protection conduits are made of specially modified thermoplastic elastomer. The material is halogen, phosphor and cadmium-free and is also heat and hydrolysis stabilised.

The EW-HY cable protection conduits are characterised by outstanding flexibility, flexural fatigue strength and good crush resistance.

This product is ideal for use in handling systems and robotics engineering, because of its excellent flexural fatigue strength. For dynamic applications involving low to medium mechanical loads.

Applications:

- Robotics
- Handling systems

### SPECIFICATIONS

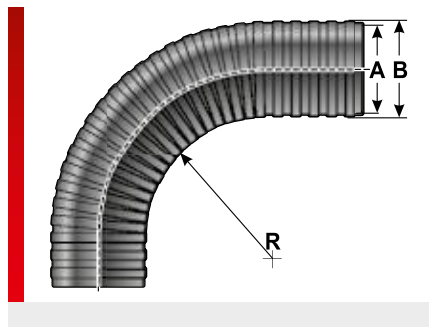
- 45 – 160 °C short term 180 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 500 N
- In conformity with IEC EN 61386  
Cycles: > 250000 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-HY-M12/P9	83121050	Black	9.40	12.80	21.00	51.00	3.2	50
EW-HY-M16/P11	83121052	Black	12.10	15.60	28.00	68.00	4.0	50
EW-HY-M20/P16S	83121054	Black	16.70	20.70	38.00	95.00	7.0	50
EW-HY-M25/P21	83121056	Black	21.80	28.00	49.00	109.00	12.0	50
EW-HY-M32/P29	83121058	Black	27.70	34.20	67.00	142.00	17.0	25
EW-HY-M40/P36	83121060	Black	35.20	42.20	81.00	191.00	21.0	25
EW-HY-M50/P48	83121062	Black	47.30	53.40	102.00	237.00	28.0	25
EW-HY 56	83121065	Black	54.88	67.40	120.00	285.00	40.0	25
EW-HY-70 Jumbo	83121066	Black	66.20	79.50	140.00	330.00	51.5	25
EW-HY-95 Jumbo	83121070	Black	90.00	105.00	150.00	400.00	90.0	10
<b>Narrow corrugation</b>								
EW-HY-M20/P16S	83121014	Grey	16.70	20.70	38.00	95.00	6.8	50

<sup>1)</sup> Min. order quantity 2100m

## Type EWX-HY (high corrugation)



### PRODUCT INFORMATION

The EWX-HY cable protection conduits are made of specially modified thermoplastic elastomer. The material is halogen, phosphor and cadmium-free and is also heat and hydrolysis stabilised.

The EWX-HY cable protection conduits are characterised by outstanding flexibility, flexural fatigue strength and good crush resistance.

With its excellent flexural fatigue strength, this product is ideal for use in handling systems and robotics engineering. For dynamic applications involving low to medium mechanical loads.

### SPECIFICATIONS

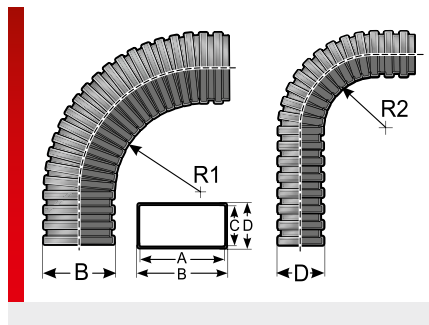
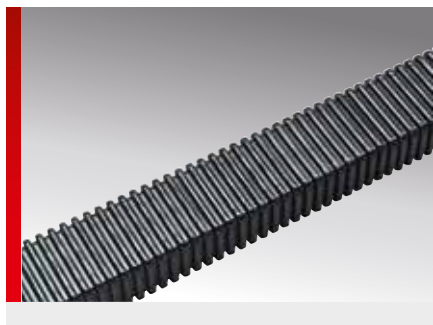
- 45 – 160 °C short term 180 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 900 N
- In conformity with IEC EN 61386  
Cycles: > 1000000 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-HY-M25/P21	83121258	Black	18.60	27.80	49.00	104.00	13.0	50
EWX-HY-M32/P29	83121260	Black	23.00	34.20	57.00	117.00	17.5	25
EWX-HY-M40/P36	83121262	Black	28.90	42.30	71.00	146.00	28.0	25
EWX-HY-M50/P48	83121264	Black	36.80	53.70	87.00	167.00	30.4	25
EWX-HY-56 Jumbo	83121278	Black	53.00	67.80	95.00	220.00	45.0	25
EWX-HY-70 Jumbo	83121280	Black	64.40	80.50	140.00	330.00	63.0	25
EWX-HY-95 Jumbo <sup>1)</sup>	83121282	Black	91.00	105.50	150.00	400.00	89.0	10

<sup>1)</sup> Min. order quantity 40m

## Type EF (rectangular conduit)



### PRODUCT INFORMATION

The rectangular Energoflex EF cable protection conduits are made of specially modified thermoplastic elastomer. The material is halogen, phosphor and cadmium-free. The Energoflex EW cable protection conduits are characterised by excellent flexibility and good flexural fatigue strength. With its rectangular shape, the EF conduit can be used as a cost-effective alternative to cable drag chains. For dynamic applications involving light to medium mechanical loads in mechanical and plant engineering.

- Advantages of the Energoflex include:
- Little relative movement of the cords
  - Low-wear interior
  - Simultaneous traversing in multiple axes possible
  - Higher stability compared to a conduit

System affiliation:

- Holder EF/B 26/42
- Flange connection FL-EF 26042

### SPECIFICATIONS

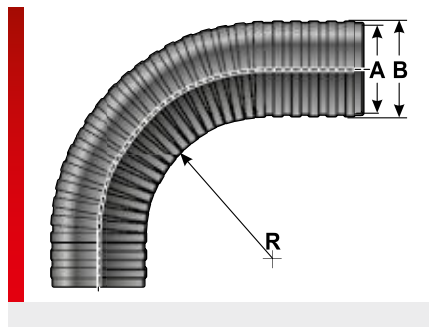
- 45 – 160 °C short term 180 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: 1000 N

RoHS
 HF
 Made in Germany

Type	Order No.	Colour	A mm	B mm	C mm	D mm	R1 stat./dyn. mm	R2 stat./dyn. mm	Weight kg/100m	Pack m
EF 26042	83361012	Black	42.00	50.00	26.00	34.00	110.0 / 320.0	60.0 / 120.0	22.0	3







## Type EWB



### PRODUCT INFORMATION

The EWB cable protection conduit has been manufactured from custom high-density polyethylene (HDPE). This material is especially suited for routing in concrete, as a result of its high chemical stability and crush resistance.

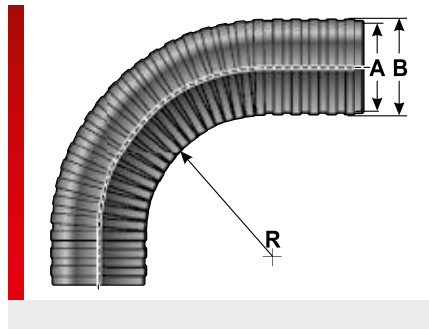
### SPECIFICATIONS

-  -15 – 90 °C short term 120 °C
-  Mod. polyethylene
-  Acc. to UL94 HB
-  In conformity with IEC EN 61386  
Crush resistance: > 650 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWB 21	99950435	Black	21.90	28.10	60.00	10.0	50
EWB 21	83980122	Black	21.90	28.10	60.00	10.0	25

## Type EW-TEF



### PRODUCT INFORMATION

The EW-TEF cable protection conduits are made of specially modified polytetrafluoroethylene. The material is halogen, phosphor and cadmium-free.

The self-extinguishing EW-TEF cable protection conduits are characterised by excellent temperature and chemical resistance. The corrugated conduits are highly also extremely hard-wearing, highly dimensionally stable and resistant to UV radiation. These products

are widely used in both the chemical and pharmaceutical industries and in the food industry. For low to medium mechanical loads.

Applications:

- Vehicle engineering
- Plant engineering
- Mechanical engineering
- Chemical plants

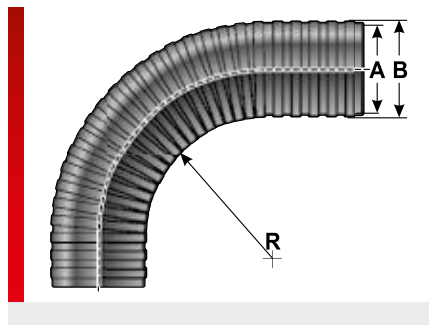
### SPECIFICATIONS

- 200 – 260 °C
- Fluoroplastic
- Acc. to UL94 V0 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 250 N

RoHS
 HF
 Made in Germany

Type	Order No.	Colour	Corresponds to conduit size	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
EW-TEF 4.5	83281050	Black		4.30	6.80	18.00	1.6	100
EW-TEF 5.5	83281052	Black		5.50	7.80	20.00	1.9	50
EW-TEF 7.5	83281054	Black	M10/P07	7.60	10.70	20.00	3.0	50
EW-TEF 10	83281056	Black	M12/P09	9.80	13.00	30.00	3.5	50
EW-TEF 13	83281058	Black	M16/P11	12.40	16.00	35.00	5.9	50
EW-TEF 14	83281060	Black		13.80	17.80	40.00	8.1	50
EW-TEF 16	83281062	Black		15.50	19.60	45.00	9.7	50
EW-TEF 17	83281064	Black	M20/P16	16.60	21.10	45.00	9.8	50
EW-TEF 19	83281066	Black		18.60	23.30	55.00	11.0	50
EW-TEF 21	83281068	Black		20.10	25.00	60.00	13.0	50

## Type EW-PA-EX



### PRODUCT INFORMATION

The EW-PA-EX cable protection conduits are made of specially modified polyamide 12 a high discharge capacity. The material is halogen, phosphor and cadmium-free.

The EW-PA-EX cable protection conduits meet the ATEX 94/9/EG directive; they are characterised by a high discharge capacity for static electricity combined with excellent flexibility.

With the proper grounding connection they are suitable for potent dust explosion zones 20, 21 and 22, as well as in areas with zones

0, 1 and 2 gas explosion risks (independent of the explosion rating group of the gases present).

These EW-PA-EX conduit properties make them the perfect choice for industrial handling systems and robotics applications and in all areas where antistatic (ESD protection) equipment is required (mining, refineries, chemical industry).

### SPECIFICATIONS

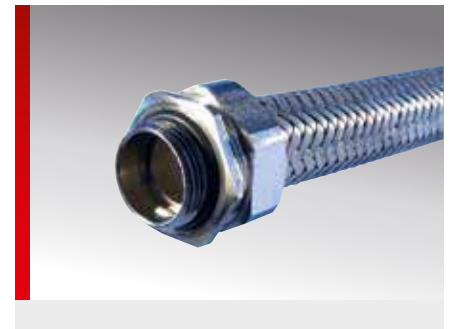
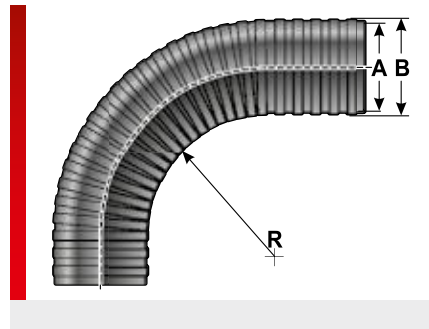
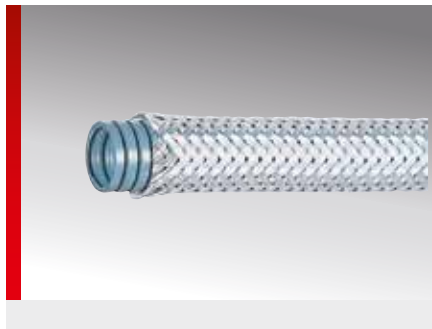
- 40 – 110 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 400 N
- In conformity with IEC EN 61386  
Cycles: > 1000000 ~
- In conformity with IEC EN 61386  
Tier: 4



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-PA-EX-M16/P11	83163654	Black	11.80	15.70	20.00	60.00	3.4	50
EW-PA-EX-M20/P16	83163656	Black	15.60	21.00	25.00	80.00	5.3	50
EW-PA-EX-M25/P21	83163658	Black	21.80	28.30	35.00	95.00	9.0	50
EW-PA-EX-M32/P29	83163660	Black	27.60	34.30	50.00	125.00	12.2	25
EW-PA-EX-M40/P36	83163662	Black	35.00	42.40	60.00	170.00	16.3	25
EW-PA-EX-M50/P48	83163664	Black	47.00	53.90	75.00	210.00	22.3	25
EW-PA-EX-70 Jumbo <sup>1)</sup>	83163666	Black	66.20	78.80	160.00	350.00	48.0	25
EW-PA-EX-95 Jumbo <sup>1)</sup>	83163668	Black	90.00	105.50	210.00	450.00	77.0	10

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EW-PAP (with metal braiding)



### PRODUCT INFORMATION

The EW-PAP cable protection conduits are made of specially modified polyamide 6 and coated with a galvanised steel wire. The materials are halogen, phosphor and cadmium-free.

The EW-PAP cable protection conduits are characterised by excellent crush resistance and very good thermal and mechanical protection. The conduits are used in mechanical and plant engineering, for example in the area of automated welding systems or in areas exposed to hot chippings at machining centres.

These cable protection conduits are also used for EMC applications. For static applications involving medium to high mechanical loads.

Applications:

- EMC applications
- In areas exposed to hot chippings
- In welding areas

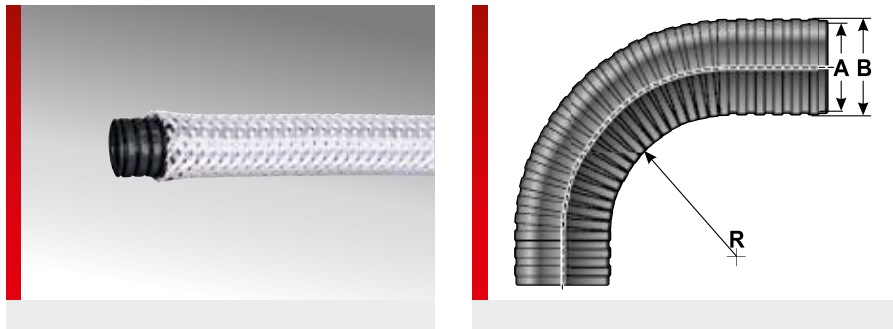
### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6  
Galvanised steel wire
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 1200 N
- In conformity with IEC EN 61386  
Cycles: > 24000 ~
- In conformity with IEC EN 61386  
System tear-out strength: > 700 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
EW-PAP-M12/P9	83141010	Grey	9.80	14.00	37.00	14.0	50
EW-PAP-M16/P11	83141012	Grey	12.30	16.80	58.00	16.0	50
EW-PAP-M20/P16	83141014	Grey	15.80	22.00	81.00	20.0	50
EW-PAP-M25/P21	83141016	Grey	22.40	29.40	95.00	36.0	50
EW-PAP-M32/P29	83141018	Grey	27.50	35.50	118.00	36.0	25
EW-PAP-M40/P36	83141020	Grey	35.50	43.50	162.00	50.0	25
EW-PAP-M50/P48	83141022	Grey	46.50	55.50	208.00	62.0	25

## Type EW-PATM (with metal braiding)



### PRODUCT INFORMATION

The EW-PATM cable protection conduits are made of specially modified polyamide 6 and coated with a galvanised steel wire. The materials are halogen, phosphor and cadmium-free.

The EW-PATM cable protection conduits feature good crush resistance, excellent thermal and mechanical protection, self-extinguish well and produce very low levels of smoke gas. Therefore it is suitable for use in both rail transport systems and exposed layouts in building service applications.

For static applications involving medium to high mechanical loads.

Specification:

- EN 45545-2 3x HL3

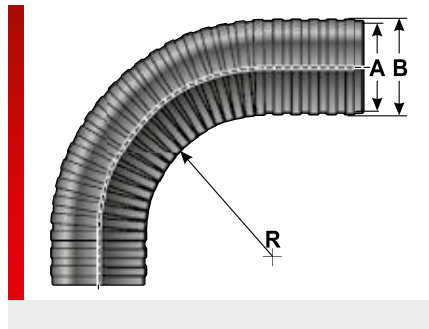
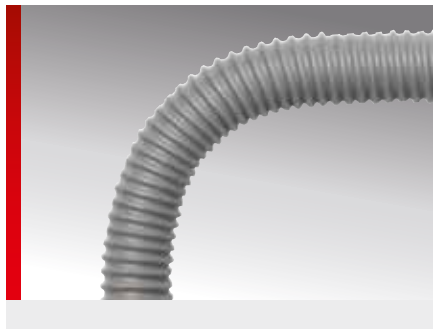
### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Acc. to UL94 V2 self-extinguishing S4
- In conformity with IEC EN 61386  
Crush resistance: > 1300 N
- In conformity with IEC EN 61386  
Cycles: > 1200 ~
- In conformity with IEC EN 61386  
Tier: 3
- In conformity with IEC EN 61386  
System tear-out strength: 500 N



Type	Order No.	Colour	A Ø mm	B Ø mm	Weight kg/100m	Pack m
EW-PATM-M25/P21	83142016	Black	22.40	30.00	36.0	50
EW-PATM-M40/P36	83142020	Black	36.00	44.50	50.0	25

## Type EL







### PRODUCT INFORMATION

The EL cable protection conduits are made of high-quality soft PVC, and the integrated support coil of rigid PVC. The conduits are suitable for continuous bending loads. The EL cable protection conduits are used mainly to protect electrical cables in control unit construction, apparatus and mechanical engineering and feature the following advantages:

- Very good flexibility
- Kink-resistant
- Hard-wearing
- Smooth interior (electric or pneumatic cables are easily inserted)

### SPECIFICATIONS

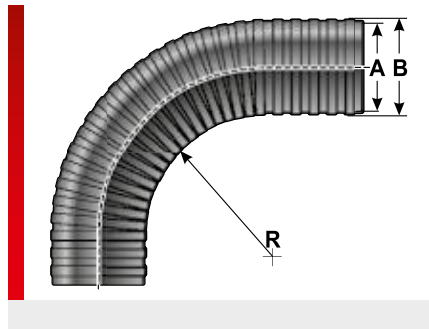
-  -15 – 60 °C
-  Polyvinyl chloride (PVC)
-  Acc. to UL94 V2 self-extinguishing
-  In conformity with IEC EN 61386  
Crush resistance: > 500 N

RoHS

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
EL 13 <sup>1)</sup>	83301054	Black	15.00	19.00	20.00	11.0	50
EL 16 <sup>1)</sup>	83301056	Black	16.00	21.00	21.00	12.0	50
EL 21	83301058	Black	22.00	27.00	27.00	19.0	50
EL 09	83301010	Grey	10.00	14.00	14.00	8.3	50
EL 11	83301012	Grey	13.00	17.00	17.00	10.0	50
EL 13	83301014	Grey	15.00	19.00	20.00	11.0	50
EL 16	83301016	Grey	16.00	21.00	21.00	12.0	50
EL 21	83301018	Grey	22.00	27.00	27.00	19.0	50
EL 29	83301020	Grey	30.00	35.00	35.00	22.0	25
EL 36	83301024	Grey	40.00	44.00	45.00	40.0	25
EL 36 <sup>1)</sup>	83301026	Grey	40.00	44.00	45.00	40.0	50
EL 48	83301030	Grey	50.00	56.00	55.00	49.0	25

<sup>1)</sup>Part to be phased out!

## Type ELS



### PRODUCT INFORMATION

The ELS cable protection conduits are made of high-quality soft PVC, and the integrated support coil of plastic coated spring steel. The conduits are suitable for high continuous bending and very high mechanical loads. The silicone and cadmium-free ELS cable protection conduits are used mainly to protect electrical cables in control unit construction, apparatus and mechanical engineering and feature the following advantages:

- Highly flexible
- Extremely small bending radius
- Dimensionally stable
- Hard-wearing and kink-resistant
- Air and liquid-tight

### SPECIFICATIONS

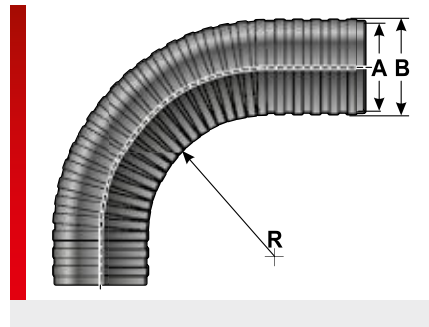
- 25 – 80 °C short term 100 °C
- Polyvinyl chloride (PVC)  
Spring steel
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 1200 N

RoHS

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
ELS 07 <sup>1)</sup>	83321050	Black	7.00	10.00	8.00	20.00	7.0	100
ELS 07	83321010	Grey	7.00	10.00	8.00	20.00	7.0	50
ELS 09	83321012	Grey	10.00	14.00	10.00	25.00	8.5	50
ELS 11	83321014	Grey	13.00	17.00	13.00	35.00	13.0	50
ELS 13	83321016	Grey	15.00	19.00	15.00	40.00	15.0	50
ELS 16	83321018	Grey	16.00	21.00	17.00	45.00	21.0	50
ELS 21	83321020	Grey	22.00	27.00	20.00	50.00	29.0	50
ELS 29	83321022	Grey	29.00	36.00	25.00	65.00	44.0	25
ELS 36	83321024	Grey	38.00	45.00	36.00	90.00	54.0	25
ELS 42 <sup>1)</sup>	83321026	Grey	44.00	52.00	38.00	95.00	72.0	25
ELS 48	83321028	Grey	48.00	56.00	40.00	100.00	88.0	25

<sup>1)</sup> Part to be phased out!

## Type EVK



### PRODUCT INFORMATION

The EVK cable protection conduits are made of high-quality soft PVC with approx. 30% nitrile rubber. The integrated support coil made of rigid PVC gives the conduit a high level of dimensional stability. This makes the conduits ideal for static applications involving high mechanical loads.

The EVK cable protection conduits are used mainly to protect electrical cables in machine construction and mechanical engineering and feature the following advantages:

- Excellent dimensional stability
- Hard-wearing and kink-resistant
- Weather-resistant and hard-wearing

### SPECIFICATIONS

- 15 – 60 °C
- Polyvinyl chloride (PVC)
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 650 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
EVK 07/E	83301252	Black	10.00	13.80	10.00	9.5	50
EVK 07	83301210	Grey	9.00	13.40	9.00	8.5	50
EVK 07/E	83301212	Grey	10.00	13.80	10.00	9.5	25
EVK 09/E	83301216	Grey	13.00	17.20	13.00	12.0	50
EVK 09	83301214	Grey	14.00	18.80	14.00	14.0	50
EVK 11/E <sup>1)</sup>	83301220	Grey	15.00	19.60	15.00	15.0	50
EVK 11	83301218	Grey	16.00	20.60	16.00	15.0	50
EVK 13 <sup>1)</sup>	83301222	Grey	19.00	24.00	19.00	17.0	50
EVK 16	83301224	Grey	20.00	24.60	20.00	21.0	50
EVK 21/E <sup>1)</sup>	83301228	Grey	22.00	26.60	22.00	23.0	50
EVK 21	83301226	Grey	27.00	32.20	27.00	25.0	50
EVK 21 without print	83980141	Grey	27.00	32.20	27.00	25.0	50
EVK 29/E	83301232	Grey	30.00	35.80	30.00	30.0	25
EVK 29	83301230	Grey	35.00	40.40	35.00	39.0	25
EVK 36/E	83301236	Grey	38.00	43.80	38.00	44.0	25
EVK 36 <sup>1)</sup>	83301234	Grey	45.00	51.20	45.00	51.0	25
EVK 42 <sup>1)</sup>	83301238	Grey	50.00	56.60	50.00	59.0	25
EVK 48 <sup>1)</sup>	83301240	Grey	55.00	62.20	55.00	65.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request



## Type GF (braided conduit)



### PRODUCT INFORMATION

The GF braided conduits are made of specially modified polyamide 6.6. With this material and the special braiding, the conduit is extremely durable and elastic in both the radial and axial directions.

The GF braided conduit is used to bundle and protect a large number of cables and individual wires of all types. The elastic braiding means that configuration of the conduit can be very variable.

Additional advantages of the GF braided conduit include:

- Very good mechanical and thermal resistance
- Good chemical resistance
- High flexibility
- Very high abrasion resistance

### SPECIFICATIONS

- 50 – 150 °C short term 175 °C
- Mod. polyamide PA 6.6
- Acc. to UL94 V2 self-extinguishing



Type	Order No.	Colour	Nominal widths NW	Size range mm	Surface covering in %	Weight kg/100m	Pack m
GF 4	83341010	Black	4.00	3.0 / 8.0	93.00	0.7	200
GF 6	83341012	Black	6.00	4.0 / 10.5	86.00	0.7	200
GF 8	83341014	Black	8.00	7.0 / 14.0	87.00	1.0	200
GF 10	83341016	Black	10.00	6.0 / 15.0	77.00	1.3	200
GF 12	83341018	Black	12.00	10.0 / 16.0	74.00	1.6	200
GF 16	83341020	Black	16.00	11.0 / 24.0	80.00	1.7	100
GF 20	83341022	Black	20.00	18.0 / 30.0	75.00	2.5	100
GF 22	83341024	Black	22.00	18.0 / 32.0	84.00	2.6	100
GF 30	83341026	Black	30.00	20.0 / 37.0	78.00	2.5	100
GF 40	83341028	Black	40.00	36.0 / 50.0	77.00	4.0	50
GF 50	83341030	Black	50.00	45.0 / 52.0	79.00	5.0	50
GF 70	83341032	Black	70.00	45.0 / 78.0	84.00	5.4	50
GF 4	83341050	Grey	4.00	3.0 / 8.0	93.00	0.45	200
GF 6	83341052	Grey	6.00	4.0 / 10.5	86.00	0.57	200
GF 8	83341054	Grey	8.00	7.0 / 14.0	87.00	0.81	200
GF 10	83341056	Grey	10.00	6.0 / 15.0	77.00	0.76	200
GF 12	83341058	Grey	12.00	10.0 / 16.0	74.00	0.8	200
GF 16	83341060	Grey	16.00	11.0 / 24.0	80.00	1.31	100
GF 20	83341062	Grey	20.00	18.0 / 30.0	75.00	1.41	100
GF 22	83341064	Grey	22.00	18.0 / 32.0	84.00	1.9	100
GF 30	83341066	Grey	30.00	20.0 / 37.0	78.00	2.17	100
GF 40	83341068	Grey	40.00	36.0 / 50.0	77.00	2.88	50
GF 50	83341070	Grey	50.00	45.0 / 52.0	79.00	3.62	50
GF 70	83341072	Grey	70.00	45.0 / 78.0	84.00	5.95	50

## Type GF-P (braided conduit)



### PRODUCT INFORMATION







The GF-P braided conduits are made of specially modified polyester. With this material and the special braiding, the conduit is extremely durable and elastic in both the radial and axial directions. It can be used to bundle and protect a large number of cables and individual wires of all types. The elastic braiding means that configuration of the conduit can be very variable.

Additional advantages of the GF-P braided conduit include:

- Very good mechanical and thermal resistance
- Good chemical resistance
- Very low levels of smoke gas
- Very high abrasion resistance

Specification:  
EN 45545-2 3x HL3

### SPECIFICATIONS

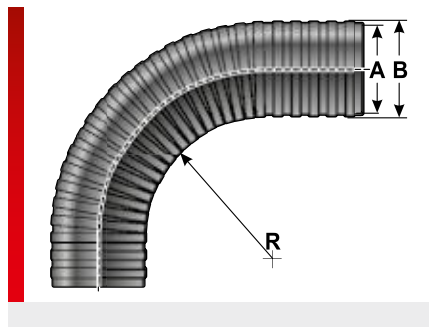
	-55 – 150 °C	
	mod. Polyester	
	Acc. to UL94 V2 self-extinguishing	
		

Type	Order No.	Colour	Nominal widths NW	Size range mm	Surface covering in %	Weight kg/100m	Pack m
GF-P 3	83342008	Black	4.00	3.0 / 8.0	93.00	0.41	500
GF-P 4	83342010	Black	4.00	3.0 / 10.0	93.00	0.58	200
GF-P 6	83342012	Black	6.00	4.0 / 10.5	86.00	0.7	200
GF-P 8	83342014	Black	8.00	6.0 / 14.0	87.00	0.74	200
GF-P 10	83342016	Black	10.00	6.0 / 15.0	77.00	0.91	200
GF-P 12	83342018	Black	12.00	10.0 / 16.0	74.00	0.94	200
GF-P 16	83342020	Black	16.00	11.0 / 22.0	80.00	1.5	100
GF-P 20	83342022	Black	20.00	12.0 / 30.0	75.00	1.75	100
GF-P 22	83342024	Black	22.00	18.0 / 32.0	84.00	1.9	100
GF-P 30	83342026	Black	30.00	20.0 / 38.0	78.00	2.65	100
GF-P 40	83342028	Black	40.00	28.0 / 42.0	77.00	3.18	50
GF-P 50	83342030	Black	50.00	45.0 / 50.0	79.00	3.88	50
GF-P 70	83342032	Black	70.00	45.0 / 87.0	87.00	5.94	50
GF-P 4	83342050	Grey	4.00	3.0 / 10.0	93.00	0.58	200
GF-P 6	83342052	Grey	6.00	4.0 / 10.5	86.00	0.7	200
GF-P 8	83342054	Grey	8.00	6.0 / 14.0	87.00	0.74	200
GF-P 10	83342056	Grey	10.00	6.0 / 15.0	77.00	0.91	200
GF-P 12	83342058	Grey	12.00	10.0 / 16.0	74.00	0.94	200
GF-P 16	83342060	Grey	16.00	11.0 / 22.0	80.00	1.5	100
GF-P 20	83342062	Grey	20.00	12.0 / 30.0	75.00	1.75	100
GF-P 22	83342064	Grey	22.00	18.0 / 32.0	84.00	1.9	100
GF-P 30	83342066	Grey	30.00	20.0 / 38.0	78.00	2.65	100
GF-P 40	83342068	Grey	40.00	28.0 / 42.0	77.00	3.18	50
GF-P 50	83342070	Grey	50.00	45.0 / 50.0	79.00	3.88	50
GF-P 70	83342072	Grey	70.00	45.0 / 87.0	87.00	5.94	50





## Type EWX-LS (high corrugation)



### PRODUCT INFORMATION

The EWX-LS cable protection conduits are made of specially modified polyethylene. The material is halogen, phosphor and cadmium-free.

For installation of pre-assembled cables, retrofitting or repairs in mechanical and plant engineering. For static applications involving light to medium mechanical loads.

The EWX-LS cable protection conduits have a higher corrugation and feature the following advantages:

- Excellent flexibility
- Less wear
- Good crush resistance
- Subsequent installation possible

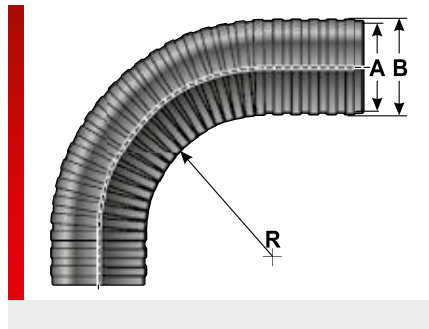
### SPECIFICATIONS

- 20 – 70 °C short term 90 °C
- Mod. polyethylene
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Cycles: > 1600 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>High corrugation</b>							
EWX-LS-M25/P21	83102218	Grey	19.30	28.30	49.00	9.0	50
EWX-LS-M32/P29	83102220	Grey	23.00	34.20	57.00	11.5	25
EWX-LS-M40/P36	83102222	Grey	28.70	42.30	71.00	15.0	25
EWX-LS-M50/P48	83102224	Grey	37.50	54.00	87.00	22.0	25

## Type EW-PA-LS



### PRODUCT INFORMATION

The EW-PA-LS cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.

The conduits are for universal use in both mechanical and plant engineering and vehicle engineering. With their slotted design, the conduits are ideally suited for retrofitting, repairs or for pre-assembled cables.

The EW-PA-LS cable protection conduits feature the following advantages:

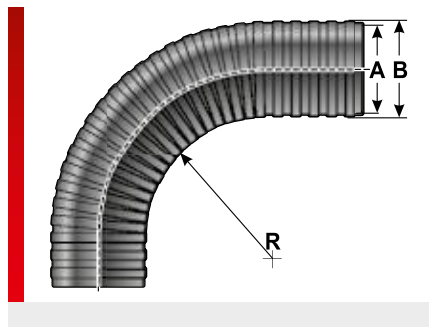
- High crush resistance
- Good flexibility
- Medium to high loads in static applications
- Subsequent installation possible

### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Cycles: > 24000 ~

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EW-PA-LS-06	83163850	Black	6.60	10.00	21.00	2.2	50
EW-PA-LS-M10/P7	83163851	Black	8.50	11.40	24.00	2.5	50
EW-PA-LS-M12/P9	83163852	Black	9.80	13.00	26.00	2.8	50
EW-PA-LS-M16/P11	83163854	Black	12.30	15.80	38.00	3.8	50
EW-PA-LS-M20/P16	83163856	Black	15.80	21.00	55.00	5.8	50
EW-PA-LS-M25/P21	83980092	Black	22.50	28.50	59.00	9.0	50

## Type EWX-PA-LS (high corrugation)



### PRODUCT INFORMATION

The EWX-PA-LS cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. For installation of pre-assembled cables, retrofitting or repair of cables. For static applications involving extreme mechanical loads.

The EWX-PA-LS cable protection conduits have a higher corrugation and feature the following advantages:

- Good flexibility
- Less wear
- Excellent crush resistance
- Subsequent installation possible

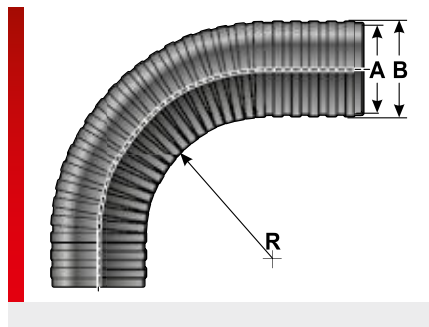
### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Cycles: > 13000 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>High corrugation</b>							
EWX-PA-LS-M25/P21	83163058	Black	19.80	28.10	49.00	10.5	50
EWX-PA-LS-M32/P29	83163060	Black	24.10	34.50	57.00	12.7	25
EWX-PA-LS-M40/P36	83163062	Black	29.70	42.10	71.00	20.5	25
EWX-PA-LS-M50/P48	83163064	Black	38.00	54.10	87.00	23.0	25

## Type EWX-PP-LS (high corrugation)



### PRODUCT INFORMATION

The self-extinguishing EWX-PP cable protection conduits are made of specially modified polypropylene. The material is phosphor and cadmium-free.

For static and dynamic applications involving medium to high mechanical loads, as well as the installation of pre-assembled cables, retrofitting or repair of cables.

The EWX-PP-LS cable protection conduits have a higher corrugation and feature the following advantages:

- Good flexibility
- Less wear
- Excellent crush resistance
- Subsequent installation possible
- Chemical resistance

### SPECIFICATIONS

- 40 – 130 °C short term 150 °C
- Mod. Polypropylene
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Cycles: > 2000000 ~

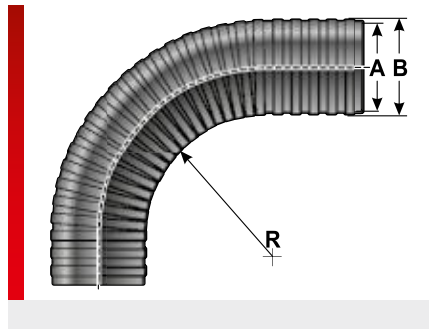


Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-PP-LS M25/P21 <sup>1)</sup>	83203058	Black	18.30	28.00	50.00	110.00	9.0	50
EWX-PP-LS M32/P29 <sup>1)</sup>	83203060	Black	22.60	34.20	60.00	120.00	12.2	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request



## Type EWX-PAE-LS (high corrugation)



### PRODUCT INFORMATION

The EWX-PAE-LS cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free. With its excellent flexural fatigue strength, this product is ideal for robotics engineering and in the area of handling systems. For installation of pre-assembled cables, retrofitting or repair of cables. For dynamic applications involving light to medium mechanical loads.

The EWX-PAE-LS cable protection conduits have a higher corrugation and feature the following advantages:

- Very good flexibility
- Excellent flexural fatigue strength
- Less wear
- Good crush resistance
- Subsequent installation possible

### SPECIFICATIONS

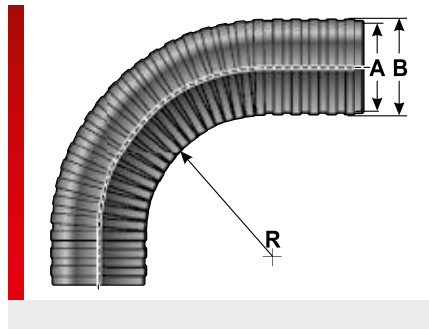
- 40 – 120 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Cycles: > 5000000 ~
- In conformity with IEC EN 61386  
Tier: 4



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-PAE-LS-M20/P16	83182256	Black	13.30	21.10	36.00	77.00	6.0	50
EWX-PAE-LS-M25/P21	83182258	Black	19.20	28.20	49.00	104.00	11.0	50
EWX-PAE-LS-M32/P29	83182260	Black	23.10	34.50	57.00	117.00	14.0	25
EWX-PAE-LS-M40/P36	83182262	Black	28.50	42.20	71.00	146.00	18.2	25
EWX-PAE-LS-M50/P48	83182264	Black	36.50	53.60	87.00	167.00	24.0	25
EWX-PAE-LS-56 Jumbo <sup>1)</sup>	83182278	Black	51.70	67.70	95.00	220.00	40.0	25
EWX-PAE-LS-70 Jumbo	83182280	Black	64.30	80.30	115.00	235.00	52.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWX-HY-LS (high corrugation)



### PRODUCT INFORMATION

The EWX-HY-LS cable protection conduits are made of specially modified thermoplastic elastomer. The material is halogen, phosphor and cadmium-free.

With its excellent flexural fatigue strength, this product is ideal for robotics engineering and in the area of handling systems. For installation of pre-assembled cables, retrofitting or repair of cables. For dynamic applications involving light to medium mechanical loads.

The EWX-HY-LS cable protection conduits have a higher corrugation and feature the following advantages:

- Very good flexibility
- Excellent flexural fatigue strength
- Less wear
- Good crush resistance
- Subsequent installation possible

### SPECIFICATIONS

- 45 – 160 °C short term 180 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Cycles: > 100000 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-HY-LS-M25/P21	83122258	Black	19.80	28.10	49.00	104.00	11.5	50
EWX-HY-LS-M32/P29	83122260	Black	24.10	34.50	57.00	117.00	17.5	25
EWX-HY-LS-M40/P36	83122262	Black	29.70	42.10	71.00	146.00	22.0	25
EWX-HY-LS-M50/P48	83122264	Black	38.00	54.10	87.00	167.00	30.4	25
EWX-HY-LS-56 Jumbo <sup>1)</sup>	83122278	Black	52.00	68.00	95.00	220.00	45.0	25
EWX-HY-LS-70 Jumbo <sup>1)</sup>	83122282	Black	64.00	80.00	115.00	235.00	63.0	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type GF-P-LS



### PRODUCT INFORMATION

The self-retracting fabric conduit with longitudinal slot provides excellent mechanical protection against abrasion for your cords. First off it prevents rattling even better, plus it can be installed at any place and at any time.

Additional advantages of the GF-P-LS braided conduit include:

- High mechanical protection
- Light-weight / low mass
- High flexibility
- Great chemical resistance
- Flame resistant

Specification:

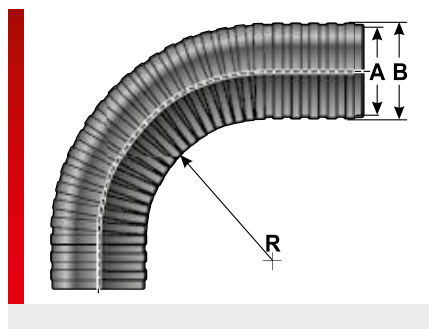
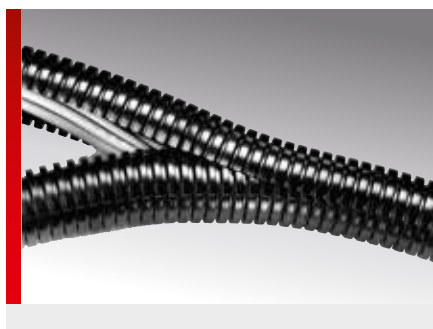
- EN 45545-2 2x HL3 1X HL2

### SPECIFICATIONS

	-55 – 150 °C short term 175 °C	
	mod. Polyester	
	UL 224 / FMV SS302 self-extinguishing Type B	

Type	Order No.	Colour	Nominal widths NW	Size range mm	Weight kg/100m	Pack m
GF-P-LS-5	83342110	Black	5.00	3.0 / 5.0	1.71	25
GF-P-LS-8	83342112	Black	8.00	5.0 / 8.0	2.12	25
GF-P-LS-10	83342114	Black	10.00	8.0 / 10.0	2.43	25
GF-P-LS-13	83342116	Black	13.00	10.0 / 13.0	2.54	25
GF-P-LS-16	83342118	Black	16.00	13.0 / 16.0	3.38	25
GF-P-LS-19	83342120	Black	19.00	16.0 / 19.0	3.38	25
GF-P-LS-25	83342122	Black	25.00	22.0 / 25.0	4.81	25
GF-P-LS-29	83342124	Black	29.00	26.0 / 29.0	5.18	25
GF-P-LS-32	83342126	Black	32.00	29.0 / 32.0	6.35	25
GF-P-LS-38	83342128	Black	38.00	32.0 / 44.0	7.56	25
GF-P-LS-50	83342130	Black	50.00	44.0 / 50.0	7.56	25

## Type EWT-PA split-flex®



### PRODUCT INFORMATION

The EWT-PA cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The conduits are suitable for static applications involving light to medium mechanical loads. The EWT-PA cable protection conduits consist of a two-piece slotted conduit system and feature the following advantages:

- Cable protection conduits can be opened and closed at any time.
- Mounting of pre-assembled cables
- Retrofitting or repair in mechanical and plant engineering

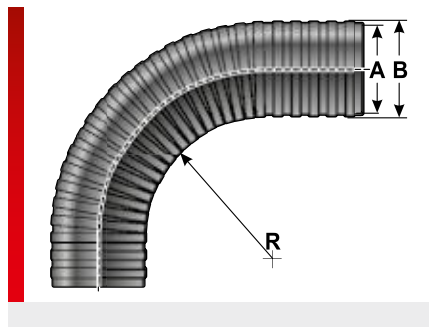
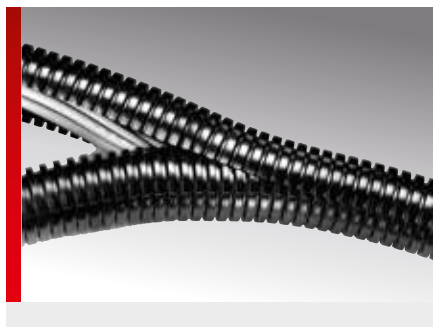
### SPECIFICATIONS

- 40 – 120 °C short term 160 °C
- Mod. polyamide PA 6
- Acc. to UL94 HB
- In conformity with IEC EN 61386  
Crush resistance: > 900 N
- In conformity with IEC EN 61386  
Cycles: > 15000 ~

RoHS
 HF
 Made in Germany

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWT-PA-M10/P7	83164250	Black	5.70	11.50	70.00	3.7	50
EWT-PA-M12/P9	83164252	Black	7.90	12.90	75.00	4.6	50
EWT-PA-M16/P11	83164254	Black	10.00	16.20	100.00	7.2	50
EWT-PA-M20/P16	83164256	Black	13.70	21.00	120.00	11.0	50
EWT-PA-M25/P21	83164258	Black	19.80	28.40	170.00	16.6	50
EWT-PA-M32/P29	83164260	Black	25.00	34.20	180.00	21.0	25
EWT-PA-M40/P36	83164262	Black	32.30	43.50	200.00	29.3	25
EWT-PA-M50/P48	83164264	Black	44.00	53.30	240.00	40.0	25
EWT-PA-70 Jumbo	83261022	Black	62.20	79.00	300.00	53.0	10

## Type EWT-PAT split-flex®



### PRODUCT INFORMATION

The EWT-PAT cable protection conduits are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free.

The EWT-PAT cable protection conduits feature excellent crush resistance, self-extinguish very well and produce very low levels of smoke gas. For static applications involving medium to high mechanical loads. The EWT-PAT cable protection conduits consist of a two-piece slotted conduit system and feature the following advantages:

- Cable protection conduits can be opened and closed at any time.
- Mounting of pre-assembled cables
- Retrofitting or repair in mechanical and plant engineering

Specification:

- EN 45545-2 3x HL3
- Fire test in accordance with UL1696

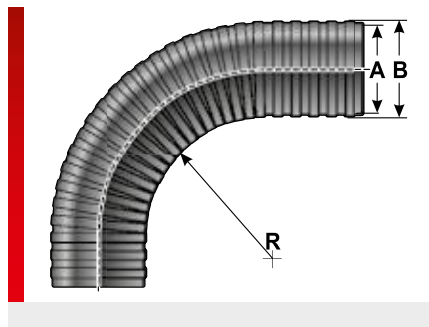
### SPECIFICATIONS

- 40 – 120 °C short term 180 °C
- Mod. polyamide PA 6
- Acc. to UL94 V2 self-extinguishing S4
- In conformity with IEC EN 61386  
Crush resistance: > 1000 N
- In conformity with IEC EN 61386  
Cycles: > 1200 ~



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>							
EWT-PAT-M12/P9	83165152	Black	7.90	12.90	75.00	4.6	50
EWT-PAT-M16/P11	83165154	Black	10.00	16.20	100.00	7.2	50
EWT-PAT-M20/P16	83165156	Black	16.60	21.20	120.00	11.0	50
EWT-PAT-M25/P21	83165158	Black	22.40	28.50	170.00	16.0	50
EWT-PAT-M32/P29	83165160	Black	25.00	34.20	180.00	21.0	25
EWT-PAT-M40/P36	83165162	Black	32.30	43.50	200.00	29.3	25
EWT-PAT-M50/P48	83165164	Black	44.00	53.30	240.00	37.8	25

## Type EWT-PP split-flex®



### PRODUCT INFORMATION

The EWT-PP cable protection conduits are made of specially modified polypropylene. The material is phosphor and cadmium-free. For static applications involving light to medium mechanical loads. The EWT-PP cable protection conduits consist of a two-piece slotted corrugated conduit system and feature the following advantages:

- Corrugated conduits can be opened and closed at any time.
- Mounting of pre-assembled cables
- Retrofitting or repair in mechanical and plant engineering

### SPECIFICATIONS

- 40 – 130 °C short term 150 °C
- Mod. Polypropylene
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386  
Crush resistance: > 700 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EWT-PP-M10/P7	83204250	Black	5.70	11.50	55.00	190.00	3.2	50
EWT-PP-M12/P9	83204252	Black	7.90	12.90	60.00	210.00	4.0	50
EWT-PP-M16/P11	83204254	Black	10.40	16.00	75.00	260.00	5.6	50
EWT-PP-M20/P16	83204256	Black	13.90	20.60	85.00	295.00	8.8	50
EWT-PP-M25/P21	83204258	Black	20.60	28.00	130.00	455.00	12.2	50
EWT-PP-M32/P29	83204260	Black	25.60	34.00	140.00	490.00	16.5	25
EWT-PP-M40/P36	83204262	Black	31.80	43.00	160.00	560.00	26.6	25
EWT-PP-M50/P48	83204264	Black	42.50	53.00	170.00	595.00	32.2	25
EWT-PP-70 Jumbo	83261062	Black	60.50	78.00	190.00	655.00	44.0	10



**Conduit connection / bulkhead fitting**

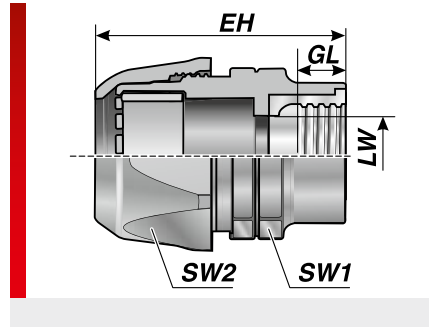






**m-top conduit fitting**

## Type IVG (metal internal thread)



### PRODUCT INFORMATION

The IVG conduit fittings are made of specially modified polyamide 6, thermoplastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free. The IVG conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K to 6 bar without any add-on components to DIN IEC 60529/A1

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

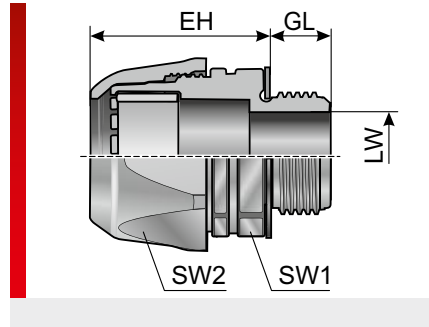
- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Nickel-plated brass
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal inside threading</b>									
IVG M12-M	83571052	Black	M12x1.5	M12/P09	31.00	8.00	6.50	19.0 / 20.0	50
IVG M16-M	83571054	Black	M16x1,5	M16/P11	37.00	8.00	10.00	22.0 / 25.0	50
IVG M20-M	83571056	Black	M20x1.5	M20/P16	45.00	10.00	14.00	27.0 / 33.0	50
IVG M25-M	83571058	Black	M25x1.5	M25/P21	47.00	10.00	18.30	33.0 / 41.0	50
IVG M32-M	83571060	Black	M32x1.5	M32/P29	56.00	13.00	24.00	43.0 / 50.0	25
IVG M40-M <sup>1)</sup>	83571062	Black	M40x1.5	M40/P36	70.00	14.00	33.00	54.0 / 60.0	25
IVG M50-M	83571064	Black	M50x1.5	M50/P48	80.00	15.00	44.00	67.0 / 75.0	10

<sup>1)</sup>With CSA approval

## Type VG (plastic thread)



### PRODUCT INFORMATION

The VG conduit fittings are made of specially modified polyamide 6 and thermoplastic elastomer. The materials are halogen, phosphor and cadmium-free. The VG conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K to 6 bar and without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

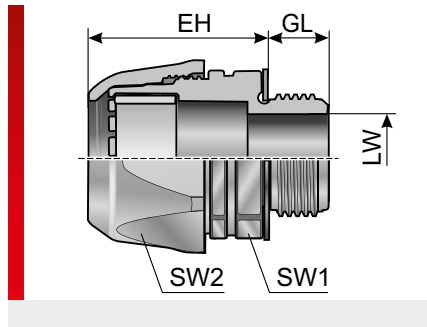
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 / 2 mm	Pack qty.
<b>Metric plastic thread</b>									
VG M12-K <sup>(1)</sup>	83511052	Black	M12x1.5	M12/P09	21.00	12.00	7.20	20.0 / 20.0	50
VG M16-K <sup>(1)</sup>	83511054	Black	M16x1,5	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG M20-K <sup>(1)</sup>	83511056	Black	M20x1.5	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG M25-K <sup>(1)</sup>	83511058	Black	M25x1.5	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG M32-K <sup>(1)</sup>	83511060	Black	M32x1.5	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG M40-K <sup>(2)</sup>	83511062	Black	M40x1.5	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG M50-K <sup>(1)</sup>	83511064	Black	M50x1.5	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10
<b>Pg plastic threading</b>									
VG P9-K <sup>(1)</sup>	83511452	Black	Pg 09	M12/P09	21.00	12.00	7.20	20.0 / 20.0	50
VG P11-K <sup>(1)</sup>	83511454	Black	Pg 11	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG P16-K <sup>(1)</sup>	83511456	Black	Pg 16	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG P21-K <sup>(1)</sup>	83511458	Black	Pg 21	M25/P21	37.00	13.00	22.00	41.0 / 41.0	50
VG P29-K <sup>(1)</sup>	83511460	Black	Pg 29	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG P36-K <sup>(2)</sup>	83511462	Black	Pg 36	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG P48-K <sup>(1)</sup>	83511464	Black	Pg 48	M50/P48	60.00	17.00	49.00	75.0 / 75.0	10

**Type VG (plastic thread)** (Continued...)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 / 2 mm	Pack qty.
VG P9-K <sup>1)</sup>	83511412	Grey	Pg 09	M12/P09	21.00	12.00	7.20	20.0 / 20.0	50
VG P11-K <sup>1)</sup>	83511414	Grey	Pg 11	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG P16-K <sup>1)</sup>	83511416	Grey	Pg 16	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG P21-K <sup>1)</sup>	83511418	Grey	Pg 21	M25/P21	37.00	13.00	22.00	41.0 / 41.0	50
VG P29-K <sup>1)</sup>	83511420	Grey	Pg 29	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG P36-K <sup>2)</sup>	83511422	Grey	Pg 36	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG P48-K <sup>1)</sup>	83511424	Grey	Pg 48	M50/P48	60.00	17.00	49.00	75.0 / 75.0	10
<b>NPT plastic threading</b>									
VG N 3/8"-K <sup>1)</sup>	83511850	Black	3/8"	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG N 1/2"-K <sup>1)</sup>	83511852	Black	1/2"	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG N 3/4"-K <sup>1)</sup>	83511854	Black	3/4"	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG N 1"-K <sup>1)</sup>	83511856	Black	1"	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG N 1 1/4"-K <sup>2)</sup>	83511858	Black	1 1/4"	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG N 2"-K <sup>1)</sup>	83511860	Black	2"	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10
VG N 3/8"-K <sup>3)</sup>	83511810	Grey	3/8"	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG N 1/2"-K <sup>1)</sup>	83511812	Grey	1/2"	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG N 3/4"-K <sup>1)</sup>	83511814	Grey	3/4"	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG N 1"-K <sup>1)</sup>	83511816	Grey	1"	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG N 1 1/4"-K <sup>2)</sup>	83511818	Grey	1 1/4"	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG N 2"-K <sup>4)</sup>	83511820	Grey	2"	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10

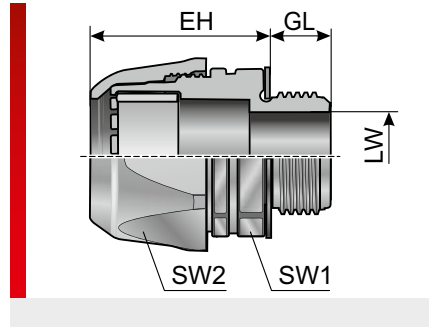
<sup>1)</sup> With cURus- approval

<sup>2)</sup> With CSA- and cURus- approval

<sup>3)</sup> With cURus approval, - min. order quantity 1000 pcs

<sup>4)</sup> With cURus approval, - min. order quantity 400 pcs

## Type VG (metal thread)



### PRODUCT INFORMATION

The VG conduit fittings are made of specially modified polyamide 6, thermoplastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free. The VG conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

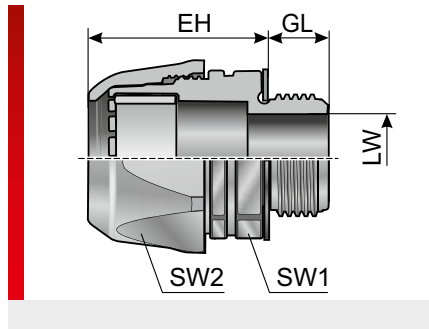
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Nickel-plated brass
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal thread</b>									
VG M12-M <sup>1)</sup>	83511252	Black	M12x1.5	M12/P09	21.00	12.00	7.20	20.0 / 20.0	50
VG M16x1.5/09-M <sup>1)</sup>	83511253	Black	M16x1,5	M12/P09	21.00	12.00	10.50	20.0 / 20.0	50
VG M16-M <sup>1)</sup>	83511254	Black	M16x1,5	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG M20x1.5/11-M <sup>1)</sup>	83511255	Black	M20x1.5	M16/P11	27.00	13.00	14.60	25.0 / 25.0	50
VG M20-M <sup>1)</sup>	83511256	Black	M20x1.5	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG M25x1.5/16-M <sup>1)</sup>	83511257	Black	M25x1.5	M20/P16	35.00	13.00	19.00	33.0 / 33.0	50
VG M25-M <sup>1)</sup>	83511258	Black	M25x1.5	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG M32x1.5/21-M <sup>1)</sup>	83511259	Black	M32x1.5	M25/P21	37.00	14.00	26.00	41.0 / 41.0	25
VG M32-M <sup>1)</sup>	83511260	Black	M32x1.5	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG M40x1.5/29-M <sup>1)</sup>	83511261	Black	M40x1.5	M32/P29	46.00	17.00	33.50	50.0 / 50.0	25
VG M40-M <sup>2)</sup>	83511262	Black	M40x1.5	M40/P36	53.00	17.00	32.00	60.0 / 60.0	25
VG M50x1.5/36-M <sup>1)</sup>	83511263	Black	M50x1.5	M40/P36	53.00	17.00	41.20	60.0 / 60.0	10
VG M50-M <sup>1)</sup>	83511264	Black	M50x1.5	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10
VG M63x1.5/48-M <sup>1)</sup>	83511266	Black	M63x1.5	M50/P48	60.00	17.00	50.30	75.0 / 75.0	10
VG M12-M <sup>1)</sup>	83511212	Grey	M12x1.5	M12/P09	21.00	12.00	7.20	20.0 / 20.0	50
VG M16-M <sup>1)</sup>	83511214	Grey	M16x1,5	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG M20-M <sup>1)</sup>	83511216	Grey	M20x1.5	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG M25-M <sup>1)</sup>	83511218	Grey	M25x1.5	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG M32-M <sup>1)</sup>	83511220	Grey	M32x1.5	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG M40-M <sup>2)</sup>	83511222	Grey	M40x1.5	M40/P36	53.00	17.00	32.00	60.0 / 60.0	25
VG M50-M <sup>1)</sup>	83511224	Grey	M50x1.5	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10
VG M63x1.5/48-M <sup>1)</sup>	83511226	Grey	M63x1.5	M50/P48	60.00	17.00	50.30	75.0 / 75.0	10

**Type VG (metal thread)** (Continued...)

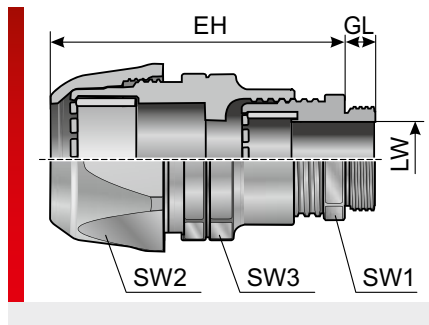


Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 / 2 mm	Pack qty.
<b>Pg-metal threading</b>									
VG P9-M <sup>1)</sup>	83511652	Black	Pg 09	M12/P09	21.00	12.00	7.20	20.0 / 20.0	50
VG P11-M <sup>1)</sup>	83511654	Black	Pg 11	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG P16-M <sup>1)</sup>	83511656	Black	Pg 16	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG P21-M <sup>1)</sup>	83511658	Black	Pg 21	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG P29-M <sup>1)</sup>	83511660	Black	Pg 29	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG P36-M <sup>2)</sup>	83511662	Black	Pg 36	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG P48-M <sup>1)</sup>	83511664	Black	Pg 48	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10
<b>Grey variants</b>									
VG P9-M <sup>1)</sup>	83511612	Grey	Pg 09	M12/P09	21.00	12.00	7.20	20.0 / 20.0	50
VG P11-M <sup>1)</sup>	83511614	Grey	Pg 11	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG P16-M <sup>1)</sup>	83511616	Grey	Pg 16	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG P21-M <sup>1)</sup>	83511618	Grey	Pg 21	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG P29-M <sup>1)</sup>	83511620	Grey	Pg 29	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG P36-M <sup>2)</sup>	83511622	Grey	Pg 36	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG P48-M <sup>1)</sup>	83511624	Grey	Pg 48	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10
<b>NPT metal threading</b>									
VG N 3/8"-M <sup>1)</sup>	83512050	Black	3/8"	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG N 1/2"-M <sup>1)</sup>	83512052	Black	1/2"	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG N 3/4"-M <sup>1)</sup>	83512054	Black	3/4"	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG N 1"-M <sup>1)</sup>	83512056	Black	1"	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG N 1 1/4"-M <sup>2)</sup>	83512058	Black	1 1/4"	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG N 2"-M <sup>1)</sup>	83512060	Black	2"	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10
<b>Grey variants</b>									
VG N 3/8"-M <sup>1)</sup>	83512010	Grey	3/8"	M16/P11	27.00	12.00	10.50	25.0 / 25.0	50
VG N 1/2"-M <sup>1)</sup>	83512012	Grey	1/2"	M20/P16	35.00	13.00	14.60	33.0 / 33.0	50
VG N 3/4"-M <sup>1)</sup>	83512014	Grey	3/4"	M25/P21	37.00	13.00	19.00	41.0 / 41.0	50
VG N 1"-M <sup>1)</sup>	83512016	Grey	1"	M32/P29	46.00	14.00	26.00	50.0 / 50.0	25
VG N 1 1/4"-M <sup>2)</sup>	83512018	Grey	1 1/4"	M40/P36	53.00	17.00	33.50	60.0 / 60.0	25
VG N 2"-M <sup>1)</sup>	83512020	Grey	2"	M50/P48	60.00	17.00	41.20	75.0 / 75.0	10

<sup>1)</sup> With cURus- approval

<sup>2)</sup> With CSA- and cURus- approval

## Type CVG (conduit and cable fitting, plastic thread)



### PRODUCT INFORMATION

The CVG combined conduit and cable fittings are made of specially modified polyamide 6 and thermoplastic elastomer. The materials are halogen, phosphor and cadmium-free.

The CVG combined conduit and cable fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- Optimum strain relief for the cable
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:  
• EN 45545-2 3x HL3

### SPECIFICATIONS

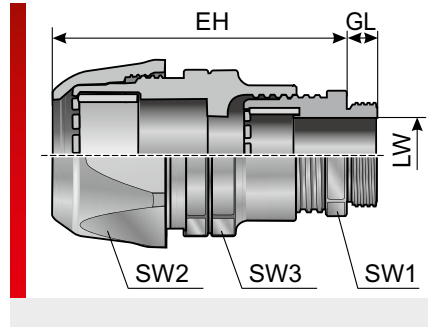
- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	Clamping range (LW) mm	SW 1 / 2 / 3 mm	Pack qty.
<b>Metric plastic thread</b>									
CVG M12-K	83531050	Black	M12x1.5	M12/P09	39.00	8.00	3.0 – 6.5	15.0 / 20.0 / 20.0	50
CVG M16-K	83531052	Black	M16x1,5	M16/P11	45.00	8.00	4.0 – 8.0	22.0 / 25.0 / 25.0	50
CVG M20-K	83531056	Black	M20x1.5	M20/P16	55.00	9.00	6.0 – 12.0	24.0 / 33.0 / 33.0	50
CVG M25-K	83531058	Black	M25x1.5	M25/P21	57.00	11.00	13.0 – 18.0	33.0 / 42.0 / 40.0	50
CVG M32-K	83531060	Black	M32x1.5	M32/P29	69.00	11.00	18.0 – 25.0	42.0 / 50.0 / 50.0	25
CVG M40-K <sup>1)</sup>	83531062	Black	M40x1.5	M40/P36	84.00	13.00	22.0 – 32.0	53.0 / 60.0 / 60.0	25
CVG M63-K	83531064	Black	M63x1.5	M50/P48	94.00	14.00	37.0 – 44.0	60.0 / 75.0 / 73.0	10

<sup>1)</sup>With CSA approval

## Type CVG EMV (conduit and cable fitting, metal thread)



### PRODUCT INFORMATION

The CVG EMV combined conduit and cable fittings are made of specially modified polyamide 6, thermoplastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free.

The CVG EMV combined conduit and cable fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- Optimum strain relief for the cable
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Nickel-plated brass
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)

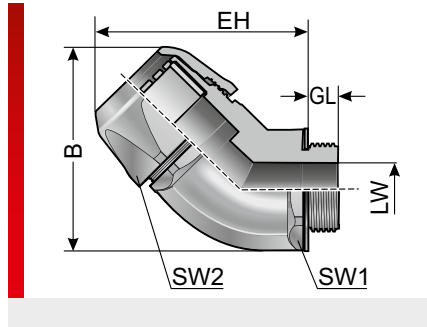


Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	Clamping range (LW) mm	SW 1 / 2 / 3 mm	Pack qty.
<b>Metric metal thread / EMC version</b>									
CVG M12 EMV	83551050	Black	M12x1.5	M12/P09	39.00	6.50	3.0 – 6.5	14.0 / 20.0 / 20.0	50
CVG M16 EMV	83551052	Black	M16x1.5	M16/P11	45.00	6.00	5.0 – 8.0	20.0 / 25.0 / 25.0	50
CVG M20 EMV	83551056	Black	M20x1.5	M20/P16	55.00	6.00	10.0 – 14.0	24.0 / 33.0 / 33.0	50
CVG M25 EMV	83551058	Black	M25x1.5	M25/P21	57.00	7.00	13.0 – 18.0	30.0 / 42.0 / 40.0	50
CVG M32 EMV	83551060	Black	M32x1.5	M32/P29	69.00	8.00	18.0 – 25.0	40.0 / 50.0 / 50.0	25
CVG M40 EMV <sup>1)</sup>	83551062	Black	M40x1.5	M40/P36	84.00	8.00	22.0 – 32.0	50.0 / 60.0 / 60.0	25
CVG M50-EMV	83551063	Black	M50x1.5	M50/P48	94.00	10.00	37.0 – 44.0	68.0 / 75.0 / 75.0	10
CVG M63 EMV	83551064	Black	M63x1.5	M50/P48	94.00	10.00	37.0 – 44.0	68.0 / 75.0 / 75.0	10
<b>Metric metal thread / EMC version with extended thread</b>									
CVG/L M12 EMV	83551650	Black	M12x1.5	M12/P09	39.00	10.00	3.0 – 6.5	14.0 / 20.0 / 20.0	50
CVG/L M16 EMV	83551652	Black	M16x1.5	M16/P11	45.00	10.00	5.0 – 10.0	20.0 / 25.0 / 25.0	50
CVG/L M20 EMV	83551656	Black	M20x1.5	M20/P16	55.00	10.00	10.0 – 14.0	24.0 / 33.0 / 33.0	50
CVG/L M25 EMV	83551658	Black	M25x1.5	M25/P21	57.00	12.00	13.0 – 18.0	33.0 / 41.0 / 40.0	50
CVG/L M32 EMV	83551660	Black	M32x1.5	M32/P29	69.00	12.00	18.0 – 25.0	40.0 / 50.0 / 50.0	25
CVG/L M40 EMV <sup>1)</sup>	83551662	Black	M40x1.5	M40/P36	84.00	15.00	22.0 – 32.0	50.0 / 60.0 / 60.0	25
CVG/L M50-EMV	83551663	Black	M50x1.5	M50/P48	94.00	15.00	37.0 – 44.0	68.0 / 75.0 / 75.0	10

<sup>1)</sup> With CSA approval



## Type VW 45° (plastic thread)



### PRODUCT INFORMATION

The VW 45° conduit fittings are made of specially modified polyamide 6 and thermo-plastic elastomer. The materials are halogen, phosphor and cadmium-free. The VW 45° conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K without any add-on components to EN 60529

Specification:

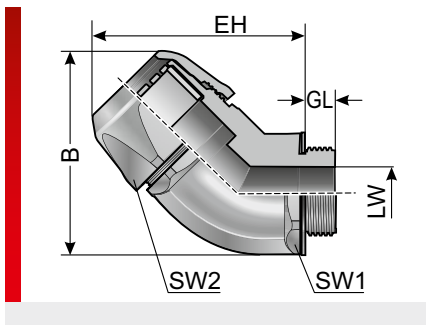
- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 mm	Pack qty.
<b>Metric plastic thread</b>										
VW 45 M12-K <sup>1)</sup>	83513052	Black	M12x1.5	M12/P09	38.00	12.00	7.20	36.00	21.0 / 21.0	50
VW 45 M16-K <sup>1)</sup>	83513054	Black	M16x1,5	M16/P11	45.00	12.00	10.50	43.00	27.0 / 27.0	50
VW 45 M20-K <sup>1)</sup>	83513056	Black	M20x1.5	M20/P16	56.00	13.00	14.60	52.00	34.0 / 34.0	50
VW 45 M25-K <sup>1)</sup>	83513058	Black	M25x1.5	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 M32-K <sup>1)</sup>	83513060	Black	M32x1.5	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 M40-K <sup>2)</sup>	83513062	Black	M40x1.5	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 M50-K <sup>1)</sup>	83513064	Black	M50x1.5	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10
<b>Pg plastic threading</b>										
VW 45 P9-K <sup>1)</sup>	83513452	Black	Pg 09	M12/P09	38.00	12.00	7.20	36.00	21.0 / 21.0	50
VW 45 P11-K <sup>1)</sup>	83513454	Black	Pg 11	M16/P11	45.00	12.00	10.50	43.00	27.0 / 27.0	50
VW 45 P16-K <sup>1)</sup>	83513456	Black	Pg 16	M20/P16	56.00	13.00	14.60	52.00	34.0 / 34.0	50
VW 45 P21-K <sup>1)</sup>	83513458	Black	Pg 21	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 P29-K <sup>1)</sup>	83513460	Black	Pg 29	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 P36-K <sup>2)</sup>	83513462	Black	Pg 36	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 P48-K <sup>1)</sup>	83513464	Black	Pg 48	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10

**Type VW 45° (plastic thread)** (Continued...)

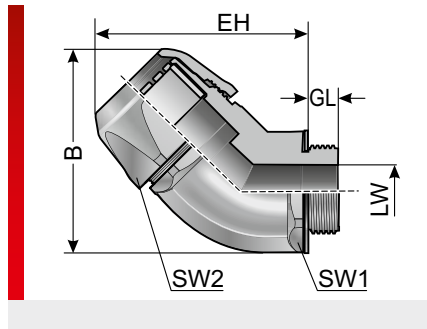


Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 mm	Pack qty.
VW 45 P9-K <sup>1)</sup>	83513412	Grey	Pg 09	M12/P09	38.00	12.00	7.20	36.00	21.0 / 21.0	50
VW 45 P11-K <sup>1)</sup>	83513414	Grey	Pg 11	M16/P11	45.00	12.00	10.50	43.00	27.0 / 27.0	50
VW 45 P16-K <sup>1)</sup>	83513416	Grey	Pg 16	M20/P16	56.00	13.00	14.60	52.00	34.0 / 34.0	50
VW 45 P21-K <sup>1)</sup>	83513418	Grey	Pg 21	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 P29-K <sup>1)</sup>	83513420	Grey	Pg 29	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 P36-K <sup>2)</sup>	83513422	Grey	Pg 36	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 P48-K <sup>1)</sup>	83513424	Grey	Pg 48	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10
<b>NPT plastic threading</b>										
VW 45 NPT 3/8"-K <sup>1)</sup>	83513850	Black	3/8"	M16/P11	45.00	12.00	10.50	43.00	25.0 / 25.0	50
VW 45 NPT 1/2"-K <sup>1)</sup>	83513852	Black	1/2"	M20/P16	56.00	13.00	14.60	52.00	33.0 / 33.0	50
VW 45 NPT 3/4"-K <sup>1)</sup>	83513854	Black	3/4"	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 NPT 1"-K <sup>1)</sup>	83513856	Black	1"	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 NPT 1 1/4"-K <sup>2)</sup>	83513858	Black	1 1/4"	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 NPT 2"-K <sup>1)</sup>	83513860	Black	2"	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10
VW 45 NPT 3/8"-K <sup>1)</sup>	83513810	Grey	3/8"	M16/P11	45.00	12.00	10.50	43.00	25.0 / 25.0	50
VW 45 NPT 1/2"-K <sup>1)</sup>	83513812	Grey	1/2"	M20/P16	56.00	13.00	14.60	52.00	33.0 / 33.0	50
VW 45 NPT 3/4"-K <sup>1)</sup>	83513814	Grey	3/4"	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 NPT 1"-K <sup>1)</sup>	83513816	Grey	1"	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 NPT 1 1/4"-K <sup>2)</sup>	83513818	Grey	1 1/4"	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 NPT 2"-K <sup>1)</sup>	83513820	Grey	2"	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10

<sup>1)</sup> With cURus- approval

<sup>2)</sup> With CSA- and cURus- approval

## Type VW 45° (metal thread)



### PRODUCT INFORMATION

The VW 45° conduit fittings are made of specially modified polyamide 6, thermo-plastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free.

The VW 45° conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

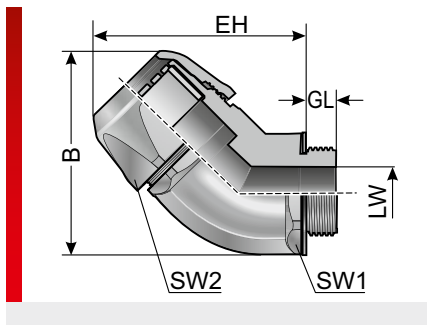
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Nickel-plated brass
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)

RoHS
 HF
 EU
 UL
 cULus
 Made in Germany

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal thread</b>										
VW 45 M12-M <sup>1)</sup>	83513252	Black	M12x1.5	M12/P09	38.00	12.00	7.20	36.00	21.0 / 21.0	50
VW 45 M16-M <sup>1)</sup>	83513254	Black	M16x1,5	M16/P11	45.00	12.00	10.50	43.00	27.0 / 27.0	50
VW 45 M20-M <sup>1)</sup>	83513256	Black	M20x1.5	M20/P16	56.00	13.00	14.60	52.00	34.0 / 34.0	50
VW 45 M25-M <sup>1)</sup>	83513258	Black	M25x1.5	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 M32-M <sup>1)</sup>	83513260	Black	M32x1.5	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 M40-M <sup>2)</sup>	83513262	Black	M40x1.5	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 M50-M <sup>1)</sup>	83513264	Black	M50x1.5	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10
<b>Pg-metal threading</b>										
VW 45 P9-M <sup>1)</sup>	83513652	Black	Pg 09	M12/P09	38.00	12.00	7.20	36.00	21.0 / 21.0	50
VW 45 P11-M <sup>1)</sup>	83513654	Black	Pg 11	M16/P11	45.00	12.00	10.50	43.00	27.0 / 27.0	50
VW 45 P16-M <sup>1)</sup>	83513656	Black	Pg 16	M20/P16	56.00	13.00	14.70	52.00	34.0 / 34.0	50
VW 45 P21-M <sup>1)</sup>	83513658	Black	Pg 21	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 P29-M <sup>1)</sup>	83513660	Black	Pg 29	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 P36-M <sup>2)</sup>	83513662	Black	Pg 36	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 P48-M <sup>1)</sup>	83513664	Black	Pg 48	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10

**Type VW 45° (metal thread)** (Continued...)



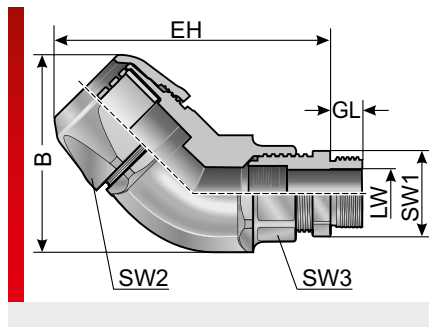
Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 mm	Pack qty.
VW 45 P9-M <sup>1)</sup>	83513612	Grey	Pg 09	M12/P09	38.00	12.00	7.20	36.00	21.0 / 21.0	50
VW 45 P11-M <sup>1)</sup>	83513614	Grey	Pg 11	M16/P11	45.00	12.00	10.50	43.00	27.0 / 27.0	50
VW 45 P16-M <sup>1)</sup>	83513616	Grey	Pg 16	M20/P16	56.00	13.00	14.70	52.00	34.0 / 34.0	50
VW 45 P21-M <sup>1)</sup>	83513618	Grey	Pg 21	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 P29-M <sup>1)</sup>	83513620	Grey	Pg 29	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 P36-M <sup>2)</sup>	83513622	Grey	Pg 36	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 P48-M <sup>1)</sup>	83513624	Grey	Pg 48	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10
<b>NPT metal threading</b>										
VW 45 NPT 3/8"-M <sup>1)</sup>	83514050	Black	3/8"	M16/P11	45.00	12.00	10.50	43.00	24.0 / 24.0	50
VW 45 NPT 1/2"-M <sup>1)</sup>	83514052	Black	1/2"	M20/P16	56.00	13.00	14.60	52.00	33.0 / 33.0	50
VW 45 NPT 3/4"-M <sup>1)</sup>	83514054	Black	3/4"	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 NPT 1"-M <sup>1)</sup>	83514056	Black	1"	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 NPT 1 1/4"-M <sup>2)</sup>	83514058	Black	1 1/4"	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 NPT 2"-M <sup>1)</sup>	83514060	Black	2"	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10
VW 45 NPT 3/8"-M <sup>1)</sup>	83514010	Grey	3/8"	M16/P11	45.00	12.00	10.50	43.00	24.0 / 24.0	50
VW 45 NPT 1/2"-M <sup>1)</sup>	83514012	Grey	1/2"	M20/P16	56.00	13.00	14.60	52.00	33.0 / 33.0	50
VW 45 NPT 3/4"-M <sup>1)</sup>	83514014	Grey	3/4"	M25/P21	65.00	13.00	18.70	65.00	41.0 / 41.0	25
VW 45 NPT 1"-M <sup>1)</sup>	83514016	Grey	1"	M32/P29	77.00	14.00	25.50	79.00	50.0 / 50.0	25
VW 45 NPT 1 1/4"-M <sup>2)</sup>	83514018	Grey	1 1/4"	M40/P36	90.00	17.00	33.00	95.00	60.0 / 60.0	25
VW 45 NPT 2"-M <sup>1)</sup>	83514020	Grey	2"	M50/P48	105.00	17.00	42.00	115.00	75.0 / 75.0	10

<sup>1)</sup>With cURus- approval

<sup>2)</sup>With CSA- and cURus- approval

<sup>3)</sup>With cURus approval, - min. order quantity 750 pcs

## Type CVW 45° (conduit and cable fitting, plastic thread)



### PRODUCT INFORMATION

The CVW 45° combined conduit and cable fittings are made of specially modified polyamide 6 and thermoplastic elastomer. The materials are halogen, phosphor and cadmium-free.

The CVW 45° combined conduit and cable fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- Optimum strain relief for the cable
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)

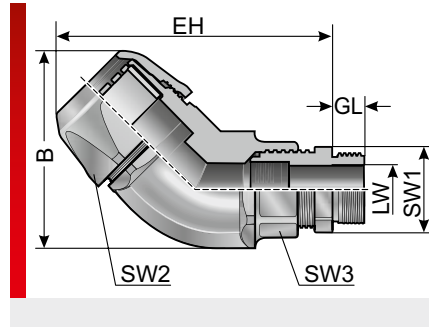


Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	B mm	Clamping range (LW) mm	SW 1 / 2 / 3 mm	Pack qty.
<b>Metric plastic thread</b>										
CVW 45 M12-K	83531250	Black	M12x1.5	M12/P09	55.00	8.00	36.00	3.0 – 6.5	15.0 / 20.0 / 20.0	50
CVW 45 M16-K	83531252	Black	M16x1,5	M16/P11	63.00	8.00	43.00	4.0 – 8.0	22.0 / 24.0 / 22.0	50
CVW 45 M20-K	83531256	Black	M20x1.5	M20/P16	77.00	9.00	52.00	6.0 – 12.0	24.0 / 33.0 / 27.0	50
CVW 45 M25-K	83531258	Black	M25x1.5	M25/P21	87.00	11.00	65.00	13.0 – 18.0	33.0 / 41.0 / 33.0	25
CVW 45 M32-K	83531260	Black	M32x1.5	M32/P29	102.00	11.00	79.00	18.0 – 25.0	42.0 / 50.0 / 42.0	25
CVW 45 M40-K <sup>1)</sup>	83531262	Black	M40x1.5	M40/P36	123.00	13.00	95.00	22.0 – 35.0	53.0 / 60.0 / 53.0	25
CVW 45 M63-K <sup>2)</sup>	83531264	Black	M63x1.5	M50/P48	138.00	14.00	115.00	37.0 – 44.0	68.0 / 75.0 / 68.0	10

<sup>1)</sup>With CSA approval

<sup>2)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type CVW 45° EMV (conduit and cable fitting, metal thread)



### PRODUCT INFORMATION

The CVW 45° EMV combined conduit and cable fittings are made of specially modified polyamide 6, thermoplastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free. The CVW 45° EMV combined conduit and cable fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- Optimum strain relief for the cable
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

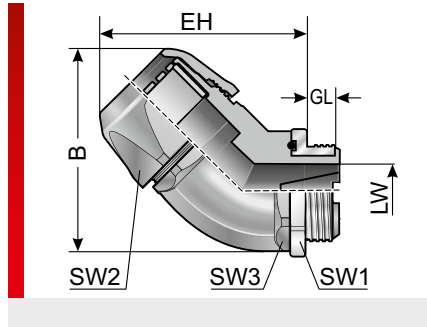
- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Nickel-plated brass
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)

RoHS
 HF
 CE
 UL
 Made in Germany

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	B mm	Clamping range (LW) mm	SW 1 / 2 / 3 mm	Pack qty.
<b>Metric metal thread / EMC version</b>										
CVW 45 M12 EMV	83551250	Black	M12x1.5	M12/P09	55.00	5.00	36.00	3.0 – 6.5	14.0 / 20.0 / 20.0	50
CVW 45 M16 EMV	83551252	Black	M16x1.5	M16/P11	63.00	6.00	43.00	5.0 – 10.0	20.0 / 25.0 / 22.0	50
CVW 45 M20 EMV	83551256	Black	M20x1.5	M20/P16	77.00	6.00	52.00	10.0 – 14.0	24.0 / 33.0 / 27.0	50
CVW 45 M25 EMV	83551258	Black	M25x1.5	M25/P21	87.00	7.00	65.00	13.0 – 18.0	30.0 / 41.0 / 33.0	25
CVW 45 M32 EMV	83551260	Black	M32x1.5	M32/P29	102.00	8.00	75.00	18.0 – 24.0	40.0 / 50.0 / 43.0	25
CVW 45 M40 EMV <sup>1)</sup>	83551262	Black	M40x1.5	M40/P36	123.00	8.00	95.00	22.0 – 31.0	50.0 / 60.0 / 53.0	25
CVW 45 M63 EMV	83551264	Black	M63x1.5	M50/P48	138.00	10.00	115.00	37.0 – 44.0	68.0 / 75.0 / 68.0	10

<sup>1)</sup>With CSA approval

## Type DVW 45° (360° rotatable conduit fitting, metal thread)



### PRODUCT INFORMATION

The DVW 45° conduit fittings are rotatable through 360° and made of specially modified polyamide 6, thermoplastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free. The DVW 45° rotatable conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

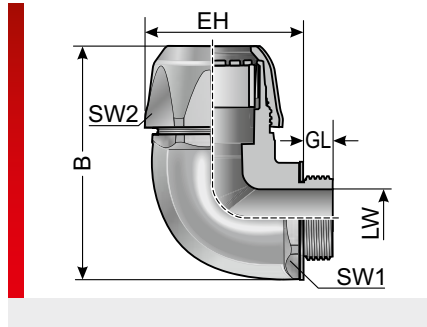
- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Nickel-plated brass
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 / 3 mm	Pack qty.
<b>Metric metal thread</b>										
DVW 45 M16/P9-M	83493252	Black	M16x1,5	M12/P09	41.00	11.20	7.20	36.40	21.0 / 21.0 / 21.0	50
DVW 45 M20/P11-M	83493254	Black	M20x1.5	M16/P11	49.10	11.20	10.50	44.60	27.0 / 27.0 / 27.0	50
DVW 45 M25/P16-M	83493256	Black	M25x1.5	M20/P16	59.10	12.20	14.70	55.40	34.0 / 34.0 / 34.0	25
DVW 45 M32/P21-M	83493258	Black	M32x1.5	M25/P21	68.20	12.20	18.70	67.10	41.0 / 41.0 / 41.0	25
DVW 45 M40/P29-M	83493260	Black	M40x1.5	M32/P29	80.30	13.20	25.50	79.20	50.0 / 50.0 / 50.0	25
DVW 45 M50/P36-M <sup>1)</sup>	83493262	Black	M50x1.5	M40/P36	92.10	17.20	33.00	93.70	60.0 / 60.0 / 60.0	10
DVW 45 M63/P48-M	83493264	Black	M63x1.5	M50/P48	107.70	17.50	41.20	114.20	75.0 / 75.0 / 75.0	10

<sup>1)</sup>With CSA approval

## Type VW 90° (plastic thread)



### PRODUCT INFORMATION

The VW 90° conduit fittings are made of specially modified polyamide 6 and thermo-plastic elastomer. The materials are halogen, phosphor and cadmium-free. The VW 90° conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 mm	Pack qty.
<b>Metric plastic thread</b>										
VW 90 M12-K <sup>1)</sup>	83515052	Black	M12x1.5	M12/P09	29.00	12.00	7.20	45.00	21.0 / 21.0	50
VW 90 M16-K <sup>1)</sup>	83515054	Black	M16x1,5	M16/P11	35.00	12.00	10.50	55.00	27.0 / 27.0	50
VW 90 M20-K <sup>1)</sup>	83515056	Black	M20x1.5	M20/P16	45.00	13.00	14.70	67.00	34.0 / 34.0	50
VW 90 M25-K <sup>1)</sup>	83515058	Black	M25x1.5	M25/P21	55.00	13.00	18.70	78.00	41.0 / 41.0	25
VW 90 M32-K <sup>1)</sup>	83515060	Black	M32x1.5	M32/P29	65.00	15.00	25.50	92.00	50.0 / 50.0	25
VW 90 M40-K <sup>2)</sup>	83515062	Black	M40x1.5	M40/P36	75.00	17.00	33.00	109.00	60.0 / 60.0	25
VW 90 M50-K <sup>1)</sup>	83515064	Black	M50x1.5	M50/P48	93.00	17.00	42.00	134.00	75.0 / 75.0	10
<b>Pg plastic threading</b>										
VW 90 P9-K <sup>1)</sup>	83515452	Black	Pg 09	M12/P09	29.00	12.00	7.20	45.00	21.0 / 21.0	50
VW 90 P11-K <sup>1)</sup>	83515454	Black	Pg 11	M16/P11	35.00	12.00	10.50	55.00	27.0 / 27.0	50
VW 90 P16-K <sup>1)</sup>	83515456	Black	Pg 16	M20/P16	45.00	13.00	14.70	67.00	34.0 / 34.0	50
VW 90 P21-K <sup>1)</sup>	83515458	Black	Pg 21	M25/P21	44.00	13.00	18.70	78.00	41.0 / 41.0	25
VW 90 P29-K <sup>1)</sup>	83515460	Black	Pg 29	M32/P29	65.00	14.00	25.50	92.00	50.0 / 50.0	25
VW 90 P36-K <sup>2)</sup>	83515462	Black	Pg 36	M40/P36	75.00	17.00	33.00	109.00	60.0 / 60.0	25
VW 90 P48-K <sup>1)</sup>	83515464	Black	Pg 48	M50/P48	93.00	17.00	42.00	134.00	75.0 / 75.0	10



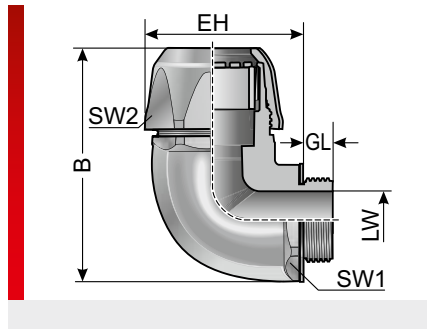
**Type VW 90° (plastic thread)** (Continued...)

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 mm	Pack qty.
VW 90 P9-K <sup>1)</sup>	83515412	Grey	Pg 09	M12/P09	29.00	12.00	7.20	45.00	21.0 / 21.0	50
VW 90 P11-K <sup>1)</sup>	83515414	Grey	Pg 11	M16/P11	35.00	12.00	10.50	55.00	27.0 / 27.0	50
VW 90 P16-K <sup>1)</sup>	83515416	Grey	Pg 16	M20/P16	45.00	13.00	14.70	67.00	34.0 / 34.0	50
VW 90 P21-K <sup>1)</sup>	83515418	Grey	Pg 21	M25/P21	44.00	13.00	18.70	78.00	41.0 / 41.0	25
VW 90 P29-K <sup>1)</sup>	83515420	Grey	Pg 29	M32/P29	65.00	14.00	25.50	92.00	50.0 / 50.0	25
VW 90 P36-K <sup>2)</sup>	83515422	Grey	Pg 36	M40/P36	75.00	17.00	33.00	109.00	60.0 / 60.0	25
VW 90 P48-K <sup>1)</sup>	83515424	Grey	Pg 48	M50/P48	93.00	17.00	42.00	134.00	60.0 / 60.0	10
<b>NPT plastic threading</b>										
VW 90 N 3/8"-K <sup>1)</sup>	83515850	Black	3/8"	M16/P11	35.00	12.00	10.50	55.00	25.0 / 25.0	50
VW 90 N 1/2"-K <sup>1)</sup>	83515852	Black	1/2"	M20/P16	45.00	13.00	14.60	67.00	34.0 / 34.0	50
VW 90 N 3/4"-K <sup>1)</sup>	83515854	Black	3/4"	M25/P21	55.00	14.00	18.70	78.00	41.0 / 41.0	25
VW 90 N 1"-K <sup>1)</sup>	83515856	Black	1"	M32/P29	65.00	14.00	25.60	92.00	50.0 / 50.0	25
VW 90 N 1 1/4 -K <sup>2)</sup>	83515858	Black	1 1/4"	M40/P36	75.00	18.00	33.00	109.00	60.0 / 60.0	25
VW 90 N 2"-K <sup>1)</sup>	83515860	Black	2"	M50/P48	93.00	18.00	42.00	134.00	75.0 / 75.0	10
VW 90 N 3/8"-K <sup>1)</sup>	83515810	Grey	3/8"	M16/P11	35.00	12.00	10.50	55.00	25.0 / 25.0	50
VW 90 N 1/2"-K <sup>1)</sup>	83515812	Grey	1/2"	M20/P16	45.00	13.00	14.60	67.00	34.0 / 34.0	50
VW 90 N 3/4"-K <sup>1)</sup>	83515814	Grey	3/4"	M25/P21	55.00	14.00	18.70	78.00	41.0 / 41.0	25
VW 90 N 1"-K <sup>1)</sup>	83515816	Grey	1"	M32/P29	65.00	14.00	25.60	92.00	50.0 / 50.0	25
VW 90 N 1 1/4 -K <sup>2)</sup>	83515818	Grey	1 1/4"	M40/P36	75.00	18.00	33.00	109.00	60.0 / 60.0	25
VW 90 N 2"-K <sup>1)</sup>	83515820	Grey	2"	M50/P48	93.00	18.00	42.00	134.00	75.0 / 75.0	10

<sup>1)</sup>With cURus- approval

<sup>2)</sup>With CSA- and cURus- approval

## Type VW 90° (metal thread)



### PRODUCT INFORMATION

The VW 90° conduit fittings are made of specially modified polyamide 6, thermo-plastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free.

The VW 90° conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal thread</b>										
VW 90 M12-M <sup>1)</sup>	83515252	Black	M12x1.5	M12/P09	29.00	12.00	7.20	45.00	21.0 / 21.0	50
VW 90 M16-M <sup>1)</sup>	83515254	Black	M16x1,5	M16/P11	35.00	12.00	10.50	55.00	27.0 / 27.0	50
VW 90 M20-M <sup>1)</sup>	83515256	Black	M20x1.5	M20/P16	45.00	13.00	14.70	67.00	34.0 / 34.0	50
VW 90 M25-M <sup>1)</sup>	83515258	Black	M25x1.5	M25/P21	55.00	13.00	18.70	78.00	41.0 / 41.0	25
VW 90 M32-M <sup>1)</sup>	83515260	Black	M32x1.5	M32/P29	65.00	14.00	25.50	92.00	50.0 / 50.0	25
VW 90 M40-M <sup>2)</sup>	83515262	Black	M40x1.5	M40/P36	75.00	17.00	33.00	109.00	60.0 / 60.0	25
VW 90 M50-M <sup>1)</sup>	83515264	Black	M50x1.5	M50/P48	93.00	17.00	42.00	134.00	75.0 / 75.0	10
<b>Pg metal thread</b>										
VW 90 M12-M <sup>1)</sup>	83515212	Grey	M12x1.5	M12/P09	29.00	12.00	7.20	45.00	21.0 / 21.0	50
VW 90 M16-M <sup>1)</sup>	83515214	Grey	M16x1,5	M16/P11	35.00	12.00	10.50	55.00	27.0 / 27.0	50
VW 90 M20-M <sup>1)</sup>	83515216	Grey	M20x1.5	M20/P16	45.00	13.00	14.70	67.00	34.0 / 34.0	50
VW 90 M25-M <sup>1)</sup>	83515218	Grey	M25x1.5	M25/P21	55.00	13.00	18.70	78.00	41.0 / 41.0	25
VW 90 M32-M <sup>1)</sup>	83515220	Grey	M32x1.5	M32/P29	65.00	14.00	25.50	92.00	50.0 / 50.0	25
VW 90 M40-M <sup>2)</sup>	83515222	Grey	M40x1.5	M40/P36	75.00	17.00	33.00	109.00	60.0 / 60.0	25
VW 90 M50-M <sup>1)</sup>	83515224	Grey	M50x1.5	M50/P48	93.00	17.00	42.00	134.00	75.0 / 75.0	10
VW 90 P9-M <sup>1)</sup>	83515652	Black	Pg 09	M12/P09	29.00	12.00	7.20	45.00	21.0 / 21.0	50
VW 90 P11-M <sup>1)</sup>	83515654	Black	Pg 11	M16/P11	35.00	12.00	10.50	55.00	27.0 / 27.0	50
VW 90 P16-M <sup>1)</sup>	83515656	Black	Pg 16	M20/P16	45.00	13.00	14.70	67.00	34.0 / 34.0	50
VW 90 P21-M <sup>1)</sup>	83515658	Black	Pg 21	M25/P21	55.00	14.00	18.70	78.00	41.0 / 41.0	25
VW 90 P29-M <sup>1)</sup>	83515660	Black	Pg 29	M32/P29	65.00	14.00	25.50	92.00	50.0 / 50.0	25
VW 90 P36-M <sup>2)</sup>	83515662	Black	Pg 36	M40/P36	75.00	17.00	33.00	109.00	60.0 / 60.0	25
VW 90 P48-M <sup>1)</sup>	83515664	Black	Pg 48	M50/P48	93.00	17.00	42.00	134.00	75.0 / 75.0	10

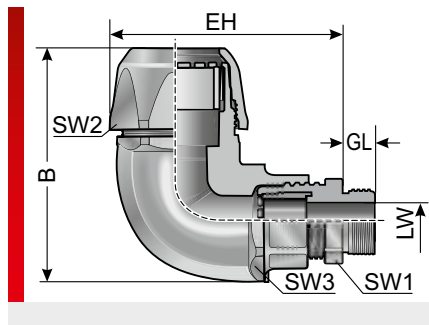
## Type VW 90° (metal thread) (Continued...)

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 mm	Pack qty.
VW 90 P9-M <sup>1)</sup>	83515612	Grey	Pg 09	M12/P09	29.00	12.00	7.20	45.00	21.0 / 21.0	50
VW 90 P11-M <sup>1)</sup>	83515614	Grey	Pg 11	M16/P11	35.00	12.00	10.50	55.00	27.0 / 27.0	50
VW 90 P16-M <sup>1)</sup>	83515616	Grey	Pg 16	M20/P16	45.00	13.00	14.70	67.00	34.0 / 34.0	50
VW 90 P21-M <sup>1)</sup>	83515618	Grey	Pg 21	M25/P21	55.00	14.00	18.70	78.00	41.0 / 41.0	25
VW 90 P29-M <sup>1)</sup>	83515620	Grey	Pg 29	M32/P29	65.00	14.00	25.50	92.00	50.0 / 50.0	25
VW 90 P36-M <sup>2)</sup>	83515622	Grey	Pg 36	M40/P36	75.00	17.00	33.00	109.00	60.0 / 60.0	25
VW 90 P48-M <sup>1)</sup>	83515624	Grey	Pg 48	M50/P48	93.00	17.00	42.00	134.00	75.0 / 75.0	10
<b>NPT metal threading</b>										
VW 90 N 3/8"-M <sup>1)</sup>	83516050	Black	3/8"	M16/P11	35.00	12.00	10.50	55.00	25.0 / 25.0	50
VW 90 N 1/2"-M <sup>1)</sup>	83516052	Black	1/2"	M20/P16	45.00	13.00	14.60	67.00	34.0 / 34.0	50
VW 90 N 3/4"-M <sup>1)</sup>	83516054	Black	3/4"	M25/P21	55.00	14.00	18.70	78.00	41.0 / 41.0	25
VW 90 N 1"-M <sup>1)</sup>	83516056	Black	1"	M32/P29	65.00	14.00	25.60	92.00	50.0 / 50.0	25
VW 90 N 1 1/4"-M <sup>2)</sup>	83516058	Black	1 1/4"	M40/P36	75.00	18.00	33.50	109.00	60.0 / 60.0	25
VW 90 N 2"-M <sup>1)</sup>	83516060	Black	2"	M50/P48	93.00	18.00	42.00	134.00	75.0 / 75.0	10
VW 90 N 3/8"-M <sup>1)</sup>	83516010	Grey	3/8"	M16/P11	35.00	12.00	10.50	55.00	25.0 / 25.0	50
VW 90 N 1/2"-M <sup>1)</sup>	83516012	Grey	1/2"	M20/P16	45.00	13.00	14.60	67.00	34.0 / 34.0	50
VW 90 N 3/4"-M <sup>1)</sup>	83516014	Grey	3/4"	M25/P21	55.00	14.00	18.70	78.00	41.0 / 41.0	25
VW 90 N 1"-M <sup>1)</sup>	83516016	Grey	1"	M32/P29	65.00	14.00	25.60	92.00	50.0 / 50.0	25
VW 90 N 1 1/4"-M <sup>2)</sup>	83516018	Grey	1 1/4"	M40/P36	75.00	18.00	33.50	109.00	60.0 / 60.0	25
VW 90 N 2"-M <sup>1)</sup>	83516020	Grey	2"	M50/P48	93.00	18.00	42.00	134.00	75.0 / 75.0	10

<sup>1)</sup>With cURus- approval

<sup>2)</sup>With CSA- and cURus- approval

## Type CVW 90° (conduit and cable fitting, plastic thread)



### PRODUCT INFORMATION

The CVW 90° combined conduit and cable fittings are made of specially modified polyamide 6 and thermoplastic elastomer. The materials are halogen, phosphor and cadmium-free.

The CVW 90° combined conduit and cable fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- Optimum strain relief for the cable
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

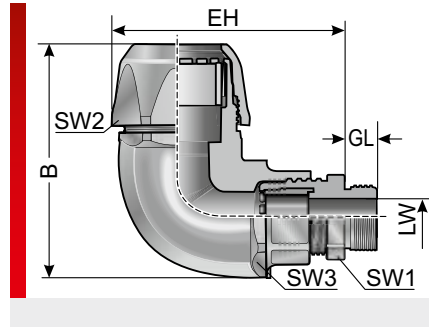
- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	B mm	Clamping range (LW) mm	SW 1 / 2 / 3 mm	Pack qty.
<b>Metric plastic thread</b>										
CVW 90 M12	83531450	Black	M12x1.5	M12/P09	45.00	8.00	44.00	3.0 – 6.5	21.0 / 15.0 / 20.0	50
CVW 90 M16	83531452	Black	M16x1,5	M16/P11	55.00	8.00	54.00	4.0 – 8.0	27.0 / 22.0 / 25.0	50
CVW 90 M20	83531456	Black	M20x1.5	M20/P16	67.00	9.00	67.00	6.0 – 12.0	33.0 / 24.0 / 33.0	50
CVW 90 M25	83531458	Black	M25x1.5	M25/P21	76.00	11.00	79.00	13.0 – 19.0	41.0 / 33.0 / 41.0	25
CVW 90 M32	83531460	Black	M32x1.5	M32/P29	94.00	11.00	92.00	18.0 – 25.0	50.0 / 42.0 / 50.0	25
CVW 90 M40 <sup>1)</sup>	83531462	Black	M40x1.5	M40/P36	112.00	13.00	109.00	22.0 – 32.0	60.0 / 53.0 / 60.0	25
CVW 90 M63	83531464	Black	M63x1.5	M50/P48	128.00	14.00	136.00	37.0 – 44.0	75.0 / 68.0 / 75.0	10

<sup>1)</sup>With CSA approval

## Type CVW 90° EMV (EMC conduit and cable fitting, metal thread)



### PRODUCT INFORMATION

The CVW 90° EMV combined conduit and cable fittings are made of specially modified polyamide 6, thermoplastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free. The CVW 90° EMV combined conduit and cable fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- Optimum strain relief for the cable
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

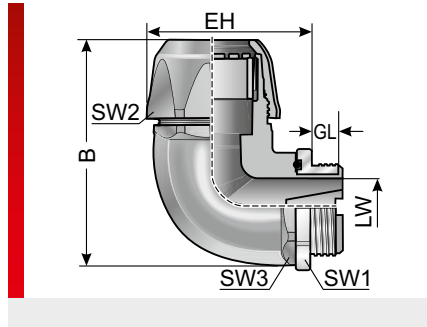
- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Nickel-plated brass
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)

RoHS
 HF
 EU
 SE
 Made in Germany

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	B mm	Clamping range (LW) mm	SW 1 / 2 / 3 mm	Pack qty.
<b>Metric metal thread / EMC version</b>										
CVW 90 M12 EMV	83551450	Black	M12x1.5	M12/P09	46.00	6.50	45.00	3.0 – 6.5	21.0 / 14.0 / 20.0	50
CVW 90 M16 EMV	83551452	Black	M16x1,5	M16/P11	54.00	6.00	54.00	5.0 – 10.0	27.0 / 20.0 / 25.0	50
CVW 90 M20 EMV	83551456	Black	M20x1.5	M20/P16	67.00	6.00	67.00	10.0 – 14.0	34.0 / 24.0 / 33.0	50
CVW 90 M25 EMV	83551458	Black	M25x1.5	M25/P21	74.00	7.00	79.00	13.0 – 18.0	41.0 / 30.0 / 41.0	25
CVW 90 M32 EMV	83551460	Black	M32x1.5	M32/P29	88.00	8.00	92.00	18.0 – 25.0	50.0 / 40.0 / 50.0	25
CVW 90 M40 EMV <sup>1)</sup>	83551462	Black	M40x1.5	M40/P36	108.00	8.00	109.00	22.0 – 32.0	60.0 / 50.0 / 60.0	25
CVW 90 M63 EMV	83551464	Black	M63x1.5	M50/P36	127.00	10.00	136.00	37.0 – 44.0	75.0 / 68.0 / 75.0	10

<sup>1)</sup>With CSA approval

## Type DVW 90° (360° rotatable conduit fitting, metal thread)



### PRODUCT INFORMATION

The rotatable DVW 90° conduit fittings are made of specially modified polyamide 6, thermoplastic elastomer and nickel-plated brass. The materials are halogen, phosphor and cadmium-free.

The DVW 90° conduit fittings feature the following advantages:

- Quick assembly, insert conduit, screw upper part tight, done
- No parts can get lost, delivered completely assembled

- Resistant to vibration due to lockable cap nut
- Clamping along entire circumference, ensuring maximum tensile strength.
- High level of tightness at IP 68/69K to 6 bar without any add-on components to EN 60529

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Connecting thread: Nickel-plated brass
- Acc. to UL94 V0 self-extinguishing
- IP 68 up to 6 bar (IP 69K)



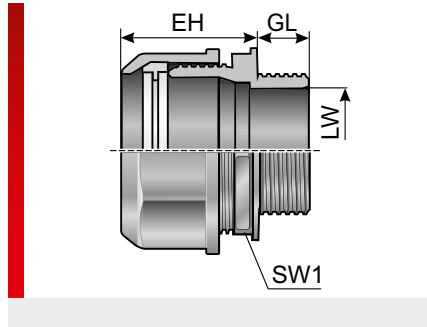
Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	B mm	SW 1 / 2 / 3 mm	Pack qty.
<b>Metric metal thread</b>										
DVW 90 M16/P9-M	83495252	Black	M16x1,5	M12/P09	31.80	11.20	7.20	45.80	21.0 / 21.0 / 21.0	50
DVW 90 M20/P11-M	83495254	Black	M20x1.5	M16/P11	38.50	11.20	10.50	56.80	27.0 / 27.0 / 25.0	50
DVW 90 M25/P16-M	83495256	Black	M25x1.5	M20/P16	48.00	12.20	14.60	68.60	34.0 / 27.0 / 34.0	25
DVW 90 M32/P21-M	83495258	Black	M32x1.5	M25/P21	55.50	12.20	18.70	79.30	41.0 / 41.0 / 41.0	25
DVW 90 M40/P29-M	83495260	Black	M40x1.5	M32/P29	67.50	13.20	25.50	93.60	50.0 / 50.0 / 50.0	25
DVW 90 M50/P36-M <sup>1)</sup>	83495262	Black	M50x1.5	M40/P36	75.70	15.20	33.00	109.90	60.0 / 60.0 / 60.0	10
DVW 90 M63/P48-M	83495264	Black	M63x1.5	M50/P48	92.80	15.20	41.20	135.80	75.0 / 75.0 / 75.0	10

<sup>1)</sup>With CSA approval



**m-tec conduit fitting**

## Type EH



### PRODUCT INFORMATION

The EH conduit fittings are made of specially modified polyamide and polyoxymethylene. The materials are halogen, phosphor and cadmium-free. The EH conduit fittings feature the following advantages:

- No parts can get lost, delivered completely assembled

- Tightness of IP 65 for static and dynamic application
- Integrated clamping ring ensures high tear-out strength

Specification:

- UL listed E 148958
- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Clamping ring: Polyoxymethylene (POM)
- Acc. to UL94 V0 self-extinguishing
- IP 65

RoHS
 HF
 EU
 US
 Made in Germany

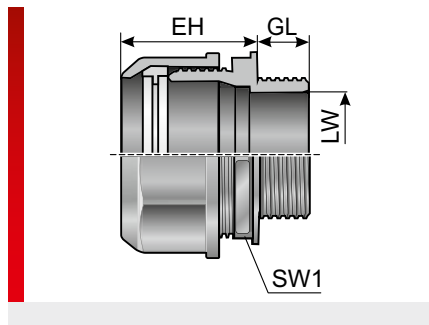
Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 mm	Pack qty.
<b>Metric thread</b>									
EH-M12x1.5/9	83501452	Black	M12x1.5	M12/P09	26.00	13.00	8.00	19.00	50
EH-M12x1.5/11	83501456	Black	M12x1.5	M16/P11	26.00	13.00	8.00	22.00	50
EH-M16x1.5/9	83501454	Black	M16x1,5	M12/P09	26.00	13.00	11.00	19.00	50
EH-M16x1.5/11	83501458	Black	M16x1,5	M16/P11	26.00	13.00	11.00	22.00	50
EH-M20x1.5/13.5	83501459	Black	M20x1.5	DN 13	26.00	14.00	15.00	27.00	50
EH-M20x1.5/16	83501460	Black	M20x1.5	M20/P16(S)	26.00	14.00	15.00	27.00	50
EH-M25x1.5/21	83501462	Black	M25x1.5	M25/P21(S)	33.00	10.00	21.00	37.00	50
EH-M32x1.5/29 <sup>1)</sup>	83501464	Black	M32x1.5	M32/P29(S)	33.00	10.00	27.00	45.00	25
EH-M40x1.5/36 <sup>1)</sup>	83501466	Black	M40x1.5	M40/P36(S)	44.00	15.00	35.00	55.00	25
EH-M50x1.5/48 <sup>1)</sup>	83501468	Black	M50x1.5	M50/P48(S)	50.00	17.00	44.00	65.00	10
EH-M63x1.5/48 <sup>1)</sup>	83501470	Black	M63x1.5	M50/P48(S)	50.00	15.00	50.00	65.00	10
EH-M12x1.5/9	83501412	Grey	M12x1.5	M12/P09	26.00	13.00	8.00	19.00	50
EH-M12x1.5/11	83501416	Grey	M12x1.5	M16/P11	26.00	13.00	8.00	22.00	50
EH-M16x1.5/9	83501414	Grey	M16x1,5	M12/P09	26.00	13.00	11.00	19.00	50
EH-M16x1.5/11	83501418	Grey	M16x1,5	M16/P11	26.00	13.00	11.00	22.00	50
EH-M20x1.5/13.5	83501419	Grey	M20x1.5	DN 13	26.00	14.00	15.00	27.00	50
EH-M20x1.5/16	83501420	Grey	M20x1.5	M20/P16(S)	26.00	14.00	15.00	27.00	50
EH-M25x1.5/21	83501422	Grey	M25x1.5	M25/P21(S)	33.00	10.00	21.00	37.00	50
EH-M32x1.5/29 <sup>1)</sup>	83501424	Grey	M32x1.5	M32/P29(S)	33.00	10.00	27.00	45.00	25
EH-M40x1.5/36 <sup>1)</sup>	83501426	Grey	M40x1.5	M40/P36(S)	44.00	15.00	35.00	55.00	25
EH-M50x1.5/48 <sup>1)</sup>	83501428	Grey	M50x1.5	M50/P48(S)	50.00	17.00	44.00	65.00	10
EH-M63x1.5/48 <sup>1)</sup>	83501430	Grey	M63x1.5	M50/P48(S)	50.00	15.00	50.00	65.00	10



## Type EH (Continued...)

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 mm	Pack qty.
<b>Pg threads</b>									
EH-Pg 07	83501050	Black	Pg 07	M10/P07	26.00	8.00	8.50	19.00	50
EH-Pg 07/09	83501068	Black	Pg 07	M12/P09	26.00	8.00	8.50	19.00	50
EH-Pg 09	83501052	Black	Pg 09	M12/P09	26.00	8.00	11.00	19.00	50
EH-Pg 09/11	83501070	Black	Pg 09	M16/P11	26.00	8.00	10.50	22.00	50
EH-Pg 09/13.5	83501072	Black	Pg 09	DN 13	26.00	8.00	10.50	27.00	50
EH-Pg 09/16	83501074	Black	Pg 09	M20/P16	26.00	8.00	10.50	27.00	50
EH-Pg 11/09	83501076	Black	Pg 11	M12/P09	26.00	8.00	14.00	19.00	50
EH-Pg 11	83501054	Black	Pg 11	M16/P11	26.00	8.00	14.00	22.00	50
EH-Pg 11/13.5	83501078	Black	Pg 11	DN 13	26.00	8.00	14.00	27.00	50
EH-Pg 11/16	83501080	Black	Pg 11	M20/P16	26.00	8.00	14.00	27.00	50
EH-Pg 13.5	83501055	Black	Pg 13.5	DN 13	26.00	8.00	14.00	27.00	50
EH-Pg 13.5/16	83501056	Black	Pg 13.5	M20/P16	26.00	8.00	14.00	27.00	50
EH-Pg 16/13.5	83501082	Black	Pg 16	DN 13	26.00	8.00	17.00	27.00	50
EH-Pg 16	83501058	Black	Pg 16	M20/P16	26.00	8.00	17.00	27.00	50
EH-Pg 21	83501060	Black	Pg 21	M25/P21(S)	34.00	10.00	23.00	38.00	50
EH-Pg 21 long	83501061	Black	Pg 21	M25/P21(S)	34.00	15.00	23.00	38.00	50
EH-Pg 29 <sup>1)</sup>	83501062	Black	Pg 29	M32/P29(S)	34.00	10.00	31.00	46.00	25
EH-Pg 36 <sup>1)</sup>	83501064	Black	Pg 36	M40/P36(S)	44.00	15.00	40.00	55.00	25
EH-Pg 48 <sup>1)</sup>	83501066	Black	Pg 48	M50/P48(S)	50.00	15.00	51.00	65.00	10
<b>Grey threads</b>									
EH-Pg 07	83501010	Grey	Pg 07	M10/P07	26.00	8.00	8.50	19.00	50
EH-Pg 07/09	83501028	Grey	Pg 07	M12/P09	26.00	8.00	8.50	19.00	50
EH-Pg 09	83501012	Grey	Pg 09	M12/P09	26.00	8.00	11.00	19.00	50
EH-Pg 09/11	83501030	Grey	Pg 09	M16/P11	26.00	8.00	10.50	22.00	50
EH-Pg 09/13.5	83501032	Grey	Pg 09	DN 13	26.00	8.00	10.50	27.00	50
EH-Pg 09/16	83501034	Grey	Pg 09	M20/P16	26.00	8.00	10.50	27.00	50
EH-Pg 11/09	83501036	Grey	Pg 11	M12/P09	26.00	8.00	14.00	19.00	50
EH-Pg 11	83501014	Grey	Pg 11	M16/P11	26.00	8.00	14.00	22.00	50
EH-Pg 11/13.5	83501038	Grey	Pg 11	DN 13	26.00	8.00	14.00	27.00	50
EH-Pg 11/16	83501040	Grey	Pg 11	M20/P16	26.00	8.00	14.00	27.00	50
EH-Pg 13.5	83501015	Grey	Pg 13.5	DN 13	26.00	8.00	14.00	27.00	50
EH-Pg 13.5/16	83501016	Grey	Pg 13.5	M20/P16	26.00	8.00	14.00	27.00	50
EH-Pg 16/13.5	83501042	Grey	Pg 16	DN 13	26.00	8.00	17.00	27.00	50
EH-Pg 16	83501018	Grey	Pg 16	M20/P16	26.00	8.00	17.00	27.00	50
EH-Pg 21	83501020	Grey	Pg 21	M25/P21(S)	34.00	10.00	23.00	38.00	50
EH-Pg 21 long	83501021	Grey	Pg 21	M25/P21(S)	34.00	15.00	23.00	38.00	50
EH-Pg 29 <sup>1)</sup>	83501022	Grey	Pg 29	M32/P29(S)	34.00	10.00	31.00	46.00	25
EH-Pg 36 <sup>1)</sup>	83501024	Grey	Pg 36	M40/P36(S)	44.00	15.00	40.00	55.00	25
EH-Pg 48 <sup>1)</sup>	83501026	Grey	Pg 48	M50/P48(S)	50.00	15.00	51.00	65.00	10
<b>NPT thread</b>									
EH-NPT 3/8"/11	83501251	Black	3/8"	M16/P11	26.00	14.00	12.00	22.00	50
EH-NPT 1/2"/16	83501250	Black	1/2"	M20/P16(S)	26.00	13.00	14.00	27.00	50
EH-NPT 3/4"/21	83501252	Black	3/4"	M25/P21(S)	31.00	14.00	19.00	37.00	50
EH-NPT 1"/29 <sup>1)</sup>	83501254	Black	1"	M32/P29(S)	32.00	19.00	26.00	46.00	25
EH-NPT 1 1/4"/36 <sup>1)</sup>	83501256	Black	1 1/4"	M40/P36(S)	44.00	18.00	35.00	55.00	25

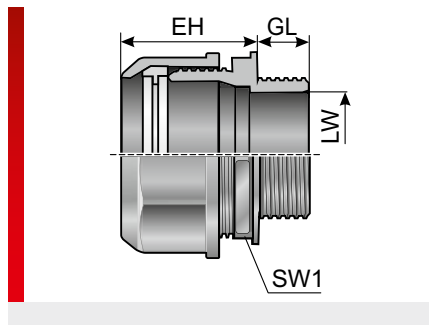
**Type EH** (Continued...)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 mm	Pack qty.
EH-NPT 2"/48 <sup>1)</sup>	83501258	Black	2"	M50/P48(S)	50.00	18.00	51.00	65.00	10
EH-NPT 3/8"/11	83501211	Grey	3/8"	M16/P11	26.00	14.00	12.00	22.00	50
EH-NPT 1/2"/16	83501210	Grey	1/2"	M20/P16(S)	26.00	13.00	14.00	27.00	50
EH-NPT 3/4"/21	83501212	Grey	3/4"	M25/P21(S)	31.00	14.00	19.00	37.00	50
EH-NPT 1"/29 <sup>1)</sup>	83501214	Grey	1"	M32/P29(S)	32.00	19.00	26.00	46.00	25
EH-NPT 1 1/4"/36 <sup>1)</sup>	83501216	Grey	1 1/4"	M40/P36(S)	44.00	18.00	35.00	55.00	25
EH-NPT 2"/48 <sup>1)</sup>	83501218	Grey	2"	M50/P48(S)	50.00	18.00	51.00	65.00	10

<sup>1)</sup>With cURus- approval

## Type EH/S



### PRODUCT INFORMATION

The EH/S conduit fittings are made of specially modified polyamide and polyoxymethylene. The materials are halogen, phosphor and cadmium-free.

The EH/S conduit fittings feature the following advantages:

- No parts can get lost, delivered completely assembled

- Cost-effective solution
- Integrated clamping ring ensures high tear-out strength

Fitting suitable for the EVK, EL and ELS cable protection conduit.

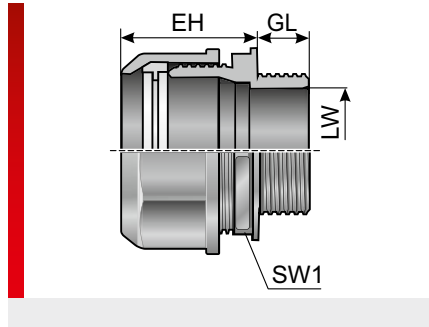
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide  
Clamping ring: Polyoxymethylene (POM)
- Acc. to UL94 V0 self-extinguishing
- IP 65

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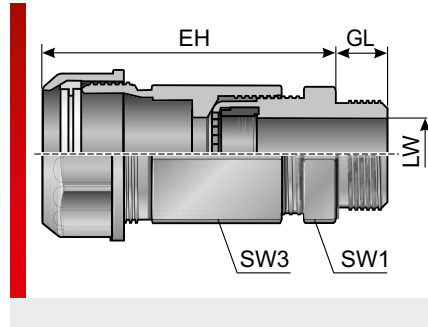
Type	Order No.	Colour	Connecting thread	Suitable for Murrflex EL	Suitable for Murrflex ELS	Suitable for Murrflex EVK	EH mm	GL mm	SW 1 mm	Pack qty.
<b>Metric plastic thread</b>										
EH/S M12X1.5/9	83541252	Black	M12x1.5	09	09	07/E	26.00	13.00	19.00	50
EH/S M12X1.5/11	83541256	Black	M12x1.5	11	11	09/E	26.00	13.00	22.00	50
EH/S M16X1.5/9	83541254	Black	M16x1,5	09	09	07/E	26.00	13.00	19.00	50
EH/S M16X1.5/11	83541258	Black	M16x1,5	11	11	09/E	26.00	13.00	22.00	50
EH/S M20X1.5/13	83541259	Black	M20x1.5	13	13	11	26.00	14.00	27.00	50
EH/S M20X1.5/16	83541260	Black	M20x1.5	16	16	11	26.00	14.00	27.00	50
EH/S M25X1.5/21	83541262	Black	M25x1.5	21	21	21/E	33.00	10.00	37.00	50
EH/S M32X1.5/29	83541264	Black	M32x1.5	29	29	29/E	33.00	10.00	45.00	25
EH/S M40X1.5/36	83541266	Black	M40x1.5	36	36	36/E	44.00	15.00	55.00	25
EH/S M50X1.5/48	83541268	Black	M50x1.5	48	48	42	50.00	17.00	65.00	10
<b>Grey plastic thread</b>										
EH/S M12X1.5/9	83541212	Grey	M12x1.5	09	09	07/E	26.00	13.00	19.00	50
EH/S M12X1.5/11	83541216	Grey	M12x1.5	11	11	09/E	26.00	13.00	22.00	50
EH/S M16X1.5/9	83541214	Grey	M16x1,5	09	09	07/E	26.00	13.00	19.00	50
EH/S M16X1.5/11	83541218	Grey	M16x1,5	11	11	09/E	26.00	13.00	22.00	50
EH/S M20X1.5/13	83541219	Grey	M20x1.5	13	13	11	26.00	14.00	27.00	50
EH/S M20X1.5/16	83541220	Grey	M20x1.5	16	16	11	26.00	14.00	27.00	50
EH/S M25X1.5/21	83541222	Grey	M25x1.5	21	21	21/E	33.00	10.00	37.00	50
EH/S M32X1.5/29	83541224	Grey	M32x1.5	29	29	29/E	33.00	10.00	45.00	25
EH/S M40X1.5/36	83541226	Grey	M40x1.5	36	36	36/E	44.00	15.00	55.00	25
EH/S M50X1.5/48	83541228	Grey	M50x1.5	48	48	42	50.00	17.00	65.00	10
<b>Pg plastic threading</b>										
EH/S PG 07	83541050	Black	Pg 07		07		26.00	8.00	19.00	50
EH/S PG 07/09	83541068	Black	Pg 07	09	09		26.00	8.00	19.00	50

Type EH/S (Continued...)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex EL	Suitable for Murrflex ELS	Suitable for Murrflex EVK	EH mm	GL mm	SW 1 mm	Pack qty.
EH/S PG 09	83541052	Black	Pg 09	09	09	07/E	26.00	8.00	19.00	50
EH/S PG 09/11	83541070	Black	Pg 09	11	11	09/E	26.00	8.00	22.00	50
EH/S PG 09/13	83541072	Black	Pg 09	13	13	11/E	26.00	8.00	27.00	50
EH/S PG 09/16	83541074	Black	Pg 09	16	16	13/E	26.00	8.00	27.00	50
EH/S PG 11/09	83541076	Black	Pg 11	09	09	07/E	26.00	8.00	19.00	50
EH/S PG 11	83541054	Black	Pg 11	11	11	09/E	26.00	8.00	22.00	50
EH/S PG 11/13	83541078	Black	Pg 11	13	13	11/E	26.00	8.00	27.00	50
EH/S PG 11/16	83541080	Black	Pg 11	16	16	13/E	26.00	8.00	27.00	50
EH/S PG 13.5	83541056	Black	Pg 13.5	13	13	11/E	26.00	8.00	27.00	50
EH/S PG 13/16	83541082	Black	Pg 13	16	16	13/E	26.00	8.00	27.00	50
EH/S PG 16/13	83541084	Black	Pg 16	13	13	11/E	26.00	8.00	27.00	50
EH/S PG 16	83541058	Black	Pg 16	16	16	13/E	26.00	8.00	27.00	50
EH/S PG 21	83541060	Black	Pg 21	21	21	16/E	34.00	10.00	38.00	50
EH/S PG 29	83541062	Black	Pg 29	29	29	21/E	34.00	10.00	46.00	25
EH/S PG 36	83541064	Black	Pg 36	36	36	29/E	44.00	15.00	55.00	25
EH/S PG 48	83541066	Black	Pg 48	48	48	42	50.00	15.00	65.00	10
EH/S PG 07	83541010	Grey	Pg 07		07		26.00	8.00	19.00	50
EH/S PG 07/09	83541028	Grey	Pg 07	09	09		26.00	8.00	19.00	50
EH/S PG 09	83541012	Grey	Pg 09	09	09	07/E	26.00	8.00	19.00	50
EH/S PG 09/11	83541030	Grey	Pg 09	11	11	09/E	26.00	8.00	22.00	50
EH/S PG 09/13	83541032	Grey	Pg 09	13	13	11/E	26.00	8.00	27.00	50
EH/S PG 09/16	83541034	Grey	Pg 09	16	16	13/E	26.00	8.00	27.00	50
EH/S PG 11/09	83541040	Grey	Pg 11	09	09	07/E	26.00	8.00	19.00	50
EH/S PG 11	83541014	Grey	Pg 11	11	11	09/E	26.00	8.00	22.00	50
EH/S PG 11/13	83541036	Grey	Pg 11	13	13	11/E	26.00	8.00	27.00	50
EH/S PG 11/16	83541038	Grey	Pg 11	16	16	13/E	26.00	8.00	27.00	50
EH/S PG 13.5	83541016	Grey	Pg 13.5	13	13	11/E	26.00	8.00	27.00	50
EH/S PG 13/16	83541042	Grey	Pg 13	16	16	13/E	26.00	8.00	27.00	50
EH/S PG 16/13	83541044	Grey	Pg 16	13	13	11/E	26.00	8.00	27.00	50
EH/S PG 16	83541018	Grey	Pg 16	16	16	13/E	26.00	8.00	27.00	50
EH/S PG 21	83541020	Grey	Pg 21	21	21	16/E	34.00	10.00	38.00	50
EH/S PG 29	83541022	Grey	Pg 29	29	29	21/E	34.00	10.00	46.00	25
EH/S PG 36	83541024	Grey	Pg 36	36	36	29/E	44.00	15.00	55.00	25
EH/S PG 48	83541026	Grey	Pg 48	48	48	42	50.00	15.00	65.00	10

## Type CSKV (conduit and cable fitting)



### PRODUCT INFORMATION

The CSKV conduit and cable fitting is a combination of our proven WKK cable fitting and the EH conduit fitting.

The fittings are made of specially modified polyamide.

The materials are halogen, phosphor and cadmium-free.

The CSKV conduit and cable fittings feature the following advantages:

- No parts can get lost, delivered completely assembled

- Tightness of IP 65 for static and dynamic application
- Integrated clamping ring ensures high tear-out strength
- Optimum strain relief for the cable due to iris-shaped lamellae

Specification:

- UL listed E 148958
- EN 45545-2 3x HL3

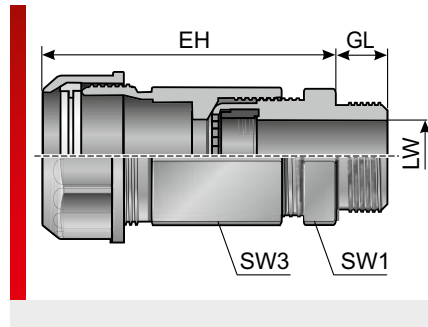
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: Perbunan (NBR)
- Acc. to UL94 V0 self-extinguishing
- IP 65



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	Clamping range (LW) mm	SW 1 / 3 mm	Pack qty.
<b>Metric thread</b>									
CSKV-M16x1.5/9 <sup>1)</sup>	83581850	Black	M16x1,5	M12/P09	45.00	8.00	4.0 – 8.0	19.0 / 19.0	50
CSKV-M16x1.5/11 <sup>1)</sup>	83581852	Black	M16x1,5	M16/P11	49.00	8.00	5.0 – 10.0	22.0 / 22.0	50
CSKV-M20x1,5/13,5-16 <sup>1)</sup>	83581854	Black	M20x1.5	DN 13	50.00	9.00	6.0 – 12.0	24.0 / 27.0	50
CSKV M20x1.5/16/6-12 <sup>2)</sup>	83980354	Black	M20x1.5	M20/P16(S)	50.00	9.00	6.0 – 12.0	24.0 / 27.0	50
CSKV-M20x1.5/16 <sup>1)</sup>	83581856	Black	M20x1.5	M20/P16(S)	50.00	9.00	10.0 – 14.0	27.0 / 27.0	50
CSKV-M25x1.5/21 <sup>1)</sup>	83581858	Black	M25x1.5	M25/P21(S)	60.00	11.00	13.0 – 18.0	33.0 / 33.0	50
CSKV-M32x1.5/29 <sup>1)</sup>	83581860	Black	M32x1.5	M32/P29(S)	69.00	11.00	18.0 – 25.0	42.0 / 42.0	25
CSKV-M40x1.5/36 <sup>1)</sup>	83581862	Black	M40x1.5	M40/P36(S)	88.00	13.00	22.0 – 32.0	53.0 / 53.0	10
CSKV-M63x1.5/48 <sup>1)</sup>	83581864	Black	M63x1.5	M50/P48(S)	109.00	14.00	37.0 – 44.0	65.0 / 65.0	10
<b>Grey variants</b>									
CSKV-M16x1.5/9 <sup>1)</sup>	83581810	Grey	M16x1,5	M12/P09	45.00	8.00	4.0 – 8.0	19.0 / 19.0	50
CSKV-M16x1.5/11 <sup>1)</sup>	83581812	Grey	M16x1,5	M16/P11	49.00	8.00	5.0 – 10.0	22.0 / 22.0	50
CSKV-M20x1,5/13,5-16 <sup>1)</sup>	83581814	Grey	M20x1.5	DN 13	50.00	9.00	6.0 – 12.0	24.0 / 27.0	50
CSKV-M20x1.5/16 <sup>1)</sup>	83581816	Grey	M20x1.5	M20/P16(S)	52.00	9.00	10.0 – 14.0	27.0 / 27.0	50
CSKV-M25x1.5/21 <sup>1)</sup>	83581818	Grey	M25x1.5	M25/P21(S)	60.00	11.00	13.0 – 18.0	33.0 / 33.0	50
CSKV-M32x1.5/29 <sup>1)</sup>	83581820	Grey	M32x1.5	M32/P29(S)	69.00	11.00	18.0 – 25.0	42.0 / 42.0	25
CSKV-M40x1.5/36 <sup>1)</sup>	83581822	Grey	M40x1.5	M40/P36(S)	88.00	13.00	22.0 – 32.0	53.0 / 53.0	10
CSKV-M63x1.5/48 <sup>1)</sup>	83581824	Grey	M63x1.5	M50/P48(S)	109.00	14.00	37.0 – 44.0	65.0 / 65.0	10
<b>Pg threads</b>									
CSKV-Pg 09 <sup>1)</sup>	83581250	Black	Pg 09	M12/P09	45.00	8.00	4.0 – 8.0	19.0 / 19.0	50
CSKV-Pg 11 <sup>1)</sup>	83581252	Black	Pg 11	M16/P11	49.00	8.00	5.0 – 10.0	22.0 / 22.0	50
CSKV-Pg 13,5/16 <sup>1)</sup>	83581254	Black	Pg 13.5	M20/P16(S)	52.00	9.00	6.0 – 12.0	24.0 / 27.0	50
CSKV-Pg 16 <sup>1)</sup>	83581256	Black	Pg 16	M20/P16(S)	52.00	10.00	10.0 – 14.0	27.0 / 27.0	50

## Type CSKV (conduit and cable fitting) (Continued...)

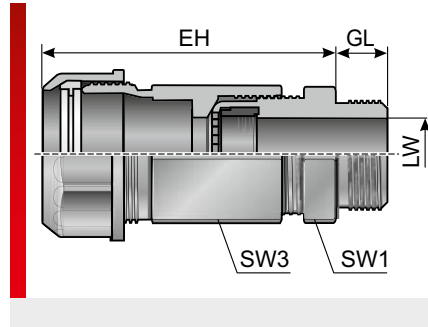


Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	Clamping range (LW) mm	SW 1 / 3 mm	Pack qty.
CSKV-Pg 21 <sup>1)</sup>	83581258	Black	Pg 21	M25/P21(S)	60.00	11.00	13.0 – 18.0	33.0 / 33.0	50
CSKV-Pg 29 <sup>1)</sup>	83581260	Black	Pg 29	M32/P29(S)	69.00	11.00	18.0 – 25.0	42.0 / 42.0	25
CSKV-Pg 36 <sup>1)</sup>	83581262	Black	Pg 36	M40/P36(S)	88.00	13.00	22.0 – 32.0	53.0 / 53.0	10
CSKV-Pg 48 <sup>1)</sup>	83581264	Black	Pg 48	M50/P48(S)	95.00	14.00	37.0 – 44.0	65.0 / 65.0	10
<b>NPT thread</b>									
CSKV 3/8"-09 <sup>1)</sup>	83583250	Black	3/8"	M12/P09	45.00	14.00	4.0 – 8.0	19.0 / 22.0	50
CSKV 1/2"-16 <sup>1)</sup>	83583256	Black	1/2"	M20/P16(S)	52.00	13.00	10.0 – 14.0	27.0 / 27.0	50
CSKV 3/4"-21 <sup>1)</sup>	83583258	Black	3/4"	M25/P21(S)	60.00	14.00	13.0 – 18.0	33.0 / 33.0	25
CSKV 1"-29 <sup>1)</sup>	83583260	Black	1"	M32/P29(S)	69.00	19.00	18.0 – 25.0	42.0 / 42.0	25
CSKV 3/8"-09 <sup>1)</sup>	83583210	Grey	3/8"	M12/P09	45.00	14.00	4.0 – 8.0	19.0 / 22.0	50
CSKV 1/2"-16 <sup>1)</sup>	83583216	Grey	1/2"	M20/P16(S)	52.00	13.00	10.0 – 14.0	27.0 / 27.0	50
CSKV 3/4"-21 <sup>1)</sup>	83583218	Grey	3/4"	M25/P21(S)	60.00	14.00	13.0 – 18.0	33.0 / 33.0	25
CSKV 1"-29 <sup>1)</sup>	83583220	Grey	1"	M32/P29(S)	69.00	19.00	18.0 – 25.0	42.0 / 42.0	25

<sup>1)</sup> With cURus- approval

<sup>2)</sup> Min. order quantity 250 pcs

## Type MCSKV (conduit and cable fitting)



### PRODUCT INFORMATION

The MCSKV conduit and cable fitting is a combination of our proven WKK cable fitting and the m-tec EH conduit fitting with multi-insert. The fittings are made of specially modified polyamide.

The materials are halogen, phosphor and cadmium-free.

The MCSKV conduit and cable fittings feature the following advantages:

- No parts can get lost, delivered completely assembled
- Tightness of IP 65 for static and dynamic application
- Integrated clamping ring ensures high tear-out strength
- Several cables can be inserted at the same time

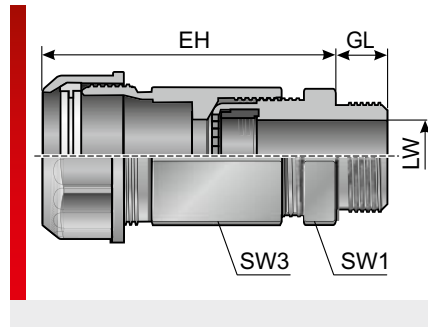
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: Perbunan (NBR)
- Acc. to UL94 V0 self-extinguishing
- IP 65

RoHS
 HF
 EU
 Made in Germany

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	Number x Ø mm	EH mm	GL mm	SW 1 / 3 mm	Pack qty.
<b>Metric thread</b>									
MCSKV-M16x1.5/9/4x1.4	83582850	Black	M16x1.5	M12/P09	4.0 x 1.4	45.00	8.00	19.0 / 19.0	50
MCSKV-M16x1.5/9/2x3	83582852	Black	M16x1.5	M12/P09	2.0 x 3.0	45.00	8.00	19.0 / 19.0	50
MCSKV-M20x1.5/16/3x2	83582854	Black	M20x1.5	M20/P16	3.0 x 2.0	52.00	9.00	27.0 / 27.0	50
MCSKV-M20x1.5/16/6x3	83582856	Black	M20x1.5	M20/P16	6.0 x 3.0	52.00	9.00	27.0 / 27.0	50
MCSKV-M20x1.5/16/3x4	83582858	Black	M20x1.5	M20/P16	3.0 x 4.0	52.00	9.00	27.0 / 27.0	50
MCSKV-M20x1.5/16/2x5	83582860	Black	M20x1.5	M20/P16	2.0 x 5.0	52.00	9.00	27.0 / 27.0	50
MCSKV-M25x1.5/21/4x2	83582862	Black	M25x1.5	M25/P21	4.0 x 2.0	60.00	11.00	33.0 / 33.0	50
MCSKV-M25x1.5/21/3x7	83582864	Black	M25x1.5	M25/P21	3.0 x 7.0	60.00	11.00	33.0 / 33.0	50
MCSKV-M25x1.5/21/2x8	83582866	Black	M25x1.5	M25/P21	2.0 x 8.0	60.00	11.00	33.0 / 33.0	50
MCSKV-M32x1.5/29/6x6.5	83582868	Black	M32x1.5	M32/P29	6.0 x 6.5	69.00	11.00	42.0 / 42.0	25
MCSKV-M32x1.5/29/4x9	83582870	Black	M32x1.5	M32/P29	4.0 x 9.0	69.00	11.00	42.0 / 42.0	25
<b>Pg threads</b>									
MCSKV-Pg 09 4x1,4	83582250	Black	Pg 09	M12/P09	4.0 x 1.4	45.00	8.00	19.0 / 19.0	50
MCSKV-Pg 09 4x3	83582252	Black	Pg 09	M12/P09	4.0 x 3.0	45.00	8.00	19.0 / 19.0	50
MCSKV-Pg 11 2x3	83582254	Black	Pg 11	M16/P11	2.0 x 3.0	49.00	8.00	22.0 / 22.0	50
MCSKV-Pg 11 2x4	83582256	Black	Pg 11	M16/P11	2.0 x 4.0	49.00	8.00	22.0 / 22.0	50
MCSKV-Pg 11 3x3	83582258	Black	Pg 11	M16/P11	3.0 x 3.0	49.00	8.00	22.0 / 22.0	50
MCSKV-Pg 13.5 2x5	83582260	Black	Pg 13.5	DN 13	2.0 x 5.0	52.00	9.00	24.0 / 27.0	50
MCSKV-Pg 13.5 3x2	83582262	Black	Pg 13.5	DN 13	3.0 x 2.0	52.00	9.00	24.0 / 27.0	50
MCSKV-Pg 13.5 3x4	83582264	Black	Pg 13.5	DN 13	3.0 x 4.0	52.00	9.00	24.0 / 27.0	50
MCSKV-Pg 13.5 6x3	83582266	Black	Pg 13.5	DN 13	6.0 x 3.0	52.00	9.00	24.0 / 27.0	50
MCSKV-Pg 16 2x6	83582268	Black	Pg 16	M20/P16	2.0 x 6.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 3x3	83582270	Black	Pg 16	M20/P16	3.0 x 3.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 3x4	83582272	Black	Pg 16	M20/P16	3.0 x 4.0	52.00	10.00	27.0 / 27.0	50

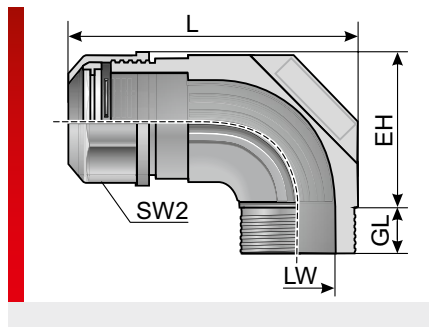
**Type MCSKV (conduit and cable fitting)** (Continued...)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	Number x Ø mm	EH mm	GL mm	SW 1 / 3 mm	Pack qty.
MCSKV-Pg 16 3x6	83582274	Black	Pg 16	M20/P16	3.0 x 6.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 4x4	83582276	Black	Pg 16	M20/P16	4.0 x 4.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 5x4	83582278	Black	Pg 16	M20/P16	5.0 x 4.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 6x4	83582280	Black	Pg 16	M20/P16	6.0 x 4.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 21 2x8	83582282	Black	Pg 21	M25/P21	2.0 x 8.0	60.00	11.00	33.0 / 33.0	50
MCSKV-Pg 21 3x7	83582284	Black	Pg 21	M25/P21	3.0 x 7.0	60.00	11.00	33.0 / 33.0	50
MCSKV-Pg 21 4x6	83582286	Black	Pg 21	M25/P21	4.0 x 6.0	60.00	11.00	33.0 / 33.0	50
MCSKV-Pg 09 4x1,4	83582210	Grey	Pg 09	M12/P09	4.0 x 1.4	45.00	8.00	19.0 / 19.0	50
MCSKV-Pg 09 4x3	83582212	Grey	Pg 09	M12/P09	4.0 x 3.0	45.00	8.00	19.0 / 19.0	50
MCSKV-Pg 11 2x3	83582214	Grey	Pg 11	M16/P11	2.0 x 3.0	49.00	8.00	22.0 / 22.0	50
MCSKV-Pg 11 2x4	83582216	Grey	Pg 11	M16/P11	2.0 x 4.0	49.00	8.00	22.0 / 22.0	50
MCSKV-Pg 11 3x3	83582218	Grey	Pg 11	M16/P11	3.0 x 3.0	49.00	8.00	22.0 / 22.0	50
MCSKV-Pg 13.5 2x5	83582220	Grey	Pg 13.5	DN 13	2.0 x 5.0	52.00	9.00	24.0 / 27.0	50
MCSKV-Pg 13.5 3x2	83582222	Grey	Pg 13.5	DN 13	3.0 x 2.0	52.00	9.00	24.0 / 27.0	50
MCSKV-Pg 13.5 3x4	83582224	Grey	Pg 13.5	DN 13	3.0 x 4.0	52.00	9.00	24.0 / 27.0	50
MCSKV-Pg 13.5 6x3	83582226	Grey	Pg 13.5	DN 13	6.0 x 3.0	52.00	9.00	24.0 / 27.0	50
MCSKV-Pg 16 2x6	83582228	Grey	Pg 16	M20/P16	2.0 x 6.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 3x3	83582230	Grey	Pg 16	M20/P16	3.0 x 3.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 3x4	83582232	Grey	Pg 16	M20/P16	3.0 x 4.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 3x6	83582234	Grey	Pg 16	M20/P16	3.0 x 6.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 4x4	83582236	Grey	Pg 16	M20/P16	4.0 x 4.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 5x4	83582238	Grey	Pg 16	M20/P16	5.0 x 4.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 16 6x4	83582240	Grey	Pg 16	M20/P16	6.0 x 4.0	52.00	10.00	27.0 / 27.0	50
MCSKV-Pg 21 2x8	83582242	Grey	Pg 21	M25/P21	2.0 x 8.0	60.00	11.00	33.0 / 33.0	50
MCSKV-Pg 21 3x7	83582244	Grey	Pg 21	M25/P21	3.0 x 7.0	60.00	11.00	33.0 / 33.0	50
MCSKV-Pg 21 4x6	83582246	Grey	Pg 21	M25/P21	4.0 x 6.0	60.00	11.00	33.0 / 33.0	50



## Type KW 90° (conduit fitting)



### PRODUCT INFORMATION

The angled KW 90° conduit fittings with plastic threading are made from specially modified polyamide. The materials are halogen, phosphor and cadmium-free. The KW 90° conduit fittings feature the following advantages:

- No parts can get lost, delivered completely assembled
- Tightness of IP 65 for static and dynamic application

- Integrated clamping ring ensures high tear-out strength
- Easy insertion of the cables through rounded inside bend

Specification:

- UL listed E 148958
- EN 45545-2 3x HL3

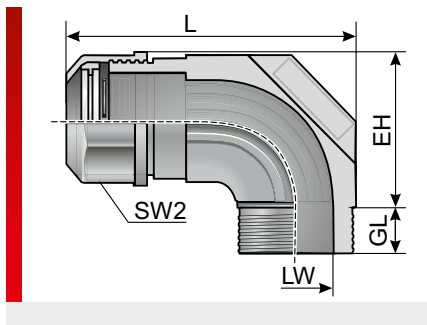
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Clamping ring: Polyoxymethylene (POM)
- Acc. to UL94 V0 self-extinguishing
- IP 65



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	L mm	GL mm	LW mm	SW 2 mm	Pack qty.
<b>Metric thread</b>										
KW-M16x1,5/9 <sup>1)</sup>	83565050	Black	M16x1,5	M12/P09	27.00	47.00	7.50	9.50	22.00	50
KW-M20x1,5/11 <sup>1)</sup>	83565052	Black	M20x1.5	M16/P11	29.00	51.00	8.00	13.00	24.00	50
KW-M25x1,5/16 <sup>1)</sup>	83565054	Black	M25x1.5	M20/P16(S)	35.00	56.00	10.00	16.00	30.00	50
KW-M32x1,5/21 <sup>1)</sup>	83565056	Black	M32x1.5	M25/P21(S)	41.00	67.00	12.00	22.00	38.00	25
KW-M40x1,5/29 <sup>1)</sup>	83565058	Black	M40x1.5	M32/P29(S)	53.00	82.00	12.00	28.00	46.00	25
<b>Pg threads</b>										
KW-Pg 09 <sup>1)</sup>	83561050	Black	Pg 09	M12/P09	27.00	45.00	7.50	9.50	22.00	50
KW-Pg 11 <sup>1)</sup>	83561052	Black	Pg 11	M16/P11	29.00	51.00	8.00	13.00	24.00	50
KW-Pg 13/16 <sup>1)</sup>	83561054	Black	Pg 13.5	M20/P16(S)	35.00	56.00	10.00	16.00	30.00	50
KW-Pg 16 <sup>1)</sup>	83561056	Black	Pg 16	M20/P16(S)	35.00	56.00	10.00	16.00	30.00	50
KW-Pg 21 <sup>1)</sup>	83561058	Black	Pg 21	M25/P21(S)	41.00	67.00	11.00	22.00	38.00	25
KW-Pg 29 <sup>1)</sup>	83561060	Black	Pg 29	M32/P29(S)	53.00	82.00	12.00	29.00	46.00	25
<b>Grey variants</b>										
KW-Pg 09 <sup>1)</sup>	83561010	Grey	Pg 09	M12/P09	27.00	45.00	7.50	9.50	22.00	50
KW-Pg 11 <sup>1)</sup>	83561012	Grey	Pg 11	M16/P11	29.00	51.00	8.00	13.00	24.00	50
KW-Pg 13/16 <sup>1)</sup>	83561014	Grey	Pg 13.5	M20/P16(S)	35.00	56.00	10.00	16.00	30.00	50
KW-Pg 16 <sup>1)</sup>	83561016	Grey	Pg 16	M20/P16(S)	35.00	56.00	10.00	16.00	30.00	50
KW-Pg 21 <sup>1)</sup>	83561018	Grey	Pg 21	M25/P21(S)	41.00	67.00	11.00	22.00	38.00	25

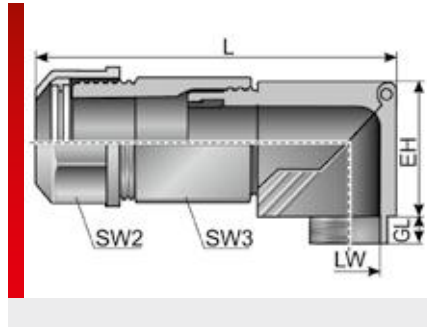
**Type KW 90° (conduit fitting)** (Continued...)



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	L mm	GL mm	LW mm	SW 2 mm	Pack qty.
KW-Pg 29 <sup>1)</sup>	83561020	Grey	Pg 29	M32/P29(S)	53.00	82.00	12.00	29.00	46.00	25
<b>NPT thread</b>										
KW-3/8"/11 <sup>1)</sup>	83561451	Black	3/8"	M16/P11	29.00	51.00	8.00	13.00	24.00	50
KW-1/2"/16 <sup>1)</sup>	83561450	Black	1/2"	M20/P16(S)	35.00	56.00	10.00	16.00	30.00	50
KW-3/4"/21 <sup>1)</sup>	83561452	Black	3/4"	M25/P21(S)	41.00	67.00	11.00	21.00	38.00	25
KW-1"/29 <sup>1)</sup>	83561454	Black	1"	M32/P29(S)	53.00	82.00	12.00	27.00	46.00	25
KW-3/8"/11 <sup>1)</sup>	83561411	Grey	3/8"	M16/P11	29.00	51.00	8.00	13.00	24.00	50
KW-1/2"/16 <sup>1)</sup>	83561410	Grey	1/2"	M20/P16(S)	35.00	56.00	10.00	16.00	30.00	50
KW-3/4"/21 <sup>1)</sup>	83561412	Grey	3/4"	M25/P21(S)	41.00	67.00	11.00	21.00	38.00	25
KW-1"/29 <sup>1)</sup>	83561414	Grey	1"	M32/P29(S)	53.00	82.00	12.00	27.00	46.00	25

<sup>1)</sup> With cURus- approval

## Type CKW (conduit and cable fitting)



### PRODUCT INFORMATION

The angled and folding CKW 90° combined conduit and cable fittings with plastic threading are made from specially modified polyamide and perbunan. The materials are halogen, phosphor and cadmium-free. The CKW 90° conduit fittings feature the following advantages:

- No parts can get lost, delivered completely assembled
- Optimum strain relief for the cable due to iris-shaped lamellae

- Tightness of IP 65 for static and dynamic application
- Integrated clamping ring ensures high tear-out strength
- Folding angle piece makes cable assembly easy

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: Perbunan (NBR)
- Acc. to UL94 V0 self-extinguishing
- IP 65



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	Clamping range (LW) mm	SW 2 / 3 mm	Pack qty.
<b>Metric thread</b>									
CKW-M16x1.5/9	83584250	Black	M16x1,5	M12/P09	23.00	8.00	4.0 – 8.0	22.0 / 22.0	50
CKW-M20x1.5/16	83584256	Black	M20x1.5	M20/P16	32.00	9.00	6.0 – 12.0	27.0 / 27.0	50
CKW-M25x1.5/21	83584258	Black	M25x1.5	M25/P21	40.00	12.00	13.0 – 18.0	33.0 / 33.0	10
CKW-M32x1.5/29 <sup>1)</sup>	83584260	Black	M32x1.5	M32/P29	50.00	12.00	18.0 – 25.0	42.0 / 42.0	25
<b>Pg threads</b>									
CKW-Pg 09	83581050	Black	Pg 09	M12/P09	23.00	8.00	4.0 – 8.0	19.0 / 19.0	50
CKW-Pg 11	83581052	Black	Pg 11	M16/P11	28.00	8.00	5.0 – 10.0	22.0 / 22.0	50
CKW-Pg 16	83581054	Black	Pg 16	M20/P16	37.00	11.00	10.0 – 14.0	27.0 / 27.0	50
CKW-Pg 21	83581056	Black	Pg 21	M25/P21	39.00	11.00	13.0 – 18.0	33.0 / 33.0	25
CKW-Pg 29 <sup>1)</sup>	83581058	Black	Pg 29	M32/P29	50.00	11.00	18.0 – 25.0	42.0 / 42.0	25

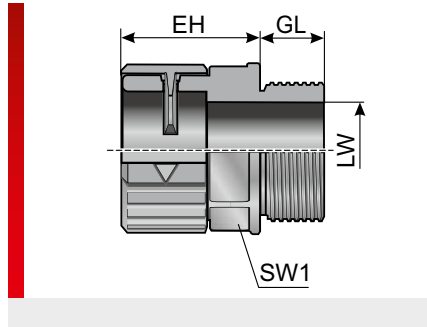
<sup>1)</sup>With cURus- approval





**m-fix conduit fitting**

## Type MSV (plug-in fitting)



### PRODUCT INFORMATION

The MSV conduit fittings are made of specially modified polyamide 6. The materials are halogen, phosphor and cadmium-free. The affordable MSV conduit fittings feature the following advantages:

- No parts can get lost, delivered completely assembled
- Cost reduction through simple assembly work, insert conduit and done

- Simple opening mechanism
- Tightness of IP 54 for static and dynamic application, IP 65 with additional mounting of an O-ring

Specification:  
 • EN 45545-2 3x HL3

### SPECIFICATIONS

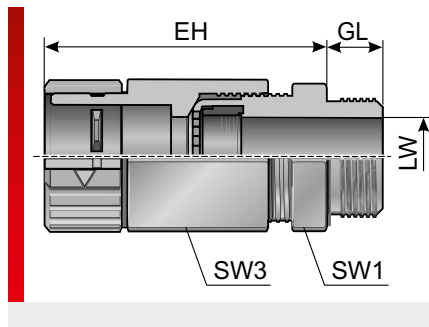
- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 54  
IP 65 with sealing ring DR-NBR

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 mm	Pack qty.
<b>Metric thread</b>									
MSV-M12x1.5/7	83602450	Black	M12x1.5	M10/P07	19.00	13.00	8.00	16.00	50
MSV-M12x1.5/9	83602452	Black	M12x1.5	M12/P09	19.00	13.00	8.00	18.00	50
MSV-M12x1.5/11	83602456	Black	M12x1.5	M16/P11	23.00	13.00	8.00	21.00	50
MSV-M16x1.5/9	83602454	Black	M16x1,5	M12/P09	19.00	13.00	12.00	18.00	50
MSV-M16x1.5/11	83602458	Black	M16x1,5	M16/P11	23.00	13.00	12.00	21.00	50
MSV-M20x1.5/11	83602459	Black	M20x1.5	M16/P11	23.00	14.00	13.50	21.00	50
MSV-M20x1.5/16	83602460	Black	M20x1.5	M20/P16(S)	27.00	14.00	15.00	27.00	50
MSV-M25x1.5/16	83602461	Black	M25x1.5	M20/P16(S)	26.00	14.00	19.00	27.00	50
MSV-M25x1.5/21	83602462	Black	M25x1.5	M25/P21(S)	32.00	14.00	21.00	36.00	50
MSV-M32x1.5/21	83602463	Black	M32x1.5	M25/P21(S)	32.00	14.00	26.00	36.00	50
MSV-M32x1.5/29	83602464	Black	M32x1.5	M32/P29(S)	34.00	14.00	27.00	40.00	25
MSV-M40x1.5/29	83602465	Black	M40x1.5	M32/P29(S)	34.00	14.00	32.00	40.00	25
MSV-M40x1.5/36	83602466	Black	M40x1.5	M40/P36(S)	38.00	16.00	34.00	49.00	10
MSV-M50x1.5/36	83602467	Black	M50x1.5	M40/P36(S)	37.50	16.00	40.00	49.00	10
MSV-M50x1.5/48	83602468	Black	M50x1.5	M50/P48(S)	39.00	16.00	44.00	60.00	10
MSV-M63x1.5/48	83602469	Black	M63x1.5	M50/P48(S)	38.50	16.00	52.00	60.00	10
MSV-M12x1.5/7	83602410	Grey	M12x1.5	M10/P07	19.00	13.00	8.00	16.00	50
MSV-M12x1.5/9	83602412	Grey	M12x1.5	M12/P09	19.00	13.00	8.00	18.00	50
MSV-M12x1.5/11	83602416	Grey	M12x1.5	M16/P11	23.00	13.00	8.00	21.00	50
MSV-M16x1.5/9	83602414	Grey	M16x1,5	M12/P09	19.00	13.00	12.00	18.00	50
MSV-M16x1.5/11	83602418	Grey	M16x1,5	M16/P11	23.00	13.00	12.00	21.00	50
MSV-M20x1.5/11	83602419	Grey	M20x1.5	M16/P11	23.00	14.00	13.50	21.00	50
MSV-M20x1.5/16	83602420	Grey	M20x1.5	M20/P16(S)	27.00	14.00	15.00	27.00	50
MSV-M25x1.5/16	83602421	Grey	M25x1.5	M20/P16(S)	26.00	14.00	19.00	27.00	50

**Type MSV (plug-in fitting)** (Continued...)

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	SW 1 mm	Pack qty.
MSV-M25x1.5/21	83602422	Grey	M25x1.5	M25/P21(S)	32.00	14.00	21.00	36.00	50
MSV-M32x1.5/21	83602423	Grey	M32x1.5	M25/P21(S)	32.00	14.00	26.00	36.00	50
MSV-M32x1.5/29	83602424	Grey	M32x1.5	M32/P29(S)	34.00	14.00	27.00	40.00	25
MSV-M40x1.5/29	83602425	Grey	M40x1.5	M32/P29(S)	34.00	14.00	32.00	40.00	25
MSV-M40x1.5/36	83602426	Grey	M40x1.5	M40/P36(S)	38.00	16.00	34.00	49.00	10
MSV-M50x1.5/36	83602427	Grey	M50x1.5	M40/P36(S)	37.50	16.00	40.00	49.00	10
MSV-M50x1.5/48	83602428	Grey	M50x1.5	M50/P48(S)	39.00	16.00	44.00	60.00	10
MSV-M63x1.5/48	83602429	Grey	M63x1.5	M50/P48(S)	38.50	16.00	52.00	60.00	10
<b>Pg plastic threading</b>									
MSV-Pg 07	83601050	Black	Pg 07	M10/P07	19.00	9.00	8.00	16.00	50
MSV-Pg 09	83601052	Black	Pg 09	M12/P09	19.00	10.00	9.60	18.00	50
MSV-Pg 11	83601054	Black	Pg 11	M16/P11	23.00	10.00	13.80	21.00	50
MSV-Pg 13,5/11	83601055	Black	Pg 13.5	M16/P11	23.00	13.00	12.00	21.00	50
MSV-Pg 13,5/16	83601056	Black	Pg 13.5	M20/P16(S)	27.00	13.00	15.50	27.00	50
MSV-Pg 16/09	83601057	Black	Pg 16	M12/P09	19.00	13.00	27.00	27.00	50
MSV-Pg 16	83601058	Black	Pg 16	M20/P16(S)	27.00	13.00	17.00	27.00	50
MSV-Pg 21/16	83601059	Black	Pg 21	M20/P16	26.00	14.00	36.00	36.00	50
MSV-Pg 21	83601060	Black	Pg 21	M25/P21(S)	32.00	14.00	23.00	36.00	50
MSV-Pg 29	83601062	Black	Pg 29	M32/P29(S)	35.00	14.00	28.00	40.00	25
MSV-Pg 36	83601064	Black	Pg 36	M40/P36(S)	38.00	15.00	40.00	49.00	10
MSV-Pg 48	83601066	Black	Pg 48	M50/P48(S)	39.00	17.00	47.00	60.00	10
MSV-Pg 07	83601010	Grey	Pg 07	M10/P07	19.00	9.00	8.00	16.00	50
MSV-Pg 09	83601012	Grey	Pg 09	M12/P09	19.00	10.00	9.60	18.00	50
MSV-Pg 11	83601014	Grey	Pg 11	M16/P11	23.00	10.00	13.80	21.00	50
MSV-Pg 13,5/11	83601015	Grey	Pg 13.5	M16/P11	23.00	13.00	12.00	21.00	50
MSV-Pg 13,5/16	83601016	Grey	Pg 13.5	M20/P16(S)	27.00	13.00	15.50	27.00	50
MSV-Pg 16/09	83601017	Grey	Pg 16	M12/P09	19.00	13.00	27.00	27.00	50
MSV-Pg 16	83601018	Grey	Pg 16	M20/P16(S)	27.00	13.00	17.00	27.00	50
MSV-Pg 21/16	83601019	Grey	Pg 21	M20/P16	26.00	14.00	36.00	36.00	50
MSV-Pg 21	83601020	Grey	Pg 21	M25/P21(S)	32.00	14.00	23.00	36.00	50
MSV-Pg 29	83601022	Grey	Pg 29	M32/P29(S)	35.00	14.00	28.00	40.00	25
MSV-Pg 36	83601024	Grey	Pg 36	M40/P36(S)	38.00	15.00	40.00	49.00	10
MSV-Pg 48	83601026	Grey	Pg 48	M50/P48(S)	39.00	17.00	47.00	60.00	10
<b>NPT plastic threading</b>									
MSV NPT 3/8"/11	83602650	Black	3/8"	M16/P11(S)	32.00	8.00	12.00	21.00	50
MSV-NPT 1/2"/16	83602652	Black	1/2"	M20/P16(S)	27.00	14.00	15.00	27.00	50
MSV-NPT 3/4"/21	83602654	Black	3/4"	M25/P21(S)	32.00	14.00	20.50	36.00	50
MSV-NPT 1"/29	83602656	Black	1"	M32/P29(S)	35.00	16.00	26.50	40.00	25
MSV NPT 3/8"/11	83602610	Grey	3/8"	M16/P11(S)	32.00	8.00	12.00	21.00	50
MSV-NPT 1/2"/16	83602612	Grey	1/2"	M20/P16(S)	27.00	14.00	15.00	27.00	50
MSV-NPT 3/4"/21	83602614	Grey	3/4"	M25/P21(S)	32.00	14.00	20.50	36.00	50
MSV-NPT 1"/29	83602616	Grey	1"	M32/P29(S)	35.00	16.00	26.50	40.00	25

## Type KSV (conduit and cable fitting)



### PRODUCT INFORMATION

The KSV combined conduit and cable fittings are made of specially modified polyamide 6. The materials are halogen, phosphor and cadmium-free.

The KSV combined conduit and cable fittings feature the following advantages:

- Optimum strain relief for the cable
- Cost reduction through simplification of assembly of conduit, insert conduit and done

- No parts can get lost, as the fitting does not have to be dismantled for assembly
- Tightness of IP 54 for static and dynamic application, IP 65 with additional mounting of an O-ring

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: NBR
- Acc. to UL94 V0 self-extinguishing
- IP 54  
IP 65 with sealing ring DR-NBR



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	Clamping range (LW) mm	SW 1 / 3 mm	Pack qty.
<b>Metric thread</b>							
KSV-M16x1.5/9	83611450	Black	M16x1,5	M12/P09	4.0 – 8.0	19.0	50
KSV-M16x1.5/11	83611452	Black	M16x1,5	M16/P11	5.0 – 10.0	22.0	50
KSV-M20x1.5/16	83611456	Black	M20x1.5	M20/P16(S)	10.0 – 14.0	24.0 / 27.0	50
KSV-M25x1.5/21	83611458	Black	M25x1.5	M25/P21(S)	13.0 – 18.0	33.0	50
KSV-M32x1.5/29	83611460	Black	M32x1.5	M32/P29(S)	18.0 – 25.0	42.0	25
<b>Grey variants</b>							
KSV-M16x1.5/9	83611410	Grey	M16x1,5	M12/P09	4.0 – 8.0	19.0	50
KSV-M16x1.5/11	83611412	Grey	M16x1,5	M16/P11	5.0 – 10.0	22.0	50
KSV-M20x1.5/16	83611416	Grey	M20x1.5	M20/P16(S)	10.0 – 14.0	24.0 / 27.0	50
KSV-M25x1.5/21	83611418	Grey	M25x1.5	M25/P21(S)	13.0 – 18.0	33.0	50
KSV-M32x1.5/29	83611420	Grey	M32x1.5	M32/P29(S)	18.0 – 25.0	42.0	25
<b>Pg plastic threading</b>							
KSV-Pg 09	83611250	Black	Pg 09	M12/P09	4.0 – 8.0	19.0	50
KSV-Pg 11	83611252	Black	Pg 11	M16/P11	5.0 – 10.0	22.0	50
KSV-PG 13/11	83611253	Black	Pg 13	M16/P11	6.0 – 12.0	27.0 / 24.0	50
KSV-Pg 13,5/16 <sup>1)</sup>	83611254	Black	Pg 13.5	M20/P16(S)	6.0 – 12.0	24.0 / 27.0	50
KSV-Pg 16	83611256	Black	Pg 16	M20/P16(S)	10.0 – 14.0	27.0	50
KSV-Pg 16/21	83611257	Black	Pg 16	M25/P21	13.0 – 18.0	33.0	50
KSV-Pg 21	83611258	Black	Pg 21	M25/P21(S)	13.0 – 18.0	33.0	50
KSV-Pg 29	83611260	Black	Pg 29	M32/P29(S)	18.0 – 25.0	42.0	25
<b>Pg threads</b>							
KSV-Pg 09	83611210	Grey	Pg 09	M12/P09	4.0 – 8.0	19.0	50
KSV-Pg 11	83611212	Grey	Pg 11	M16/P11	5.0 – 10.0	22.0	50

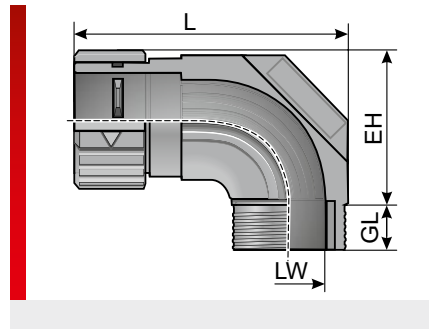


**Type KSV (conduit and cable fitting)** (Continued...)

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	Clamping range (LW) mm	SW 1 / 3 mm	Pack qty.
KSV PG 13/11	83611213	Grey	Pg 13	M16/P11	6.0 – 12.0	27.0 / 24.0	50
KSV-Pg 13,5/16 <sup>1)</sup>	83611214	Grey	Pg 13.5	M20/P16(S)	6.0 – 12.0	24.0 / 27.0	50
KSV-Pg 16	83611216	Grey	Pg 16	M20/P16(S)	10.0 – 14.0	27.0	50
KSV-Pg 16/21	83611217	Grey	Pg 16	M25/P21	13.0 – 18.0	33.0	50
KSV-Pg 21	83611218	Grey	Pg 21	M25/P21(S)	13.0 – 18.0	33.0	50
KSV-Pg 29	83611220	Grey	Pg 29	M32/P29(S)	18.0 – 25.0	42.0	25
<b>NPT plastic threading</b>							
KSV 3/8"/9	83613250	Black	3/8"	M12/P09	4.0 – 8.0	19.0	50
KSV 1/2"/16	83613256	Black	1/2"	M20/P16	10.0 – 14.0	27.0	50
KSV 3/4"/21	83613258	Black	3/4"	M25/P21(S)	13.0 – 18.0	33.0	25
KSV 1"-/29	83613260	Black	1"	M32/P29	18.0 – 25.0	42.0	25
KSV 3/8"/9	83613210	Grey	3/8"	M12/P09	4.0 – 8.0	19.0	50
KSV 1/2"/16	83613216	Grey	1/2"	M20/P16(S)	10.0 – 14.0	27.0	50
KSV 3/4"/21	83613218	Grey	3/4"	M25/P21(S)	13.0 – 18.0	33.0	25
KSV 1"-/29	83613220	Grey	1"	M32/P29(S)	18.0 – 25.0	42.0	25

<sup>1)</sup>Part to be phased out!

## Type WSV 90° (angle plug-in fitting)



### PRODUCT INFORMATION

The WSV conduit fittings are made of specially modified polyamide 6. The materials are halogen, phosphor and cadmium-free. The affordable MSV conduit fittings feature the following advantages:

- No parts can get lost, delivered completely assembled
- Cost reduction through simple assembly work, insert conduit and done

- Simple opening mechanism
- Tightness of IP 54 for static and dynamic application, IP 65 with additional mounting of an O-ring

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 54  
IP 65 with sealing ring DR-NBR



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex	EH mm	GL mm	LW mm	Pack qty.
<b>Metric thread</b>								
WSV-M16x1.5/9	83605050	Black	M16x1,5	M12/P09	26.00	7.50	10.00	50
WSV-M20x1.5/11	83605052	Black	M20x1.5	M16/P11	29.00	8.00	12.00	50
WSV-M25x1.5/16	83605054	Black	M25x1.5	M20/P16(S)	32.00	10.00	16.00	50
WSV-M32x1.5/21	83605056	Black	M32x1.5	M25/P21(S)	39.00	11.00	22.00	25
WSV-M40x1.5/29	83605058	Black	M40x1.5	M32/P29(S)	51.00	12.00	28.00	25
WSV-M50x1.5/36	83605060	Black	M50x1.5	M40/P36(S)	70.00	15.00	35.00	10
WSV-M63x1.5/48	83605062	Black	M63x1.5	M50/P48(S)	96.00	15.00	49.00	10
<b>Grey variants</b>								
WSV-M16x1.5/9	83605010	Grey	M16x1,5	M12/P09	26.00	7.50	10.00	50
WSV-M20x1.5/11	83605012	Grey	M20x1.5	M16/P11	29.00	8.00	12.00	50
WSV-M25x1.5/16	83605014	Grey	M25x1.5	M20/P16(S)	32.00	10.00	16.00	50
WSV-M32x1.5/21	83605016	Grey	M32x1.5	M25/P21(S)	39.00	11.00	22.00	25
WSV-M40x1.5/29	83605018	Grey	M40x1.5	M32/P29(S)	51.00	12.00	28.00	25
WSV-M50x1.5/36	83605020	Grey	M50x1.5	M40/P36(S)	70.00	15.00	35.00	10
WSV-M63x1.5/48	83605022	Grey	M63x1.5	M50/P48(S)	96.00	15.00	49.00	10
<b>Pg threads</b>								
WSV-Pg 09	83601450	Black	Pg 09	M12/P09	28.50	8.00	13.00	50
WSV-Pg 11	83601452	Black	Pg 11	M16/P11	28.50	8.00	13.00	50
WSV-Pg 13.5/16	83601454	Black	Pg 13.5	M20/P16(S)	32.00	10.00	16.00	50
WSV-Pg 16	83601456	Black	Pg 16	M20/P16(S)	32.00	10.00	16.00	50
WSV-Pg 21	83601458	Black	Pg 21	M25/P21(S)	38.50	11.50	22.00	25
WSV-Pg 29	83601460	Black	Pg 29	M32/P29(S)	50.50	12.00	28.00	25
WSV-Pg 36	83601462	Black	Pg 36	M40/P36(S)	70.00	15.50	35.00	10
WSV-Pg 48	83601464	Black	Pg 48	M50/P48(S)	96.00	16.00	49.00	10



## Type DR-NBR (sealing ring)





### PRODUCT INFORMATION

The sealing ring DR-NBR enables the protection rating on conduit fittings MSV, KSV and WSV to be increased from IP 54 to IP 65. To do so, simply insert the sealing ring into the first recess at the end of the cable protection conduit.

To guarantee reliable installation, the clamping ring should be unlocked before the

conduit is assembled. Following assembly of the cable protection conduit in the conduit fitting, protection rating IP 65 is achieved. The sealing ring can only be used for cable protection conduits with standard corrugation and crush resistance > 400 N/100 mm.

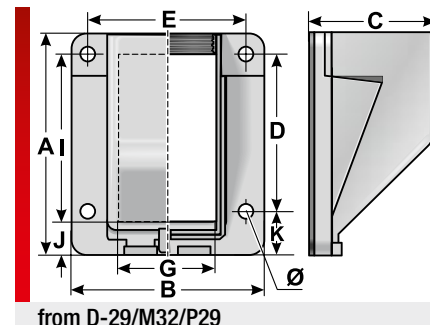
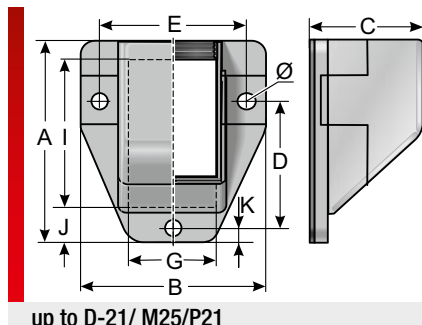
### SPECIFICATIONS

	-25 – 120 °C
	Perbunan (NBR)
	

Type	Order No.	Colour	Suitable for Murrflex	Pack qty.
DR-NBR M10/P7	83481410	Black	M10/P07	50
DR-NBR M12/P9	83481412	Black	M12/P09	50
DR-NBR M16/P11	83481414	Black	M16/P11	50
DR-NBR M20/P16	83481416	Black	M20/P16	50
DR-NBR M25/P21	83481418	Black	M25/P21	50
DR-NBR M32/P29	83481420	Black	M32/P29	25
DR-NBR M40/P36	83481422	Black	M40/P36	10
DR-NBR M50/P48	83481424	Black	M50/P48	10



## Type KFW



### PRODUCT INFORMATION

The KFW bulkhead fittings are made of specially modified polyamide 6. The material is self-extinguishing, and halogen, phosphor and cadmium-free. Bulkhead fittings are available with a metric or Pg thread. The KFW bulkhead fittings with thread are used with both cable and conduit fittings. The KFW bulkhead fittings feature the following advantages:

- System divided in two for very quick and easy installation of cables
- Subsequent installation of cables is simplified by removable upper part
- Gasket included in delivery

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: Neoprene (CR)
- Acc. to UL94 V0 self-extinguishing
- IP 65

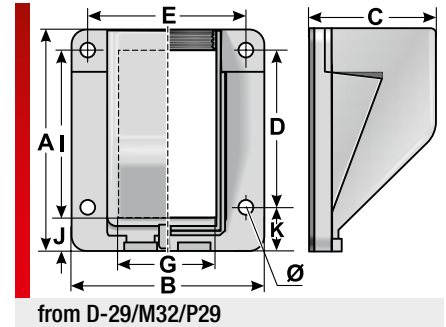
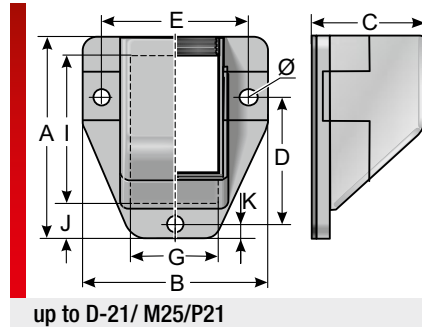


Type	Order No.	Colour	Internal thread	A mm	B mm	C mm	D mm	E mm	G mm	I mm	J mm	K mm	Ø mm	Pack qty.
<b>Metric thread</b>														
KFW-M16x1,5	83562450	Black	M16x1,5	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW-M20x1,5	83562452	Black	M20x1.5	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW-M25x1,5	83562454	Black	M25x1.5	69.00	65.00	44.00	41.50	51.50	30.00	42.50	15.00	6.00	6.00	10
KFW-M32x1,5	83562456	Black	M32x1.5	90.00	78.00	55.00	64.50	64.50	40.00	68.00	9.00	16.00	6.50	10
KFW-M40x1,5	83562458	Black	M40x1.5	99.00	94.00	66.00	79.50	79.50	48.50	74.50	9.50	10.00	6.50	10
KFW-M50x1,5	83562460	Black	M50x1.5	116.00	101.00	76.00	87.50	87.50	68.50	89.50	9.50	16.00	6.50	10
<b>Pg threads</b>														
KFW-11	83561650	Black	Pg 11	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW-16	83561652	Black	Pg 16	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW-21	83561654	Black	Pg 21	69.00	65.00	44.00	41.50	51.50	30.00	42.50	15.00	6.00	6.00	10
KFW-29	83561656	Black	Pg 29	90.00	78.00	55.00	64.50	64.50	40.00	68.00	9.00	16.00	6.50	10
KFW-36	83561658	Black	Pg 36	99.00	94.00	66.00	79.50	79.50	48.50	74.50	9.50	10.00	6.50	10
KFW-48	83561660	Black	Pg 48	116.00	101.00	76.00	87.50	87.50	68.50	89.50	9.50	16.00	6.50	10
KFW-11	83561610	Grey	Pg 11	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW-16	83561612	Grey	Pg 16	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW-21	83561614	Grey	Pg 21	69.00	65.00	44.00	41.50	51.50	30.00	42.50	15.00	6.00	6.00	10

**Type KFW** (Continued...)

Type	Order No.	Colour	Internal thread	A mm	B mm	C mm	D mm	E mm	G mm	I mm	J mm	K mm	Ø mm	Pack qty.
KFW-29	83561616	Grey	Pg 29	90.00	78.00	55.00	64.50	64.50	40.00	68.00	9.00	16.00	6.50	10
KFW-36	83561618	Grey	Pg 36	99.00	94.00	66.00	79.50	79.50	48.50	74.50	9.50	10.00	6.50	10
KFW-48	83561620	Grey	Pg 48	116.00	101.00	76.00	87.50	87.50	68.50	89.50	9.50	16.00	6.50	10

## Type KFW/D



### PRODUCT INFORMATION

The KFW bulkhead fittings are made of specially modified polyamide 6. The material is self-extinguishing, and halogen, phosphor and cadmium-free. With the KFW/D and KFW/X bulkhead fittings, the cable protection conduits EW with standard corrugation and EWX with high corrugation can be directly mounted. The KFW bulkhead fittings feature the following advantages:

- System divided in two for very quick and easy installation of cables
- Subsequent installation of cables is simplified by the removable upper part
- Gasket included in delivery
- No extra fittings are required

Specification:

- EN 45545-2 3x HL3

### SPECIFICATIONS

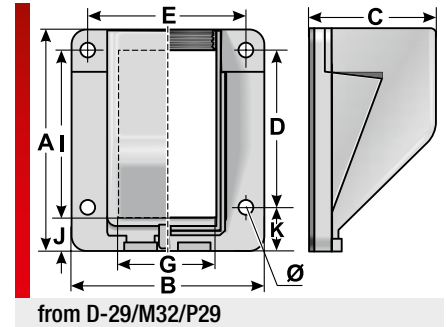
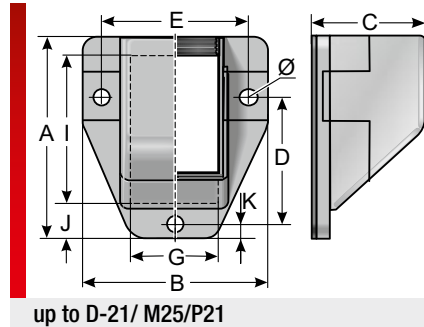
- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: Neoprene (CR)
- Acc. to UL94 V0 self-extinguishing
- IP 54



Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	D mm	E mm	G mm	I mm	J mm	K mm	Ø mm	Pack qty.
<b>For cable protection conduits with standard corrugation, type EW-xx and EWT-xx</b>														
KFW/D-11	83561850	Black	M16/P11	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW/D-16	83561852	Black	M20/P16(S)	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW/D-21	83561854	Black	M25/P21(S)	69.00	65.00	44.00	41.50	51.50	30.00	42.50	15.00	6.00	6.00	10
KFW/D-29	83561856	Black	M32/P29(S)	90.00	78.00	55.00	64.50	64.50	40.00	68.00	9.00	16.00	6.50	10
KFW/D-36	83561858	Black	M40/P36(S)	99.00	94.00	66.00	79.50	79.50	48.50	74.50	9.50	10.00	6.50	10
KFW/D-48	83561860	Black	M50/P48(S)	116.00	101.00	76.00	87.50	87.50	68.50	89.50	9.50	16.00	6.50	10
KFW/D-11	83561810	Grey	M16/P11	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW/D-16	83561812	Grey	M20/P16(S)	49.00	47.00	35.00	29.00	37.00	22.50	27.00	11.00	4.50	4.30	10
KFW/D-21	83561814	Grey	M25/P21(S)	69.00	65.00	44.00	41.50	51.50	30.00	42.50	15.00	6.00	6.00	10
KFW/D-29	83561816	Grey	M32/P29(S)	90.00	78.00	55.00	64.50	64.50	40.00	68.00	9.00	16.00	6.50	10
KFW/D-36	83561818	Grey	M40/P36(S)	99.00	94.00	66.00	79.50	79.50	48.50	74.50	9.50	10.00	6.50	10
KFW/D-48	83561820	Grey	M50/P48(S)	116.00	101.00	76.00	87.50	87.50	68.50	89.50	9.50	16.00	6.50	10



Type KFW/X



PRODUCT INFORMATION

The KFW bulkhead fittings are made of specially modified polyamide 6. The material is self-extinguishing, and halogen, phosphor and cadmium-free. With the KFW/D and KFW/X bulkhead fittings, the cable protection conduits EW with standard corrugation and EWX with high corrugation can be directly mounted. The KFW bulkhead fittings feature the following advantages:

- System divided in two for very quick and easy installation of cables
- Subsequent installation of cables is simplified by removable upper part
- Gasket included in delivery
- No extra fittings are required

Specification:  
 • EN 45545-2 3x HL3

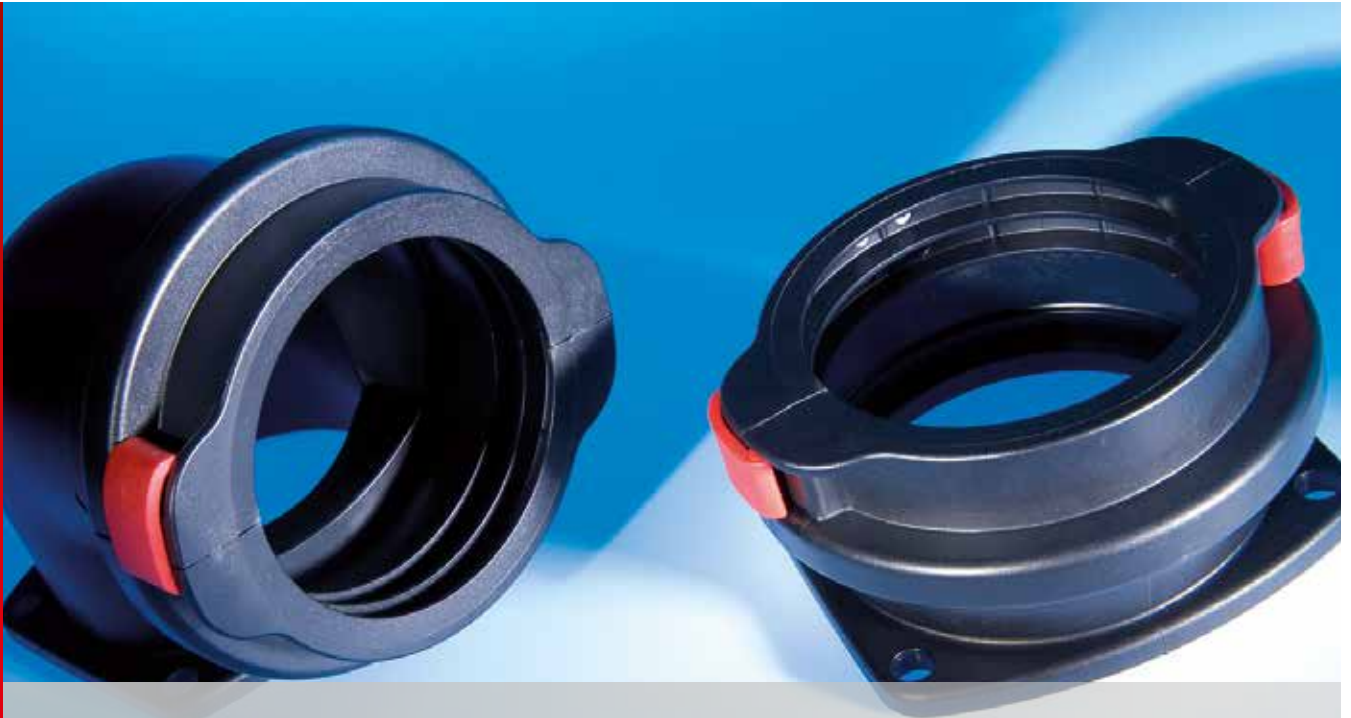
SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: Neoprene (CR)
- Acc. to UL94 V0 self-extinguishing
- IP 54

RoHS
 HF
 EU
 Made in Germany

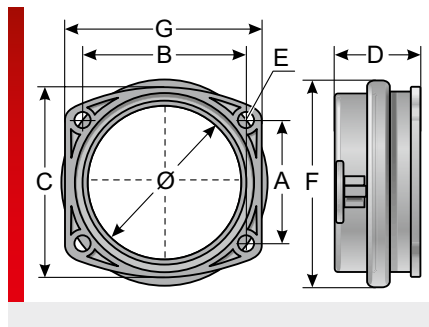
Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	D mm	E mm	G mm	I mm	J mm	K mm	Ø mm	Pack qty.
<b>For cable protection conduits with high corrugation, type EWX-xx</b>														
KFW/X M25/P21	83562654	Black	M25/P21	69.00	65.00	44.00	41.50	51.50	30.00	42.50	15.00	6.00	6.00	10
KFW/X M32/P29	83562656	Black	M32/P29	90.00	78.00	55.00	64.50	64.50	40.00	68.00	9.00	16.00	6.50	10
KFW/X M40/P36	83562658	Black	M40/P36	99.00	94.00	66.00	79.50	79.50	48.50	74.50	9.50	10.00	6.50	10
KFW/X M50/P48	83562660	Black	M50/P48	116.00	101.00	76.00	87.50	87.50	68.50	89.50	9.50	16.00	6.50	10
KFW/X M25/P21	83562614	Grey	M25/P21	69.00	65.00	44.00	41.50	51.50	30.00	42.50	15.00	6.00	6.00	10
KFW/X M32/P29	83562616	Grey	M32/P29	90.00	78.00	55.00	64.50	64.50	40.00	68.00	9.00	16.00	6.50	10
KFW/X M40/P36	83562618	Grey	M40/P36	99.00	94.00	66.00	79.50	79.50	48.50	74.50	9.50	10.00	6.50	10
KFW/X M50/P48	83562620	Grey	M50/P48	116.00	101.00	76.00	87.50	87.50	68.50	89.50	9.50	16.00	6.50	10





**m-jumbo conduit connection**

## Type SA-Jumbo (flange connection)



### PRODUCT INFORMATION

Die SA-Jumbo flange connections are made of specially modified polyamide. The material is halogen, phosphor and cadmium-free. The SA-Jumbo flange connections feature the following advantages:

- Split ring makes assembly easy
- Tightness of IP 52 without DS seal
- Tightness of IP 65 with DS seal (DS seal must be ordered separately if required)

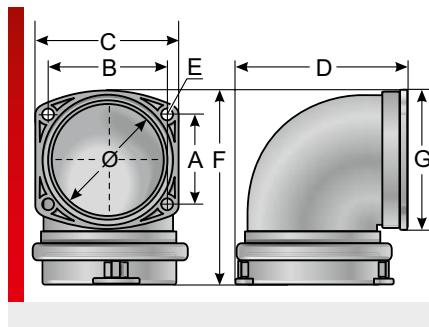
- Dimensionally stable connection ring ensures high tear-out strength
- Safety clips ensure protection against connection ring opening by itself
- O-ring for fastening flange included in delivery

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 52  
IP 65 with sealing ring DS

Type	Order No.	Colour	A mm	B mm	C mm	D mm	E mm	F mm	G mm	Ø mm	Pack qty.
SA 56	83681020	Black	60.00	66.00	85.00	50.00	6.50	94.00	86.00	60.00	1
SA 70	83681014	Black	60.00	80.00	94.00	52.00	7.50	106.00	96.00	70.00	1
SA 95	83681016	Black	74.00	108.00	126.00	52.00	7.50	132.00	126.00	95.00	1
SA 56	83681008	Grey	60.00	66.00	85.00	50.00	6.50	94.00	86.00	60.00	1
SA 70	83681010	Grey	60.00	80.00	94.00	52.00	7.50	106.00	96.00	70.00	1
SA 95	83681012	Grey	74.00	108.00	126.00	52.00	7.50	132.00	126.00	95.00	1

## Type KFW-Jumbo (90° flange connection)



### PRODUCT INFORMATION

Die KFW-Jumbo flange connections are made of specially modified polyamide. The material is halogen, phosphor and cadmium-free.

The KFW-Jumbo flange connections feature the following advantages:

- Split ring makes assembly easy
- Tightness of IP 52 without DS seal
- Tightness of IP 65 with DS seal (DS seal must be ordered separately if required)

- Dimensionally stable connection ring ensures high tear-out strength
- Safety clips ensure protection against connection ring opening by itself
- O-ring for fastening flange included in delivery

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 52  
IP 65 with sealing ring DS



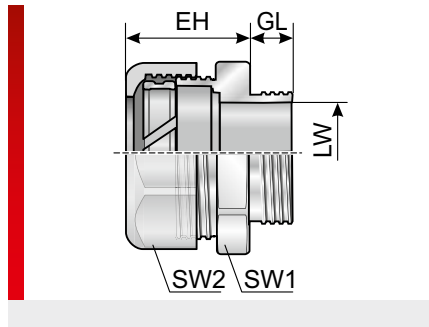
Type	Order No.	Colour	A mm	B mm	C mm	D mm	E mm	F mm	G mm	Ø mm	Pack qty.
KFW-56	83681220	Black	60.00	66.00	85.00	119.00	6.50	99.00	95.00	60.00	1
KFW-70	83681213	Black	60.00	80.00	96.00	110.00	7.00	137.00	94.00	77.00	1
KFW-95	83681214	Black	74.00	108.00	127.00	144.00	7.00	167.00	128.00	111.00	1
KFW 56	83681208	Grey	60.00	66.00	85.00	119.00	6.50	99.00	95.00	60.00	1
KFW-70	83681210	Grey	60.00	80.00	96.00	110.00	7.00	137.00	94.00	77.00	1
KFW-95	83681212	Grey	74.00	108.00	127.00	144.00	7.00	167.00	128.00	111.00	1





**Special fitting / connection**





## EH-EMV



### PRODUCT INFORMATION

The EH-EMV metal fitting can be used together with the EMC cable protection conduit EW-PAP. The EH-EMV fitting is used to discharge sheath currents on the cable protection conduit safely and reliably.

### SPECIFICATIONS

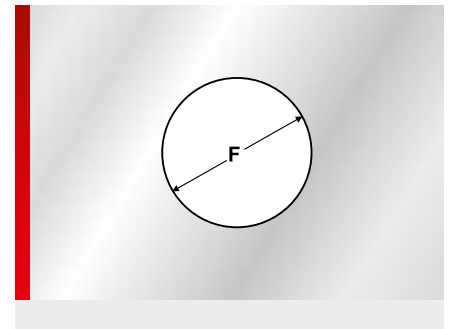
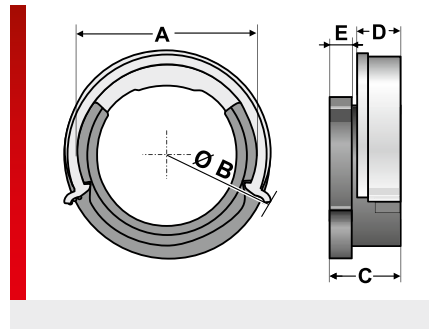
-  -40 – 140 °C short term 160 °C
-  Nickel-plated brass
-  IP 40
-  RoHS

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex EW	LW mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal thread / EMC version</b>									
EH-EMV M12x1.5	83521050	Silver	M12x1.5	M12/P09	7.90	17.00	5.50	22.0	10
EH-EMV M16x1.5	83521052	Silver	M16x1,5	M16/P11	10.30	17.50	5.80	27.0	10
EH-EMV M20x1.5	83521054	Silver	M20x1.5	M20/P16	14.40	19.00	7.00	31.0	10
EH-EMV M25x1.5	83521056	Silver	M25x1.5	M25/P21	18.50	22.00	7.00	40.0	10
EH-EMV M32x1.5	83521058	Silver	M32x1.5	M32/P29	25.80	24.00	7.00	48.0	10
EH-EMV M40x1.5	83521060	Silver	M40x1.5	M40/P36	32.90	27.00	11.00	60.0	2
EH-EMV M50x1.5 <sup>1)</sup>	83521062	Silver	M50x1.5	M50/P48	41.00	31.00	11.50	78.0	2
<b>Pg metric metal thread / EMC version</b>									
EH-EMV Pg 09	83521010	Silver	Pg 09	M12/P09	12.00	17.00	6.00	22.0	10
EH-EMV Pg 11	83521012	Silver	Pg 11	M16/P11	15.50	18.00	6.00	27.0	10
EH-EMV Pg 16	83521014	Silver	Pg 16	M20/P16	18.50	20.00	7.00	31.0	10
EH-EMV Pg 21	83521016	Silver	Pg 21	M25/P21	24.00	23.00	7.00	40.0	10
EH-EMV Pg 29	83521018	Silver	Pg 29	M32/P29	33.00	26.00	7.00	48.0	10
EH-EMV Pg 36	83521020	Silver	Pg 36	M40/P36	43.00	30.00	7.50	57.0	2
EH-EMV Pg 48	83521022	Silver	Pg 48	M50/P48	54.00	32.00	11.00	78.0	2

<sup>1)</sup>Min. order quantity 100 pcs



## Type AT



### PRODUCT INFORMATION

The AT connector is a holder for split and closed conduits in the EW and EWT series. It is made of specially modified polyamide 6. The material is self-extinguishing, and halogen, phosphor and cadmium-free.

The AT connectors feature the following advantages:

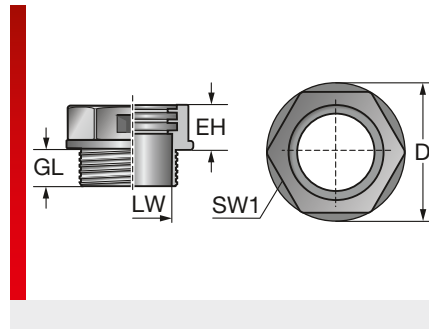
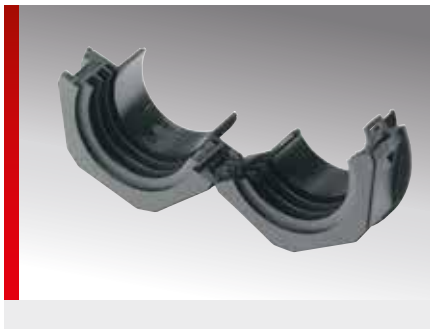
- Click system for quick, easy and tool-free assembly and disassembly
- Compact design
- Conduits can still be rotated
- Suitable for split and closed conduits

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 42

Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	D mm	E mm	F mm	Pack qty.
AT M20/P09	83651050	Black	M12/P09	20.20	35.00	16.00	9.50	5.00	20.50	50
AT M25/P11	83651052	Black	M16/P11	25.20	40.50	16.00	9.50	5.00	25.50	50
AT M32/P16	83651054	Black	M20/P16	32.20	48.00	17.20	10.30	5.40	32.50	50
AT M40/P21	83651056	Black	M25/P21	40.20	58.00	17.90	10.00	6.40	40.50	50
AT M50/P29	83651058	Black	M32/P29	50.20	68.00	17.90	10.00	6.40	50.50	25
AT M50/P36	83651060	Black	M40/P36	50.20	68.00	21.50	12.00	8.00	50.50	10
AT M63/P48	83651062	Black	M50/P48	63.20	82.00	24.80	15.30	8.00	63.50	10
AT M20/P09	83651010	Grey	M12/P09	20.20	35.00	16.00	9.50	5.00	20.50	50
AT M25/P11	83651012	Grey	M16/P11	25.20	40.50	16.00	9.50	5.00	25.50	50
AT M32/P16	83651014	Grey	M20/P16	32.20	48.00	17.20	10.30	5.40	32.50	50
AT M40/P21	83651016	Grey	M25/P21	40.20	58.00	17.90	10.00	6.40	40.50	50
AT M50/P29	83651018	Grey	M32/P29	50.20	68.00	17.90	10.00	6.40	50.50	25
AT M50/P36	83651020	Grey	M40/P36	50.20	68.00	21.50	12.00	8.00	50.50	10
AT M63/P48	83651022	Grey	M50/P48	63.20	82.00	24.80	15.30	8.00	63.50	10

## Type SVT



### PRODUCT INFORMATION

The split conduit fitting is made of specially modified polyamide 6. The material is self-extinguishing, and halogen, phosphor and cadmium-free. The fittings are used when cable protection conduits fitted with pre-assembled cables need to be fixed or cable protection conduits need to be retrofitted. The SVT is ideal for connecting to our split EWT cable protection conduits and all other Murrflex cable protection conduits with standard corrugation.

- Particular benefits of the SVT conduit fitting include:
- Subsequent installation or repairs
  - Perfect for use with the GMT split lock nut
  - Very good system tear-out strength
  - Compact design
  - Easy assembly and disassembly

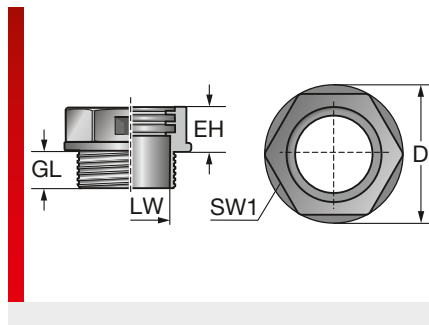
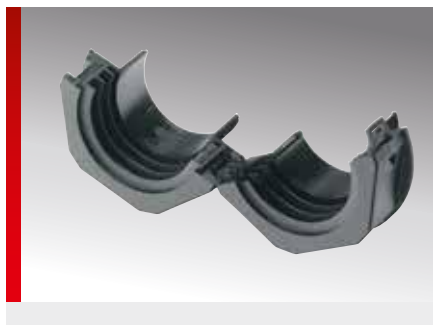
Specification:  
 • EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 50

Type	Order No.	Colour	Connecting thread	Suitable for Murrflex EW	LW mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Splittable conduit fitting</b>									
SVT M16x1,5/11	83651258	Black	M16x1,5	M16/P11	11.00	15.00	15.00	26.0	50
SVT M20x1,5/11	83651260	Black	M20x1.5	M16/P11	15.00	15.00	15.00	26.0	50
SVT M20x1,5/16	83651262	Black	M20x1.5	M20/P16	15.00	15.00	15.00	28.0	50
SVT M25x1,5/16	83651264	Black	M25x1.5	M20/P16	21.00	15.00	15.00	28.0	50
SVT M25x1,5/21	83651266	Black	M25x1.5	M25/P21	21.00	20.00	15.00	28.0	50
SVT M32x1,5/21	83651268	Black	M32x1.5	M25/P21	27.00	20.00	15.00	36.0	50
SVT M32x1,5/29	83651270	Black	M32x1.5	M32/P29	27.00	20.00	15.00	46.0	25
SVT M32x1,5/36	83651272	Black	M32x1.5	M40/P36	27.00	20.00	15.00	55.0	25
SVT M40x1,5/29	83651274	Black	M40x1.5	M32/P29	35.00	20.00	15.00	46.0	25
SVT M40x1,5/36	83651276	Black	M40x1.5	M40/P36	35.00	20.00	15.00	55.0	25
SVT M50x1,5/36	83651278	Black	M50x1.5	M40/P36	44.00	20.00	20.00	55.0	25
SVT M50x1,5/48	83651280	Black	M50x1.5	M50/P48	44.00	25.00	20.00	65.0	10
SVT M63x1,5/48	83651282	Black	M63x1.5	M50/P48	57.00	25.00	20.00	65.0	10

## Type SVT-X



### PRODUCT INFORMATION

The SVT-X split conduit fitting is made of specially modified polyamide 6. The material is self-extinguishing, and halogen, phosphor and cadmium-free.

The fittings are used when cable protection conduits fitted with pre-assembled cables need to be fixed or cable protection conduits need to be retrofitted. The SVT-X is ideal for connecting to our Murrflex cable protection conduits with high corrugation.

Particular benefits of the SVT-X conduit fitting include:

- Subsequent installation or repairs
- Perfect for use with the GMT split lock nut
- Very good system tear-out strength
- Compact design
- Easy assembly and disassembly

Specification:

- EN 45545-2 3x HL3

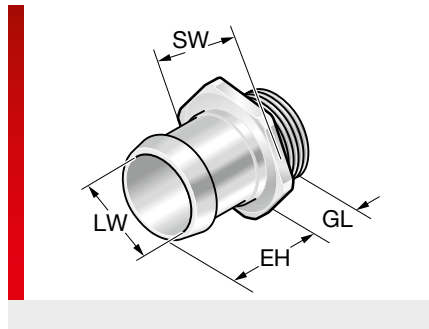
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 50



Type	Order No.	Colour	Connecting thread	Suitable for Murrflex EW	LW mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Splittable conduit fitting</b>									
SVT-X M25x1.5/21	83651284	Black	M25x1.5	M25/P21	21.00	20.00	15.00	36.0	50
SVT-X M32x1.5/21	83651286	Black	M32x1.5	M25/P21	27.00	20.00	15.00	36.0	50
SVT-X M32x1.5/29	83651288	Black	M32x1.5	M32/P29	27.00	20.00	15.00	46.0	25
SVT-X M32x1.5/36	83651290	Black	M32x1.5	M40/P36	27.00	20.00	15.00	55.0	25
SVT-X M40x1.5/29	83651292	Black	M40x1.5	M32/P29	35.00	20.00	15.00	46.0	25
SVT-X M40x1.5/36	83651294	Black	M40x1.5	M40/P36	35.00	20.00	15.00	55.0	25
SVT-X M50x1.5/36	83651296	Black	M50x1.5	M40/P36	44.00	20.00	20.00	55.0	25
SVT-X M50x1.5/48	83651298	Black	M50x1.5	M50/P48	44.00	25.00	20.00	65.0	10

## Type EVK-PG



### PRODUCT INFORMATION

The EVK-PG is a metal connecting piece with which the EVK conduit is fitted on and fixed using an SS or SSG conduit clamp. The connecting pieces have a Pg thread.

The right connection for Murrplastik EVK cable protection conduit.

### SPECIFICATIONS



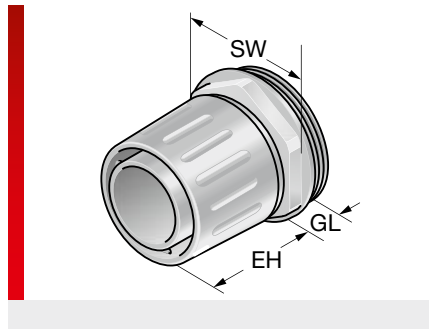
Nickel-plated brass

Type	Order No.	Connecting thread	LW mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
EVK PG 07/E	83723014	Pg 07	8.50	20.70	7.00	15.0	50
EVK PG 07	83723010	Pg 07	7.00	18.00	7.00	17.0	50
EVK PG 09/07	83723012	Pg 09	7.00	18.00	7.00	19.0	50
EVK PG 09/E	83723016	Pg 09	11.00	21.00	7.00	19.0	50
EVK PG 09	83723018	Pg 09	11.00	21.00	7.00	19.0	50
EVK PG 11/E	83723022	Pg 11	14.00	22.00	7.00	22.0	50
EVK PG 11	83723024	Pg 11	14.00	22.00	7.00	22.0	50
EVK PG 13.5 <sup>1)</sup>	83723028	Pg 13.5	16.00	26.00	8.00	24.0	100
EVK PG 13/E	83723026	Pg 13.5	16.00	26.00	8.00	24.0	50
EVK PG 16	83723030	Pg 16	17.00	28.00	8.00	27.0	50
EVK PG 21/E	83723032	Pg 21	20.00	27.50	9.00	30.0	50
EVK PG 21	83723034	Pg 21	23.00	33.00	8.00	32.0	50
EVK PG 29/E	83723038	Pg 29	27.00	32.20	9.50	40.0	50
EVK PG 29	83723040	Pg 29	31.00	33.20	8.00	41.0	50
EVK PG 36	83723046	Pg 36	39.00	50.20	10.00	55.0	25
EVK PG 42/36	83723048	Pg 42	46.00	48.50	12.00	64.0	25
EVK PG 42	83723050	Pg 42	44.00	53.00	12.00	60.0	25
EVK PG 48	83723054	Pg 48	51.00	56.00	12.00	65.0	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request



## Type ELD/K



### PRODUCT INFORMATION

The ELD/K conduit fitting is made of specially modified polypropylene. The fitting is equipped with a rotatable connection thread into which the conduit is screwed. The upper part of the fitting is also rotatable.

The ELD/K fitting is characterised by its quick and easy assembly without the use of any special tools and can be used for EL, ELS and EVK cable protection conduits.

### SPECIFICATIONS

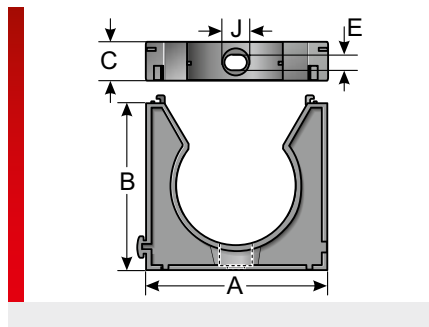
- 10 – 110 °C
- Polypropylene (PP)
- IP 54

Type	Order No.	Colour	Connecting thread	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric plastic thread</b>							
ELD/K M20x1.5	83741416	Grey	M20x1.5	30.00	10.00	22.0	50
ELD/K M25x1.5	83741418	Grey	M25x1.5	34.00	11.00	27.0	50
ELD/K M32x1.5	83741420	Grey	M32x1.5	42.70	12.00	35.0	25
ELD/K M40x1.5	83741422	Grey	M40x1.5	44.00	12.00	45.0	25
ELD/K M50x1.5	83741424	Grey	M50x1.5	47.50	12.00	54.0	25
ELD/K M63X1.5	83741426	Grey	M63x1.5	50.00	15.00	65.0	10
<b>Pg plastic threading</b>							
ELD/K PG 07	83741210	Grey	Pg 07	23.00	10.00	16.0	50
ELD/K PG 09	83741212	Grey	Pg 09	27.50	10.00	19.0	50
ELD/K PG 11	83741214	Grey	Pg 11	30.00	10.00	22.0	50
ELD/K PG 13	83741215	Grey	Pg 13	30.00	10.00	24.0	50
ELD/K PG 16	83741216	Grey	Pg 16	34.00	11.00	27.0	50
ELD/K PG 21	83741220	Grey	Pg 21	44.00	11.00	35.0	25
ELD/K PG 29	83741224	Grey	Pg 29	44.00	12.00	45.0	25
ELD/K PG 36	83741226	Grey	Pg 36	47.50	12.00	54.0	25
ELD/K PG 42	83741227	Grey	Pg 42	49.50	12.00	61.0	10
ELD/K PG 48	83741228	Grey	Pg 48	50.00	15.00	65.0	10



**Cable protection conduit holder**

## Type HS (conduit holder)



### PRODUCT INFORMATION

The HS conduit holder is made of specially modified polyamide. The material is halogen, phosphor and cadmium-free. The HS holders are used as a conduit holder system that can be arranged in rows and stacks and can be adapted to different installation situations with optional accessories.

The holder features the following advantages:

- Flexible system
- Stackable
- Arrangeable in rows

### SPECIFICATIONS

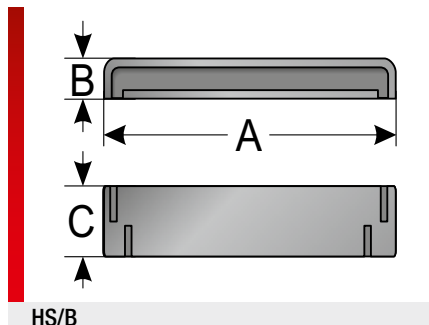
- 40 – 110 °C short term 140 °C
- Mod. polyamide PA 6  
UL listed material
- Acc. to UL94 V0 self-extinguishing



Type	Order No.	Colour	A mm	B mm	C mm	E mm	J mm	Pack qty.
<b>Conduit holder suitable for Murrflex EW and EWX</b>								
HS/U 07	83631052	Black	21.50	21.00	14.00	4.50	8.00	100
HS/U 09	83631054	Black	21.50	21.00	14.00	4.50	8.00	100
HS/U 11	83631056	Black	28.00	29.00	14.00	5.50	10.00	100
HS/U 16	83631060	Black	28.00	29.00	14.00	5.50	10.00	100
HS/U 21	83631062	Black	43.00	42.40	14.00	5.50	10.00	50
HS/U 29	83631064	Black	43.00	42.40	14.00	5.50	10.00	50
HS/U 36	83631066	Black	63.50	57.50	14.00	5.50	10.00	50
HS/U 48	83631068	Black	63.50	62.50	14.00	5.50	10.00	50
HS/U 07	83631012	Grey	21.50	21.00	14.00	4.50	8.00	100
HS/U 09	83631014	Grey	21.50	21.00	14.00	4.50	8.00	100
HS/U 11	83631016	Grey	28.00	29.00	14.00	5.50	10.00	100
HS/U 16	83631020	Grey	28.00	29.00	14.00	5.50	10.00	100
HS/U 21	83631022	Grey	43.00	42.40	14.00	5.50	10.00	50
HS/U 29	83631024	Grey	43.00	42.40	14.00	5.50	10.00	50
HS/U 36	83631026	Grey	63.50	57.50	14.00	5.50	10.00	50
HS/U 48	83631028	Grey	63.50	62.50	14.00	5.50	10.00	50



## Accessories – Type HS/B bracket



### PRODUCT INFORMATION

The accessories for the HS holder are made of specially modified polyamide. The material is halogen, phosphor and cadmium-free. The variant HS/B is the bracket used for the HS/U holder for higher tear-out forces.

The HS holder system features the following advantages:

- Flexible system
- Stackable
- Arrangeable in rows

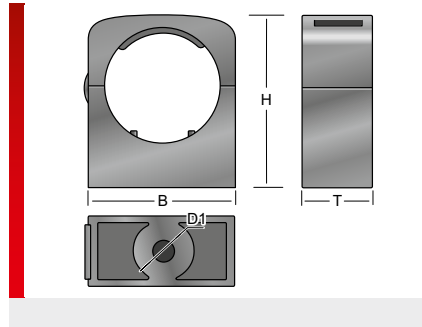
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing



Type	Order No.	Colour	Suited for holder	A mm	B mm	C mm	Pack qty.
<b>Clamping bracket</b>							
HS/B 07-09	83631250	Black	HS/U 07-09	21.50	5.00	14.00	100
HS/B 11-16	83631252	Black	HS/U 11-16	28.00	5.00	14.00	100
HS/B 21-29	83631254	Black	HS/U 21-29	43.00	6.00	14.00	50
HS/B 36-48	83631256	Black	HS/U 36-48	63.50	7.00	14.00	50
HS/B 07-09	83631210	Grey	HS/U 07-09	21.50	5.00	14.00	100
HS/B 11-16	83631212	Grey	HS/U 11-16	28.00	5.00	14.00	100
HS/B 21-29	83631214	Grey	HS/U 21-29	43.00	6.00	14.00	50
HS/B 36-48	83631216	Grey	HS/U 36-48	63.50	7.00	14.00	50

## Type UHE



### PRODUCT INFORMATION

The UHE holder is a one-piece corrugated conduit holder, featuring a cover attached to the holder with an integral hinge. It is manufactured from a specially modified Polyamide. The material is halogen, phosphor and cadmium-free. The holder is used to fix cable protection conduits to equipment and machinery.

The UHE holder features the following advantages:

- Quick assembly thanks to single-hole fixing

- Protective conduits only need to be snapped on, which makes them excellent for overhead installations.
- Optimum connection of conduit to holder thanks to double webs of holder
- Optimized axial strain relief of the corrugated conduit achieved with integrated double webs
- Highest degree of retention power.
- Suitable for all Murrflex corrugated conduit profiles.

Specification:

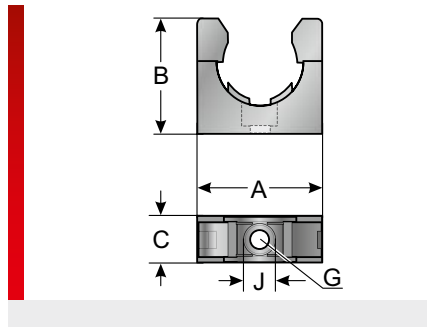
- EN 45545-2 3x HL3

### SPECIFICATIONS

- UL listed material Mod. polyamide PA 6
- 40 – 110 °C transient / short term 140 °C
- Acc. to UL94 V0 self-extinguishing

Type	Order No.	Colour	A mm	B mm	C mm	J mm	Pack qty.
UHE P07	83621850	Black	17.00	21.50	15.00	7.50	100
UHE P09	83621852	Black	20.50	24.50	15.00	9.00	100
UHE P11	83621854	Black	24.00	27.00	15.00	9.00	100
UHE P16	83621856	Black	30.00	33.00	15.00	10.00	100
UHE P21	83621858	Black	38.50	42.00	15.00	10.00	100
UHE P29	83621860	Black	45.50	48.00	15.00	10.00	50
UHE P36	83621862	Black	55.50	56.00	15.00	10.00	50
UHE P48	83621864	Black	67.50	68.00	15.00	10.00	50
UHE P07	83621810	Grey	17.00	21.50	15.00	7.50	100
UHE P09	83621812	Grey	20.50	24.50	15.00	9.00	100
UHE P11	83621814	Grey	24.00	27.00	15.00	9.00	100
UHE P16	83621816	Grey	30.00	33.00	15.00	10.00	100
UHE P21	83621818	Grey	38.50	42.00	15.00	10.00	100
UHE P29	83621820	Grey	45.50	48.00	15.00	10.00	50
UHE P36	83621822	Grey	55.50	56.00	15.00	10.00	50
UHE P48	83621824	Grey	67.50	68.00	15.00	10.00	50

## Type UH



### PRODUCT INFORMATION

The UH holder is made of specially modified polyamide. The material is halogen, phosphor and cadmium-free. The holder is used to fix cable protection conduits to equipment and machinery.

The UH holder features the following advantages:

- Quick assembly thanks to single-hole fixing
- Protective conduit is simply snapped in
- Optimum connection of conduit to holder thanks to double webs of holder
- Optional BL bracket for applications with high stresses

Specification:

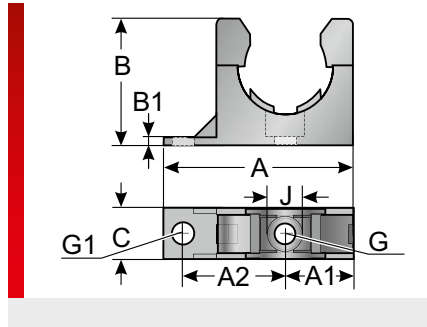
- EN 45545-2 3x HL3

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing

Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	G mm	J mm	Pack qty.
<b>Suitable for Murrflex EW and EWX</b>									
UH 07	83621210	Black	M10/P07	29.00	23.00	11.00	4.50	7.50	100
UH 09/M4	83621212	Black	M12/P09	30.00	23.00	12.50	4.50	8.50	100
UH 09/M5	83621213	Black	M12/P09	30.00	23.00	12.50	5.50	8.50	100
UH 11/M4	83621214	Black	M16/P11	30.00	23.00	12.50	4.50	8.50	100
UH 11/M5	83621215	Black	M16/P11	30.00	23.00	12.50	5.50	8.50	100
UH 16/M5	83621216	Black	M20/P16(S)	35.00	30.00	15.00	5.50	10.50	100
UH 16/M6	83621217	Black	M20/P16(S)	35.00	30.00	15.00	6.40	10.50	100
UH 21	83621218	Black	M25/P21(S)	42.00	38.00	16.00	6.50	11.00	100
UH 29	83621220	Black	M32/P29(S)	51.00	43.00	16.00	6.50	11.50	50
UH 36	83621222	Black	M40/P36(S)	61.00	51.00	18.00	6.50	13.50	50
UH 48	83621224	Black	M50/P48(S)	74.00	64.00	19.00	6.50	13.50	50
UH 07	83621110	Grey	M10/P07	29.00	23.00	11.00	4.50	7.50	100
UH 09/M4	83621112	Grey	M12/P09	30.00	23.00	12.50	4.50	8.50	100
UH 09/M5	83621113	Grey	M12/P09	30.00	23.00	12.50	5.50	8.50	100
UH 11/M4	83621114	Grey	M16/P11	30.00	23.00	12.50	4.50	8.50	100
UH 11/M5	83621115	Grey	M16/P11	30.00	23.00	12.50	5.50	8.50	100
UH 16/M5	83621116	Grey	M20/P16(S)	35.00	30.00	15.00	5.50	10.50	100
UH 16/M6	83621117	Grey	M20/P16(S)	35.00	30.00	15.00	6.40	10.50	100
UH 21	83621118	Grey	M25/P21(S)	42.00	38.00	16.00	6.50	11.00	100
UH 29	83621120	Grey	M32/P29(S)	51.00	43.00	16.00	6.50	11.50	50
UH 36	83621122	Grey	M40/P36(S)	61.00	51.00	18.00	6.50	13.50	50
UH 48	83621124	Grey	M50/P48(S)	74.00	64.00	19.00	6.50	13.50	50

## Type UHG



### PRODUCT INFORMATION

The UHG holder is made of specially modified polyamide. The material is halogen, phosphor and cadmium-free. The holder is used to fix cable protection conduits to equipment and machinery.

The UHG holder features the following advantages:

- The additional flap can be used to prevent rotation of the holder

- Protective conduit is simply snapped in
- Optimum connection of conduit to holder thanks to double webs of holder
- Optional BL bracket for applications with high stresses

Specification:

- EN 45545-2 3x HL3

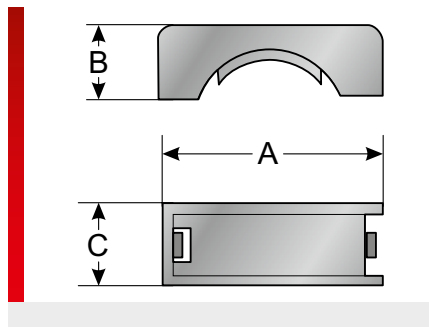
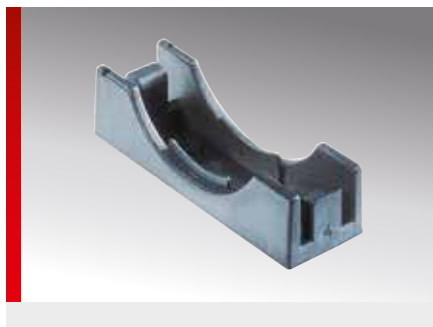
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing



Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	G mm	J mm	A1 mm	A2 mm	B1 mm	G1 mm	Pack qty.
<b>Suitable for Murrflex EW and EWX</b>													
UHG 09	83621250	Black	M12/P09	46.00	23.00	12.50	4.50	7.50	15.00	24.50	2.00	6.20	100
UHG 11	83621252	Black	M16/P11	46.00	23.00	12.50	4.50	7.50	15.00	24.50	2.00	6.20	100
UHG 16	83621254	Black	M20/P16(S)	50.00	30.00	15.00	5.50	9.50	17.50	27.00	2.50	6.20	100
UHG 21	83621256	Black	M25/P21(S)	57.00	38.00	16.00	6.50	11.50	21.00	30.70	2.50	6.20	100
UHG 29	83621258	Black	M32/P29(S)	67.00	43.50	16.00	6.50	11.50	25.50	35.30	3.00	6.20	50
UHG 36	83621260	Black	M40/P36(S)	77.00	51.00	18.50	6.50	11.50	30.50	40.00	3.50	6.20	50
UHG 48	83621262	Black	M50/P48(S)	89.00	64.00	19.00	6.50	11.50	37.00	46.50	3.50	6.20	50

## Type BL (clamping bracket for types UH and UHG)



### PRODUCT INFORMATION

The BL clamping bracket can be used for types UH and UHG and is made from specially modified polyamide. The material is halogen, phosphor and cadmium-free. The bracket can be used to achieve additional support of the conduit clamp for high loads.

Specification:  
 • EN 45545-2 3x HL3

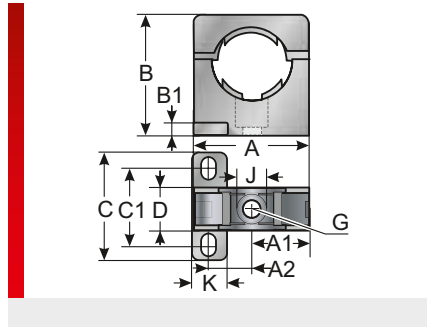
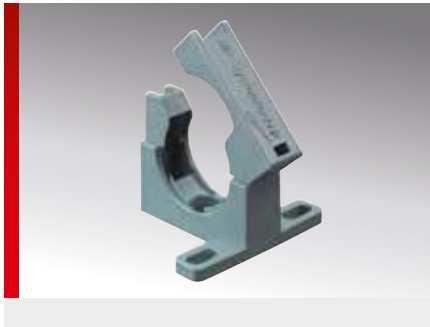
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing



Type	Order No.	Colour	Suited for holder	A mm	B mm	C mm	Pack qty.
BL 09	83621406	Black	UH 09 / UHG 09	29.00	10.00	12.50	100
BL 11	83621408	Black	UH 11 / UHG 11	29.00	11.00	12.50	100
BL 16	83621410	Black	UH 16 / UHG 16	34.00	12.00	15.00	100
BL 21	83621412	Black	UH 21 / UHG 21	41.00	13.00	15.50	100
BL 29	83621414	Black	UH 29 / UHG 26	50.00	14.00	16.00	50
BL 36	83621416	Black	UH 36 / UHG 36	60.00	17.00	18.00	50
BL 48	83621418	Black	UH 48 / UHG 48	72.00	19.00	18.50	50
BL 09	83621146	Grey	UH 09 / UHG 09	29.00	10.00	12.50	100
BL 11	83621148	Grey	UH 11 / UHG 11	29.00	11.00	12.50	100
BL 16	83621150	Grey	UH 16 / UHG 16	34.00	12.00	15.00	100
BL 21	83621152	Grey	UH 21 / UHG 21	41.00	13.00	15.50	100
BL 29	83621154	Grey	UH 29 / UHG 26	50.00	14.00	16.00	50
BL 36	83621156	Grey	UH 36 / UHG 36	60.00	17.00	18.00	50
BL 48	83621158	Grey	UH 48 / UHG 48	72.00	19.00	18.50	50

## Typ UHF



### PRODUCT INFORMATION

The UHF holder is made of specially modified polyamide. The material is halogen, phosphor and cadmium-free. The holder is used as a quick and easy connection between control cabinet and door.

The UHF holder features the following advantages:

- Various fastening possibilities

- Protective conduits can still be rotated in the holder
- Pre-assembly of lower part possible
- High tensile strength thanks to double webs
- Bracket is included in delivery

Specification:

- EN 45545-2:2016 3x HL

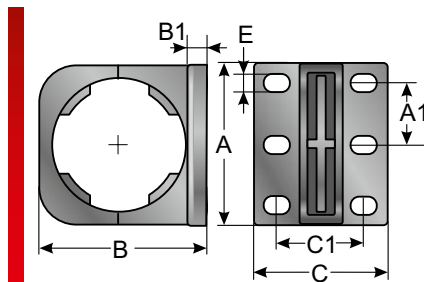
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing



Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	D mm	G mm	J mm	K mm	B1 mm	A1 mm	A2 mm	C1 mm	Pack qty.
<b>Suitable for Murrflex EW and EWX</b>															
UHF 16	83621610	Grey	M20/P16(S)	35.00	35.00	38.00	15.00	5.50	9.50	12.00	5.00	17.50	11.30	27.00	100
UHF 21	83621612	Grey	M25/P21(S)	42.00	42.00	38.00	16.00	6.50	11.50	12.00	5.00	21.00	14.70	27.00	100
UHF 29	83621614	Grey	M32/P29(S)	51.00	48.00	60.00	16.00	6.50	11.50	12.00	5.00	25.50	19.30	44.00	50
UHF 36	83621616	Grey	M40/P36(S)	61.00	55.00	60.00	19.00	6.50	11.50	13.00	6.00	30.50	24.50	47.50	50
UHF 48	83621618	Grey	M50/P48(S)	74.00	68.00	60.00	19.00	6.50	11.50	13.00	8.00	37.00	30.00	47.50	50
<b>Suitable for Murrflex EWS/F RAL 7035</b>															
UHF 16	83621611	RAL 7035	M20/P16(S)	35.00	35.00	38.00	15.00	5.50	9.50	12.00	5.00	17.50	11.30	27.00	10
UHF 21	83621613	RAL 7035	M25/P21(S)	42.00	42.00	38.00	16.00	6.50	11.50	12.00	5.00	21.00	14.70	27.00	10
UHF 29	83621615	RAL 7035	M32/P29(S)	51.00	48.00	60.00	16.00	6.50	11.50	12.00	5.00	25.50	19.30	44.00	10
UHF 36	83621617	RAL 7035	M40/P36(S)	61.00	55.00	60.00	19.00	6.50	11.50	13.00	6.00	30.50	24.50	47.50	10
UHF 48	83621619	RAL 7035	M50/P48(S)	74.00	68.00	60.00	19.00	6.50	11.50	13.00	8.00	37.00	30.00	47.50	10

## Type USH



USH 11 / USH 16 / USH 21

### PRODUCT INFORMATION

The USH holder consists of an upper and a lower part made of specially modified polycarbonate. The material is halogen, phosphor and cadmium-free. The holder is used as a quick and easy connection between control cabinet and door.

The USH holder features the following advantages:

- Various fastening possibilities
- Protective conduits can still be rotated in the holder
- Pre-assembly of lower part possible

### SPECIFICATIONS

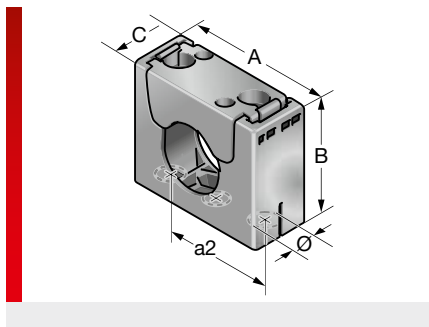
- 30 – 100 °C
- Polycarbonate
- Acc. to UL94 V2 self-extinguishing

Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	E mm	A1 mm	B1 mm	C1 mm	Pack qty.
<b>Suitable for Murrflex EW and EWX</b>											
USH 11	83641019	Black	M16/P11	38.00	39.50	38.00	5.60	12.90	5.00	22.80	50
USH 16	83641020	Black	M20/P16(S)	38.00	39.40	38.00	5.70	12.90	5.00	22.80	50
USH 21	83641022	Black	M25/P21(S)	38.00	39.25	38.00	5.60	12.90	5.00	22.80	50
USH 29	83641024	Black	M32/P29(S)	46.35	47.65	38.20	5.30	17.60	4.90	25.75	50
USH 36	83641026	Black	M40/P36(S)	52.45	59.10	60.40	5.60	20.00	6.00	48.00	50
USH 48	83641028	Black	M50/P48(S)	76.20	77.20	59.70	5.60	27.70	8.10	47.10	50
USH 11	83641009	Grey	M16/P11	38.00	39.50	38.00	5.60	12.90	5.00	22.80	50
USH 16	83641010	Grey	M20/P16(S)	38.00	39.40	38.00	5.70	12.90	5.00	22.80	50
USH 21	83641012	Grey	M25/P21(S)	38.00	39.25	38.00	5.60	12.90	5.00	22.80	50
USH 29	83641014	Grey	M32/P29(S)	46.35	47.65	38.20	5.30	17.60	4.90	25.75	50
USH 36	83641016	Grey	M40/P36(S)	52.45	59.10	60.40	5.60	20.00	6.00	48.00	50
USH 48	83641018	Grey	M50/P48(S)	76.20	77.20	59.70	5.60	27.70	8.10	47.10	50

## Type UH-S



UH-S M20/P16 – UH-S M63/P56



UH-S M10/P07 – UH-S M16/P11

### PRODUCT INFORMATION

The stable UH-S holder is made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The UH-S holders, which can be strung together and stacked, are ideally suited to applications with special requirements in terms of stability. Equipped with the appropriate cable protection conduits, the UH-S holders offer excellent performance in terms of stability, flexibility of use and durability – even under high dynamic loads. The UH-S holders M20/P16 to M63/P56 feature the following advantages:

- Safe closing of the holder with no tools required
- Machine safe, can only be opened with a tool
- The upper part can also be secured with screws if necessary
- Lower part can be pre-assembled

The UH-S holders in the sizes M10/P07 to M16/P11 are to be fixed with two screws.

- Specification:
- EN 45545-2 3x HL3

### SPECIFICATIONS

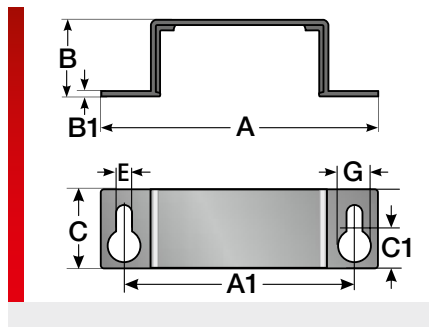
- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing



Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	a2 mm	Ø mm	Pack qty.
UH-S M10/P07	83641444	Black	M10/P07	35.00	26.00	14.60	20.00	5.60	15
UH-S M12/P09	83641446	Black	M12/P09	35.00	26.00	15.00	20.00	5.60	15
UH-S M16/P11	83641448	Black	M16/P11(S)	43.00	26.00	16.60	26.00	6.90	15
UH-S M20/P16	83641450	Black	M20/P16(S)	70.00	52.00	30.00	45.00	8.50	15
UH-S M25/P21	83641452	Black	M25/P21(S)	70.00	52.00	30.00	45.00	8.50	15
UH-S M32/P29	83641454	Black	M32/P29(S)	85.00	66.00	30.00	60.00	8.50	10
UH-S M40/P36	83641456	Black	M40/P36	85.00	66.00	30.00	60.00	8.50	10
UH-S M50/P48	83641458	Black	M50/P48	115.00	86.00	30.00	90.00	8.50	5
UH-S M63/P56	83641460	Black	NW56	115.00	86.00	30.00	90.00	8.50	5



## Type EF/B



### PRODUCT INFORMATION

The holder for the EF rectangular conduit is made of specially modified polyamide. The material is halogen, phosphor and cadmium-free.

The holder features the following advantages:

- Easy assembly
- High tear-out strength

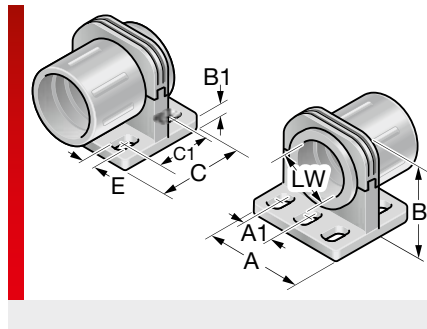
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing



Type	Order No.	Colour	A mm	B mm	C mm	E mm	G mm	A1 mm	B1 mm	C1 mm	Pack qty.
EF/B 26042	83361022	Black	92.00	36.00	32.00	6.20	10.00	76.00	3.50	16.00	1

## Type USH/D






### PRODUCT INFORMATION

The USH/D holder with rotating part is made of specially modified polycarbonate. The material is halogen, phosphor and cadmium-free. The holder with rotating part is used for quick and easy holding of Murrplastik EL and ELS cable protection conduits and features the following advantages:

- Various fastening possibilities
- Conduits can still be rotated
- Pre-assembly of lower part possible

### SPECIFICATIONS

-  -40 – 110 °C short term 140 °C
-  Polycarbonate
-  Acc. to UL94 V2 self-extinguishing

RoHS

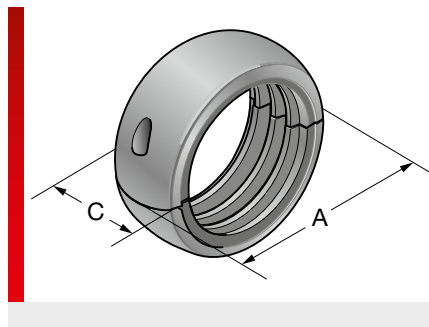
HF

Type	Order No.	Colour	A mm	B mm	C mm	E mm	A1 mm	B1 mm	C1 mm	LW mm	Pack qty.
USH/D P16	83641210	Grey	38.00	40.00	38.00	5.50	13.00	5.00	23.00	14.70	50
USH/D P21	83641212	Grey	38.00	40.00	38.00	5.50	13.00	5.00	23.00	19.60	50
USH/D P29	83641214	Grey	46.00	48.00	38.00	5.50	17.50	5.00	26.00	26.00	50
USH/D P29	83641250	Black	46.00	48.00	38.00	5.50	17.50	5.00	26.00	26.00	50
USH/D P36	83641216	Grey	52.00	59.00	60.00	5.50	20.00	6.00	48.00	35.10	10
USH/D P48	83641218	Grey	68.00	77.00	60.00	5.50	27.50	8.00	47.00	46.70	10



**Protectors / conduit couplings / conduit distributors**

## Type PR/SV



### PRODUCT INFORMATION

The PR/SV protectors are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The protectors are used for impact protection and connecting cable protection conduits and also protect against wear.

The PR/SV protectors feature the following advantages:

- Flat construction
- Simple assembly with a sliding lock and optional lock screw assembly
- High tear-out strength

### SPECIFICATIONS

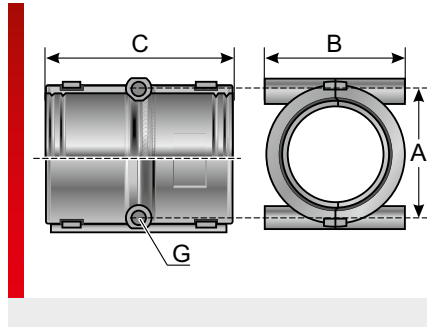
- 40 – 110 °C short term 140 °C
- UL listed material  
Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing



Type	Order No.	Colour	Suitable for Murrflex	Suitable for Murrflex EWX	A mm	C mm	Pack qty.
<b>Standard design for cable protection conduits with standard corrugation, type EW-xx / type EWT-xx</b>							
PR/SV-EW 21	83691058	Black	M25/P21		51.60	51.20	10
PR/SV-EW 29	83691060	Black	M32/P29		57.90	51.00	10
PR/SV-EW 36	83691062	Black	M40/P36		66.00	51.50	10
PR/SV-EW 48	83691064	Black	M50/P48		78.00	49.50	10
PR/SV-EW 56	83691065	Black	NW56		90.80	51.00	5
<b>Standard design for cable protection conduits with high corrugation, type EWX-xx</b>							
PR/SV-EW 21	83691018	Grey	M25/P21		51.60	51.20	10
PR/SV-EW 29	83691020	Grey	M32/P29		57.90	51.00	10
PR/SV-EW 36	83691022	Grey	M40/P36		66.00	51.50	10
PR/SV-EW 48	83691024	Grey	M50/P48		78.00	49.50	10
PR/SV-EW 56	83691025	Grey	NW56		90.80	51.00	5
<b>Standard design for cable protection conduits with high corrugation, type EWX-xx</b>							
PR/SV-EWX 21	83691258	Black	M25/P21		51.60	51.90	10
PR/SV-EWX 29	83691260	Black	M32/P29		57.90	51.00	10
PR/SV-EWX 36	83691262	Black	M40/P36		66.00	51.50	10
PR/SV-EWX 48	83691264	Black	M50/P48		78.00	49.50	10
PR/SV-EWX 56	83691265	Black	NW56		90.80	51.00	5
PR/SV-EWX 21	83691218	Grey	M25/P21		51.60	51.90	10
PR/SV-EWX 29	83691220	Grey	M32/P29		57.90	51.00	10
PR/SV-EWX 36	83691222	Grey	M40/P36		66.00	51.50	10
PR/SV-EWX 48	83691224	Grey	M50/P48		78.00	49.50	10
PR/SV-EWX 56	83691225	Grey	NW56		90.80	51.00	5



## Type SVG



### PRODUCT INFORMATION

The SVG conduit couplings are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The conduit couplings are used as an extension or for the repair of cable protection conduits and feature the following advantages:

- Easy assembly by latching
- Split version makes routing of cables easy
- Can also be screwed on

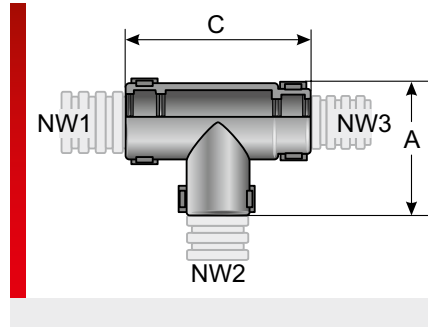
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 42  
IP 54 bolted

**RoHS** **HF**

Type	Order No.	Colour	Suitable for Murrflex	A mm	B mm	C mm	G mm	Pack qty.
<b>Conduit holder suitable for Murrflex EW and EWX</b>								
SVG 21	83701630	Black	M25/P21(S)	31.00	36.00	50.00	5.50	25
SVG 29	83701632	Black	M32/P29(S)	36.80	44.00	54.00	5.50	25
SVG 36	83701634	Black	M40/P36(S)	44.80	50.00	66.00	5.50	10
SVG 48	83701636	Black	M50/P48(S)	56.80	64.00	66.00	5.50	10
SVG 21	83701610	Grey	M25/P21(S)	31.00	36.00	50.00	5.50	25
SVG 29	83701612	Grey	M32/P29(S)	36.80	44.00	54.00	5.50	25
SVG 36	83701614	Grey	M40/P36(S)	44.80	50.00	66.00	5.50	10
SVG 48	83701616	Grey	M50/P48(S)	56.80	64.00	66.00	5.50	10

## Type VT



### PRODUCT INFORMATION

The VT conduit distributors are made of specially modified polyamide 6. They are used for coupling Murrplastik cable protection conduits of the same and different diameters.

The distributors feature the following advantages:

- Easy assembly by latching
- Split version makes routing of cables easy
- Distributor envelops the conduit, which means that the entire inside diameter of the conduit is available

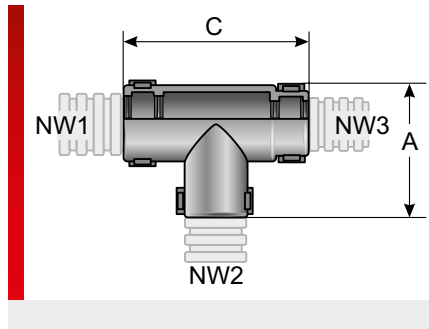
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 42

RoHS
 HF

Type	Order No.	Colour	for Murrflex with NW1 / NW2 / NW3	A mm	C mm	Pack qty.
<b>Hose distributor suitable for Murrflex EW and EWX</b>						
VT 080808	83702410	Black	06 / 06 / 06	31.10	45.20	10
VT 120808	83702412	Black	09 / 06 / 06	31.10	45.20	10
VT 120812	83702414	Black	09 / 06 / 09	31.10	45.20	10
VT 121208	83702416	Black	09 / 09 / 06	31.10	45.20	10
VT 121212	83702418	Black	09 / 09 / 09	31.10	45.20	10
VT 160816	83702420	Black	11 / 06 / 11	34.80	49.10	10
VT 161212	83702422	Black	11 / 09 / 09	34.80	49.10	10
VT 161216	83702424	Black	11 / 09 / 11	34.80	49.10	10
VT 161612	83702426	Black	11 / 11 / 09	34.80	49.10	10
VT 161616	83702428	Black	11 / 11 / 11	34.80	49.10	10
VT 200820	83702430	Black	16 / 06 / 16	41.00	56.50	10
VT 201216	83702432	Black	16 / 09 / 11	41.00	56.50	10
VT 201220	83702434	Black	16 / 09 / 16	41.00	56.50	10
VT 201616	83702436	Black	16 / 11 / 11	41.00	56.50	10
VT 201620	83702438	Black	16 / 11 / 16	41.00	56.50	10
VT 202016	83702440	Black	16 / 16 / 11	41.00	56.50	10
VT 202020	83702441	Black	16 / 16 / 16	41.00	56.50	10
VT 281220	83702442	Black	21 / 09 / 16	48.60	64.50	10
VT 281620	83702444	Black	21 / 11 / 16	48.60	64.50	10
VT 282020	83702446	Black	21 / 16 / 16	48.60	64.50	10
VT 281228	83702448	Black	21 / 09 / 21	48.60	64.50	10
VT 281628	83702450	Black	21 / 11 / 21	48.60	64.50	10
VT 282028	83702452	Black	21 / 16 / 21	48.60	64.50	10
VT 282828	83702454	Black	21 / 21 / 21	48.60	64.50	10
VT 321632	83702456	Black	29 / 11 / 29	55.30	72.00	10

**Type VT** (Continued...)

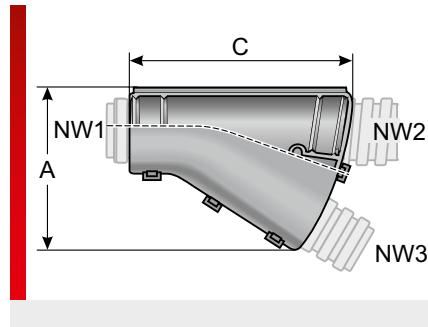


Type	Order No.	Colour	for Murrflex with NW1 / NW2 / NW3	A mm	C mm	Pack qty.
VT 322032	83702458	Black	29 / 16 / 29	55.30	72.00	10
VT 323232	83702460	Black	29 / 29 / 29	72.00	55.30	10





## Type SVY



### PRODUCT INFORMATION

The SVY conduit distributors are made of specially modified polyamide 6. They are used for coupling Murrplastik cable protection conduits of the same and different diameters.

The distributors feature the following advantages:

- Easy assembly by latching
- Split version makes routing of cables easy
- Distributor envelops the conduit, which means that the entire inside diameter of the conduit is available

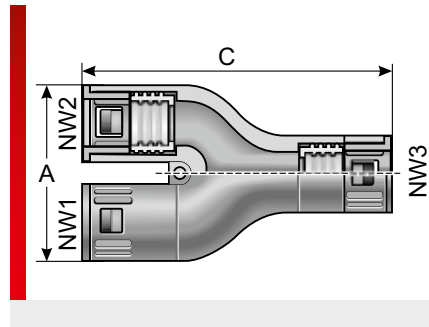
### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing
- IP 42



Type	Order No.	Colour	for Murrflex with NW1 / NW2 / NW3	A mm	C mm	Pack qty.
SVY 080808	83701410	Black	06 / 06 / 06	37.10	54.60	10
SVY 120808	83701412	Black	09 / 06 / 06	37.10	54.60	10
SVY 121208	83701414	Black	09 / 09 / 06	37.10	54.60	10
SVY 121212	83701416	Black	09 / 09 / 09	37.10	54.60	10
SVY 161208	83701418	Black	11 / 09 / 06	39.80	54.60	10
SVY 161212	83701420	Black	11 / 09 / 09	39.80	54.60	10
SVY 161608	83701422	Black	11 / 11 / 06	39.80	54.90	10
SVY 161612	83701424	Black	11 / 11 / 09	39.80	54.90	10
SVY 200808	83701426	Black	16 / 06 / 06	39.80	42.80	10
SVY 201208	83701428	Black	16 / 09 / 06	41.00	42.80	10
SVY 201212	83701430	Black	16 / 09 / 09	41.00	42.80	10
SVY 201608	83701432	Black	16 / 11 / 06	39.60	48.20	10
SVY 201612	83701434	Black	16 / 11 / 09	39.60	48.20	10
SVY 201616	83701435	Black	16 / 11 / 11	48.20	39.60	10
SVY 202008	83701436	Black	16 / 16 / 06	44.90	57.90	10
SVY 202012	83701438	Black	16 / 16 / 09	44.90	57.90	10
SVY 202016	83701440	Black	16 / 16 / 11	47.50	63.50	10
SVY 282012	83701442	Black	21 / 16 / 09	49.00	53.50	10
SVY 282016	83701444	Black	21 / 16 / 11	49.00	53.50	10
SVY 282812	83701446	Black	21 / 21 / 09	56.50	67.00	10
SVY 282816	83701448	Black	21 / 21 / 11	56.50	67.00	10
SVY 282820	83701450	Black	21 / 21 / 16	50.00	76.50	10
SVY 282828	83701452	Black	21 / 21 / 21	66.80	92.10	10

## Type YPA-F







### PRODUCT INFORMATION

The YPA-F conduit distributors are made of specially modified polyamide. They are used for coupling Murrplastik cable protection conduits of the same and different diameters. The distributors feature the following advantages:

- Easy assembly - just insert the cable protection conduit
- High protection class
- Closed design

### SPECIFICATIONS

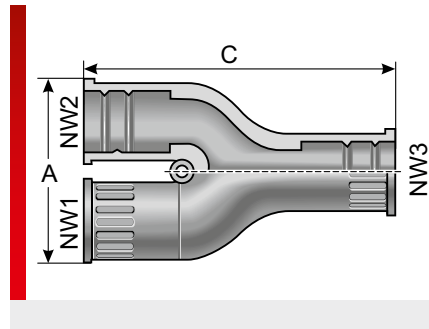
-  -30 – 100 °C
-  Mod. polyamide PA 6
-  Acc. to UL94 V0 self-extinguishing
-  IP 67

RoHS

HF

Type	Order No.	Colour	for Murrflex with NW1 / NW2 / NW3	A mm	C mm	Pack qty.
YPA-F-6/6/9	83701850	Black	06 / 06 / 09	36.00	68.00	10
YPA-F-9/9/9	83701854	Black	09 / 09 / 09	42.00	70.00	10
YPA-F-9/9/11	83701858	Black	09 / 09 / 11	42.00	71.00	10
YPA-F-11/11/11	83701862	Black	11 / 11 / 11	48.00	80.00	10
YPA-F-6/6/9	83701810	Grey	06 / 06 / 09	36.00	68.00	10
YPA-F-9/9/9	83701814	Grey	09 / 09 / 09	42.00	70.00	10
YPA-F-9/9/11	83701818	Grey	09 / 09 / 11	42.00	71.00	10
YPA-F-11/11/11	83701822	Grey	11 / 11 / 11	48.00	80.00	10

## Type YTPE-F



### PRODUCT INFORMATION

The YTPE-F conduit distributors are made of specially modified thermoplastic elastomer. They are used for coupling Murrplastik cable protection conduits of the same and different diameters. The distributors feature the following advantages:

- Easy assembly - just insert the cable protection conduit
- High protection class
- Closed design

### SPECIFICATIONS

- 30 – 100 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- IP 66

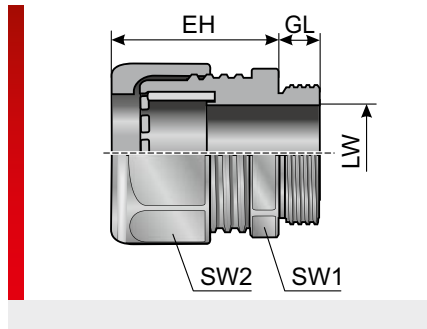
RoHS
 HF

Type	Order No.	Colour	for Murrflex with NW1 / NW2 / NW3	A mm	C mm	Pack qty.
YTPE-F-6/6/6	83701856	Black	06 / 06 / 06	32.00	51.00	10
YTPE-F-11/11/16	83701870	Black	11 / 11 / 16	51.00	75.00	10
YTPE-F-11/11/21	83701872	Black	11 / 11 / 21	52.00	81.00	10
YTPE-F-16/16/16	83701874	Black	16 / 16 / 16	62.50	82.50	10
YTPE-F-16/16/21	83701878	Black	16 / 16 / 21	61.00	81.00	10
YTPE-F-21/21/29	83701882	Black	21 / 21 / 29	79.00	87.00	10
YTPE-F-29/29/36	83701886	Black	29 / 29 / 36	87.00	99.00	10
YTPE-F-36/36/48	83701888	Black	36 / 36 / 48	109.00	116.00	5
YTPE-F-6/6/6	83701826	Grey	06 / 06 / 06	32.00	51.00	10
YTPE-F-11/11/16	83701830	Grey	11 / 11 / 16	51.00	75.00	10
YTPE-F-16/16/16	83701834	Grey	16 / 16 / 16	62.50	82.50	10
YTPE-F-16/16/21	83701838	Grey	16 / 16 / 21	61.00	81.00	10
YTPE-F-21/21/29	83701842	Grey	21 / 21 / 29	79.00	87.00	10
YTPE-F-29/29/36	83701846	Grey	29 / 29 / 36	87.00	99.00	10



## Cable fittings

## Type m-seal® KV (plastic version)



### PRODUCT INFORMATION

The m-seal cable fittings are manufactured of specially modified Polyamide and the seal is made of NBR.

m-seal cable fittings feature the following advantages:

- Large seal and clamping area
- With integrated strain relief
- High protection class IP 68
- Simple, fast assembly without special tools

### SPECIFICATIONS

- 20 – 100 °C short term 150 °C
- Fitting: Mod. polyamide PA 6  
Sealing ring: Neoprene (CR)
- Acc. to UL94 V2 self-extinguishing
- IP 68
- Strain relief according to DIN EN 50262



Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric plastic thread</b>								
m-seal KV M12x1.5 3.0-6.5 <sup>1)</sup>	84181250	Black	M12x1.5	3.0 – 6.5	22.00	6.00	15.0	100
m-seal KV M16x1,5 4,0-8,0 <sup>1)</sup>	84181252	Black	M16x1,5	4.0 – 8.0	25.00	8.00	19.0	50
m-seal KV M20x1.5 6.0-12.0 <sup>2)</sup>	84181254	Black	M20x1.5	6.0 – 12.0	29.00	10.00	24.0	50
m-seal KV M25x1.5 11.0-17.0 <sup>2)</sup>	84181256	Black	M25x1.5	11.0 – 17.0	33.00	8.00	29.0	50
m-seal KV M32x1.5 15.0-21.0 <sup>2)</sup>	84181258	Black	M32x1.5	15.0 – 21.0	39.00	10.00	36.0	25
m-seal KV M40x1.5 19.0-28.0 <sup>2)</sup>	84181260	Black	M40x1.5	19.0 – 28.0	44.00	10.00	46.0	20
m-seal KV M50x1.5 30.0-38.0 <sup>2)</sup>	84181262	Black	M50x1.5	30.0 – 38.0	49.00	18.00	60.0	10
m-seal KV M63x1.5 34.0-44.0 <sup>2)</sup>	84181264	Black	M63x1.5	34.0 – 44.0	49.00	18.00	65.0	10
<b>Pg plastic threading</b>								
m-seal KV Pg 7 3.0-6.5 <sup>1)</sup>	84181050	Black	Pg 07	3.0 – 6.5	22.00	8.00	15.0	100
m-seal KV Pg 9 4.0-8.0 <sup>1)</sup>	84181052	Black	Pg 09	4.0 – 8.0	25.00	8.00	19.0	50

**Type m-seal® KV (plastic version)** (Continued...)

Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
m-seal KV Pg 11 5.0-10.0 <sup>3)</sup>	84181054	Black	Pg 11	5.0 – 10.0	28.00	8.00	22.0	50
m-seal KV Pg 13.5 6.0-12.0 <sup>2)</sup>	84181056	Black	Pg 13.5	6.0 – 12.0	29.00	9.00	24.0	50
m-seal KV Pg 16 10.0-14.0 <sup>4)</sup>	84181058	Black	Pg 16	10.0 – 14.0	31.00	10.00	27.0	50
m-seal KV Pg 21 13.0-18.0 <sup>2)</sup>	84181060	Black	Pg 21	13.0 – 18.0	35.00	11.00	33.0	25
m-seal KV Pg 29 18.0-25.0 <sup>4)</sup>	84181062	Black	Pg 29	18.0 – 25.0	40.00	11.00	42.0	20
m-seal KV Pg 36 22.0-32.0 <sup>2)</sup>	84181064	Black	Pg 36	22.0 – 32.0	49.00	13.00	53.0	10
m-seal KV Pg 42 30.0-38.0 <sup>2)</sup>	84181066	Black	Pg 42	30.0 – 38.0	49.00	13.00	60.0	10
m-seal KV Pg 48 34.0-44.0 <sup>2)</sup>	84181068	Black	Pg 48	34.0 – 44.0	49.00	14.00	65.0	10
m-seal KV Pg 7 3.0-6.5 <sup>1)</sup>	84181000	Grey	Pg 07	3.0 – 6.5	22.00	8.00	15.0	100
m-seal KV Pg 9 4.0-8.0 <sup>1)</sup>	84181002	Grey	Pg 09	4.0 – 8.0	25.00	8.00	19.0	50
m-seal KV Pg 11 5.0-10.0 <sup>3)</sup>	84181004	Grey	Pg 11	5.0 – 10.0	28.00	8.00	22.0	50
m-seal KV Pg 13.5 6.0-12.0 <sup>2)</sup>	84181006	Grey	Pg 13.5	6.0 – 12.0	29.00	9.00	24.0	50
m-seal KV Pg 16 10.0-14.0 <sup>4)</sup>	84181008	Grey	Pg 16	10.0 – 14.0	31.00	10.00	27.0	50
m-seal KV Pg 21 13.0-18.0 <sup>2)</sup>	84181010	Grey	Pg 21	13.0 – 18.0	35.00	11.00	33.0	25
m-seal KV Pg 29 18.0-25.0 <sup>4)</sup>	84181012	Grey	Pg 29	18.0 – 25.0	40.00	11.00	42.0	20
m-seal KV Pg 36 22.0-32.0 <sup>2)</sup>	84181014	Grey	Pg 36	22.0 – 32.0	49.00	13.00	53.0	10
m-seal KV Pg 42 30.0-38.0 <sup>2)</sup>	84181016	Grey	Pg 42	30.0 – 38.0	49.00	13.00	60.0	10
m-seal KV Pg 48 34.0-44.0 <sup>2)</sup>	84181018	Grey	Pg 48	34.0 – 44.0	49.00	14.00	65.0	10

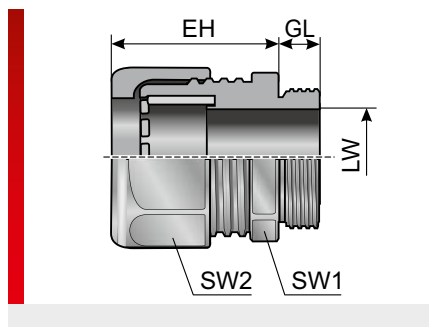
<sup>1)</sup> With UR approval

<sup>2)</sup> With UL approval

<sup>3)</sup> With cURus- approval

<sup>4)</sup> With cULus- approval

## Type m-seal® MV (metal version)



### PRODUCT INFORMATION

The m-seal cable fittings are made of nickel-plated brass and the sealing ring of neoprene. The fittings offer excellent strain relief and have a cap nut that is resistant to vibration.

m-seal cable fittings feature the following advantages:

- Large seal and clamping area
- With integrated strain relief
- High protection class IP 68
- Simple, fast assembly without special tools

### SPECIFICATIONS

- 20 – 100 °C short term 150 °C
- Fitting: Nickel-plated brass  
Sealing ring: Neoprene (CR)
- Acc. to UL94 V2 self-extinguishing
- IP 68
- Strain relief according to DIN EN 50262



Type	Order No.	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal thread</b>							
m-seal MV M12x1.5 3.0-6.5 <sup>1)</sup>	84201600	M12x1.5	3.0 – 6.5	21.50	6.00	14.0	50
m-seal MV M16x1.5 5.0-10.0 <sup>2)</sup>	84201602	M16x1,5	5.0 – 10.0	25.30	7.00	20.0	50
m-seal MV M20x1.5 6.0-12.0 <sup>1)</sup>	84201604	M20x1.5	6.0 – 12.0	25.40	8.00	22.0	50
m-seal MV M25x1.5 11.0-17.0 <sup>3)</sup>	84201606	M25x1.5	11.0 – 17.0	31.00	8.00	27.0	25
m-seal MV M32x1.5 15.0-21.0 <sup>3)</sup>	84201608	M32x1.5	15.0 – 21.0	33.50	8.00	34.0	10
m-seal MV M40x1.5 19.0-28.0 <sup>3)</sup>	84201610	M40x1.5	19.0 – 28.0	42.00	9.00	43.0	10
m-seal MV M50x1.5 27.0-38.0 <sup>3)</sup>	84201612	M50x1.5	27.0 – 38.0	50.00	9.00	58.0	5
m-seal MV M63x1.5 34.0-44.0 <sup>1)</sup>	84201614	M63x1.5	34.0 – 44.0	52.30	14.00	64.0 / 68.0	5
<b>Pg metal thread</b>							
m-seal MV Pg 7 3.0-6.5 <sup>1)</sup>	84201000	Pg 07	3.0 – 6.5	21.80	6.00	14.0	50
m-seal MV Pg 9 4.0-8.0 <sup>1)</sup>	84201002	Pg 09	4.0 – 8.0	22.60	6.00	17.0	50
m-seal MV Pg 11 5.0-11.0 <sup>1)</sup>	84201004	Pg 11	5.0 – 11.0	25.30	6.00	20.0	50
m-seal MV Pg 13.5 6.0-12.0 <sup>1)</sup>	84201006	Pg 13.5	6.0 – 12.0	24.10	6.50	22.0	50
m-seal MV Pg 16 10.0-14.0 <sup>1)</sup>	84201008	Pg 16	10.0 – 14.0	27.50	6.50	24.0	25
m-seal MV Pg 21 13.0-18.0 <sup>1)</sup>	84201010	Pg 21	13.0 – 18.0	31.20	7.20	30.0	20
m-seal MV Pg 29 18.0-25.0 <sup>1)</sup>	84201012	Pg 29	18.0 – 25.0	39.30	8.00	40.0	10
m-seal MV Pg 36 22.0-32.0 <sup>1)</sup>	84201014	Pg 36	22.0 – 32.0	47.20	9.00	50.0	5
m-seal MV Pg 42 30.0-38.0 <sup>1)</sup>	84201016	Pg 42	30.0 – 38.0	47.70	12.00	58.0	5
m-seal MV Pg 48 34.0-44.0 <sup>1)</sup>	84201018	Pg 48	34.0 – 44.0	52.00	14.00	64.0	5
<b>Long, metal metric threading</b>							
m-seal MV M12x1.5-L 3.0-6.5	84201400	M12x1.5	3.0 – 6.5	21.50	12.00	14.0	50



**Type m-seal® MV (metal version)** (Continued...)

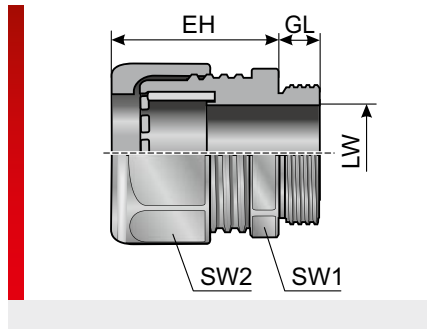
Type	Order No.	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
m-seal MV M16x1.5-L 5.0-10.0	84201402	M16x1,5	5.0 – 10.0	25.30	12.00	20.0	50
m-seal MV M20x1.5-L 6.0-12.0	84201404	M20x1.5	6.0 – 12.0	25.40	12.00	22.0	50
m-seal MV M25x1.5-L 11.0-17.0	84201406	M25x1.5	11.0 – 17.0	31.00	12.00	27.0	25
m-seal MV M32x1.5-L 15.0-21.0	84201408	M32x1.5	15.0 – 21.0	33.50	15.00	34.0	10
m-seal MV M40x1.5-L 19.0-28.0	84201410	M40x1.5	19.0 – 28.0	42.00	15.00	43.0	10
m-seal MV M50x1.5-L 27.0-38.0	84201412	M50x1.5	27.0 – 38.0	50.00	15.00	58.0	5
m-seal MV M63x1.5-L 34.0-44.0	84201414	M63x1.5	34.0 – 44.0	52.30	15.00	64.0 / 68.0	5
<b>Long, metal PG threading</b>							
m-seal MV Pg 7-L 3.0-6.5	84201200	Pg 07	3.0 – 6.5	21.80	10.00	14.0	50
m-seal MV Pg 9-L 4.0-8.0	84201202	Pg 09	4.0 – 8.0	22.60	10.00	17.0	50
m-seal MV Pg 11-L 5.0-11.0	84201204	Pg 11	5.0 – 11.0	25.30	10.00	20.0	50
m-seal MV Pg 13.5-L 6.0-12.0	84201206	Pg 13.5	6.0 – 12.0	24.10	10.00	22.0	50
m-seal MV Pg 16-L 10.0-14.0	84201208	Pg 16	10.0 – 14.0	27.50	10.00	24.0	25
m-seal MV Pg 21-L 13.0-18.0	84201210	Pg 21	13.0 – 18.0	31.20	12.00	30.0	20
m-seal MV Pg 29-L 18.0-25.0	84201212	Pg 29	18.0 – 25.0	39.30	12.00	40.0	10
m-seal MV Pg 36-L22.0-32.0	84201214	Pg 36	22.0 – 32.0	47.20	14.00	50.0	5
m-seal MV Pg 42-L 30.0-38.0	84201216	Pg 42	30.0 – 38.0	47.70	16.00	58.0	5
m-seal MV Pg 48-L 34.0-44.0	84201218	Pg 48	34.0 – 44.0	52.00	18.00	64.0	5

<sup>1)</sup> With CSA approval

<sup>2)</sup> With CSA- and cURus- approval

<sup>3)</sup> With CSA- and cULus- approval

## Type m-seal® EMC (EMV)



### PRODUCT INFORMATION

With the m-seal EMC (EMV) cable fittings, simple radial and axial movement of the cable are possible, even at contact location. The contact finger surfaces with rounded edges prevent damage to the conductor. In addition, the large surface on the contact finger makes low contact resistance possible, even on loosely woven cables (the contact area does not press into the conductor).

The m-seal EMC (EMV) cable fitting features the following advantages:

- Large seal and clamping area
- With integrated strain relief
- High protection class IP 68
- High contract rating, even at vibration conditions
- Very simple and rapid assembly without tools
- Suitable for the highest requirements of today's technology
- Very good shielding attenuation

### SPECIFICATIONS

- 20 – 100 °C short term 150 °C
- Fitting: Nickel-plated brass  
Sealing ring: Neoprene (CR)
- Acc. to UL94 V2 self-extinguishing
- IP 68
- Strain relief according to DIN EN 50262

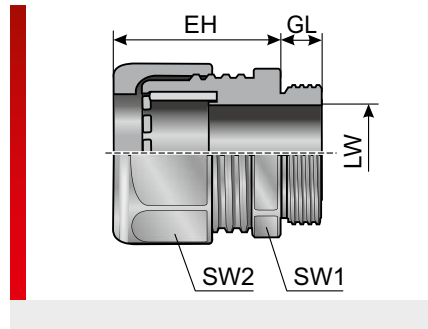


Type	Order No.	Connecting thread	Clamping range (LW) mm	Contact diameter mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal thread / EMC version</b>								
m-seal EMC M12x1.5 3.0-6.5 <sup>1)</sup>	84201800	M12x1.5	3.0 – 6.5	2.0 – 5.0	28.00	6.00	14.0	50
m-seal EMC M16x1.5 5.0-10.0 <sup>1)</sup>	84201802	M16x1,5	5.0 – 10.0	3.5 – 8.0	34.00	6.00	20.0	50
m-seal EMC M20x1.5 6.0-12.0	84201804	M20x1.5	6.0 – 12.0	4.5 – 10.0	38.00	6.00	24.0	50
m-seal EMC M25x1.5 10.0-18.0 <sup>1)</sup>	84201806	M25x1.5	10.0 – 18.0	7.0 – 14.0	42.00	8.00	30.0	25
m-seal EMC M32x1.5 16.0-25.0 <sup>2)</sup>	84201808	M32x1.5	16.0 – 25.0	12.0 – 20.0	50.00	9.00	40.0	10
m-seal EMC M40x1.5 22.0-32.0 <sup>2)</sup>	84201810	M40x1.5	22.0 – 32.0	18.0 – 27.0	57.00	9.00	50.0	5
m-seal EMC M50x1.5 30.0-38.0 <sup>2)</sup>	84201812	M50x1.5	30.0 – 38.0	26.0 – 34.0	68.00	9.00	58.0	5
m-seal EMC M63x1.5 34.0-44.0 <sup>2)</sup>	84201814	M63x1.5	34.0 – 44.0	30.0 – 40.0	69.00	14.00	64.0 / 68.0	5

<sup>1)</sup>With cURus- approval

<sup>2)</sup>With cULus- approval

## Type WKK (plastic version)



### PRODUCT INFORMATION

The WKK cable fittings are made of specially modified polyamide and the seals of NBR. The materials are halogen, phosphor and cadmium-free. The KV-ME multi-inserts can be used in the cable fittings.

The WKK cable fittings feature the following advantages:

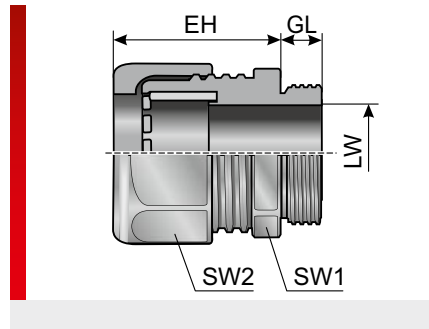
- Very high protection class
- Easy to assemble
- Large clamping range
- Vibration-resistant cap nut

### SPECIFICATIONS

- 40 – 100 °C short term 120 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: Perbunan (NBR)
- Acc. to UL94 V0 self-extinguishing
- IP 54 up to IP65 for smooth surfaces  
IP 68 with additional O-ring type OR to 10 bar

Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric thread</b>								
WKK-M12x1,5 <sup>1)</sup>	84105050	Black	M12x1.5	3.0 – 6.5	21.00	8.00	15.0 / 15.0	50
WKK-M16x1,5 <sup>1)</sup>	84105056	Black	M16x1,5	4.0 – 8.0	22.00	8.00	19.0 / 19.0	50
WKK-M20x1,5 <sup>2)</sup>	84105062	Black	M20x1.5	6.0 – 12.0	27.00	9.00	24.0 / 24.0	50
WKK-M25x1,5 <sup>2)</sup>	84105068	Black	M25x1.5	13.0 – 18.0	31.00	11.00	33.0 / 33.0	50
WKK-M32x1,5 <sup>2)</sup>	84105074	Black	M32x1.5	18.0 – 25.0	39.00	11.00	42.0 / 42.0	25
WKK-M40x1,5 <sup>2)</sup>	84105080	Black	M40x1.5	22.0 – 32.0	48.00	13.00	53.0 / 53.0	10
WKK-M50x1,5 <sup>2)</sup>	84105086	Black	M50x1.5	32.0 – 38.0	49.00	13.00	60.0 / 60.0	10
WKK-M63x1,5 <sup>2)</sup>	84105092	Black	M63x1.5	37.0 – 44.0	49.00	14.00	65.0 / 68.0	10
<b>Metric version with extended thread</b>								
WKK/L-M12x1,5 <sup>1)</sup>	84105650	Black	M12x1.5	3.0 – 6.5	21.00	15.00	15.0 / 15.0	50
WKK/L-M16x1,5 <sup>1)</sup>	84105652	Black	M16x1,5	4.0 – 8.0	22.00	15.00	19.0 / 19.0	50
WKK/L-M20x1,5 <sup>2)</sup>	84105654	Black	M20x1.5	6.0 – 12.0	27.00	15.00	24.0 / 24.0	50

**Type WKK (plastic version)** (Continued...)



Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
WKK/L-M25x1,5 <sup>2)</sup>	84105656	Black	M25x1.5	13.0 – 18.0	31.00	15.00	33.0 / 33.0	50
<b>Pg threads</b>								
WKK-Pg 07 <sup>1)</sup>	84101050	Black	Pg 07	3.0 – 6.5	21.00	8.00	15.0 / 15.0	50
WKK-Pg 09 <sup>1)</sup>	84101052	Black	Pg 09	4.0 – 8.0	22.00	8.00	19.0 / 19.0	50
WKK-Pg 11 <sup>1)</sup>	84101054	Black	Pg 11	5.0 – 10.0	25.00	8.00	22.0 / 22.0	50
WKK-Pg 13.5 <sup>2)</sup>	84101056	Black	Pg 13.5	6.0 – 12.0	27.00	9.00	24.0 / 24.0	50
WKK-Pg 16 <sup>2)</sup>	84101058	Black	Pg 16	10.0 – 14.0	28.00	10.00	27.0 / 27.0	50
WKK-Pg 21 <sup>2)</sup>	84101060	Black	Pg 21	13.0 – 18.0	31.00	11.00	33.0 / 33.0	50
WKK-Pg 29 <sup>2)</sup>	84101062	Black	Pg 29	18.0 – 25.0	39.00	11.00	42.0 / 42.0	25
WKK-Pg 36 <sup>2)</sup>	84101064	Black	Pg 36	22.0 – 32.0	48.00	13.00	53.0 / 53.0	10
WKK-Pg 42 <sup>2)</sup>	84101066	Black	Pg 42	32.0 – 38.0	49.00	13.00	60.0 / 60.0	5
WKK-Pg 48 <sup>2)</sup>	84101068	Black	Pg 48	37.0 – 44.0	49.00	13.00	65.0 / 65.0	5
WKK-Pg 07 <sup>1)</sup>	84101010	Grey	Pg 07	3.0 – 6.5	21.00	8.00	15.0 / 15.0	50
WKK-Pg 09 <sup>1)</sup>	84101012	Grey	Pg 09	4.0 – 8.0	22.00	8.00	19.0 / 19.0	50
WKK-Pg 11 <sup>1)</sup>	84101014	Grey	Pg 11	5.0 – 10.0	25.00	8.00	22.0 / 22.0	50
WKK-Pg 13.5 <sup>2)</sup>	84101016	Grey	Pg 13.5	6.0 – 12.0	27.00	9.00	24.0 / 24.0	50
WKK-Pg 16 <sup>2)</sup>	84101018	Grey	Pg 16	10.0 – 14.0	28.00	10.00	27.0 / 27.0	50
WKK-Pg 21 <sup>2)</sup>	84101020	Grey	Pg 21	13.0 – 18.0	31.00	11.00	33.0 / 33.0	50
WKK-Pg 29 <sup>2)</sup>	84101022	Grey	Pg 29	18.0 – 25.0	39.00	11.00	42.0 / 42.0	25
WKK-Pg 36 <sup>2)</sup>	84101024	Grey	Pg 36	22.0 – 32.0	48.00	13.00	53.0 / 53.0	10
WKK-Pg 42 <sup>2)</sup>	84101026	Grey	Pg 42	32.0 – 38.0	49.00	13.00	60.0 / 60.0	5
WKK-Pg 48 <sup>2)</sup>	84101028	Grey	Pg 48	37.0 – 44.0	49.00	13.00	65.0 / 65.0	5
<b>Pg version with extended thread</b>								
WKK/L-Pg 07 <sup>1)</sup>	84101650	Black	Pg 07	3.0 – 6.5	21.00	15.00	15.0 / 15.0	50
WKK/L-Pg 09 <sup>1)</sup>	84101652	Black	Pg 09	4.0 – 8.0	22.00	15.00	19.0 / 19.0	50
WKK/L-Pg 11 <sup>1)</sup>	84101654	Black	Pg 11	5.0 – 10.0	25.00	15.00	22.0 / 22.0	50
WKK/L-Pg 13.5 <sup>2)</sup>	84101656	Black	Pg 13.5	6.0 – 12.0	27.00	15.00	24.0 / 24.0	50
WKK/L-Pg 16 <sup>2)</sup>	84101658	Black	Pg 16	10.0 – 14.0	28.00	15.00	27.0 / 27.0	50
WKK/L-Pg 21 <sup>2)</sup>	84101660	Black	Pg 21	13.0 – 18.0	31.00	15.00	33.0 / 33.0	50
WKK/L-Pg 29 <sup>2)</sup>	84101662	Black	Pg 29	18.0 – 25.0	39.00	15.00	42.0 / 42.0	25
WKK/L-Pg 36 <sup>2)</sup>	84101664	Black	Pg 36	22.0 – 32.0	48.00	18.00	53.0 / 53.0	10
WKK/L-Pg 42 <sup>2)</sup>	84101666	Black	Pg 42	32.0 – 38.0	49.00	18.00	60.0 / 60.0	5
WKK/L-Pg 48 <sup>2)</sup>	84101668	Black	Pg 48	37.0 – 44.0	49.00	18.00	65.0 / 65.0	5
WKK/L-Pg 07 <sup>1)</sup>	84101610	Grey	Pg 07	3.0 – 6.5	21.00	15.00	15.0 / 15.0	50

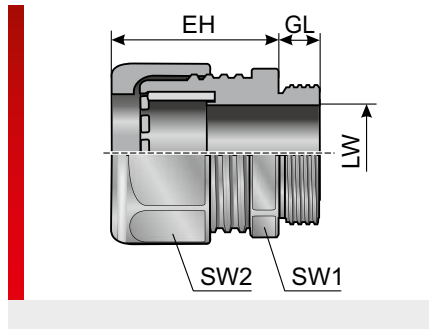
## Type WKK (plastic version) (Continued...)

Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
WKK/L-Pg 09 <sup>1)</sup>	84101612	Grey	Pg 09	4.0 – 8.0	22.00	15.00	19.0 / 19.0	50
WKK/L-Pg 11 <sup>1)</sup>	84101614	Grey	Pg 11	5.0 – 10.0	25.00	15.00	22.0 / 22.0	50
WKK/L-Pg 13.5 <sup>2)</sup>	84101616	Grey	Pg 13.5	6.0 – 12.0	27.00	15.00	24.0 / 24.0	50
WKK/L-Pg 16 <sup>2)</sup>	84101618	Grey	Pg 16	10.0 – 14.0	28.00	15.00	27.0 / 27.0	50
WKK/L-Pg 21 <sup>2)</sup>	84101620	Grey	Pg 21	13.0 – 18.0	31.00	15.00	33.0 / 33.0	50
WKK/L-Pg 29 <sup>2)</sup>	84101622	Grey	Pg 29	18.0 – 25.0	39.00	15.00	42.0 / 42.0	25
WKK/L-Pg 36 <sup>2)</sup>	84101624	Grey	Pg 36	22.0 – 32.0	48.00	18.00	53.0 / 53.0	10
WKK/L-Pg 42 <sup>2)</sup>	84101626	Grey	Pg 42	32.0 – 38.0	49.00	18.00	60.0 / 60.0	5
WKK/L-Pg 48 <sup>2)</sup>	84101628	Grey	Pg 48	37.0 – 44.0	49.00	18.00	65.0 / 65.0	5
<b>NPT thread</b>								
WKK/NPT 3/8" <sup>1)</sup>	84102050	Black	3/8"	2.0 – 6.0	22.00	15.00	19.0 / 22.0	50
WKK/NPT 3/8" <sup>1)</sup>	84102052	Black	3/8"	4.0 – 8.0	22.00	15.00	19.0 / 22.0	50
WKK/NPT 1/2" <sup>2)</sup>	84102054	Black	1/2"	5.0 – 9.0	27.00	13.00	24.0 / 24.0	50
WKK/NPT 1/2" <sup>2)</sup>	84102056	Black	1/2"	9.0 – 12.0	28.00	13.00	24.0 / 24.0	50
WKK/NPT 3/4' 9-16 KV, sw <sup>2)</sup>	84102058	Black		9.0 – 16.0	32.00	13.00	33.0 / 33.0	50
WKK/NPT 3/4' 13-18 KV, sw <sup>2)</sup>	84102060	Black		13.0 – 18.0	32.00	13.00	33.0 / 33.0	50
WKK NPT 3/8' 2-6 KV, gr <sup>1)</sup>	84102010	Grey	3/8"	2.0 – 6.0	22.00	15.00	19.0 / 22.0	50
WKK NPT 3/8' 4-8 KV, gr <sup>1)</sup>	84102012	Grey	3/8"	4.0 – 8.0	22.00	15.00	19.0 / 22.0	50
WKK NPT 1/2' 5-9 KV, gr <sup>2)</sup>	84102014	Grey	1/2"	5.0 – 9.0	27.00	13.00	24.0 / 24.0	50
WKK NPT 1/2' 9-12 KV, gr <sup>2)</sup>	84102016	Grey	1/2"	9.0 – 12.0	28.00	13.00	24.0 / 24.0	50
WKK NPT 3/4' 9-16 KV, gr <sup>2)</sup>	84102018	Grey	3/4"	9.0 – 16.0	32.00	13.00	33.0 / 33.0	50
WKK NPT 3/4' 13-18 KV, gr <sup>2)</sup>	84102020	Grey	3/4"	13.0 – 18.0	32.00	13.00	33.0 / 33.0	50

<sup>1)</sup> With cURus- approval

<sup>2)</sup> With cULus- approval

## Type WKK/Ex (plastic version)



### PRODUCT INFORMATION

The WKK-Ex cable fittings are made of specially modified polyamide and the form seals of NBR. The materials are halogen, phosphor and cadmium-free.

The WKK-Ex cable fittings feature the following advantages:

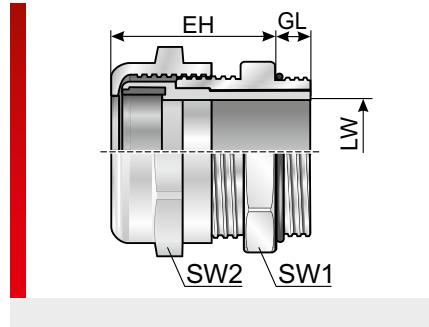
- Easy to assemble
- Approved for areas at risk of explosion
- Large clamping range

### SPECIFICATIONS

- 20 – 85 °C
- Fitting: Mod. polyamide PA 6  
Moulded seal: Perbunan (NBR)
- Acc. to UL94 V0 self-extinguishing
- IP 68 with additional O-ring type OR to 10 bar

Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
WKK/EX M12x1,5 3-6,5	84101352	Black	M12x1.5	3.0 – 6.5	15.00	15.00	15.0	50
WKK/EX M16x1,5 4-8	84101354	Black	M16x1,5	4.0 – 8.0	22.00	15.00	19.0	50
WKK/EX M16x1,5 5-10	84101356	Black	M16x1,5	5.0 – 10.0	25.00	15.00	22.0	50
WKK/EX M20x1,5 6-12	84101358	Black	M20x1.5	6.0 – 12.0	27.00	15.00	24.0	50
WKK/EX M20x1,5 10-14	84101360	Black	M20x1.5	10.0 – 14.0	28.00	15.00	27.0	50
WKK/EX M25x1,5 13-18	84101362	Black	M25x1.5	13.0 – 18.0	31.00	15.00	33.0	50
WKK/EX M32x1,5 18-25	84101364	Black	M32x1.5	18.0 – 25.0	39.00	15.00	42.0	25
WKK/EX M40x1,5 22-32	84101366	Black	M40x1.5	22.0 – 32.0	48.00	18.00	53.0	10
WKK/EX M50x1,5 32-38	84101368	Black	M50x1.5	32.0 – 38.0	49.00	18.00	60.0	5
WKK/EX M63x1,5 37-44	84101370	Black	M63x1.5	37.0 – 44.0	49.00	18.00	65.0 / 68.0	5

## Type WKM (metal version)



### PRODUCT INFORMATION

The cable fittings are made of nickel-plated brass and specially modified polyamide, and the seal of NBR. The KV-ME multi-inserts can be used in the fittings.

The WKM cable fittings feature the following advantages:

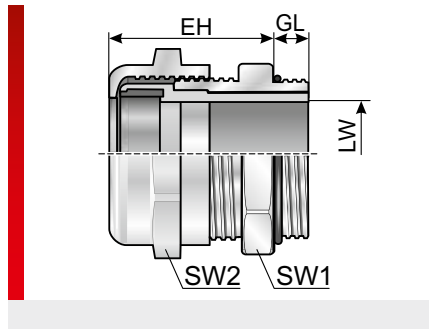
- Very high protection class
- Easy to assemble
- Large clamping range
- Vibration-resistant cap nut
- O-ring of type OR included in delivery

### SPECIFICATIONS

- 40 – 100 °C short term 120 °C
- Fitting: Nickel-plated brass  
Clamping ring: Mod. polyamide PA 6  
Moulded seal: NBR
- Acc. to UL94 V0 self-extinguishing
- IP 68 with additional O-ring type OR to 10 bar

Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric thread</b>								
WKM-M12x1,5 <sup>1)</sup>	84125010	Silver	M12x1.5	3.0 – 6.5	19.00	5.00	14.0	50
WKM-M16x1,5 <sup>1)</sup>	84125014	Silver	M16x1.5	4.0 – 8.0	20.00	6.00	17.0	50
WKM-M20x1,5 <sup>2)</sup>	84125018	Silver	M20x1.5	6.0 – 12.0	22.00	6.00	22.0	50
WKM-M25x1,5 <sup>2)</sup>	84125022	Silver	M25x1.5	13.0 – 18.0	25.00	7.00	27.0	25
WKM-M32x1,5 <sup>2)</sup>	84125026	Silver	M32x1.5	18.0 – 25.0	29.00	8.00	40.0	25
WKM-M40x1,5 <sup>2)</sup>	84125030	Silver	M40x1.5	22.0 – 32.0	35.00	8.00	50.0	10
WKM-M50x1,5 <sup>2)</sup>	84125034	Silver	M50x1.5	32.0 – 38.0	37.00	9.00	57.0	10
WKM-M63x1,5 <sup>2)</sup>	84125038	Silver	M63x1.5	37.0 – 44.0	38.00	10.00	64.0 / 68.0	10
<b>Pg threads</b>								
WKM-Pg 07 <sup>1)</sup>	84121010	Silver	Pg 07	3.0 – 6.5	19.00	5.00	14.0	50
WKM-Pg 09 <sup>1)</sup>	84121012	Silver	Pg 09	4.0 – 8.0	20.00	6.00	17.0	50
WKM-Pg 11 <sup>1)</sup>	84121014	Silver	Pg 11	5.0 – 10.0	21.00	6.00	20.0	50
WKM-Pg 13.5 <sup>2)</sup>	84121016	Silver	Pg 13.5	6.0 – 12.0	22.00	6.50	22.0	50
WKM-Pg 16 <sup>2)</sup>	84121018	Silver	Pg 16	10.0 – 14.0	23.00	6.50	24.0	50
WKM-Pg 21 <sup>2)</sup>	84121020	Silver	Pg 21	13.0 – 18.0	25.00	7.00	30.0	25
WKM-Pg 29 <sup>2)</sup>	84121022	Silver	Pg 29	18.0 – 25.0	29.00	8.00	40.0	25
WKM-Pg 36 <sup>2)</sup>	84121024	Silver	Pg 36	22.0 – 32.0	35.00	8.00	40.0	10
WKM-Pg 42 <sup>2)</sup>	84121026	Silver	Pg 42	32.0 – 38.0	37.00	9.00	57.0	5
WKM-Pg 48 <sup>2)</sup>	84121028	Silver	Pg 48	37.0 – 44.0	38.00	10.00	64.0	5

**Type WKM (metal version)** (Continued...)



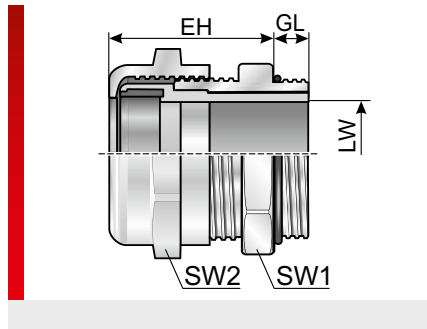
Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Pg version with extended thread</b>								
WKM/L-Pg 07 <sup>1)</sup>	84121210	Silver	Pg 07	3.0 – 6.5	19.00	10.00	14.0	50
WKM/L-Pg 09 <sup>1)</sup>	84121212	Silver	Pg 09	4.0 – 8.0	20.00	10.00	17.0	50
WKM/L-Pg 11 <sup>1)</sup>	84121214	Silver	Pg 11	5.0 – 10.0	21.00	10.00	20.0	50
WKM/L-Pg 13.5 <sup>2)</sup>	84121216	Silver	Pg 13.5	6.0 – 12.0	22.00	10.00	22.0	50
WKM/L-Pg 16 <sup>2)</sup>	84121218	Silver	Pg 16	10.0 – 14.0	23.00	10.00	24.0	50
WKM/L-Pg 21 <sup>2)</sup>	84121220	Silver	Pg 21	13.0 – 18.0	25.00	12.00	30.0	25
WKM/L-Pg 29 <sup>2)</sup>	84121222	Silver	Pg 29	18.0 – 25.0	29.00	12.00	40.0	25
WKM/L-Pg 36 <sup>2)</sup>	84121224	Silver	Pg 36	22.0 – 32.0	35.00	15.00	40.0	10
WKM/L-Pg 42 <sup>2)</sup>	84121226	Silver	Pg 42	32.0 – 38.0	37.00	15.00	57.0	5
WKM/L-Pg 48 <sup>2)</sup>	84121228	Silver	Pg 48	37.0 – 44.0	38.00	15.00	64.0	5
<b>NPT thread</b>								
WKM-NPT 3/8 <sup>1)</sup>	84122212	Silver	3/8"	2.0 – 6.0	21.00	15.00	17.0 / 19.0	50
WKM-NPT 3/8 <sup>1)</sup>	84122210	Silver	3/8"	4.0 – 8.0	21.00	15.00	17.0 / 19.0	50
WKM-NPT 1/2 <sup>2)</sup>	84122216	Silver	1/2"	5.0 – 9.0	24.00	13.00	22.0 / 24.0	50
WKM-NPT 1/2 <sup>2)</sup>	84122214	Silver	1/2"	6.0 – 12.0	24.00	13.00	22.0 / 24.0	50
WKM-NPT 3/4 <sup>2)</sup>	84122220	Silver	3/4"	9.0 – 16.0	25.00	13.00	30.0	25
WKM-NPT 3/4 <sup>2)</sup>	84122218	Silver	3/4"	13.0 – 18.0	25.00	13.00	30.0	25

<sup>1)</sup> With cURus- approval

<sup>2)</sup> With cULus- approval



## Type MWKM (metal version with multi-insert)



### PRODUCT INFORMATION

The MWKM is a metal cable fitting made of nickel-plated brass, specially modified polyamide and an additional multi-insert that makes it possible to run multiple cords through a cable fitting.

The MWKM cable fittings feature the following advantages:

- Integrated multi-insert
- High tightness
- Easy to assemble
- Type OR O-ring included in delivery

### SPECIFICATIONS

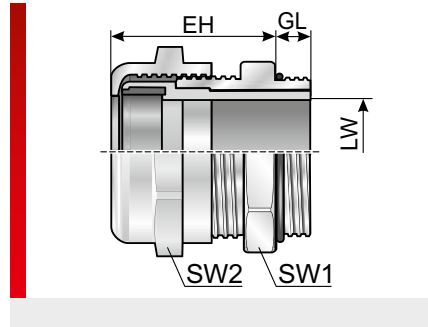
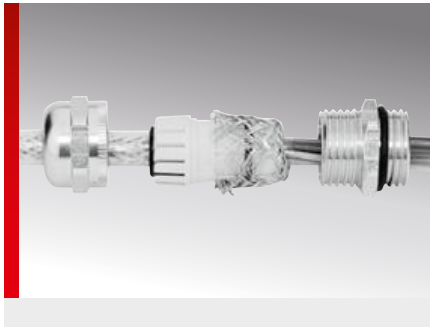
- 40 – 100 °C short term 120 °C
- Fitting: Nickel-plated brass  
Clamping ring: Mod. polyamide PA 6 IP 65
- IP 68 with optimum configuration and with additional O-ring, type OR



Type	Order No.	Colour	Connecting thread	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
MWKM-Pg 09-2x3 <sup>1)</sup>	84121810	Silver	Pg 09	21.00	6.00	17.0 / 17.0	50
MWKM-Pg 09-4x1.4 <sup>1)</sup>	84121812	Silver	Pg 09	21.00	6.00	17.0 / 17.0	50
MWKM-Pg 11-2x3 <sup>1)</sup>	84121814	Silver	Pg 11	22.00	6.00	20.0 / 20.0	50
MWKM-Pg 11-2x4 <sup>1)</sup>	84121816	Silver	Pg 11	22.00	6.00	20.0 / 20.0	50
MWKM-Pg 11-3x3 <sup>1)</sup>	84121818	Silver	Pg 11	22.00	6.00	20.0 / 20.0	50
MWKM-Pg 13.5-2x5 <sup>1)</sup>	84121820	Silver	Pg 13.5	24.00	6.50	22.0 / 22.0	50
MWKM-Pg 13.5-3x2 <sup>1)</sup>	84121822	Silver	Pg 13.5	24.00	6.50	22.0 / 22.0	50
MWKM-Pg 13.5-3x4 <sup>1)</sup>	84121824	Silver	Pg 13.5	24.00	6.50	22.0 / 22.0	50
MWKM-Pg 13.5-6x3 <sup>1)</sup>	84121826	Silver	Pg 13.5	22.00	6.50	22.0 / 22.0	50
MWKM-Pg 16-2x6 <sup>1)</sup>	84121828	Silver	Pg 16	23.00	6.50	24.0 / 24.0	50
MWKM-Pg 16-3x3 <sup>1)</sup>	84121830	Silver	Pg 16	23.00	6.50	24.0 / 24.0	50
MWKM-Pg 16-3x4 <sup>1)</sup>	84121832	Silver	Pg 16	23.00	6.50	24.0 / 24.0	50
MWKM-Pg 16-3x6 <sup>1)</sup>	84121834	Silver	Pg 16	23.00	6.50	24.0 / 24.0	50
MWKM-Pg 16-4x4 <sup>1)</sup>	84121836	Silver	Pg 16	23.00	6.50	24.0 / 24.0	50
MWKM-Pg 16-5x4 <sup>1)</sup>	84121838	Silver	Pg 16	23.00	6.50	24.0 / 24.0	50
MWKM-Pg 16-6x4 <sup>1)</sup>	84121840	Silver	Pg 16	23.00	6.50	24.0 / 24.0	50
MWKM-Pg 21-2x8 <sup>1)</sup>	84121842	Silver	Pg 21	24.00	7.00	30.0 / 30.0	25
MWKM-Pg 21-3x7 <sup>1)</sup>	84121844	Silver	Pg 21	24.00	7.00	30.0 / 30.0	25
MWKM-Pg 21-4x6 <sup>1)</sup>	84121846	Silver	Pg 21	24.00	7.00	30.0 / 30.0	25

<sup>1)</sup> With cURus- approval

## Type WKM-EMV (metal versions)














### PRODUCT INFORMATION

The WKM/EMV cable fittings are made of nickel-plated brass and specially modified polyamide, and the seals of NBR. The materials are halogen, phosphor and cadmium-free. Shielded cables can be connected to earth potential using this cable fitting. The cable's braiding makes contact with the metal body, discharge the sheath currents.

The WKM/EMV cable fittings feature the following advantages:

- Large clamping range
- Very high protection class
- Easy to assemble
- Simple contacting
- Type OR O-ring included in delivery

### SPECIFICATIONS

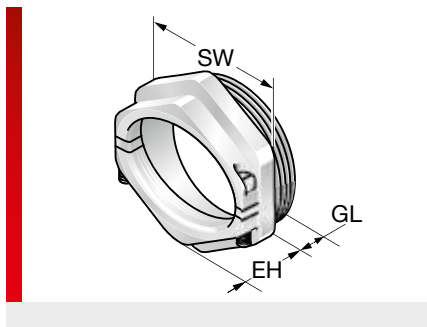
	-40 – 100 °C short term 120 °C				
	Fitting: Nickel-plated brass Clamping ring: Mod. polyamide PA 6 Moulded seal: NBR				
	Acc. to UL94 V0 self-extinguishing				
	IP 68 with additional O-ring type OR to 10 bar				
					
					

Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric / EMC design</b>								
WKM/EMV M12x1,5 <sup>1)</sup>	84125210	Silver	M12x1.5	3.0 – 6.5	19.00	5.00	14.0 / 14.0	50
WKM/EMV M16x1,5 <sup>1)</sup>	84125212	Silver	M16x1,5	6.0 – 10.0	22.00	6.00	20.0 / 20.0	50
WKM/EMV M20x1,5 <sup>2)</sup>	84125214	Silver	M20x1.5	10.0 – 14.0	23.00	6.00	24.0 / 24.0	50
WKM/EMV M25x1,5 <sup>2)</sup>	84125216	Silver	M25x1.5	14.0 – 18.0	24.00	7.00	30.0 / 30.0	25
WKM/EMV M32x1,5 <sup>2)</sup>	84125218	Silver	M32x1.5	20.0 – 25.0	31.00	8.00	40.0 / 40.0	25
WKM/EMV M40x1,5 <sup>2)</sup>	84125220	Silver	M40x1.5	22.0 – 32.0	37.00	8.00	50.0 / 50.0	10
WKM/EMV M50x1,5 <sup>2)</sup>	84125222	Silver	M50x1.5	32.0 – 38.0	37.00	9.00	57.0	5
WKM/EMV M63x1,5 <sup>2)</sup>	84125224	Silver	M63x1.5	37.0 – 44.0	38.00	10.00	64.0 / 68.0	5
<b>Pg / EMC design</b>								
WKM/EMV Pg 07 <sup>1)</sup>	84122010	Silver	Pg 07	3.0 – 6.5	19.00	5.00	14.0 / 14.0	50
WKM/EMV Pg 09 <sup>1)</sup>	84122012	Silver	Pg 09	4.0 – 8.0	21.00	6.00	17.0 / 17.0	50
WKM/EMV Pg 11 <sup>1)</sup>	84122014	Silver	Pg 11	6.0 – 10.0	22.00	6.00	20.0 / 20.0	50
WKM/EMV Pg 13.5 <sup>2)</sup>	84122016	Silver	Pg 13.5	6.0 – 12.0	24.00	6.50	22.0 / 22.0	50
WKM/EMV Pg 16 <sup>2)</sup>	84122018	Silver	Pg 16	10.0 – 14.0	23.00	6.50	24.0 / 24.0	50
WKM/EMV Pg 21 <sup>2)</sup>	84122020	Silver	Pg 21	14.0 – 18.0	24.00	7.00	30.0 / 30.0	25
WKM/EMV Pg 29 <sup>2)</sup>	84122022	Silver	Pg 29	20.0 – 25.0	29.00	8.00	40.0 / 40.0	25
WKM/EMV Pg 36 <sup>2)</sup>	84122024	Silver	Pg 36	22.0 – 32.0	35.00	8.00	50.0 / 50.0	10
WKM/EMV Pg 42 <sup>2)</sup>	84122026	Silver	Pg 42	32.0 – 38.0	37.00	9.00	57.0 / 57.0	5
WKM/EMV Pg 48 <sup>2)</sup>	84122028	Silver	Pg 48	37.0 – 44.0	38.00	10.00	64.0 / 64.0	5

<sup>1)</sup> With cURus- approval

<sup>2)</sup> With cULus- approval

## Type KKV



### PRODUCT INFORMATION

The KKV cable clamp fittings are made of nickel-plated brass and used as simple and quick strain relief for cables that need to be inserted into for example a control cabinet.

The cable clamp fittings feature the following advantages:

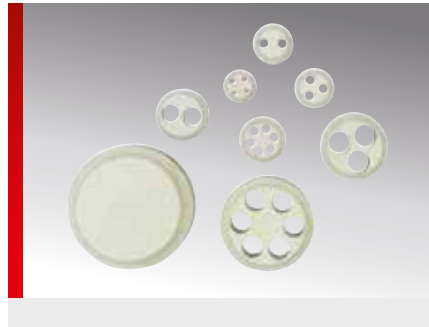
- Large clamping range
- With integrated centric strain relief
- Quick and easy assembly with a screw-driver

### SPECIFICATIONS

- 40 – 110 °C
- Nickel-plated brass

Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
KKV PG 07 5.0-8.0	84221200	Silver	Pg 07	5.0 – 8.0	9.50	5.50	16.0	100
KKV PG 09 7.0-10.0	84221202	Silver	Pg 09	7.0 – 10.0	10.00	6.00	19.0	100
KKV PG 11 8.0-12.0	84221204	Silver	Pg 11	8.0 – 12.0	11.50	6.00	22.0	50
KKV PG 13 10.0-14.0	84221206	Silver	Pg 13	10.0 – 14.0	10.50	7.50	24.0	50
KKV PG 16 11.0-17.0	84221208	Silver	Pg 16	11.0 – 17.0	11.50	7.50	27.0	50
KKV PG 21 12.0-22.0	84221210	Silver	Pg 21	12.0 – 22.0	13.00	8.00	34.0	25
KKV PG 29 19.0-30.0	84221212	Silver	Pg 29	19.0 – 30.0	14.00	8.00	42.0	20
KKV PG 36 25.0-37.0	84221214	Silver	Pg 36	25.0 – 37.0	16.00	9.50	52.0	10
KKV PG 42 31.0-43.0	84221216	Silver	Pg 42	31.0 – 43.0	16.30	10.00	59.0	10
KKV PG 48 35.0-48.0	84221218	Silver	Pg 48	35.0 – 48.0	16.30	11.00	64.0	10

## Type KV-ME (multi-insert)



### PRODUCT INFORMATION

The KV-ME multi-insert can be used both in WKK cable fittings and in WKM cable fittings. The KV-ME multi-insert can be used to route several cables through one fitting. The fitted seal insert in the cable fitting is simply swapped for the KV-ME multi-insert during assembly. Please note that the cable diameter may be up to 20% less than the diameter of the hole, but must not under-shoot the hole diameter by less than 1 mm.

The KV-ME multi-inserts feature the following advantages:

- Variable
- More cables through one fitting
- High protection class

NOT suitable for the m-seal cable fittings.

### SPECIFICATIONS

	-40 – 100 °C short term 120 °C
	Elastomer
	IP 65
	RoHS

Type	Order No.	No. Openings	Diameter mm	Suitable for metric	Suitable for Pg	Suitable for NPT	Pack qty.
KV-ME M16/Pg09-4x1.4	8358221000	4	1.40	M16x1,5	Pg 09	3/8"	50
KV-ME M16/Pg09-2x3	8358221200	2	3.00	M16x1,5	Pg 09	3/8"	50
KV-ME M20/Pg13.5-2x5	8358222000	2	5.00	M20x1.5	Pg 13.5	1/2"	50
KV-ME M20/Pg13.5-3x2	8358222200	3	2.00	M20x1.5	Pg 13.5	1/2"	50
KV-ME M20/Pg13.5-3x4	8358222400	3	4.00	M20x1.5	Pg 13.5	1/2"	50
KV-ME M20/Pg13.5-6x3	8358222600	6	3.00	M20x1.5	Pg 13.5	1/2"	50
KV-ME Pg11-2x3	8358221400	2	3.00		Pg 11		50
KV-ME Pg11-2x4	8358221600	2	4.00		Pg 11		50
KV-ME Pg11-3x3	8358221800	3	3.00		Pg 11		50
KV-ME Pg16-2x6	8358222800	2	6.00		Pg 16		50
KV-ME Pg16-3x3	8358223000	3	3.00		Pg 16		50
KV-ME Pg16-3x4	8358223200	3	4.00		Pg 16		50
KV-ME Pg16-3x5.6	8358223400	3	5.60		Pg 16		50
KV-ME Pg16-4x4	8358223600	4	4.00		Pg 16		50
KV-ME Pg16-5x4	8358223800	5	4.00		Pg 16		50
KV-ME Pg16-6x4	8358224000	6	4.00		Pg 16		50
KV-ME M25/Pg21-2x8	8358224200	2	8.00	M25x1.5	Pg 21	3/4"	50
KV-ME M25/Pg21-3x7	8358224400	3	7.00	M25x1.5	Pg 21	3/4"	50
KV-ME M25/Pg21-4x6	8358224600	4	6.00	M25x1.5	Pg 21	3/4"	50
KV-ME M32/Pg29-6x6.5	8358224800	6	6.50	M32x1.5	Pg 29		50
KV-ME M32/Pg29-4x9	8358225000	4	9.00	M32x1.5	Pg 29		25
KV-ME M40/Pg36 blind	8358228400			M40x1.5	Pg 36	1 1/2"	25

## m-seal ME (multi-insert)



### PRODUCT INFORMATION

The m-seal ME multi-insert is the perfect complement part to our m-seal cable fitting. The KV-ME multi-insert can be used to route several cables through one fitting. The fitted seal insert in the cable fitting is simply swapped for the ME multi-insert during assembly. Please note that the cable diameter may be up to 20% less than the diameter of the hole, but must not undershoot the hole diameter by less than 1 mm.

The m-seal ME multi-inserts feature the following advantages:

- Variable
- More cables through one fitting
- High protection class

NOT suitable for type WKK and type WKM cable fittings.

### SPECIFICATIONS

	-40 – 100 °C short term 120 °C
	Elastomer
	IP 65
	RoHS

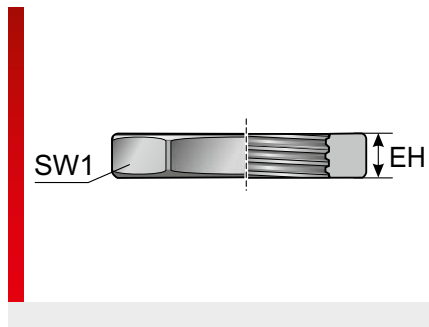
Type	Order No.	No. Openings	Diameter mm	Suitable for metric	Suitable for Pg	Pack qty.
m-seal ME M20/PG13,5-2x5	84182020	2	5.00	M20x1.5	Pg 13.5	50
m-seal ME M20/PG13,5-2x6	84182022	2	6.00	M20x1.5	Pg 13.5	50
m-seal ME M20/PG13,5-3x4	84182024	3	4.00	M20x1.5	Pg 13.5	50
m-seal ME M20/PG13,5-3x5	84182026	3	5.00	M20x1.5	Pg 13.5	50
m-seal ME M20/PG13,5-4x4	84182028	4	4.00	M20x1.5	Pg 13.5	50
m-seal ME M25-Blind	83980251			M25x1.5		50
m-seal ME M25-1x4	83980252	2		M25x1.5		50
m-seal ME M25-2x6	84182030	2	6.00	M25x1.5		50
m-seal ME M25-4x5	84182034	4	5.00	M25x1.5		50
m-seal ME M25-6x4	84182036	6	4.00	M25x1.5		50
m-seal ME M25-3x7	84182032	3	7.00	M25x1.5		50
m-seal ME M32-2x8	84182040	2	8.00	M32x1.5		50
m-seal ME M32-2x9	84182041	2	9.00	M32x1.5		50
m-seal ME M32-3x8	84182042	3	8.00	M32x1.5		50
m-seal ME M32-4x6	84182043	4	6.00	M32x1.5		50
m-seal ME M32-4x7	84182044	4	7.00	M32x1.5		50
m-seal ME M32-5x6	84182045	5	6.00	M32x1.5		50
m-seal ME M32-8x5	84182046	8	5.00	M32x1.5		50
m-seal ME M32-9x4	84182047	9	4.00	M32x1.5		50
m-seal ME M40-2x10	84182050	2	10.00	M40x1.5		50
m-seal ME M40-3x10	84182051	3	10.00	M40x1.5		50
m-seal ME M40-4x8	84182052	4	8.00	M40x1.5		50
m-seal ME M40-5x9	84182053	5	9.00	M40x1.5		50
m-seal ME M40-6x7	84182054	6	7.00	M40x1.5		50
m-seal ME M40-8x6	84182055	8	6.00	M40x1.5		50
m-seal ME M40-9x7	84182056	9	7.00	M40x1.5		50





# Accessories

## Type KGM (plastic lock nut)



### PRODUCT INFORMATION

The type KGM plastic lock nut is made of self-extinguishing polyamide and is available with metric or Pg thread. Usable for all corresponding conduit and cable fittings, preferably with plastic threads.

### SPECIFICATIONS

- 30 – 100 °C short term 130 °C
- Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing

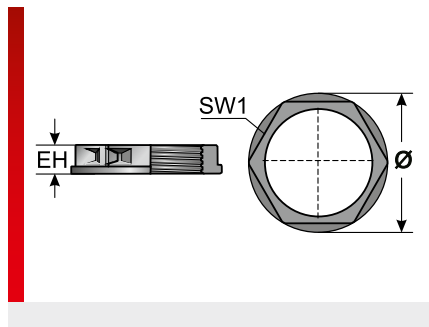


Type	Order No.	Colour	IG	EH mm	SW 1 mm	Pack qty.
<b>Metric thread</b>						
KGM-M12x1,5	83727250	Black	M12x1.5	5.00	17.00	100
KGM-M16x1.5	83727252	Black	M16x1,5	5.00	22.00	100
KGM-M20x1,5	83727254	Black	M20x1.5	6.00	26.00	100
KGM-M25x1.5	83727256	Black	M25x1.5	6.00	32.00	100
KGM-M32x1,5	83727258	Black	M32x1.5	7.00	41.00	100
KGM-M40x1,5	83727260	Black	M40x1.5	7.00	50.00	50
KGM-M50x1.5	83727262	Black	M50x1.5	8.00	60.00	50
KGM-M63x1,5	83727264	Black	M63x1.5	8.00	75.00	50
<b>Grey variants</b>						
KGM-M12x1,5	83727210	Grey	M12x1.5	5.00	17.00	100
KGM-M16x1.5	83727212	Grey	M16x1,5	5.00	22.00	100
KGM-M20x1,5	83727214	Grey	M20x1.5	6.00	26.00	100
KGM-M25x1.5	83727216	Grey	M25x1.5	6.00	32.00	100
KGM-M32x1,5	83727218	Grey	M32x1.5	7.00	41.00	100
KGM-M40x1,5	83727220	Grey	M40x1.5	7.00	50.00	50
KGM-M50x1.5	83727222	Grey	M50x1.5	8.00	60.00	50
KGM-M63x1,5	83727224	Grey	M63x1.5	8.00	75.00	50
<b>Pg threads</b>						
KGM-Pg 07	83722250	Black	Pg 07	5.00	19.00	100
KGM-Pg 09	83722252	Black	Pg 09	6.00	22.00	100
KGM-Pg 11	83722254	Black	Pg 11	6.00	24.00	100
KGM-Pg 13.5	83722256	Black	Pg 13.5	6.00	27.00	100
KGM-Pg 16	83722258	Black	Pg 16	6.00	30.00	100
KGM-Pg 21	83722260	Black	Pg 21	7.00	36.00	100
KGM-Pg 29	83722262	Black	Pg 29	7.00	46.00	50





## Type GMT






### PRODUCT INFORMATION




The GMT split lock nut is made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The lock nuts are used when cable protection conduits fitted with pre-assembled cables need to be fixed or cable protection conduits need to be retrofitted. The GMT is ideal for connecting to our split EWT cable protection conduits and all other Murrflex cable protection conduits.

Particular benefits of the split lock nuts include:

- Subsequent installation or repairs
- Perfect for use with the SVT split conduit fitting
- Very good system tear-out strength
- Compact design
- Easy assembly and disassembly

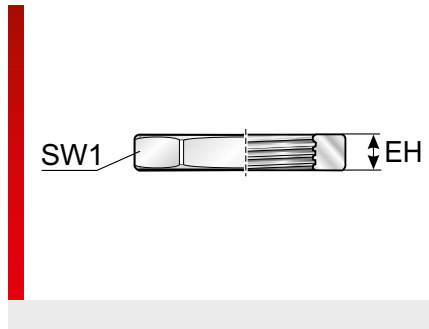
### SPECIFICATIONS

-  -30 – 100 °C short term 130 °C
-  Mod. polyamide PA 6
-  Acc. to UL94 V0 UL listed material

Type	Order No.	Colour	EH mm	SW 1 mm	Ø mm	Pack qty.
<b>Divisible lock nut</b>						
GMT M16x1,5	83651454	Black	10.00	26.00	30.00	50
GMT M20x1,5	83651456	Black	10.00	26.00	30.00	50
GMT M25x1,5	83651458	Black	10.00	28.00	32.00	50
GMT M32x1,5	83651460	Black	10.00	36.00	42.00	25
GMT M40x1,5	83651462	Black	12.00	46.00	52.00	25
GMT M50x1,5	83651464	Black	12.00	55.00	62.00	10
GMT M63x1,5	83651466	Black	12.00	70.00	79.00	10


## Type GM (metal lock nut)





### PRODUCT INFORMATION

The GM type lock nut is made of brass with nickel plating. It is available with metric or Pg thread and usable for all corresponding conduit and cable fittings, preferably with metal threads.

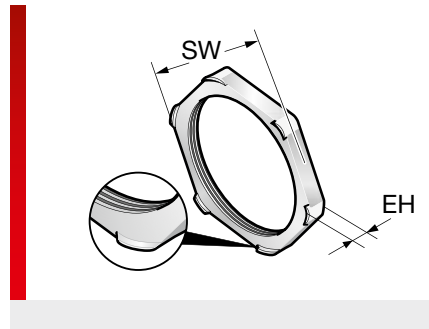
### SPECIFICATIONS

 Nickel-plated brass

Type	Order No.	IG	EH mm	SW 1 mm	Pack qty.
<b>Metric thread</b>					
GM-M12x1,5	83727010	M12x1.5	2.80	15.00	100
GM-M16x1,5	83727012	M16x1,5	2.80	19.00	100
GM-M20x1,5	83727014	M20x1.5	3.00	24.00	100
GM-M25x1,5	83727016	M25x1.5	3.50	30.00	100
GM-M32x1,5	83727018	M32x1.5	4.50	36.00	100
GM-M40x1,5	83727020	M40x1.5	5.00	46.00	50
GM-M50x1,5	83727022	M50x1.5	5.00	60.00	50
GM-M63x1,5	83727024	M63x1.5	6.00	70.00	50
<b>Pg threads</b>					
GM-Pg 07	83722010	Pg 07	2.80	15.00	100
GM-Pg 09	83722012	Pg 09	2.80	18.00	100
GM-Pg 11	83722014	Pg 11	3.00	21.00	100
GM-Pg 13.5	83722016	Pg 13.5	3.00	23.00	100
GM-Pg 16	83722018	Pg 16	3.00	26.00	100
GM-Pg 21	83722020	Pg 21	3.50	32.00	100
GM-Pg 29	83722022	Pg 29	4.00	41.00	100
GM-Pg 36	83722024	Pg 36	5.00	51.00	50
GM-Pg 42	83722026	Pg 42	5.00	60.00	50
GM-Pg 48	83722028	Pg 48	5.50	64.00	50

## Type GM EMV (metal lock nut for EMC applications)



### PRODUCT INFORMATION

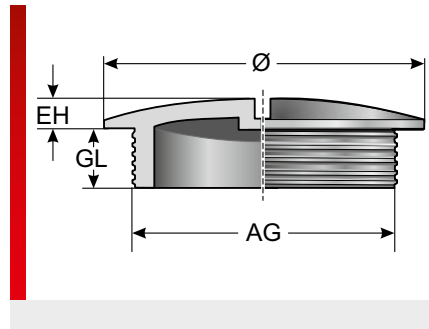
The GM EMV lock nut is available with a metric or Pg thread and has special cutting edges. These cutting edges are required to “cut through” the paint layers, for example on the control cabinet, ensuring optimum contact with the housing.

### SPECIFICATIONS

Nickel-plated brass

Type	Order No.	IG	EH mm	SW mm	Pack qty.
<b>Metric thread</b>					
GM EMV M12x1,5	83727050	M12x1.5	3.30	15.00	100
GM EMV M16x1.5	83727052	M16x1,5	3.50	19.00	100
GM EMV M20x1,5	83727054	M20x1.5	3.60	24.00	100
GM EMV M25x1,5	83727056	M25x1.5	3.50	30.00	100
GM EMV M32x1,5	83727058	M32x1.5	4.00	36.00	50
GM EMV M40x1,5	83727060	M40x1.5	4.60	46.00	25
GM EMV M50x1,5	83727062	M50x1.5	5.50	60.00	10
GM EMV M63x1,5	83727064	M63x1.5	6.70	70.00	10
<b>Pg threads</b>					
GM EMV PG 07	83722050	Pg 07	3.30	16.50	100
GM EMV PG 09	83722052	Pg 09	3.30	18.00	100
GM EMV PG 11	83722054	Pg 11	3.50	21.00	100
GM EMV PG 13.5	83722056	Pg 13.5	3.50	23.00	100
GM EMV PG 16	83722058	Pg 16	3.50	26.00	100
GM EMV PG 21	83722060	Pg 21	4.00	32.00	100
GM EMV PG 29	83722062	Pg 29	4.60	41.00	50
GM EMV PG 36	83722064	Pg 36	5.60	51.00	25
GM EMV PG 42	83722066	Pg 42	5.60	60.00	10
GM EMV PG 48	83722068	Pg 48	6.10	64.00	10

## Type BSTK (plastic dummy plug)



### PRODUCT INFORMATION

The type BSTK dummy plug is made of specially modified polyamide and is available with metric or Pg thread. For instance, it can be used as a temporarily filler for holes currently not needed in the control cabinet. IP 65 protection rating can be achieved using an additional type OR O-ring. (O-ring not included in the delivery)

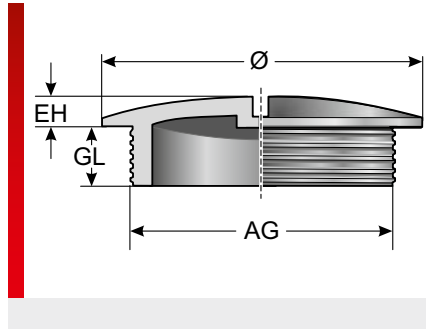
### SPECIFICATIONS

- 30 – 100 °C short term 130 °C
- Mod. polyamide PA 6
- Acc. to UL94 HB
- IP 54
- IP 65 with additional sealing ring, type OR

**RoHS** **HF**

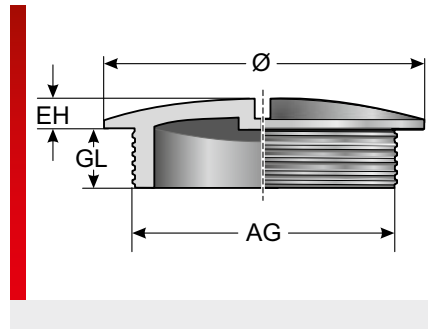
Type	Order No.	Colour	AG	EH mm	GL mm	Ø mm	Pack qty.
<b>Metric thread</b>							
BSTK-M12x1,5	83726450	Black	M12x1.5	3.00	6.00	15.00	100
BSTK-M16x1,5	83726452	Black	M16x1,5	3.50	6.00	20.00	100
BSTK-M20x1,5	83726454	Black	M20x1.5	4.00	6.00	24.00	100
BSTK-M25x1,5	83726456	Black	M25x1.5	4.50	8.00	30.00	100
BSTK-M32x1,5	83726458	Black	M32x1.5	4.50	8.00	37.00	100
BSTK-M40x1,5	83726460	Black	M40x1.5	5.50	8.00	46.00	50
BSTK-M50x1,5	83726462	Black	M50x1.5	5.50	10.00	56.00	50
BSTK-M63x1,5	83726464	Black	M63x1.5	4.50	12.00	70.00	50
<b>Pg threads</b>							
BSTK-Pg 07	83721410	Grey	Pg 07	1.50	6.00	15.00	100
BSTK-Pg 09	83721412	Grey	Pg 09	2.50	6.00	19.00	100
BSTK-Pg 11	83721414	Grey	Pg 11	3.00	6.00	22.00	100
BSTK-Pg 13.5	83721416	Grey	Pg 13.5	3.50	6.00	25.00	100
BSTK-Pg 16	83721418	Grey	Pg 16	3.50	6.00	27.00	100

**Type BSTK (plastic dummy plug)** (Continued...)



Type	Order No.	Colour	AG	EH mm	GL mm	Ø mm	Pack qty.
BSTK-Pg 21	83721420	Grey	Pg 21	3.50	8.00	33.00	100
BSTK-Pg 29	83721422	Grey	Pg 29	3.50	8.00	44.00	100
BSTK-Pg 36	83721424	Grey	Pg 36	5.00	10.00	55.00	50
BSTK-Pg 42	83721426	Grey	Pg 42	6.00	10.00	62.00	50
BSTK-Pg 48	83721428	Grey	Pg 48	5.00	12.00	69.00	50

## Type BST (metal dummy plug)






### PRODUCT INFORMATION

The type BST dummy plug is made of brass with nickel plating. It is available with metric or Pg thread and can be used as a temporary filler for holes currently not needed in the control cabinet.

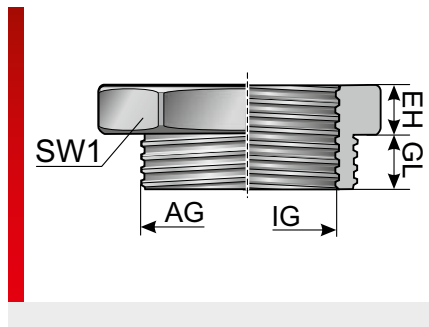
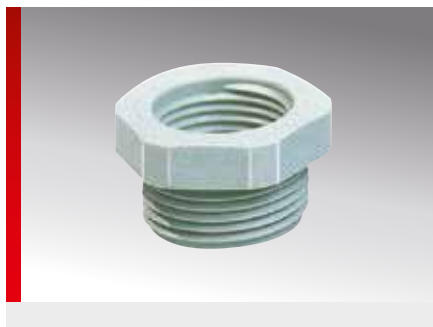
IP 65 protection rating can be achieved using an additional type OR O-ring. (O-ring is not included in the delivery)

### SPECIFICATIONS

-  Nickel-plated brass
-  IP 54  
IP 65 with additional sealing ring, type OR
-  RoHS

Type	Order No.	AG	EH mm	GL mm	Ø mm	Pack qty.
<b>Metric thread</b>						
BST-M12x1,5	83726210	M12x1.5	3.00	5.00	16.00	100
BST-M16x1.5	83726212	M16x1,5	3.00	6.00	20.00	100
BST-M20x1,5	83726214	M20x1.5	3.00	6.50	24.00	100
BST-M25x1,5	83726216	M25x1.5	3.50	7.00	28.00	100
BST-M32x1,5	83726218	M32x1.5	4.00	8.00	35.00	50
BST-M40x1,5	83726220	M40x1.5	4.00	8.00	45.00	50
BST-M50x1,5	83726222	M50x1.5	5.00	9.00	55.00	25
BST-M63x1,5	83726224	M63x1.5	6.00	10.00	68.00	10
<b>Pg threads</b>						
BST-Pg 07	83721210	Pg 07	3.00	5.00	14.00	100
BST-Pg 09	83721212	Pg 09	3.00	6.00	17.00	100
BST-Pg 11	83721214	Pg 11	3.00	6.00	20.00	100
BST-Pg 13.5	83721216	Pg 13.5	3.00	6.50	22.00	100
BST-Pg 16	83721218	Pg 16	3.50	6.50	24.00	100
BST-Pg 21	83721220	Pg 21	4.00	7.00	30.00	50
BST-Pg 29	83721222	Pg 29	4.00	8.00	39.00	50
BST-Pg 36	83721224	Pg 36	6.00	9.00	50.00	25
BST-Pg 42	83721226	Pg 42	6.00	10.00	57.00	25
BST-Pg 48	83721228	Pg 48	6.00	10.00	64.00	10

## Type KRR (plastic reducing bush)



### PRODUCT INFORMATION

The thread reducing bush is made of specially modified polyamide and is available with metric or Pg thread. They are to be used with an additional type OR O-ring. (O-ring is not included in the delivery)

### SPECIFICATIONS

- 30 – 100 °C short term 130 °C
- Mod. polyamide PA 6
- Acc. to UL94 HB

RoHS
 HF

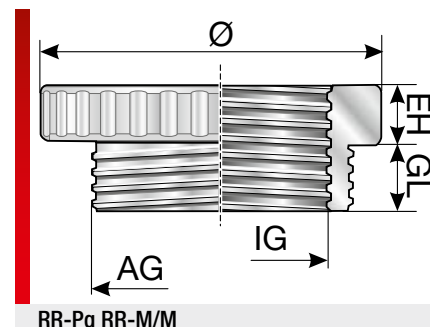
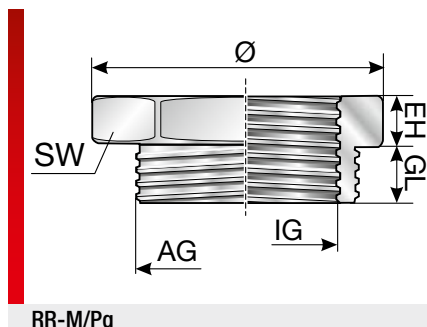
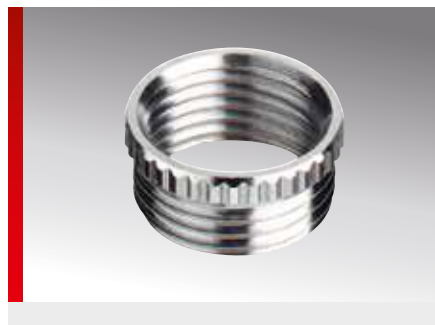
Type	Order No.	Colour	AG	IG	EH mm	GL mm	SW 1 mm	Pack qty.
<b>Metric / metric version</b>								
KRR-M20/M12	83727450	Black	M20x1.5	M12x1.5	4.00	8.00	24.00	100
KRR-M20/M16	83727452	Black	M20x1.5	M16x1,5	4.00	8.00	24.00	100
KRR-M25/M12	83727454	Black	M25x1.5	M12x1.5	6.00	8.00	30.00	100
KRR-M25/M16	83727456	Black	M25x1.5	M16x1,5	6.00	8.00	30.00	100
KRR-M25/M20	83727458	Black	M25x1.5	M20x1.5	6.00	8.00	30.00	100
KRR-M32/M12	83727460	Black	M32x1.5	M12x1.5	6.00	10.00	36.00	50
KRR-M32/M16	83727462	Black	M32x1.5	M16x1,5	6.00	10.00	36.00	50
KRR-M32/M20	83727464	Black	M32x1.5	M20x1.5	6.00	10.00	36.00	50
KRR-M32/M25	83727466	Black	M32x1.5	M25x1.5	6.00	10.00	36.00	50
KRR-M40/M16	83727468	Black	M40x1.5	M16x1,5	6.00	10.00	46.00	50
KRR-M40/M20	83727470	Black	M40x1.5	M20x1.5	6.00	10.00	46.00	50
KRR-M40/M25	83727472	Black	M40x1.5	M25x1.5	6.00	10.00	46.00	50
KRR-M40/M32	83727474	Black	M40x1.5	M32x1.5	6.00	10.00	46.00	50
KRR-M50/M20	83727476	Black	M50x1.5	M20x1.5	6.00	12.00	55.00	25
KRR-M50/M25	83727478	Black	M50x1.5	M25x1.5	6.00	12.00	55.00	25
KRR-M50/M32	83727480	Black	M50x1.5	M32x1.5	6.00	12.00	55.00	25
KRR-M50/M40	83727482	Black	M50x1.5	M40x1.5	6.00	12.00	55.00	25
KRR-M63/M25	83727484	Black	M63x1.5	M25x1.5	6.00	12.00	68.00	25
KRR-M63/M32	83727486	Black	M63x1.5	M32x1.5	6.00	12.00	68.00	25
KRR-M63/M40	83727488	Black	M63x1.5	M40x1.5	6.00	12.00	68.00	25
KRR-M63/M50	83727490	Black	M63x1.5	M50x1.5	6.00	12.00	68.00	25
KRR-M20/M12	83727400	Grey	M20x1.5	M12x1.5	4.00	8.00	24.00	100
KRR-M20/M16	83727402	Grey	M20x1.5	M16x1,5	4.00	8.00	24.00	100
KRR-M25/M12	83727404	Grey	M25x1.5	M12x1.5	6.00	8.00	30.00	100
KRR-M25/M16	83727406	Grey	M25x1.5	M16x1,5	6.00	8.00	30.00	100



## Type KRR (plastic reducing bush) (Continued...)

Type	Order No.	Colour	AG	IG	EH mm	GL mm	SW 1 mm	Pack qty.
KRR-M25/M20	83727408	Grey	M25x1.5	M20x1.5	6.00	8.00	30.00	100
KRR-M32/M12	83727410	Grey	M32x1.5	M12x1.5	6.00	10.00	36.00	50
KRR-M32/M16	83727412	Grey	M32x1.5	M16x1,5	6.00	10.00	36.00	50
KRR-M32/M20	83727414	Grey	M32x1.5	M20x1.5	6.00	10.00	36.00	50
KRR-M32/M25	83727416	Grey	M32x1.5	M25x1.5	6.00	10.00	36.00	100
KRR-M40/M16	83727418	Grey	M40x1.5	M16x1,5	6.00	10.00	46.00	50
KRR-M40/M20	83727420	Grey	M40x1.5	M20x1.5	6.00	10.00	46.00	50
KRR-M40/M25	83727422	Grey	M40x1.5	M25x1.5	6.00	10.00	46.00	50
KRR-M40/M32	83727424	Grey	M40x1.5	M32x1.5	6.00	10.00	46.00	50
KRR-M50/M20	83727426	Grey	M50x1.5	M20x1.5	6.00	12.00	55.00	25
KRR-M50/M25	83727428	Grey	M50x1.5	M25x1.5	6.00	12.00	55.00	25
KRR-M50/M32	83727430	Grey	M50x1.5	M32x1.5	6.00	12.00	55.00	25
KRR-M50/M40	83727432	Grey	M50x1.5	M40x1.5	6.00	12.00	55.00	25
KRR-M63/M25	83727434	Grey	M63x1.5	M25x1.5	6.00	12.00	68.00	25
KRR-M63/M32	83727436	Grey	M63x1.5	M32x1.5	6.00	12.00	68.00	25
KRR-M63/M40	83727438	Grey	M63x1.5	M40x1.5	6.00	12.00	68.00	25
KRR-M63/M50	83727440	Grey	M63x1.5	M50x1.5	6.00	12.00	68.00	25
<b>Pg / Pg version</b>								
KRR-Pg 11/07	83722410	Grey	Pg 11	Pg 07	6.00	8.00	22.00	100
KRR-Pg 11/09	83722412	Grey	Pg 11	Pg 09	15.00	8.00	22.00	100
KRR-Pg 13.5/07	83722414	Grey	Pg 13.5	Pg 07	6.00	9.00	24.00	100
KRR-Pg 13/09	83722416	Grey	Pg 13.5	Pg 09	6.00	9.00	24.00	100
KRR-Pg 13/11	83722420	Grey	Pg 13.5	Pg 11	15.00	9.00	24.00	100
KRR-Pg 16/09	83722418	Grey	Pg 16	Pg 09	6.00	10.00	27.00	100
KRR-Pg 16/11	83722422	Grey	Pg 16	Pg 11	6.00	10.00	27.00	100
KRR-Pg 16/13.5	83722424	Grey	Pg 16	Pg 13.5	17.00	10.00	27.00	100
KRR-Pg 21/11	83722426	Grey	Pg 21	Pg 11	5.00	11.00	32.00	100
KRR-Pg 21/13.5	83722428	Grey	Pg 21	Pg 13.5	5.00	11.00	32.00	100
KRR-Pg 21/16	83722430	Grey	Pg 21	Pg 16	5.00	11.00	32.00	100
KRR-Pg 29/13	83722432	Grey	Pg 29	Pg 13	6.00	11.00	40.00	50
KRR-Pg 29/16	83722434	Grey	Pg 29	Pg 16	6.00	11.00	40.00	50
KRR-Pg 29/21	83722436	Grey	Pg 29	Pg 21	6.00	11.00	40.00	50
KRR-Pg 36/16	83722438	Grey	Pg 36	Pg 16	6.00	13.00	50.00	50
KRR-Pg 36/21	83722440	Grey	Pg 36	Pg 21	6.00	13.00	50.00	50
KRR-Pg 36/29	83722442	Grey	Pg 36	Pg 29	6.00	18.00	50.00	50
KRR-Pg 42/21	83722444	Grey	Pg 42	Pg 21	6.00	18.00	55.00	25
KRR-Pg 42/29	83722446	Grey	Pg 42	Pg 29	6.00	18.00	55.00	25
KRR-Pg 42/36	83722448	Grey	Pg 42	Pg 36	6.00	18.00	55.00	25
KRR-Pg 48/29	83722450	Grey	Pg 48	Pg 29	6.00	15.00	60.00	25
KRR-Pg 48/36	83722452	Grey	Pg 48	Pg 36	7.00	16.00	60.00	25

## Type RR (metal reducing bush)



### PRODUCT INFORMATION

The type RR thread reducing bush is made of brass with nickel plating. It is available with metric or Pg thread and depending on the type, as a knurled or hexagon version. The following versions of the thread reducing bush are available:

- Metric/metric
- Metric/Pg
- Pg/Pg

### SPECIFICATIONS



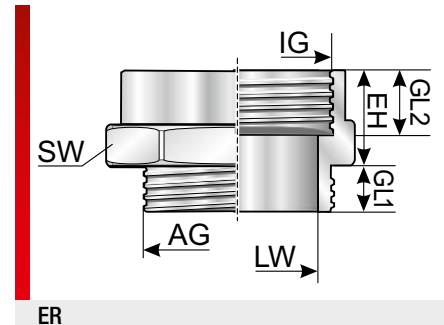
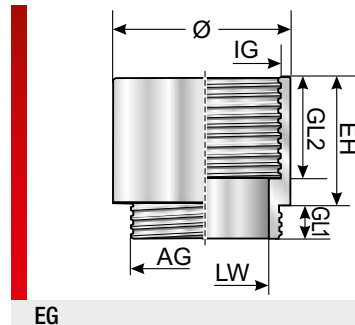
Nickel-plated brass



Type	Order No.	Colour	AG	IG	EH mm	GL mm	SW mm	Ø mm	Pack qty.
<b>Metric / metric version (without O-ring)</b>									
RR-M16/M12	83727610	Silver	M16x1,5	M12x1.5	2.50	6.00	18.00	100	
RR-M20/M12	83727612	Silver	M20x1.5	M12x1.5	2.50	6.50	22.00	100	
RR-M20/M16	83727614	Silver	M20x1.5	M16x1,5	2.50	6.50	22.00	100	
RR-M25/M16	83727616	Silver	M25x1.5	M16x1,5	3.00	7.00	27.00	100	
RR-M25/M20	83727618	Silver	M25x1.5	M20x1.5	3.00	7.00	27.00	100	
RR-M32/M20	83727620	Silver	M32x1.5	M20x1.5	3.50	8.00	34.00	50	
RR-M32/M25	83727622	Silver	M32x1.5	M25x1.5	3.50	8.00	34.00	50	
RR-M40/M25	83727624	Silver	M40x1.5	M25x1.5	3.50	9.00	43.00	25	
RR-M40/M32	83727626	Silver	M40x1.5	M32x1.5	3.50	9.00	43.00	25	
RR-M50/M32	83727628	Silver	M50x1.5	M32x1.5	4.00	10.00	53.00	25	
RR-M50/M40	83727630	Silver	M50x1.5	M40x1.5	4.00	10.00	53.00	10	
RR-M63/M40	83727632	Silver	M63x1.5	M40x1.5	4.00	10.00	66.00	10	
RR-M63/M50	83727634	Silver	M63x1.5	M50x1.5	4.00	10.00	66.00	10	
<b>Metric / Pg version (with O-ring on external thread)</b>									
RR-M16/Pg7	83727810	Silver	M16x1,5	Pg 07	3.00	5.00	17.00	100	
RR-M20/Pg9	83727812	Silver	M20x1.5	Pg 09	3.00	6.00	22.00	100	
RR-M25/Pg9	83727814	Silver	M25x1.5	Pg 09	3.00	7.00	27.00	100	
RR-M25/Pg11	83727816	Silver	M25x1.5	Pg 11	3.00	7.00	27.00	100	
RR-M25/Pg13,5	83727818	Silver	M25x1.5	Pg 13.5	3.00	7.00	27.00	100	
RR-M32/Pg13,5	83727820	Silver	M32x1.5	Pg 13.5	3.00	8.00	34.00	50	
RR-M32/Pg16	83727822	Silver	M32x1.5	Pg 16	3.00	8.00	34.00	50	
RR-M32/Pg21	83727824	Silver	M32x1.5	Pg 21	3.00	8.00	34.00	50	
RR-M40/Pg16	83727826	Silver	M40x1.5	Pg 16	4.00	8.00	43.00	25	
RR-M40/Pg21	83727828	Silver	M40x1.5	Pg 21	4.00	8.00	43.00	25	
RR-M40/Pg29	83727830	Silver	M40x1.5	Pg 29	4.00	8.00	43.00	25	
RR-M50/Pg21	83727832	Silver	M50x1.5	Pg 21	4.00	9.00	55.00	25	



## Type ER/EG (metal extension)



### PRODUCT INFORMATION

The type ER/EG thread extension bush is made of brass with nickel plating. They are available with metric or Pg thread and depending on the type, as a round or hexagon version. The thread extension bush fittings are in part already equipped with an O-ring on the external thread (see identification).

The following versions of the thread extension bush are available:

- Metric/metric
- Metric/Pg
- Pg/Pg

### SPECIFICATIONS



Nickel-plated brass



RoHS

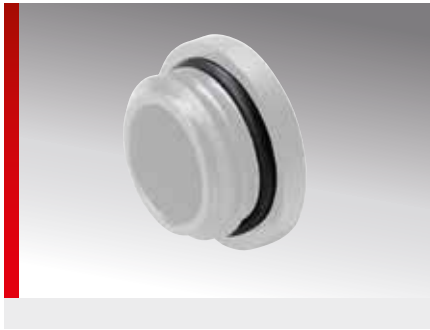
Type	Order No.	AG	IG	EH mm	GL 1 mm	GL 2 mm	Ø mm	SW 1 mm	Pack qty.
<b>Metric / metric version</b>									
ER-M12/M16	83728010	M12x1.5	M16x1,5	10.00	5.00	9.00		18.00	100
ER-M16/M20	83728012	M16x1,5	M20x1.5	10.50	5.00	9.50		22.00	100
ER-M20/M25	83728014	M20x1.5	M25x1.5	11.50	6.00	10.50		27.00	50
ER-M25/M32	83728016	M25x1.5	M32x1.5	12.50	7.00	11.00		34.00	25
ER-M32/M40	83728018	M32x1.5	M40x1.5	14.50	8.00	13.00		42.00	10
ER-M40/M50	83728020	M40x1.5	M50x1.5	19.50	8.00	18.00		52.00	10
ER-M50/M63	83728022	M50x1.5	M63x1.5	22.00	9.00	20.00		65.00	10
<b>Metric / Pg version</b>									
EG-M12/Pg 09	83726810	M12x1.5	Pg 09	10.00	5.00	9.00	17.00		100
EG-M16/Pg 11	83726812	M16x1,5	Pg 11	10.50	5.00	9.50	20.00		100
EG-M20/Pg 16 <sup>1)</sup>	83726814	M20x1.5	Pg 16	12.50	6.00	10.50	24.00		100
EG-M25/Pg 21	83726816	M25x1.5	Pg 21	14.50	7.00	11.00	30.00		100
EG-M32/Pg 29 <sup>1)</sup>	83726818	M32x1.5	Pg 29	22.00	8.00	13.00	39.00		50
EG-M40/Pg 36 <sup>1)</sup>	83726820	M40x1.5	Pg 36	19.50	8.00	18.00	50.00		50
EG-M50/Pg 42 <sup>1)</sup>	83726822	M50x1.5	Pg 42	22.00	9.00	20.00	57.00		25
EG-M50/Pg 48 <sup>1)</sup>	83726824	M50x1.5	Pg 48	23.00	9.00	20.00	64.00		25
<b>Pg / Pg version</b>									
EG-Pg 07/09	83721810	Pg 07	Pg 09	10.00	5.00	9.00	17.00		100
EG-Pg 09/11	83721812	Pg 09	Pg 11	10.50	6.00	9.50	20.00		100
EG-Pg 09/13.5	83721814	Pg 09	Pg 13.5	10.50	6.00	10.50	22.00		100
EG-Pg 11/13.5	83721816	Pg 11	Pg 13.5	11.50	6.00	10.50	22.00		100
EG-Pg 11/16	83721818	Pg 11	Pg 16	11.50	6.00	11.00	24.00		100
EG-Pg 13.5/16	83721820	Pg 13.5	Pg 16	13.50	6.50	11.00	24.00		100
EG-Pg 16/21	83721822	Pg 16	Pg 21	15.50	6.50	13.00	30.00		100
EG-Pg 21/29	83721824	Pg 21	Pg 29	16.00	7.00	14.50	39.00		50

**Type ER/EG (metal extension)** (Continued...)

Type	Order No.	AG	IG	EH mm	GL 1 mm	GL 2 mm	Ø mm	SW 1 mm	Pack qty.
EG-Pg 29/36	83721826	Pg 29	Pg 36	19.50	8.00	18.00	50.00		25
EG-Pg 36/42	83721828	Pg 36	Pg 42	22.00	9.00	20.00	50.00		10
EG-Pg 42/48	83721830	Pg 42	Pg 48	23.00	10.00	21.00	64.00		10
<b>Pg / metric version</b>									
ER-Pg 07/M12	83728210	Pg 07	M12x1.5	10.00	5.00	7.50		14.00	100
ER-Pg 09/M16	83728212	Pg 09	M16x1,5	10.00	6.00	7.50		19.00	100
ER-Pg 11/M16	83728214	Pg 11	M16x1,5	10.00	6.00	7.50		22.00	100
ER-Pg 13.5/M20	83728216	Pg 13.5	M20x1.5	11.00	6.50	8.50		24.00	100
ER-Pg 16/M20	83728218	Pg 16	M20x1.5	11.00	6.50	8.50		27.00	100
ER-Pg 16/M25	83728220	Pg 16	M25x1.5	12.00	6.50	9.50		30.00	100
ER-Pg 21/M25	83728222	Pg 21	M25x1.5	12.00	7.00	9.50		32.00	100
ER-Pg 21/M32	83728224	Pg 21	M32x1.5	13.00	7.00	10.50		36.00	100
ER-Pg 29/M40	83728226	Pg 29	M40x1.5	13.00	8.00	11.00		43.00	50
ER-Pg 36/M50	83728228	Pg 36	M50x1.5	14.00	9.00	11.50		55.00	25

<sup>1)</sup> with O-ring on external thread

## Type OR-NBR (O-ring)




### PRODUCT INFORMATION

The type OR-NBR O-ring is manufactured from NBR and serves to seal off threaded connections for higher protection classes, i.e. at threaded cable fittings.

The O-rings can be used for the following thread types, according to size:

- Metric
- Pg
- NPT

### SPECIFICATIONS

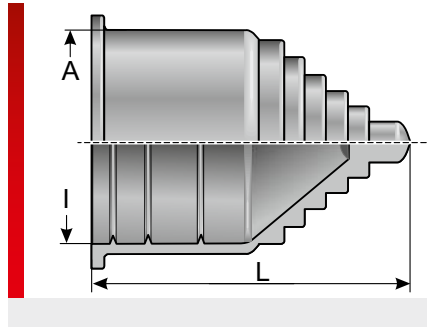
 -25 – 120 °C

 NBR

Type	Order No.	Suitable for metric	Suitable for Pg	Suitable for NPT	Pack qty.
OR-NBR 10x1.5	83481210	M12x1.5	Pg 07		100
OR-NBR 12x1.5	83481212	M16x1,5	Pg 09		100
OR-NBR 13x2	83481214			3/8"	100
OR-NBR 16x1,5	83481216		Pg 11		100
OR-NBR 17x1.8	83481218	M20x1.5	Pg 13.5		100
OR-NBR 18x1.5	83481220		Pg 16		100
OR-NBR 19x1,8	83481222			1/2"	100
OR-NBR 22x2	83481224	M25x1.5		3/4"	100
OR-NBR 26x2	83481226		Pg 21		100
OR-NBR 29x2	83481228	M32x1.5		1"	100
OR-NBR 33x2	83481230		Pg 29		50
OR-NBR 35x2	83481232	M40x1.5			50
OR-NBR 43x2	83481234	M50x1.5	Pg 36		50
OR-NBR 50x2	83481236		Pg 42		50
OR-NBR 55x2	83481238	M63x1.5	Pg 48		50

## Type ET-EN (end grommet)



### PRODUCT INFORMATION

The type ET end grommet is made of TPE and is used, for example, to close off the open end of a protective conduit, or as centring device for exiting cables. The end grommet features the following advantages:

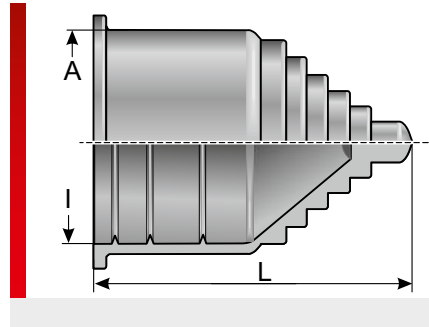
- Opening of end grommet variable (depending on the cable diameter used)
- Easy assembly
- Fixing of end grommet to the cable protection conduit using ribs running round the inside
- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

- 40 – 100 °C short term 120 °C
- Thermoplastic elastomer
- Acc. to UL94 V0 self-extinguishing
- IP 67

Type	Order No.	Colour	A mm	I mm	L mm	Cable Ø mm	Pack qty.
ET-EN P07 end grommet, sw	83723480	Black	13.00	10.00	29.00	1.0 / 8.0	50
ET-EN P09 end grommet, sw	83723482	Black	16.00	13.00	32.50	1.0 / 10.0	50
ET-EN P11 end grommet, sw	83723484	Black	19.00	15.80	36.50	4.0 / 12.0	50
ET-EN P16 end grommet, sw	83723486	Black	25.00	21.20	37.50	6.0 / 16.5	50
ET-EN P21 end grommet, sw	83723488	Black	32.00	28.50	40.20	6.0 / 23.0	25
ET-EN P36 end grommet, sw	83723492	Black	46.00	42.50	46.00	10.0 / 37.0	25
ET-EN P48 end grommet, sw	83723494	Black	59.00	54.50	52.00	10.0 / 47.0	10

## Type ET (end grommet)



### PRODUCT INFORMATION

The type ET end grommet is made of TPE and is used, for example, to close off the open end of a protective conduit, or as centring device for exiting cables. The end grommet features the following advantages:

- Opening of end grommet variable (depending on the cable diameter used)
- Easy assembly
- Fixing of end grommet to the cable protection conduit using ribs running round the inside

### SPECIFICATIONS

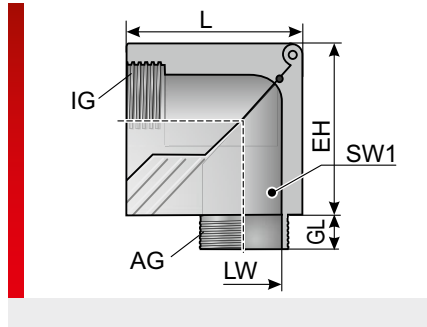
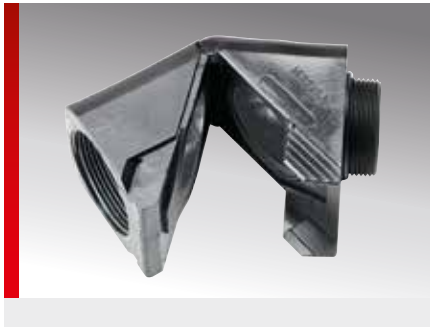
- 40 – 100 °C short term 120 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- IP 67

**RoHS** **HF**

Type	Order No.	Colour	Suitable for Murrflex	A mm	I mm	L mm	Cable Ø mm	Pack qty.
ET 07	83723450	Black	Pg06 ; M10/P7	13.00	10.00	29.00	1.0 / 8.0	50
ET 09	83723452	Black	M12/P9	16.00	13.00	32.50	1.0 / 10.0	50
ET 11	83723454	Black	M16/P11	19.00	15.80	36.50	4.0 / 12.0	50
ET 16	83723456	Black	M20/P16(S)	25.00	21.20	37.50	6.0 / 16.5	50
ET 21	83723458	Black	M25/P21(S)	32.00	28.50	40.20	6.0 / 23.0	25
ET 29	83723460	Black	M32/P29(S)	39.00	34.50	44.20	6.0 / 29.0	25
ET 36	83723462	Black	M40/P36(S)	46.00	42.50	46.00	10.0 / 37.0	25
ET 48	83723464	Black	M50/P48(S)	59.00	54.50	52.00	10.0 / 47.0	10
ET 07	83723410	Grey	Pg06 ; M10/P7	13.00	10.00	29.00	1.0 / 8.0	50
ET 09	83723412	Grey	M12/P9	16.00	13.00	32.50	1.0 / 10.0	50
ET 11	83723414	Grey	M16/P11	19.00	15.80	36.50	4.0 / 12.0	50
ET 16	83723416	Grey	M20/P16(S)	25.00	21.20	37.50	6.0 / 16.5	50
ET 21	83723418	Grey	M25/P21(S)	32.00	28.50	40.20	6.0 / 23.0	25
ET 29	83723420	Grey	M32/P29(S)	39.00	34.50	44.20	6.0 / 29.0	25
ET 36	83723422	Grey	M40/P36(S)	46.00	42.50	46.00	10.0 / 37.0	25
ET 48	83723424	Grey	M50/P48(S)	59.00	54.50	52.00	10.0 / 47.0	10



## Type KAW (plastic connection angle)



### PRODUCT INFORMATION

The KAW 90° plastic connection angle is a foldable angle connection, made of specially modified polyamide. It can be combined in any way with cable fittings or conduit fittings. The connection angle features the following advantages:

- Easy cable insertion
- High degree of protection (IP 68)
- Easy assembly
- Folds open
- Wide range of connection options
- Includes seal on connecting thread

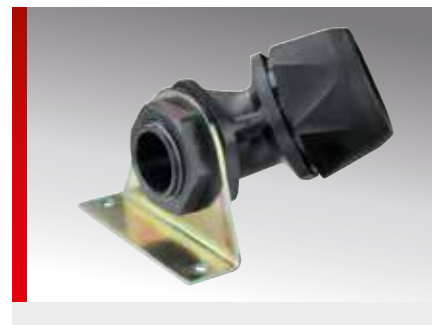
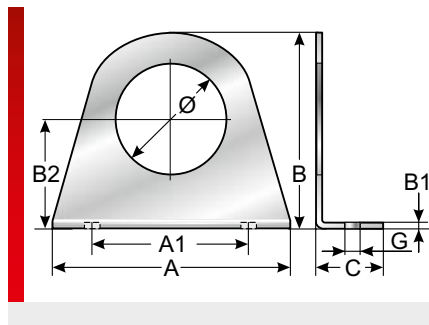
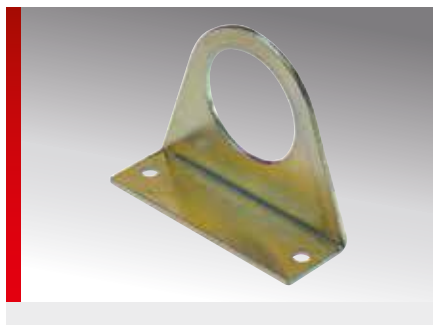
### SPECIFICATIONS

- 20 – 80 °C
- Mod. polyamide PA 6  
NBR
- Acc. to UL94 V0 self-extinguishing
- IP 68

**RoHS** **HF**

Type	Order No.	Colour	AG	IG	EH mm	GL mm	L mm	LW mm	SW 1 mm	Pack qty.
<b>Metric thread</b>										
KAW-M 16x1.5	83661650	Black	M16x1,5	Pg 09	23.00	8.00	28.50	10.00	19.00	25
KAW-M 20x1.5	83661652	Black	M20x1.5	Pg 13.5	30.50	9.00	35.00	13.50	24.00	25
KAW-M 25x1.5	83661654	Black	M25x1.5	Pg 21	40.00	11.00	49.00	19.50	33.00	25
KAW-M 32x1.5	83661656	Black	M32x1.5	Pg 29	51.50	11.00	60.00	27.00	42.00	10
KAW-M 16x1.5	83661610	Grey	M16x1,5	Pg 09	23.00	8.00	28.50	10.00	19.00	25
KAW-M 20x1.5	83661612	Grey	M20x1.5	Pg 13.5	30.50	9.00	35.00	13.50	24.00	25
KAW-M 25x1.5	83661614	Grey	M25x1.5	Pg 21	40.00	11.00	49.00	19.50	33.00	25
KAW-M 32x1.5	83661616	Grey	M32x1.5	Pg 29	51.50	11.00	60.00	27.00	42.00	10
<b>Pg threads</b>										
KAW-Pg 09	83661050	Black	Pg 09	Pg 09	23.00	8.00	28.50	10.00	19.00	25
KAW-Pg 11	83661052	Black	Pg 11	Pg 11	27.00	8.00	31.50	12.00	22.00	25
KAW-Pg 13.5	83661054	Black	Pg 13.5	Pg 13.5	30.50	9.00	35.00	13.50	24.00	25
KAW-Pg 16	83661056	Black	Pg 16	Pg 16	32.50	10.00	37.50	16.00	27.00	25
KAW-Pg 21	83661058	Black	Pg 21	Pg 21	40.00	11.00	49.00	20.00	33.00	25
KAW-Pg 29	83661060	Black	Pg 29	Pg 29	51.50	11.00	60.00	27.00	42.00	10
KAW-Pg 09	83661012	Grey	Pg 09	Pg 09	23.00	8.00	28.50	10.00	19.00	25
KAW-Pg 11	83661014	Grey	Pg 11	Pg 11	27.00	8.00	31.50	12.00	22.00	25
KAW-Pg 13.5	83661016	Grey	Pg 13.5	Pg 13.5	30.50	9.00	35.00	13.50	24.00	25
KAW-Pg 16	83661018	Grey	Pg 16	Pg 16	32.50	10.00	37.50	16.00	27.00	25
KAW-Pg 21	83661020	Grey	Pg 21	Pg 21	40.00	11.00	49.00	20.00	33.00	25
KAW-Pg 29	83661022	Grey	Pg 29	Pg 29	51.50	11.00	60.00	27.00	42.00	10

## Type BWM (Fastening bracket)



### PRODUCT INFORMATION

The type BWM fastening bracket is made of sheet steel with zinc plating. It is used as a universal holder for fastening fittings to equipment and machinery. The fastening bracket features the following advantages:

- Quick and easy fastening
- For Pg and metric fittings
- Fastening of fitting secured with lock nut

### SPECIFICATIONS

Galvanised sheet steel

RoHS

Type	Order No.	Suitable for Thread	A mm	B mm	C mm	G mm	A1 mm	B1 mm	Ø mm	Pack qty.
<b>For metric threading</b>										
BWM-M12x1,5	83721660	M12x1.5	35.00	31.50	12.00	4.00	25.00	1.50	12.40	25
BWM-M16x1.5	83721662	M16x1,5	50.00	31.50	12.00	4.00	40.00	1.50	16.40	25
BWM-M20x1,5	83721664	M20x1.5	50.00	37.50	20.00	4.00	40.00	2.00	20.50	25
BWM-M25x1,5	83721666	M25x1.5	60.00	47.50	20.00	4.00	50.00	2.00	25.50	25
BWM-M32x1,5	83721668	M32x1.5	70.00	57.50	20.00	4.00	60.00	2.00	32.50	25
BWM-M40x1,5	83721670	M40x1.5	80.00	68.50	20.00	4.00	70.00	2.00	40.50	25
BWM-M50x1,5	83721672	M50x1.5	90.00	81.00	20.00	4.00	80.00	2.00	51.00	25
<b>For PG threading</b>										
BWM 09	83721610	Pg 09	35.00	31.50	12.00	4.00	25.00	1.50	15.30	25
BWM 11	83721612	Pg 11	35.00	31.50	12.00	4.00	25.00	1.50	18.80	25
BWM 16	83721614	Pg 16	50.00	38.00	20.00	4.00	40.00	2.00	23.00	25
BWM 21	83721616	Pg 21	60.00	47.50	20.00	4.00	50.00	2.00	28.50	25
BWM 29	83721618	Pg 29	70.00	57.30	20.00	4.00	60.00	2.00	37.50	25
BWM 36	83721620	Pg 36	80.00	67.80	20.00	4.00	70.00	2.00	47.50	25
BWM 48	83721622	Pg 48	90.00	80.50	20.00	4.00	80.00	2.00	60.00	25

## Type SS (conduit clamp)



### PRODUCT INFORMATION

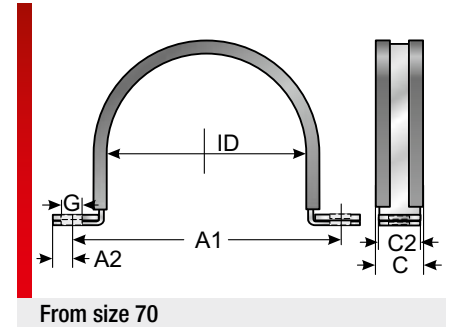
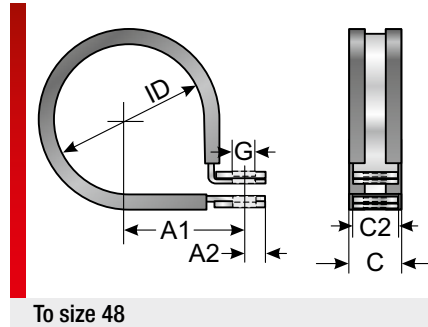
The type SS conduit clamps are made of sheet steel with zinc plating. They are used for fixing or securing the protective conduits.

### SPECIFICATIONS

 Galvanised sheet steel

Type	Order No.	Clamping range mm	Width mm	Pack qty.
SS 15	83721010	8.0 – 16.0	9.00	100
SS 19	83721012	12.0 – 22.0	9.00	100
SS 26	83721014	16.0 – 27.0	9.00	100
SS 32	83721016	20.0 – 32.0	9.00	100
SS 38	83721018	25.0 – 40.0	9.00	50
SS 47	83721020	35.0 – 50.0	12.00	50
SS 57	83721022	40.0 – 60.0	12.00	50
SS 70	83721024	50.0 – 70.0	12.00	25
SS 78	83721026	70.0 – 90.0	12.00	25

## Type SSG (conduit clamp)



### PRODUCT INFORMATION

The type SSG conduit clamp is made of sheet steel, with a zinc plated surface and is partially covered with a halogen-free elastomer. The SSG are used for easy fixing or securing of cable protection conduits and distinguish themselves with the following

advantages:

- Quick and easy assembly
- The elastomer cover prevents damage to the protective conduits
- Suitable for all cable protection conduits

### SPECIFICATIONS



-40 – 120 °C



Galvanised sheet steel  
EPDM



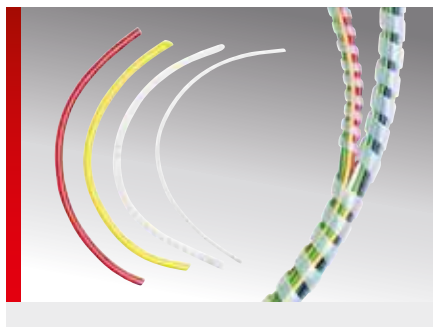
RoHS

Type	Order No.	C mm	G mm	ID mm	A1 mm	A2 mm	C2 mm	Pack qty.
SSG 06/M5	83723210	15.00	5.30	10.00	13.00	5.00	12.00	25
SSG 06/M6	83723211	18.50	6.40	10.00	16.20	6.00	15.00	25
SSG 07/M5	83723212	15.00	5.30	12.00	14.00	5.00	12.00	25
SSG 07/M6	83723213	18.50	6.40	12.00	17.20	6.00	15.00	25
SSG 09/M5	83723214	15.00	5.30	13.00	14.50	5.00	12.00	25
SSG 09/M6	83723215	18.50	6.40	13.00	17.70	6.00	15.00	25
SSG 11/M5	83723216	15.00	5.30	15.00	15.50	5.00	12.00	25
SSG 11/M6	83723217	18.50	6.40	15.00	18.70	6.00	15.00	25
SSG 16/M5	83723218	15.00	5.30	21.00	18.50	5.00	12.00	25
SSG 16/M6	83723219	18.50	6.40	21.00	21.70	6.00	15.00	25
SSG 21/M6	83723222	18.50	6.40	28.00	25.20	6.00	15.00	25
SSG 29/M6	83723224	18.50	6.40	34.00	28.20	6.00	15.00	25
SSG 36/M8	83723226	25.00	8.40	40.00	34.50	8.50	20.00	10
SSG 48/M6	83723228	18.50	6.40	54.00	38.20	6.00	15.00	10
SSG 70/M8	83723230	24.50	8.40	78.00	107.00	8.50	20.00	10
SSG 95/M8	83723232	24.50	8.40	105.00	134.00	8.50	20.00	10





## Type SB/SBF (Spiral tape)






### PRODUCT INFORMATION

Spiral tapes are used to bundle cable harnesses efficiently and simply. The spiral tapes also protect the insulation of the wires. Branches of single wires or looms of cables may be made at any place. Bundling in the range from 2 - 100 mm is possible with just three sizes.

The SBF consists of flame-retardant material.

### SPECIFICATIONS

-  -10 – 40 °C short term 60 °C
-  Mod. polyethylene
-  Acc. to UL94 HB for Type SB only  
Acc. to UL94 V2 for Type SBF only



Type	Order No.	Colour	Bundle range mm	inside mm	external mm	Weight kg/100m	Pack qty.
SB 12	87621010	Natural colour	2.0 – 12.0	1.50	3.00	0.4	50
SB 50	87621012	Natural colour	5.0 – 50.0	4.00	6.00	1.5	100
SB 100	87621014	Natural colour	12.0 – 100.0	9.00	12.00	4.8	50
SB 50	87621022	Black	5.0 – 50.0	4.00	6.00	1.5	100
SB 100	87621024	Black	12.0 – 100.0	9.00	12.00	1.5	50
SB 50	87621210	Yellow	5.0 – 50.0	4.00	6.00	1.5	100
SB 100	87621212	Yellow	12.0 – 100.0	9.00	12.00	2.8	50
SB 50	87621250	Orange	5.0 – 50.0	4.00	6.00	1.5	100
SB 100	87621252	Orange	12.0 – 100.0	9.00	12.00	2.8	50

#### Flame-retardant version (fire classification acc. to UL94: V0) V2)

SBF 12	87621050	White	2.0 – 10.0	1.50	3.00	0.3	50
SBF 50	87621052	White	5.0 – 40.0	4.00	6.00	1.4	25
SBF 100	87621054	White	11.0 – 55.0	9.00	12.00	4.8	25

## Type SBX (Spiral tape)



### PRODUCT INFORMATION

The SBX type cable tapes are manufactured from modified PVC and are used for the protection and bundling of large cable harnesses or hydraulic hoses.

Based on the outstanding abrasion resistance and excellent fire resistance, the SBX is very suitable for use with heavy machinery and mining, as well as for commercial vehicles.

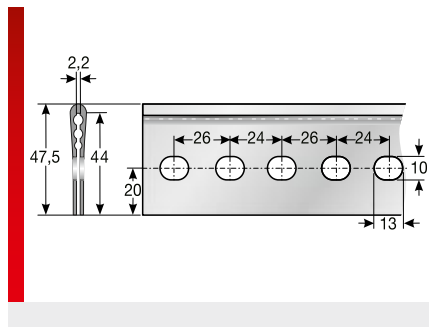
### SPECIFICATIONS

- 10 – 60 °C short term 70 °C
  - Polyvinyl chloride (PVC)
  - Acc. to UL94 V0
- RoHS** **HF**

Type	Order No.	Colour	Bundle range mm	inside mm	external mm	Weight kg/100m	Pack qty.
SBX 16	87621604	Black	16.0 – 26.0	16.00	19.50	10.0	20
SBX 20	87621606	Black	20.0 – 27.0	20.00	24.20	17.0	20
SBX 34,5	87621614	Black	35.0 – 60.0	34.50	40.00	42.0	20



## Edge protection profile



### PRODUCT INFORMATION

The KSP 47.5 edge protection profile is manufactured of specially modified thermoplastic rubber. Materials are self-extinguishing, halogen-free and tested according to EN 45545-2 standards.

Exceptional mechanical properties characterise the edge protection profile, it is abrasion-proof and fixed on a pre-set hole pattern.

### SPECIFICATIONS

- 10 – 85 °C
- Thermoplastic elastomer
- Acc. to UL94 V0 UL94

Type	Order No.	Colour	Pack m
Edge protection profile 47,5 mm <sup>1)</sup>	83980105	Black	25

<sup>1)</sup> Shore hardness A 78





## Tools



## Type Tube-Cut (Conduit knife for cable protection conduits)



Tube-Cut/Z



Tube-Cut/D

### PRODUCT INFORMATION

The Tube-Cut conduit knife allows subsequent slitting of closed cable protection conduits. It can be used by both the right and left-handed. The sliding foot is made of extremely hard-wearing Teflon-coated metal. The Tube-Cut conduit knife features the following advantages:

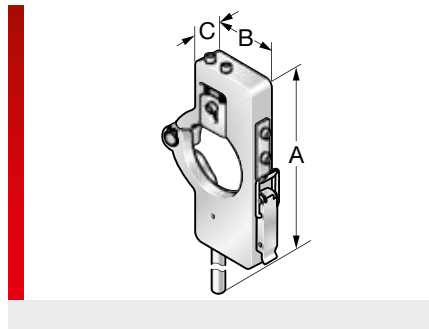
- Extremely easy handling
- Two different versions available
- Safe to use with a material hold-down device that also shields the blade
- Fast and safe blade change
- Very low weight

### SPECIFICATIONS

- Plastic
- Steel
- Not suitable for NW95 with high corrugation

Type	Order No.	Protection class	Length mm	Suitable for Murrflex	Pack qty.
Tube-Cut/D	83729214		120.00	Standard corrugation M12/P09 to NW 95, High corrugation (EWX) to NW 70	1
Tube-Cut/Z	83729212		120.00	Standard corrugation M12/P09 to NW 95, NW70	1

## Type m-cut



### PRODUCT INFORMATION

The type m-cut corrugated conduit cutter is made of aluminium and makes length adjustments for Murrplastik cable protection conduits easy and safe. It can be used by both the right and left-handed. A sturdy double-edged blade has been installed to achieve perfectly cut edges. Furthermore, the corrugated conduit cutters feature the following advantages:

- Extremely easy handling
- Safe handling, because of its spring-loaded blade cover, which covers the blade when the cutter is not in use.
- Faster and more secure blade exchange -> blades are available as spare parts
- Low weight

### SPECIFICATIONS

Aluminium

Made in Germany

Type	Order No.	Suitable for Murrflex	Pack qty.
m-cut M40 B	83729222	M40/P36	1
m-cut M50 B	83729224	M50/P48	1
m-cut 56 B	83729226	NW56	1
m-cut 70 B	83729228	NW70	1
m-cut 95 B	83729230	NW95	1



## Appendix





# Selection table cable protection conduits – material / temperatures / approvals

CONDUIT TYPE		TEMPERATURES					APPROVALS							
		Material	°C Lowest application temperature	°C Highest application temperature	°C Transient stress	Fire classification UL 94	RoHS – Reach	GL	ATEX	Robi	UR	EN 45545	CE	
CLOSED STANDARD CABLE PROTECTION CONDUITS	EW	PE	-20	70	90	HB	●						●	
	EWX	PE	-20	70	90	HB	●						●	
	EWS	PE	-20	70	90	HB	●						●	
	EWf	PE	-20	90	120	V2	●						●	
	EWS/F	PE	-20	90	120	V2	●						●	
	EW-PP	PP	-45	130	150	V2	●						●	
	EWL-PP	PP	-45	130	150	V2	●						●	
	EWX-PP	PP	-45	130	150	V2	●						●	
	EW-PA	PA6	-40	140	160	HB	●						●	
	EWL-PA	PA6	-40	140	160	HB	●						●	
	EWX-PA	PA6	-40	140	160	HB	●						●	
	EW-PAB	PA6	-25	140	160	V0	●	●			●		●	
	EWL-PAB	PA6	-25	140	160	V2	●	●					●	
	EW-PAT	PA6	-40	140	180	V2	●					●	●	
	EWL-PAT	PA6	-40	140	180	V2	●					●	●	
	EW-PA-UL	PA6	-40	140	160	V0	●	●			●		●	
	EWX-PA-UL	PA6	-40	140	160	V0	●	●			●		●	
	EW-PRF	PA12	-40	105	150	V2	●	●		●	●		●	
	EW-PRT	PA12	-40	120	140	V2	●			●		●	●	
	EW-PAE	PA12	-40	120	150	HB	●			●			●	
EWX-PAE	PA12	-40	120	150	HB	●			●			●		
EW-HY	TPE	-45	160	180	HB	●			●			●		
EWX-HY	TPE	-45	160	180	HB	●			●			●		
CLOSED SPECIAL CABLE PROTECTION CONDUITS	EF	TPE	-45	160	180	HB	●			●			●	
	EWB	PE	-15	90	120	HB	●						●	
	EW-TEF	PTFE	-200	260		V0	●						●	
	EW-PA-EX	PA12	-40	110	150	HB	●		●*				●	
	EW-PAP	PA6	-40	120	140	HB	●						●	
	EW-PATM	PA6	-40	120	140	V2	●				●		●	
	EL	PVC	-15	60		V2	●						●	
	ELS	PVC	-25	80	100	V2	●						●	
	EVK	PVC	-15	60		V2	●						●	
	GF	PA6.6	-50	150	175	V2	●						●	
	GF-P	PET	-55	150		V2	●						●	
OPEN / SEPARABLE CABLE PROTECTION CONDUITS	EW-LS	PE	-20	70	90	HB	●						●	
	EWX-LS	PE	-20	70	90	HB	●						●	
	EW-PA-LS	PA6	-40	140	160	HB	●						●	
	EWX-PA-LS	PA6	-40	140	160	HB	●						●	
	EWX-PAE-LS	PA12	-40	120	150	HB	●			●			●	
	EWX-HY-LS	TPE	-45	160	180	HB	●			●			●	
	EWT-PA	PA6	-40	140	160	HB	●						●	
	EWT-PAT	PA6	-40	140	180	V0	●				●		●	
	EWT-PP	PP	-40	130	150	V2	●						●	

\* tested according to ATEX directive only




# Selection table cable protection conduits – applications

CONDUIT TYPE		APPLICATIONS						
		Control cabinet construction	Mechanical engineering	Robotics engineering	Chemical plants	External use	Welding applications	Railway engineering
CLOSED STANDARD CABLE PROTECTION CONDUITS	EW	•						
	EWX	•						
	EWS	•						
	EWF	•						
	EWS/F	•						
	EW-PP		•		•	•		
	EWL-PP	•	•					
	EWX-PP		•		•	•		
	EW-PA		•			•		
	EWL-PA	•	•					
	EWX-PA		•			•		
	EW-PAB		•			•		
	EWL-PAB	•	•					
	EW-PAT		•					•
	EWL-PAT	•	•					•
	EW-PA-UL	(•)	•			•		
	EWX-PA-UL		•			•		
	EW-PRF		•	•	•	•		
	EW-PRT		•	•	(•)	•		•
	EW-PAE		•	•	(•)	•	•	
EWX-PAE			•	(•)		•		
EW-HY		•	•	(•)				
EWX-HY			•	(•)				
CLOSED SPECIAL CABLE PROTECTION CONDUITS	EF		•	•				
	EWB				(•)	(•)		
	EW-TEF		•		•	(•)		
	EW-PA-EX		•	(•)				
	EW-PAP		•				•	
	EW-PATM		•					•
	EL		•		•			
	ELS		•		•			
	EVK		•		•			
	GF	•						
	GF-P	•			(•)			
OPEN / SEPARABLE CABLE PROTECTION CONDUITS	EW-LS	•						
	EWX-LS	•						
	EW-PA-LS	•	•					
	EWX-PA-LS	•	•					
	EWX-PAE-LS			•	(•)	•		
	EWX-HY-LS			•	(•)	•		
	EWT-PA	•	•					
	EWT-PAT	•	•					•
	EWT-PP	•	•		•	•		



# Selection table cable protection conduits – mechanical protection

CONDUIT TYPE		MECHANICAL PROTECTION					Crush resistance (N/100 mm)
		low	medium	high	very high	extremely high	
							
CLOSED STANDARD CABLE PROTECTION CONDUITS	EW	•					200
	EWX		•				500
	EWS	•					50
	EWF	•					200
	EWS/F	•					50
	EW-PP			•			700
	EWL-PP		•				550
	EWX-PP				•		1300
	EW-PA			•			800
	EWL-PA		•				550
	EWX-PA				•		1300
	EW-PAB			•			800
	EWL-PAB		•				550
	EW-PAT			•			800
	EWL-PAT		•				550
	EW-PA-UL				•		1300
	EWX-PA-UL					•	2000
	EW-PRF			•			900
	EW-PRT		•				450
	EW-PAE		•				450
EWX-PAE		•				550	
EW-HY		•				400	
EWX-HY			•			700	
CLOSED SPECIAL CABLE PROTECTION CONDUITS	EF	•					300
	EWB			•			750
	EW-TEF	•					200
	EW-PA-EX		•				350
	EW-PAP			•			800
	EW-PATM			•			800
	EL		•				550
	ELS					•	2000
	EVK		•				450
	GF	•					—
	GF-P	•					—
	OPEN / SEPARABLE CABLE PROTECTION CONDUITS	EW-LS	•				
EWX-LS			•				400
EW-PA-LS				•			700
EWX-PA-LS					•		1200
EWX-PAE-LS			•				450
EWX-HY-LS			•				600
EWT-PA					•		1200
EWT-PAT					•		1000
EWT-PP				•			900

# Selection table fittings – features and approvals



TYPE OF FITTING		APPROVALS											
		Plastic thread	Metal thread	Combined cable fitting	Pivoting (fitting)	Rotating (conduit)	Tightness	Fire classification UL 94	CE	RoHS - Reach	GL	UR	EN 45545
							IP			RoHS	GL		EN 45545
M-TOP	IVG		•				IP 68	V0	•	•	•	•	•
	VG -K	•					IP 68	V0	•	•	•	•	•
	VG -M		•				IP 68	V0	•	•	•	•	•
	CVG	•		•			IP 68	V0	•	•	•	•	•
	CVG EMV		•	•			IP 68	V0	•	•	•	•	•
	VW 45° -K	•					IP 68	V0	•	•	•	•	•
	VW 45° -M		•				IP 68	V0	•	•	•	•	•
	CVW 45°	•		•			IP 68	V0	•	•	•	•	•
	CVW 45° EMV		•	•			IP 68	V0	•	•	•	•	•
	DVW 45°		•		•		IP 68	V0	•	•	•	•	•
	VW 90° -K	•					IP 68	V0	•	•	•	•	•
	VW 90° -M		•				IP 68	V0	•	•	•	•	•
	CVW 90°	•		•			IP 68	V0	•	•	•	•	•
	CVW 90° EMV		•	•			IP 68	V0	•	•	•	•	•
DVW 90°		•		•		IP 68	V0	•	•	•	•	•	
M-TEC	EH	•					IP65	V0	•	•		•	•
	EH/S	•					IP65	V0	•	•			•
	CSKV	•		•			IP65	V0	•	•		•	•
	MCSKV	•		•			IP65	V0	•	•			•
	KW 90°	•					IP65	V0	•	•		•	•
	CKW	•		•			IP65	V0	•	•		•	•
M-FIX	MSV	•				•	IP54	V0	•	•	•		•
	KSV	•		•		•	IP54	V0	•	•	•		•
	WSV 90°	•				•	IP54	V0	•	•	•		•
BULKHEAD FITTING	KFW	(•)					IP65	V0	•	•	•		•
	KFW/D					•	IP54	V0	•	•	•		•
	KFW/X					•	IP54	V0	•	•	•		•
JUM-BO	SA-Jumbo					•	IP52	V0	•	•	•		
	KFW-Jumbo					•	IP52	V0	•	•	•		
SPECIAL FITTING	EH-EMV		•				IP40		•	•			
	AT						IP42	V0	•	•			•
	SVT	•					IP50	V0	•	•			•
	SVT-X	•					IP50	V0	•	•			•
	EVK-PG		•				IP65		•	•			
	FL-EF						IP42	HB	•	•			
ELD/K	•					IP54		•	•				
CABLE FITTINGS	m-seal® KV	•		•			IP68	V2	•	•		•	
	m-seal® MV		•	•			IP68	V2	•	•		•	
	m-seal® EMC		•	•			IP68	V2	•	•		•	
	WKK	•		•			IP65	V0	•	•	•	•	•
	WKK-EX	•		•			IP65	V0	•	•		•	•
	WKM		•	•			IP68	V0	•	•	•	•	•
	WKM-EMV		•	•			IP68	V0	•	•	•	•	•
KKV		•	•					•	•				





# Robotic equipment

## MATERIAL PROPERTIES



Materials used

## MECHANICAL PROPERTIES



Protection class



Crush resistance

## THERMAL PROPERTIES



Temperature / temperature range

## FIRE BEHAVIOUR



Fire classification

## GENERAL TECHNICAL DATA



Additional information

## APPROVALS AND OPERATING PERMITS



EU railway approval  
EN 45545-2



CSA approval



cULus-approval



cURus-approval



VDE-approval



EX-approval



ROBI-approval

## TECHNICAL INFORMATION



Halogen-free  
DIN 53474



UV-resistant

## CONFORMITY



RoHS (EC Directive 2002/95/EC)

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## APPENDIX

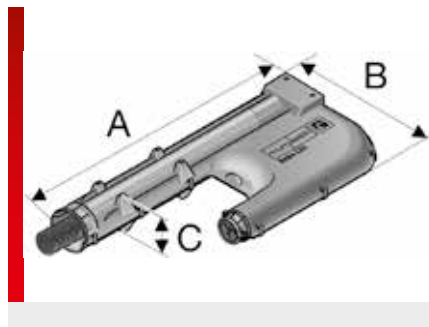
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**R-Tec Box**

## R-Tec Box



### PRODUCT INFORMATION

With their R-Tec Box design, Murrplastik has succeeded in creating a new system for optimum management of energy packages from axis 3 to axis 6 of industrial robots. In this specially designed housing with the unique, integrated spring return system, the energy packet is transported safely and

effectively in a low-wear manner within the smallest space.

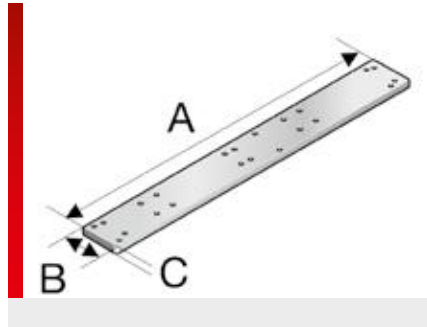
### SPECIFICATIONS

- 40 – 140 °C short term 160 °C
- Mod. polypropylene
- 

Type	Order No.	Colour	Suitable for conduit type EW-PAE	Suitable for conduit type EWX-PAE	A mm	B mm	C mm	Stroke mm	Pack qty.
R-Tec Box-S EW 29 MP - 35N	83692693	Black	M32/P29		507.00	285.00	110.00	270.00	1
R-Tec Box-S EWX 29 MP - 35N	83692695	Black		M32/P29	507.00	285.00	110.00	270.00	1
R-Tec Box-S EW 36 MP - 35N	83692696	Black	M40/P36		507.00	285.00	110.00	270.00	1
R-Tec Box-S EWX 36 MP - 35N	83692697	Black		M40/P36	507.00	285.00	110.00	270.00	1
R-Tec Box EW 36 MP - 80N	83692650	Black	M40/P36		730.00	343.00	138.00	400.00	1
R-Tec Box EWX 36 MP - 80N	83692652	Black		M40/P36	730.00	343.00	138.00	400.00	1
R-Tec Box EW 48 MP - 100N	83692654	Black	M50/P48		730.00	343.00	138.00	400.00	1
R-Tec Box EWX 48 MP - 100N	83692656	Black		M50/P48	730.00	343.00	138.00	400.00	1
R-Tec Box EWX 48-KB MP - 100N <sup>1)</sup>	83692633	Black		M50/P48	730.00	343.00	138.00	400.00	1
R-Tec Box EW 48 MP - 120N	83692664	Black	M50/P48		730.00	343.00	138.00	400.00	1
R-Tec Box EWX 48 MP - 120N	83692665	Black		M50/P48	730.00	343.00	138.00	400.00	1
R-Tec Box EW/EWX 56 MP - 200N	83692658	Black	56 Jumbo	56 Jumbo	937.50	430.00	176.00	600.00	1
R-Tec Box EW/EWX 70 MP - 200N	83692660	Black	70 Jumbo	70 Jumbo	937.50	430.00	176.00	600.00	1
R-Tec Box EW/EWX 70-KB MP - 200N <sup>1)</sup>	83692662	Black	70 Jumbo	70 Jumbo	937.50	430.00	176.00	600.00	1

<sup>1)</sup> with strain relief V-ZLT-70KB

## System plate for R-Tec Box



### PRODUCT INFORMATION

System plate for mounting a R-Tec Box on axis 3. Adjusted to production series of various manufacturers.

The listed system plates are examples only. Contact us for the proper size for you.

### SPECIFICATIONS

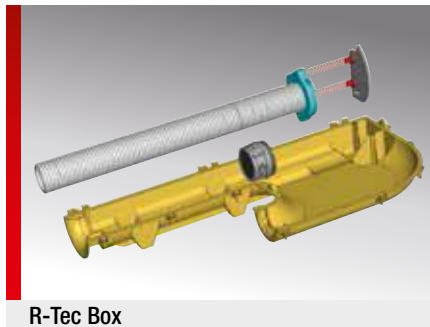


Powder coated sheet steel



Type	Order No.	Colour	Pack qty.
A3 Kuka KR6 base plate	83692751	Black	
Kuka KR16 base plate	83692750	Black	1
Kuka KR16 L base plate	83692777	Black	1
Kuka KR30 - KR60 base plate	83692757	Black	1
Kuka KR30 - KR60 L base plate	83692776	Black	1
Kuka Quantec/Series 2000 base plate	83692620	Black	1
base plate Kuka KR1000 Titan-F	83692785	Black	1
Base plate ABB IRB series 1600	83692762	Black	1
R-Tec Box, ABB IRB 4400 base plate	82390027	Black	1
Base plate ABB IRB series -1.85	83692763	Black	1
Base plate ABB series 4600	83692625	Black	1
Base plate ABB series 6400	83692623	Black	1
ABB 6600/6640/6650/6700 series base plate	83692622	Black	1
Base plate ABB IRB series 6620	83692627	Black	1
R-Tec Box, ABB IRB 6640 base plate	82390028	Black	1
Base plate ABB IRB series 7600	83692764	Black	1
R-Tec Box Fanuc M710 base plate	82390043	Black	1
Fanuc M-900 base plate	83692755	Black	1
Fanuc M-900iA350/600 base plate	83692624	Black	1
Base plate Fanuc series 2000 iB/iA	83692621	Black	1
Motoman HD20 base plate	83692761	Black	1
Motoman MH50 base plate	83692628	Black	1
Motoman MH50-35 base plate	83692772	Black	1
Motoman MS165, MH165 base plate	83692629	Black	1

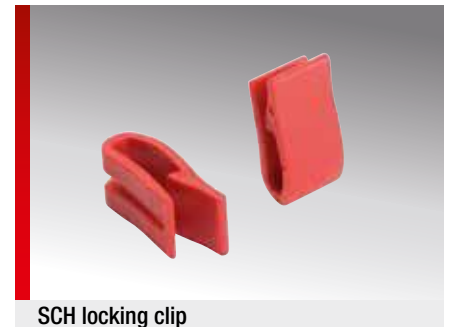
## Replacement parts for R-Tec Box



R-Tec Box



Wear ring



SCH locking clip

### PRODUCT INFORMATION

Replacement parts for R-Tec Box

Type	Order No.	Colour	Pack qty.
<b>Spring set</b>			
Spring Set 29/36 35N <sup>1)</sup>	83692679	Silver	1
Spring Set 36/48 80N <sup>1)</sup>	83692685	Silver	1
Spring Set 36/48 100N <sup>1)</sup>	83692686	Silver	1
Spring Set 36/48 120N <sup>1)</sup>	83692687	Silver	1
Spring Set 56/70 200N <sup>1)</sup>	83692688	Silver	1
<b>Position markers for EW, EW-LS, EWT and EWX</b>			
Position marker - set 36	83692690	Green / yellow / red	1
Position marker - set 48	83692692	Green / yellow / red	1
Position marker - set 56	83692694	Green / yellow / red	1
Position marker - set 70	83692698	Green / yellow / red	1
<b>Slider set</b>			
R-Tec Box-S EW 29 slider set <sup>2)</sup>	83692671	Black	1
R-Tec Box-S EWX 29 slider set <sup>2)</sup>	83692673	Black	1
R-Tec Box-S EW 36 slider set <sup>2)</sup>	83692675	Black	1
R-Tec Box-S EWX 36 slider set <sup>2)</sup>	83692677	Black	1
Slider set EW 36 <sup>2)</sup>	83692670	Black	1
Slider set EWX 36 <sup>2)</sup>	83692672	Black	1
Slider set EW 48 <sup>2)</sup>	83692674	Black	1
Slider set EWX 48 <sup>2)</sup>	83692676	Black	1
Slider-Set EW/EWX 56 <sup>2)</sup>	83692678	Black	1
Slider-Set EW/EWX 70 <sup>2)</sup>	83692680	Black	1
<b>Mounting set</b>			
Mounting set 29/36 <sup>3)</sup>	83692681	-	1
Mounting set 36/48 <sup>3)</sup>	83692682	-	1

## Replacement parts for R-Tec Box (Continued...)

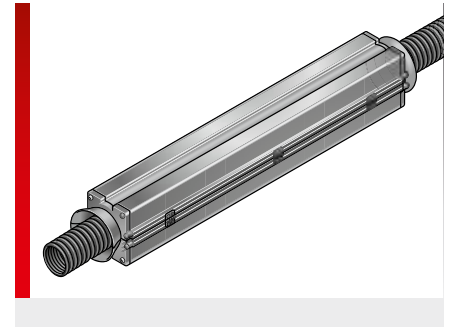
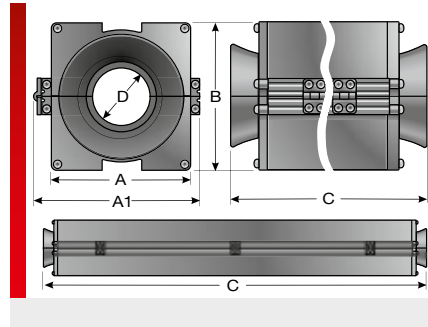
Type	Order No.	Colour	Pack qty.
Mounting set 56/70 <sup>3)</sup>	83692684	-	1
<b>Thread bushing</b>			
ELH 8s bushing Suitable for R-Tec Box-S 29/36 & R-Tec Box 36/48	83692630	Gold	6
ELH 12s bushing Suitable for R-Tec Box 56/70 and R-Tec Liner 56/70	83692632	Gold	6
<b>Wear ring for R-Tec Box</b>			
Wear ring R-Tec Box M40/M50	83692715	Black	1
Wear ring R-Tec Box NW 56/70	83692716	Black	1
<b>Locking clip for manual opening for SH system holder... as well as R-Tec Box ....</b>			
SCH locking clip, rt	83980022	Red	10
<b>Robotic opening tools</b>			
Robotic opening tools for opening the locking clip at the SH system holder... as well as the R-Tec Box ....	83980312	Red	1
<sup>1)</sup> consisting of: 2x tension spring incl. mounting material <sup>2)</sup> consisting of: 1x slider incl. mounting material <sup>3)</sup> consisting of: ELH bushing, cover caps and mounting material			





**R-Tec Liner**

## R-Tec Liner



### PRODUCT INFORMATION

The R-Tec Liner is Murrplastik's innovation for a new linear system supplying optimum guidance for energy packets from axis 3 to axis 6 on industrial robots. Inside the specially manufactured aluminium housing with the integrated and patented spring return system the energy packet is guided in a low-wearing and effective manner.

- extremely strong aluminium housing
- the system can be installed without base plate on selected robots
- compact design
- highest holding times
- quick and easy replacement of the dress-pack
- closed system; the guidance system is protected from ingress of dirt
- preferred for conduit harnesses from axis 1-6

### SPECIFICATIONS

- 40 – 140 °C short term 160 °C
- Aluminium  
Mod. polypropylene
- Acc. to UL94 V2

RoHS
 HF
 No fire
 No explosion

Type	Order No.	Colour	Suitable for conduit type EW-PAE	Suitable for conduit type EWX-PAE	A mm	A1 mm	B mm	C mm	Stroke mm	Pack qty.
R-Tec Liner 350mm EW/EWX 56 <sup>1)</sup>	83693076	Black	NW 56	56 Jumbo	150.00	195.00	150.00	655.00	350.00	1
R-Tec Liner 550mm EW/EWX 56 <sup>1)</sup>	83693078	Black	NW 56	56 Jumbo	150.00	195.00	150.00	855.00	550.00	1
R-Tec Liner 350mm EW/EWX 70 <sup>1)</sup>	83693080	Black	NW 70	70 Jumbo	150.00	195.00	150.00	655.00	350.00	1
R-Tec Liner 550mm EW/EWX 70 <sup>1)</sup>	83693082	Black	NW 70	70 Jumbo	150.00	195.00	150.00	855.00	550.00	1
R-Tec Liner 350mm EW/EWX 80 - 200N <sup>1)</sup>	83693084	Black	NW 80	80 Jumbo	175.00	215.00	185.00	655.00	350.00	1
R-Tec Liner 550mm EW/EWX 80 - 200N <sup>1)</sup>	83693086	Black	NW 80	80 Jumbo	175.00	215.00	185.00	855.00	550.00	1
R-Tec Liner 350mm EW/EWX 95 - 200N <sup>1)</sup>	83693088	Black	NW 95	95 Jumbo	175.00	215.00	185.00	655.00	350.00	1
R-Tec Liner 550mm EW/EWX 95 - 200N <sup>1)</sup>	83693090	Black	NW 95	95 Jumbo	175.00	215.00	185.00	855.00	550.00	1

<sup>1)</sup>System plates of R-Tec Box 56/70 will fit R-Tec Liner 56/70 as well as R-Tec Liner 80/95



## Replacement parts for R-Tec Liner



### PRODUCT INFORMATION

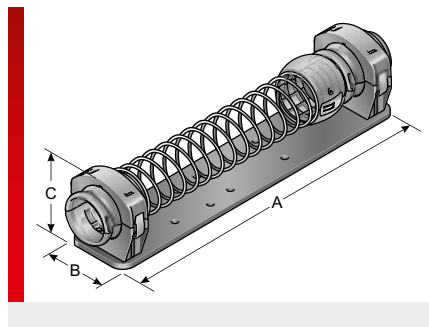
Type	Order No.	Colour	Suitable for conduit type EW-PAE	Suitable for conduit type EWX-PAE	A mm	B mm	Pack qty.
<b>Spring set</b>							
Spring Set 56/70 200N, 350 mm <sup>1)</sup>	83693006	Silver					1
Spring Set 56/70 200N <sup>1)</sup>	83692688	Silver					1
<b>Suitable for R-Tec Liner EW/EWX 56</b>							
EW/EWX 56 R-Tec Liner slider	83693022	Black	NW 56	56 Jumbo			1
EW/EWX 70 R-Tec Liner slider	83693020	Black	NW 70	70 Jumbo			1
EW/EWX 80 R-Tec Liner slider	83693021	Black	NW 80	80 Jumbo			1
EW/EWX 95 R-Tec Liner slider	83693023	Black	NW 95	95 Jumbo			1
<b>Suitable for R-Tec Liner EW/EWX 56 and R-Tec Liner EW/EWX70</b>							
TRO R-Tec Liner 56/70	83693036	Black					1
TRO R-Tec Liner 80/95	83693035	Black					1
<b>Position markers for EW, EW-LS, EWT and EWX</b>							
Position marker - set 56	83692694	Green / yellow / red			59.10	1.75	1
Position marker - set 70	83692698	Green / yellow / red			70.50	1.75	1
Position marker - set 80	83692733	Green / yellow / red			82.60	1.75	1
Position marker - set 95	83692737	Green / yellow / red			95.00	1.75	1

<sup>1)</sup> consisting of: 2x tension spring incl. mounting material





## Recirculation system 21/29






### PRODUCT INFORMATION

The recirculation system is designed to be an easy, space-saving alternative to the Murrplastik R-Tec Box-S and can handle a length adjustment of 150 mm. The system is very suitable for small robots, such as FANUC M20iA or KUKA KR6/KR10.

As long as the hole pattern fits, the recirculation system can be mounted directly on the robot or attached with spacer sleeves. If the hole pattern does not match, an additional adapter plate will be necessary for the installation.

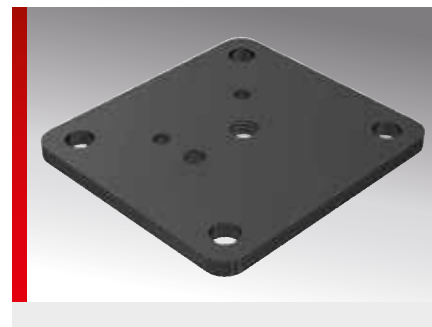
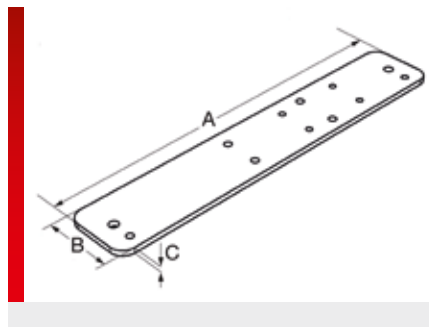
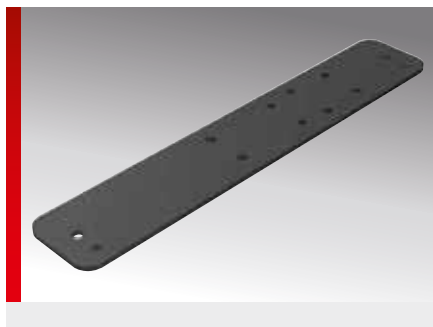
### SPECIFICATIONS

-  -40 – 110 °C
-  Mod. polyamide PA 6  
Base plate: Aluminium  
Spring Steel
-  Acc. to UL94 V0



Type	Order No.	Colour	A mm	B mm	C mm	Pack qty.
EW 21 - 20N recirculation system	83692721	Black	290.00	72.50	70.00	1
EWX 21 - 20N recirculation system	83692722	Black	290.00	72.50	70.00	1
EW 29 - 20N recirculation system	83692723	Black	290.00	72.50	70.00	1
EWX 29 - 20N recirculation system	83692724	Black	290.00	72.50	70.00	1

## Recirculation system, system plate 21/29



### PRODUCT INFORMATION

System plate for holding the recirculation system. Adjusted to production series of various manufacturers.  
Contact us for the correct system plate for you!

### SPECIFICATIONS

Aluminium

Type	Order No.	Colour	A mm	B mm	C mm	Pack qty.
A3 Fanuc M20iA adapter plate	83692759	Anodised black	65.00	60.00	4.00	1
Kuka KR10 R 1100 base plate <sup>1)</sup>	83692760	Anodised black	280.00	50.00	4.00	1

<sup>1)</sup> serves as mounting base plate for recirculation systems 21/29 (pre-assembled)





## Flexible support system

## FHS-SH support bracket



FHS-SH on UR5

### PRODUCT INFORMATION

The FHS-SH fixes the proven SH-P M25-M32 system holder without tools and without much effort to nearly any small robots and cobots.

For smaller cable packages and low to medium travel speed, this is the way to provide secure hold and maximum flexibility for the applications. The respective protective conduits can be installed fixed, sliding in

axial direction or with strain relief by using additional system components in M25 or M32 sizes.

Optional accessories:

- KEG/ZL - strain relief with cable ties
- KEG/K - strain relief with cable star
- KMG/G - sliding channel guide
- KMG/F - axial channel guide

### SPECIFICATIONS

	Mod. polyamide Mod. polypropylene Thermoplastic elastomer

Type	Order No.	Colour	Length of Velcro tape mm	Pack qty.
FHS-SH 350	83693423	Black / Red	350.0	1
FHS-SH 450	83693425	Black / Red	450.0	1
FHS-SH 550	83693427	Black / Red	550.0	1
FHS-SH 750	83693429	Black / Red	750.0	1
FHS-SH Set <sup>1)</sup>	83693422	Black / Red	350.0 – 750.0	1

<sup>1)</sup>Set with 4 Velcro tapes



## FHS-C support bracket



FHS-C on UR5

### PRODUCT INFORMATION

The FHS-C has been designed for the direct insertion of lines or protective conduits. The Velcro tape has a slip-resistant coating and wraps around the cable packet as well as the robot. The variable lengths of Velcro tape and the special contour of the base element makes the system exceptionally well suited for assemblies on a variety of robot models and machine components. Advantages:

- low interference contour
- saves space
- low weight
- secure hold, even on conical surfaces
- quick fit, without pre-drilling
- quick routing adjustment is possible during implementation

### SPECIFICATIONS

Polypropylene (PP)  
 Thermoplastic elastomer

Type	Order No.	Colour	Length of Velcro tape mm	Pack qty.
FHS-C 350	83693443	Black / Red	350.0	1
FHS-C 450	83693445	Black / Red	450.0	1
FHS-C 550	83693447	Black / Red	550.0	1
FHS-C 750	83693449	Black / Red	750.0	1
FHS-C Set <sup>1)</sup>	83693442	Black / Red	350.0 – 750.0	1

<sup>1)</sup> Set with 4 Velcro tapes

## FHS-UHE support bracket



FHS-UHE on UR5

### PRODUCT INFORMATION

The FHS-UHE makes fixing the cable protection conduit quick and possible without tools. The conduit is fixed with especially low cable wear for light, dynamic applications and without axial movement of the attachment.

The specially coated Velcro tape and the unique shape of the base element gives the system a tight fit on almost any contour. This makes the FHS-UHE suitable for nearly all small robot cable routings.

#### Advantages:

- no additional components required
- especially gentle on cables
- secure hold, even on conical surfaces
- quick fit, without pre-drilling
- quick routing adjustment is possible during implementation

### SPECIFICATIONS



Mod. polyamide PA 6  
Polypropylene (PP)  
Thermoplastic elastomer



Type	Order No.	Colour	Length of Velcro tape mm	Pack qty.
<b>Suitable for Murrflex EW and EWX</b>				
FHS-UHE M32/P29 350	83693466	Black / Red	350.0	1
FHS-UHE M32/P29 450	83693467	Black / Red	450.0	1
FHS-UHE M32/P29 550	83693468	Black / Red	550.0	1
FHS-UHE M32/P29 750	83693469	Black / Red	750.0	1
FHS-UHE M32/P29 <sup>1)</sup>	83693465	Black / Red	350.0 – 750.0	1

<sup>1)</sup>Set with 4 Velcro tapes

## Robotics kit



FHS-C on UR5



### PRODUCT INFORMATION

Sets, especially designed for cable routing on robots of the Universal Robots Company. The configuration includes protective cable conduit, end sleeves and the matching attachments using the relevant FHS-C. The protective cable conduit slotted LS version is ideal for the installation of pre-assembled cables.

The set offers a lowest possible interference contour for a low risk of damage.

Optional accessories:

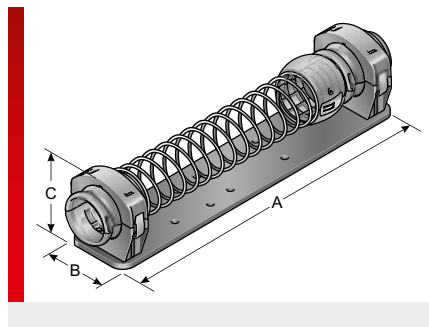
- R-SSR - tension clamp for axis 6
- SH-P M25-M32 - system holder
- KEG/ZL or KEG/K - strain relief

### SPECIFICATIONS

Polypropylene (PP)  
 Thermoplastic elastomer  
 Mod. polyamide

Type	Order No.	Colour	Pack qty.
<b>Fixing kit for Universal Robot UR3</b>			
FHS-C-Set UR3	83693480	Black / Red	1
Set consists of: 2m EWX-PP-LS M25/P21, 3x FHS-C incl. Velcro tape, 2x end sleeves, 1x wire insertion tool			
FHS-SH-Set UR3	83693491	Black / Red	1
Set consists of: 2m EWX-PP-LS M25/P21, 2x FHS-SH incl. Velcro tape, 1x end grommet, 1x strain relief, 1x tension clamp axis 6, 1x wire insertion tool			
<b>Fixing kit for Universal Robot UR5</b>			
FHS-C-Set UR5	83693482	Black / Red	1
Set consists of: 2m EWX-PP-LS M32/P29, 4x FHS-C incl. Velcro tape, 2x end sleeves, 1x wire insertion tool			
FHS-UHE-Set UR5	83693489	Black / Red	1
Set consists of: 2m EWX-PP-LS M32/P29, 4x FHS-UHE incl. Velcro tape, 2x end grommet, 1x wire insertion tool			
FHS-SH-Set UR5	83693492	Black / Red	1
Set consists of: 2m EWX-PP-LS M32/P29, 3x FHS-SH incl. Velcro tape, 1x end grommet, 1x strain relief, 1x tension clamp axis 6, 1x wire insertion tool			
FHS-RS-Set UR5	83693495	Black / Red	1
Set consists of: 2m EWX-PP-LS M32/P29, 1x- spring-return mechanism, 1x FHS-SH incl. Velcro tape, 1x end grommet, 1x strain relief, 1x tension clamp axis 6, 1x wire insertion tool			
<b>Fixing kit for Universal Robot UR10</b>			
FHS-C-Set UR10	83693484	Black / Red	1
Set consists of: 3.5m EWX-PP-LS M32/P29, 5x FHS-C incl. Velcro tape, 2x end sleeves, 1x wire insertion tool			
FHS-UHE-Set UR10	83693490	Black / Red	1
Set consists of: 3.5m EWX-PP-LS M32/P29, 5x FHS-UHE incl. Velcro tape, 2x end grommet, 1x wire insertion tool			
FHS-SH-Set UR10	83693493	Black / Red	1
Set consists of: 3.5m EWX-PP-LS M32/P29, 5x FHS-UHE incl. Velcro tape, 1x end grommet, 1x strain relief, 1x tension clamp axis 6, 1x wire insertion tool			
FHS-RS-Set UR10	83693496	Black / Red	1
Set consists of: 3.5 m EWX-PP-LS M32/P29, 1x- spring-return mechanism, 2x FHS-UHE incl. Velcro tape, 1x end grommet, 1x strain relief, 1x tension clamp axis 6, 1x wire insertion tool			

## FHS Recirculation system 21/29



### PRODUCT INFORMATION

The recirculation system is a simple and space-saving system and can handle a length adjustment of 150 mm. The system is very suitable for small robots, such as UR3, UR5 & UR10 of Universal Robots.

The recirculation system can be mounted directly on the robot with FHS-Velcro holders.

### SPECIFICATIONS

- 40 – 110 °C
- Mod. polyamide PA 6  
Base plate: Aluminium  
Spring Steel
- Acc. to UL94 V0
- 

Type	Order No.	Colour	Pack qty.
FHS-RS EW 21 - 20N	83693411	Black	1
FHS-RS EW 29 - 20N	83693413	Black	1
FHS-RS EWX 21 - 20N	83693412	Black	1
FHS-RS EWX 29 - 20N	83693414	Black	1

## KKR-Fix Velcro tape



### PRODUCT INFORMATION

The KKR-Fix Velcro tapes are used for the quick and easy fastening of our flexible holder systems, as well as for bundling and fixing of cable strands.

Applications range from their use in robotics throughout mechanical engineering and on to house installations.


The back side of the Velcro tape has been specially coated. This ensures a tight and slip-resistant grip of the tape on almost any



surface. These special properties of the KKR-Fix makes it quite a gentle solution for low torque fastening of cables.

Advantages:

- tool-free installation
- secure grip without slipping
- no restriction of sensitive cables
- no risk of damage due to sharp edges

### SPECIFICATIONS

 Polypropylene (PP)  
 coated with anti-slip layer  
 Mod. polyamide PA 6

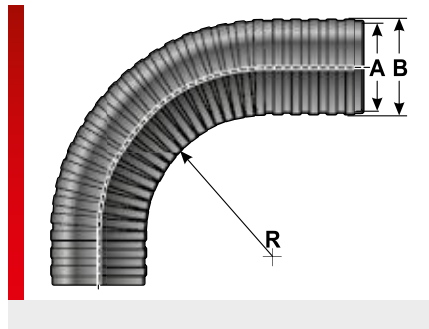
Type	Order No.	Colour	Length of Velcro tape mm	Pack qty.
<b>FHS Velcro tape</b>				
KKR-Fix 350	83693402	Black	350.0	10
KKR-Fix 450	83693404	Black	450.0	10
KKR-Fix 550	83693406	Black	550.0	10
KKR-Fix 750	83693408	Black	750.0	10





## **Cable protection conduit**

## Type EW-PAE



### PRODUCT INFORMATION

The EW-PAE cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free.

The EW-PAE cable protection conduits are characterised by excellent flexibility, flexural fatigue strength and good crush resistance.

For extremely dynamic applications involving medium mechanical loads.

Applications:

- Robotics
- Handling systems
- In energy chains

### SPECIFICATIONS

- 40 – 120 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 HB
- In conformity with IEC EN 61386: > 500 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-PAE-06	83181650	Black	6.50	9.80	15.00	40.00	1.8	50
EW-PAE-M10/P7	83181652	Black	8.50	11.50	20.00	45.00	2.1	50
EW-PAE M12/P09, 200m	83988262	Black	9.60	12.80	21.00	51.00	2.8	200
EW-PAE-M12/P9	83181654	Black	9.60	12.80	21.00	51.00	2.8	50
EW-PAE-M16/P11	83181656	Black	11.90	15.60	28.00	68.00	3.8	50
EW-PAE-M20/P16	83181658	Black	15.50	20.80	36.00	70.00	5.8	50
EW-PAE M20/P16, 200m	83988263	Black	15.50	20.80	36.00	70.00	5.8	200
EW-PAE-M25/P21	83181660	Black	21.80	28.30	49.00	109.00	9.5	50
EW-PAE-M32/P29	83181662	Black	27.80	34.40	67.00	142.00	12.6	25
EW-PAE M32/P29, 200m	83988264	Black	27.80	34.40	67.00	142.00	12.6	200
EW-PAE-M40/P36	83181664	Black	34.90	42.00	81.00	191.00	17.0	25
EW-PAE-M50/P48	83181666	Black	47.00	54.00	102.00	237.00	22.8	25
EW-PAE-56 Jumbo	83181678	Black	56.00	67.30	110.00	310.00	40.0	25
EW-PAE-70 Jumbo	83181680	Black	67.40	79.00	200.00	390.00	48.0	25
EW-PAE-80 Jumbo	83181681	Black	79.00	93.00	220.00	440.00	62.0	15
EW-PAE-95 Jumbo	83181682	Black	89.70	105.00	265.00	500.00	83.0	10
EW-PAE-06 <sup>1)</sup>	83181610	Grey	6.50	9.80	15.00	40.00	2.0	50
EW-PAE-M10/P7	83181612	Grey	8.50	11.50	20.00	45.00	2.1	50
EW-PAE-M12/P9	83181614	Grey	9.60	12.80	21.00	51.00	2.6	50
EW-PAE-M16/P11	83181616	Grey	11.90	15.60	28.00	68.00	3.6	50
EW-PAE-M20/P16	83181618	Grey	15.50	20.80	36.00	70.00	5.8	50
EW-PAE-M25/P21	83181620	Grey	21.80	28.30	49.00	109.00	9.5	50
EW-PAE-M32/P29	83181622	Grey	27.80	34.40	67.00	142.00	12.6	25
EW-PAE-M40/P36	83181624	Grey	34.90	42.00	81.00	191.00	17.0	25

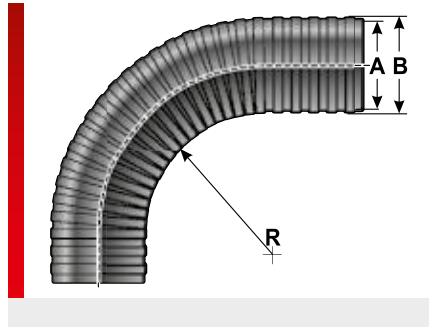


**Type EW-PAE** (Continued...)

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
EW-PAE-M50/P48	83181626	Grey	47.00	54.00	102.00	237.00	22.8	25
EW-PAE-56 Jumbo <sup>1)</sup>	83181638	Grey	56.00	67.30	110.00	310.00	35.0	25
EW-PAE-70 Jumbo <sup>1)</sup>	83181640	Grey	67.40	79.30	200.00	390.00	56.0	25
EW-PAE-95 Jumbo <sup>1)</sup>	83181642	Grey	89.70	105.80	265.00	500.00	80.0	10

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EWX-PAE (high corrugation)



### PRODUCT INFORMATION

The EWX-PAE cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free.

With its excellent flexural fatigue strength, this product is ideal for robot technology and in the area of handling systems. For extremely dynamic applications involving medium to high mechanical loads.

The EWX-PAE cable protection conduits have a higher corrugation and feature the following advantages:

- Very good flexibility
- Excellent flexural fatigue strength
- Less wear
- Good crush resistance

### SPECIFICATIONS

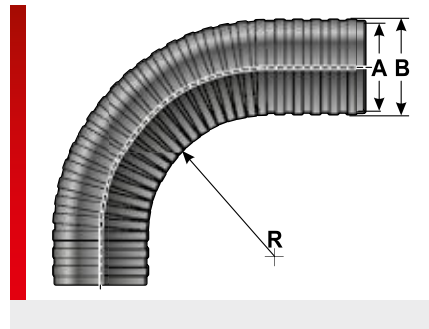
- 40 – 120 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 HB
- In conformity with IEC EN 61386: > 1200 N

RoHS
 HF
 UV
 Hand

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-PAE-M25/P21	83182058	Black	18.20	28.10	49.00	104.00	13.0	50
EWX-PAE-M32/P29	83182060	Black	22.80	34.10	57.00	117.00	22.0	25
EWX-PAE-M40/P36	83182062	Black	28.70	42.40	71.00	146.00	28.0	25
EWX-PAE-M50/P48	83182064	Black	36.70	53.50	87.00	167.00	36.0	25
EWX-PAE-56 Jumbo	83182078	Black	52.20	67.70	95.00	220.00	40.0	25
EWX-PAE-70 Jumbo	83182080	Black	64.00	80.30	115.00	235.00	56.0	25
EWX-PAE-70 Jumbo	83182084	Black	64.00	80.30	115.00	235.00	52.0	110
EWX-PAE-80 Jumbo	83182081	Black	76.00	92.80	195.00	380.00	66.0	15
EWX-PAE-95 Jumbo	83182082	Black	88.20	105.50	220.00	450.00	92.5	10
EWX-PAE-M25/P21	83182018	Grey	18.20	28.10	49.00	104.00	11.0	50
EWX-PAE-M32/P29	83182020	Grey	22.80	34.10	57.00	117.00	22.0	25
EWX-PAE-M40/P36 <sup>1)</sup>	83182022	Grey	28.70	42.40	71.00	146.00	28.0	25
EWX-PAE-M50/P48 <sup>1)</sup>	83182024	Grey	36.70	53.50	87.00	167.00	36.0	25
EWX-PAE-70 Jumbo <sup>1)</sup>	83182040	Grey	64.00	80.30	115.00	235.00	56.0	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EWX-PAE-LS (high corrugation)



### PRODUCT INFORMATION

The EWX-PAE-LS cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free.

With its excellent flexural fatigue strength, this product is ideal for robot technology and in the area of handling systems. For installation of pre-assembled cables, retrofitting or repair of cables. For dynamic applications involving light to medium mechanical loads.

The EWX-PAE-LS cable protection conduits have a higher corrugation and feature the following advantages:

- Very good flexibility
- Excellent flexural fatigue strength
- Less wear
- Good crush resistance
- Subsequent installation possible

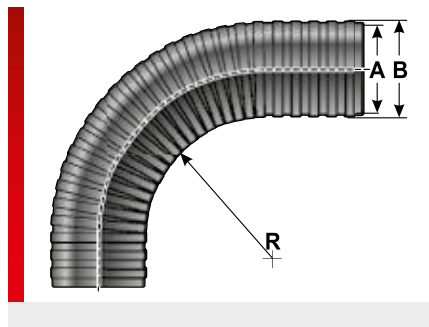
### SPECIFICATIONS

- 40 – 120 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 HB
- RoHS
- HF
- UV
- Installation

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-PAE-LS-M20/P16	83182256	Black	13.30	21.10	36.00	77.00	6.0	50
EWX-PAE-LS-M25/P21	83182258	Black	19.20	28.20	49.00	104.00	11.0	50
EWX-PAE-LS-M32/P29	83182260	Black	23.10	34.50	57.00	117.00	14.0	25
EWX-PAE-LS-M40/P36	83182262	Black	28.50	42.20	71.00	146.00	18.2	25
EWX-PAE-LS-M50/P48	83182264	Black	36.50	53.60	87.00	167.00	24.0	25
EWX-PAE-LS-56 Jumbo <sup>1)</sup>	83182278	Black	51.70	67.70	95.00	220.00	40.0	25
EWX-PAE-LS-70 Jumbo	83182280	Black	64.30	80.30	115.00	235.00	52.0	25

<sup>1)</sup>No stock goods, delivery time and minimum order quantities upon request

## Type EW-HY



### PRODUCT INFORMATION

The EW-HY cable protection conduits are made of specially modified thermoplastic elastomer. The material is halogen, phosphor and cadmium-free and is also heat and hydrolysis stabilised.

The EW-HY cable protection conduits are characterised by outstanding flexibility, flexural fatigue strength and good crush resistance.

This product is ideal for use in handling systems and robot technology, because of its excellent flexural fatigue strength. For dynamic applications involving low to medium mechanical loads.

Applications:

- Robotics
- Handling systems

### SPECIFICATIONS

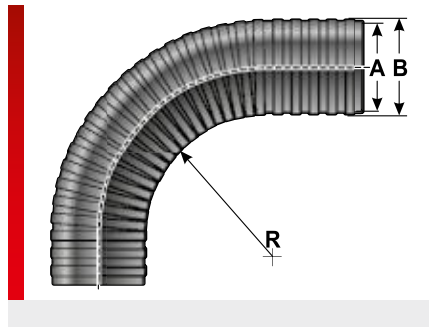
- 45 – 160 °C short term 180 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- In conformity with IEC EN 61386: > 500 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-HY-06	83121048	Black	6.40	9.90	18.00	40.00	2.4	50
EW-HY-M12/P9	83121050	Black	9.40	12.80	21.00	51.00	3.2	50
EW-HY-M16/P11	83121052	Black	12.10	15.60	28.00	68.00	4.0	50
EW-HY-M20/P16S	83121054	Black	16.70	20.70	38.00	95.00	7.0	50
EW-HY-M25/P21	83121056	Black	21.80	28.00	49.00	109.00	12.0	50
EW-HY-M32/P29	83121058	Black	27.70	34.20	67.00	142.00	17.0	25
EW-HY-M40/P36	83121060	Black	35.20	42.20	81.00	191.00	21.0	25
EW-HY-M50/P48	83121062	Black	47.30	53.40	102.00	237.00	28.0	25
EW-HY-70 Jumbo	83121066	Black	66.20	79.50	140.00	330.00	51.5	25
EW-HY-95 Jumbo	83121070	Black	90.00	105.00	150.00	400.00	90.0	10
<b>Narrow corrugation</b>								
EW-HY-M12/P9 <sup>1)</sup>	83121010	Grey	9.40	12.80	21.00	51.00	2.8	50
EW-HY-M16/P11	83121012	Grey	12.10	15.60	28.00	68.00	4.0	50
EW-HY-M25/P21	83121016	Grey	21.80	28.00	49.00	109.00	12.0	50
EW-HY-M32/P29	83121018	Grey	27.70	34.20	67.00	142.00	17.0	25
EW-HY-M40/P36	83121020	Grey	35.20	42.20	81.00	191.00	21.0	25
EW-HY-M50/P48	83121022	Grey	47.30	53.40	102.00	237.00	29.5	25
EW-HY-70 Jumbo	83121026	Grey	66.20	79.50	140.00	330.00	51.5	25
EW-HY-95 Jumbo	83121030	Grey	90.00	105.00	150.00	400.00	90.0	10

<sup>1)</sup> Min. order quantity 2100m

## Type EWX-HY (high corrugation)



### PRODUCT INFORMATION

The EWX-HY cable protection conduits are made of specially modified thermoplastic elastomer. The material is halogen, phosphor and cadmium-free and is also heat and hydrolysis stabilised. The EWX-HY cable protection conduits are characterised by outstanding flexibility,

flexural fatigue strength and good crush resistance. With its excellent flexural fatigue strength, this product is ideal for use in handling systems and robot technology. For dynamic applications involving low to medium mechanical loads.

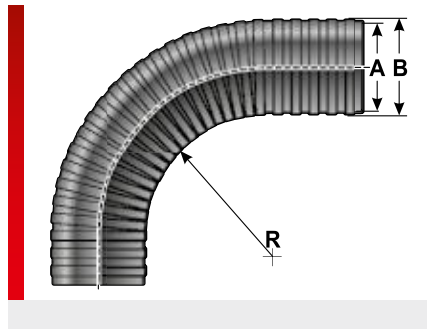
### SPECIFICATIONS

- 45 – 160 °C short term 180 °C
  - Thermoplastic elastomer
  - Acc. to UL94 HB
  - In conformity with IEC EN 61386: > 900 N
- 

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-HY-M25/P21	83121258	Black	18.60	27.80	49.00	104.00	13.0	50
EWX-HY-M32/P29	83121260	Black	23.00	34.20	57.00	117.00	17.5	25
EWX-HY-M40/P36	83121262	Black	28.90	42.30	71.00	146.00	28.0	25
EWX-HY-M50/P48	83121264	Black	36.80	53.70	87.00	167.00	30.4	25
EWX-HY-56 Jumbo	83121278	Black	53.00	67.80	95.00	220.00	45.0	25
EWX-HY-70 Jumbo	83121280	Black	64.40	80.50	140.00	330.00	63.0	25
EWX-HY-95 Jumbo <sup>1)</sup>	83121282	Black	91.00	105.50	150.00	400.00	89.0	10

<sup>1)</sup> Min. order quantity 40m

## Type EWX-HY-LS (high corrugation)



### PRODUCT INFORMATION

The EWX-HY-LS cable protection conduits are made of specially modified thermoplastic elastomer. The material is halogen, phosphor and cadmium-free.

With its excellent flexural fatigue strength, this product is ideal for robot technology and in the area of handling systems. For installation of pre-assembled cables, retrofitting or repair of cables. For dynamic applications involving light to medium mechanical loads.

The EWX-HY-LS cable protection conduits have a higher corrugation and feature the following advantages:

- Very good flexibility
- Excellent flexural fatigue strength
- Less wear
- Good crush resistance
- Subsequent installation possible

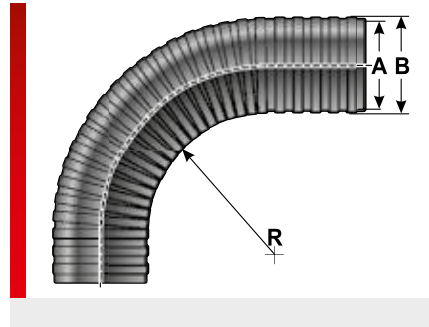
### SPECIFICATIONS

- 45 – 160 °C short term 180 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- RoHS
- HF
- UV
- Hand

Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>High corrugation</b>								
EWX-HY-LS-M25/P21	83122258	Black	19.80	28.10	49.00	104.00	11.5	50
EWX-HY-LS-M32/P29	83122260	Black	24.10	34.50	57.00	117.00	17.5	25
EWX-HY-LS-M40/P36	83122262	Black	29.70	42.10	71.00	146.00	22.0	25
EWX-HY-LS-M50/P48	83122264	Black	38.00	54.10	87.00	167.00	30.4	25
EWX-HY-LS-56 Jumbo <sup>1)</sup>	83122278	Black	52.00	68.00	95.00	220.00	45.0	25
EWX-HY-LS-70 Jumbo <sup>1)</sup>	83122282	Black	64.00	80.00	115.00	235.00	63.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request

## Type EW-PRF



### PRODUCT INFORMATION

The EW-PRF cable protection conduits are made of specially modified polyamide 12. The material is halogen, phosphor and cadmium-free.

The conduits are suitable for dynamic applications involving medium to high mechanical loads. The EW-PRF cable protection conduits are used both in the robot technology as well as in the aviation industry.

They feature the following advantages:

- High flexibility
- Excellent impact strength
- Excellent self-extinguishing properties
- Very low levels of smoke gas

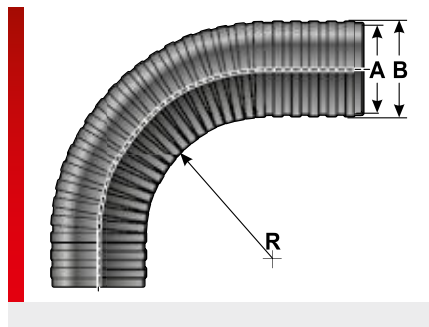
### SPECIFICATIONS

- 40 – 105 °C short term 150 °C
- Mod. polyamide PA 12
- Acc. to UL94 V2 self-extinguishing
- In conformity with IEC EN 61386: > 1100 N



Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
<b>Standard corrugation</b>								
EW-PRF-M10/P7	83181252	Black	8.50	11.60	21.00	46.00	2.0	50
EW-PRF-M12/P9	83181254	Black	9.80	13.00	22.00	51.00	2.5	50
EW-PRF-M16/P11	83181256	Black	11.80	15.90	28.00	68.00	3.6	50
EW-PRF-M20/P16	83181258	Black	15.60	21.10	38.00	95.00	5.5	50
EW-PRF-M25/P21	83181262	Black	21.60	28.50	49.00	109.00	10.0	50
EW-PRF-M32/P29	83181264	Black	28.00	34.50	67.00	142.00	12.0	25
EW-PRF-M40/P36	83181266	Black	35.00	42.50	81.00	191.00	17.0	25
EW-PRF-M50/P48	83181268	Black	47.00	54.30	102.00	237.00	23.0	25
EW-PRF-70 Jumbo	83181272	Black	68.40	80.00	200.00	390.00	44.0	25
EW-PRF-95 Jumbo <sup>1)</sup>	83181274	Black	89.40	106.10	265.00	500.00	80.5	10
<b>Grey variants</b>								
EW-PRF-M10/P7	83181212	Grey	8.50	11.60	21.00	46.00	2.1	50
EW-PRF-M12/P9 <sup>1)</sup>	83181214	Grey	9.80	13.00	22.00	51.00	2.5	50
EW-PRF-M16/P11 <sup>1)</sup>	83181216	Grey	11.80	15.90	28.00	68.00	3.6	50
EW-PRF-M20/P16 <sup>1)</sup>	83181218	Grey	15.60	21.10	38.00	95.00	5.8	50
EW-PRF-M25/P21	83181222	Grey	21.60	28.50	49.00	109.00	9.5	50
EW-PRF-M32/P29	83181224	Grey	28.00	34.50	67.00	142.00	12.0	25
EW-PRF-M40/P36 <sup>1)</sup>	83181226	Grey	35.00	42.50	81.00	191.00	16.5	25
EW-PRF-M50/P48 <sup>1)</sup>	83181228	Grey	47.00	54.30	102.00	237.00	23.0	25
EW-PRF-70 Jumbo <sup>1)</sup>	83181232	Grey	68.40	80.00	200.00	390.00	48.0	25
EW-PRF-95 Jumbo <sup>1)</sup>	83181234	Grey	89.40	106.10	265.00	500.00	81.0	10
<b>Narrow corrugation</b>								
EW-PRF-M20/P16S	83181260	Black	16.70	21.10	35.00	90.00	5.6	50
EW-PRF-M25/P21S <sup>1)</sup>	83181462	Black	23.00	28.30	44.00	104.00	10.0	50

**Type EW-PRF** (Continued...)

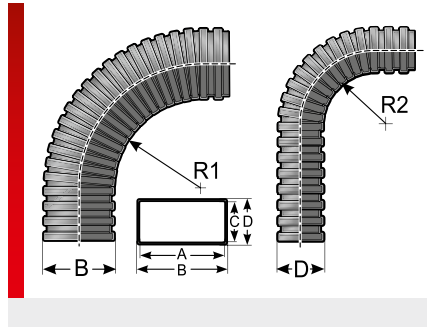
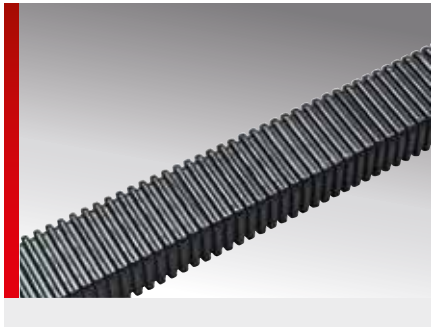


Type	Order No.	Colour	A Ø mm	B Ø mm	R stat. mm	R dyn. mm	Weight kg/100m	Pack m
EW-PRF-M32/P29S	83181464	Black	28.50	34.30	62.00	132.00	14.0	25
EW-PRF-M20/P16S <sup>1)</sup>	83181220	Grey	16.70	21.10	35.00	90.00	5.6	50
EW-PRF-M25/P21S <sup>1)</sup>	83181422	Grey	23.00	28.30	44.00	104.00	9.5	50
EW-PRF-M32/P29S <sup>1)</sup>	83181424	Grey	28.50	34.30	62.00	132.00	14.0	25

<sup>1)</sup> No stock goods, delivery time and minimum order quantities upon request



## Type EF (rectangular conduit)



### PRODUCT INFORMATION

The rectangular Energoflex EF cable protection conduits are made of specially modified thermoplastic elastomer. The material is halogen, phosphor and cadmium-free. The Energoflex EW cable protection conduits are characterised by excellent flexibility and good flexural fatigue strength. With its rectangular shape, the EF conduit can be used as a cost-effective alternative to energy chains.

For dynamic applications involving light to medium mechanical loads in mechanical and plant engineering.

Advantages of the Energoflex include:

- Little relative movement of the lines
- Low-wear interior
- Simultaneous traversing in multiple axes possible
- Higher stability compared to a conduit

System affiliation:

- Holder EF/B 26/42
- Flange connection FL-EF 26042

### SPECIFICATIONS

- 45 – 160 °C short term 180 °C
- Thermoplastic elastomer
- Acc. to UL94 HB
- In conformity with IEC EN 61386: 1000 N



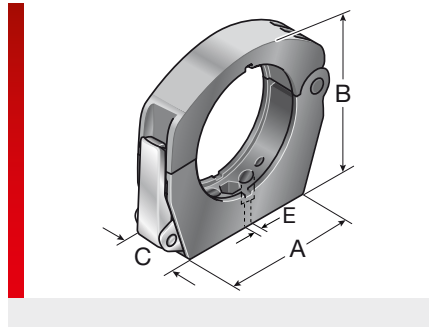
Type	Order No.	Colour	A mm	B mm	C mm	D mm	R1 stat./dyn. mm	R2 stat./dyn. mm	Weight kg/100m	Pack m
EF 26042	83361012	Black	42.00	50.00	26.00	34.00	110.0 / 320.0	60.0 / 120.0	22.0	3





**Fastening element**

## SH system holder






### PRODUCT INFORMATION

The SH system holder is the optimally aligned main component which, especially in conjunction with Murrflex cable protection conduits and the inlays, is able to promise excellent performance in terms of stability, operational flexibility and durability, even under high dynamic loads.

The SH 56/70 and SH 56/70-M system holder is made of a modified, impact resistant polyamide, whereas the SH 56/70-A is made of black anodised aluminium.

- Suitable for initial equipment, subsequent installations or repairs
- Excellent system stability
- Easy assembly of inlays and the cable protection conduit without tools
- Suitable for 4 different inserts/inlays
- Simple and easy configuration for dynamic or rigid applications
- Cost reduction – only one system holder for every application
- Versatile mounting options

### SPECIFICATIONS

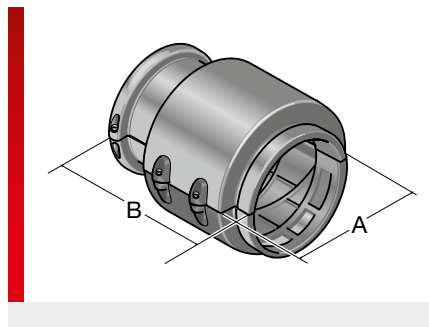
	-40 – 110 °C short term 140 °C
	Type SH ... : Mod. polyamide Type SH ... -M: Mod. polyamide Type SH ... -A: Aluminium
	Acc. to UL94 V0



Type	Order No.	Colour	A mm	B mm	C mm	E mm	Pack qty.
<b>System holder without continuous fin</b>							
SH-P/M25-M32	83691462	Black	73.00	62.00	26.00	8.60	1
SH-P/M40-M50	83691460	Black	104.50	90.00	33.00	8.80	1
SH 56/70	83691490	Black	135.00	120.00	33.00	8.80	1
SH 80/95	83691506	Black	150.00	147.00	40.00	8.80	1
<b>System holder with continuous fin</b>							
SH-F / M40-M50	83691450	Black	104.50	90.00	33.00	8.80	1
SH-PF / M40-M50 <sup>1)</sup>	83691470	Black	104.50	90.00	33.00	8.80	1
<b>System holder with metal closing</b>							
SH M40/M50-M	83691501	Black	118.00	90.00	33.00	8.80	1
SH 56/70-M	83691502	Black	135.00	120.00	33.00	8.80	1
<b>System holder made of aluminium</b>							
SH M40/M50-A	83691503	Anodised black	104.50	90.00	30.00	8.80	1
SH 56/70-A	83691504	Anodised black	130.00	121.00	35.00	8.80	1
<b>Conduit holder inlay</b>							
ELR M40-M50	83691480	Red					1

<sup>1)</sup> Continuous fin type ELR, included loose

## KEG/AK telescopic joint



with SH and ZS-70

### PRODUCT INFORMATION

The extendible KEG/AK telescopic joint makes a length adjustment of approx. 30 mm possible. The conduit connection piece can be pivoted by approx. 20° in all directions and can therefore adapt to the dresspack movements.

If used in conjunction with the strain-relief systems ZS-70 or ZS-70-KB it provides optimum wear protection, even when using heavy media packages.

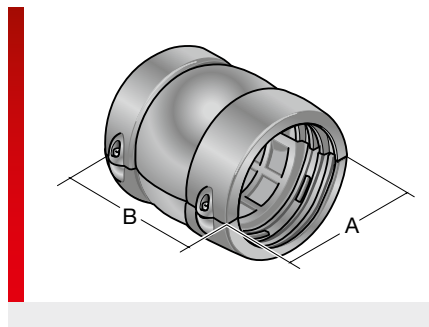
### SPECIFICATIONS

- 40 – 110 °C
- Mod. polyamide
- Acc. to UL94 V0

Type	Order No.	Colour	Suitable for Murrflex	Suitable for System holder	Version	A mm	B mm	Pack qty.
KEG/AK-70 <sup>1)</sup>	83692480	Black	NW70	SH 56/70	divisible	105.00	120.00	1

<sup>1)</sup> Tightening torque 1.5Nm

## KEG/K ball bearing



with SH and V-ZLT-70

### PRODUCT INFORMATION

The KEG-K is used wherever cables or cords exit from the cable protection conduit. The type KEG-K ball joint, which can be installed into the SH system holder easily and quickly, is the optimum fit for cords, cables and conduit throughputs; especially because its integratable strain relief is freely configurable to the needs of the application.

The KEG-K is the ideal connection of the Murrflex cable protection conduit to the SH system holder. The cables are sealed and strain is relieved at the same time.

### SPECIFICATIONS

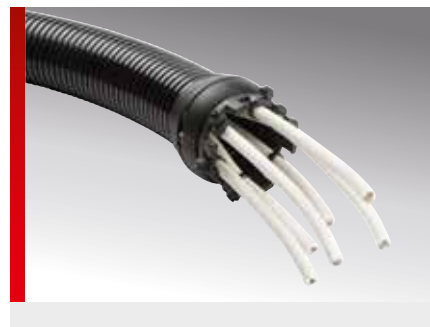
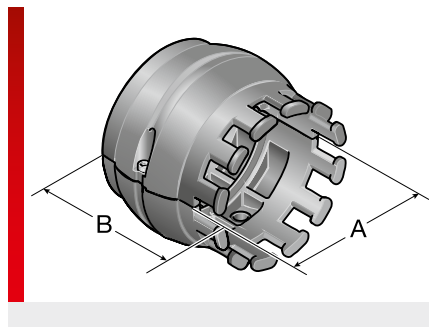
- 40 – 110 °C
- Mod. polyamide
- Acc. to UL94 V0

RoHS
 HF

Type	Order No.	Colour	Suitable for Murrflex	Suitable for System holder	Version	A mm	B mm	Pack qty.
KEG/K-M25	83692458	Black	M25/P21	SH-P / M25-M32	divisible	46.50	48.50	1
KEG/K-M32	83692460	Black	M32/P29	SH-P / M25-M32	divisible	46.50	48.50	1
KEG/K-M40	83692462	Black	M40/P36	SH-P / M40-M50	divisible	70.00	67.00	1
KEG/K-M50	83692464	Black	M50/P48	SH-P / M40-M50	divisible	70.00	67.00	1
KEG/K-56 <sup>1)</sup>	83692466	Black	NW56	SH 56/70	divisible	100.50	122.40	1
KEG/K-70 <sup>1)</sup>	83692468	Black	NW70	SH 56/70	divisible	100.50	122.40	1
KEG/K-80 sw <sup>1)</sup>	83692470	Black	NW80	SH 80/95	divisible	126.00	170.00	1
KEG/K-95 sw <sup>1)</sup>	83692472	Black	NW95	SH 80/95	divisible	126.00	170.00	1

<sup>1)</sup>Tightening torque 1.5Nm

## KEG/ZL ball bearing



### PRODUCT INFORMATION

The KEG-ZL is used wherever cords or cables exit from the cable protection conduit with strain relief.

The detachably connected type KEG-ZL ball joint with integrated strain relief can easily and quickly be placed into the SH system holder and thus connected to the Murrflex cable protection conduits and the robot.

The cords, conduits and cables are connected to the integrated strain relief with cable ties.

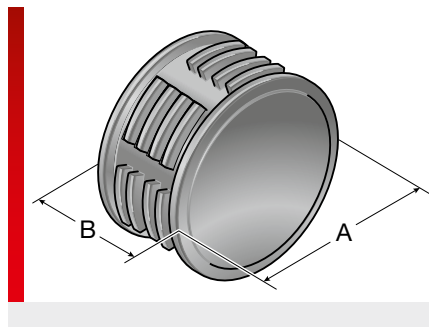
### SPECIFICATIONS

- 40 – 110 °C
- Mod. polyamide
- Acc. to UL94 V0

RoHS
 HF

Type	Order No.	Colour	Suitable for Murrflex	Suitable for System holder	Version	A mm	B mm	Pack qty.
KEG/ZL-M25	83692258	Black	M25/P21	SH-P / M25-M32	divisible	42.50	38.50	1
KEG/ZL-M32	83692260	Black	M32/P29	SH-P / M25-M32	divisible	42.50	38.50	1
KEG/ZL-M40	83692262	Black	M40/P36	SH-P / M40-M50	divisible	69.00	56.50	1
KEG/ZL-M50	83692264	Black	M50/P48	SH-P / M40-M50	divisible	69.00	56.50	1

## Strain relief cable star









ZS-70-KB

### PRODUCT INFORMATION

The cable star grommet is the optimum and most cord friendly strain relief for your cables, also offering the highest degree of tear-out resistance. The elongated KB version is fastened with an additional conduit clamp to facilitate even extreme loads. Another benefit of the cable star grommet is its preventive properties against the ingress of contamination into the dresspack.

Simply drill holes of the appropriate cable diameter into the R-ZL.  
Or, with a minimum order of 10 pieces, we can produce your customised hole pattern, using our waterjet technology. Talk to us!

### SPECIFICATIONS

	-40 – 110 °C
	Elastomer
	Acc. to UL94 HB
	
	
	

Type	Order No.	Colour	Suitable for System holder	A mm	B mm	Pack qty.
<b>Strain relief as blank for self-made assembly</b>						
R-ZL/N1 21/29 <sup>1)</sup>	83951606	Black		33.50	18.00	1
R-ZL/N1 36/48 <sup>1)</sup>	83951610	Black		55.00	18.00	1
V-ZLT-70 <sup>2)</sup>	83692802	Black		82.50	39.00	1
V-ZLT-70KB <sup>2)</sup>	83692804	Black		82.50	66.50	1
V-ZLT-95 <sup>4)</sup>	83692830	Black		102.00	39.00	1
V-ZLT-95KB <sup>4)</sup>	83692832	Black		102.00	66.00	1
<b>Strain relief system</b>						
ZS-70 <sup>3)</sup>	83692806	Black	SH 56/70	100.90	60.35	1
ZS-70-KB <sup>3)</sup>	83692808	Black	SH 56/70	100.90	85.40	1
ZS-95 stain relief system <sup>3)</sup>	83692834	Black	SH 80/95	102.00	57.00	1
ZS-95-KB stain relief system <sup>3)</sup>	83692836	Black	SH 80/95	102.00	82.00	1

<sup>1)</sup> suitable for KEG-K M25 and KEG-K M32

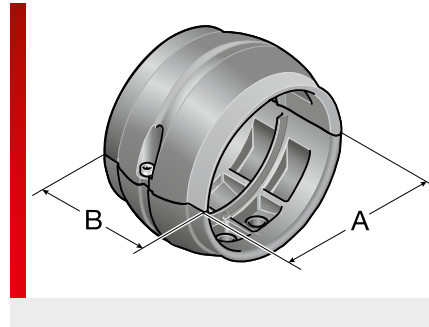
<sup>2)</sup> suitable for KEG-K 56 and KEG-K 70

<sup>3)</sup> Tightening torque 1.5Nm

<sup>4)</sup> suitable for KEG-K 80 and KEG-K 95



## KMG/F ball bearing – SRF conduit ring



### PRODUCT INFORMATION

The KMG/F and SRF have been designed for robot applications and other moving handling equipment.




The SH system holder can be mounted easily and quickly in the detachably connected inlays and is the perfect fit for fixing Murrflex cable protection conduits.

The KMG-F and SRF are made of especially modified polyamide.

The special advantages of the KMG-F centre ball joint and of the SRF hose ring are:

- Suitable for conversions or subsequent installation
- May be used statically fixed (KMG-F + SRF) or detachable at the axis (KMG-F)
- Long service life
- easy assembly and disassembly
- Murrflex cable protection conduits are firmly fastened and are therefore securely routed

### SPECIFICATIONS

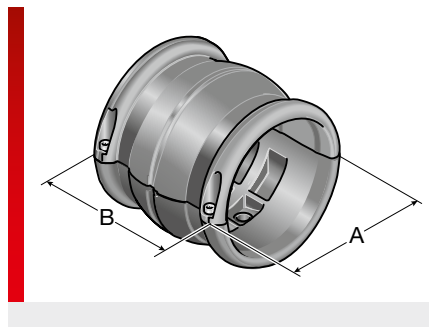
	-40 – 110 °C short term 140 °C
	Mod. polyamide
	Acc. to UL94 V0



Type	Order No.	Colour	Suitable for Murrflex	Suitable for System holder	Version	A mm	B mm	Pack qty.
<b>Centre ball joint (fixed) for fastening cable protection conduits</b>								
KMG-F-M25	83691658	Black	M25/P21	SH-P / M25-M32	divisible	42.50	27.50	1
KMG-F-M32	83691660	Black	M32/P29	SH-P / M25-M32	divisible	42.50	27.50	1
KMG-F-M40	83691662	Black	M40/P36	SH M40-M50	divisible	69.00	44.00	1
KMG-F-M50	83691664	Black	M50/P48	SH M40-M50	divisible	69.00	44.00	1
<b>Set consists of KMG/F + SH-P M40/M50</b>								
Set KMG-F-M40	83691663	Black	M40/P36		divisible	69.00	44.00	1
Set KMG-F-M50	83691665	Black	M50/P48		divisible	69.00	44.00	1
<b>Hose ring (fixed) for fastening cable protection conduits</b>								
SRF-M40/P36 <sup>1)</sup>	83692288	Black	M40/P36	SH 56/70	divisible	89.50	27.00	1
SRF-M50/P48 <sup>1)</sup>	83692289	Black	M50/P48	SH 56/70	divisible	89.50	27.00	1
SRF-56	83692290	Black	NW56	SH 56/70	divisible	89.50	27.00	1
SRF-68	83692291	Black	NW68	SH 56/70	divisible	89.50	27.00	1
SRF-70	83692292	Black	NW70	SH 56/70	divisible	89.50	27.00	1
SRF-80 sw	83692294	Black	NW80	SH 80/95	divisible	119.00	46.00	1
SRF-95 sw	83692296	Black	NW95	SH 80/95	divisible	119.00	46.00	1
<b>Set consist of SRF + SH 56/70</b>								
Set SRF-68	83692246	Black	NW68		divisible	89.50	27.00	1

<sup>1)</sup> \* mainly developed for use in the R-Tec Box-36/48 for continuous laying of a Murrplastik corrugated conduit.

## KMG/G ball bearing



### PRODUCT INFORMATION

The KMG-G is mainly used for dynamic applications, as you may find in robots and other movable handling devices. The detachably connected type KMG-G centre ball joint can be mounted at the SH system holder easily and quickly. The KMG-G facilitates a smooth gliding movement through the longitudinal axis whenever the cable protection conduit

is moving in the longitudinal direction. This makes the KMG-G the perfect fastening system of the Murrflex cable protection conduits to the SH system holder. Therefore lines and cables can be routed and protected with absolute process protection and length adaptability, even in highly dynamic applications.

### SPECIFICATIONS

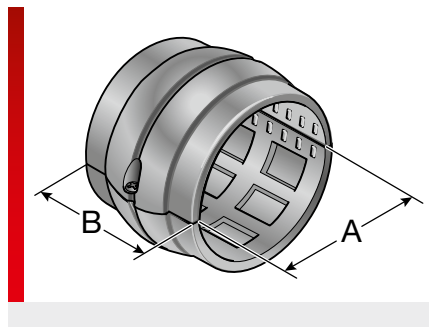
- 40 – 110 °C
- Mod. polyamide
- Acc. to UL94 V0

RoHS
 HF

Type	Order No.	Colour	Suitable for Murrflex	Suitable for System holder	Version	A mm	B mm	Pack qty.
KMG/G-M25	83691858	Black	M25/P21	SH-P / M25-M32	divisible	42.50	36.00	1
KMG/G-M32	83691860	Black	M32/P29	SH-P / M25-M32	divisible	42.50	36.00	1
KMG/G-M40	83691862	Black	M40/P36	SH-P / M40-M50	divisible	70.00	70.00	1
KMG/G-M50	83691864	Black	M50/P48	SH-P / M40-M50	divisible	70.00	70.00	1



## KMG-F H ball bearing



### PRODUCT INFORMATION

The detachably connected KMG/F-H is the perfect fixation for coiled heat conduits. Our ball joint can be placed into the SH-system holder quickly and easily and is mostly used for robot applications and other smaller handling equipment.

This way your heat conduits are routed and protected for any application with absolute process safety.

### SPECIFICATIONS

- 40 – 110 °C
- Mod. polyamide
- Acc. to UL94 V0

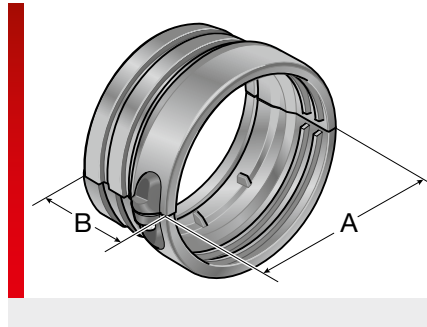
Type	Order No.	Colour	Suitable for System holder	Version	A mm	B mm	Pack qty.
KMG-F H45/13	83691670	Black	SH-P / M40-M50	divisible	45.70	44.00	1
KMG-F H55/16	83691672	Black	SH-P / M40-M50	divisible	55.25	44.00	1
KMG-F H66/25	83691674	Black	SH 56/70	divisible	66.50	45.00	1
KMG-F H45/13 set <sup>1)</sup>	83691602	Black		divisible			1
KMG-F H55/16 set <sup>2)</sup>	83691604	Black		divisible			1
KMG-F H66/25 set <sup>3)</sup>	83691606	Black		divisible			1

<sup>1)</sup> Set consists of KMG-F H45/13 and SH M40/M50

<sup>2)</sup> Set consists of KMG-F H55/16 and SH M40/M50

<sup>3)</sup> Set consists of KMG-F H 66/25 and SH 56/70

## A-RS conduit adapter



### PRODUCT INFORMATION

The A RS conduit adapter is intended for corrugated tubes from third party manufacturers that may have different diameters. They facilitate secure manoeuvring at the robot arm with optimum hold.

### SPECIFICATIONS

-  -40 – 110 °C
-  Mod. polyamide
-  Acc. to UL94 V0

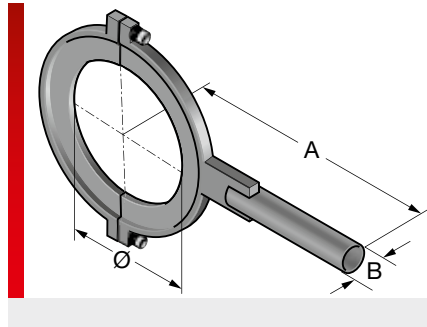




Type	Order No.	Colour	Suitable for Murrflex	Version	A mm	B mm	Pack qty.
A-RS-56 sw <sup>1)</sup>	83692280	Black	NW52	divisible	102.50	46.00	1
A-RS-70 sw <sup>1)</sup>	83692282	Black	NW70	divisible	102.50	46.00	1

<sup>1)</sup> Tightening torque 1.5Nm




## Tension clamp (axis 6)



### PRODUCT INFORMATION

The R-SSR wrist support serves to provide a fixing point on axis 6. Addition fastening elements can be affixed to the wrist support as required.

### SPECIFICATIONS

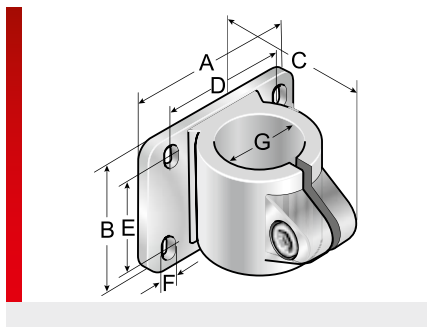
-  Powder coated sheet steel
-  RoHS
- 

Type	Order No.	Colour	Ø mm	A mm	B mm	Pack qty.
Kuka KR6, KR 10 retaining plate, axis 6	83692753	Black	39.50	83.00		1
R-SSR D 50 tension clamp with angled sheet	83952697	Black	50.00	89.50		1
R-SSR D63 tension clamp UR3 <sup>1)</sup>	83693201	Black	63.00	54.00		1
R-SSR D 63 tension clamp with angled sheet <sup>2)</sup>	83952699	Black	63.00	99.30		1
R-SSR D63 tension clamp UR5 <sup>1)</sup>	83693202	Black	75.00	60.00		1
R-SSR D63 tension clamp UR10 <sup>1)</sup>	83693203	Black	90.00	68.00		1
R-SSR 100-1 tension clamp with pipe 15°	83952626	Black	100.00	289.00	32.00	1
R-SSR 116-2 tension clamp with pipe, straight	83692712	Black	116.00	301.00	32.00	1
R-SSR 125-1 tension clamp with pipe 15°	82952696	Black	125.00	361.60	32.00	1
R-SSR 125-2 tension clamp with pipe, straight	82390044	Black	125.00	352.50	32.00	1
R-SSR 140-2 tension clamp with pipe, straight	82390067	Black	140.00	355.00	32.00	1
R-SSR 160-1 tension clamp with pipe 15°	83952628	Black	160.00	374.40	32.00	1
R-SSR 160-2 tension clamp with pipe, straight	83952629	Black	160.00	370.00	32.00	1
R-SSR 172-1 tension clamp with pipe 15°	83952634	Black	172.00	384.00	32.00	1
R-SSR 180-1 tension clamp with pipe 15°	82390032	Black	180.00	384.00	32.00	1
R-SSR 190-1 tension clamp with pipe 15°	83952638	Black	190.00	384.00	32.00	1
R-SSR 200-1 tension clamp with pipe 15°	83952642	Black	200.00	388.20	32.00	1
R-SSR 220-1 tension clamp with pipe 15°	83952640	Black	220.00	392.30	32.00	1
R-SSR 250-1 tension clamp with pipe 15°	83952646	Black	250.00	412.30	32.00	1
R-SSR 315-1 tension clamp with pipe 15°	83692711	Black	315.00	493.70	32.00	1

<sup>1)</sup> Suitable for system holder SH M25/M32

<sup>2)</sup> Suitable for system holder SH M40/M50

## Pipe clamp



with FKE 32 and SH 56/70-M

### PRODUCT INFORMATION

The R-FKM and R-FKE pipe clamps facilitate connecting R-SSR tension clamps with other components. Clamping on the entire pipe circumference. With hub flange for pivot bearings and base plate.

The R-FKM pipe clamps need the R-FKG base plate for fixing a system holder.

The Type R-FKE pipe clamp does not need the additional base plate; the system holder can be attached directly.

### SPECIFICATIONS

Aluminium

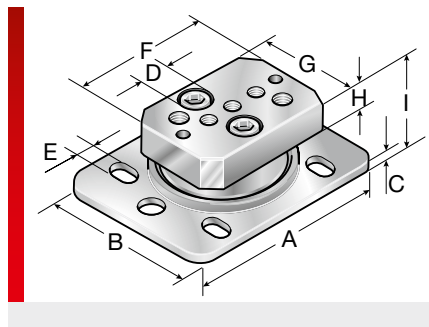
Type	Order No.	Colour	A mm	B mm	C mm	D Angle °	E mm	F mm	G mm	Pack qty.
R-FKE 32	83952614	Anodised black	60.00	60.00	93.00				32.00	1
R-FKM 32 <sup>1)</sup>	83952610	Silver	105.00	80.00	85.00	80.00	58.00	8.50	32.00	1
R-FKM 40 <sup>1)</sup>	83952612	Silver	105.00	80.00	85.00	80.00	58.00	8.50	40.00	1

<sup>1)</sup>Adapter plate R-FKG is required for the installation of a system holder.





## Pivot bearing



R-DLM with TRO 70

### PRODUCT INFORMATION

The pivot bearing can be rotated in 360° and is on a ball bearing.

- R-DZM pivot bearings with adapter plates for mounting type SH system holders
- R-DLM individual pivot bearing for use with TRO 70 trumpet

### SPECIFICATIONS

Steel  
Steel, powder coated

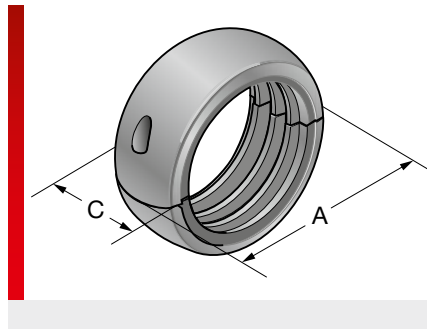


Type	Order No.	Colour	A mm	B mm	C mm	E mm	F mm	G mm	H mm	I mm	K Thread	Pack qty.
R-DLM	83952210	Silver	120.00	85.00	5.00	9.00					M10x1,5	1

#### Pivot bearing with adapter plate

R-DZM	83952212	Silver / Black	120.00	85.00	5.00	9.00	80.00	45.00	15.00	34.00	M10x1,5	1
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## PR/SV Protector



### PRODUCT INFORMATION

The PR/SV protectors are made of specially modified polyamide 6. The material is halogen, phosphor and cadmium-free. The protectors are used for impact protection and connecting cable protection conduits and also protect against wear.

The PR/SV protectors feature the following advantages:

- Flat construction
- Simple assembly with a sliding lock and optional lock screw assembly
- High tear-out strength

### SPECIFICATIONS

- 40 – 110 °C short term 140 °C
- UL listed material Mod. polyamide PA 6
- Acc. to UL94 V0 self-extinguishing

Type	Order No.	Colour	Suitable for Murrflex	Suitable for Murrflex EWX	A mm	C mm	Pack qty.
<b>Standard design for cable protection conduits with standard corrugation, type EW-xx / type EWT-xx</b>							
PR/SV-EW 21	83691058	Black	M25/P21		51.60	51.20	10
PR/SV-EW 29	83691060	Black	M32/P29		57.90	51.00	10
PR/SV-EW 36	83691062	Black	M40/P36		66.00	51.50	10
PR/SV-EW 48	83691064	Black	M50/P48		78.00	49.50	10
PR/SV-EW 56	83691065	Black	NW56		90.80	51.00	5
<b>Standard design for cable protection conduits with high corrugation, type EWX-xx</b>							
PR/SV-EW 21	83691018	Grey	M25/P21		51.60	51.20	10
PR/SV-EW 29	83691020	Grey	M32/P29		57.90	51.00	10
PR/SV-EW 36	83691022	Grey	M40/P36		66.00	51.50	10
PR/SV-EW 48	83691024	Grey	M50/P48		78.00	49.50	10
PR/SV-EW 56	83691025	Grey	NW56		90.80	51.00	5
<b>Standard design for cable protection conduits with high corrugation, type EWX-xx</b>							
PR/SV-EWX 21	83691258	Black	M25/P21		51.60	51.90	10
PR/SV-EWX 29	83691260	Black	M32/P29		57.90	51.00	10
PR/SV-EWX 36	83691262	Black	M40/P36		66.00	51.50	10
PR/SV-EWX 48	83691264	Black	M50/P48		78.00	49.50	10
PR/SV-EWX 56	83691265	Black	NW56		90.80	51.00	5
PR/SV-EWX 21	83691218	Grey	M25/P21		51.60	51.90	10
PR/SV-EWX 29	83691220	Grey	M32/P29		57.90	51.00	10
PR/SV-EWX 36	83691222	Grey	M40/P36		66.00	51.50	10
PR/SV-EWX 48	83691224	Grey	M50/P48		78.00	49.50	10
PR/SV-EWX 56	83691225	Grey	NW56		90.80	51.00	5







## Accessories

## Tube-Cut (Conduit knife for cable protection conduits)



Tube-Cut/Z



Tube-Cut/D

### PRODUCT INFORMATION

The Tube-Cut conduit knife allows subsequent slitting of closed cable protection conduits. It can be used by both the right and left-handed. The sliding foot is made of extremely hard-wearing Teflon-coated metal. The Tube-Cut conduit knife features the following advantages:

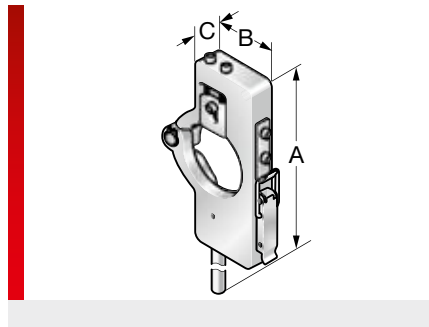
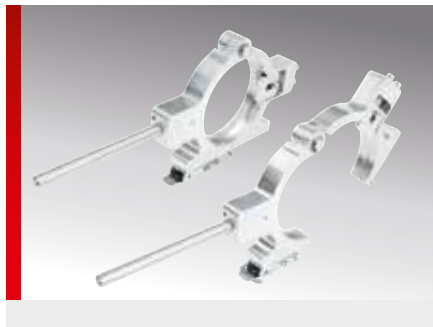
- Extremely easy handling
- Two different versions available
- Safe to use with a material hold-down device that also shields the blade
- Fast and safe blade change
- Very low weight

### SPECIFICATIONS

- Plastic
- Steel
- Not suitable for NW95 with high corrugation

Type	Order No.	Length mm	Suitable for Murrflex	Pack qty.
Tube-Cut/D	83729214	120.00	Standard corrugation M12/P09 to NW 95, High corrugation (EWX) to NW 70	1
Tube-Cut/Z	83729212	120.00	Standard corrugation M12/P09 to NW 95, NW70	1

## m-cut corrugated conduit cutter



### PRODUCT INFORMATION

The type m-cut corrugated conduit cutter is made of aluminium and makes length adjustments for Murrplastik cable protection conduits easy and safe. It can be used by both the right and left-handed. A sturdy double-edged blade has been installed to achieve perfectly cut edges. Furthermore, the corrugated pipe cutters feature the following advantages:

- Extremely easy handling
- Safe handling, because of its spring-loaded blade cover, which covers the blade when the cutter is not in use.
- Faster and more secure blade exchange -> blades are available as spare parts
- Low weight

### SPECIFICATIONS



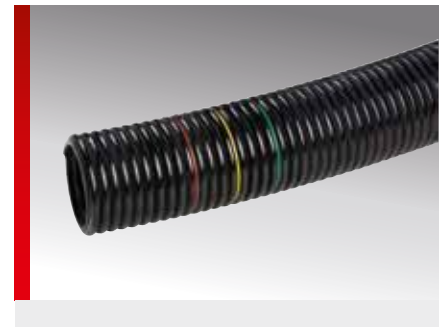
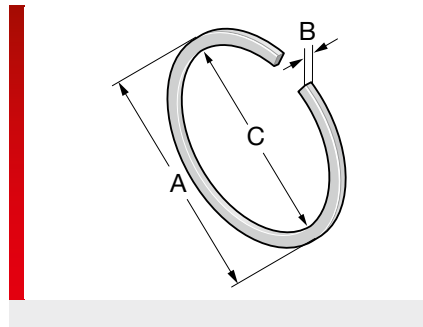
Type	Order No.	Suitable for Murrflex	Pack qty.
m-cut M40 B	83729222	M40/P36	1
m-cut M50 B	83729224	M50/P48	1
m-cut 56 B	83729226	NW56	1
m-cut 70 B	83729228	NW70	1
m-cut 95 B	83729230	NW95	1
m-cut replacement blade	83729232		1







## Position marker



### PRODUCT INFORMATION

Conduit marking for any number of uses in robotics and mechanical engineering applications.  
Can be installed in seconds on EW and EWX cable protection conduits.

### SPECIFICATIONS

- 20 – 105 °C
- Acc. to UL94 HB
- 

Type	Order No.	Colour	A mm	B mm	Pack qty.
<b>Position markers for EW, EW-LS, EWT and EWX</b>					
Position marker - 36 - yellow	83692641	Yellow	32.70	1.75	5
Position marker - 36 - green	83692636	Green	32.70	1.75	5
Position marker - 36 - red	83692646	Red	32.70	1.75	5
Position marker - 48 - yellow	83692642	Yellow	41.20	1.75	5
Position marker - 48 - green	83692637	Green	41.20	1.75	5
Position marker - 48 - red	83692647	Red	41.20	1.75	5
Position marker - 56 - yellow	83692643	Yellow	59.10	1.75	5
Position marker - 56 - green	83692638	Green	59.10	1.75	5
Position marker - 56 - red	83692648	Red	59.10	1.75	5
Position marker - 70 - yellow	83692644	Yellow	70.50	1.75	5
Position marker - 70 - green	83692639	Green	70.50	1.75	5
Position marker - 70 - red	83692649	Red	70.50	1.75	5
Position marker - set 36	83692690		32.70	1.75	1
Position marker - set 48	83692692		41.20	1.75	1
Position marker - set 56	83692694		59.10	1.75	1
Position marker - set 70	83692698		70.50	1.75	1









# Base plates and recirculation systems for KUKA robots

●	Base plate required
○	Base plate optional

## KUKA ROBOT TYPE

	83692760 Base plate KUKA KR10 R 1100	83692750 Base plate KUKA KR16	83692757 Base plate KUKA KR30 - KR60	83692620 Base plate KUKA KR30 - KR60	Recirculation system M25/M32	R-Tec Box-S M32/M40	R-Tec Box M40/M50	R-Tec Liner
KR 3 R540 (KR AGILUS)	●			●				
KR 6 R700 five (KR AGILUS)	●			●				
KR 6 R700 sixx (KR AGILUS)	●			●				
KR 6 R700 sixx WP (KR AGILUS)	●			●				
KR 6 R900 five (KR AGILUS)	●			●				
KR 6 R900 sixx (KR AGILUS)	●			●				
KR 6 R900 sixx WP (KR AGILUS)	●			●				
KR 10 R900 sixx (KR AGILUS)	●			●				
KR 10 R900 sixx WP (KR AGILUS)	●			●				
KR 10 R1100 five (KR AGILUS)	●			●				
KR 10 R1100 sixx (KR AGILUS)	●			●				
KR 10 R1100 sixx WP (KR AGILUS)	●			●				
KR 5 arc		●			●			
KR 6-2		●			●			
KR 16-2		●			●			
KR 16 L6-2		●			●			
KR 20-3		●			●			
KR 5-2 arc HW		●			●			
KR 16 arc HW		●			●			
KR 16-2 F		●			●			
KR 16-2 KS-F		●			●			
KR 16 L6-2 KS		●			●			
KR 16-2 CR		●			●			
KR 30-3			●		●			
KR 30 L16-2			●		●			
KR 60-3			●		●			
KR 30-3 F			●		●			
KR 30-4 KS-F			●		●			
KR 30-4 KS			●		●			
KR 30-3 CR			●		●			
KR 30 HA (High Accuracy)			●		●			
KR 60-3 F			●		●			
KR 60-4 KS-F			●		●			
KR 60-4 KS			●		●			
KR 60 L16-2 KS			●		●			
KR 90 R2700 pro (KR QUANTEC pro)				●		●	●	○
KR 120 R2500 pro (KR QUANTEC pro)				●		●	●	○
KR 90 R3100 extra (KR QUANTEC extra)				●		●	●	○
KR 120 R2900 extra (KR QUANTEC extra)				●		●	●	○
KR 150 R2700 extra (KR QUANTEC extra)				●		●	●	○
KR 210 R2700 extra (KR QUANTEC extra)				●		●	●	○
KR 180 R2500 extra (KR QUANTEC extra)				●		●	●	○
KR 90 R3100 extra F-HP (KR QUANTEC extra)				●		●	●	○
KR 120 R2900 extra F-HP (KR QUANTEC extra)				●		●	●	○
KR 150 R2700 extra F-HP (KR QUANTEC extra)				●		●	●	○
KR 180 R2500 extra F-HP (KR QUANTEC extra)				●		●	●	○

Continued on the next page

# Base plates and recirculation systems for KUKA robots



●	Base plate required
○	Base plate optional

## KUKA ROBOT TYPE

	83692760 Base plate KUKA KR10 R 1100	83692750 Base plate KUKA KR16	83692757 Base plate KUKA KR30 - KR60	83692620 Base plate KUKA QUANTEC/SERIE 2000	Recirculation system M25/M32	R-Tec Box-S M32/M40	R-Tec Box M40/M50	R-Tec Box 56/70	R-Tec Liner
KR 150 R3100 prime (KR QUANTEC prime)			●			●	●	○	
KR 180 R2900 prime (KR QUANTEC prime)			●			●	●	○	
KR 210 R2700 prime (KR QUANTEC prime)			●			●	●	○	
KR 240 R2500 prime (KR QUANTEC prime)			●			●	●	○	
KR 240 R2700 prime (KR QUANTEC)			●			●	●	○	
KR 90 R3700 prime K (KR QUANTEC prime)			●			●	●	○	
KR 120 R3500 prime K (KR QUANTEC prime)			●			●	●	○	
KR 150 R3300 prime K (KR QUANTEC prime)			●			●	●	○	
KR 180 R3100 prime K (KR QUANTEC prime)			●			●	●	○	
KR 210 R2900 prime K (KR QUANTEC prime)			●			●	●	○	
KR 210 R2700 prime F (KR QUANTEC prime)			●			●	●	○	
KR 210 R3100 ultra (KR QUANTEC ultra)			●			●	●	○	
KR 240 R2900 ultra (KR QUANTEC ultra)			●			●	●	○	
KR 270 R2700 ultra (KR QUANTEC ultra)			●			●	●	○	
KR 300 R2500 ultra (KR QUANTEC ultra)			●			●	●	○	
KR 210 R3100 ultra F (KR QUANTEC ultra)			●			●	●	○	
KR 120 R3900 ultra K (KR QUANTEC ultra)			●			●	●	○	
KR 150 R3700 ultra K (KR QUANTEC ultra)			●			●	●	○	
KR 180 R3500 ultra K (KR QUANTEC ultra)			●			●	●	○	
KR 210 R3300 ultra K (KR QUANTEC ultra)			●			●	●	○	
KR 240 R3100 ultra K (KR QUANTEC ultra)			●			●	●	○	
KR 270 R2900 ultra K (KR QUANTEC ultra)			●			●	●	○	
KR 240 R2900 ultra F (KR QUANTEC ultra)			●			●	●	○	
KR 270 R2700 ultra F (KR QUANTEC ultra)			●			●	●	○	
KR 300 R2500 ultra F (KR QUANTEC ultra)			●			●	●	○	
KR 240 R3330 (KR 360 FORTEC)			●			●	●	○	
KR 280 R3080 (KR 360 FORTEC)			●			●	●	○	
KR 360 R2830 (KR 360 FORTEC)			●			●	●	○	
KR 340 R3330 (KR 500 FORTEC)			●			●	●	○	
KR 420 R3080 (KR 500 FORTEC)			●			●	●	○	
KR 480 R3330 MT (KR 500 FORTEC)			●			●	●	○	
KR 500 R2830 (KR 500 FORTEC)			●			●	●	○	
KR 500 R2830 MT (KR 500 FORTEC)			●			●	●	○	
KR 420 R3330 (KR 600 FORTEC)			●			●	●	○	
KR 510 R3080 (KR 600 FORTEC)			●			●	●	○	
KR 600 R2830 (KR 600 FORTEC)			●			●	●	○	
KR 120 R3200 PA (KR QUANTEC)			●			●	●	○	
KR 180 R3200 PA (KR QUANTEC)			●			●	●	○	
KR 240 R3200 PA (KR QUANTEC)			●			●	●	○	
KR 300-2 PA			●			●	●	○	
KR 470-2 PA			●			●	●	○	
KR 700 PA			●			●	●	○	





## Base plates and recirculation systems for ABB robots

●	Base plate required
○	Base plate optional

ABB ROBOT TYPE	83692762 Base plate ABB IRB Series 1600	83692763 Base plate ABB IRB 2600	83692625 Base plate ABB SERIE 4600	83692623 Base plate ABB SERIE 6400	83692627 Base plate ABB SERIE 6600	83692622 Base plate ABB SERIE 6620	83692761 Base plate ABB SERIE 7600	Recirculation system M25/M32	R-Tec Box-S M32/M40	R-Tec Box M40/M50	R-Tec Liner
ABB IRB 1600	●							●			
ABB IRB 2600		●						●			
ABB IRB 4600			●						●	●	●
ABB IRB 6400				●						●	●
ABB IRB 6600					●			●	●	●	●
ABB IRB 6620				●				●	●	●	●
ABB IRB 6640					●			●	●	●	●
ABB IRB 6650					●			●	●	●	●
ABB IRB 6650S					●			●	●	●	●
ABB IRB 6660					●			●	●	●	●
ABB IRB 6700					●			●	●	●	●
ABB IRB 7600						●		●	●	●	●

## Base plates and recirculation systems for Yaskawa-Motoman robots

●	Base plate required
○	Base plate optional

YASKAWA-MOTOMAN ROBOT TYPE	83692629 Base plate Motoman MS165, MH180	83692628 Base plate Motoman MH50	Recirculation system M25/M32	R-Tec Box-S M32/M40	R-Tec Box M40/M50	R-Tec Liner
Yaskawa-Motoman ES165RDII	●		●	●	●	
Yaskawa-Motoman ES200RDII	●		●	●	●	
Yaskawa-Motoman MH50-20II		●	●			
Yaskawa-Motoman MH180-120	●		●	●	●	
Yaskawa-Motoman MH180	●		●	●	●	
Yaskawa-Motoman MH225	●		●	●	●	
Yaskawa-Motoman MH280II	●		●	●	●	
Yaskawa-Motoman MS165	●		●	●	●	
Yaskawa-Motoman MS210	●		●	●	●	
Yaskawa-Motoman ES280-D	●		●	●	●	





# Cable entry- and cable retaining systems



## Solutions for cable applications – Product line overview



### CABLE ENTRY SYSTEM FOR CABLES WITH PLUGS

The cable entry system is designed for inserting pre-assembled cables and electrical cables in divider walls, junction boxes, control cabinets...

from page 879



### CABLE ENTRY SYSTEM FOR CABLES WITHOUT PLUGS

The cable entry plate is a routing and fastening system for cables without plugs or pneumatic hoses.

from page 907



### EMC SOLUTIONS

The EMC systems are used to dissipate electromagnetic interference and conducted fault currents.

from page 959



### STRAIN RELIEF / CABLE FIXING PLATE

The strain relief plate is used wherever the strain on cables, single wires or conduits must be securely and easily relieved. Cable fixing plates are clipped onto top-hat rails or C-rails without tools.

from page 989



### "M-SEAL" CABLE FITTINGS

"m-seal" cable fittings, made of plastic or metal, are able to meet highest demands and can be mounted quickly and easily.

from page 1007



### ACCESSORIES / TOOLS AND PUNCHING TOOLS

Adapter plates, blanking panels, catch hooks and much more. Tools for electrical installation, as well as for creating exact cut-outs in steel and stainless steel sheets.

from page 1013



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## Punching tools

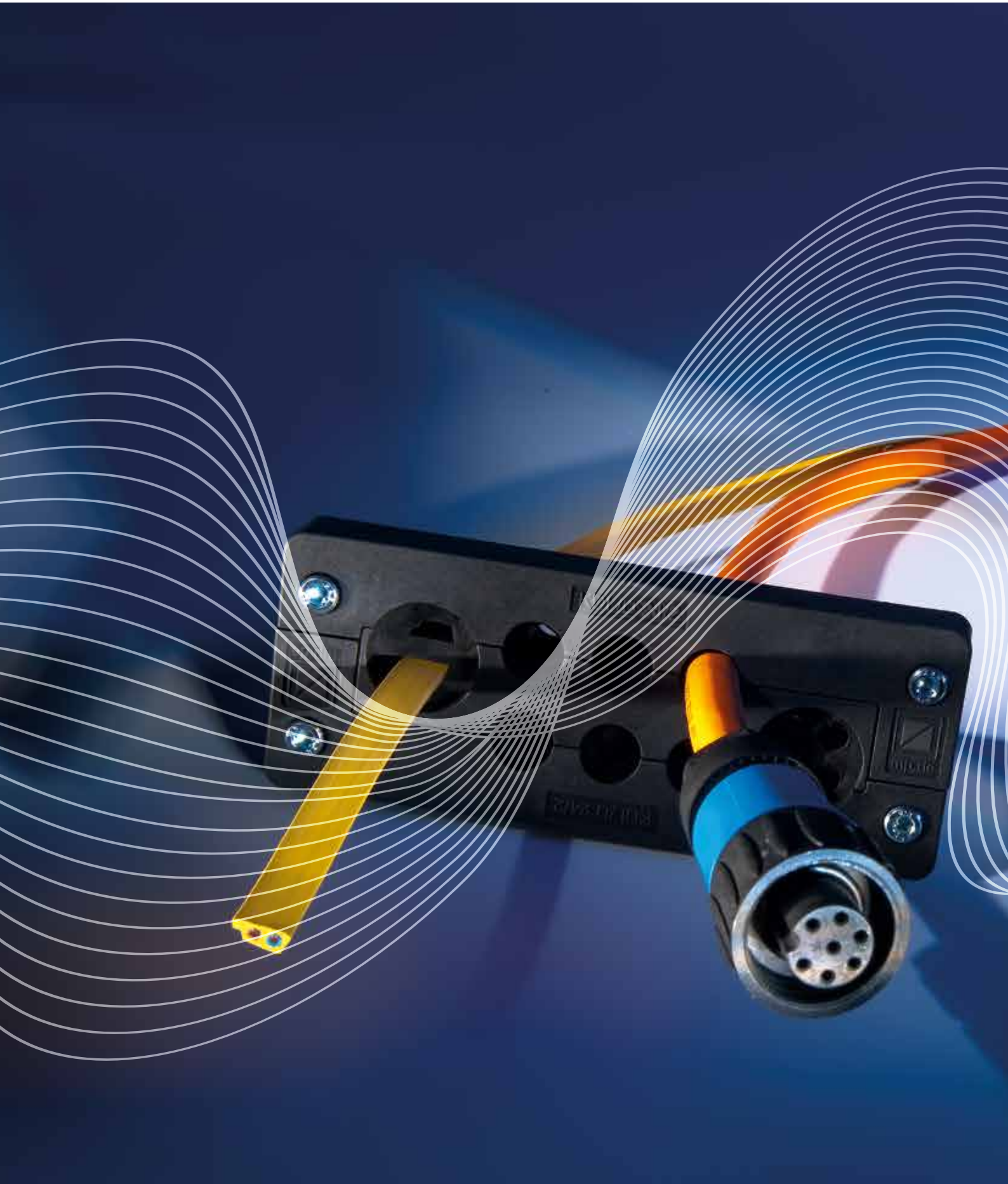
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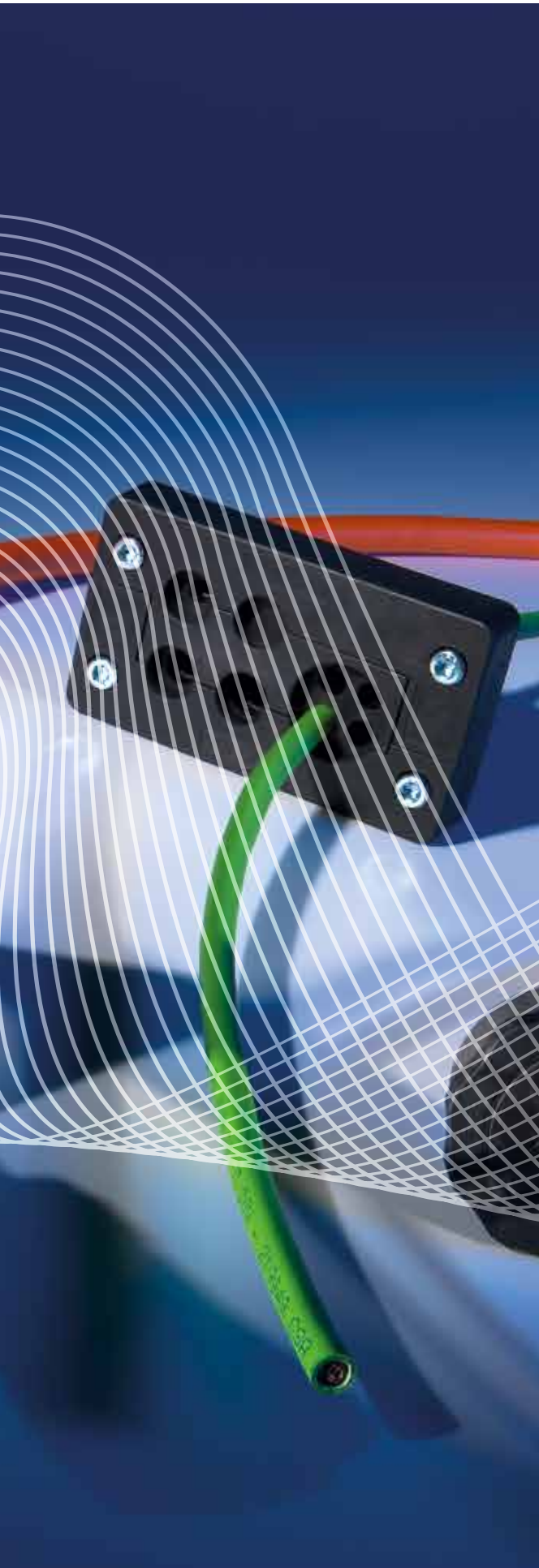
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**Selection tables**  
**Cable entry systems**  
**Cable entry plates**



## Overview selection tables

### THE MOST IMPORTANT MURRPLASTIK CABLE ENTRY SYSTEMS IN THE OVERVIEW

Which cable entry system would best meet your requirements? How many openings for cables with or without plugs are available on the system? What are the available forms and materials?

Get an overview of our systems and the corresponding accessories.



#### Cable entry system Type KDL/C and KDL/D

Cable entry systems for cables with plugs. The KDL/D is built with a massive frame for increased stability.

from page 830



#### KDP cable entry plate, plastic, round

Types KDPR/F, KDP/R and KDP/R-KGM for cables without plugs. For standard M40, M50 and M63 cut-outs.

from page 862



#### KDL/H cable entry system

Die-cast zinc cable entry systems for cables with plugs. For the highest degree of stability and tightness up to IP 69K.

from page 844



#### Cable entry plate Type KDP, metal, cablequick®

Cable entry for cables without plugs, made of V4A stainless steel, sheet metal or aluminium.

from page 864



#### Cable entry system Type KDL/E

Cable entry plates for cables with conductors fitting cut-out sizes 16- and 24-pin.

from page 846



#### Cable entry membranes Type KDM

For cables without plugs and for pneumatic tubing. Fits standard cut-outs of M12 to M50.

from page 872



#### Type KDL-Jumbo cable entry system

Splittable cable entry plates for cables with diameters of 30 – 65 mm.

from page 850



#### Cable entry plate for railway technology

The types KDP/EN and KDP/EN-RA meet the requirements of the EN 45545-2 standards for railway technology.

from page 876



#### KDP cable entry plate, plastic, rectangular

Types KDP/X, KDP/N, KDP/E, KDP/F and KDP 24-Multi for cables without plugs. Greatest diversity in variants and applications

from page 852

# Overview grommets for cable entry systems

## POSSIBLE COMBINATIONS OF VARIOUS GROMMETS AND CABLE ENTRY SYSTEMS

The most varied combinations of cables and conduits can be installed in our cable entry systems using various grommets. This is an overview of the available grommet types and suitable cable entry systems.



					
<b>Cable grommet</b>	<b>Grommets with diameters of between 0.12 and 2.56 inch (3 and 65 mm) for round cables</b>				
	KDT/ZE small	KDT/X small			KDT/Z jumbo
		KDT/X medium			
	KDT/ZE large	KDT/X large			
<b>Variable cable grommet</b>	<b>Grommets with variable diameter for round cables</b>				
	KDT/VE small				
<b>ASI-/USB-/LAN grommet</b>	<b>Special grommets</b>				
	KDT/ZE ASI small	KDT/X ASI medium			
	KDT/ZE 2xASI	KDT/X 2xASI medium			
		KDT/X-USB medium			
		KDT/X-LAN large			
<b>Multi-line grommet</b>	<b>High-capacity grommets with several openings</b>				
	KDT/ZE 2x/4xsmall	KDT/X 2x2 mm 2x3 mm 2x4 mm small			
		KDT/X 4x2 mm 4x3 mm 4x4 mm small			
		KDT/X 2x5 mm 2x6 mm 2x7 mm 2x8 mm medium			
		KDT/X 4x5 mm 4x6 mm 4x7 mm 4x8 mm medium			
<b>Conduit grommet</b>	<b>Grommets for the feed-through of cable protection conduits</b>				
	SDT/ZE small				
	SDT/ZE large				
<b>Dummy grommet</b>	<b>Grommets for closing off unused slots</b>				
	BTK/E small	BTK/X small			BT-Jumbo
	BTG/E large	BTG/X medium			
		BTG/XL large			



## Selection table KDL/C and KDL/D 24/xx for cables with plugs

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

KDL/C 24 and KDL/D 24 cable entry systems have the identical grommet block, equipped with large, medium and small grommets for a variety of uses. The three-compartment frame clearly gives the KDL/D the better mechanical stability and a higher degree of tightness.

<b>X</b> Number of grommets <b>X</b> Suitable grommets	<b>A</b> Small grommets 2 – 12 mm	<b>B</b> Medium grommets 12 – 22 mm	<b>C</b> Large grommets 22 – 30 mm
 <p><b>KDL/D 24/3</b> KDL/D: 87141013</p>		<p>Number of grommets: 1</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTG/X dummy grommet</li> <li>KDT/X ASI, ASI cable bushing</li> <li>KDT/X USB USB cable grommet</li> <li>ATG/X adapter grommet</li> </ul>	<p>Number of grommets: 2</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>BTG/XL dummy gromme</li> <li>ATG/XL adapter grommet</li> </ul>
 <p><b>KDL/C/D 24/4</b> KDL/C: 87141016 / KDL/D: 87141014</p>		<p>Number of grommets: 4</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTG/X dummy grommet</li> <li>KDT/X ASI, ASI cable bushing</li> <li>KDT/X USB USB cable grommet</li> <li>ATG/X adapter grommet</li> </ul>	
 <p><b>KDL/C/D 24/8</b> KDL/C: 87141020 / KDL/D: 87141018</p>	<p>Number of grommets: 6</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTK/X dummy grommet</li> </ul>	<p>Number of grommets: 2</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTG/X dummy grommet</li> <li>KDT/X ASI, ASI cable bushing</li> <li>KDT/X USB USB cable grommet</li> <li>ATG/X adapter grommet</li> </ul>	
 <p><b>KDL/C/D 24/9</b> KDL/C: 87141024 / KDL/D: 87141022</p>	<p>Number of grommets: 8</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTK/X dummy grommet</li> </ul>	<p>Number of grommets: 1</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTG/X dummy grommet</li> <li>KDT/X ASI, ASI cable bushing</li> <li>KDT/X USB USB cable grommet</li> <li>ATG/X adapter grommet</li> </ul>	
 <p><b>KDL/C/D 24/12</b> KDL/C: 87141012 / KDL/D: 87141010</p>	<p>Number of grommets: 12</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTK/X dummy grommet</li> </ul>		

## Available grommets for all variants of KDL/C, KDL/D and KDL/H



### CABLE GROMMET FOR ROUND CABLES

For example, the KDT/X cable entry grommets are perfect for cable entries or feed-through of round, pre-assembled cables at control cabinets. The small version covers cable diameters of between 2 to 12 mm, the medium covers between 12 to 22 mm and the large covers between 22 to 30 mm. The lengthwise slotted grommet, made of thermoplastic natural rubber is placed around the cable and pushed into the grommet block.



### MULTI-LINE CABLE ENTRY GROMMET

The KDT/X 2x/4x multi-line cable entry grommet in their small version (for slots of type **A**) and in the medium version (for slots of type **B**) facilitate cable entry for two or four round pre-assembled cables without problem, e.g. entry into or feed-through at a control cabinet. The grommet is made of thermoplastic rubber.



### DUMMY GROMMET

With the BTK/X dummy grommets (for slots Type **A**), BTG/X (for slots of type **B**) and BTG/XL (for slots of type **C**) unused openings can be tightly sealed.



### ASI CABLE BUSHING

The KDT/X ASI large ASI cable bushing (for slots of type **B**) can easily accommodate ASI bus cables, e.g. entry into or feed-through at control cabinets. One or two-cables per grommet versions are available. The grommet is made of thermoplastic rubber.



### USB / LAN CABLE GROMMET

The USB cable grommet KDT/X-USB (for slots of type **B**) facilitates the routing of KDL/C or KDL/D. There are two versions available, including 1 m or 3 m USB cables. The LAN cable grommet KDT/X-LAN (for slots of type **C**) facilitates the routing of KDL/C oder KDL/D. Both grommets are made of thermoplastic rubber.



### ADAPTER GROMMET





The ATG/X adapter grommet (for slots of type **B**) facilitates the installation of a small grommet into a slot for medium grommets. The ATG/XL adapter grommet (for slots of type **C**) facilitates the installation of a medium grommet into a slot for large grommets.



## Selection table KDL/C and KDL/D 16/x for cables with plugs

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

KDL/C 16 and KDL/D 16 cable entry systems have the identical grommet block, equipped with large, medium and small grommets for a variety of uses. The three-compartment frame clearly gives the KDL/D the better mechanical stability and a higher degree of tightness.

<b>X</b> Number of grommets <b>X</b> Suitable grommets	<b>A</b> Small grommets 2 – 12 mm	<b>B</b> Medium grommets 12 – 22 mm	<b>C</b> Large grommets 22 – 30 mm
 <p><b>KDL/D 16/2</b> KDL/D: 87141033</p>			Number of grommets: 2 KDT/X cable grommet BTG/XL dummy gromme ATG/XL adapter grommet
 <p><b>KDL/C/D 16/3</b> KDL/C: 87141036 / KDL/D: 87141034</p>			Number of grommets: 3 KDT/X cable grommet KDT/X 2x/4x multi-line grommet BTG/X dummy grommet KDT/X ASI, ASI cable bushing KDT/X USB USB cable grommet ATG/X adapter grommet
 <p><b>KDL/C/D 16/7</b> KDL/C: 87141032 / KDL/D: 87141030</p>	Number of grommets: 6 KDT/X cable grommet KDT/X 2x/4x multi-line grommet BTK/X dummy grommet	Number of grommets: 1 KDT/X cable grommet KDT/X 2x/4x multi-line grommet BTG/X dummy grommet KDT/X ASI, ASI cable bushing KDT/X USB USB cable grommet ATG/X adapter grommet	
 <p><b>KDL/C/D 16/8</b> KDL/C: 87141028 / KDL/D: 87141026</p>	Number of grommets: 8 KDT/X cable grommet KDT/X 2x/4x multi-line grommet BTK/X dummy grommet		



## Selection table KDL/C and KDL/D 10/x for cables with plugs

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

KDL/C 10 and KDL/D 10 cable entry systems have the identical grommet block, equipped with medium and small grommets for a variety of uses. The three-compartment frame clearly gives the KDL/D the better mechanical stability and a higher degree of tightness.

**X** Number of grommets  
**X** Suitable grommets

**A** Small grommets 2–12 mm

**B** Medium grommets 12–22 mm



Number of grommets: 2

KDT/X cable grommet  
 KDT/X 2x/4x multi-line grommet  
 BTG/X dummy grommet  
 KDT/X ASI, ASI cable bushing  
 KDT/X USB USB cable grommet  
 ATG/X adapter grommet



Number of grommets: 4

KDT/X cable grommet  
 KDT/X 2x/4x multi-line grommet  
 BTK/X dummy grommet

Number of grommets: 1

KDT/X cable grommet  
 KDT/X 2x/4x multi-line grommet  
 BTG/X dummy grommet  
 KDT/X ASI, ASI cable bushing  
 KDT/X USB USB cable grommet  
 ATG/X adapter grommet

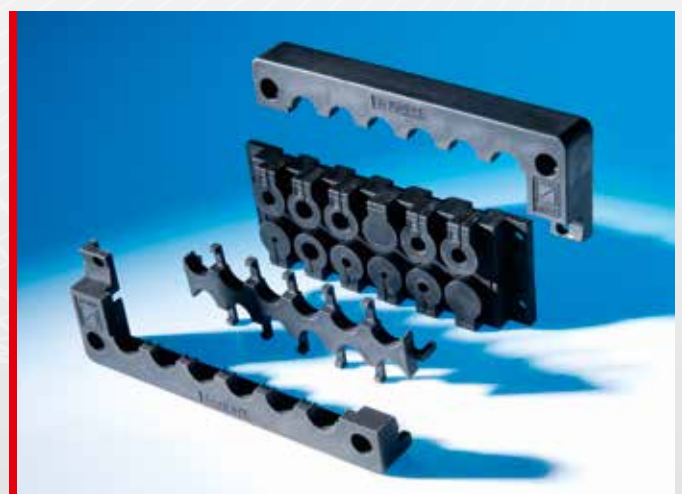


Number of grommets: 6

KDT/X cable grommet  
 KDT/X 2x/4x multi-line grommet  
 BTK/X dummy grommet



KDL/C: Two-piece frame plus grommet block



KDL/D: Three-piece frame plus grommet block



## Selection table KDL/C and KDL/D 6/x, 1/x and KDL/D-R M50/x

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

KDL/C 6 and KDL/D 6 cable entry systems have the identical grommet block, that can be equipped with small grommets for a variety of uses. The three-compartment frame clearly gives the KDL/D the better mechanical stability and a higher degree of tightness. The KDL/D-R M50/4 is designed for installation into 50 mm Ø circular cut-outs.

- X** Number of grommets
- X** Suitable grommets

**A** Small grommets 2–12 mm

**B** Medium grommets 12–22 mm



- Number of grommets: 4
- KDT/X cable grommet
- KDT/X 2x/4x multi-line grommet
- BTK/X dummy grommet



- Number of grommets: 6
- KDT/X cable grommet
- KDT/X 2x/4x multi-line grommet
- BTK/X dummy grommet



- Number of grommets: 4
- KDT/X cable grommet
- KDT/X 2x/4x multi-line grommet
- BTK/X dummy grommet



KDL/D 6/4: Three-piece frame, grommet block and grommets



KDL/D 6/4 and KDL/D 1/6 (grommet block) and their applications





## Selection table KDL/H 24/x for cables with plugs

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

The KDL/H is manufactured in a zinc die-cast process or made of milled aluminium and enables the insertion, sealing and strain relief of pre-assembled cables and conduits, for example in control cabinets and terminal boxes. The KDL/H can be equipped with large, medium and small grommets for a wide variety of applications.. Multi-line cable entry grommets increase the capacity. It distinguishes itself through its especially strong construction and high degree of tightness, all the way to IP 69K.

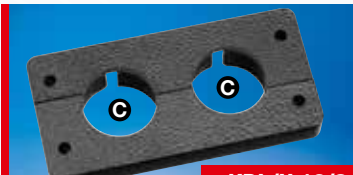
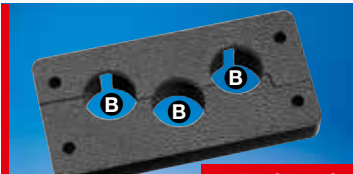
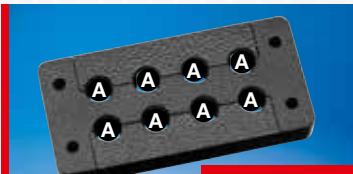


<b>X</b> Number of grommets <b>X</b> Suitable grommets	<b>A</b> Small grommets 2 – 12 mm	<b>B</b> Medium grommets 12 – 22 mm	<b>C</b> Large grommets 22 – 30 mm
 <p><b>KDL/H 24/3</b> Order number: 87141414</p>		<p>Number of grommets: 1</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTG/X dummy grommet</li> <li>KDT/X ASI, ASI cable bushing</li> <li>KDT/X USB USB cable grommet</li> <li>ATG/X adapter grommet</li> </ul>	<p>Number of grommets: 2</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>BTG/XL dummy gromme</li> <li>ATG/XL adapter grommet</li> </ul>
 <p><b>KDL/H 24/4</b> Order number: 87141412</p>		<p>Number of grommets: 4</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTG/X dummy grommet</li> <li>KDT/X ASI, ASI cable bushing</li> <li>KDT/X USB USB cable grommet</li> <li>ATG/X adapter grommet</li> </ul>	
 <p><b>KDL/H 24/12</b> Order number: 87141410</p>	<p>Number of grommets: 12</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2 x / 4 x multi-line grommet</li> <li>BTK/X dummy grommet</li> </ul>		
			

KDL/H 24/12 in application

## Selection table KDL/H 16/x and special sizes for cables with plugs

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

The KDL/H is manufactured in a zinc die-cast process or made of milled aluminium and enables the insertion, sealing and strain relief of pre-assembled cables and conduits, for example in control cabinets and terminal boxes. The KDL/H can be equipped with large, medium and small grommets for a wide variety of applications.. Multi-line cable entry grommets increase the capacity. It distinguishes itself through its especially strong construction and high degree of tightness, all the way to IP 69K.

<b>X</b> Number of grommets <b>X</b> Suitable grommets	<b>A</b> Small grommets 2 – 12 mm	<b>B</b> Medium grommets 12 – 22 mm	<b>C</b> Large grommets 22 – 30 mm
 <p><b>KDL/H 16/2</b> Order number: 87141420</p>			<p>Number of grommets: 2</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>BTG/XL dummy gromme</li> <li>ATG/XL adapter grommet</li> </ul>
 <p><b>KDL/H 16/3</b> Order number: 87141416</p>			<p>Number of grommets: 3</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2x/ 4x multi-line grommet</li> <li>BTG/X dummy grommet</li> <li>KDT/X ASI, ASI cable bushing</li> <li>KDT/X USB USB cable grommet</li> <li>ATG/X adapter grommet</li> </ul>
 <p><b>KDL/H 16/8</b> Order number: 87141418</p>			<p>Number of grommets: 8</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2x/ 4x multi-line grommet</li> <li>BTK/X dummy grommet</li> </ul>
 <p><b>KDL/H 1/6</b> Order number: 87141422</p>			<p>Number of grommets: 6</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2x/ 4x multi-line grommet</li> <li>BTK/X dummy grommet</li> </ul>
 <p><b>KDL/H M50/4</b> Order number: 87141424</p>			<p>Number of grommets: 4</p> <ul style="list-style-type: none"> <li>KDT/X cable grommet</li> <li>KDT/X 2x/ 4x multi-line grommet</li> <li>BTK/X dummy grommet</li> </ul>



## Selection table KDL/E 16/x for cables with plugs

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

The frames of the cable entry system KDL/E 16 can be equipped with large and/or small grommets.

Small grommets (marked with **A** in the picture) can be used for the installation of cables with diameters of 3 – 16 mm.

Large grommets (marked with **B** in the picture) can be used for the installation of cables with diameters of 16 – 31 mm.

- X** Number of grommets
- X** Suitable grommets

**A** Small grommets 3–16 mm

**B** Large grommets 16–31 mm



Number of grommets: 2

- KDT/ZE cable grommet
- SDT/ZE conduit grommet
- ATG/E adapter grommet
- BTG/E dummy grommet



Number of grommets: 4

- KDT/ZE cable grommet
- KDT/VE cable vario grommet
- KDT/ZE ASI, ASI cable bushing
- KDT/X 2x/4x multi-line grommet
- SDT/ZE conduit grommet
- BTK/E dummy grommet

Number of grommets: 0



Number of grommets: 4

- KDT/ZE cable grommet
- KDT/VE cable vario grommet
- KDT/ZE ASI, ASI cable bushing
- KDT/X 2x/4x multi-line grommet
- SDT/ZE conduit grommet
- BTK/E dummy grommet

Number of grommets: 1

- KDT/ZE cable grommet
- SDT/ZE conduit grommet
- ATG/E adapter grommet
- BTG/E dummy grommet



Number of grommets: 8

- KDT/ZE cable grommet
- KDT/VE cable vario grommet
- KDT/ZE ASI, ASI cable bushing
- KDT/X 2x/4x multi-line grommet
- SDT/ZE conduit grommet
- BTK/E dummy grommet

## Available grommets for KDL/E 16/x

**A**
**Small grommets**
**B**
**Large grommets**


KDT/ZE



KDT/ZE

### CABLE GROMMET FOR ROUND CABLES

For example, the KDT/ZE cable entry grommets are perfect for cable entries or feed-through of round, pre-assembled cables at control cabinets. The small design covers cable diameters of between 3 to 16 mm, the large design is for 16 to 31 mm versions. The grommet, made of thermoplastic rubber is 2-pce. and is positioned around the cable. Strain relief can be achieved by installing cable ties.



KDT/VE

### VARIABLE CABLE GROMMET (PROTECTION CLASS IP 42)

The KDT/VE small type, variable cable grommet (for slots of type **A**) can easily accommodate round, pre-configured cables, e.g. for entry into or feed-through at control cabinets. Two different diameter ranges can be serviced: Cable diameters from 3 to 7 mm and from 7 to 10 mm. The grommet, made of thermoplastic rubber is slotted and is positioned around the cables.



KDT/ZE ASI

### ASI CABLE BUSHING

The KDT/ZE ASI small ASI cable bushing (for slots of type **A**) can easily accommodate ASI bus cables, e.g. for entry into or feed-through at control cabinets. One or two-cables per grommet versions are available. The grommet, made of thermoplastic rubber, is 2-pce. and will be positioned around the cable. Strain relief can be achieved by installing cable ties.



KDT/ZE 2 x / 4 x

### MULTI-LINE CABLE ENTRY GROMMET

The KDT/ZE 2 x / 4 x multi-line cable entry grommets in their small version (for slots of type **A**) facilitate easy cable entry for several round, pre-assembled cables, e.g. entry into or feed-through at a control cabinet. Two- or four-cables per grommet versions are available. The grommet, made of thermoplastic rubber is either slotted, or 2-pce. and will be positioned around the cable. Strain relief can be achieved by installing cable ties.



SDT/ZE



SDT/ZE

### CONDUIT GROMMET FOR MURRFLEX CABLE PROTECTION CONDUITS

For example, the SDT/ZE conduit grommets are perfect for Murrplastik cable protection conduit infeed or feed-through at control cabinets. The smaller versions accommodate tube sizes M10/ P7 to M16/P11, the large versions are for M20/P16 and M25/P21. The grommet, made of thermoplastic rubber is 2-pce. and will be positioned around the conduits. Strain relief can be achieved by installing cable ties.


 BTK/E **A** BTG/E **B**

### DUMMY GROMMET

With the BTK/E dummy grommets (for slots of type **A**) and BTG/E (for slots of type **B**) unused openings can be tightly sealed.


 ATG/E **B**

### ADAPTER GROMMET

The ATG/E adapter grommet (for slots of type **B**) facilitates the installation of a small grommet into a slot for large grommets.



## Selection table KDL/E 24/xx for cables with plugs

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

The frames of the cable entry system KDL/E 24 can be equipped with large and/or small grommets.

Small grommets (marked with **A** in the picture) can be used for the installation of cables with diameters of 3 – 16 mm.

Large grommets (marked with **B** in the picture) can be used for the installation of cables with diameters of 16 – 31 mm.

**X** Number of grommets  
**X** Suitable grommets

**A** Small grommets 3–16 mm

**B** Large grommets 16–31 mm



Number of grommets: 2
KDT/ZE cable grommet
KDT/VE cable vario grommet
KDT/ZE 2 x ASI cable bushing
KDT/X 2x/4x multi-line grommet
SDT/ZE conduit grommet
BTK/E dummy grommet

Number of grommets: 2
KDT/ZE cable grommet
SDT/ZE conduit grommet
ATG/E adapter grommet
BTG/E dummy grommet



Number of grommets: 6
KDT/ZE cable grommet
KDT/VE cable vario grommet
KDT/ZE 2 x ASI cable bushing
KDT/X 2x/4x multi-line grommet
SDT/ZE conduit grommet
BTK/E dummy grommet

Number of grommets: 1
KDT/ZE cable grommet
SDT/ZE conduit grommet
ATG/E adapter grommet
BTG/E dummy grommet



Number of grommets: 10
KDT/ZE cable grommet
KDT/VE cable vario grommet
KDT/ZE 2 x ASI cable bushing
KDT/X 2x/4x multi-line grommet
SDT/ZE conduit grommet
BTK/E dummy grommet

Number of grommets: 0
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KDL/E 24 for cables with plugs in applications



## Available grommets for KDL/E 24/xx

**A**
**Small grommets**
**B**
**Large grommets**


KDT/ZE



KDT/ZE

### CABLE GROMMET FOR ROUND CABLES

For example, the KDT/ZE cable entry grommets are perfect for cable entries or feed-through of round, pre-assembled cables at control cabinets. The small design covers cable diameters of between 3 to 16 mm, the large design is for 16 to 31 mm versions.

The grommet, made of thermoplastic rubber is 2-pce. and is positioned around the cable. Strain relief can be achieved by installing cable ties.



KDT/VE

### VARIABLE CABLE GROMMET (PROTECTION CLASS IP 42)

The KDT/VE small type, variable cable grommet (for slots of type **A**) can easily accommodate round, pre-configured cables, e.g. for entry into or feed-through at control cabinets. Two different diameter ranges can be serviced:

Cable diameters from 3 to 7 mm and from 7 to 10 mm.

The grommet, made of thermoplastic rubber is slotted and is positioned around the cables.



KDT/ZE ASI

### ASI CABLE BUSHING

The KDT/ZE ASI small ASI cable bushing (for slots of type **A**) can easily accommodate ASI bus cables, e.g. for entry into or feed-through at control cabinets.

One or two-cables per grommet versions are available.

The grommet, made of thermoplastic rubber, is 2-pce. and will be positioned around the cable. Strain relief can be achieved by installing cable ties.



KDT/ZE 2 x / 4 x

### MULTI-LINE CABLE ENTRY GROMMET

The KDT/ZE 2 x / 4 x multi-line cable entry grommets in their small version (for slots of type **A**) facilitate easy cable entry for several round, pre-assembled cables, e.g. entry into or feed-through at a control cabinet. Two- or four-cables per grommet versions are available.

The grommet, made of thermoplastic rubber is either slotted, or 2-pce. and will be positioned around the cable. Strain relief can be achieved by installing cable ties.



SDT/ZE



SDT/ZE

### CONDUIT GROMMET FOR MURRFLEX CABLE PROTECTION CONDUITS

For example, the SDT/ZE conduit grommets are perfect for Murrplastik cable protection conduit infeed or feed-through at control cabinets. The smaller versions accommodate tube sizes M10/ P7 to M16/P11, the large versions are for M20/P16 and M25/P21.

The grommet, made of thermoplastic rubber is 2-pce. and will be positioned around the conduits. Strain relief can be achieved by installing cable ties.


 BTK/E **A** BTG/E **B**

### DUMMY GROMMET

With the BTK/E dummy grommets (for slots of type **A**) and BTG/E (for slots of type **B**) unused openings can be tightly sealed.


 ATG/E **B**

### ADAPTER GROMMET

The ATG/E adapter grommet (for slots of type **B**) facilitates the installation of a small grommet into a slot for large grommets.



## Selection table KDL-Jumbo for cables with plugs

### POSSIBLE COMBINATIONS OF CABLE ENTRY SYSTEMS AND GROMMETS

The KDL-Jumbo cable entry system is used for inserting pre-assembled cables. The KDL-Jumbo system is a fully splittable system that enables the quick and simple installation of 1 or 2 pre-assembled cables with a diameter of between 30 and 65 mm in control cabinets and terminal boxes.

- X Number of grommets
- X Suitable grommets

#### **A** Splittable grommets for clamping range 30–65 mm.



Number of grommets: 1
KDT/Z-Jumbo cable grommet
BT-Jumbo dummy grommet



Number of grommets: 2
KDT/Z-Jumbo cable grommet
BT-Jumbo dummy grommet



KDL-Jumbo 1 and KDL-Jumbo 2 and their applications

## Available grommets for KDL-Jumbo

**A**

### Jumbo grommets



#### CABLE GROMMET FOR ROUND CABLES

For example, the KDT/Z-Jumbo cable entry grommets are perfect for cable entries or feed-through of round, pre-assembled cables with large cable diameters at control cabinets.  
 Cable diameters of 30 to 65 mm are accommodated in 5 mm increments.  
 The grommet, made of thermoplastic rubber is 2-pce. and is positioned around the cable.  
 Strain relief can be achieved by installing cable ties.









#### DUMMY GROMMET

The BT-Jumbo dummy grommets (for slots of type **A**) facilitate the tight sealing of unused openings.








## Selection table KDP/N 24 for cables without plugs

X Number of openings  
 X clamping area in mm

	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0												
 <b>KDP/N 24/10</b> Order number: 87301108				2	3.0 – 6.5 mm			1	5.0 – 9.2 mm			5	9 – 14 mm			2	14 – 20 mm																		
 <b>KDP/N 24/11</b> Order number: 87301110				4	3.0 – 6.5 mm			4	5.0 – 9.2 mm											3	14 – 20 mm														
 <b>KDP/N 24/12</b> Order number: 87301120																								12	8 – 12 mm										
 <b>KDP/N 24/13</b> Order number: 87301130				2	3.0 – 5.5 mm																				6	4.1 – 8.1 mm		4	9 – 14 mm		1	14 – 20 mm			
 <b>KDP/N 24/14</b> Order number: 87301140				6	3.0 – 6.5 mm			4	5.0 – 9.2 mm						4	9.6 – 15.9 mm																			
 <b>KDP/N 24/17</b> Order number: 87301150																																	17	5.0 – 9.2 mm	

## Selection table KDP/N 24 for cables without plugs

**X** Number of openings  
**X** clamping area in mm

	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0		
 <p><b>KDP/N 24/17-1</b> Order number: 87301151</p>				11	3.0 – 6.5 mm			1	4.1 – 8.1 mm			5	8.0 – 12.5 mm												
 <p><b>KDP/N 24/22</b> Order number: 87301160</p>				16	3.0 – 6.5 mm			4	5.0 – 9.2 mm			2	8.0 – 12.5 mm												
 <p><b>KDP/N 24/23</b> Order number: 87301170</p>							23	4.1 – 8.1 mm																	
 <p><b>KDP/N 24/29</b> Order number: 87301180</p>				29	3.0 – 6.5 mm																				
 <p><b>KDP/N 24/80</b> Order number: 87301190</p>			1.5–2.6	78				2	2.5 – 5.0 mm																





## Selection table KDP/X 24 for cables without plugs

- X Number of openings
- X clamping area in mm

	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0		
 <p><b>KDP/X 24/10</b> Order number: 87301305</p>			2 3.0 – 6.5 mm				1 5.0 – 9.2 mm						5 9 – 14 mm					2 14 – 20 mm							
 <p><b>KDP/X 24/11</b> Order number: 87301315</p>			4 3.0 – 6.5 mm				4 5.0 – 9.2 mm												3 14 – 20 mm						
 <p><b>KDP/X 24/12</b> Order number: 87301325</p>													12 8 – 12 mm												
 <p><b>KDP/X 24/13</b> Order number: 87301335</p>			2 3.0 – 5.5 mm					6 4.1 – 8.1 mm						4 9 – 14 mm					1 14 – 20 mm						
 <p><b>KDP/X 24/14</b> Order number: 87301345</p>			6 3.0 – 6.5 mm					4 5.0 – 9.2 mm																	4 9.6 – 15.9 mm
 <p><b>KDP/X 24/17</b> Order number: 87301355</p>																									17 5.0 – 9.2 mm

## Selection table KDP/X 24 for cables without plugs

**X** Number of openings  
**X** clamping area in mm

	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0	
 <p><b>KDP/X 24/17-1</b> Order number: 87301356</p>			11 3.0 – 6.5 mm		1 4.1 – 8.1 mm							5 8.0 – 12.5 mm												
			16 3.0 – 6.5 mm			4 5.0 – 9.2 mm							2 8.0 – 12.5 mm											
					23 4.1 – 8.1 mm																			
 <p><b>KDP/X 24/29</b> Order number: 87301385</p>			29 3.0 – 6.5 mm																					



## Selection table KDP/E 24 for cables without plugs




- X Number of openings
- X clamping area in mm

	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0			
 <p><b>KDP/E 24/11</b> Order number: 87301310</p>			4 3.0 – 6.5 mm				4 5.0 – 9.2 mm												3 14 – 20 mm							
 <p><b>KDP/E 24/12</b> Order number: 87301320</p>																									12 8 – 12 mm	
 <p><b>KDP/E 24/13</b> Order number: 87301330</p>			2 3.0 – 5.5 mm		6 4.1 – 8.1 mm								4 9 – 14 mm												1 14 – 20 mm	
 <p><b>KDP/E 24/14</b> Order number: 87301340</p>			6 3.0 – 6.5 mm				4 5.0 – 9.2 mm																			4 9.6 – 15.9 mm
 <p><b>KDP/E 24/17</b> Order number: 87301350</p>																										17 5.0 – 9.2 mm
 <p><b>KDP/E 24/17-1</b> Order number: 87301351</p>			11 3.0 – 6.5 mm		1 4.1 – 8.1 mm																					5 8.0 – 12.5 mm



## Selection table KDP/E 24 for cables without plugs






**X** Number of openings  
**X** clamping area in mm

	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0			
 <b>KDP/E 24/22</b> Order number: 87301360			16	3.0 – 6.5 mm				4	5.0 – 9.2 mm				2	8.0 – 12.5 mm												
						23	4.1 – 8.1 mm																			
 <b>KDP/E 24/23</b> Order number: 87301370																										
 <b>KDP/E 24/29</b> Order number: 87301380																										



## Selection table KDP/F for cables without plugs






**X** Number of openings  
**X** clamping area in mm

	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	30.0	
 <p><b>KDP/F 24-14</b> Order number: 87302010</p>																								
	6	9 mm maximum																						
	4	11 mm maximum																						
	4	18 mm maximum																						
 <p><b>KDP/F 24-22</b> Order number: 87302020</p>																								
	16	9 mm maximum																						
	4	11 mm maximum																						
	2	15 mm maximum																						
 <p><b>KDP/F 24-28</b> Order number: 87302040</p>																								
28	9 mm maximum																							
 <p><b>KDP/F 24-46</b> Order number: 87302050</p>																								
46	6.5 mm maximum																							
 <p><b>KDP/F 24-multi</b> Order number: 87302030</p>																								
4	rectangular openings, 27 x 30 mm maximum																							



## Selection table KDP/Z for cables without plugs

**X** Number of openings  
**X** clamping area in mm







	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	30.0	
 <p><b>KDP/Z 24/14</b> Order number: 87303010</p>											14	7.5 – 12.0 mm												
 <p><b>KDP/Z 24/14-1</b> Order number: 87302020</p>				2	3.0 – 6.0 mm				4	5.0 – 9.0 mm		3	7.5 – 12.0 mm					3	10.0 – 16.0 mm		2	14.0 – 20.0 mm		
 <p><b>KDP/Z 24/23</b> Order number: 87303030</p>											23	5.0 – 9.0 mm												
 <p><b>KDP/Z 24/30</b> Order number: 87303040</p>					20	3.0 – 6.0 mm			6	5.0 – 9.0 mm			4	7.5 – 12.0 mm										
 <p><b>KDP/Z 24/48</b> Order number: 87303050</p>				20	2.0 – 4.0 mm																			
						28	3.0 – 6.0 mm																	





## Selection table KDP/R for cables without plugs

**X** Number of openings  
**X** clamping area in mm







	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0	11.0	12.0	14.0	16.0		
 <p><b>KDP/R M50/4</b> Order number: 87301030</p>											3	6 – 10 mm						1	9.6 – 15.9 mm						
 <p><b>KDP/R M50/6</b> Order number: 87301032</p>				1	3.0 – 5.5 mm					5	5.0 – 9.2 mm														
 <p><b>KDP/R M50/8</b> Order number: 87301034</p>						7	3.5 – 6.5 mm				1	6 – 10 mm													
 <p><b>KDP/R M50/31</b> Order number: 87301038</p>	31	1.5 – 3.1 mm																							
 <p><b>KDP/R M63/8</b> Order number: 87301040</p>										2	3.0 – 6.5 mm			4	5.0 – 9.2 mm				2	9.6 – 15.9 mm					
 <p><b>KDP/R M63/13</b> Order number: 87301042</p>						6	3.0 – 5.5 mm						6	3.5 – 6.5 mm					1	6 – 10 mm					





## Selection table cablequick® metal KDP 90 for cables without plugs

**X** Number of openings  
**X** clamping area in mm

	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0	24.0	28.0		
 <b>KDP 90/5</b> V4A: upon requ. / ALU: 87663029																			5	16 – 28 mm					
 <b>KDP 90/8</b> V4A: upon requ. / ALU: 87663026																			8	16 – 28 mm					
 <b>KDP 90/13</b> V4A: 87663118 / ALU: upon requ.	3.0 – 6.2 mm			4	4.5 – 8.5 mm		2	4	6 – 10 mm		2	9 – 14 mm		1	14 – 18 mm										
 <b>KDP 90/25</b> V4A: upon requ. / ALU: 87663022	3 – 5 mm		9	16	4 – 8 mm																				
 <b>KDP 90/28</b> V4A: upon requ. / ALU: 87663032		14	4 – 8 mm		10	6 – 10 mm		2	9 – 14 mm		2	12 – 18 mm													
 <b>KDP 90/39+3</b> V4A: 87663038 / ALU: 87663036	3 – 6 mm			12	4 – 8 mm		24		3	8 – 12 mm															



## Selection table cablequick® metal KDP 90 for cables without plugs

**X** Number of openings  
**X** clamping area in mm









	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0	24.0	28.0	
<b>KDP 90/47</b>		14	3.5 – 6.5 mm	28	4.5 – 8.5 mm			4	7 – 11 mm			1	11 – 16 mm											
<b>KDP 90/55</b>			3 – 5 mm	3	3.5 – 6.5 mm	32	4 – 8 mm			4	8 – 12 mm													




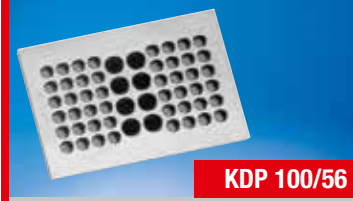


## Selection table cablequick® metal KDP 100 for cables without plugs

**X** Number of openings  
**X** clamping area in mm

	1.0	2.0	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	24.0	
 <b>KDP 100/6</b> V4A: 87663116 / ALU: upon requ.																								
 <b>KDP 100/15</b> V4A: 87663120 / ALU: upon requ.																								
 <b>KDP 100/18</b> V4A: 87663122 / ALU: upon requ.																								
 <b>KDP 100/24</b> V4A: 87663124 / ALU: upon requ.																								
 <b>KDP 100/30</b> V4A: 87663062 / ALU: upon requ.																								
 <b>KDP 100/30B</b> V4A: 87663063 / ALU: upon requ.																								

## Selection table cablequick® metal KDP 100 for cables without plugs

**X** Number of openings  
**X** clamping area in mm

	1.0	2.0	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	24.0	
 <p><b>KDP 100/40</b>                      V4A: 87663061 / ALU: upon requ.</p>						40	4.5 – 8.5 mm																	
 <p><b>KDP 100/56</b>                      V4A: 87663060 / ALU: upon requ.</p>			48	3.5 – 6.5 mm				8	6 – 10 mm															
 <p><b>KDP 100/56B</b>                      V4A: 87663065 / ALU: upon requ.</p>	1.0 – 3.5 mm		48	3.5 – 6.5 mm																				
 <p><b>KDP 100/56C</b>                      V4A: 87663067 / ALU: upon requ.</p>	1.0 – 3.5 mm		48	3.5 – 6.5 mm				4	6 – 10 mm															



## Selection table cablequick® metal KDP 105 for cables without plugs

**X** Number of openings  
**X** clamping area in mm







	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0	24.0	26.0	
<b>KDP 105/12</b> V4A: 87663057 / ALU: 87663056											9	9 – 14 mm		2	12 – 18 mm			1	18 – 25 mm					
<b>KDP 105/15</b> V4A: 87663016 / ALU: 87663014							8	6 – 10 mm			4	9 – 14 mm		3	12 – 18 mm									
<b>KDP 105/32</b> V4A: 87663012 / ALU: 87663010			3 – 5 mm																					
			12	4 – 8 mm							4	6 – 10 mm												



KDP 105/15 in the control cabinet

## Selection table cablequick® metal KDP 120/134 for cables without plugs







**X** Number of openings  
**X** clamping area in mm

	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	24.0	28.0	32.0	36.0	40.0	44.0	49.0	
 <p><b>KDP 120/2</b>            V4A: 87663140 / ALU: 87663001</p>															2	18 – 36 mm								
 <p><b>KDP 120/2B</b>            V4A: 87663141 / ALU: 87663002</p>																				2	36 – 49 mm			
 <p><b>KDP 120/2C</b>            V4A: 87663142 / ALU: 87663003</p>															1	18 – 36 mm				1	36 – 49 mm			
 <p><b>KDP 120/17</b>            V4A: 87663143 / ALU: 87663004</p>			6	6 – 10 mm			4	9 – 14 mm		3	12 – 18 mm			4	18 – 25 mm									
 <p><b>KDP 120/35</b>            V4A: 87663144 / ALU: 87663005</p>				3.5 – 6.5 mm	8		18	6 – 10 mm		7	9.6 – 15.9 mm			2	14 – 20 mm									
 <p><b>KDP 134/34</b>            V4A: upon requ. / ALU: 87663024</p>		3/5 mm	2		6	4 – 8 mm		15	6 – 10 mm		4	8 – 12 mm		5	9 – 14 mm					2	14 – 20 mm			



## Selection table cablequick® metal KDP 149 for cables without plugs

- X Number of openings
- X clamping area in mm

	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0						
 <p><b>KDP 149/46</b> V4A: upon requ. / ALU: 87663064</p>						8	6 – 10 mm			16	10 – 14 mm		18	12 – 18 mm			4	18 – 25 mm											
 <p><b>KDP 149/56</b> V4A: 87663086 / ALU: 87663097</p>						36	6 – 10 mm			8	9.0 – 14.0 mm			8	14 – 18 mm			4	18 – 25 mm										
 <p><b>KDP 149/78</b> Steel: 87663771</p>	3.5 – 6.2 mm					40	6 – 10 mm					4	11 – 16 mm			2	12 – 18 mm					2	18 – 25 mm						
 <p><b>KDP 149/140</b> V4A: 87663088 / ALU: 87663095</p>	3.5 – 6.5 mm					64	4.5 – 8.5 mm			36	6 – 10 mm			4	8 – 12 mm			8	9 – 14 mm				8	14 – 18 mm			4	18 – 25 mm	
 <p><b>KDP 149/158</b> V4A: 87663068 / ALU: 87663089</p>	3.5 – 6.5 mm						24	6 – 10 mm				6	8.0 – 12.0 mm				2	12 – 18 mm											
 <p><b>KDP 149/292</b> V4A: 87663066 / ALU: 87663079</p>	3.5 – 6.5 mm						32	6 – 10 mm				8	8.0 – 12.0 mm				2	12 – 18 mm											

## Selection table cablequick® metal KDP 160 for cables without plugs

- X Number of openings
- X clamping area in mm



3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0	24.0	26.0	28.0	
3.5 – 6.5 mm							16																
									10	9.0 – 14.0 mm													
											40	12 – 18 mm											







KDP 149/46: High degree of tightness at IP 65



## Selection table KDM for cables without plugs

- X Number of openings
- X clamping area in mm

	1.0	3.0	5.0	7.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	21.0	23.0	25.0	27.0	29.0	31.0	33.0	35.0
 <p><b>KDM M16</b> Order number: 87401010</p>	1 – 9 mm Ø max. <span style="background-color: yellow; border: 1px solid black; padding: 0 2px;">1</span>																						
 <p><b>KDM M20</b> Order number: 87401012</p>	1 – 13 mm Ø max. <span style="background-color: yellow; border: 1px solid black; padding: 0 2px;">1</span>																						
 <p><b>KDM M25</b> Order number: 87401014</p>	1 – 18 mm Ø max. <span style="background-color: yellow; border: 1px solid black; padding: 0 2px;">1</span>																						
 <p><b>KDM M32</b> Order number: 87401016</p>	1 – 25 mm Ø max. <span style="background-color: yellow; border: 1px solid black; padding: 0 2px;">1</span>																						







Type KDM cable entry membrane and its applications



## Selection table KDM/F for cables without plugs








**X** Number of openings  
**X** clamping area in mm

	1.0	3.0	5.0	7.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	21.0	23.0	25.0	27.0	29.0	31.0	33.0	35.0		
 <p><b>KDM/F M16</b> Order number: 87401050</p>	1 – 9 mm Ø max. <b>1</b>																								
 <p><b>KDM/F M20</b> Order number: 87401052</p>	1 – 13 mm Ø max. <b>1</b>																								
 <p><b>KDM/F M25</b> Order number: 87401054</p>	1 – 18 mm Ø max. <b>1</b>																								
 <p><b>KDM/F M32</b> Order number: 87401056</p>	1 – 25 mm Ø max. <b>1</b>																								



## Selection table KDM/G for cables without plugs

**X** Number of openings  
**X** clamping area in mm





	4.0	5.0	6.0	7.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	21.0	23.0	25.0	27.0	29.0	31.0	33.0	35.0
 <p><b>KDM/G M12</b> Order number: 87401020</p>	4 - 7 mm Ø max. <b>1</b>																						
 <p><b>KDM/G M16</b> Order number: 87401022</p>	<b>1</b> 5 - 10 mm Ø max.																						
 <p><b>KDM/G M20</b> Order number: 87401024</p>	<b>1</b> 8 - 13 mm Ø max.																						
 <p><b>KDM/G M25</b> Order number: 87401026</p>	<b>1</b> 11 - 17 mm Ø max.																						
 <p><b>KDM/G M32</b> Order number: 87401028</p>	<b>1</b> 15 - 21 mm Ø max.																						
 <p><b>KDM/G M40</b> Order number: 87401030</p>	<b>1</b> 19 - 28 mm Ø max.																						
 <p><b>KDM/G M50</b> Order number: 87401032</p>	<b>1</b> 27 - 35 mm Ø max.																						





## Selection table KDP/EN and KDP/EN-RA 24 for railway technology

**X** Number of openings  
**X** clamping area in mm

	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	18.0	20.0	22.0	
 <b>KDP/EN 24/22</b> EN: 87301260 / EN-RA: 87301265			16	3.0 – 6.5 mm			4	5.0 – 9.2 mm			2	8.0 – 12.5 mm												
 <b>KDP/EN 24/23</b> EN: 87301270 / EN-RA: 87301275				23			4.1 – 8.1 mm																	
 <b>KDP/EN 24/29</b> EN: 87301280 / EN-RA: 87301285			29	3.0 – 6.5 mm																				
 <b>KDP/EN 24/80</b> EN: 87301290 / EN-RA: 87301295				1.5–2.6	78		2	2.5 – 5.0 mm																



KDP/EN plus room integrity mat results in KDP/EN-RA



Expanded room integrity mat after heat application



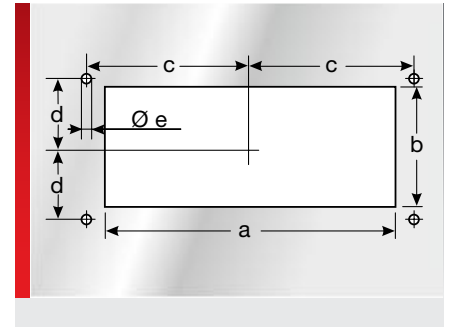
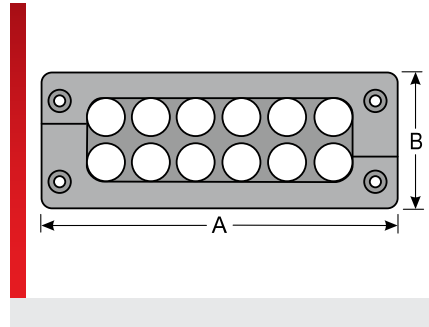








## KDL/D cable entry system



### PRODUCT INFORMATION

The KDL/D cable entry system is used for inserting pre-assembled cables. The KDL/D system is a splittable system that enables the quick and simple installation of up to 48 pre-assembled cables with a high packing density in control cabinets and terminal boxes. In addition, the KDL/D system offers a very high protection class and a very robust design.

- Uninterrupted cable guidance
- Easy assembly
- Integrated strain relief
- Fits standard cut-out dimensions
- High protection class IP65
- KDL/D-R M50/4: Cut-out 50.5 mm (round)
- Matching grommet: KDT/X

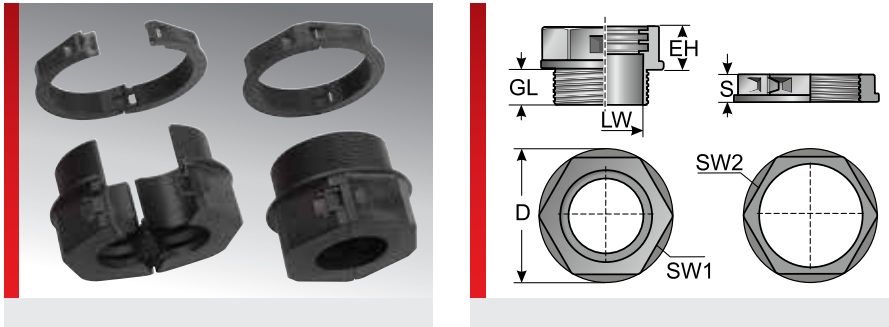
### SPECIFICATIONS

- 30 – 100 °C
- Frame: Polypropylene (PP)  
Block: TPE
- V0
- IP 65 (with suitable grommets and cables)

Type	Order No.	Colour	No. Openings			Pack qty.
			Small	medium	large	
<b>For standard cut-out size 24</b>						
KDL/D 24/12	87141010	Black	12	0	0	1
KDL/D 24/9	87141022	Black	8	1	0	1
KDL/D 24/8	87141018	Black	6	2	0	1
KDL/D 24/4	87141014	Black	0	4	0	1
KDL/D 24/3	87141013	Black	0	1	2	1
<b>For standard cut-out size 16</b>						
KDL/D 16/8	87141026	Black	8	0	0	1
KDL/D 16/7	87141030	Black	6	1	0	1
KDL/D 16/2	87141033	Black	0	0	2	1
KDL/D 16/3	87141034	Black	0	3	0	1
<b>For standard cut-out size 10</b>						
KDL/D 10/6	87141038	Black	6	0	0	1
KDL/D 10/5	87141042	Black	4	1	0	1
KDL/D 10/2	87141039	Black	0	2	0	1
<b>For standard cut-out size 6</b>						
KDL/D 6/4	87141044	Black	4	0	0	1
<b>special size</b>						
KDL/D 1/6	87141048	Black	6	0	0	1
KDL/D-R M50/4	87141002	Black	4	0	0	1



## KDL/D-mono cable entry system



### PRODUCT INFORMATION

The KDL/D-mono is a split cable entry system for inserting pre-assembled cables. Depending on the choice of cable entry grommet, up to four cables can be introduced. The split lock nut is included within the scope of delivery.

- Easy assembly and installation of pre-assembled cables
- Integrated and split seal
- Simple strain relief for cables using cable ties
- Matching grommet: KDT/X

### SPECIFICATIONS

- 30 – 100 °C
- Polyamide 6
- V0
- IP 65

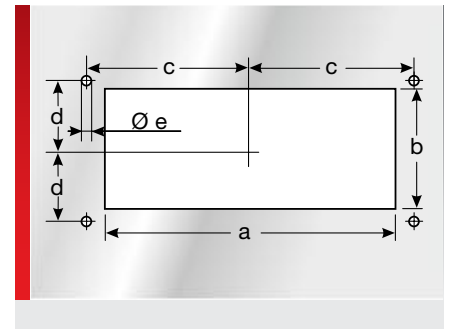
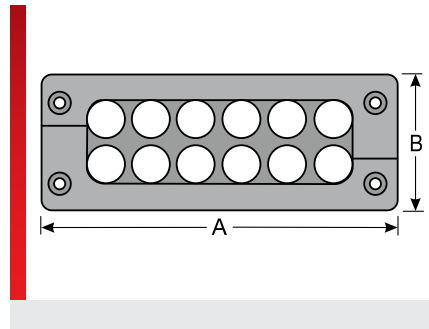
RoHS
 LABS
 UV
 Made in Germany

Type	Order No.	Colour	No. Openings			Thread	Pack qty.
			Small	medium	large		
KDL/D-mono 1 M25	87141610	Black	1	0	0	M25x1.5	5
KDL/D-mono 1 M32	87141620	Black	0	1	0	M32x1.5	5
KDL/D-mono 1 M40	87141636	Black	0	1	0	M40x1.5	5
KDL/D-mono 2 M40	87141630	Black	2	0	0	M40x1.5	5
KDL/D-mono 1 M50	87141640	Black	0	0	1	M50x1.5	5

### Dimension table

Type	Order No.	Installation height (EH) mm	Thread length (GL) mm	Diameter (D) mm	Width across flats (SW1/SW2) mm
KDL/D-mono 1 M25	87141610	18.50	15.00	40.00	36.0 / 28.0
KDL/D-mono 1 M32	87141620	18.00	15.00	50.00	46.0 / 36.0
KDL/D-mono 1 M40	87141636	18.00	20.00	62.00	55.0 / 46.0
KDL/D-mono 2 M40	87141630	18.00	20.00	62.00	55.0 / 46.0
KDL/D-mono 1 M50	87141640	22.00	20.00	62.00	55.0 / 55.0

## KDL/H cable entry system



### PRODUCT INFORMATION

KDL/H is manufactured in a zinc die-cast process and is designed for feed-through of pre-assembled cables. The KDL/D system is a splittable system that enables the quick and easy installation of up to 48 pre-assembled cables with a high packing density in control cabinets and terminal boxes. Special benefits of the KDL/H are:

- Cable infeed without interruption
- Standardised cut-out dimensions
- Easy assembly
- High protection category to IP 69K (in combination with the proper enclosure)
- Very robust construction
- Integrated strain relief
- Matching grommet: KDT/X
- KDL/H M50/4: Cut-out 50.5 mm (round)

### SPECIFICATIONS

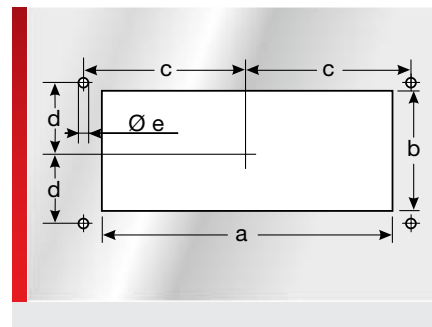
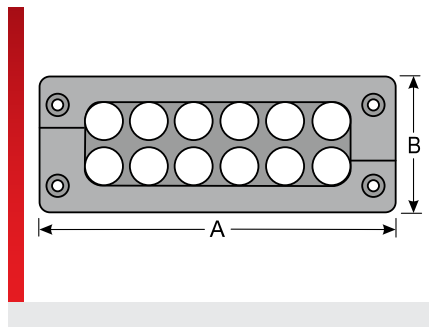
	-30 – 100 °C
	Frame: ZN Block: TPE Frame: Aluminium
	IP 66/67 (with suitable grommets and cables)

Type	Order No.	Colour	No. Openings			Pack qty.
			Small	medium	large	
<b>For standard cut-out size 24</b>						
KDL/H 24/12	87141410	Black	12	0	0	1
KDL/H 24/4	87141412	Black	0	4	0	1
KDL/H 24/3	87141414	Black	0	1	2	1
<b>For standard cut-out size 16</b>						
KDL/H 16/8	87141418	Black	8	0	0	1
KDL/H 16/3	87141416	Black	0	3	0	1
KDL/H 16/2	87141420	Black	0	0	2	1
<b>special size</b>						
KDL/H 1/6	87141422	Black	6	0	0	1
KDL/H M50/4	87141424	Black	4	0	0	1

### Dimension table

Type	Order No.	Installation height (EH) mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
<b>For standard cut-out size 24</b>									
KDL/H 24/12	87141410	18.00	148.00	58.00	112.00	36.00	65.00	16.00	5.50
KDL/H 24/4	87141412	18.00	148.00	58.00	112.00	36.00	65.00	16.00	5.50
KDL/H 24/3	87141414	18.00	148.00	58.00	112.00	36.00	65.00	16.00	5.50
<b>For standard cut-out size 16</b>									
KDL/H 16/8	87141418	18.00	121.00	58.00	86.00	36.00	51.50	16.00	5.50
KDL/H 16/3	87141416	18.00	121.00	58.00	86.00	36.00	51.50	16.00	5.50

**KDL/H cable entry system** (Continued...)



Type	Order No.	Installation height (EH) mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDL/H 16/2	87141420	18.00	121.00	58.00	86.00	36.00	51.50	16.00	5.50
<b>special size</b>									
KDL/H 1/6	87141422	18.00	148.00	38.00	112.00	17.00	65.00	16.00	5.50
KDL/H M50/4	87141424	18.00	62.00	62.00			23.00	23.00	5.50

## KDT/X cable entry grommets



### PRODUCT INFORMATION

For example, in conjunction with the KDL/C, KDL/D and KDL/H cable entry systems, the KDT/X cable entry grommet can be used to easily route pre-assembled cables into and through control cabinets. The grommet is retrofitted around the cable.

Double cable grommets, multi-line grommets, ASI bushings, USB-grommets and adapter grommets are not cURus listed.

### SPECIFICATIONS

- 30 – 100 °C
- TPE
- V0

RoHS
 LABS
 UV
 cULus
 Made in Germany

Type	Order No.	Colour	for Ø mm	For opening Small / medium / large	No. of open-ings	Pack qty.
<b>Grommet, small</b>						
KDT/X 02	87141210	Black	2 – 3	• / - / -	1	12
KDT/X 03	87141212	Black	3 – 4	• / - / -	1	12
KDT/X 04	87141214	Black	4 – 5	• / - / -	1	12
KDT/X 05	87141216	Black	5 – 6	• / - / -	1	12
KDT/X 06	87141218	Black	6 – 7	• / - / -	1	12
KDT/X 07	87141220	Black	7 – 8	• / - / -	1	12
KDT/X 08	87141222	Black	8 – 9	• / - / -	1	12
KDT/X 09	87141224	Black	9 – 10	• / - / -	1	12
KDT/X 10	87141226	Black	10 – 11	• / - / -	1	12
KDT/X 11	87141228	Black	11 – 12	• / - / -	1	12
<b>Grommet, medium</b>						
KDT/X 12	87141230	Black	12 – 13	- / • / -	1	4
KDT/X 13	87141232	Black	13 – 14	- / • / -	1	4
KDT/X 14	87141234	Black	14 – 15	- / • / -	1	4
KDT/X 15	87141236	Black	15 – 16	- / • / -	1	4
KDT/X 16	87141238	Black	16 – 17	- / • / -	1	4
KDT/X 17	87141240	Black	17 – 18	- / • / -	1	4
KDT/X 18	87141242	Black	18 – 19	- / • / -	1	4
KDT/X 19	87141244	Black	19 – 20	- / • / -	1	4
KDT/X 20	87141246	Black	20 – 21	- / • / -	1	4
KDT/X 21	87141248	Black	21 – 22	- / • / -	1	4
<b>Grommet, large</b>						
KDT/X 22	87141250	Black	22 – 23	- / - / •	1	4
KDT/X 23	87141252	Black	23 – 24	- / - / •	1	4

## KDT/X cable entry grommets (Continued...)



Type	Order No.	Colour	for Ø mm	For opening Small / medium / large	No. of open-ings	Pack qty.
KDT/X 24	87141254	Black	24 – 25	- / - / •	1	4
KDT/X 25	87141256	Black	25 – 26	- / - / •	1	4
KDT/X 26	87141258	Black	26 – 27	- / - / •	1	4
KDT/X 27	87141260	Black	27 – 28	- / - / •	1	4
KDT/X 28	87141262	Black	28 – 29	- / - / •	1	4
KDT/X 29	87141264	Black	29 – 30	- / - / •	1	4
<b>Dummy grommet</b>						
BTK/X (dummy grommet)	87141270	Black		• / - / -	1	12
BTG/X dummy grommet	87141266	Black		- / • / -	1	4
BTG/XL dummy grommet	87141265	Black		- / - / •		4
<b>Double cable grommet</b>						
KDT/X 2x2 <sup>1)</sup>	87141275	Black	2	• / - / -	2	12
KDT/X 2x3 <sup>1)</sup>	87141277	Black	3	• / - / -	2	12
KDT/X 2x4 <sup>1)</sup>	87141279	Black	4	• / - / -	2	12
KDT/X 2x5 <sup>1)</sup>	87141281	Black	5	- / • / -	2	4
KDT/X 2x6 <sup>1)</sup>	87141283	Black	6	- / • / -	2	4
KDT/X 2x7 <sup>1)</sup>	87141285	Black	7	- / • / -	2	4
KDT/X 2x8 <sup>1)</sup>	87141287	Black	8	- / • / -	2	4
<b>Multi-line grommet 4-line</b>						
KDT/X 4x2 <sup>1)</sup>	87141276	Black	2	• / - / -	4	12
KDT/X 4x3 <sup>1)</sup>	87141278	Black	3	• / - / -	4	12
KDT/X 4x4 <sup>1)</sup>	87141280	Black	4	• / - / -	4	12
KDT/X 4x5 <sup>1)</sup>	87141282	Black	5	- / • / -	4	4
KDT/X 4x6 <sup>1)</sup>	87141284	Black	6	- / • / -	4	4
KDT/X 4x7 <sup>1)</sup>	87141286	Black	7	- / • / -	4	4
KDT/X 4x8 <sup>1)</sup>	87141288	Black	8	- / • / -	4	4
<b>Grommet adapter (adapter for small grommet)</b>						
ATG/X <sup>2)</sup>	87141268	Black		- / • / -		4
<b>ASI bushing (for ASI cable)</b>						
KDT/X 1xASI <sup>2)</sup>	87141274	Black		- / • / -		4
KDT/X 2xASI <sup>2)</sup>	87141272	Black		- / • / -		4



**KDT/X cable entry grommets** (Continued...)

Type	Order No.	Colour	for Ø mm	For opening Small / medium / large	No. of open-ings	Pack qty.
<b>USB grommet</b>						
KDT/X-USB 0.5m <sup>2)</sup>	87141294	Black		- / •		1
KDT/X-USB 1.0m <sup>2)</sup>	87141296	Black		- / • / -		1
KDT/X-USB 3.0m <sup>2)</sup>	87141298	Black		- / • / -		1
<b>LAN port</b>						
KDT/X-LAN	87141292	Black		- / - / •		1
<b>Adapter grommet (for centre grommet)</b>						
ATG/XL adapter grommet	87141267	Black		- / - / •		4

<sup>1)</sup> no UR-approval / unused openings can be closed off with Type VST sealing plugs

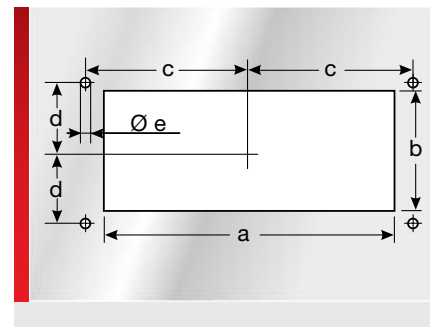
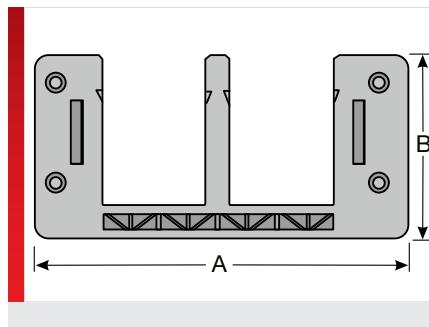
<sup>2)</sup> no UR approval





**KDL/E cable entry system**

## KDL/E cable entry system



### PRODUCT INFORMATION

The KDL/E represents the 3rd generation of Murrplastik cable entry system.

- Even quicker mounting of pre-assembled cables
- Snap in, meaning screwing on is no longer absolutely necessary
- Catch hook for 1.5 – 2.0 mm plate thickness included with delivery, additional catch hooks for up to 4.1 mm plate thickness available

- Fits standard cut-outs for connectors (e.g. Harting, Wieland and Rittal).
- EMC solution with discharge plate, simple realisation
- Matching grommets: KDT/xE

### SPECIFICATIONS

- 40 – 80 °C
- Polyamide 6.6
- V0
- IP 54 (with suitable grommets and cables)

Type	Order No.	Colour	No. of openings small / large	for Ø mm	Pack qty.
<b>For standard cut-out size 16</b>					
KDL/E 16/2 <sup>1)</sup>	87121010	Black	0 / 2	16.0 – 31.0	1
KDL/E 16/4 <sup>1)</sup>	87121011	Black	4 / 0	3.0 – 16.0	1
KDL/E 16/5 <sup>1)</sup>	87121012	Black	4 / 1	3.0 – 31.0	1
KDL/E 16/8 <sup>1)</sup>	87121014	Black	8 / 0	3.0 – 16.0	1
<b>For standard cut-out size 24</b>					
KDL/E 24/4 <sup>2)</sup>	87121016	Black	2 / 2	3.0 – 31.0	1
KDL/E 24/7 <sup>2)</sup>	87121018	Black	6 / 1	3.0 – 31.0	1
KDL/E 24/10 <sup>2)</sup>	87121020	Black	10 / 0	3.0 – 16.0	1

<sup>1)</sup> If catch hooks are used, then the width of the cut-out must be enlarged by 91 mm

<sup>2)</sup> For matching adapter plates or floor plates, see chapter “Accessories for cable entry systems and plates”

### Dimension table

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
<b>For standard cut-out size 16</b>									
KDL/E 16/2 <sup>1)</sup>	87121010	15.50	116.00	58.00	86.00	36.00	51.50	16.00	5.50
KDL/E 16/4 <sup>1)</sup>	87121011	15.50	116.00	58.00	86.00	36.00	51.50	16.00	5.50
KDL/E 16/5 <sup>1)</sup>	87121012	15.50	116.00	58.00	86.00	36.00	51.50	16.00	5.50
KDL/E 16/8 <sup>1)</sup>	87121014	15.50	116.00	58.00	86.00	36.00	51.50	16.00	5.50



## KDT/xE cable entry grommets



### PRODUCT INFORMATION

In conjunction with the KDL/E cable entry system, the KDT/xE cable entry grommet can be used to easily route pre-assembled cables e.g. in control cabinets. The grommet is 2-pce. and is positioned around the cable. The grommets are equipped with catch hooks that anchor themselves in the KDL/E when positioning.

Strain relief for type KDT/ZE is achieved using a simple cable tie. Type KDT/VE is a vario grommet without strain relief which covers a larger clamping range.

### SPECIFICATIONS

- 40 – 80 °C
- Thermoplastic rubber
- HB

RoHS

LABS

UV

SE

UL

Made in Germany

Type	Order No.	Colour	for Ø mm	For opening small / large	No. of openings	Suitable for Conduit	Pack qty.
<b>Grommet, small</b>							
KDT/ZE 03	87121210	Black	3 – 4	• / -	1		10
KDT/ZE 04	87121212	Black	4 – 5	• / -	1		10
KDT/ZE 05	87121214	Black	5 – 6	• / -	1		10
KDT/ZE 06	87121216	Black	6 – 7	• / -	1		10
KDT/ZE 07	87121218	Black	7 – 8	• / -	1		10
KDT/ZE 08	87121220	Black	8 – 9	• / -	1		10
KDT/ZE 09	87121222	Black	9 – 10	• / -	1		10
KDT/ZE 10	87121224	Black	10 – 11	• / -	1		10
KDT/ZE 11	87121226	Black	11 – 12	• / -	1		10
KDT/ZE 12	87121228	Black	12 – 13	• / -	1		10
KDT/ZE 13	87121230	Black	13 – 14	• / -	1		10
KDT/ZE 14	87121232	Black	14 – 15	• / -	1		10
KDT/ZE 15	87121234	Black	15 – 16	• / -	1		10
<b>Grommet, large</b>							
KDT/ZE 16	87121236	Black	16 – 17	- / •	1		10
KDT/ZE 17	87121238	Black	17 – 18	- / •	1		10
KDT/ZE 18	87121240	Black	18 – 19	- / •	1		10
KDT/ZE 19	87121242	Black	19 – 20	- / •	1		10
KDT/ZE 20	87121244	Black	20 – 21	- / •	1		10
KDT/ZE 21	87121246	Black	21 – 22	- / •	1		10
KDT/ZE 22	87121248	Black	22 – 23	- / •	1		10
KDT/ZE 23	87121250	Black	23 – 24	- / •	1		10
KDT/ZE 24	87121252	Black	24 – 25	- / •	1		10
KDT/ZE 25	87121254	Black	25 – 26	- / •	1		10
KDT/ZE 26	87121256	Black	26 – 27	- / •	1		10

## KDT/xE cable entry grommets (Continued...)

Type	Order No.	Colour	for Ø mm	For opening small / large	No. of open- ings	Suitable for Conduit	Pack qty.
KDT/ZE 27	87121258	Black	27 – 28	- / •	1		10
KDT/ZE 28	87121260	Black	28 – 29	- / •	1		10
KDT/ZE 29	87121262	Black	29 – 30	- / •	1		10
KDT/ZE 30	87121264	Black	30 – 31	- / •	1		10
<b>Variable cable grommet (Protection class IP 42)</b>							
KDT/VE 3-7 <sup>1)</sup>	87121272	Black	3 – 7	• / -	1		10
KDT/VE 7-10 <sup>1)</sup>	87121274	Black	7 – 10	• / -	1		10
<b>Multi-line grommet 2-line</b>							
KDT/ZE 2x4 double grommet <sup>2)</sup>	87121284	Black	4	• / -	2		10
KDT/ZE 2x5 double grommet <sup>2)</sup>	87121286	Black	5	• / -	2		10
KDT/ZE 2x6 double grommet <sup>2)</sup>	87121288	Black	6	• / -	2		10
KDT/ZE 2xASI double grommet <sup>1)</sup>	87121280	Black		• / -	2		10
KDT/ZE 2x8 double grommet <sup>2)</sup>	87121291	Black	8	• / -	2		10
<b>Multi-line grommet 4-line</b>							
KDT/ZE 2x7 double grommet <sup>2)</sup>	87121290	Black	7	• / -	2		10
KDT/ZE 4x2 quadruple grommet <sup>2)</sup>	87121292	Black	2	• / -	4		10
KDT/ZE 4x3 quadruple grommet <sup>2)</sup>	87121293	Black	3	• / -	4		10
KDT/ZE 4x4 quadruple grommet <sup>2)</sup>	87121294	Black	4	• / -	4		10
KDT/ZE 4x5 quadruple grommet <sup>2)</sup>	87121295	Black	5	• / -	4		10
KDT/ZE 4x6 quadruple grommet <sup>2)</sup>	87121296	Black	6	• / -	4		10
<b>ASI bushing (for ASI cable)</b>							
KDT/ZE ASI <sup>1)</sup>	87121282	Black		• / -	1		10
<b>Dummy plug for ASI grommet</b>							
BST KDT/ZE ASI <sup>1)</sup>	87121281	Black					10
<b>Grommet adapter (adapter for small grommet)</b>							
ATG/E <sup>1)</sup>	87121268	Black		- / •	1		10
<b>Hose grommet</b>							
SDT/ZE 07 <sup>1)</sup>	87174250	Black		• / -	1	M10/P07	10
SDT/ZE 09 <sup>1)</sup>	87174252	Black		• / -	1	M12/P09	10
SDT/ZE 11 <sup>1)</sup>	87174254	Black		• / -	1	M16/P11	10
SDT/ZE 16 <sup>1)</sup>	87174256	Black		- / •	1	M20/P16	10
SDT/ZE 21 <sup>1)</sup>	87174258	Black		- / •	1	M25/P21	10
<b>Dummy grommet</b>							
BTK/E	87121266	Black		• / -	0		10
BTG/E	87121270	Black		- / •	0		10

<sup>1)</sup> no UR approval

<sup>2)</sup> no UR-approval / unused openings can be closed off with Type VST sealing plugs

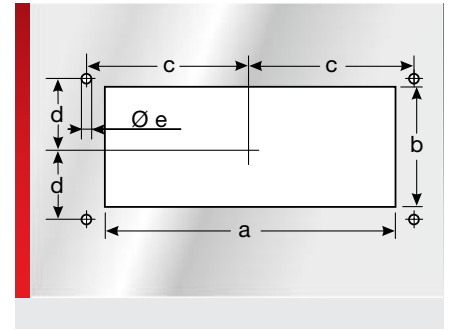
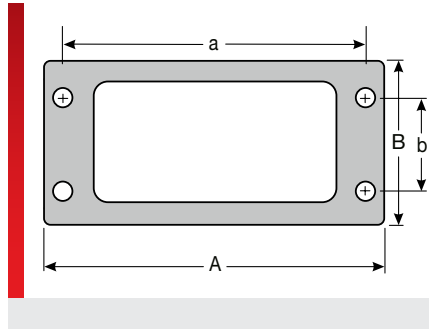






**KDL/S cable entry system**

## KDL/S 16 cable entry system



### PRODUCT INFORMATION

The KDL/S cable entry system is a custom plate that allows various kinds of cables to be inserted to accommodate customers' requests and to be able to seal openings. The internal KDT/S grommet can be custom designed based on the customer's requirements desires.

- Fits standard cut-outs for 16-pin plug connectors (e.g. Harting, Wieland and Rittal).
- Individual solutions
- Matching grommet: KDT/S

### SPECIFICATIONS

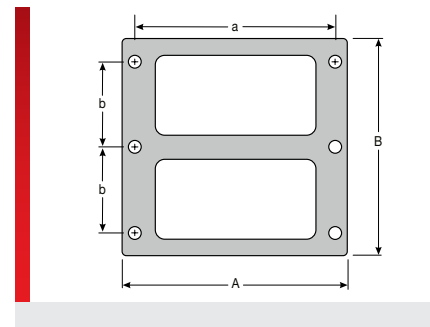
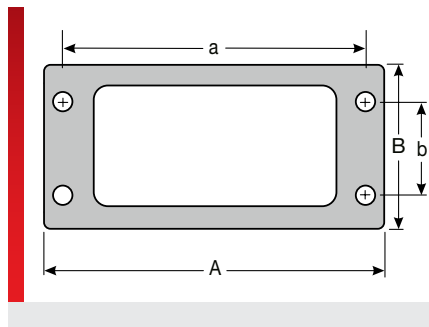
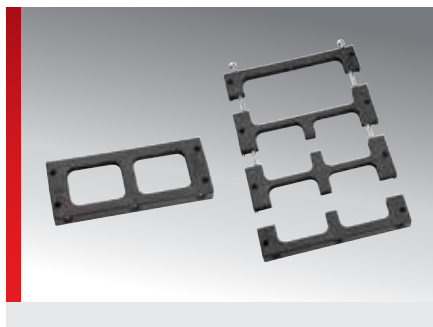
- 40 – 80 °C
- Polyamide 6.6
- V0
- IP 54 (with suitable grommets and cables)
- RoHS
- Made in Germany

Type	Order No.	Colour	Pack qty.
<b>For standard cut-out size 16</b>			
KDL/S 16	87173004	Black	1

### Dimension table

Type	Order No.	A mm	B mm	C mm	D mm	a mm	b mm	c mm	d mm	e mm	EH mm
<b>For standard cut-out size 16</b>											
KDL/S 16	87173004	116.00	58.00	82.00	43.00	86.00	36.00	51.50	16.00	5.50	15.00

## KDL/S 24 cable entry system



### PRODUCT INFORMATION

The Type KDL/S 24 cable entry system is a custom plate that allows various kinds of cables to be inserted to accommodate customers' requests and to be able to seal openings. The internal KDT/S-K and KDT/S-G grommets can be custom designed based on the customer requests.

- Individual solutions
- Matching grommet: KDT/S-K and KDT/S-G

### SPECIFICATIONS

- 40 – 80 °C
- Polyamide 6.6
- V0

RoHS
 LABS
 UV
 Made in Germany

Type	Order No.	Colour	Pack qty.
KDL/S-G 24	87173032	Black	1
KDL/S-G 24/2	87173036	Black	1
KDL/S-G-K 24/3	87173038	Black	1
KDL/S-K 24	87173030	Black	1
KDL/S-K 24/4	87173034	Black	1

### Dimension table

Type	Order No.	A mm	B mm	a mm	b mm
KDL/S-G 24	87173032	142.00	58.00	130.00	32.00
KDL/S-G 24/2	87173036	142.00	102.00	130.00	38.00
KDL/S-G-K 24/3	87173038	142.00	102.00	130.00	38.00
KDL/S-K 24	87173030	142.00	58.00	130.00	32.00
KDL/S-K 24/4	87173034	142.00	102.00	130.00	38.00

## KDT/S 16 cable entry grommets








### PRODUCT INFORMATION

The cable entry grommets type KDT/S can be manufactured to meet the customer's specifications. It can provide solutions for a wide variety of applications, e.g. insertion of cables in a range of shapes or sealing openings for metal wiring.

- Individual solutions

### SPECIFICATIONS

	-40 – 80 °C
	Thermoplastic rubber
	HB
	

Type	Order No.	Colour	No. Openings	for Ø mm	For ribbon cable mm	Version	Pack qty.
KDT/S 2x15	87175444	Black	2	15		two-piece	1
KDT/S 2x24 – 28	87175447	Black	2	24 – 28		two-piece	1
KDT/S 2x28 – 32	87175443	Black	2	28 – 32		two-piece	1
KDT/S 2x35	87175440	Black	2	35		two-piece	1
KDT/S 6x17.5	87175441	Black	6	17.5		one-piece	1
KDT/S 6x20.3	87175445	Black	6	20.3		one-piece	1
KDT/S 56x13	87175442	Black	2		56.0 x 13.0	two-piece	1
KDT/S 56x13 B	87175448	Black	2		56.0 x 13.0	one-piece	1
KDT/S 67x12 B	87175446	Black	2		67.0 x 12.0	one-piece	1
KDT/S 67x12 C	87175449	Black	2		67.0 x 12.0	two-piece	1
KDT/S Blind	87175437	Black				one-piece	1

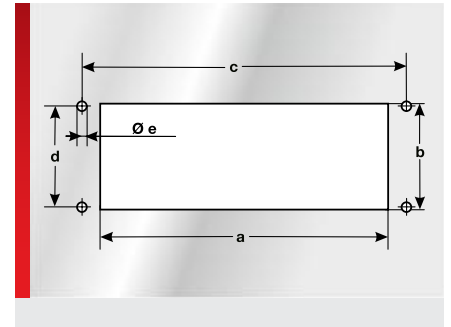
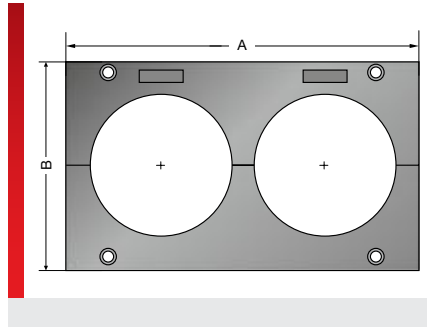






## **KDL-Jumbo cable entry system**

## KDL-Jumbo cable entry system



### PRODUCT INFORMATION

The KDL-Jumbo cable entry system is used for inserting pre-assembled cables and corrugated conduits (EW & EWX corrugation). The KDL-Jumbo system is a fully splittable system that enables the quick and simple installation of 1 or 2 pre-assembled cables or corrugated conduits with a diameter of between 30 mm and 65 mm in control cabinets and terminal boxes. Particular benefits of the KDL-Jumbo noise attenuation liner:

- Cable infeed without interruption
- Very robust and completely splittable system
- Integrated, permanent (captive) seal
- High protection class IP65
- Labelling with KSS 20x9 and KSS 10x8 labels
- Integrated strain relief at the grommets
- Fire classification V0 per UL94
- Supply includes all mounting materials.

### SPECIFICATIONS

- 30 – 100 °C
- Polyamide 6.6, PUR
- V0
- IP 65 (with suitable grommets and cables)

Type	Order No.	Colour	for Ø mm	No. Openings	Pack qty.
KDL-Jumbo 1	87176110	Black	30.0 – 65.0	1	1
KDL-Jumbo 2	87176120	Black	30.0 – 65.0	2	1

### Dimension table

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDL-Jumbo 1	87176110	35.00	110.00	116.00	90.00	90.00	57.00	101.00	7.00
KDL-Jumbo 2	87176120	35.00	200.00	116.00	180.00	90.00	147.00	101.00	7.00



## KDT/Z-Jumbo cable entry grommets




### PRODUCT INFORMATION

The cable entry grommet KDT/Z-Jumbo allows the fitting of cables from 30-65 mm in size in the openings of the KDL-Jumbo cable entry system. The grommet has two parts, and is aligned and installed with the frame halves together around the cable. Strain relief can be provided quickly and easily for cables using cable ties.

### SPECIFICATIONS

	-30 – 100 °C
	TPE-S
	V0

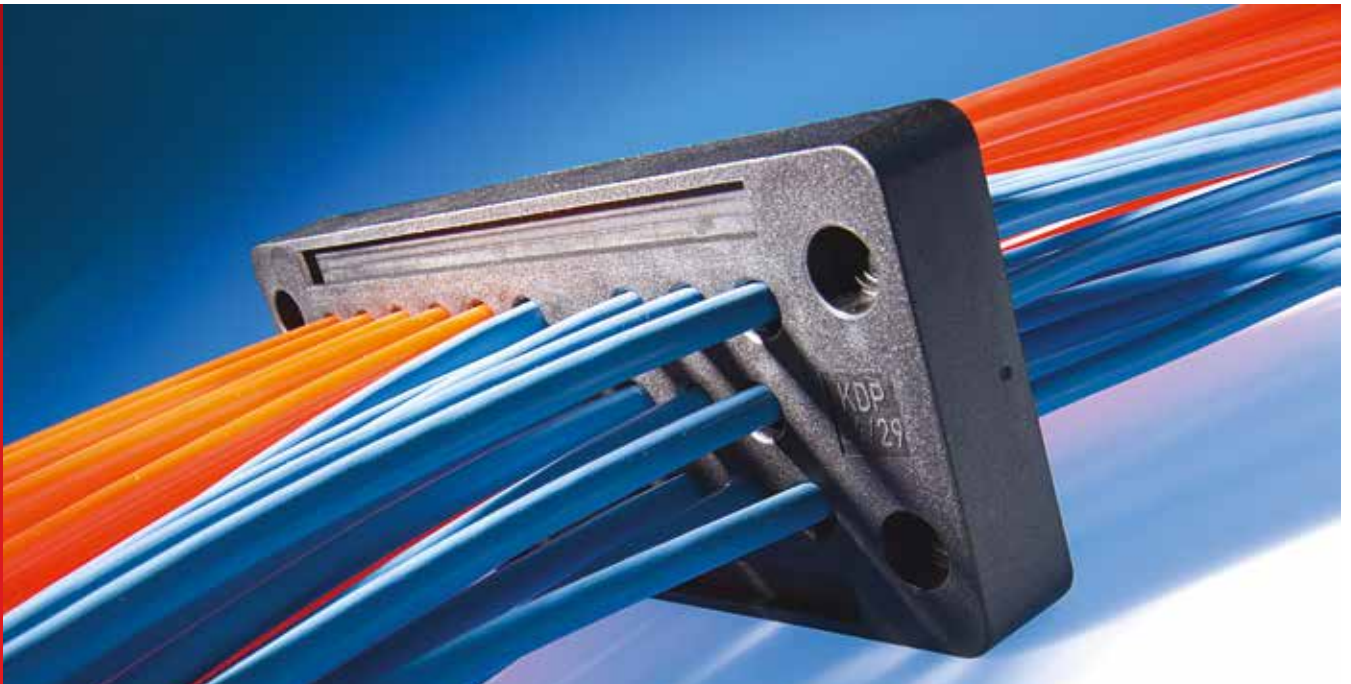
			
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Type	Order No.	Colour	for Ø mm	No. Openings	Pack qty.
KDT/Z-Jumbo 30-35	87176212	Black	30 – 35	1	1
KDT/Z-Jumbo 35-40	87176214	Black	35 – 40	1	1
KDT/Z-Jumbo 40-45	87176216	Black	40 – 45	1	1
KDT/Z-Jumbo 45-50	87176218	Black	45 – 50	1	1
KDT/Z-Jumbo 50-55	87176220	Black	50 – 55	1	1
KDT/Z-Jumbo 55-60	87176222	Black	55 – 60	1	1
KDT/Z-Jumbo 60-65	87176224	Black	60 – 65	1	1

#### Dummy grommet

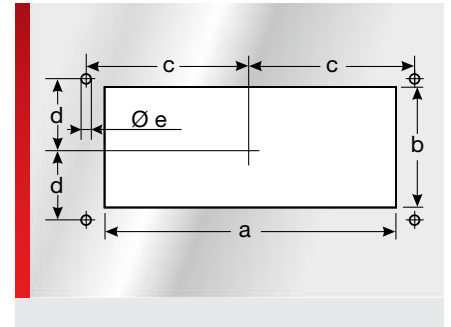
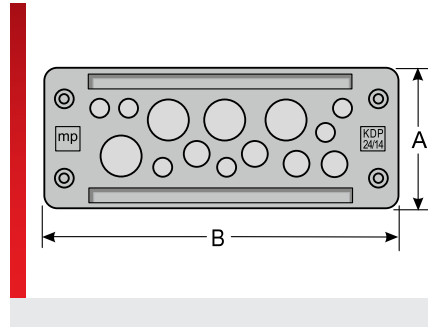
BT-Jumbo	87176210	Black			1
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**KDP cable entry plate, plastic, rectangular**

## KDP/N 24 cable entry plate, plastic



### PRODUCT INFORMATION

Second generation of our cable entry plates, plastic, square, with improved clip-in function.

Economical connection technology for tool-free wiring of equipment and machinery. Wherever the rapid and economical introduction of cables and/or pneumatic hoses in confined spaces is essential. The alternative to cable fittings. Suitable for standard

cut-outs for 24-pin Harting and Wieland connectors. For snap-in fastening and/or screwing in place.

- Snap-in at plate thicknesses of 1.5 to 2.0 mm
- High degree of strain relief
- 2 elastomer panels (seals)

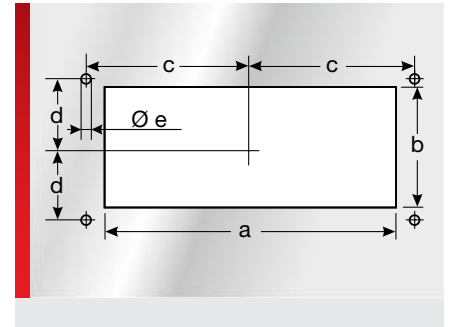
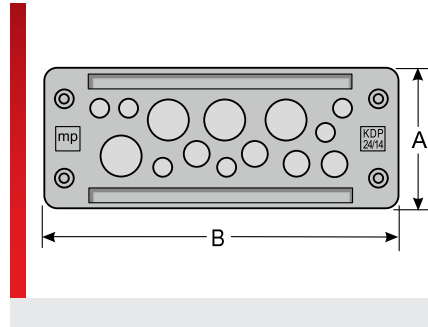
### SPECIFICATIONS

	-30 – 70 °C
	Enclosure: Polyamide 6.6 Seal: TPU / NBR / EPDM
	IP 65

Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	Pack qty.
KDP/N 24/10	87301108	Black	10	2x 3.0 – 6.5 1x 5.0 – 9.2 5x 9.0 – 14.0 2x 14.0 – 20.0	1
KDP/N 24/11	87301110	Black	11	4x 3.0 – 6.5 4x 5.0 – 9.2 3x 14.0 – 20.0	1
KDP/N 24/12	87301120	Black	12	12x 8.0 – 12.0	1
KDP/N 24/13	87301130	Black	13	2x 3.0 – 5.5 6x 4.1 – 8.1 4x 9.0 – 14.0 1x 14.0 – 20.0	1
KDP/N 24/14	87301140	Black	14	6x 3.0 – 6.5 4x 5.0 – 9.2 4x 9.6 – 15.9	1
KDP/N 24/17	87301150	Black	17	17x 5.0 – 9.2	1
KDP/N 24/17-1	87301151	Black	17	11x 3.0 – 6.5 1x 4.1 – 8.1 5x 8.0 – 12.5	1
KDP/N 24/22	87301160	Black	22	16x 3.0 – 6.5 4x 5.0 – 9.2 2x 8.0 – 12.5	1
KDP/N 24/23	87301170	Black	23	23x 4.1 – 8.1	1
KDP/N 24/29	87301180	Black	29	29x 3.0 – 6.5	1
KDP/N 24/80	87301190	Black	80	78x 1.5 – 2.6 2x 2.5 – 5.0	1



## KDP/X 24 cable entry plate, plastic



### PRODUCT INFORMATION

4. Generation of our cable entry plates, plastic, square, with improved clip-in function and one instead of two elastomer plates. Economical connection technology for tool-free wiring of equipment and machinery. Wherever the rapid and economical introduction of cables and/or pneumatic hoses in confined spaces is essential. The alter-

native to cable fittings. Suitable for standard cut-outs for 24-pin Harting and Wieland connectors. For snap-in fastening and/or screwing in place.

- Snap-in at plate thicknesses of 1.5 to 2.0 mm
- High degree of strain relief

### SPECIFICATIONS

	-30 – 70 °C
	Enclosure: Polyamide 6.6 Seal: TPU / EPDM
	IP 65

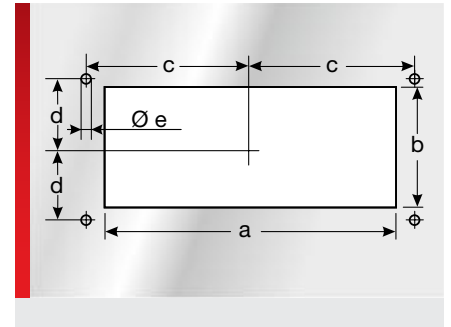
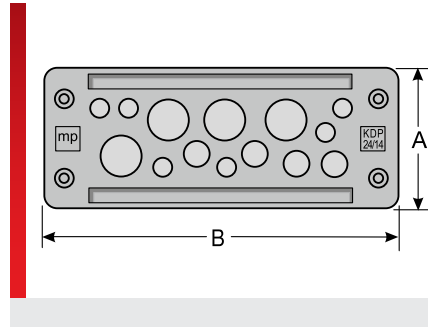
Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	Pack qty.
KDP/X 24/10	87301305	Black	10	2x 3.0 – 6.5	1
				1x 5.0 – 9.2	
				5x 9.0 – 14.0	
				2x 14.0 – 20.0	
KDP/X 24/11	87301315	Black	11	4x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				3x 14.0 – 20.0	
KDP/X 24/12	87301325	Black	12	12x 8.0 – 12.0	1
KDP/X 24/13	87301335	Black	13	2x 3.0 – 5.5	1
				6x 4.1 – 8.1	
				4x 9.0 – 14.0	
				1x 14.0 – 20.0	
KDP/X 24/14	87301345	Black	14	6x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				4x 9.6 – 15.9	
KDP/X 24/17	87301355	Black	17	17x 5.0 – 9.2	1
KDP/X 24/17-1	87301356	Black	17	11x 3.0 – 6.5	1
				1x 4.1 – 8.1	
				5x 8.0 – 12.5	
KDP/X 24/22	87301365	Black	22	16x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				2x 8.0 – 12.5	
KDP/X 24/23	87301375	Black	23	23x 4.1 – 8.1	1
KDP/X 24/29	87301385	Black	29	29x 3.0 – 6.5	1

**KDP/X 24 cable entry plate, plastic** (Continued...)

**Dimension table**

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/X 24/10	87301305	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/11	87301315	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/12	87301325	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/13	87301335	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/14	87301345	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/17	87301355	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/17-1	87301356	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/22	87301365	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/23	87301375	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/X 24/29	87301385	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50

## KDP/E 24 cable entry plate, plastic



### PRODUCT INFORMATION

3. Generation of our cable entry plates, plastic, square, with improved clip-in function and one instead of two elastomer plates. Economical connection technology for tool-free wiring of equipment and machinery. Wherever the rapid and economical introduction of cables and/or pneumatic hoses in confined spaces is essential. The alternative to cable fittings. Suitable for standard cut-outs for 24-pin Harting and Wieland

connectors. For snap-in fastening and/or screwing in place.

- Snap-in at plate thicknesses of 1.5 to 2.0 mm
- Lower strain relief
- Introduction of larger cable diameters is possible
- Introduction from both sides is possible

### SPECIFICATIONS

	-30 – 70 °C
	Frame: Polyamide 6.6 Seal: TPU / EPDM
	IP 65

Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	Pack qty.
KDP/E 24/11	87301310	Black	11	4x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				3x 14.0 – 20.0	
KDP/E 24/12	87301320	Black	12	12x 8.0 – 12.0	1
KDP/E 24/13	87301330	Black	13	2x 3.0 – 5.5	1
				6x 4.1 – 8.1	
				4x 9.0 – 14.0	
KDP/E 24/14	87301340	Black	14	6x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				4x 9.6 – 15.9	
KDP/E 24/17	87301350	Black	17	17x 5.0 – 9.2	1
KDP/E 24/17-1	87301351	Black	17	11x 3.0 – 6.5	1
				1x 4.1 – 8.1	
				5x 8.0 – 12.5	
KDP/E 24/22	87301360	Black	22	16x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				2x 8.0 – 12.5	
KDP/E 24/23	87301370	Black	23	23x 4.1 – 8.1	1
KDP/E 24/29	87301380	Black	29	29x 3.0 – 6.5	1

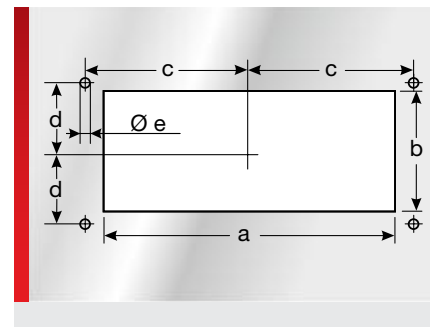
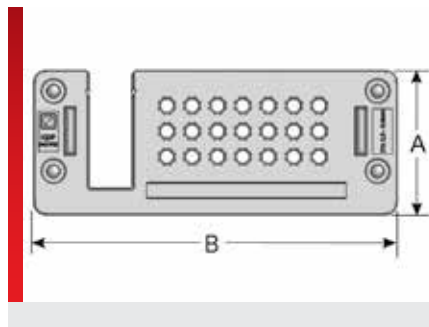
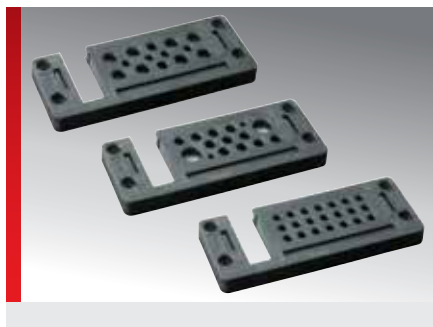


## KDP/E 24 cable entry plate, plastic (Continued...)

### Dimension table

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/E 24/11	87301310	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/E 24/12	87301320	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/E 24/13	87301330	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/E 24/14	87301340	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/E 24/17	87301350	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/E 24/17-1	87301351	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/E 24/22	87301360	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/E 24/23	87301370	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/E 24/29	87301380	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50

## KDP 24-Multi cable entry plate, plastic



### PRODUCT INFORMATION

The cable entry plates, type KDP 24-Multi are a combination of our KDP system and our cable entry strips KDL/E. They are ideal for situations where a few cables with plugs have to be brought into the control cabinet next to cables without plugs. These cable entry plates take up to four pre-assembled cables in two grommets.

- Catch hook for 1.5 – 2.0 mm plate thickness included with delivery, additional catch hooks for up to 4.1 mm plate thickness available

### SPECIFICATIONS

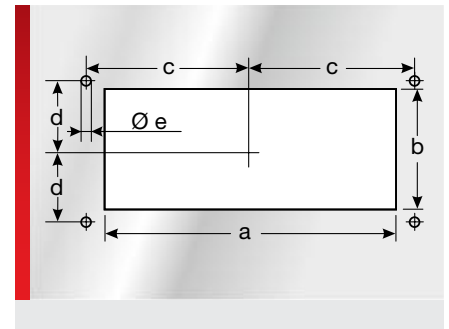
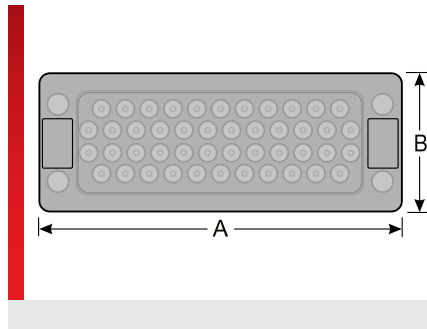
	-30 – 70 °C
	Enclosure: Polyamide Seal: TPU / NBR / EPDM
	IP 54

Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	No. Grommets	Pack qty.
KDP 24/10/02	87301076	Black	10	4x 3.0 – 6.5 2x 4.5 – 8.5 4x 8.0 – 12.5	2	1
KDP 24/14/02	87301078	Black	14	4x 2.5 – 5.0 2x 3.0 – 6.5 8x 4.5 – 8.5	2	1
KDP 24/15/02	87301080	Black	15	2x 1.5 – 3.5 11x 3.0 – 6.5 2x 8.5 – 12.5	2	1
KDP 24/17/02	87301082	Black	17	17x 3.0 – 6.5	2	1
KDP 24/20/02	87301084	Black	20	4x 1.5 – 3.5 6x 3.0 – 5.0 10x 3.0 – 6.5	2	1
KDP 24/21/02	87301086	Black	21	21x 2.5 – 5.0	2	1

### Dimension table

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP 24/10/02	87301076	15.50	58.00	146.00	112.00	36.00	65.00	16.00	5.50
KDP 24/14/02	87301078	15.50	58.00	146.00	112.00	36.00	65.00	16.00	5.50
KDP 24/15/02	87301080	15.50	58.00	146.00	112.00	36.00	65.00	16.00	5.50
KDP 24/17/02	87301082	15.50	58.00	146.00	112.00	36.00	65.00	16.00	5.50
KDP 24/20/02	87301084	15.50	58.00	146.00	112.00	36.00	65.00	16.00	5.50
KDP 24/21/02	87301086	15.50	58.00	146.00	112.00	36.00	65.00	16.00	5.50

## KDP/F 24 cable entry plate, plastic



### PRODUCT INFORMATION

The KDP/F 24 cable entry plate is an entry and fastening system for cables and pneumatic hoses such as those used in control cabinets, plant or machine construction. Wherever quick assembly, cable-protection and high packing density are required, this cable entry plate can be used.

- Enormous time savings in assembly
- High packing density
- Large wire diameter ranges
- Several cables may be fed through an opening together
- Very flat design

### SPECIFICATIONS

	-30 – 70 °C
	Frame: Polypropylene (PP) Seal: TPE
	HB
	IP 65

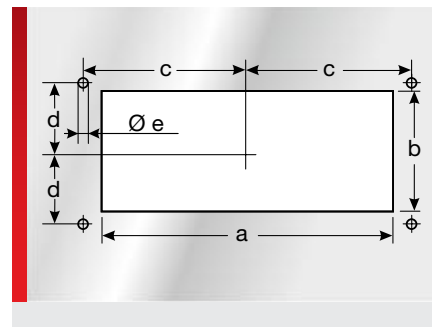
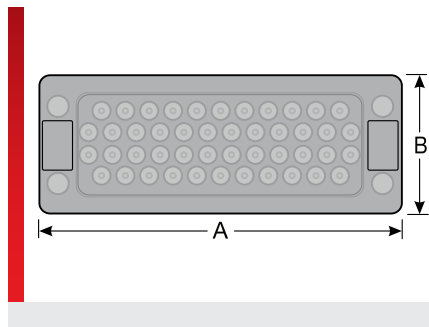


Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	Pack qty.
KDP/F 24-14	87302010	Black	14	6x max. 9.0 4x max. 11.0 4x max. 18.0	1
KDP/F 24-14, PU 100	87302011	Black	14	6x max. 9.0 4x max. 11.0 4x max. 18.0	100
KDP/F 24-22	87302020	Black	22	16x max. 9.0 4x max. 11.0 2x max. 15.0	1
KDP/F 24-22, PU 100	87302021	Black	22	16x max. 9.0 4x max. 11.0 2x max. 15.0	100
KDP/F 24-28	87302040	Black	28	28x max. 9.0	1
KDP/F 24-28, PU 100	87302041	Black	28	28x max. 9.0	100
KDP/F 24-46	87302050	Black	46	46x max. 6.5	1
KDP/F 24-46, PU 100	87302051	Black	46	46x max. 6.5	100
KDP/F 24-multi	87302030	Black	3	3x max. 27.0	1
KDP/F 24-multi, PU 100	87302031	Black	3	3x max. 27.0	100

### Dimension table

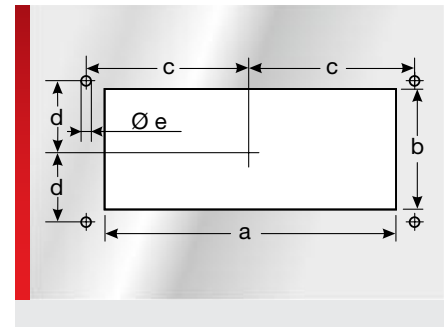
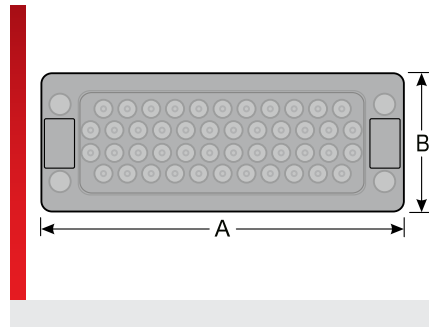
Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/F 24-14	87302010	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50
KDP/F 24-14, PU 100	87302011	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50
KDP/F 24-22	87302020	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50

**KDP/F 24 cable entry plate, plastic** (Continued...)



Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/F 24-22, PU 100	87302021	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50
KDP/F 24-28	87302040	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50
KDP/F 24-28, PU 100	87302041	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50
KDP/F 24-46	87302050	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50
KDP/F 24-46, PU 100	87302051	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50
KDP/F 24-multi	87302030	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50
KDP/F 24-multi, PU 100	87302031	10.00	148.00	60.00	112.00	36.00	65.00	16.00	5.50

## KDP/Z cable entry plate, plastic



### PRODUCT INFORMATION

The KDP/Z 24 cable entry plate is an entry and fastening system for cables and pneumatic hoses such as those used in control cabinets, plant or machine construction. Wherever quick assembly, cable-protection and high packing density are required, this cable entry plate can be used.

- Enormous time savings in assembly
- High packing density
- Large wire diameter ranges
- Good strain relief
- Very flat design

### SPECIFICATIONS

- 30 – 70 °C
- Frame: Polypropylene (PP)  
Seal: TPE
- V0 Frame:  
HB Seal:
- IP 65

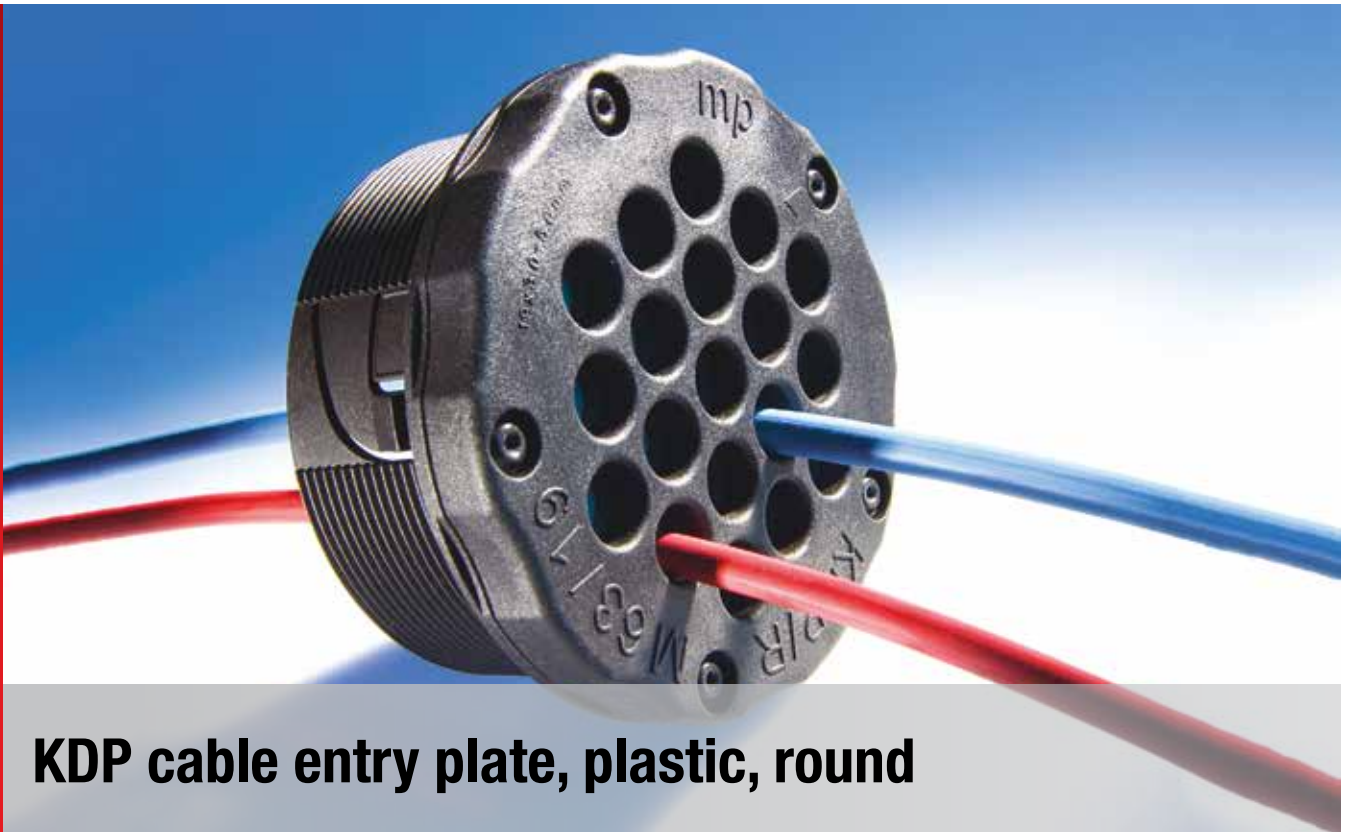


Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	Pack qty.
KDP/Z 24/14	87303010	Black	14	14x 7.5 – 12.0	5
KDP/Z 24/14-1	87303020	Black	14	2x 3.0 – 6.0 4x 5.0 – 9.0 3x 7.5 – 12.0 3x 10.0 – 16.0 2x 14.0 – 20.0	5
KDP/Z 24/23	87303030	Black	23	23x 5.0 – 9.0	5
KDP/Z 24/30	87303040	Black	30	20x 3.0 – 6.0 6x 5.0 – 9.0 4x 7.5 – 12.0	5
KDP/Z 24/48	87303050	Black	48	28x 3.0 – 6.0 20x 2.0 – 4.0	5

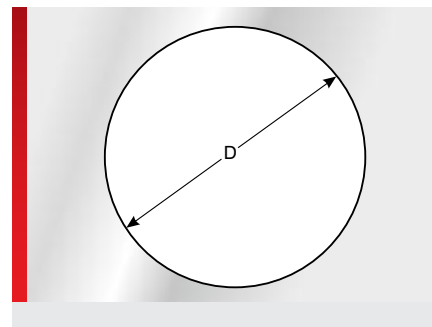
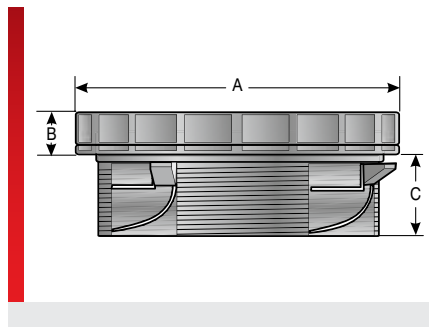
### Dimension table

Type	Order No.	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/Z 24/14	87303010	149.00	61.00	112.00	36.00	65.00	16.00	5.50
KDP/Z 24/14-1	87303020	149.00	61.00	112.00	36.00	65.00	16.00	5.50
KDP/Z 24/23	87303030	149.00	61.00	112.00	36.00	65.00	16.00	5.50
KDP/Z 24/30	87303040	149.00	61.00	112.00	36.00	65.00	16.00	5.50
KDP/Z 24/48	87303050	149.00	61.00	112.00	36.00	65.00	16.00	5.50





## KDP/R cable entry plate, plastic, round



### PRODUCT INFORMATION

Economical connection technology for tool-free wiring of equipment and machinery. Extremely quick mounting of cables and pneumatic hoses. The alternative to cable fittings. For snap-in fastening or screwing in place with a lock nut. Lock nut not included with delivery!

- For snapping into 1.5 – 2.0 mm plates
- Integrated seal
- Compact design
- High protection class

### SPECIFICATIONS

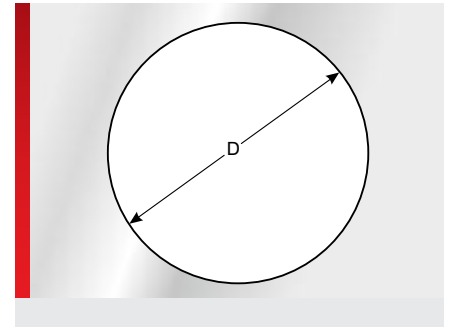
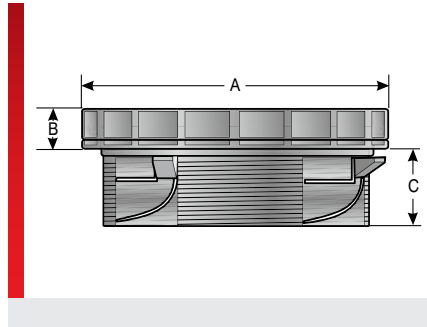
	-30 – 90 °C
	Enclosure: Polyamide 6.6 Seal: NBR / EPDM
	IP 65

Type	Order No.	Colour	No. of openings total	Openings Quantity / Ø mm	Thread metric	A mm	B mm	C mm	D mm	Pack qty.
KDP/R M50/04	87301030	Black	4	3x 6.0 – 10.0 1x 9.6 – 15.9	M50x1.5	58.00	9.00	24.00	50.50	1
KDP/R M50/06	87301032	Black	6	1x 3.0 – 5.5 5x 5.0 – 9.2	M50x1.5	58.00	9.00	24.00	50.50	1
KDP/R M50/08	87301034	Black	8	7x 3.5 – 6.5 1x 6.0 – 10.0	M50x1.5	58.00	9.00	24.00	50.50	1
KDP/R M50/31 <sup>1)</sup>	87301038	Black	31	31x 1.5 – 3.1	M50x1.5	58.00	9.00	24.00	50.50	1
KDP/R M63/08	87301040	Black	8	2x 3.0 – 6.5 4x 5.0 – 9.2 2x 9.6 – 15.9	M63x1.5	71.00	9.00	25.00	63.50	1
KDP/R M63/13	87301042	Black	13	6x 3.0 – 5.5 6x 3.5 – 6.5 1x 6.0 – 10.0	M63x1.5	71.00	9.00	25.00	63.50	1
KDP/R M63/19	87301044	Black	19	19x 3.0 – 5.0	M63x1.5	71.00	9.00	25.00	63.50	1
KDP/R M63/46 <sup>1)</sup>	87301048	Black	46	46x 1.5 – 3.1	M63x1.5	71.00	9.00	25.00	63.50	1

<sup>1)</sup> no UR approval



## KDP/R-KGM cable entry plate, plastic, round



### PRODUCT INFORMATION

Economical connection technology for tool-free wiring of equipment and machinery. Extremely quick mounting of cables and pneumatic hoses. The alternative to cable fittings. For snap-in fastening or screwing in place with a lock nut.

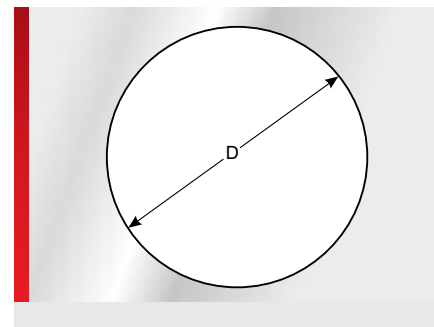
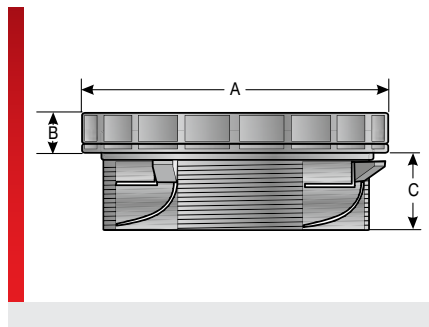
- For snapping into 1.5 – 2.0 mm plates
- Integrated seal
- Compact design
- High protection class
- Supply includes the lock nut

### SPECIFICATIONS

	-30 – 90 °C
	Enclosure: Polyamide 6.6 Seal: NBR / EPDM
	IP 65

Type	Order No.	Colour	No. of openings total	Openings Quantity / Ø mm	Thread metric	A mm	B mm	C mm	D mm	Pack qty.
KDP/R-KGM M50/04	87301031	Black	4	3x 6.0 – 10.0 1x 9.6 – 15.9	M50x1.5	58.00	9.00	24.00	50.50	1
KDP/R-KGM M50/06	87301033	Black	6	1x 3.0 – 5.5 5x 5.0 – 9.2	M50x1.5	58.00	9.00	24.00	50.50	1
KDP/R-KGM M50/08	87301035	Black	8	7x 3.5 – 6.5 1x 6.0 – 10.0	M50x1.5	58.00	9.00	24.00	50.50	1
KDP/R-KGM M50/31	87301039	Black	31	31x 1.5 – 3.1	M50x1.5	58.00	9.00	24.00	50.50	1
KDP/R-KGM M63/08	87301041	Black	8	2x 3.0 – 6.5 4x 5.0 – 9.2 2x 9.6 – 15.9	M63x1.5	71.00	9.00	25.00	63.50	1
KDP/R-KGM M63/13	87301043	Black	13	6x 3.0 – 5.5 6x 3.5 – 6.5 1x 6.0 – 10.0	M63x1.5	71.00	9.00	25.00	63.50	1
KDP/R-KGM M63/19	87301045	Black	19	19x 3.0 – 5.0	M63x1.5	71.00	9.00	25.00	63.50	1
KDP/R-KGM M63/46	87301049	Black	46	46x 1.5 – 3.1	M63x1.5	71.00	9.00	25.00	63.50	1

## KDPR/F cable entry plate, plastic, round



### PRODUCT INFORMATION

The KDPR/F cable entry plate is made of modified Polypropylene and is a round entry and fastening system for cables without plugs and pneumatic hoses such as those used in control cabinets, plant or machine construction. Wherever quick assembly, cable-protection and high packing density are required, this cable entry plate is used. Special benefits of the KDPR/F are:

- Enormous time savings in assembly
- High packing density
- Standardised cut-out dimensions
- Large wire diameter ranges
- Several cables may be fed through an opening together
- Very flat design

### SPECIFICATIONS

	-30 – 70 °C
	Frame: Polypropylene (PP) Seal: TPE
	HB
	IP 65

Type	Order No.	Colour	Openings Quantity / Ø mm	Thread metric	B mm	D mm	Pack qty.
KDPR/F 40/8	87302072	Black	8x max. 8.5	M40x1.5	6.50	40.50	5
KDPR/F 40/multi	87302070	Black	2x max. 14.0	M40x1.5	6.50	40.50	5

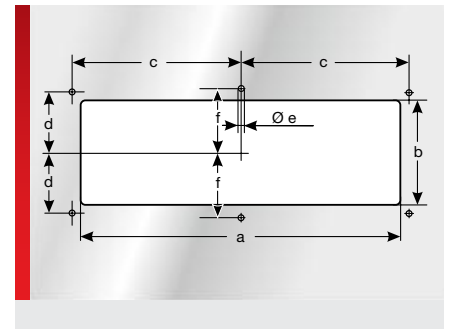
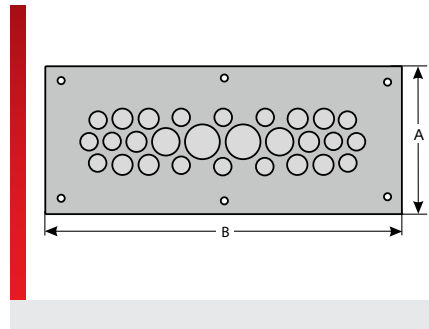


**KDP cablequick® cable entry plate, metal, rectangular**





## cablquick® Type 90 (90x221 mm)



### PRODUCT INFORMATION

Efficient connection technology for terminal boxes, control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, optoelectronic, pneumatic lines and drive technology into a control panel. The stainless steel version is particularly suitable for applications in the food and chemical industry. Integrated

threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

- V4A : 1.4571
- ALU : 3.3535
- ST : 1.0037
- Rittal cut-out 2

### SPECIFICATIONS

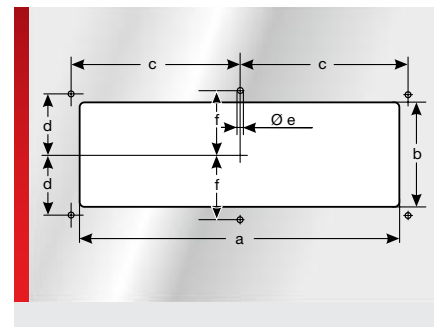
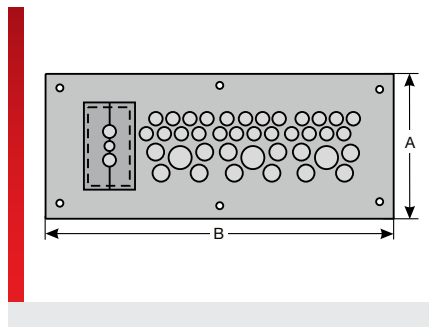
-30 – 90 °C  
 Seal: NBR / EPDM  
 IP 65

Type	Order No.	Colour	No. Openings	Openings No. Ø mm	Pack qty.
KDP 90/18 V4A <sup>1)</sup>	87663028	Smoothed	18	9x 6.0 – 10.0	1
				8x 12.0 – 18.0	
				1x 18.0 – 25.0	
KDP 90/28 ALU	87663032	RAL 7035	28	14x 4.0 – 8.0	1
KDP 90/28 V4A	87663034	Smoothed	28	10x 6.0 – 10.0	1
				2x 9.0 – 14.0	
				2x 12.0 – 18.0	
KDP 90/47 ALU <sup>1)</sup>	87663037	RAL 7035	47	14x 3.5 – 6.5	1
				28x 4.5 – 8.5	
				4x 7.0 – 11.0	
				1x 11.0 – 16.0	
KDP 90/47 V4A <sup>1)</sup>	87663039	Smoothed	47	14x 3.5 – 6.5	1
				28x 4.5 – 8.5	
				4x 7.0 – 11.0	
				1x 11.0 – 16.0	
KDP 90/55 V4A	87663058	Smoothed	55	3x 3.0 – 5.0	1
				32x 3.0 – 6.2	
				16x 4.0 – 8.0	
				4x 8.0 – 12.0	

<sup>1)</sup>no UR approval



## cablquick® Type 90+3 (90x221 mm)



### PRODUCT INFORMATION

Efficient connection technology for terminal boxes, control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, optoelectronic, pneumatic lines and drive technology into a control panel. The cut-out of the KDP 90/39+3 enables up to three pre-assembled cables with a maximum connector size of 48 x 24 mm to be introduced. The connector grommet is simply inserted into the plate and locked from behind by means of a quick-re-

lease lock. The stainless steel version is particularly suitable for applications in the food and chemical industry. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

- V4A : 1.4571
- ALU : 3.3535
- ST : 1.0037
- Rittal cut-out 2

### SPECIFICATIONS

	-30 – 90 °C
	Seal: NBR / EPDM
	IP 65

Type	Order No.	Colour	No. Openings	Openings No. Ø mm	Pack qty.
KDP 90/39+3 ALU	87663036	RAL 7035	42	24x 3.0 – 6.0	1
				12x 4.0 – 8.0	
				3x 8.0 – 12.0	
KDP 90/39+3 V4A	87663038	Smoothed	42	24x 3.0 – 6.2	1
				12x 4.0 – 8.0	
				3x 8.0 – 12.0	

### Dimension table

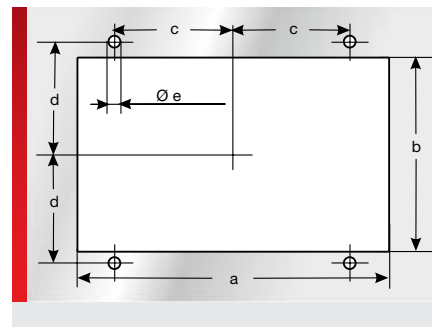
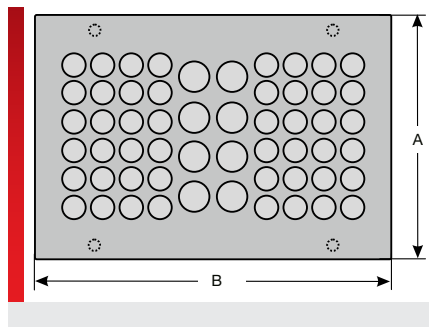
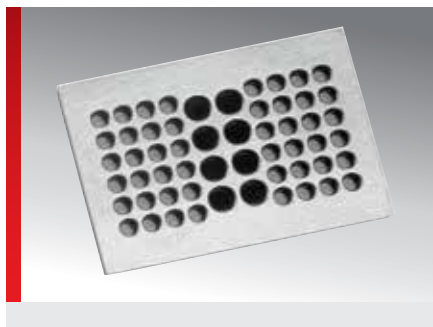
Type	Order No.	A mm	B mm	a mm	b mm	c mm	d mm	e mm	f mm
KDP 90/39+3 ALU	87663036	90.00	221.00	192.00	62.00	101.00	36.00	4.50	38.00
KDP 90/39+3 V4A	87663038	90.00	221.00	192.00	62.00	101.00	36.00	4.50	38.00







## cablquick® Type 100 (100x145 mm)



### PRODUCT INFORMATION

Efficient connection technology for terminal boxes, control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, optoelectronic, pneumatic lines and drive technology into a control panel. KDPs of the product group 100 fits into standard cut-outs for Rittal and Sarel cabinets when combined with adapter plates. These adapter plates can be configured individually.

The stainless steel version is particularly suitable for applications in the food and chemical industry. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

- V4A : 1.4571
- ALU : 3.3535
- ST : 1.0037

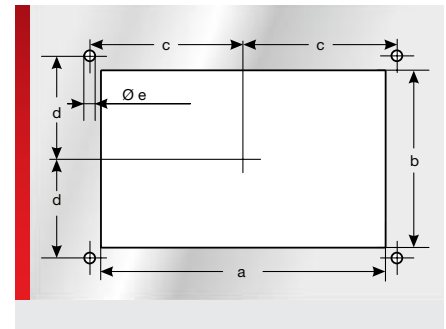
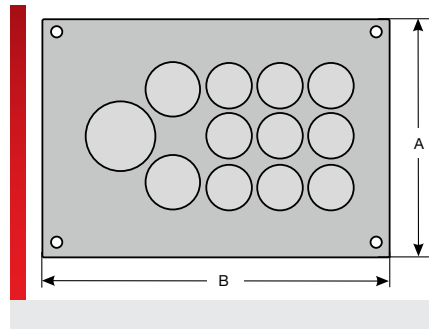
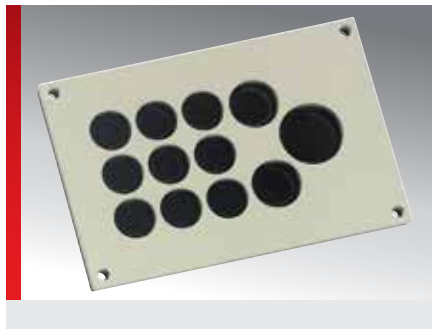
### SPECIFICATIONS

- 30 – 90 °C
- Seal: NBR / EPDM
- IP 65

Type	Order No.	Colour	No. Openings	Openings No. Ø mm	Pack qty.
KDP 100/6 V4A	87663116	Smoothed	6	6x 16.0 – 24.0	1
KDP 100/15 V4A	87663120	Smoothed	15	3x 8.0 – 12.0	1
				12x 11.0 – 16.0	
KDP 100/18 V4A	87663122	Smoothed	18	18x 8.0 – 12.0	1
KDP 100/24 V4A	87663124	Smoothed	24	24x 6.0 – 10.5	1
KDP 100/30 V4A	87663062	Smoothed	30	12x 3.5 – 6.2	1
				12x 6.0 – 10.0	
				6x 9.0 – 14.0	
KDP 100/30B V4A	87663063	Smoothed	30	12x 3.5 – 6.2	1
				12x 6.0 – 10.0	
				4x 9.0 – 14.0	
				2x 12.0 – 18.0	
KDP 100/40 V4A	87663061	Smoothed	40	40x 4.5 – 8.5	1
KDP 100/56 V4A	87663060	Smoothed	56	48x 3.5 – 6.2	1
				8x 6.0 – 10.0	
KDP 100/56B V4A	87663065	Smoothed	56	48x 1.0 – 3.5	1
				8x 3.5 – 6.5	
KDP 100/56C V4A	87663067	Smoothed	56	48x 1.0 – 3.5	1
				4x 3.5 – 6.5	
				4x 6.0 – 10.0	



## cablequick® Type 105 (105x155 mm)



### PRODUCT INFORMATION

Efficient connection technology for terminal boxes, control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, optoelectronic, pneumatic lines and drive technology into a control panel. KDPs of the product group 105 fits into standard cut-outs for Rittal and Sarel cabinets when combined with adapter plates. These adapter plates can be configured individually.

The stainless steel version is particularly suitable for applications in the food and chemical industry. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

- V4A : 1.4571
- ALU : 3.3535
- ST : 1.0037

### SPECIFICATIONS

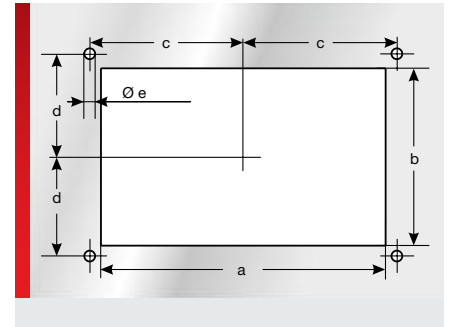
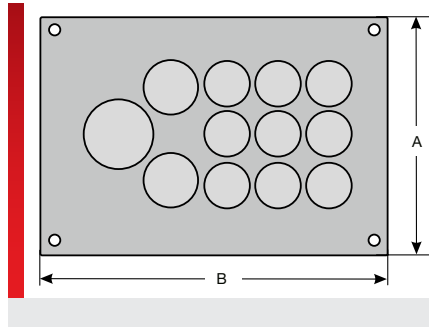
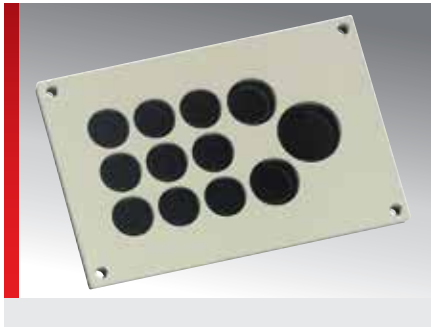
	-30 – 90 °C
	Seal: NBR / EPDM
	IP 65

Type	Order No.	Colour	No. Openings	Openings No. Ø mm	Pack qty.
KDP 105/12 ALU	87663056	RAL 7035	12	9x 9.0 – 14.0	1
				2x 12.0 – 18.0	
				1x 18.0 – 25.0	
KDP 105/12 V4A	87663057	Smoothed	12	9x 9.0 – 14.0	1
				2x 12.0 – 18.0	
				1x 18.0 – 25.0	
KDP 105/15 ALU	87663014	RAL 7035	15	8x 6.0 – 10.0	1
				4x 9.0 – 16.0	
				3x 12.0 – 18.0	
KDP 105/15 V4A	87663016	Smoothed	15	8x 6.0 – 10.0	1
				4x 9.0 – 14.0	
				3x 12.0 – 18.0	
KDP 105/32 ALU	87663010	RAL 7035	32	16x 3.0 – 5.0	1
				12x 4.0 – 8.0	
				4x 6.0 – 10.0	
KDP 105/32 V4A	87663012	Smoothed	32	16x 3.0 – 5.0	1
				12x 4.0 – 8.0	
				4x 6.0 – 10.0	

### Dimension table

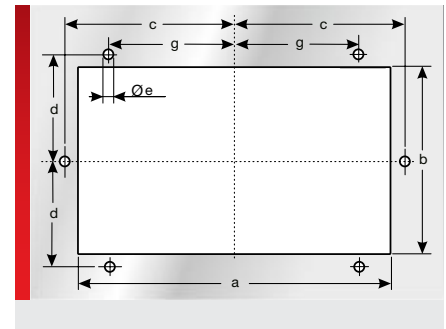
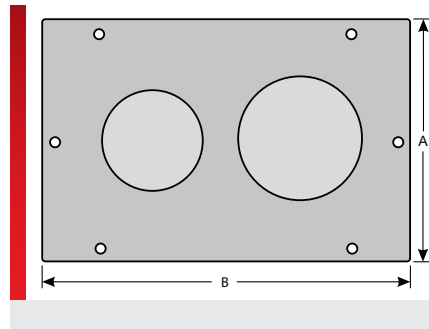
Type	Order No.	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP 105/12 ALU	87663056	105.00	155.00	132.00	82.00	71.50	46.50	5.50
KDP 105/12 V4A	87663057	105.00	155.00	132.00	82.00	71.50	46.50	5.50
KDP 105/15 ALU	87663014	105.00	155.00	132.00	82.00	71.50	46.50	5.50

**cablquick® Type 105 (105x155 mm)** (Continued...)



Type	Order No.	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP 105/15 V4A	87663016	105.00	155.00	132.00	82.00	71.50	46.50	5.50
KDP 105/32 ALU	87663010	105.00	155.00	132.00	82.00	71.50	46.50	5.50
KDP 105/32 V4A	87663012	105.00	155.00	132.00	82.00	71.50	46.50	5.50

## cablquick® Type 120 (120x190 mm)



### PRODUCT INFORMATION

Tool-free, efficient connection technology for the electrical power sector. Performance cables and services are sealed and fed into control cabinets or junction boxes and are supported flexibly.

The stainless steel version is particularly suitable for application in the food and chemical areas.

Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

- V4A : 1.4571
- ALU : 3.3535
- ST : 1.0037

### SPECIFICATIONS

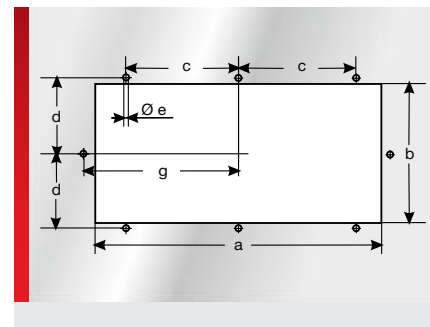
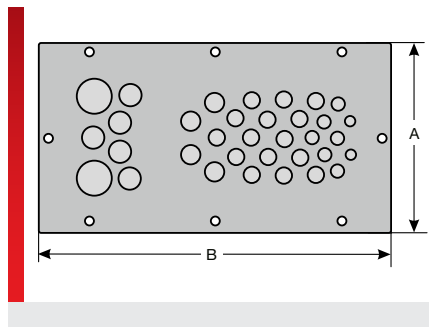
	-30 – 90 °C
	Seal: NBR / EPDM
	IP 65

Type	Order No.	Colour	No. Openings	Openings No. Ø mm	Pack qty.
KDP 120/17 V4A	87663143	Smoothed	17	6x 6.0 – 10.0	1
				4x 9.0 – 14.0	
				3x 12.0 – 18.0	
				4x 18.0 – 25.0	
KDP 120/2 B V4A	87663141	Smoothed	2	2x 36.0 – 49.0	1
KDP 120/2 C V4A	87663142	Smoothed	2	1x 18.0 – 36.0	1
				1x 36.0 – 49.0	
KDP 120/2 V4A	87663140	Smoothed	2	2x 18.0 – 36.0	1
KDP 120/35 V4A	87663144	Smoothed	35	8x 3.5 – 6.5	1
				18x 6.0 – 10.0	
				7x 9.6 – 15.9	
				2x 14.0 – 20.0	
KDP 120/2 ALU	87663001	RAL 7035	2	2x 18.0 – 36.0	1
KDP 120/2 B ALU	87663002	RAL 7035	2	2x 36.0 – 49.0	1
KDP 120/2 C ALU	87663003	RAL 7035	2	1x 18.0 – 36.0	1
				1x 36.0 – 49.0	
KDP 120/17 ALU	87663004	RAL 7035	17	6x 6.0 – 10.0	1
				4x 9.0 – 14.0	
				3x 12.0 – 18.0	
				4x 18.0 – 25.0	
KDP 120/35 ALU	87663005	RAL 7035	35	8x 3.5 – 6.5	1
				18x 6.0 – 10.0	
				7x 9.6 – 15.9	
				2x 14.0 – 20.0	





## cablquick® Type 134 (134x254 mm)



### PRODUCT INFORMATION

Efficient connection technology for terminal boxes, control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, optoelectronic, pneumatic lines and drive technology into a control panel.  
The stainless steel version is particularly suitable for application in the food and chemical areas.

Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

- V4A : 1.4571
- ALU : 3.3535
- ST : 1.0037

### SPECIFICATIONS

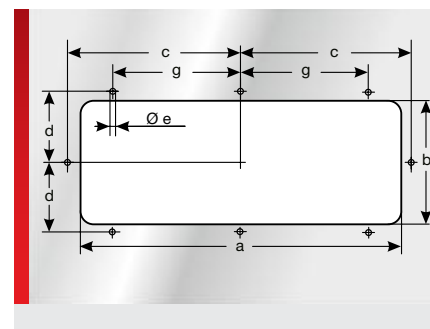
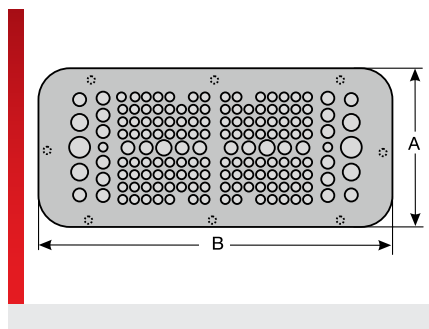
- 30 – 90 °C
- Seal: NBR / EPDM
- IP 65

Type	Order No.	Colour	No. Openings	Openings No. Ø mm	Pack qty.
KDP 134/34 ALU	87663024	RAL 7035	34	2x 3.0 – 5.0	1
				6x 4.0 – 8.0	
				15x 6.0 – 10.0	
				4x 8.0 – 12.0	
				5x 9.0 – 14.0	
				2x 14.0 – 20.0	

### Dimension table

Type	Order No.	A mm	B mm	a mm	b mm	c mm	d mm	e mm	g mm
KDP 134/34 ALU	87663024	134.00	254.00	231.00	111.00	90.50	61.00	5.50	121.00

## cablequick® Type 149 (149x339 mm)



### PRODUCT INFORMATION

Efficient connection technology for terminal boxes, control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, optoelectronic, pneumatic lines and drive technology into a control panel. KDPs of product group 149 can be fitted directly into the standard cut-outs of Rittal cabinets.

The stainless steel version is particularly suitable for applications in the food and chemical industry. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

V4A : 1.4571  
 ALU : 3.3535  
 ST : 1.0037  
 Rittal cut-out 4

### SPECIFICATIONS

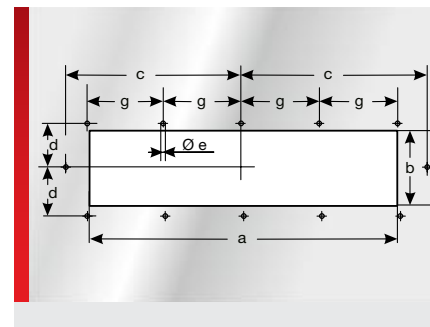
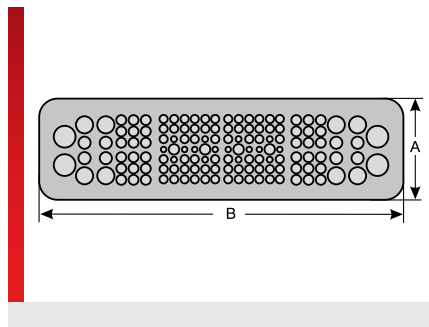
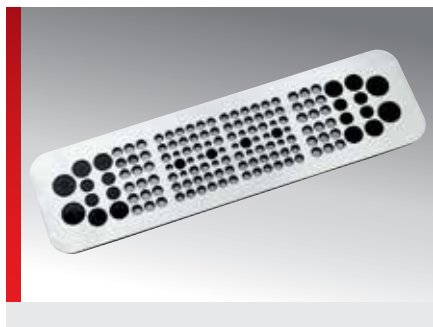
- 30 – 90 °C
- Seal: NBR / EPDM
- IP 65

Type	Order No.	Colour	No. Openings	Openings No. Ø mm	Pack qty.
KDP 149/158, Alu	87663089	RAL 7035	158	126x 3.5 – 6.2	1
				24x 6.0 – 10.0	
				6x 8.0 – 12.0	
				2x 12.0 – 18.0	
KDP 149/56, Alu	87663097	RAL 7035	56	36x 6.0 – 10.0	1
				8x 9.0 – 14.0	
				8x 14.0 – 18.0	
				4x 18.0 – 25.0	
KDP 149/78 ST <sup>1)</sup>	87663771	RAL 7035	78	30x 3.5 – 6.5	1
				40x 6.0 – 10.0	
				4x 11.0 – 16.0	
				2x 12.0 – 18.0	
				2x 18.0 – 25.0	
KDP 149/56 V4A	87663086	Smoothed	56	36x 6.0 – 10.0	1
				8x 9.0 – 14.0	
				8x 14.0 – 18.0	
				4x 18.0 – 25.0	
KDP 149/158 V4A	87663068	Smoothed	158	126x 3.5 – 6.2	1
				24x 6.0 – 10.0	
				6x 8.0 – 12.0	
				2x 12.0 – 18.0	

<sup>1)</sup> no UR approval



## cablquick® Type 149 (149x534 mm)



### PRODUCT INFORMATION

Efficient connection technology for terminal boxes, control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, optoelectronic, pneumatic lines and drive technology into a control panel. KDPs of product group 149 can be fitted directly into the standard cut-outs of Rittal cabinets.

The stainless steel version is particularly suitable for application in the food and chemical areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

- V4A : 1.4571
- ALU : 3.3535
- ST : 1.0037
- Rittal cut-out 5

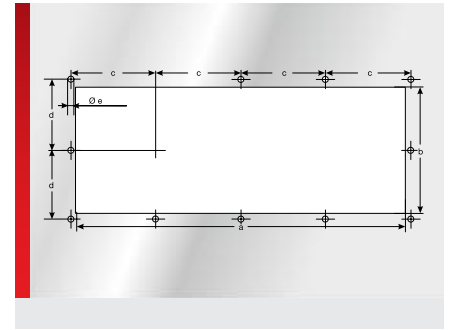
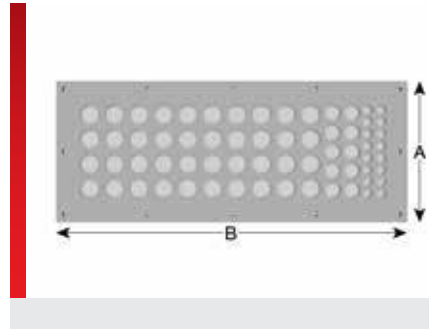
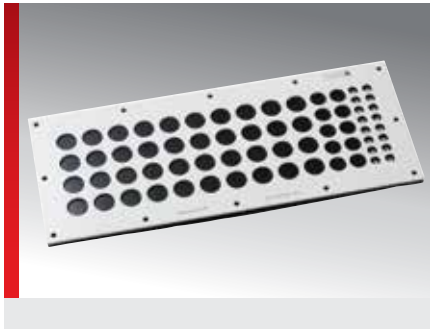
### SPECIFICATIONS

	-30 – 90 °C
	Seal: NBR / EPDM
	IP 65

Type	Order No.	Colour	No. Openings	Openings No. Ø mm	Pack qty.
KDP 149/140 ALU	87663095	RAL 7035	140	16x 3.5 – 6.2	1
				64x 4.5 – 8.5	
				36x 6.0 – 10.0	
				4x 8.0 – 12.0	
				8x 9.0 – 14.0	
				8x 14.0 – 18.0	
KDP 149/292 ALU	87663079	RAL 7035	292	4x 18.0 – 25.0	1
				250x 3.5 – 6.2	
				32x 6.0 – 10.0	
				8x 8.0 – 12.0	
KDP 149/46 ALU	87663064	RAL 7035	46	2x 12.0 – 18.0	1
				8x 6.0 – 10.0	
				16x 10.0 – 14.0	
				18x 12.0 – 18.0	
KDP 149/140 V4A	87663088	Smoothed	140	4x 18.0 – 25.0	1
				16x 3.5 – 6.2	
				64x 4.5 – 8.5	
				36x 6.0 – 10.0	
				4x 8.0 – 12.0	
				8x 9.0 – 14.0	
KDP 149/292 V4A	87663066	Smoothed	292	8x 14.0 – 18.0	1
				4x 18.0 – 25.0	
				250x 3.5 – 6.2	
				32x 6.0 – 10.0	
				8x 8.0 – 12.0	
				2x 12.0 – 18.0	



## cablquick® Type 160 (160x400 mm)



### PRODUCT INFORMATION

Efficient connection technology for terminal boxes, control cabinets for tool-free introduction of actuators, sensors, measuring and control instrumentation, optoelectronic, pneumatic lines and drive technology into a control panel.

The stainless steel version is particularly suitable for application in the food and chemical

areas. Integrated threaded bolts mean that no screws are visible from outside. Mounting set included in delivery.

- V4A : 1.4571
- ALU : 3.3535
- ST : 1.0037

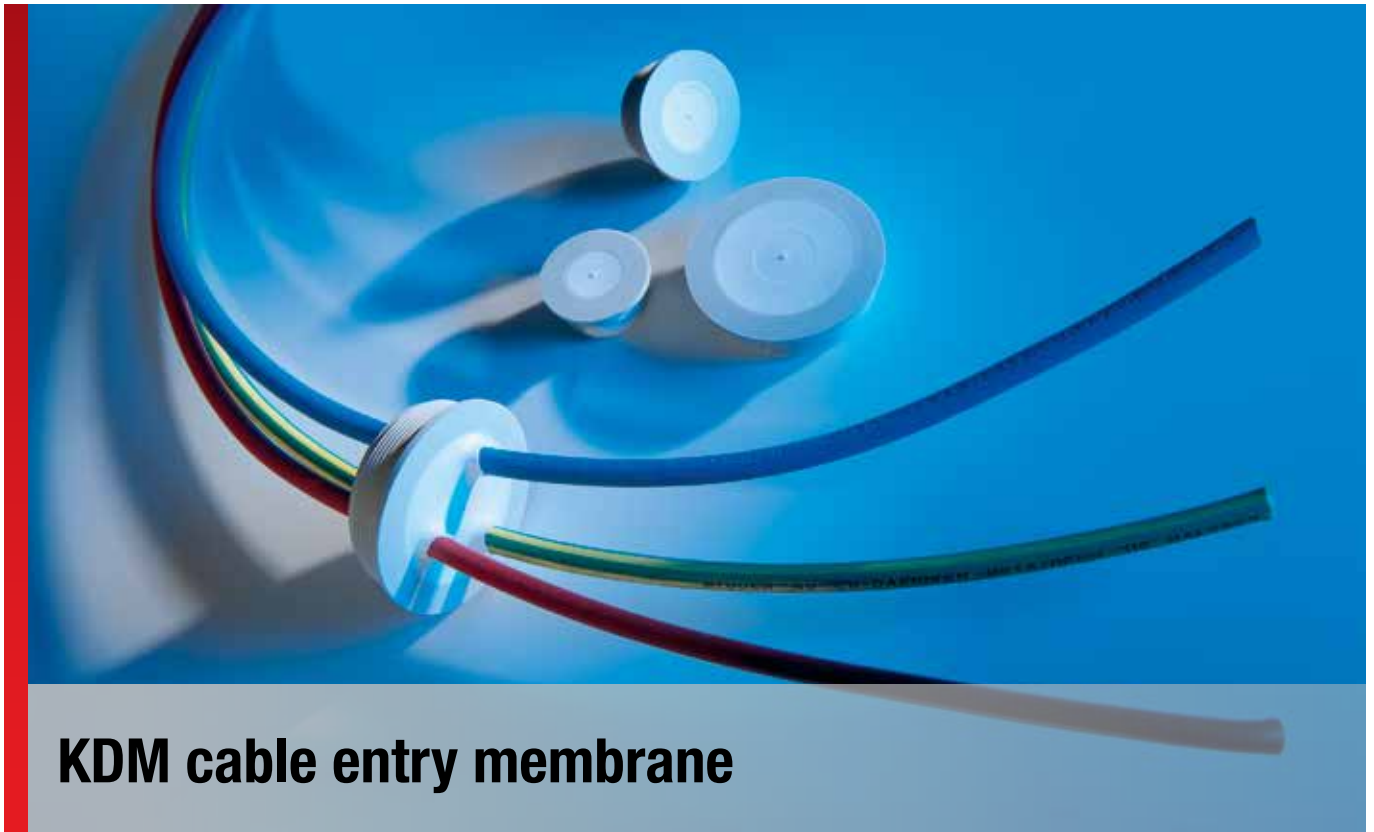
### SPECIFICATIONS

- 30 – 90 °C
- Seal: NBR / EPDM
- IP 65
- RoHS
- LABS
- UV

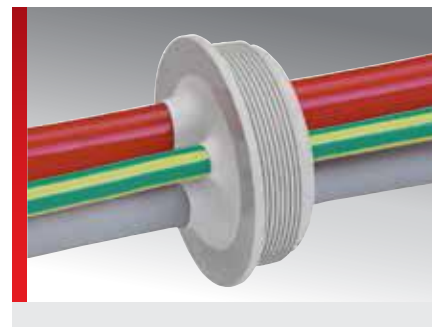
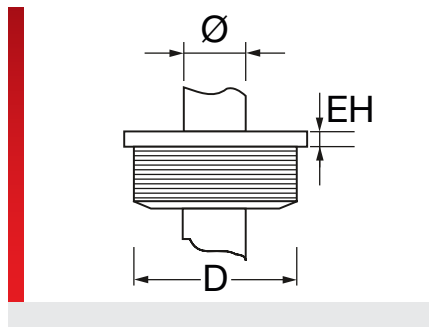
Type	Order No.	Colour	Openings No. Ø mm	Pack qty.
KDP 160/66 ALU	87663761	RAL 7035	16x 3.5 – 6.5	1
			10x 9.0 – 14.0	
			40x 12.0 – 18.0	

### Dimension table

Type	Order No.	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP 160/66 ALU	87663761	400.00	160.00	366.00	125.00	95.50	71.00	5.50



## KDM cable entry membrane



### PRODUCT INFORMATION

KDM is a cable entry system for cables without plug connectors. The various sizes fit on metric cut-outs from M16 to M32.

- Easy no-tool push-fit installation
- Extremely high tightness IP66
- Very flexible diameter ranges (more than one cable option)
- Fits on standard cut-outs of M16 to M32

### SPECIFICATIONS

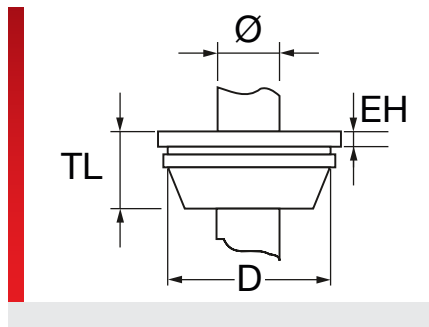
	-40 – 80 °C
	Enclosure: Polyethylene Seal: TPE
	IP 66 From plate thickness of 2.0 mm IP 65 for plate thickness of 1.5-2.0 mm

Type	Order No.	Colour	for Ø mm	EH mm	D mm	Pack qty.
KDM M16	87401010	Grey	1 – 9	1.50	16.20	50
KDM M20	87401012	Grey	1 – 13	1.50	20.40	50
KDM M25	87401014	Grey	1 – 18	1.50	25.40	50
KDM M32	87401016	Grey	1 – 25	1.50	32.50	50





## KDM/G cable entry membrane



### PRODUCT INFORMATION

KDM/G is a cable entry system for cables without plug connectors. The various sizes fit on metric cut-outs from M12 to M50 and are specially designed for cable diameters 4 – 35 mm.

- Easy no-tool push-fit installation
- Extremely high tightness IP66/67
- Fits on standard cut-outs of M12 to M50
- High temperature stability

### SPECIFICATIONS

- 40 – 110 °C
- EPDM
- IP 66 for plate thickness of 1.0–4.0 mm  
IP 67 for plate thickness of 1.0–4.0 mm
- 

Type	Order No.	Colour	for Ø mm	EH mm	TL mm	D mm	Pack qty.
KDM/G M12	87401020	Grey	4 – 7	7.00	13.00	12.20	50
KDM/G M16	87401022	Grey	5 – 10	7.00	18.00	16.20	50
KDM/G M20	87401024	Grey	8 – 13	7.00	20.00	20.40	50
KDM/G M25	87401026	Grey	11 – 17	7.00	21.50	25.40	50
KDM/G M32	87401028	Grey	15 – 21	7.00	25.00	32.50	50
KDM/G M40	87401030	Grey	19 – 27	8.00	30.00	40.50	25
KDM/G M50	87401032	Grey	28 – 35	9.50	35.00	50.50	10



## **Cable entry plates for railway technology**

## RAS room integrity set




### PRODUCT INFORMATION

The RAS Room integrity set is used in conjunction with the cable entry KDL / C or KDL / D and KDL / H. Because the system can be split apart the RAS room integrity system can be completely retrofitted on the inside of the housing. The fire protection mat reacts at temperatures exceeding 160°C by expanding and thereby closing off the opening completely fire resistant.

Special benefits of the RAS room integrity system are:

- Approved for railway technology (EN 45545-2 / 3x HL3)
- Room integrity (firewall)
- Completely splittable system
- Quick and easy assembly

### SPECIFICATIONS

 Frame: Polyamide 6

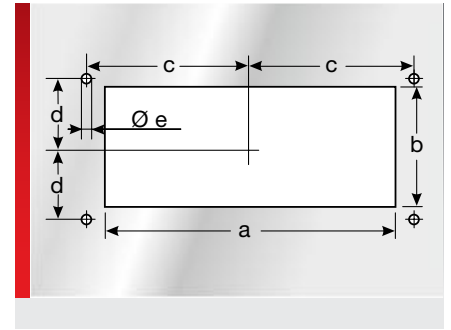
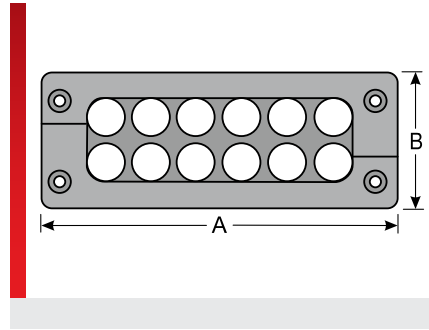


Type	Order No.	Colour	Suitable for	Pack qty.
RAS 24/12	87141111	Black	KDL/D 24/12	1
RAS 24/9	87141123	Black	KDL/D 24/9	1
RAS 24/8	87141119	Black	KDL/D 24/8	1
RAS 24/4	87141115	Black	KDL/D 24/4	1
RAS 16/8	87141127	Black	KDL/D 16/8	1
RAS 16/7	87141131	Black	KDL/D 16/7	1
RAS 16/3	87141135	Black	KDL/D 16/3	1
RAS 10/6	87141137	Black	KDL/D 10/6	1
RAS 10/5	87141143	Black	KDL/D 10/5	1
RAS 10/2	87141140	Black	KDL/D 10/2	1

### Dimension table

Type	Order No.	Installation height mm	A mm	B mm
RAS 24/12	87141111	15.00	148.00	58.00
RAS 24/9	87141123	15.00	148.00	58.00
RAS 24/8	87141119	15.00	148.00	58.00
RAS 24/4	87141115	15.00	148.00	58.00
RAS 16/8	87141127	15.00	121.00	58.00
RAS 16/7	87141131	15.00	121.00	58.00
RAS 16/3	87141135	15.00	121.00	58.00
RAS 10/6	87141137	15.00	101.00	58.00
RAS 10/5	87141143	15.00	101.00	58.00
RAS 10/2	87141140	15.00	101.00	58.00

## KDL/D-EN cable entry system



### PRODUCT INFORMATION

The KDL/D-EN cable entry systems is designed for inserting pre-assembled cables. The KDL/D-EN system is a splittable system that enables the quick and simple installation of up to 12 pre-assembled cables with a high packing density in control cabinets and terminal boxes.

Special benefits of the KDL/D-EN are:

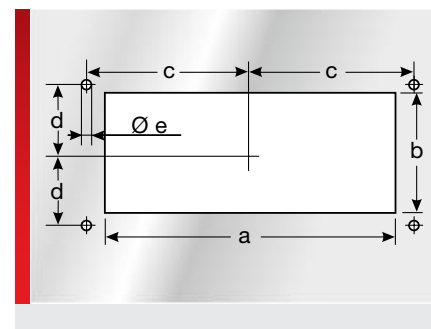
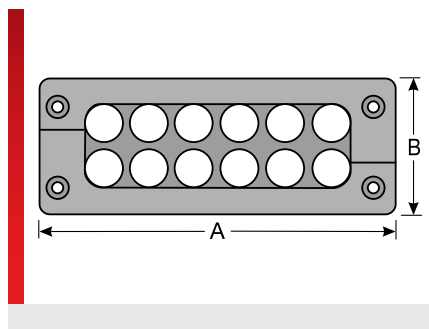
- Approved for railway technology (EN 45545-2 / 3x HL3)
- Cable infeed without interruption
- Standardised cut-out dimensions
- Easy assembly
- High protection class to IP 65
- Very robust construction
- Integrated strain relief

### SPECIFICATIONS

- 30 – 100 °C
- Frame: Polyamide  
Block: TPE
- V0
- IP 65 (with suitable grommets and cables)

Type	Order No.	Colour	No. Openings small / large	Pack qty.
<b>For standard cut-out size 24</b>				
KDL/D-EN 24/12	87141110	Black	12 / 0	1
KDL/D-EN 24/9	87141122	Black	8 / 1	1
KDL/D-EN 24/8	87141118	Black	6 / 2	1
KDL/D-EN 24/4	87141114	Black	0 / 4	1
<b>For standard cut-out size 16</b>				
KDL/D-EN 16/8	87141126	Black	8 / 0	1
KDL/D-EN 16/7	87141130	Black	6 / 1	1
KDL/D-EN 16/3	87141134	Black	0 / 3	1
<b>For standard cut-out size 10</b>				
KDL/D-EN 10/6	87141138	Black	6 / 0	1
KDL/D-EN 10/5	87141142	Black	4 / 1	1
KDL/D-EN 10/2	87141139	Black	0 / 2	1
<b>For standard cut-out size 6</b>				
KDL/D-EN 6/4	87141144	Black	4 / 0	1
<b>Special size</b>				
KDL/D-EN 1/6	87141148	Black	6 / 0	1

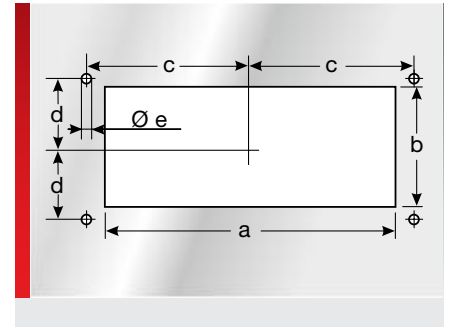
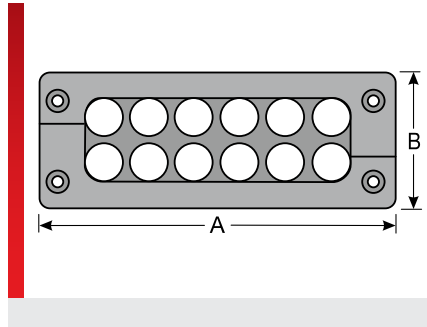
**KDL/D-EN cable entry system** (Continued...)



**Dimension table**

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	e mm
<b>For standard cut-out size 24</b>							
KDL/D-EN 24/12	87141110	18.00	148.00	58.00	112.00	36.00	5.50
KDL/D-EN 24/9	87141122	18.00	148.00	58.00	112.00	36.00	5.50
KDL/D-EN 24/8	87141118	18.00	148.00	58.00	112.00	36.00	5.50
KDL/D-EN 24/4	87141114	18.00	148.00	58.00	112.00	36.00	5.50
<b>For standard cut-out size 16</b>							
KDL/D-EN 16/8	87141126	18.00	121.00	58.00	86.00	36.00	5.50
KDL/D-EN 16/7	87141130	18.00	121.00	58.00	86.00	36.00	5.50
KDL/D-EN 16/3	87141134	18.00	121.00	58.00	86.00	36.00	5.50
<b>For standard cut-out size 10</b>							
KDL/D-EN 10/6	87141138	18.00	101.00	58.00	65.00	36.00	5.50
KDL/D-EN 10/5	87141142	18.00	101.00	58.00	65.00	36.00	5.50
KDL/D-EN 10/2	87141139	18.00	101.00	58.00	65.00	36.00	5.50
<b>For standard cut-out size 6</b>							
KDL/D-EN 6/4	87141144	18.00	74.00	58.00	65.00	36.00	5.50
<b>Special size</b>							
KDL/D-EN 1/6	87141148	18.00	148.00	38.00	112.00	17.00	5.50

## KDL/H-EN cable entry system, metal



### PRODUCT INFORMATION

KDL/H is manufactured in a zinc die-cast process and is designed for feed-through of pre-assembled cables. The KDL/D system is a splittable system that enables the quick and easy installation of up to 48 pre-assembled cables with a high packing density in control cabinets and terminal boxes. Special benefits of the KDL/H are:

- Cable infeed without interruption
- Approved for railway technology (EN 45545-2 / 3x HL3)
- Standardised cut-out dimensions
- Easy assembly
- High protection category to IP 69K (in combination with the proper enclosure)
- Very robust construction
- Integrated strain relief
- Matching grommet: KDT/X-EN

### SPECIFICATIONS

	-30 – 100 °C
	Frame: ZN Block: TPE Frame: Aluminium
	IP 66/67 (with suitable grommets and cables)

Type	Order No.	Colour	No. Openings small / large	Pack qty.
<b>For standard cut-out size 24</b>				
KDL/H-EN 24/12	87141510	Black	12	1

### Dimension table

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
<b>For standard cut-out size 24</b>									
KDL/H-EN 24/12	87141510	18.00	148.00	58.00	112.00	36.00	65.00	16.00	5.50

## KDT/X-EN cable entry grommets






### PRODUCT INFORMATION






For example, in conjunction with the KDL/D-EN and KDL/H-EN cable entry systems, the KDT/X-EN cable entry grommets can be used to easily route pre-assembled cables into and through control cabinets. The grommet is 1-piece and is subsequently positioned around the cable.

- Approved for railway technology (EN 45545-2 / 3x HL3)

### SPECIFICATIONS

	-30 – 100 °C
	TPE
	VO

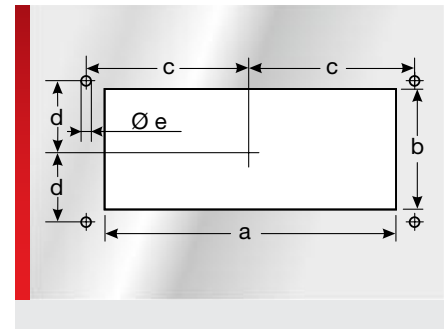
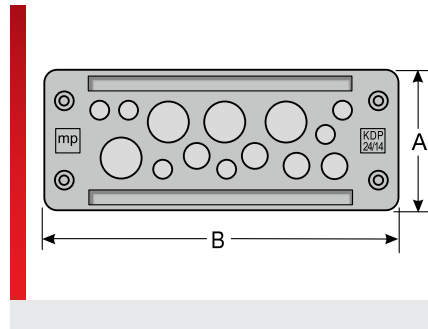
  

				
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Type	Order No.	Colour	for Ø mm	For opening small / large	No. of openings	Pack qty.
<b>Grommet, small</b>						
KDT/X-EN 02	87141310	Black	2 – 3	• / -	1	12
KDT/X-EN 03	87141312	Black	3 – 4	• / -	1	12
KDT/X-EN 04	87141314	Black	4 – 5	• / -	1	12
KDT/X-EN 05	87141316	Black	5 – 6	• / -	1	12
KDT/X-EN 06	87141318	Black	6 – 7	• / -	1	12
KDT/X-EN 07	87141320	Black	7 – 8	• / -	1	12
KDT/X-EN 08	87141322	Black	8 – 9	• / -	1	12
KDT/X-EN 09	87141324	Black	9 – 10	• / -	1	12
KDT/X-EN 10	87141326	Black	10 – 11	• / -	1	12
KDT/X-EN 11	87141328	Black	11 – 12	• / -	1	12
BTK/X-EN (dummy grommet)	87141370	Black		• / -		12
<b>Grommet, large</b>						
KDT/X-EN 12	87141330	Black	12 – 13	- / •	1	4
KDT/X-EN 13	87141332	Black	13 – 14	- / •	1	4
KDT/X-EN 14	87141334	Black	14 – 15	- / •	1	4
KDT/X-EN 15	87141336	Black	15 – 16	- / •	1	4
KDT/X-EN 16	87141338	Black	16 – 17	- / •	1	4
KDT/X-EN 17	87141340	Black	17 – 18	- / •	1	4
KDT/X-EN 18	87141342	Black	18 – 19	- / •	1	4
KDT/X-EN 19	87141344	Black	19 – 20	- / •	1	4
KDT/X-EN 20	87141346	Black	20 – 21	- / •	1	4
KDT/X-EN 21	87141348	Black	21 – 22	- / •	1	4
BTG/X-EN (dummy grommet)	87141366	Black		- / •		4



## KDP/EN cable entry plate, plastic



### PRODUCT INFORMATION

The KDP/EN 24 cable gland plates are made of modified Polyamide 6 and are cable entry and retaining systems for cables and pneumatic hoses, used in control cabinets or plant construction specifically in the railway industry. Wherever quick assembly, cable-protecting and high packing density are required, the cable insertion system is used.

The special benefits of the KDP/EN 24 are:

- Enormous time savings in assembly
- High packing density
- Standardised cut-out dimensions
- Option of labelling
- Protection category IP 65
- Approved for railway technology (EN 45545-2 / 3x HL3)

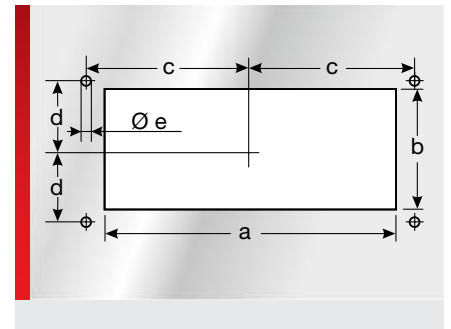
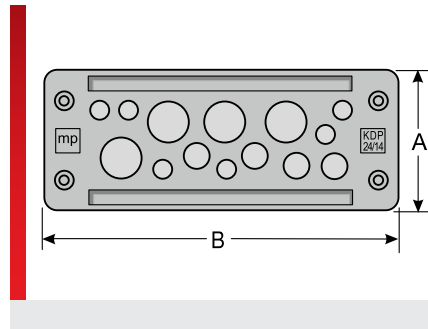
### SPECIFICATIONS

- 30 – 70 °C
- Enclosure: Polyamide 6  
Seal: EPDM
- V0
- IP 65

RoHS
 LABS
 UV
 EU
 Made in Germany

Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	Pack qty.
KDP/EN 24/11	87301210	Black	11	4x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				3x 14.0 – 20.0	
KDP/EN 24/12	87301220	Black	12	12x 8.0 – 12.0	1
KDP/EN 24/13	87301230	Black	13	2x 3.0 – 5.5	1
				6x 4.1 – 8.1	
				4x 9.0 – 14.0	
				1x 14.0 – 20.0	
KDP/EN 24/14	87301240	Black	14	6x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				4x 9.6 – 15.9	
KDP/EN 24/17	87301250	Black	17	17x 5.0 – 9.2	1
KDP/EN 24/17-1	87301251	Black	17	11x 3.0 – 6.5	1
				1x 4.1 – 8.1	
				5x 8.0 – 12.5	
KDP/EN 24/22	87301260	Black	22	16x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				2x 8.0 – 12.5	
KDP/EN 24/23	87301270	Black	23	23x 4.1 – 8.1	1
KDP/EN 24/29	87301280	Black	29	29x 3.0 – 6.5	1
KDP/EN 24/80	87301290	Black	80	78x 1.5 – 2.6	1
				2x 2.5 – 5.0	

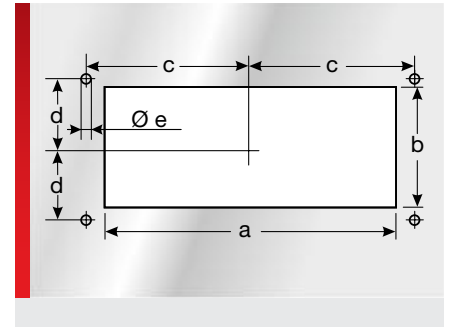
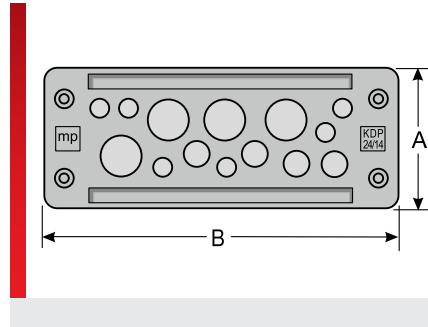
**KDP/EN cable entry plate, plastic** (Continued...)



**Dimension table**

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/EN 24/11	87301210	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/12	87301220	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/13	87301230	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/14	87301240	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/17	87301250	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/17-1	87301251	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/22	87301260	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/23	87301270	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/29	87301280	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN 24/80	87301290	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50

## KDP/EN-RA cable entry plate, plastic



### PRODUCT INFORMATION

The KDP/EN-RA 24 cable gland plates are made of modified Polyamide 6 and are cable entry and retaining systems for cables and pneumatic hoses, used in control cabinets or plant construction specifically in the railway industry. The fire protection mat, enclosed in the supply, reacts at temperatures exceeding 160°C by expanding and thereby closing off the opening completely fire resistant. Wherever quick assembly, cable-protecting and high packing density are required, the cable insertion system is used.

Special benefits of the KDP/EN-RA 24 are:

- Enormous time savings in assembly
- High packing density
- Standardised cut-out dimensions
- Option of labelling
- Protection category IP 65
- Room integrity (firewall)
- Approved for railway technology (EN 45545-2 / 3x HL3)

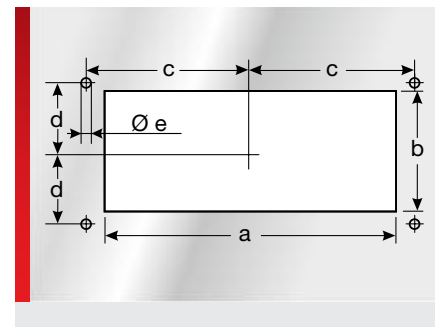
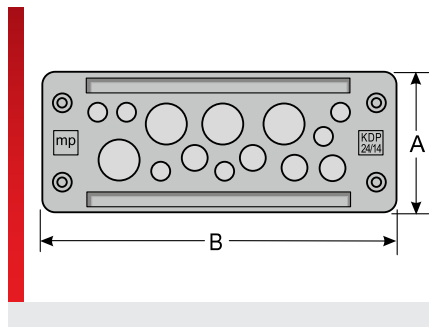
### SPECIFICATIONS

- 30 – 70 °C
- Enclosure: Polyamide 6  
Seal: EPDM
- V0
- IP 65



Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	Pack qty.
KDP/EN-RA 24/11	87301215	Black	11	4x 3.0 – 6.5	1
				4x 5.0 – 9.2	
				3x 14.0 – 20.0	
KDP/EN-RA 24/12	87301225	Black	12	12x 8.0 – 12.0	1
KDP/EN-RA 24/13	87301235	Black	13	2x 3.0 – 5.5	1
				6x 4.1 – 8.1	
				4x 9.0 – 14.0	
KDP/EN-RA 24/14	87301245	Black	14	1x 14.0 – 20.0	1
				6x 3.0 – 6.5	
				4x 5.0 – 9.2	
KDP/EN-RA 24/17	87301255	Black	17	4x 9.6 – 15.9	1
				17x 5.0 – 9.2	
				11x 3.0 – 6.5	
KDP/EN-RA 24/17-1	87301256	Black	17	1x 4.1 – 8.1	1
				5x 8.0 – 12.5	
				16x 3.0 – 6.5	
KDP/EN-RA 24/22	87301265	Black	22	4x 5.0 – 9.2	1
				2x 8.0 – 12.5	
				16x 3.0 – 6.5	
KDP/EN-RA 24/23	87301275	Black	23	23x 4.1 – 8.1	1
KDP/EN-RA 24/29	87301285	Black	29	29x 3.0 – 6.5	1
KDP/EN-RA 24/80	87301295	Black	80	78x 1.5 – 2.6	1
				2x 2.5 – 5.0	

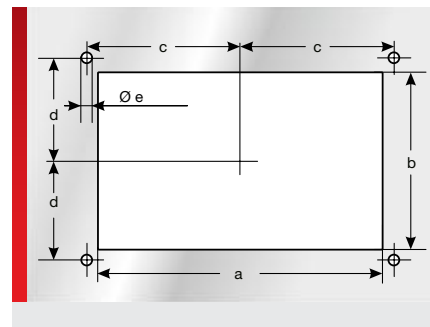
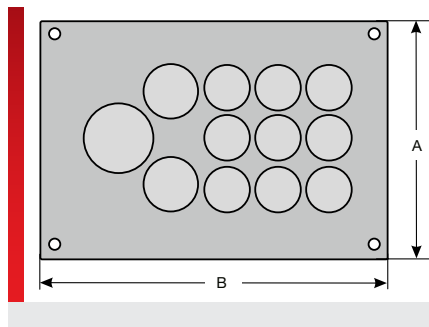
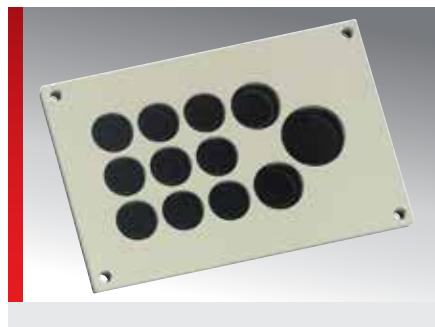
**KDP/EN-RA cable entry plate, plastic** (Continued...)



**Dimension table**

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
KDP/EN-RA 24/11	87301215	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/12	87301225	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/13	87301235	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/14	87301245	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/17	87301255	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/17-1	87301256	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/22	87301265	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/23	87301275	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/29	87301285	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50
KDP/EN-RA 24/80	87301295	15.00	59.00	147.00	112.00	36.00	65.00	16.00	5.50

## KDP/EN cable entry plate, metal



### PRODUCT INFORMATION

The KDP/EN Metal cable gland plates are cable entry and retaining systems for cables and pneumatic hoses used in control cabinets or plant construction specifically in the railway industry. Wherever quick assembly, cable-protecting and high packing density are required, the cable insertion system is used.

The special benefits of the KDP/EN Metal are:

- Enormous time savings in assembly
- High packing density
- Protection category IP 65
- Approved for railway technology (EN 45545-2 / 3x HL3)

- Other variants are available on request -

Type	Order No.	Colour	No. Openings	Openings Quantity / Ø mm	Pack qty.
cablequick® KDP/EN 60/30, Alu	87664201	RAL 7035	30	13x 1.0 – 3.5	1
				12x 3.0 – 5.0	
				2x 4.0 – 8.0	
				1x 6.0 – 10.0	
				2x 8.0 – 12.0	
cablequick® KDP/EN 120/59, Alu	87664202	RAL 7035	59	22x 1.0 – 3.5	1
				15x 3.5 – 6.5	
				14x 6.0 – 10.0	
				2x 8.0 – 12.0	
				6x 16.0 – 24.0	

### Dimension table

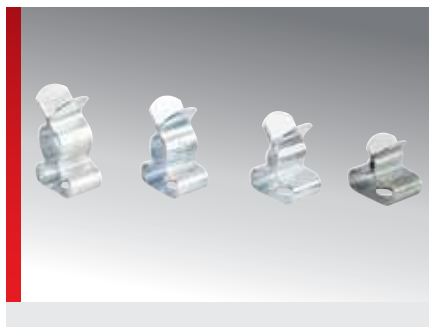
Type	Order No.	A mm	B mm	a mm	b mm	c mm	d mm	e mm
cablequick® KDP/EN 60/30, Alu	87664201	148.00	60.00	110.00	46.00	65.00	16.00	5.50
cablequick® KDP/EN 120/59, Alu	87664202	288.00	120.00	240.00	80.00	137.00	36.00	5.50





## EMC solutions

## SC-EMV / MSC-EMV shield clips



### PRODUCT INFORMATION

The steering components in today's machine, plant and control cabinet installations are becoming more and more complex. A good EMC concept therefore gains increasing importance. Murrplastik earthing and cable shielding products are designed to meet the demands for low bleeder resistance at high frequencies.

Murrplastik products are characterised by their very easy handling.

- The spring action provides uninterrupted contact pressure with the shield.
- High conductivity
- Excellent discharge of high-frequency noise current.

### SPECIFICATIONS



Zinc-plated spring steel

Type	Order No.	For sheath of Ø mm	Pack qty.
SC-EMV 1,5 - 3	87601002	1.5 – 3.0	25
SC-EMV 3 - 6	87601004	3.0 – 6.0	25
SC-EMV 6 - 8	87601006	6.0 – 8.0	25
SC-EMV 8 - 11	87601008	8.0 – 11.0	25
SC-EMV 11 - 16	87601010	11.0 – 16.0	25
SC-EMV 17 - 22	87601012	17.0 – 22.0	25
SC-EMV 23 - 29	87601014	23.0 – 29.0	25
MSC-EMV 3 - 12	87601020	3.0 – 12.0	25
MSC-EMV 7 - 18	87601022	7.0 – 18.0	25



## SCF-EMV / MSCF-EMV shield clips with snap-on foot



### PRODUCT INFORMATION

The steering components in today's machine, plant and control cabinet installations are becoming more and more complex. A good EMC concept therefore gains increasing importance. Murrplastik earthing and cable shielding products are designed to meet the demands for low bleeder resistance at high frequencies.

Murrplastik products are characterised by their very easy handling.

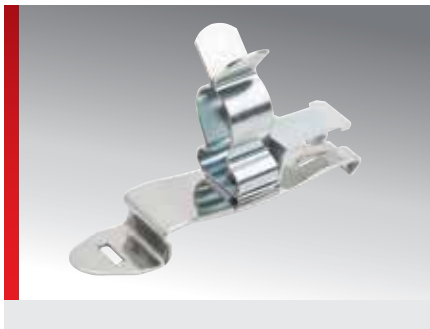
- Easy, no tools required, installation on 35 mm top-hat rails
- The spring action provides uninterrupted contact pressure with the shield.
- Excellent discharge of high-frequency noise current.

### SPECIFICATIONS

 Zinc-plated spring steel

Type	Order No.	For sheath of Ø mm	Pack qty.
SCF-EMV 1.5 - 3	87601052	1.5 – 3.0	10
SCF-EMV 3-6	87601054	3.0 – 6.0	10
SCF-EMV 6-8	87601056	6.0 – 8.0	10
SCF-EMV 8-11	87601058	8.0 – 11.0	10
SCF-EMV 11-16	87601060	11.0 – 16.0	10
SCF-EMV 17-22	87601062	17.0 – 22.0	10
SCF-EMV 23-29	87601064	23.0 – 29.0	10
SCF-EMV 30-37	87601066	30.0 – 37.0	10
MSCF-EMV 3 - 12	87601070	3.0 – 12.0	10
MSCF-EMV 7 - 18	87601072	7.0 – 18.0	10

## SCFZ-EMV shield clip with snap-on foot and strain relief



### PRODUCT INFORMATION

The steering components in today's machine, plant and control cabinet installations are becoming more and more complex. A good EMC concept therefore gains increasing importance. Murrplastik earthing and cable shielding products are designed to meet the demands for low bleeder resistance at high frequencies. Murrplastik products are characterised by their very easy handling.

- Easy, no tools required, installation on 35 mm top-hat rails
- The spring action provides uninterrupted contact pressure with the shield.
- Excellent discharge of high-frequency noise current.
- Optional strain relief with cable ties.

### SPECIFICATIONS

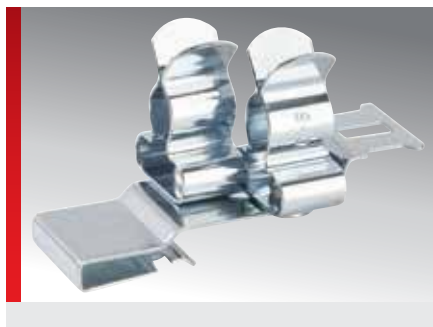


Zinc-plated spring steel



Type	Order No.	For sheath of Ø mm	Pack qty.
SCFZ-EMV 1.5 - 3	87601074	1.5 – 3.0	10
SCFZ-EMV 3 - 6	87601075	3.0 – 6.0	10
SCFZ-EMV 6 - 8	87601076	6.0 – 8.0	10
SCFZ-EMV 8 - 11	87601077	8.0 – 11.0	10
SCFZ-EMV 11 - 16	87601078	11.0 – 16.0	10
SCFZ-EMV 17 - 22	87601079	17.0 – 22.0	10

## DCS-EMV / DCSZ-EMV double clip for busbar



### PRODUCT INFORMATION

The steering components in today's machine, plant and control cabinet installations are becoming more and more complex. A good EMC concept therefore gains increasing importance. Murrplastik earthing and cable shielding products are designed to meet the demands for low bleeder resistance at high frequencies. Murrplastik products are characterised by their very easy handling.

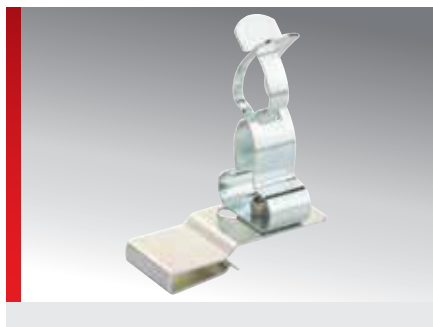
- Assembly without tools on 10x3 mm bar
- Less warehoused parts
- Very compact design
- Strain relief with cable ties (DCSZ-EMV)

### SPECIFICATIONS

 Zinc-plated spring steel

Type	Order No.	For sheath of Ø mm	Pack qty.
DCS-EMV 1,5 - 3	87601034	1.5 – 3.0	10
DCS-EMV 3 - 6	87601036	3.0 – 6.0	10
DCS-EMV 6 - 8	87601038	6.0 – 8.0	10
DCSZ-EMV 1,5 - 3	87601035	1.5 – 3.0	10
DCSZ-EMV 3 - 6	87601037	3.0 – 6.0	10
DCSZ-EMV 6 - 8	87601039	6.0 – 8.0	10

## MCS-EMV / MCSZ-EMV multi-clip for busbar



### PRODUCT INFORMATION

The steering components in today's machine, plant and control cabinet installations are becoming more and more complex. A good EMC concept therefore gains increasing importance. Murrplastik earthing and cable shielding products are designed to meet the demands for low bleeder resistance at high frequencies.

Murrplastik products are characterised by their very easy handling.

- Assembly without tools on 10x3 mm bar
- Less warehoused parts
- Very compact design
- Strain relief with cable ties (MCSZ-EMV)

### SPECIFICATIONS

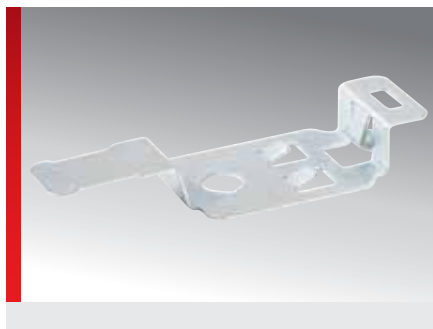
 Zinc-plated spring steel

Type	Order No.	For sheath of Ø mm	Pack qty.
MCS-EMV 3 - 12	87601044	3.0 – 12.0	10
MCS-EMV 7 - 18	87601046	7.0 – 18.0	10
MCSZ-EMV 3 - 12	87601045	3.0 – 12.0	10
MCSZ-EMV 7 - 18	87601047	7.0 – 18.0	10





## DF-EMV / DFZ-EMV direct-mount foot



### PRODUCT INFORMATION

The steering components in today's machine, plant and control cabinet installations are becoming more and more complex. A good EMC concept therefore gains increasing importance. Murrplastik earthing and cable shielding products are designed to meet the demands for low bleeder resistance at high frequencies.

Murrplastik products are characterised by their very easy handling.

- Direct mounting with M4, M5 or M6 bolt
- SC-EMV / MSC-EMV shield clips universal support bracket
- Smaller model range because of the variable population options
- Very compact design
- Strain relief with cable ties (DFZ-EMV)

### SPECIFICATIONS

 Zinc-plated spring steel

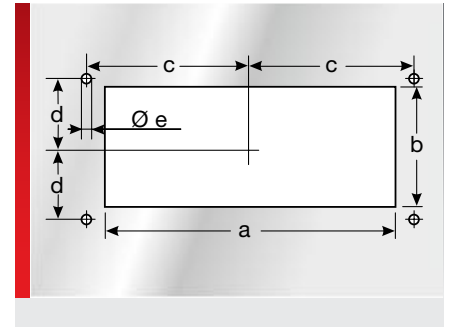
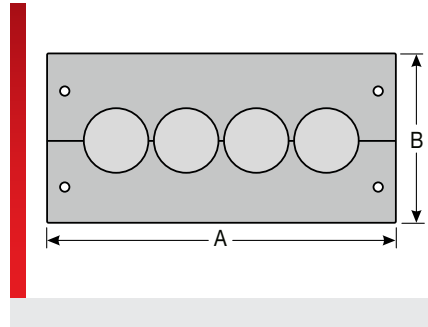
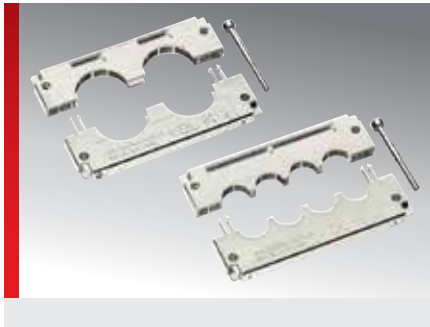
Type	Order No.	Pack qty.
DF-EMV 4	87601082	10
DF-EMV 5	87601086	10
DFZ-EMV 4	87601080	10
DFZ-EMV 5	87601084	10
DFZ-EMV 6	87601087	10







## KDL xx/xx-EMV cable entry system



### PRODUCT INFORMATION

The KDL/EMV cable entry system is based on the cable entry system KDL. A conductive surface allows cable sheath interference to be discharged onto the control cabinet simply and without additional aids. Field-bound interference is discharged by the metallisation.

The KDL 16 /xx-EMC types fit on cut-outs for 16-pin connectors, the KDL 24 /xx-EMC types fit on cut-outs for 24-pin connectors, from Harting or Wieland.

### SPECIFICATIONS

	-40 – 80 °C
	Conductive coating on Polyamide 6.6 Polyamide 6.6
	V0
	
	
	

Type	Order No.	Colour	No. Openings small / large	Pack qty.
<b>For standard cut-out size 16</b>				
KDL 16/2-EMV <sup>1)</sup>	87171020	Chrome	0 / 2	1
KDL 16/4-EMV <sup>1)</sup>	87171022	Chrome	4 / 0	1
<b>For standard cut-out size 24</b>				
KDL 24/3-EMV <sup>2)</sup>	87171024	Chrome	1 / 2	1
KDL 24/5-EMV <sup>2)</sup>	87171026	Chrome	5 / 0	1
<b>Enlarged cut-out for up to 15 pre-assembled cables</b>				
KDL 2/10-EMV <sup>3)</sup>	87171027	Chrome	10 / 0	1
KDL 3/15-EMV	87980021	Chrome	15 / 0	1
<sup>1)</sup> Replacement seal KDL16-EMV 8717102100				
<sup>2)</sup> Replacement seal KDL 24-EMV 8717102500				
<sup>3)</sup> Replacement seal KDL 2/10-EMV 87980020				

### Dimension table

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
<b>For standard cut-out size 16</b>									
KDL 16/2-EMV <sup>1)</sup>	87171020	10.00	116.00	58.00	86.00	36.00	51.50	16.00	5.50
KDL 16/4-EMV <sup>1)</sup>	87171022	10.00	116.00	58.00	86.00	36.00	51.50	16.00	5.50
<b>For standard cut-out size 24</b>									
KDL 24/3-EMV <sup>2)</sup>	87171024	10.00	146.00	58.00	112.00	36.00	65.00	16.00	5.50









## KDT/Z-EMV cable entry grommets



### PRODUCT INFORMATION

The KDT/Z-EMV cable entry grommet is adapted to the shield diameter and fitted with a conductive textile tape to discharge interferences to the control cabinet. Strain relief can be provided quickly and easily for cables using cable ties.

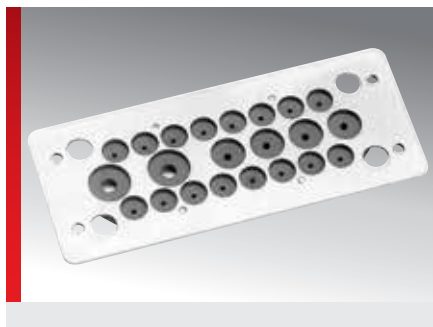
### SPECIFICATIONS

	-40 – 80 °C	
	Thermoplastic rubber With conductive textile tape	
	HB	
		

Type	Order No.	Colour	For sheath of Ø mm	For opening small / large	No. Openings	Pack qty.
<b>Grommet, small</b>						
KDT/Z-EMV 03	87171812	Black	3.0 – 4.0	• / -	1	10
KDT/Z-EMV 04	87171814	Black	4.0 – 5.0	• / -	1	10
KDT/Z-EMV 05	87171816	Black	5.0 – 6.0	• / -	1	10
KDT/Z-EMV 06	87171818	Black	6.0 – 7.0	• / -	1	10
KDT/Z-EMV 07	87171820	Black	7.0 – 8.0	• / -	1	10
KDT/Z-EMV 08	87171822	Black	8.0 – 9.0	• / -	1	10
KDT/Z-EMV 09	87171824	Black	9.0 – 10.0	• / -	1	10
KDT/Z-EMV 10	87171826	Black	10.0 – 11.0	• / -	1	10
KDT/Z-EMV 11	87171828	Black	11.0 – 12.0	• / -	1	10
KDT/Z-EMV 12	87171830	Black	12.0 – 13.0	• / -	1	10
KDT/Z-EMV 13	87171832	Black	13.0 – 14.0	• / -	1	10
KDT/Z-EMV 14	87171834	Black	14.0 – 15.0	• / -	1	10
KDT/Z-EMV 15	87171836	Black	15.0 – 16.0	• / -	1	10
<b>Grommet, large</b>						
KDT/Z-EMV 16	87172012	Black	16.0 – 17.0	- / •	1	10
KDT/Z-EMV 17	87172014	Black	17.0 – 18.0	- / •	1	10
KDT/Z-EMV 18	87172016	Black	18.0 – 19.0	- / •	1	10
KDT/Z-EMV 19	87172018	Black	19.0 – 20.0	- / •	1	10
KDT/Z-EMV 20	87172020	Black	20.0 – 21.0	- / •	1	10
KDT/Z-EMV 21	87172022	Black	21.0 – 22.0	- / •	1	10
KDT/Z-EMV 22	87172024	Black	22.0 – 23.0	- / •	1	10
KDT/Z-EMV 23	87172026	Black	23.0 – 24.0	- / •	1	10
KDT/Z-EMV 24	87172028	Black	24.0 – 25.0	- / •	1	10
KDT/Z-EMV 25	87172030	Black	25.0 – 26.0	- / •	1	10
KDT/Z-EMV 26	87172032	Black	26.0 – 27.0	- / •	1	10



## KDP/N-EMV module cable entry plate



### PRODUCT INFORMATION

The Murrplastik KDP/N 24 EMV module is designed to dissipate line and field induced interference. The KDP/N 24-EMV modules are used in conjunction with cable entry plates of Type KDP/xx 24. In order to ensure optimum performance, the EMV module is assembled in combination with the KDP/N 24 cable entry plate. While the EMV module

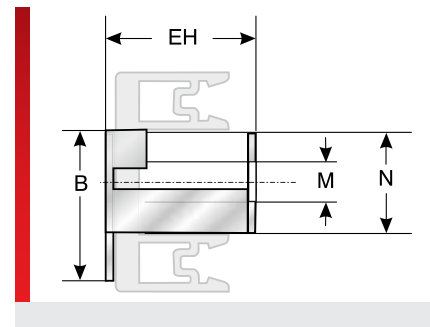
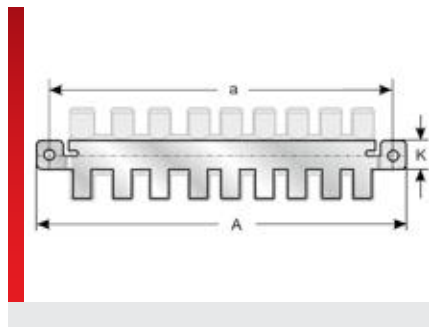
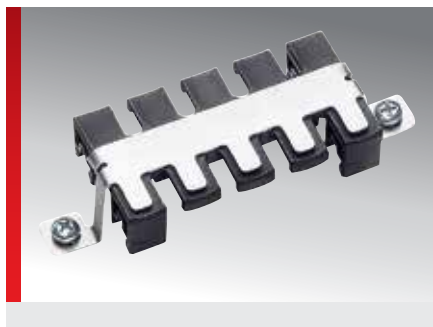
makes direct contact with the enclosure wall on the inside of the enclosure, the KDP/xx 24 cable entry plate provides mechanical protection against dust and liquids from the environment.

KDP/N 24 EMV module Features:

- Cable-friendly 360° shield contacting
- Large contact area with short distance
- Easy assembly
- Compact and slim form factor
- Visible contact area
- Stainless steel construction

Type	Order No.	Suitable for	Pack qty.
KDP/N 24/11 EMV module	87664010	KDP/xx 24/11	1
KDP/N 24/12 EMV module	87664020	KDP/xx 24/12	1
KDP/N 24/13 EMV module	87664030	KDP/xx 24/13	1
KDP/N 24/14 EMV module	87664040	KDP/xx 24/14	1
KDP/N 24/17 EMV module	87664050	KDP/xx 24/17	1
KDP/N 24/17-1 EMV module	87664051	KDP/xx 24/17-1	1
KDP/N 24/22 EMV module	87664060	KDP/xx 24/22	1
KDP/N 24/23 EMV module	87664070	KDP/xx 24/23	1
KDP/N 24/29 EMV module	87664080	KDP/xx 24/29	1

### KAF/K cable fixing plate



#### PRODUCT INFORMATION

The KAF/K-EMV cable fixing plate consists of a plastic carrier with a fitted V2A stainless steel discharge plate. Integrated clamps ensure quick and safe fastening, both on the top hat- or C-rail. The ground contact occurs through the lateral brackets. The use of two connecting points ensures a good discharge.

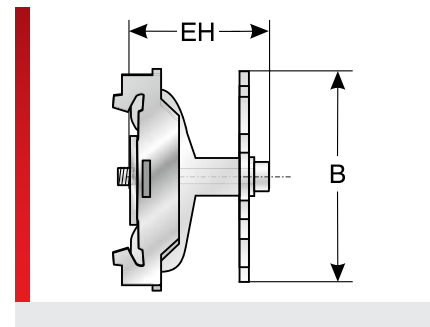
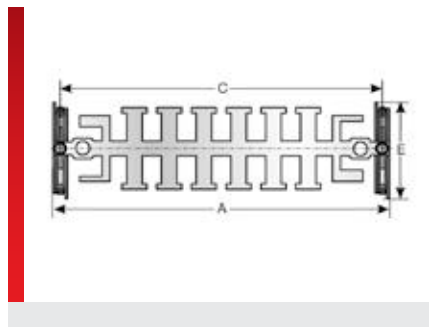
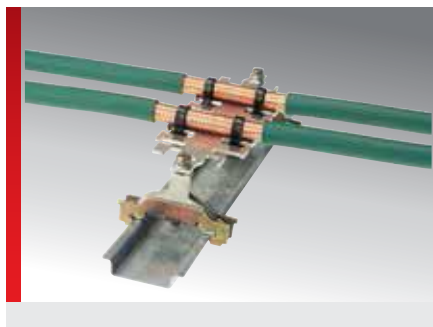
- Approved for railway technology (EN 45545-2)

#### SPECIFICATIONS

- 40 – 125 °C transient / short term 140 °C
- Plate: Polyamide 6.6  
Discharge plate: V2A
- V0

Type	Order No.	Quantity of cables	Installation height mm	A mm	B mm	c mm	d mm	Pack qty.
KAF/K-75-EMV	87201414	5	26.60	109.00	23.00	96.50	4.50	1
KAF/K-140-EMV	87201418	9	26.60	173.00	23.00	157.00	4.50	1

## KAF/EK cable fixing plate



### PRODUCT INFORMATION

The KAF/EK-EMV cable fixing plate consists of a V2A stainless steel plate for the direct discharge of any interferences on the cable sheaths. Stripping the cable in the area of the cable fixing plate and fastening by means of cable ties ensures contact to the cable fixing plate. The ground contact is

provided through a special screw stand for the 35 mm hat rail (EN50022). The KAF/EK is characterised by its extremely fast and easy assembly.

- Fits on a 35 mm top-hat rail (EN50022)

### SPECIFICATIONS

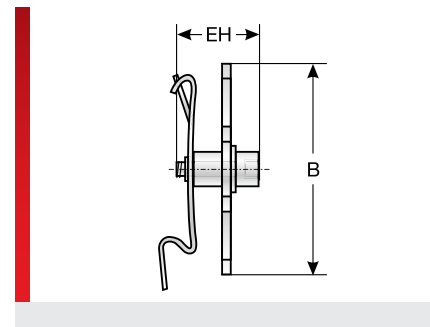
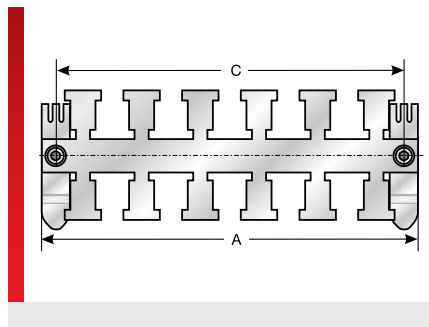
Plate: V2A



Type	Order No.	Quantity of cables	Installation height mm	A mm	B mm	c mm	Pack qty.
KAF/EK-EMV 140	87201228	6	29.00	155.00	41.50	146.00	1
KAF/EK-EMV 165	87201230	10	29.00	179.00	41.50	169.00	1



## KAF/SF cable fixing plate



### PRODUCT INFORMATION

The cable fixing plate KAF/SF is suitable for discharging interferences which may occur on cable sheaths. The earth/ground contact is provided through a special snap-on foot for the 35 mm top-hat rail (EN50022). Stripping the cable in the area of the KAF/SF and clamping in the KAF/SF achieves a contact to the KAF/SF. The snap-on foot of the KAF/SF

produces a low-resistance ground contact. The use of two connecting points ensures a good discharge regardless of the position of the cable on the KAF/SF.

- Fits on a 35 mm top-hat rail (EN50022)
- Simply snapped on

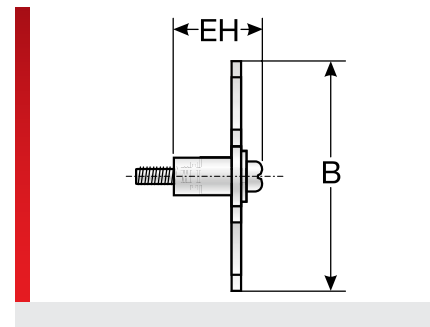
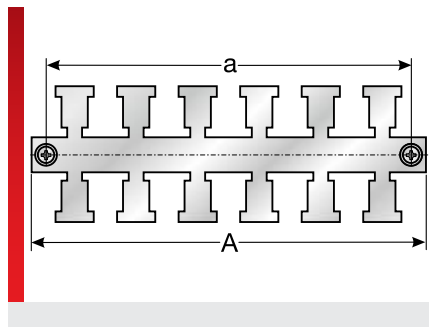
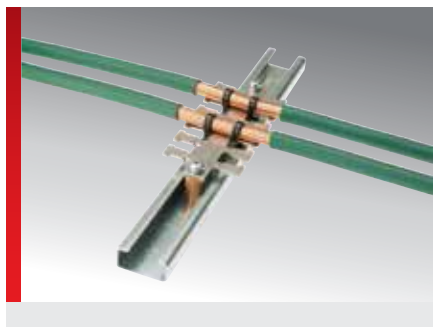
### SPECIFICATIONS

Plate: V2A



Type	Order No.	Quantity of cables	Installation height mm	A mm	B mm	c mm	Pack qty.
KAF/SF-50 EMV	87201240	2	20.00	50.00	49.00	37.50	1
KAF/SF-83 EMV	87201242	4	20.00	83.00	49.00	71.00	1
KAF/SF-116 EMV	87201244	6	20.00	116.00	49.00	103.00	1
KAF/SF-180 EMV	87201248	10	20.00	185.00	49.00	171.00	1

## KAF/DC cable fixing plate



### PRODUCT INFORMATION

The cable fixing plate KAF/DC is suitable for discharging interferences which may occur on cable sheaths. The ground connection occurs via the fixing screws. The version DC is only suitable for direct installation on a conductive background. Stripping the cable in the area of the cable fixing plate and fas-

tening by means of cable ties ensures contact to the cable fixing plate. A low-resistance ground contact is achieved by mounting the KAF on the mounting plate. The use of two connecting points ensures a good discharge regardless of the position of the cable on the KAF.

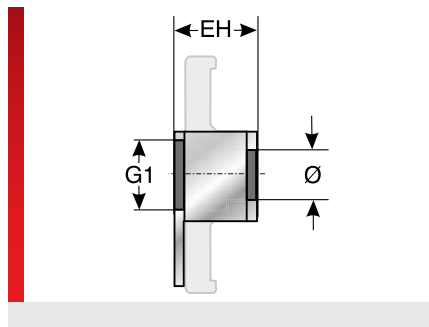
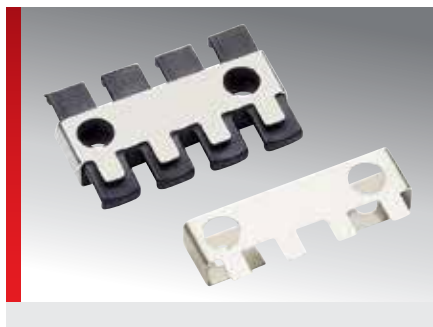
### SPECIFICATIONS

Plate: V2A  
Stand: Brass



Type	Order No.	Quantity of cables	Installation height mm	A mm	B mm	c mm	Pack qty.
KAF/DC-50 EMV	87201250	2	26.50	50.00	49.00	37.50	1
KAF/DC-83 EMV	87201252	4	26.50	83.00	49.00	70.00	1
KAF/DC-116 EMV	87201254	6	26.50	116.00	49.00	103.00	1
KAF/DC-180 EMV	87201258	10	26.50	180.00	49.00	170.00	1

## ZL xx-AB strain relief



### PRODUCT INFORMATION

In conjunction with the ZL strain relief rail, the ZL-AB discharge plate is suitable for discharging interferences which may occur on cable sheaths.

ZL strain relief not included in delivery. Please order separately.

### SPECIFICATIONS

Stainless steel 1.4301

Type	Order No.	Installation height mm	A mm	B mm	c mm	e mm	Pack qty.
ZL 39-AB/EMV <sup>1)</sup>	87701034	12.00	41.00	25.00	19.50	6.50	1
ZL 60-AB/EMV <sup>1)</sup>	87701036	12.00	62.50	25.00	43.50	6.50	1
ZL 87-AB/EMV <sup>1)</sup>	87701040	12.00	89.00	25.00	68.00	6.50	1
ZL 140-AB/EMV <sup>1)</sup>	87701046	12.00	142.50	25.00	121.00	6.50	1

<sup>1)</sup> The corresponding ZL strain relief plate is required for the discharge plate.

## KDL-AB discharge plate



### PRODUCT INFORMATION

The discharge plate AB-Clip 24 - EMV is made of 1.4301 (V2A) stainless steel. It can be used in conjunction with 24-pin cable entry strips (KDL/x) and cable gland plates (KDP/x) to eliminate interference that can occur on the cable shields. The discharge plate should be installed on the inside of the control cabinet, directly to the fixing points of the cable entry system. The deflector plate accommodates the EMC clip systems, which can be mounted on a 10x3mm busbar.

The special advantages of the AB-Clip 24 - EMV discharge plate are:

- High stability
- Easy installation of the screen clip system
- Compact design
- RoHS compliant

### SPECIFICATIONS

 Stainless steel 1.4310

 RoHS

Type	Order No.	No. Discharges	Suitable for	Pack qty.
KDL-AB 24/6-EMV	87252438	6	KDL/C 24/12 KDL/D 24/12	1
KDL-AB 16/2-EMV	87252410	2	KDL 16/2 KDL/E 16/2	1
KDL-AB 16/4-EMV	87252412	4	KDL 16/4	1
KDL-AB 24/3-EMV	87252414	3	KDL 24/3	1
KDL-AB 24/5-EMV	87252416	5	KDL 24/5 KDL 2/10 KDL 3/15	1

## KDL/N-AB discharge plate




### PRODUCT INFORMATION

The KDL/E discharge plates are suited for discharging interference which may occur on cable sheaths.

The discharge plate is installed on the inside of the control cabinet, directly to the fixing points of the KDL/E cable entry system.

### SPECIFICATIONS

 Stainless steel 1.4310

 RoHS

Type	Order No.	No. Discharges	Suitable for	Pack qty.
KDL/N-AB 16/5-EMV OT	87252420	3	KDL/E 16/5 Upper part	1
KDL/N-AB 16/5-EMV UT	87252422	2	KDL/E 16/5 Lower part	1
KDL/N-AB 16/8-EMV	87252424	4	KDL/E 16/8 Partes superior e inferior	1
KDL/N-AB 24/4-EMV OT	87252426	3	KDL/E 24/4 Upper part	1
KDL/N-AB 24/4-EMV UT	87252428	1	KDL/E 24/4 Lower part	1
KDL/N-AB 24/7-EMV OT	87252430	4	KDL/E 24/7 Upper part	1
KDL/N-AB 24/7-EMV UT	87252432	3	KDL/E 24/7 Lower part	1
KDL/N-AB 24/10-EMV OT	87252434	5	KDL/E 24/10 Upper part	1
KDL/N-AB 24/10-EMV UT	87252436	5	KDL/E 24/10 Lower part	1

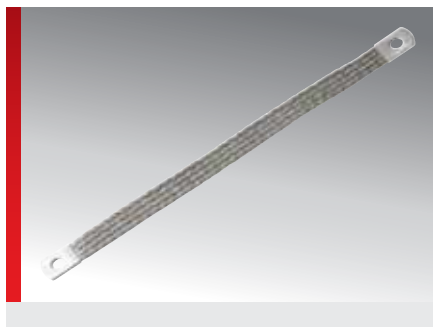








## FBE ribbon earthing cable



### PRODUCT INFORMATION

The steering components in today's machine, plant and control cabinet installations are becoming more and more complex. A good EMC concept therefore gains increasing importance. Murrplastik earthing and cable shielding products are designed to meet the demands for low bleeder resistance at high frequencies.

Murrplastik products are characterised by their very easy handling.

- Excellent discharge of high-frequency noise current.
- Very small transient resistance

### SPECIFICATIONS

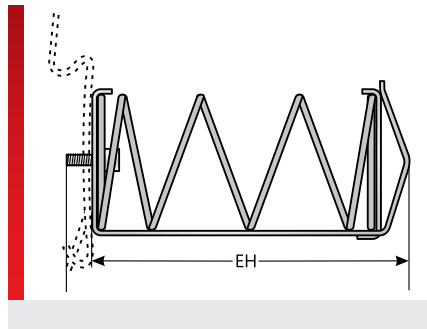


Copper



Type	Order No.	Pack qty.
FBE M6-200/10	87841080	10
FBE M8-250/16	87841084	10
FBE M8-300/16	87841082	10

## SK shielding clamp



### PRODUCT INFORMATION

The shielding clamp may be used where the shield of individual cables must be connected with earth potential. The SK can be either screwed down on the mounting plate or snapped on to the 35 mm top-hat rail (EN 50022) by means of a mounting foot. SK mounting foot not included in delivery. Please order separately.

### SPECIFICATIONS

- Galvanised sheet steel
- RoHS

Type	Order No.	Fastening	For sheath of Ø mm	A mm	B mm	C mm	Pack qty.
SK 3 – 8	87201060	M4x0,7	3.0 – 8.0	18.00	13.50	26.00	10
SK 4 – 13.5	87201062	M4x0,7	4.0 – 13.5	20.00	20.00	32.50	10
SK 10 – 20	87201064	M4x0,7	10.0 – 20.0	26.00	25.00	40.00	10
SK 15 – 32	87201066	M4x0,7	15.0 – 32.0	32.50	33.50	64.00	10
SK mounting foot	87201070			13.00	50.00		10

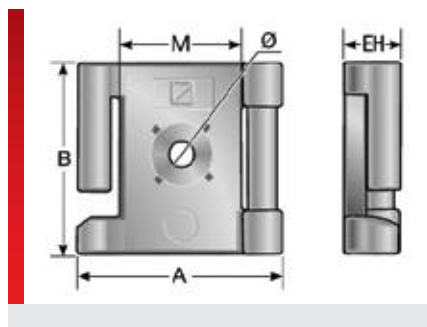






**Strain relief / cable fixing plate**

## ZL-fix strain relief









### PRODUCT INFORMATION

The strain relief ZL-fix may be used wherever cables, hoses, cords, wires or conduits must be relieved or routed in a way that is secure, easy and cost-effective. The strain relief ZL-fix is available in two versions, either for direct screw fastening (flat-head screw M5, not included in delivery) or for fastening on a profile with 10 mm groove width (integrated nut strap).

- Do not constrict sensitive cables such as fibre optic cables or pneumatic hoses
- No-tools fastening Velcro® system can be opened and closed infinitely
- Very simple handling
- Variable installation positions

### SPECIFICATIONS

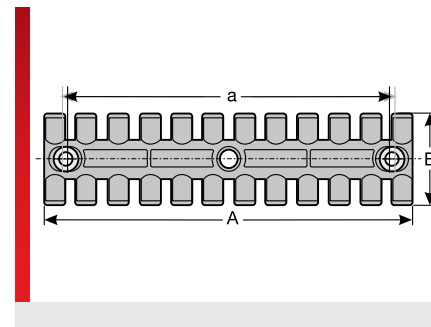
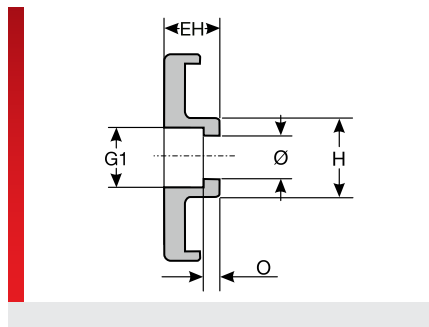
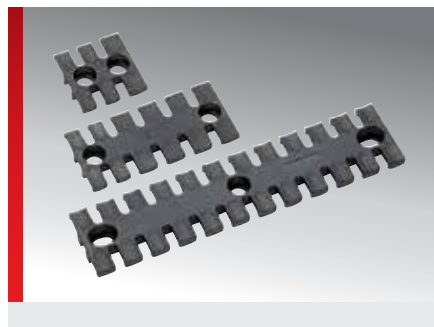
	-30 – 80 °C
	Tape: Coated polyamide Base: Polyamide 6.6
	
	

Type	Order No.	Colour	Length of Velcro strip mm	Section groove min. – max. mm	Pack qty.
<b>Profile assembly</b>					
ZL-fix P-15	87705018	Black	92.00	9.9 – 10.8	10
ZL-fix P-25	87705020	Black	171.00	9.9 – 10.8	10
ZL-fix P8-25	87705030	Black	170.00	7.9 – 8.8	10
ZL-fix P-35	87705022	Black	171.00	9.9 – 10.8	10
<b>Screw assembly</b>					
ZL-fix W-15	87705008	Black	92.00		10
ZL-fix W-25	87705010	Black	171.00		10
ZL-fix W-25-400	87705015	Black	400.00		10
ZL-fix W-35	87705012	Black	171.00		10

### Dimension table

Type	Order No.	A mm	B mm	EH mm	M mm	Ø mm
<b>Profile assembly</b>						
ZL-fix P-15	87705018	30.00	34.00	10.70	15.00	5.00
ZL-fix P-25	87705020	37.00	34.00	10.70	25.00	5.00
ZL-fix P8-25	87705030	25.00	34.00	10.70		5.00
ZL-fix P-35	87705022	45.00	34.00	10.70	35.00	5.00
<b>Screw assembly</b>						
ZL-fix W-15	87705008	39.00	34.00	10.70	15.00	5.00
ZL-fix W-25	87705010	37.00	34.00	10.70	25.00	5.00
ZL-fix W-25-400	87705015	37.00	34.00	10.70	25.00	5.00
ZL-fix W-35	87705012	45.00	34.00	10.70	35.00	5.00

## ZL strain relief



### PRODUCT INFORMATION

The ZL strain relief plate may be used wherever the strain of cables, hoses, cords, wires or conduits must be relieved or they are to be routed in a secure, easy and cost-effective way. The insertion of the ELB bush stops the cold extrusion characteristic of plastic from affecting the secure fixing of the plate. The DH spacer sleeve is needed for two-tier mounting.

- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

- 40 – 125 °C
- Plate: Polyamide 6.6
- V0

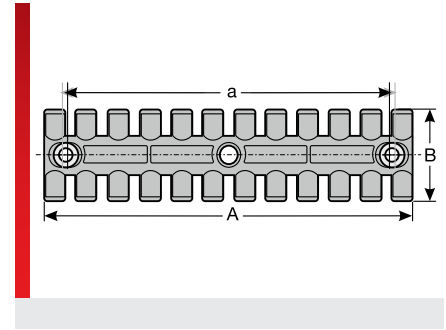
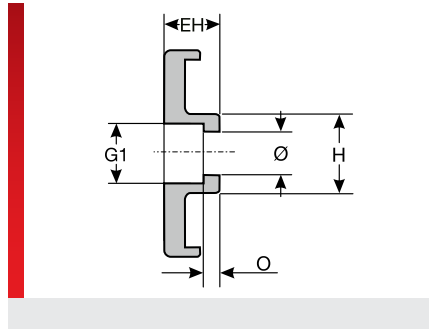
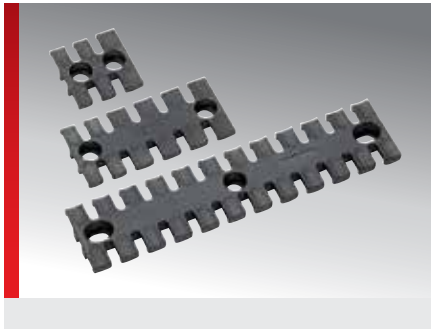
RoHS
 HF
 LABS
 UV
 EU
 Made in Germany

Type	Order No.	Colour	No. Cables	Pack qty.
ZL 04	87701010	Black	12	1
ZL 05	87701012	Black	15	1
ZL 39	87701014	Black	3	1
ZL 60	87701016	Black	4	1
ZL 70	87701017	Black	5	1
ZL 80	87701015	Black	6	1
ZL 87/68	87701018	Black	6	1
ZL 87/50	87701019	Black	6	1
ZL 103	87701020	Black	7	1
ZL 121	87701022	Black	8	1
ZL 140	87701024	Black	9	1
ZL 180/6	87701026	Black	12	1
ZL 180/8	87701027	Black	12	1

### Dimension table

Type	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	O mm	Ø mm
ZL 04	87701010	95.00	74.50	35.00	9.20	8.50		3.10	5.50
ZL 05	87701012	119.00	108.00	35.00	9.20	8.50		3.10	5.50
ZL 39	87701014	38.50	19.50	40.00	10.00	12.00	14.00	3.10	9.00
ZL 60	87701016	59.50	43.50	40.00	10.00	12.00	14.00	3.10	9.00
ZL 70	87701017	69.50	43.50	40.00	10.00	12.00	14.00	3.10	9.00
ZL 80	87701015	79.50	68.00	40.00	10.00	12.00	14.00	3.10	9.00
ZL 87/68	87701018	86.50	68.00	40.00	10.00	12.00	14.00	3.10	9.00
ZL 87/50	87701019	86.50	50.00	40.00	10.00	12.00	14.00	3.10	9.00
ZL 103	87701020	102.50	84.00	40.00	10.00	12.00	14.00	3.10	9.00

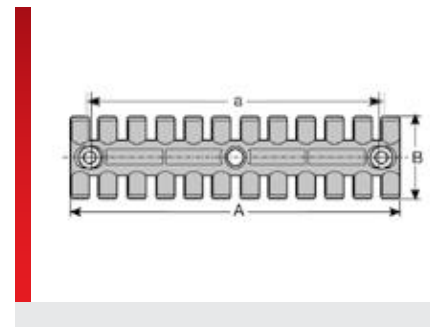
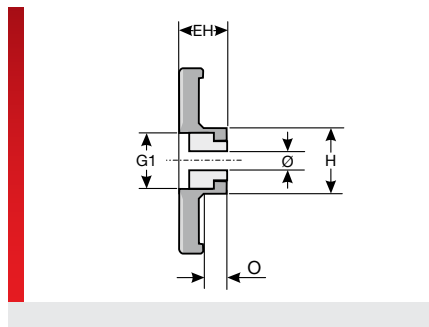
ZL strain relief (Continued...)



Type	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	Ø mm	Ø mm
ZL 121	87701022	121.00	102.50	40.00	10.00	12.00	14.00	3.10	9.00
ZL 140	87701024	139.50	121.00	40.00	10.00	12.00	14.00	3.10	9.00
ZL 180/6	87701026	180.00	157.00	42.00	11.50	12.00	16.00	3.10	9.00
ZL 180/8	87701027	180.00	157.00	42.00	11.50	13.40	16.00	3.10	11.00



## ZL-AH strain relief



### PRODUCT INFORMATION

The ZL-AH strain relief plates are based on the ZL strain relief plate. By inserting the aluminium grommets, the ZL strain relief plate is free of fastening forces.

- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

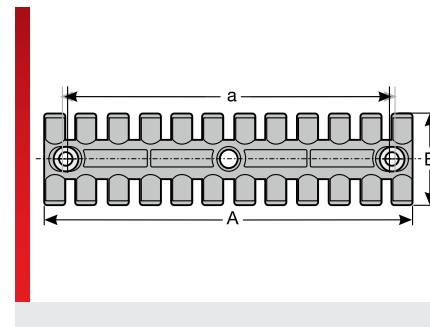
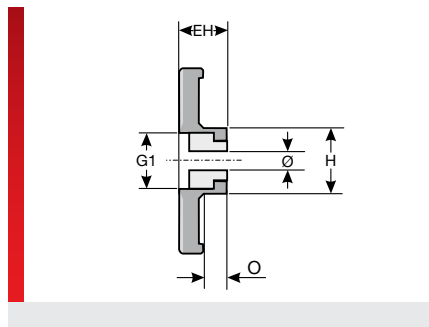
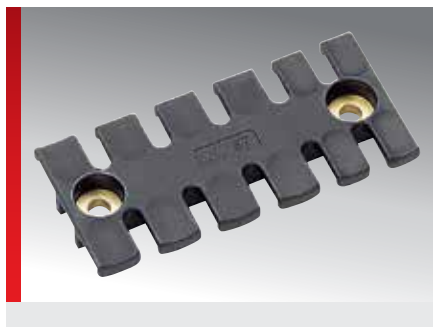
- 40 – 125 °C
- Plate: Polyamide 6.6  
Insert bushing: Aluminium
- V0

Type	Order No.	Colour	No. Cables	Pack qty.
<b>With aluminium grommets, assembly with M5 screws</b>				
ZL-AH 39	87701230	Black	3	1
ZL-AH 60	87701232	Black	4	1
ZL-AH 87	87701234	Black	6	1
ZL-AH 103	87701236	Black	7	1
ZL-AH 121	87701238	Black	8	1
ZL-AH 140	87701240	Black	9	1
ZL-AH 180	87701242	Black	12	1

### Dimension table

Type	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	O mm	Ø mm
<b>With aluminium grommets, assembly with M5 screws</b>									
ZL-AH 39	87701230	38.50	19.50	40.00	10.00	12.00	14.00	7.00	5.50
ZL-AH 60	87701232	59.50	43.50	40.00	10.00	12.00	14.00	7.00	5.50
ZL-AH 87	87701234	86.50	68.00	40.00	10.00	12.00	14.00	7.00	5.50
ZL-AH 103	87701236	102.50	84.00	40.00	10.00	12.00	14.00	7.00	5.50
ZL-AH 121	87701238	121.00	102.50	40.00	10.00	12.00	14.00	7.00	5.50
ZL-AH 140	87701240	139.50	121.00	40.00	10.00	12.00	14.00	7.00	5.50
ZL-AH 180	87701242	180.00	157.00	42.00	11.50	12.00	16.00	7.00	5.50

## ZL-MH strain relief



### PRODUCT INFORMATION

The ZL-MH strain relief plates are based on the ZL strain relief plate. By inserting the brass grommets, the ZL strain relief plate is free of fastening forces.

- Approved for railway technology (EN 45545-2)

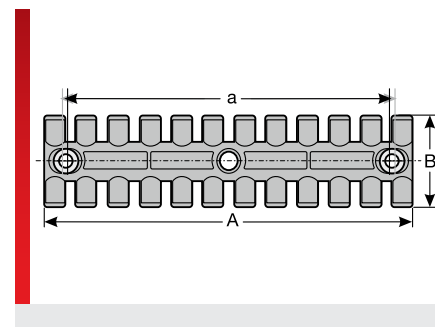
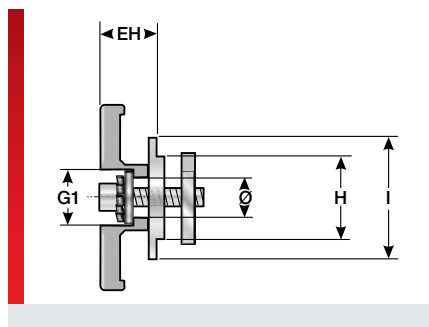
### SPECIFICATIONS

- 40 – 125 °C
- Plate: Polyamide 6.6  
Insert bushing: Brass
- V0

Type	Order No.	Colour	No. Cables	Pack qty.
<b>With brass grommets, assembly with M5 screws</b>				
ZL-MH 39	87701210	Black	3	1
ZL-MH 39, VE 50	87701211	Black	3	50
ZL-MH 60	87701212	Black	4	1
ZL-MH 87	87701214	Black	6	1
ZL-MH 103	87701216	Black	7	1
ZL-MH 121	87701218	Black	8	1
ZL-MH 140	87701220	Black	9	1
ZL-MH 140, VE 50	87701221	Black	9	50
ZL-MH 180	87701222	Black	12	1
<b>with brass grommets, mounting with M6 screws</b>				
ZL-MH 39/6	87701270	Black	3	1
ZL-MH 60/6	87701272	Black	4	1
ZL-MH 60, VE 50	87701213	Black	4	50
ZL-MH 70/6	87701274	Black	5	1
ZL-MH 87/6	87701278	Black	6	1
ZL-MH 87, VE 50	87701215	Black	6	50
ZL-MH 103/6	87701282	Black	7	1
ZL-MH 121/6	87701284	Black	8	1
ZL-MH 140/6	87701286	Black	9	1
ZL-MH 180/6	87701288	Black	12	1



## ZL-AM strain relief



### PRODUCT INFORMATION

The ZL-AM strain relief plates are based on the ZL strain relief plate. The embedded brass discs hinder the cold flow deformation properties of the plastic under heavy and permanent vibration, thereby preventing the screwed connection from loosening by itself. Slot nuts and bolts enable simple assembly on C-rails.

- Very quick assembly
- Orderly cable routing
- Simple and effective strain relief with cable ties
- Micro-encapsulated PreCOTE thread coating serves as an added locking element
- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

	-40 – 125 °C
	Polyamide 6.6
	V0

RoHS

HF

EU

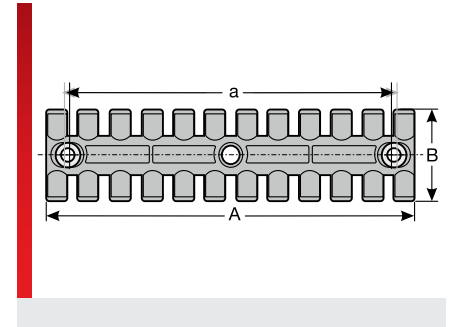
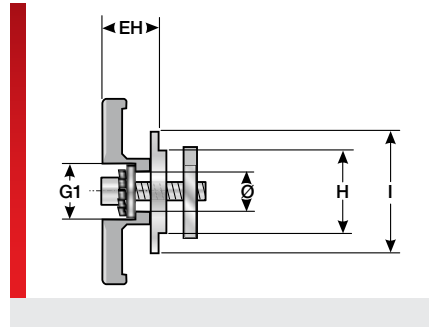
Made in Germany

Type	Order No.	Colour	No. Cables	Pack qty.
<b>For 16 mm C-rail slot</b>				
<b>Interior width 22–27 mm</b>				
<b>Brass disc</b>				
<b>Stainless steel screw 1.4301 with UNC thread</b>				
<b>Stainless steel slot nut 1.4301</b>				
ZL-AM 39	87702210	Black	3	1
ZL-AM 60	87702212	Black	4	1
ZL-AM 87	87702214	Black	6	1
ZL-AM 103	87702216	Black	7	1
ZL-AM 121	87702218	Black	8	1
ZL-AM 140	87702220	Black	9	1
ZL-AM 180	87702222	Black	12	1

### Dimension table

Type	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	I mm	Ø mm
<b>For 16 mm C-rail slot</b>									
<b>Interior width 22–27 mm</b>									
<b>Brass disc</b>									
<b>Stainless steel screw 1.4301 with UNC thread</b>									
<b>Stainless steel slot nut 1.4301</b>									
ZL-AM 39	87702210	38.50	19.50	40.00	12.00	12.00	16.00	26.00	5.00
ZL-AM 60	87702212	59.50	43.50	40.00	12.00	12.00	16.00	26.00	5.00
ZL-AM 87	87702214	86.50	68.00	40.00	12.00	12.00	16.00	26.00	5.00
ZL-AM 103	87702216	102.50	84.00	40.00	12.00	12.00	16.00	26.00	5.00
ZL-AM 121	87702218	121.00	102.50	40.00	12.00	12.00	16.00	26.00	5.00
ZL-AM 140	87702220	139.50	121.00	40.00	12.00	12.00	16.00	26.00	5.00
ZL-AM 180	87702222	180.00	157.00	42.00	13.50	12.00	16.00	26.00	5.00

## ZL-SW strain relief



### PRODUCT INFORMATION

The ZL-SW strain relief plates are based on the ZL strain relief plate. The embedded brass discs hinder the cold flow deformation properties of the plastic under heavy and permanent vibration, thereby preventing the screwed connection from loosening by itself. Slot nuts and bolts enable simple assembly on C-rails.

- Very quick assembly
- Orderly cable routing
- Simple and effective strain relief with cable ties
- Micro-encapsulated PreCOTE thread coating serves as an added locking element
- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

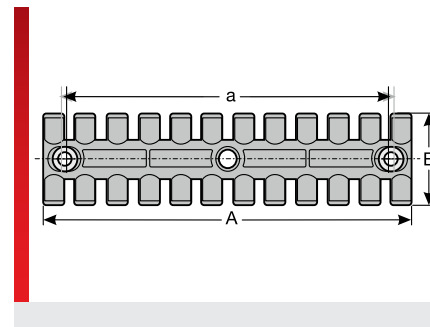
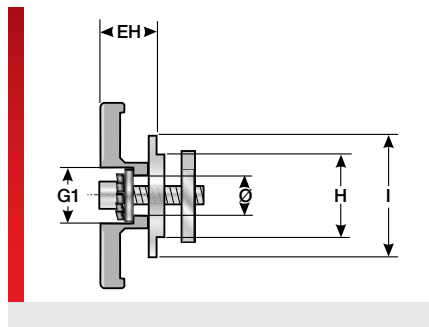
	-40 – 125 °C
	Polyamide 6.6
	V0

Type	Order No.	Colour	No. Cables	Pack qty.
<b>For 12 mm C-rail slot interior width 27 mm Brass disc 1.4301 stainless steel screw with metric thread Stainless steel slot nut 1.4301</b>				
ZL-SW 39	87702410	Black	3	1
ZL-SW 60	87702412	Black	4	1
ZL-SW 87	87702414	Black	6	1
ZL-SW 103	87702416	Black	7	1
ZL-SW 121	87702418	Black	8	1
ZL-SW 140	87702420	Black	9	1
ZL-SW 180/6	87702422	Black	12	1

### Dimension table

Type	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	I mm	Ø mm
<b>For 12 mm C-rail slot interior width 27 mm Brass disc 1.4301 stainless steel screw with metric thread Stainless steel slot nut 1.4301</b>									
ZL-SW 39	87702410	38.50	19.50	40.00	12.00	12.00	11.60	18.00	6.20
ZL-SW 60	87702412	59.50	43.50	40.00	12.00	12.00	11.60	18.00	6.20
ZL-SW 87	87702414	86.50	68.00	40.00	12.00	12.00	11.60	18.00	6.20
ZL-SW 103	87702416	102.50	84.00	40.00	12.00	12.00	11.60	18.00	6.20
ZL-SW 121	87702418	121.00	102.50	40.00	12.00	12.00	11.60	18.00	6.20
ZL-SW 140	87702420	139.50	121.00	40.00	12.00	12.00	11.60	18.00	6.20
ZL-SW 180/6	87702422	180.00	157.00	42.00	13.50	12.00	11.60	18.00	6.20

## ZL-C strain relief



### PRODUCT INFORMATION

The ZL-C strain relief plates are based on the ZL strain relief plate. The embedded brass discs hinder the cold flow deformation properties of the plastic under heavy and permanent vibration, thereby preventing the screwed connection from loosening by itself. Slot nuts and bolts enable simple assembly on C-rails.

- Very quick assembly
- Orderly cable routing
- Simple and effective strain relief with cable ties
- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

	-40 – 125 °C
	Polyamide 6.6
	V0

Type	Order No.	Colour	No. Cables	Pack qty.
<b>For 11 mm C-rail slot / interior width 21 mm</b>				
<b>Brass disc</b>				
<b>Steel screw with metric thread</b>				
<b>Steel slot nut</b>				
ZL-C 39	87702810	Black	3	1
ZL-C 60	87702812	Black	4	1
ZL-C 80	87702814	Black	6	1
ZL-C 87	87702816	Black	6	1
ZL-C 103	87702818	Black	7	1
ZL-C 121	87702820	Black	8	1
ZL-C 140	87702822	Black	9	1
ZL-C 180/6	87702824	Black	12	1

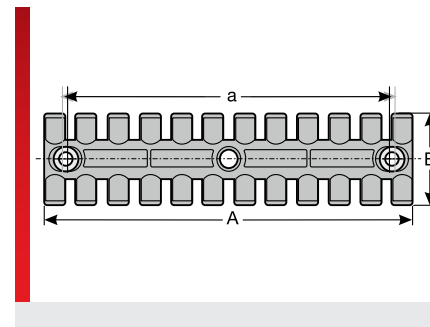
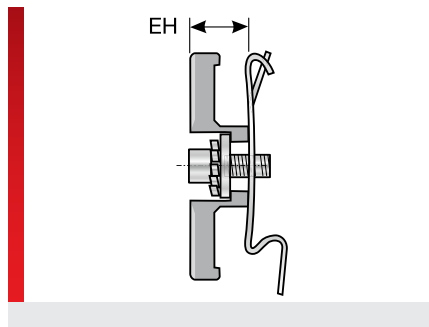
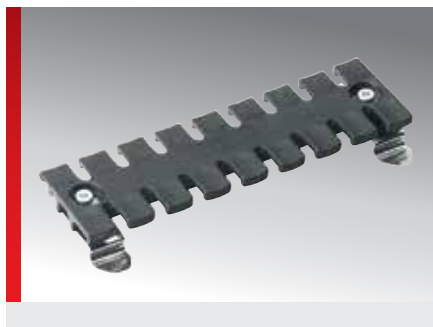
### Dimension table

Type	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	I mm	Ø mm
<b>For 11 mm C-rail slot / interior width 21 mm</b>									
<b>Brass disc</b>									
<b>Steel screw with metric thread</b>									
<b>Steel slot nut</b>									
ZL-C 39	87702810	38.50	19.50	40.00	12.00	12.00	10.60	18.00	9.00
ZL-C 60	87702812	59.50	43.50	40.00	12.00	12.00	10.60	18.00	9.00
ZL-C 80	87702814	79.50	68.00	40.00	12.00	12.00	10.60	18.00	9.00
ZL-C 87	87702816	86.50	68.00	40.00	12.00	12.00	10.60	18.00	9.00
ZL-C 103	87702818	102.50	84.00	40.00	12.00	12.00	10.60	18.00	9.00
ZL-C 121	87702820	121.00	102.50	40.00	12.00	12.00	10.60	18.00	9.00

**ZL-C strain relief** (Continued...)

Type	Order No.	A mm	a mm	B mm	EH mm	G1 mm	H mm	I mm	Ø mm
ZL-C 140	87702822	139.50	121.00	40.00	12.00	12.00	10.60	18.00	9.00
ZL-C 180/6	87702824	180.00	157.00	42.00	13.50	12.00	10.60	18.00	9.00

## ZL-MF strain relief



### PRODUCT INFORMATION

The strain relief plate ZL-MF is based on the strain relief plate ZL. The pre-installed mounting feet enable simple, tool-free assembly on a 35mm top-hat rail (EN 50022). The feet are made of galvanised steel plate.

- Quick and easy to assemble and disassemble without the need for tools.
- Orderly cable routing
- Simple and effective strain relief with cable ties
- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

	-40 – 125 °C
	Polyamide 6.6
	V0

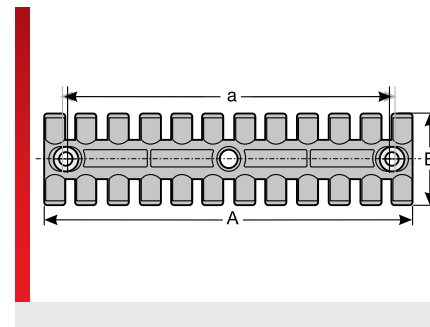
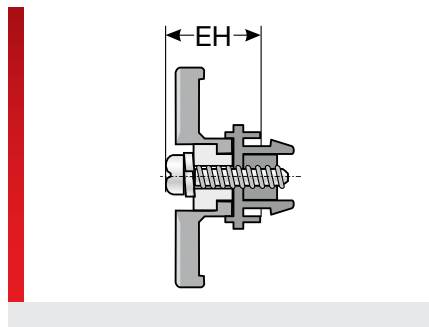
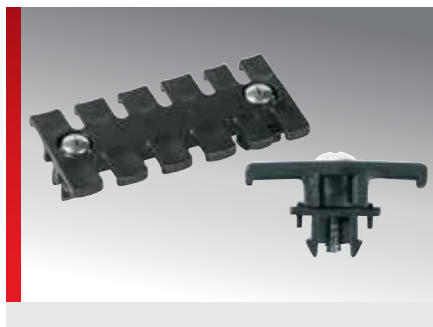
Type	Order No.	Colour	No. Cables	Pack qty.
ZL-MF 39	87702610	Black	3	1
ZL-MF 70	87702614	Black	5	1
ZL-MF 140	87702622	Black	9	1

### Dimension table

Type	Order No.	A mm	a mm	B mm	EH mm
ZL-MF 39	87702610	38.50	19.50	40.00	10.00
ZL-MF 70	87702614	69.50	43.50	40.00	10.00
ZL-MF 140	87702622	139.50	121.00	40.00	10.00



## ZLF strain relief



### PRODUCT INFORMATION

The strain relief plate ZLF is based on the strain relief plate ZL. The fastening clips that are used allow for simply mounting on C-rails with 10 mm slot and a plate thickness of 2.0 mm maximum. The pre-mounted screw in the fastening clip allows the snap-on stand to be splayed and locked.

- Very quick assembly
- Orderly cable routing
- Simple and effective strain relief with cable ties
- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

- 40 – 125 °C
- Polyamide 6.6
- V0

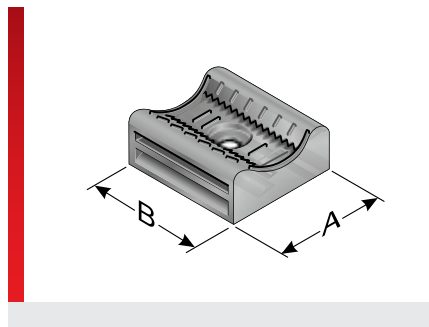
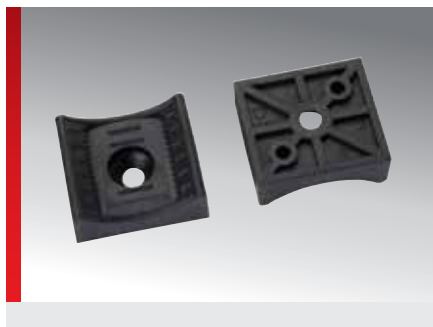
Type	Order No.	Colour	No. Cables	Pack qty.
ZLF 39	87701410	Black	3	10
ZLF 60	87701412	Black	4	10
ZLF 87	87701414	Black	6	10
ZLF 103	87701416	Black	7	10
ZLF 121	87701418	Black	8	10
ZLF 140	87701420	Black	9	10

### Dimension table

Type	Order No.	A mm	a mm	B mm	EH mm
ZLF 39	87701410	38.50	19.50	40.00	17.00
ZLF 60	87701412	59.50	43.50	40.00	17.00
ZLF 87	87701414	86.50	68.00	40.00	17.00
ZLF 103	87701416	102.50	84.00	40.00	17.00
ZLF 121	87701418	121.00	102.50	40.00	17.00
ZLF 140	87701420	139.50	121.00	40.00	17.00



## KS-fix strain relief



### PRODUCT INFORMATION

The Velcro base serves as installation aid for carefully fixing wires, cables and hoses. The base can be equipped at various lengths without tools by just using our Velcro strips. The Velcro base is designed for direct mounting, using countersunk screws.

- Velcro strips at variable lengths
- Gentle wire fixing without constrictions
- Reusable
- Cable bundles can easily be expanded
- Easy handling
- Reduced risk of injury compared to trimmed cable ties

### SPECIFICATIONS

- Polyamide 6.6
- V0
- LABS
- UV

Type	Order No.	Colour	Suitable for	Pack qty.
KS-fix 4-20 <sup>1)</sup>	87705050	Black	KB-fix 10	10
KS-fix 8-35 <sup>1)</sup>	87705060	Black	KB-fix 20	10
KS-fix 10-60 <sup>1)</sup>	87705070	Black	KB-fix 20	10
KS-fix 20-100 <sup>2)</sup>	87705080	Black	KB-fix 30	10

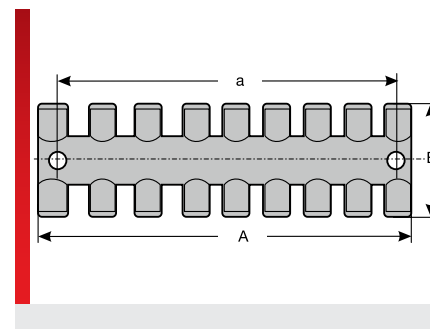
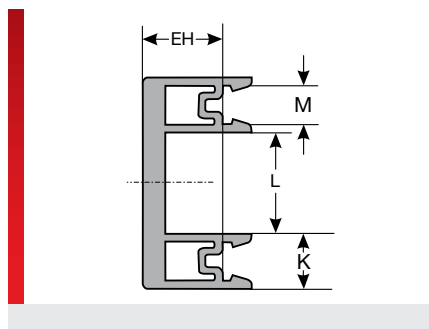
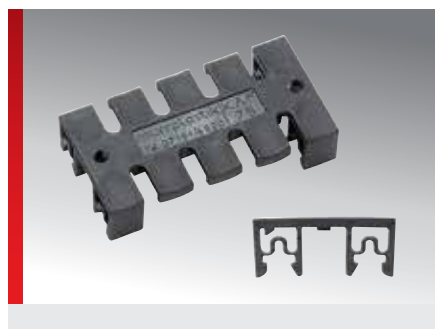
<sup>1)</sup> Mounted with M5 screws

<sup>2)</sup> Mounted with M6 screws

### Dimension table

Type	Order No.	A mm	B mm
KS-fix 4-20 <sup>1)</sup>	87705050	19.00	15.00
KS-fix 8-35 <sup>1)</sup>	87705060	29.00	26.00
KS-fix 10-60 <sup>1)</sup>	87705070	36.00	26.00
KS-fix 20-100 <sup>2)</sup>	87705080	62.00	38.00

## KAF cable fixing plate



### PRODUCT INFORMATION

The cable fixing plate KAF is suitable for simultaneously holding and relieving the strain of cables in the control cabinet. Designed to be mounted on a standard 35 mm top-hat rail (EN 50022; Niedax 2934;2936) or on a C-rail (Niedax 2970;2971). Installation is a simple snap-in process.

- Approved for railway technology (EN 45545-2)

### SPECIFICATIONS

	-40 – 125 °C
	Polyamide 6.6
	V0

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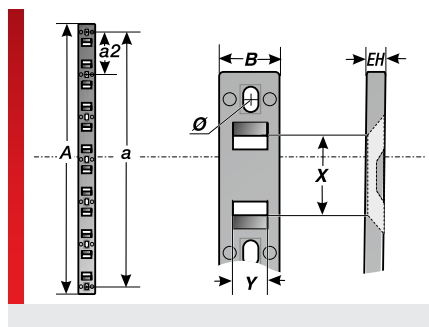
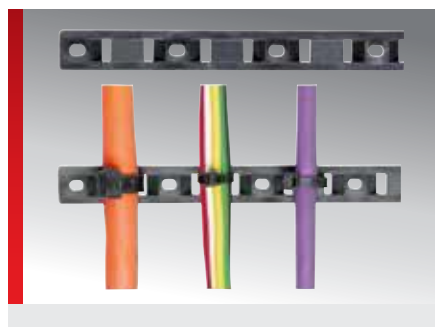
Type	Order No.	Colour	No. Cables	Pack qty.
KAF 11	87201010	Black	1	1
KAF 75	87201014	Black	5	1
KAF 140	87201018	Black	9	1

### Dimension table

Type	Order No.	A mm	B mm	a mm	EH mm	K mm	L mm	M mm
KAF 11	87201010	11.50	40.00		11.00	13.50	12.00	9.30
KAF 75	87201014	75.00	40.00	63.00	11.00	13.50	12.00	9.30
KAF 140	87201018	139.50	40.00	127.80	11.00	13.50	12.00	9.30



## KBL cable tie rail



### PRODUCT INFORMATION

Quick and easy fitting of cables.  
Cable ties may be pushed on if a rail is already fitted.

### SPECIFICATIONS

- 40 – 80 °C
- Polyamide PA 6
- V0

RoHS
 LABS
 UV
 Made in Germany

Type	Order No.	Colour	No. Cables	Pack qty.
KBL 245 x 15	87702122	Black	6	100
KBL 245 x 15	87702120	Black	6	1

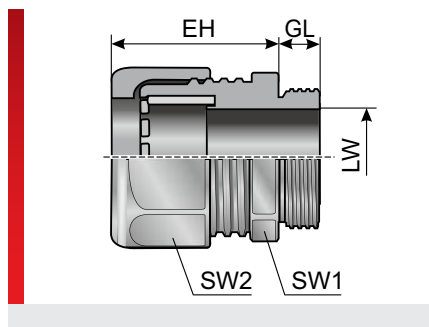
### Dimension table

Type	Order No.	A mm	B mm	a mm	a2 mm	EH mm	X mm	Y mm	Ø mm
KBL 245 x 15	87702122	245.00	15.60	231.00	38.50	5.10	24.00	8.60	4.00
KBL 245 x 15	87702120	245.00	15.60	231.00	38.50	5.10	24.00	8.60	4.00



## Cable fittings m-seal®

## Cable fitting m-seal® KV (plastic version)



### PRODUCT INFORMATION

The m-seal cable fittings are manufactured of specially modified Polyamide and the seal is made of NBR.

m-seal cable fittings feature the following advantages:

- Large seal and clamping area
- With integrated strain relief
- High protection class IP 68
- Simple, fast assembly without special tools

### SPECIFICATIONS

- 20 – 100 °C transient / short term 150 °C
- 
- i.a.w. UL94 V2 self-extinguishing
- IP 68
- Strain relief according to DIN EN 50262



Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric plastic thread</b>								
m-seal KV M12x1.5 3.0-6.5 <sup>1)</sup>	84181250	Black	M12x1.5	3.0 – 6.5	22.00	6.00	15.0	100
m-seal KV M16x1,5 4,0-8,0 <sup>1)</sup>	84181252	Black	M16x1,5	4.0 – 8.0	25.00	8.00	19.0	50
m-seal KV M20x1.5 6.0-12.0 <sup>2)</sup>	84181254	Black	M20x1.5	6.0 – 12.0	29.00	10.00	24.0	50
m-seal KV M25x1.5 11.0-17.0 <sup>2)</sup>	84181256	Black	M25x1.5	11.0 – 17.0	33.00	8.00	29.0	50
m-seal KV M32x1.5 15.0-21.0 <sup>2)</sup>	84181258	Black	M32x1.5	15.0 – 21.0	39.00	10.00	36.0	25
m-seal KV M40x1.5 19.0-28.0 <sup>2)</sup>	84181260	Black	M40x1.5	19.0 – 28.0	44.00	10.00	46.0	20
m-seal KV M50x1.5 30.0-38.0 <sup>2)</sup>	84181262	Black	M50x1.5	30.0 – 38.0	49.00	18.00	60.0	10
m-seal KV M63x1.5 34.0-44.0 <sup>2)</sup>	84181264	Black	M63x1.5	34.0 – 44.0	49.00	18.00	65.0	10
<b>Pg plastic threading</b>								
m-seal KV Pg 7 3.0-6.5 <sup>1)</sup>	84181050	Black	Pg 07	3.0 – 6.5	22.00	8.00	15.0	100
m-seal KV Pg 9 4.0-8.0 <sup>1)</sup>	84181052	Black	Pg 09	4.0 – 8.0	25.00	8.00	19.0	50



**Cable fitting m-seal® KV (plastic version)** (Continued...)

Type	Order No.	Colour	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
m-seal KV Pg 11 5.0-10.0 <sup>3)</sup>	84181054	Black	Pg 11	5.0 – 10.0	28.00	8.00	22.0	50
m-seal KV Pg 13.5 6.0-12.0 <sup>2)</sup>	84181056	Black	Pg 13.5	6.0 – 12.0	29.00	9.00	24.0	50
m-seal KV Pg 16 10.0-14.0 <sup>4)</sup>	84181058	Black	Pg 16	10.0 – 14.0	31.00	10.00	27.0	50
m-seal KV Pg 21 13.0-18.0 <sup>2)</sup>	84181060	Black	Pg 21	13.0 – 18.0	35.00	11.00	33.0	25
m-seal KV Pg 29 18.0-25.0 <sup>4)</sup>	84181062	Black	Pg 29	18.0 – 25.0	40.00	11.00	42.0	20
m-seal KV Pg 36 22.0-32.0 <sup>2)</sup>	84181064	Black	Pg 36	22.0 – 32.0	49.00	13.00	53.0	10
m-seal KV Pg 42 30.0-38.0 <sup>2)</sup>	84181066	Black	Pg 42	30.0 – 38.0	49.00	13.00	60.0	10
m-seal KV Pg 48 34.0-44.0 <sup>2)</sup>	84181068	Black	Pg 48	34.0 – 44.0	49.00	14.00	65.0	10
m-seal KV Pg 7 3.0-6.5 <sup>1)</sup>	84181000	Grey	Pg 07	3.0 – 6.5	22.00	8.00	15.0	100
m-seal KV Pg 9 4.0-8.0 <sup>1)</sup>	84181002	Grey	Pg 09	4.0 – 8.0	25.00	8.00	19.0	50
m-seal KV Pg 11 5.0-10.0 <sup>3)</sup>	84181004	Grey	Pg 11	5.0 – 10.0	28.00	8.00	22.0	50
m-seal KV Pg 13.5 6.0-12.0 <sup>2)</sup>	84181006	Grey	Pg 13.5	6.0 – 12.0	29.00	9.00	24.0	50
m-seal KV Pg 16 10.0-14.0 <sup>4)</sup>	84181008	Grey	Pg 16	10.0 – 14.0	31.00	10.00	27.0	50
m-seal KV Pg 21 13.0-18.0 <sup>2)</sup>	84181010	Grey	Pg 21	13.0 – 18.0	35.00	11.00	33.0	25
m-seal KV Pg 29 18.0-25.0 <sup>4)</sup>	84181012	Grey	Pg 29	18.0 – 25.0	40.00	11.00	42.0	20
m-seal KV Pg 36 22.0-32.0 <sup>2)</sup>	84181014	Grey	Pg 36	22.0 – 32.0	49.00	13.00	53.0	10
m-seal KV Pg 42 30.0-38.0 <sup>2)</sup>	84181016	Grey	Pg 42	30.0 – 38.0	49.00	13.00	60.0	10
m-seal KV Pg 48 34.0-44.0 <sup>2)</sup>	84181018	Grey	Pg 48	34.0 – 44.0	49.00	14.00	65.0	10

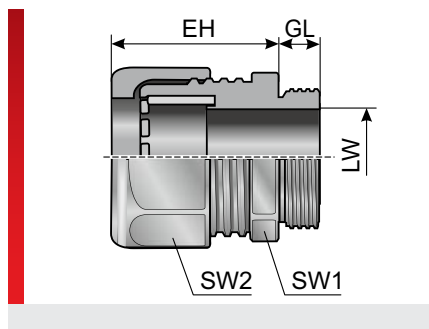
<sup>1)</sup> With UR approval

<sup>2)</sup> With UL approval

<sup>3)</sup> With cURus- approval

<sup>4)</sup> With cULus- approval

## Cable fitting m-seal® MV (metal version)



### PRODUCT INFORMATION

The m-seal cable fittings are made of nickel-plated brass and the sealing ring of neoprene. The fittings offer excellent strain relief and have a cap nut that is resistant to vibration.

m-seal cable fittings feature the following advantages:

- Large seal and clamping area
- With integrated strain relief
- High protection class IP 68
- Simple, fast assembly without special tools

### SPECIFICATIONS

- 20 – 100 °C transient / short term 150 °C
- 
- i.a.w. UL94 V2 self-extinguishing
- IP 68
- Strain relief according to DIN EN 50262



Type	Order No.	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal thread</b>							
m-seal MV M12x1.5 3.0-6.5 <sup>1)</sup>	84201600	M12x1.5	3.0 – 6.5	21.50	6.00	14.0	50
m-seal MV M16x1.5 5.0-10.0 <sup>2)</sup>	84201602	M16x1,5	5.0 – 10.0	25.30	7.00	20.0	50
m-seal MV M20x1.5 6.0-12.0 <sup>1)</sup>	84201604	M20x1.5	6.0 – 12.0	25.40	8.00	22.0	50
m-seal MV M25x1.5 11.0-17.0 <sup>3)</sup>	84201606	M25x1.5	11.0 – 17.0	31.00	8.00	27.0	25
m-seal MV M32x1.5 15.0-21.0 <sup>3)</sup>	84201608	M32x1.5	15.0 – 21.0	33.50	8.00	34.0	10
m-seal MV M40x1.5 19.0-28.0 <sup>3)</sup>	84201610	M40x1.5	19.0 – 28.0	42.00	9.00	43.0	10
m-seal MV M50x1.5 27.0-38.0 <sup>3)</sup>	84201612	M50x1.5	27.0 – 38.0	50.00	9.00	58.0	5
m-seal MV M63x1.5 34.0-44.0 <sup>1)</sup>	84201614	M63x1.5	34.0 – 44.0	52.30	14.00	64.0 / 68.0	5
<b>Pg metal thread</b>							
m-seal MV Pg 7 3.0-6.5 <sup>1)</sup>	84201000	Pg 07	3.0 – 6.5	21.80	6.00	14.0	50
m-seal MV Pg 9 4.0-8.0 <sup>1)</sup>	84201002	Pg 09	4.0 – 8.0	22.60	6.00	17.0	50
m-seal MV Pg 11 5.0-11.0 <sup>1)</sup>	84201004	Pg 11	5.0 – 11.0	25.30	6.00	20.0	50
m-seal MV Pg 13.5 6.0-12.0 <sup>1)</sup>	84201006	Pg 13.5	6.0 – 12.0	24.10	6.50	22.0	50
m-seal MV Pg 16 10.0-14.0 <sup>1)</sup>	84201008	Pg 16	10.0 – 14.0	27.50	6.50	24.0	25
m-seal MV Pg 21 13.0-18.0 <sup>1)</sup>	84201010	Pg 21	13.0 – 18.0	31.20	7.20	30.0	20
m-seal MV Pg 29 18.0-25.0 <sup>1)</sup>	84201012	Pg 29	18.0 – 25.0	39.30	8.00	40.0	10
m-seal MV Pg 36 22.0-32.0 <sup>1)</sup>	84201014	Pg 36	22.0 – 32.0	47.20	9.00	50.0	5
m-seal MV Pg 42 30.0-38.0 <sup>1)</sup>	84201016	Pg 42	30.0 – 38.0	47.70	12.00	58.0	5
m-seal MV Pg 48 34.0-44.0 <sup>1)</sup>	84201018	Pg 48	34.0 – 44.0	52.00	14.00	64.0	5
<b>Long, metal metric threading</b>							
m-seal MV M12x1.5-L 3.0-6.5	84201400	M12x1.5	3.0 – 6.5	21.50	12.00	14.0	50

**Cable fitting m-seal® MV (metal version)** (Continued...)

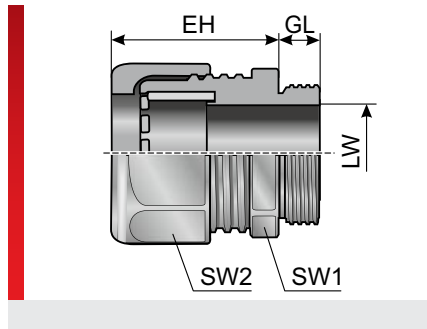
Type	Order No.	Connecting thread	Clamping range (LW) mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
m-seal MV M16x1.5-L 5.0-10.0	84201402	M16x1,5	5.0 – 10.0	25.30	12.00	20.0	50
m-seal MV M20x1.5-L 6.0-12.0	84201404	M20x1.5	6.0 – 12.0	25.40	12.00	22.0	50
m-seal MV M25x1.5-L 11.0-17.0	84201406	M25x1.5	11.0 – 17.0	31.00	12.00	27.0	25
m-seal MV M32x1.5-L 15.0-21.0	84201408	M32x1.5	15.0 – 21.0	33.50	15.00	34.0	10
m-seal MV M40x1.5-L 19.0-28.0	84201410	M40x1.5	19.0 – 28.0	42.00	15.00	43.0	10
m-seal MV M50x1.5-L 27.0-38.0	84201412	M50x1.5	27.0 – 38.0	50.00	15.00	58.0	5
m-seal MV M63x1.5-L 34.0-44.0	84201414	M63x1.5	34.0 – 44.0	52.30	15.00	64.0 / 68.0	5
<b>Long, metal PG threading</b>							
m-seal MV Pg 7-L 3.0-6.5	84201200	Pg 07	3.0 – 6.5	21.80	10.00	14.0	50
m-seal MV Pg 9-L 4.0-8.0	84201202	Pg 09	4.0 – 8.0	22.60	10.00	17.0	50
m-seal MV Pg 11-L 5.0-11.0	84201204	Pg 11	5.0 – 11.0	25.30	10.00	20.0	50
m-seal MV Pg 13.5-L 6.0-12.0	84201206	Pg 13.5	6.0 – 12.0	24.10	10.00	22.0	50
m-seal MV Pg 16-L 10.0-14.0	84201208	Pg 16	10.0 – 14.0	27.50	10.00	24.0	25
m-seal MV Pg 21-L 13.0-18.0	84201210	Pg 21	13.0 – 18.0	31.20	12.00	30.0	20
m-seal MV Pg 29-L 18.0-25.0	84201212	Pg 29	18.0 – 25.0	39.30	12.00	40.0	10
m-seal MV Pg 36-L22.0-32.0	84201214	Pg 36	22.0 – 32.0	47.20	14.00	50.0	5
m-seal MV Pg 42-L 30.0-38.0	84201216	Pg 42	30.0 – 38.0	47.70	16.00	58.0	5
m-seal MV Pg 48-L 34.0-44.0	84201218	Pg 48	34.0 – 44.0	52.00	18.00	64.0	5

<sup>1)</sup> With CSA approval

<sup>2)</sup> With CSA- and cURus- approval

<sup>3)</sup> With CSA- and cULus- approval

## Cable fitting m-seal® EMC



### PRODUCT INFORMATION

With the m-seal EMC (EMV) cable fittings, simple radial and axial movement of the cable are possible, even at contact location. The contact finger surfaces with rounded edges prevent damage to the conductor. In addition, the large surface on the contact finger makes low contact resistance possible, even on loosely woven cables (the contact area does not press into the conductor).

The m-seal EMC (EMV) cable fitting features the following advantages:

- Large seal and clamping area
- With integrated strain relief
- High protection class IP 68
- High contact rating, even at vibration conditions
- Very simple and rapid assembly without tools.
- Suitable for the highest requirements of today's technology
- Very good shielding attenuation

### SPECIFICATIONS

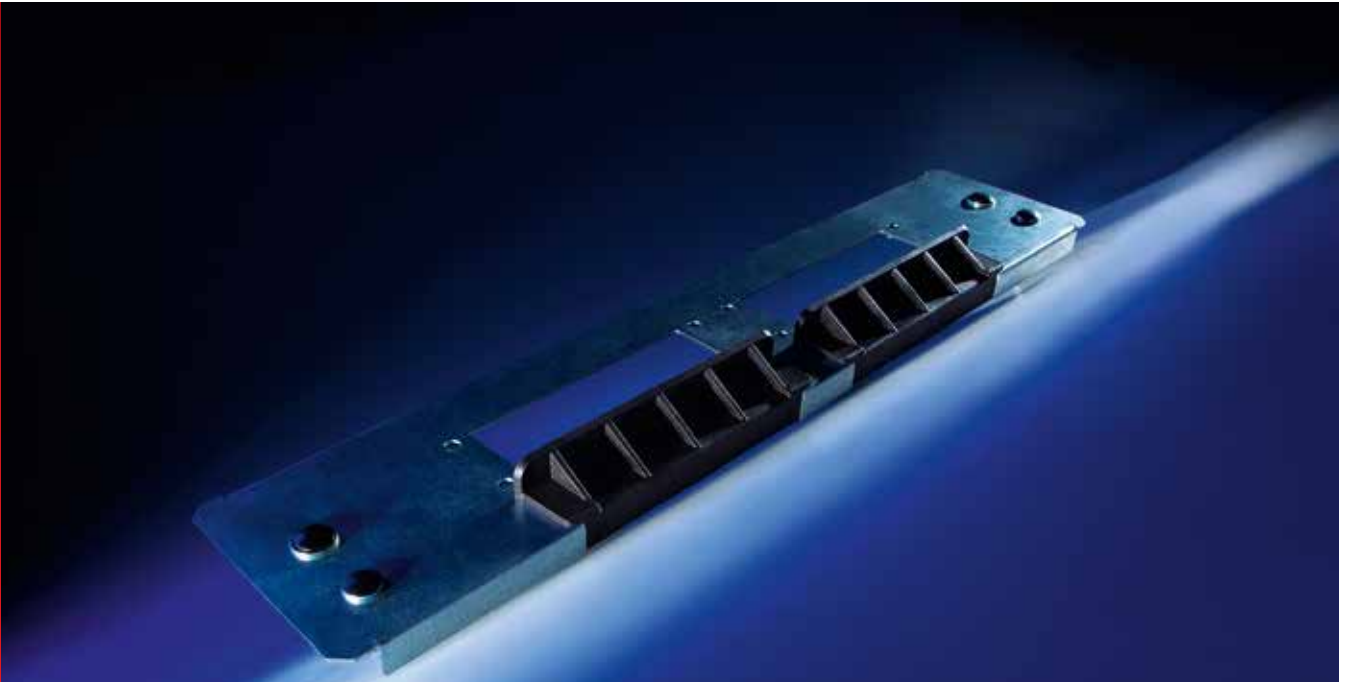
- 20 – 100 °C transient / short term 150 °C
- 
- i.a.w. UL94 V2 self-extinguishing
- IP 68
- Strain relief according to DIN EN 50262



Type	Order No.	Connecting thread	Clamping range (LW) mm	Contact diameter mm	EH mm	GL mm	SW 1 / 2 mm	Pack qty.
<b>Metric metal thread / EMC version</b>								
m-seal EMC M12x1.5 3.0-6.5 <sup>1)</sup>	84201800	M12x1.5	3.0 – 6.5	2.0 – 5.0	28.00	6.00	14.0	50
m-seal EMC M16x1.5 5.0-10.0 <sup>1)</sup>	84201802	M16x1,5	5.0 – 10.0	3.5 – 8.0	34.00	6.00	20.0	50
m-seal EMC M20x1.5 6.0-12.0	84201804	M20x1.5	6.0 – 12.0	4.5 – 10.0	38.00	6.00	24.0	50
m-seal EMC M25x1.5 10.0-18.0 <sup>1)</sup>	84201806	M25x1.5	10.0 – 18.0	7.0 – 14.0	42.00	8.00	30.0	25
m-seal EMC M32x1.5 16.0-25.0 <sup>2)</sup>	84201808	M32x1.5	16.0 – 25.0	12.0 – 20.0	50.00	9.00	40.0	10
m-seal EMC M40x1.5 22.0-32.0 <sup>2)</sup>	84201810	M40x1.5	22.0 – 32.0	18.0 – 27.0	57.00	9.00	50.0	5
m-seal EMC M50x1.5 30.0-38.0 <sup>2)</sup>	84201812	M50x1.5	30.0 – 38.0	26.0 – 34.0	68.00	9.00	58.0	5
m-seal EMC M63x1.5 34.0-44.0 <sup>2)</sup>	84201814	M63x1.5	34.0 – 44.0	30.0 – 40.0	69.00	14.00	64.0 / 68.0	5

<sup>1)</sup>With cURus- approval

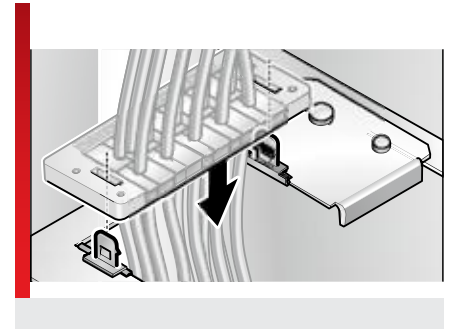
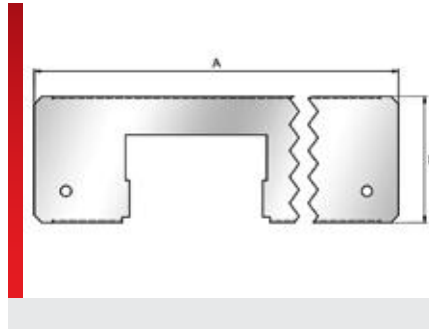
<sup>2)</sup>With cULus- approval



## Accessories



## SBB control cabinet floor plate



### PRODUCT INFORMATION

The control cabinet floor plate can be installed in Rittal (type CM and TS8) control cabinets. Up to 5 cable entry systems can be installed.

Locking plates of Type VP 24 or VP/N 24 are included with the supply of the control cabinet floor plates. These are required to lock the floor sheeting into place.

Unnecessary cut-outs can be covered with the BP/H 24 blanking plate.

- Protection category IP 54 when properly assembled as a system (control cabinet + floor plate)
- Can be installed entirely retrospectively
- Earthing points (M6 and M8) available on both side

### SPECIFICATIONS

- 40 – 125 °C
- Floor sheeting: Galvanised sheet steel  
Locking plate: Polyamide 6.6
- V0
- IP 54 when installed properly

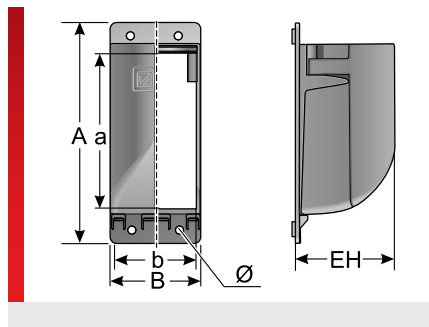


Type	Order No.	For control cabinet width mm	No. Location spaces	Plate thickness mm	A mm	B mm	Pack qty.
<b>and M5 threads</b>							
SBB-M5 420-2000 <sup>1)</sup>	87821012	1000.00	2x 24-polos	1.50	424.00	100.00	1
SBB-M5 460-2000	87821022	600.00	2x 24-polos	1.50	464.00	100.00	1
SBB-M5 520-3000 <sup>1)</sup>	87821032	1200.00	3x 24-pin	1.50	524.00	100.00	1
SBB-M5 660-3000	87821042	800.00	3x 24-pin	1.50	664.00	100.00	1
<b>with through-hole</b>							
SBB 420 - 2000 <sup>1)</sup>	87821010	1000.00	2x KDL/E 24   BPH	1.50	424.00	100.00	1
SBB 460 - 2000	87821020	600.00	2x KDL/E 24   BPH	1.50	464.00	100.00	1
SBB 520 - 3000 <sup>1)</sup>	87821030	1200.00	3x KDL/E 24   BPH	1.50	524.00	100.00	1
SBB 660 - 3000	87821040	800.00	3x KDL/E 24   BPH	1.50	664.00	100.00	1
SBB 860 - 5000 <sup>2)</sup>	87821050	1000.00	5x KDL/E 24   BPH	1.50	864.00	100.00	1
<b>Replacement part: Locking plates</b>							
VP24	87821090						5
suitable for KDL/E 24							
VP/N 24	87821092						5
suitable for KDP, KDL/C and KDL/D 24							

<sup>1)</sup> Cabinet width with central strut

<sup>2)</sup> Cabinet width without central strut

## KDP/H conduit connector



### PRODUCT INFORMATION

The KDP/H conduit connection enables a connection to our Murrflex M50/P48 cable protection conduits with standard corrugation on the cable entry plates of Types KDP/N 24, KDP/X 24 and KDP/E 24. The conduit connection is comprised of a lower part that is screwed together with the cable entry plate and an upper part that engages with the lower part after the cables have been feed through the cable entry plate without tools.

- Line protection
- Contaminant water and water jet protection
- Easy assembly and disassembly
- Compact design
- For all Murrflex conduits of sizes M50/P48 with standard corrugation

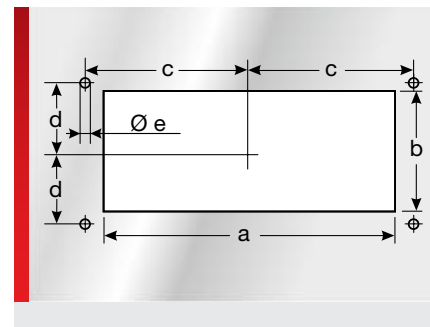
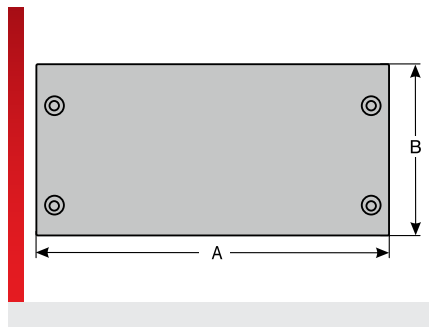
### SPECIFICATIONS

	-40 – 110 °C
	Polyamide 6
	V0

Type	Order No.	Colour	A mm	B mm	a mm	b mm	Ø mm	EH mm	Pack qty.
KDP/H 48	87301098	Black	148.00	60.00	53.00	106.00	5.50	65.00	1



## Blanking plate (plastic version)



### PRODUCT INFORMATION

The blanking plates are suited for sealing 16- or 24-pole plug connector cut-outs.

- Integrated seal
- BP/N can be snap-fitted or screw-fastened
- BP/H snap-fit assembly

### SPECIFICATIONS

- 40 – 125 °C
- BP, BP/N: Polyamide 6.6  
BP/H: TPE
- BP, BP/N: V0  
BP/H: HB
- BP: IP 54  
BP/N: IP 65  
BP/H: IP 42

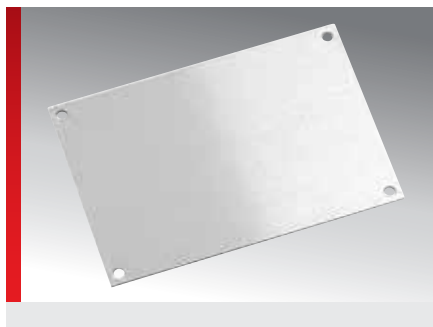


Type	Order No.	Colour	Pack qty.
<b>Reinforced version</b>			
BP 16	87171620	Black	10
BP 24	87171622	Black	10
<b>High design, latchable from plate thickness 1.5–2.0 mm</b>			
BP/N 24	87171624	Black	1
<b>Flexible version</b>			
BP/H 24	87171626	Black	1

### Dimension table

Type	Order No.	Installation height mm	A mm	B mm	a mm	b mm	c mm	d mm	e mm
<b>Reinforced version</b>									
BP 16	87171620	8.00	116.00	58.00	86.00	36.00	51.50	16.00	5.50
BP 24	87171622	8.00	146.00	58.00	112.00	36.00	65.00	16.00	5.50
<b>High design, latchable from plate thickness 1.5–2.0 mm</b>									
BP/N 24	87171624	15.50	146.00	58.00	112.00	36.00	65.00	16.00	5.50
<b>Flexible version</b>									
BP/H 24	87171626	4.50	146.00	48.00	112.00	36.00	65.00	16.00	5.50

## Blanking plate (metal version)



### PRODUCT INFORMATION

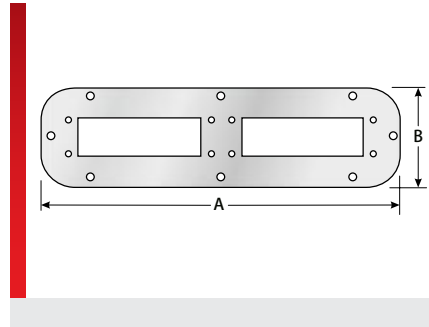
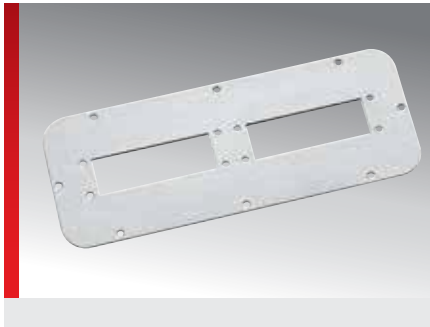
Blanking plate for closing off unused adapter positions and cut-outs.  
 The stainless steel version is particularly suitable for applications in the food and chemical industry.  
 Integrated threaded bolts mean that no screws are visible from outside.  
 Mounting set included in delivery.

### SPECIFICATIONS

	Plate: See article Seal: NBR
	

Type	Order No.	Colour	Material Plate	Pack qty.
KDP BP 120/190 V4A	87663145	Smoothed	V4A (1.4571)	1
KDP BP 120/190 ALU	87663096	RAL 7035	AlMg3 (3.3535)	1
KDP BP 90/144 ALU	87663091	RAL 7035	AlMg3 (3.3535)	1
KDP BP 90/221 ALU	87663093	RAL 7035	AlMg3 (3.3535)	1
KDP BP 100/145 V4A	87663090	Smoothed	V4A (1.4571)	1
KDP BP 105/155 ALU	87663092	RAL 7035	AlMg3 (3.3535)	1
KDP BP 105/155 V4A	87663094	Smoothed	V4A (1.4571)	1

## Rittal adapter plate



### PRODUCT INFORMATION

The Rittal adapter plates can be directly mounted into the prefabricated cut-outs from Rittal casings. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates.

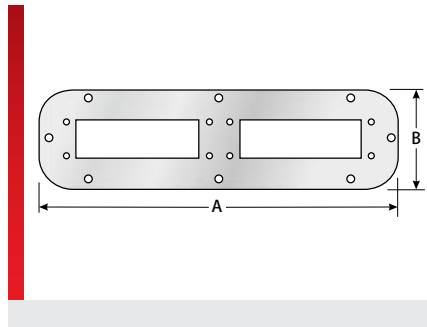
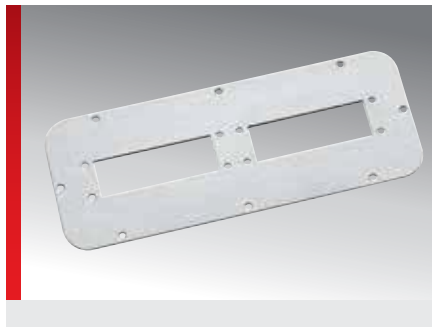
### SPECIFICATIONS

Stainless steel V2A (1.4301)  
 V4A (1.4571)  
 Steel (1.1203)

RoHS

Type	Order No.	Colour	Location spaces	Cutting	Plate thickness mm	A mm	B mm	Pack qty.
<b>With integral M5M6 threading</b>								
AP/RI-TS/1+1-M6 St-vz	87663220	Grey	1x KDL-Jumbo 1	TS8	2.00	338.00	168.00	1
			1x KDL-Jumbo 2					
AP/RI-TS/1+2-M5/M6 St-vz	87663216	Grey	1x KDL-Jumbo 1	TS8	2.00	338.00	168.00	1
			2x 24-pole					
AP/RI-TS/2-M6 St-vz	87663218	Grey	2x KDL-Jumbo 1	TS8	2.00	338.00	168.00	1
APM/RI-2 1x24-M5, RAL 7035 <sup>1)</sup>	87823080	RAL 7035	1x 24-pole	2	1.50	221.00	90.00	1
APM/RI-3 1x24-M5, RAL 7035 <sup>1)</sup>	87823070	RAL 7035	1x 24-pole	3	1.50	330.00	90.00	1
APM/RI-3 2x24-M5, RAL 7035 <sup>1)</sup>	87823072	RAL 7035	2x 24-pole	3	1.50	330.00	90.00	1
APM/RI-4 2x24-M5, RAL 7035 <sup>1)</sup>	87823050	RAL 7035	2x 24-pole	4	1.50	339.00	149.00	1
APM/RI-4 4x24-M5, RAL 7035 <sup>1)</sup>	87823052	RAL 7035	4x 24-pole	4	1.50	339.00	149.00	1
APM/RI-5 3x24-M5, RAL 7035 <sup>1)</sup>	87823060	RAL 7035	3x 24-pole	5	1.50	534.00	149.00	1
APM/RI-5 6x24-M5, RAL 7035 <sup>1)</sup>	87823062	RAL 7035	6x 24-pole	5	1.50	534.00	149.00	1
KDP AP/RI-TS/3-M5	87663212	Smoothed	3x 24-pole	TS8	2.00	338.00	168.00	1
KDP AP/RI-TS/4-M5	87663214	Smoothed	4x 24-pole	TS8	2.00	338.00	168.00	1
<b>With 24-pin cut-outs</b>								
APM/RI-2 1x24, RAL 7035 <sup>1)</sup>	87823040	RAL 7035	1x 24-pole	2	1.50	221.00	90.00	1
APM/RI-3 1x24, RAL 7035 <sup>1)</sup>	87823030	RAL 7035	1x 24-pole	3	1.50	330.00	90.00	1
APM/RI-3 2x24, RAL 7035 <sup>1)</sup>	87823032	RAL 7035	2x 24-pole	3	1.50	330.00	90.00	1
APM/RI-4 2x24, RAL 7035 <sup>1)</sup>	87823010	RAL 7035	2x 24-pole	4	1.50	339.00	149.00	1
APM/RI-4 4x24, RAL 7035 <sup>1)</sup>	87823012	RAL 7035	4x 24-pole	4	1.50	339.00	149.00	1
APM/RI-5 3x24, RAL 7035 <sup>1)</sup>	87823020	RAL 7035	3x 24-pole	5	1.50	534.00	149.00	1
APM/RI-5 6x24, RAL 7035 <sup>1)</sup>	87823022	RAL 7035	6x 24-pole	5	1.50	534.00	149.00	1
KDP AP/RI-TS/3	87663202	Smoothed	3x 24-pole	TS8	2.00	338.00	168.00	1
KDP AP/RI-TS/4	87663204	Smoothed	4x 24-pole	TS8	2.00	338.00	168.00	1
KDP 24/AP/RI-KL/1	87663073	Smoothed	1x 24-pole	2	2.00	221.00	90.00	1
KDP 24/AP/RI-BG/2	87663074	Smoothed	2x 24-pole	BG 1558.510	2.00	355.00	92.00	1

## Rittal adapter plate (Continued...)

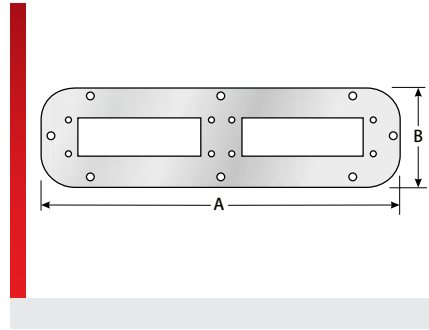
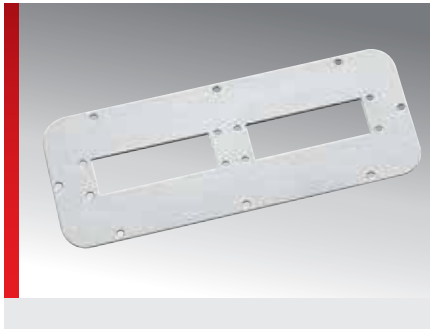


Type	Order No.	Colour	Location spaces	Cutting	Plate thickness mm	A mm	B mm	Pack qty.
KDP 24/AP/RI-AE/2	87663072	Smoothed	2x 24-pole	3	2.00	330.00	90.00	1
KDP 24/AP/RI-BG/3+4	87663075	Smoothed	3x 24-pole	BG 1559.510	2.00	555.00	92.00	1
			2x M20					
			2x M25					
KDP 24/AP/RI-AE/4 <sup>2)</sup>	87663070	Smoothed	4x 24-pole	4	2.00	339.00	149.00	1
KDP 24/AP/RI-AE/6+2 <sup>2)</sup>	87663071	Smoothed	6x 24-pole	5	2.00	534.00	149.00	1
			2x M32					
<b>For metal KDP</b>								
KDP AP 149/105/3 St <sup>1)</sup>	87663084	RAL 7035	3x KDP 105/xx	5	2.50	534.00	149.00	1
KDP AP 149/100/2 V4A	87663080	Smoothed	2x KDP 100/xx	4	2.50	339.00	149.00	1
KDP AP 149/100/3 V4A	87663082	Smoothed	3x KDP 100/xx	5	2.50	534.00	149.00	1
<b>With cut-out M50</b>								
AP/RI-TS/3x50	87663208	Smoothed	3x M50	TS8	2.00	338.00	168.00	1
AP/RI-TS/5x50	87663206	Smoothed	5x M50	TS8	2.00	338.00	168.00	1
BP RI-TS/338x168	87663210	Smoothed		TS8	2.00	338.00	168.00	1

<sup>1)</sup>Material steel (1.1203)

<sup>2)</sup>The KDL/E 24/xx cable entry system is mounted in a staggered pattern on the cut-outs. As a result, KDL/E 24/xx units cannot be positioned on top of one another. The configuration plan illustrates the possible layouts for the KDL/E 24/xx cable entry system.


## Sarel adapter plate



### PRODUCT INFORMATION

Adapter plate can be fitted directly into the standard cut-outs of Sarel cabinets. They serve to retain various Murrplastik cable entry systems. Unused adapter spaces can be closed off using blanking plates. A blade terminal L6.3 is available for earthing the adapter plate. Adapter plate without sealing. The seal is part of the cabinet accessories.

### SPECIFICATIONS

 Stainless steel 1.4301 (V2A)

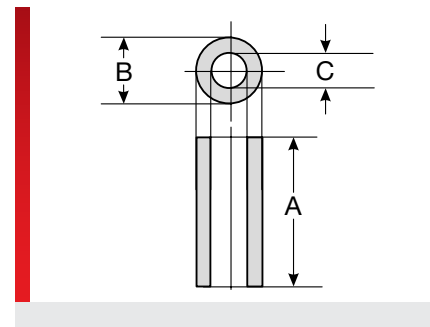
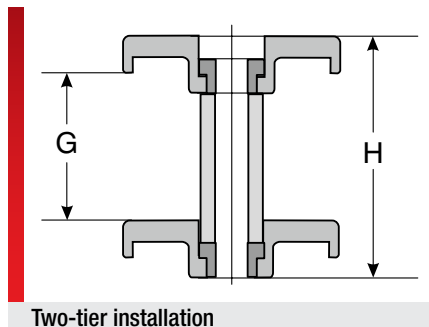
 RoHS

Type	Order No.	Colour	Location spaces	Cutting	Plate thickness mm	A mm	B mm	Pack qty.
<b>With 24-pin cut-outs</b>								
KDP 24/AP/SA/2+0	87663102	Smoothed	2x 24-pole	515X4	2.00	345.00	130.00	1
KDP 24/AP/SA/2+4	87663112	Smoothed	2x 24-pole 4x M32	515X5	2.00	445.00	130.00	1
KDP 24/AP/SA/3+2	87663108	Smoothed	3x 24-pole 2x M32	515X6	2.00	545.00	130.00	1
KDP 24/AP/SA/5+4	87663100	Smoothed	5x 24-pole 2x M25 2x M50	515X7	2.00	495.00	220.00	1
<b>For metal KDP</b>								
KDP AP/SA/130/100/2	87663130	Smoothed	2x KDP 100/xx	515X4	2.50	345.00	130.00	1
KDP AP/SA/130/100/2+4	87663128	Smoothed	2x KDP 100/xx 4x M32	515X5	2.50	445.00	130.00	1
KDP AP/SA/130/100/3+2	87663126	Smoothed	2x KDP 100/xx 3x M32	515X6	2.50	545.00	130.00	1
<b>For KDP/R</b>								
KDP/R AP/SA-1	87663106	Smoothed	6x M63	515X6	2.00	545.00	130.00	1
KDP/R AP/SA-2	87663110	Smoothed	5x M63	515X5	2.00	445.00	130.00	1
KDP/R AP/SA-3	87663114	Smoothed	3x M63	515X4	2.00	345.00	130.00	1
KDP/R AP/SA-4	87663104	Smoothed	2x M32 2x M63	515X3	2.00	245.00	130.00	1





## DH spacer sleeve



### PRODUCT INFORMATION

The DH spacer sleeve is required for stacking the ZL strain relief plate. This allows for cables to be stacked, thereby saving space.

### SPECIFICATIONS

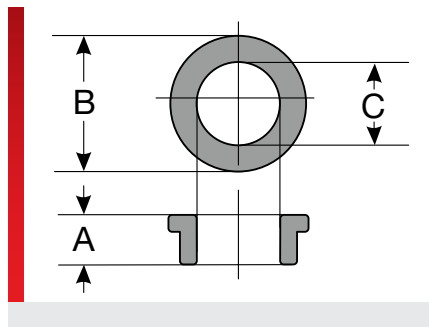


Type	Order No.	A mm	B mm	C mm	G mm	H mm	Pack qty.
<b>Para ZL 04 y ZL 05</b>							
DH 30/8	87701054	30.00	8.50	5.20	26.00	44.00	1
<b>Para ZL39 – 180/8</b>							
DH 32/6	87701052	32.00	12.00	6.30	28.00	46.00	1
DH 32/8: Typical material <sup>1)</sup>	87701062	32.00	13.00	8.30	28.00	46.00	1

<sup>1)</sup>for ZL 180/8 only



## ELB insert bushing



### PRODUCT INFORMATION

The ELB insert bushing can be laid into the strain relief plate type ZL. It prevents cold flow of the plastic at the fixing point during heavy strain or permanent movement.

### SPECIFICATIONS

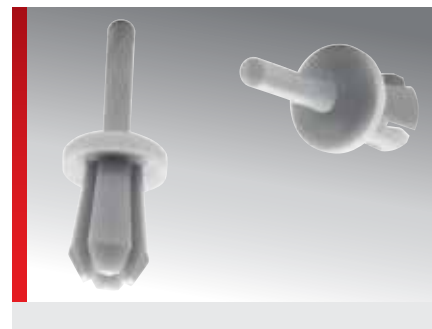


Brass

Type	Order No.	A mm	B mm	C mm	Pack qty.
<b>For ZL39 – 180/6</b>					
ELB/6	87701050	6.50	12.00	6.20	1
<b>For ZL 180/8</b>					
ELB/8 <sup>1)</sup>	87701060	6.50	13.40	8.20	1

<sup>1)</sup> for ZL 180/8 only

## BN securing rivet



### PRODUCT INFORMATION

Plastic expansion rivets for the quick installation of components, e.g. cable ducts. Assembly tool BNW is optimally adjusted to the fixing rivets. Only this tool brings out the full economical effect of the BN fixing rivet.

### SPECIFICATIONS

 -60 – 80 °C

 Hostalene

Type	Order No.	Colour	Holes mm	Shaft length mm	Fixing thickness min. mm	Fixing thickness max. mm	Pack qty.
BN 1	87621410	Grey	3.00	9.00	3.00	7.50	500
BN 2	87621412	Grey	4.50	10.00	3.00	8.00	500
BN 3	87621414	Grey	6.50	15.00	4.50	10.00	1000

## KB/KBM cable tie







### PRODUCT INFORMATION

Cable ties are a reliable method for the economic bundling and fastening of cables, cable harnesses, tubes, conduits and other components. The black cable ties are suitable for outdoor applications.

The cable tie KKB 28 is equipped with a special locking mechanism and is especially suitable for heavy-duty applications.

The KBM metal cable tie is ideally used for EMC solutions. It creates greater contact surface area for discharging sheath currents.

### SPECIFICATIONS

-  KB: Polyamide 6.6  
KBM: Stainless steel 1.4301
-  V2 for Type KB black only  
V2 for Type KKB only
-  Black cable ties are UV stabilised
- 

Type	Order No.	Colour	Length mm	Width mm	Bundle range mm	Tensile strength max.	Pack qty.
<b>Plastic cable ties</b>							
KB 15 <sup>1)</sup>	87661251	Black	75.00	2.20	15.00	60	1000
KB 20 <sup>1)</sup>	87661252	Black	98.00	2.50	20.00	60	1000
KB 22 <sup>1)</sup>	87661254	Black	120.00	2.50	30.00	80	1000
KB 25 <sup>1)</sup>	87661256	Black	140.00	3.60	33.00	130	1000
KB 30 <sup>1)</sup>	87661260	Black	160.00	4.50	38.00	180	1000
KB 45 <sup>1)</sup>	87661262	Black	178.00	4.80	45.00	220	1000
KB 50 <sup>1)</sup>	87661264	Black	200.00	2.90	50.00	80	1000
KB 55 <sup>1)</sup>	87661266	Black	200.00	4.80	50.00	220	1000
KB 75 <sup>1)</sup>	87661268	Black	290.00	4.80	75.00	220	100
KB 100 <sup>1)</sup>	87661270	Black	360.00	4.80	100.00	220	100
KB 110 <sup>1)</sup>	87661272	Black	370.00	7.80	105.00	540	100
KB 15 <sup>1)</sup>	87661210	Natural colour	75.00	2.20	15.00	60	1000
KB 20 <sup>1)</sup>	87661214	Natural colour	98.00	2.50	20.00	60	1000
KB 22 <sup>1)</sup>	87661218	Natural colour	130.00	2.50	30.00	80	1000
KB 25 <sup>1)</sup>	87661222	Natural colour	140.00	3.60	33.00	130	1000
KB 30 <sup>1)</sup>	87661226	Natural colour	160.00	4.50	38.00	180	1000
KB 45 <sup>1)</sup>	87661230	Natural colour	178.00	4.80	45.00	220	1000
KB 50 <sup>1)</sup>	87661234	Natural colour	200.00	2.90	50.00	80	1000
KB 55 <sup>1)</sup>	87661238	Natural colour	200.00	4.80	50.00	220	1000
KB 75 <sup>1)</sup>	87661242	Natural colour	290.00	4.80	75.00	220	100
KB 100 <sup>1)</sup>	87661246	Natural colour	360.00	4.80	100.00	220	100
KB 110 <sup>1)</sup>	87661248	Natural colour	370.00	7.80	105.00	540	100
<b>Power cable tie with special lock</b>							
KKB 28 <sup>2)</sup>	87661258	Black	180.00	8.00	40.00	360	100

**KB/KBM cable tie** (Continued...)



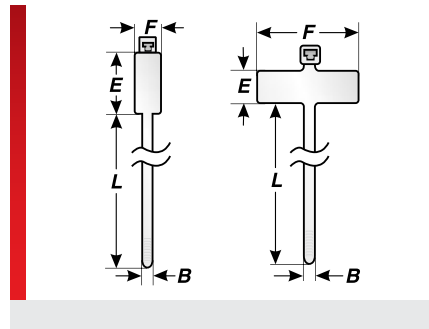
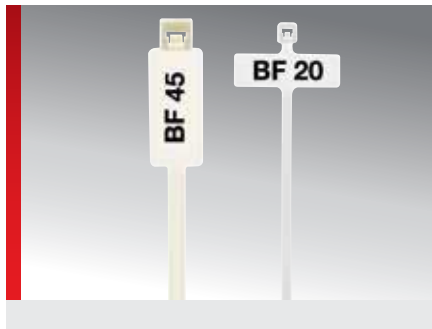
Type	Order No.	Colour	Length mm	Width mm	Bundle range mm	Tensile strength max.	Pack qty.
<b>Metal cable tie</b>							
KBM 15	87661014	Materialtypisch	200.00	4.30	50.00	445	100

The dimensions may deviate for technical or production reasons.

<sup>1)</sup> Recommended assembly tool for all widths of KKBW to 6 mm width KBW 1K.

<sup>2)</sup> Recommended assembly tool KKBW

## BF cable ties



### PRODUCT INFORMATION

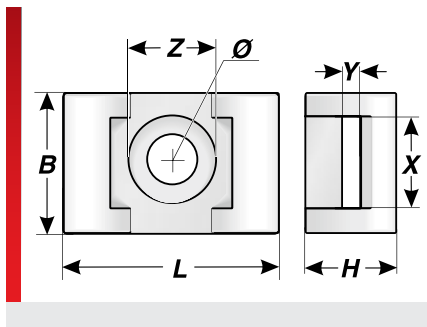
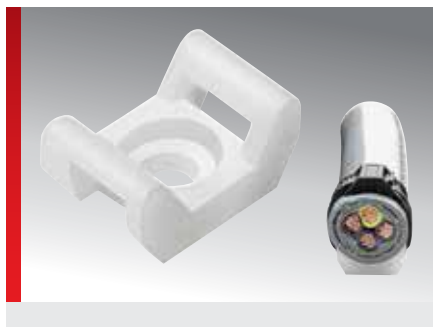
Cable tie with title block.  
 For use with ink pens or permanent water-proof markers.  
 BF20 (Fig. right)  
 Labelling field lengthwise on cable.  
 BF45 (Fig. left)  
 Labelling field across the cable.

### SPECIFICATIONS

	-25 – 85 °C
	Polyamide

Type	Order No.	Colour	B mm	E mm	F mm	L mm	Bundle range mm	Tensile strength max.	Pack qty.
BF 20	87681010	White	2.50	8.00	25.00	86.00	19.00	80	100
BF 45	87681012	Natural colour	4.70	28.00	13.00	157.00	45.00	222	100




## SH screw-down holder



### PRODUCT INFORMATION

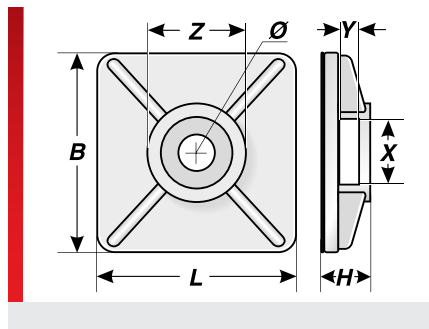
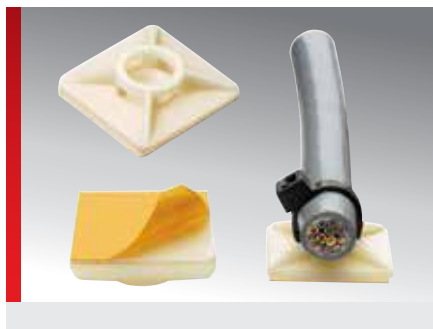
The SH screw-down holder is used to fix individual cables cost-effectively. It can be screwed or riveted to any surface.

### SPECIFICATIONS

-  -40 – 85 °C
-  Polyamide
-  RoHS

Type	Order No.	Colour	L mm	B mm	H mm	X mm	Y mm	Z mm	Ø mm	Pack qty.
SH 1	87681210	White	15.00	10.00	7.00	5.00	2.00	7.00	3.70	100
SH 2	87681212	White	22.50	15.00	11.00	9.20	2.80	10.00	5.00	100




## KH screw-down and adhesive holder



### PRODUCT INFORMATION

Adhesive holder, plastic. The retention force can be increased by additional fastening with a screw. If pressure sensitive adhesives are used, the surface must be smooth and free of dust and grease. Contaminated surfaces must be cleaned with proper cleaning agents.

### SPECIFICATIONS

-  -40 – 85 °C
-  Polyamide
-  RoHS

Type	Order No.	Colour	L mm	B mm	H mm	X mm	Y mm	Z mm	Ø mm	Pack qty.
KH 1	87681220	White	19.00	19.00	6.00	4.00	1.80	7.70	4.30	100
KH 2	87681222	White	27.00	27.00	7.50	6.00	2.30	9.70	4.70	100

## KB-fix Velcro strip







### PRODUCT INFORMATION

The KB-fix Velcro strip is made of Polypropylene and Velour Polyamide. It serves as a mounting aid in the fields of electrical and pneumatic installations, for instance in steering and control cabinets, on machines and/or residential installations, for consumer applications and much more. The Velcro (hook and loop) fastener strips are available on a 25 m roll and are cut as required. Particular benefits of the KB-fix Velcro strip are:

- Very simple handling
- Fire classification V2 per UL94
- Does not constrict sensitive cables such as fibre optic cables or pneumatic hoses
- Can be opened and closed hundreds of times
- No injuries possible from sharp edges, as from shortened cable ties

### SPECIFICATIONS

	-30 – 80 °C
	Polypropylene (PP) Polyamide 6
	V2
	

Type	Order No.	Colour	Width mm	Pack qty.
KB-fix 10-V2	87661802	Black	10.00	25
KB-fix 16-V2	87661804	Black	16.00	25
KB-fix 20-V2	87661806	Black	20.00	25
KB-fix 25-V2	87661808	Black	25.00	25
KB-fix 30-V2	87661810	Black	30.00	25









## Tools















## Punching tools

## SW-HG hydraulic manual punch



### PRODUCT INFORMATION

Practical manual punch without additional conduit and cylinder, ideal for workshop and assembly.

- Hydraulic punch made of high-strength aluminium
- Overload protection via overpressure valve
- Ergonomic handle, springs back automatically

### SPECIFICATIONS



Type	Order No.	Weight kg / piece	Punching force kN	Operating pressure bar	Pack qty.
<b>Compact hydraulic manual punch, straight</b>					
SW-HG hydraulic manual punch	87801010	2.94	75.00	650.00	1

consisting of:

- 1 pce. compact hydraulic manual punch
- 1 each tension bolt version A
- 1 pce. tension bolt version A
- 1 pce. spacer bushing set (3-parts)
- 1 pce. tap drill 11.0 mm
- 1 pce. transport case

Punching performance, round hole perforator:

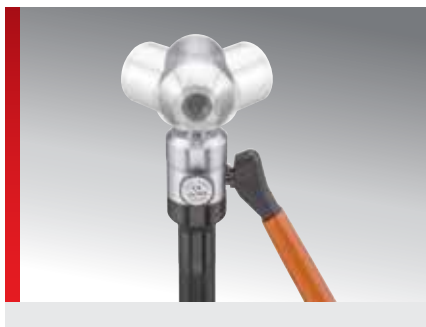
- 2.0 mm sheet steel (St37) max. Ø 84 mm
- 3.0 mm sheet steel (St37) max. Ø 64 mm
- 2.0 mm stainless steel (V2A) max. Ø 84 mm

Punching performance, square hole perforator:

- 2.0 mm sheet steel (St37) max. 36 x 112 mm

For spare parts see chapter "Spare parts list for punching tools"

## SW-HW hydraulic manual punch

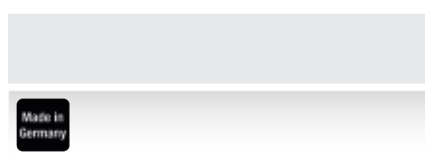


### PRODUCT INFORMATION

Practical manual punch without additional conduit and cylinder, ideal for workshop and assembly.

- Hydraulic punch made of high-strength aluminium
- Overload protection via overpressure valve
- Ergonomic handle, springs back automatically
- The angle head can be pivoted 360° for better handling.

### SPECIFICATIONS



Type	Order No.	Weight kg / piece	Punching force kN	Operating pressure bar	Pack qty.
<b>Compact hydraulic manual punch with pivoting head</b>					
SW-HW hydraulic manual angled punch	87801012	3.3	75.00	650.00	1

consisting of:

- 1 pce. compact hydraulic manual punch
- 1 each tension bolt version A
- 1 pce. tension bolt version A
- 1 pce. spacer bushing set (3-parts)
- 1 pce. tap drill 11.0 mm
- 1 pce. transport case

Punching performance, round hole perforator:

- 2.0 mm sheet steel (St37) max. Ø 84 mm
- 3.0 mm sheet steel (St37) max. Ø 64 mm
- 2.0 mm stainless steel (V2A) max. Ø 84 mm

Punching performance, square hole perforator:

- 2.0 mm sheet steel (St37) max. 36 x 112 mm

For spare parts see chapter "Spare parts list for punching tools"

## SW-HF hydraulic foot punch



### PRODUCT INFORMATION

Practical hydraulic punch with foot pump; ideal for use in the workshop. The foot pump does not require use of the hands, leaving both hands free for exact positioning and punching at the control cabinet. The support frame of the foot pump is splayed. Facilitates a stable, tip-resistant workflow.

- Overload protection via installed pump safety valve
- Better punching performance than with a manual punch
- For larger punching tools

### SPECIFICATIONS



Type	Order No.	Weight kg / piece	Punching force kN	Operating pressure bar	Pack qty.
<b>Hydraulic punch with foot pump</b>					
SW-HF Hydraulic punch with foot pump	87801014	13.92	100.00	700.00	1

consisting of:

- 1 pce. hydraulic cylinder with quick coupling
- 1 pce. hydraulic conduit 2.8 m
- 1 each tension bolt version A
- 1 pce. tension bolt version A
- 1 pce. spacer bushing set (5-parts)
- 1 pce. tap drill 11.0 mm
- 1 pce. sheet steel transport case

Punching performance, round hole perforator:

- 2.0 mm sheet steel (St37) max. Ø 150 mm
- 3.0 mm sheet steel (St37) max. Ø 100 mm
- 2.0 mm stainless steel (V2A) max. Ø 100 mm

Punching performance for square hole punch:

- 2.0 mm sheet steel (St37) max. 138 x 138 mm
- 2.0 mm stainless steel sheet (V2A) max. 92 x 92 mm

For spare parts see chapter "Spare parts list for punching tools"

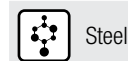
## SW-WR punching tools (rectangular)



### PRODUCT INFORMATION

Several punching tools for the creation of rectangular or square cut-outs. These hole punches are delivered in a plastic transport case. Ideal for assembly work. Corresponding tension bolt is included in the delivery. The attachment points for the screw holes can be punch-marked during the punching process.

### SPECIFICATIONS



Type	Order No.	Punching mm	Tensioning screw Type	Cut-out for	Steel type	Suited for Hydraulic punch SW-HG (HW) / SW-HF	Pack qty.
<b>Hole perforator (rectangular) for sheet steel with centring tips</b>							
SW-WR 17,0x19,0 <sup>1)</sup>	87801330	17.0 x 19.0	G		Sheet steel	• / •	1
SW-WR 21,8x25,8 <sup>1)</sup>	87801332	21.8 x 25.8	K		Sheet steel	• / •	1
SW-WR 22,0x30,0 <sup>1)</sup>	87801334	22.0 x 30.0	K		Sheet steel	• / •	1
SW-WR 22,0x42,0 <sup>1)</sup>	87801336	22.0 x 42.0	K		Sheet steel	• / •	1
SW-WR 23,0x57,0 <sup>1)</sup>	87801339	23.0 x 57.0	K		Sheet steel	• / •	1
SW-WR 25,0x50,0 <sup>1)</sup>	87801340	25.0 x 50.0	K		Sheet steel	• / •	1
SW-WR 36,0x52,0 <sup>1)</sup>	87801350	36.0 x 52.0	D	Industrial Connectors 6 pole	Sheet steel	• / •	1
SW-WR 36,0x46,0 <sup>1)</sup>	87801358	36.0 x 46.0	D	KDL/C & KDL/D 6	Sheet steel	• / •	1
SW-WR 36,0x65,0 <sup>1)</sup>	87801352	36.0 x 65.0	D	KDL/C & KDL/D 10	Sheet steel	• / •	1
SW-WR 45,0x92,0 <sup>1)</sup>	87801342	45.0 x 92.0	D		Sheet steel	• / •	1
SW-WR 46,0x112,0 <sup>1)</sup>	87801356	46.0 x 112.0	E		Sheet steel	- / •	1
SW-WR 46,0x86,0 <sup>1)</sup>	87801354	46.0 x 86.0	D		Sheet steel	• / •	1
SW-WR 46,0x92,0 <sup>1)</sup>	87801344	46.0 x 92.0	D		Sheet steel	• / •	1
SW-WR 68,0x138,0 <sup>2)</sup>	87801346	68.0 x 138.0	E		Sheet steel	- / •	1
SW-WR 82,0x132,0 <sup>2)</sup>	87801382	82.0 x 132.0	E	cablquick Type 100	Sheet steel	- / •	1
SW-WR 86,0x36,0 <sup>1)</sup>	87801292	86.0 x 36.0	D	KDL/xx 16 (screw fastened)	Sheet steel	• / •	1
SW-WR 91,0x36,0 <sup>1)</sup>	87801294	91.0 x 36.0	D	KDL/E 16 (snap fastened)	Sheet steel	• / •	1
SW-WR 112,0x36,0 <sup>1)</sup>	87801290	112.0 x 36.0	D	KDP/xx 24, KDL/xx 24	Sheet steel	• / •	1
SW-WR-VA 112,0x36,0 <sup>3)</sup>	87801291	112.0 x 36.0	D	KDP/xx 24, KDL/xx 24	Stainless sheet steel	• / •	1

<sup>1)</sup> suitable for sheet steel <= 2 mm

<sup>2)</sup> suitable for sheet steel <= 3 mm

<sup>3)</sup> suitable for steel and stainless steel sheets <= 2 mm

## SW-WQ punching tools (square)



### PRODUCT INFORMATION

Several punching tools for the creation of rectangular or square cut-outs. These hole punches are delivered in a plastic transport case. Ideal for assembly work. Corresponding tension bolt is included in the delivery. The attachment points for the screw holes can be punch-marked during the punching process.

### SPECIFICATIONS



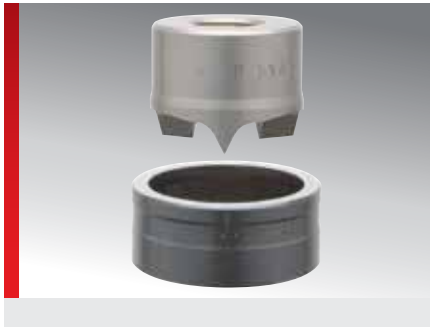
Steel



Type	Order No.	Punching mm	Tensioning screw Type	Steel type	Suited for Hydraulic punch SW-HG (HW) / SW-HF	Pack qty.
<b>Hole perforator (rectangular) for sheet steel with centring tips</b>						
SW-WQ 12.7x12.7 <sup>1)</sup>	87801300	12.7 x 12.7	H	Sheet steel	• / •	1
SW-WQ 15.8x15.8 <sup>1)</sup>	87801302	15.8 x 15.8	H	Sheet steel	• / •	1
SW-WQ 19.0x19.0 <sup>1)</sup>	87801304	19.0 x 19.0	G	Sheet steel	• / •	1
SW-WQ 22.2x22.2 <sup>1)</sup>	87801306	22.2 x 22.2	G	Sheet steel	• / •	1
SW-WQ 24.0x24.0 <sup>1)</sup>	87801308	24.0 x 24.0	G	Sheet steel	• / •	1
SW-WQ 25.4x25.4 <sup>1)</sup>	87801310	25.4 x 25.4	K	Sheet steel	• / •	1
SW-WQ 45.5x45.5 <sup>1)</sup>	87801312	45.5 x 45.5	F	Sheet steel	• / •	1
SW-WQ 46.0x46.0 <sup>1)</sup>	87801314	46.0 x 46.0	F	Sheet steel	• / •	1
SW-WQ 50.8x50.8 <sup>1)</sup>	87801316	50.8 x 50.8	D	Sheet steel	• / •	1
SW-WQ 68.0x68.0 <sup>1)</sup>	87801318	68.0 x 68.0	D	Sheet steel	• / •	1
SW-WQ 92.0x92.0 <sup>1)</sup>	87801320	92.0 x 92.0	E	Sheet steel	- / •	1
SW-WQ 125.0x125.0 <sup>1)</sup>	87801322	125.0 x 125.0	E	Sheet steel	- / •	1
SW-WQ 138.0x138.0 <sup>1)</sup>	87801324	138.0 x 138.0	E	Sheet steel	- / •	1

<sup>1)</sup> suitable for sheet steel <= 2 mm

## SW-WE punching tools (round)

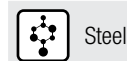


### PRODUCT INFORMATION

Round hole punch, individual tools for steel or stainless steel plates. Versions for punching holes in metric or Pg threaded connections.

- Metric sizes from M16 to M63
- Pg sizes from Pg9 to Pg48

### SPECIFICATIONS

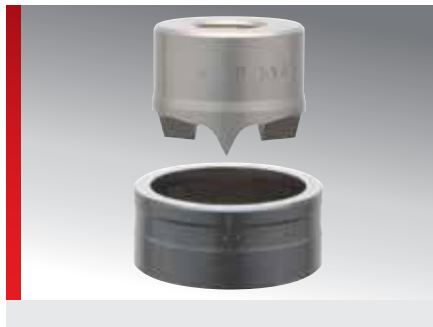


Steel



Type	Order No.	Dimension	Punching mm	Tensioning screw Type	Cut-out for	Steel type	Suited for Hydraulic punch SW-HG (HW) / SW-HF	Pack qty.
<b>Hole perforator (round) for steel sheets</b>								
SW-WE-NS M16 <sup>1)</sup>	87801210	M16	16.20	A		Sheet steel	• / •	1
SW-WE-NS M20 <sup>1)</sup>	87801212	M20	20.40	A		Sheet steel	• / •	1
SW-WE-NS M25 <sup>1)</sup>	87801214	M25	25.40	A		Sheet steel	• / •	1
SW-WE-NS M32 <sup>2)</sup>	87801216	M32	32.50	C		Sheet steel	• / •	1
SW-WE-NS M40 <sup>2)</sup>	87801218	M40	40.50	C	KDPR/F M40/xx	Sheet steel	• / •	1
SW-WE-NS M50 <sup>2)</sup>	87801220	M50	50.50	C	KDP/R M50/x, KDL/D-R M50/xx	Sheet steel	• / •	1
SW-WE-NS M63 <sup>2)</sup>	87801222	M63	63.50	C	KDP/R M63/x	Sheet steel	• / •	1
SW-WE-NS Pg09 <sup>1)</sup>	87801238	Pg09	15.20	A		Sheet steel	• / •	1
SW-WE-NS Pg11 <sup>1)</sup>	87801240	Pg11	18.60	A		Sheet steel	• / •	1
SW-WE-NS Pg13 <sup>1)</sup>	87801242	Pg13	20.40	A		Sheet steel	• / •	1
SW-WE-NS Pg16 <sup>1)</sup>	87801244	Pg16	22.50	A		Sheet steel	• / •	1
SW-WE-NS Pg21 <sup>1)</sup>	87801246	Pg21	28.30	A		Sheet steel	• / •	1
SW-WE-NS Pg29 <sup>2)</sup>	87801248	Pg29	37.00	C		Sheet steel	• / •	1
SW-WE-NS Pg36 <sup>2)</sup>	87801250	Pg36	47.00	C		Sheet steel	• / •	1
SW-WE-NS Pg42 <sup>2)</sup>	87801252	Pg42	54.00	C		Sheet steel	• / •	1
SW-WE-NS Pg48 <sup>2)</sup>	87801254	Pg48	60.00	C		Sheet steel	• / •	1
<b>Hole perforator (round) for steel and stainless steel sheets</b>								
SW-WE-VA M16 <sup>3)</sup>	87801224	M16	16.20	B		Steel/stainless steel sheets	• / •	1
SW-WE-VA M20 <sup>3)</sup>	87801226	M20	20.40	B		Steel/stainless steel sheets	• / •	1
SW-WE-VA M25 <sup>3)</sup>	87801228	M25	25.40	B		Steel/stainless steel sheets	• / •	1
SW-WE-VA M32 <sup>4)</sup>	87801230	M32	32.50	C		Steel/stainless steel sheets	• / •	1
SW-WE-VA M40 <sup>4)</sup>	87801232	M40	40.50	C	KDPR/F M40/xx	Steel/stainless steel sheets	• / •	1
SW-WE-VA M50 <sup>4)</sup>	87801234	M50	50.50	C	KDP/R M50/x, KDL/D-R M50/xx	Steel/stainless steel sheets	• / •	1
SW-WE-VA M63 <sup>4)</sup>	87801236	M63	63.50	C	KDP/R M63/x	Steel/stainless steel sheets	• / •	1
SW-WE-VA Pg09 <sup>3)</sup>	87801256	Pg09	15.20	B		Steel/stainless steel sheets	• / •	1
SW-WE-VA Pg11 <sup>3)</sup>	87801258	Pg11	18.60	B		Steel/stainless steel sheets	• / •	1

## SW-WE punching tools (round) (Continued...)



Type	Order No.	Dimension	Punching mm	Tensioning screw Type	Cut-out for	Steel type	Suited for Hydraulic punch SW-HG (HW) / SW-HF	Pack qty.
SW-WE-VA Pg13 <sup>3)</sup>	87801260	Pg13	20.40	B		Steel/stainless steel sheets	• / •	1
SW-WE-VA Pg16 <sup>3)</sup>	87801262	Pg16	22.50	B		Steel/stainless steel sheets	• / •	1
SW-WE-VA Pg21 <sup>4)</sup>	87801264	Pg21	28.30	C		Steel/stainless steel sheets	• / •	1
SW-WE-VA Pg29 <sup>4)</sup>	87801266	Pg29	37.00	C		Steel/stainless steel sheets	• / •	1
SW-WE-VA Pg36 <sup>4)</sup>	87801268	Pg36	47.00	C		Steel/stainless steel sheets	• / •	1
SW-WE-VA Pg42 <sup>4)</sup>	87801270	Pg42	54.00	C		Steel/stainless steel sheets	• / •	1
SW-WE-VA Pg48 <sup>4)</sup>	87801272	Pg48	60.00	C		Steel/stainless steel sheets	• / •	1
SW-WE-VA 30,5 <sup>4)</sup>	87801231		30.50	C		Steel/stainless steel sheets	• / •	1

<sup>1)</sup> suitable for sheet steel <= 2 mm

<sup>2)</sup> suitable for sheet steel <= 3 mm

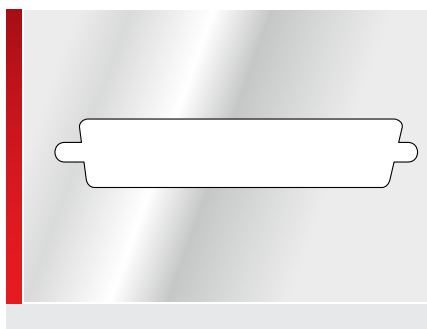
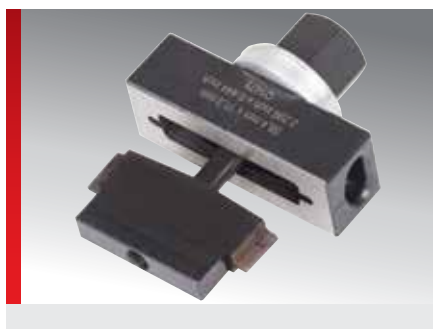
<sup>3)</sup> suitable for steel and stainless steel sheets <= 2 mm

<sup>4)</sup> suitable for steel and stainless steel sheets <= 2.5 mm





## SW-WD punching tool (SUB-MIN-D)



### PRODUCT INFORMATION

Punching tool for creation of SUB-MIN-D plug cut-outs (9 to 50 poles). Simple and quick creation of these cut-outs, e.g. for connection of data transmission cables. Corresponding tension bolt is included in the delivery.

### SPECIFICATIONS

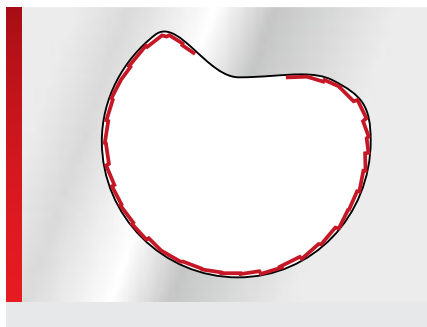


Type	Order No.	Tensioning screw Type	Punching for	Steel type	Pack qty.
<b>Hole perforator for SUB-MIN-D plug</b>					
SW-WD 9-pole <sup>1)</sup>	87801360	L	SUB-MIN-D 9-pole	Sheet steel	1
SW-WD 15-pole <sup>1)</sup>	87801362	L	SUB-MIN-D 15-pole	Sheet steel	1
SW-WD 25-pole <sup>2)</sup>	87801364	L	SUB-MIN-D 25-pole	Sheet steel	1
SW-WD 37-pole <sup>2)</sup>	87801366	L	SUB-MIN-D 37-pole	Sheet steel	1
SW-WD 50-pole <sup>2)</sup>	87801368	L	SUB-MIN-D 50-pole	Sheet steel	1

<sup>1)</sup> suitable for sheet steel <= 2 mm

<sup>2)</sup> suitable for sheet steel <= 1.65 mm


## SW-ASN universal punching tools



### PRODUCT INFORMATION

Universal punching tool for creation of various cut-out sizes and shapes. Tools with hole punch width 15 mm and 20 mm.

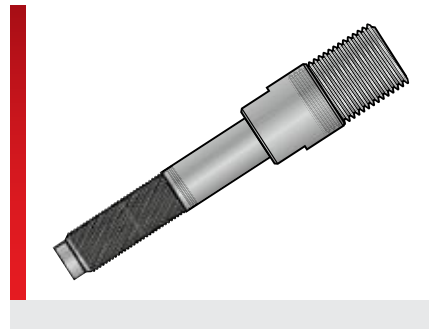
### SPECIFICATIONS

-  Steel
-  Made in Germany

Type	Order No.	Hole punch width mm	Hole punch length mm	hole diameter mm	Steel type	Pack qty.
<b>Special ASN nibbling tool</b>						
SW-ASN 15 <sup>1)</sup>	87801370	15.00	6.50	21.50	Sheet steel	1
SW-ASN 20 <sup>1)</sup>	87801372	20.00	9.00	28.50	Sheet steel	1

<sup>1)</sup> suitable for sheet steel <= 2 mm

## Spare parts list for punching tools



### PRODUCT INFORMATION

Spare parts for the entire punching tool system.

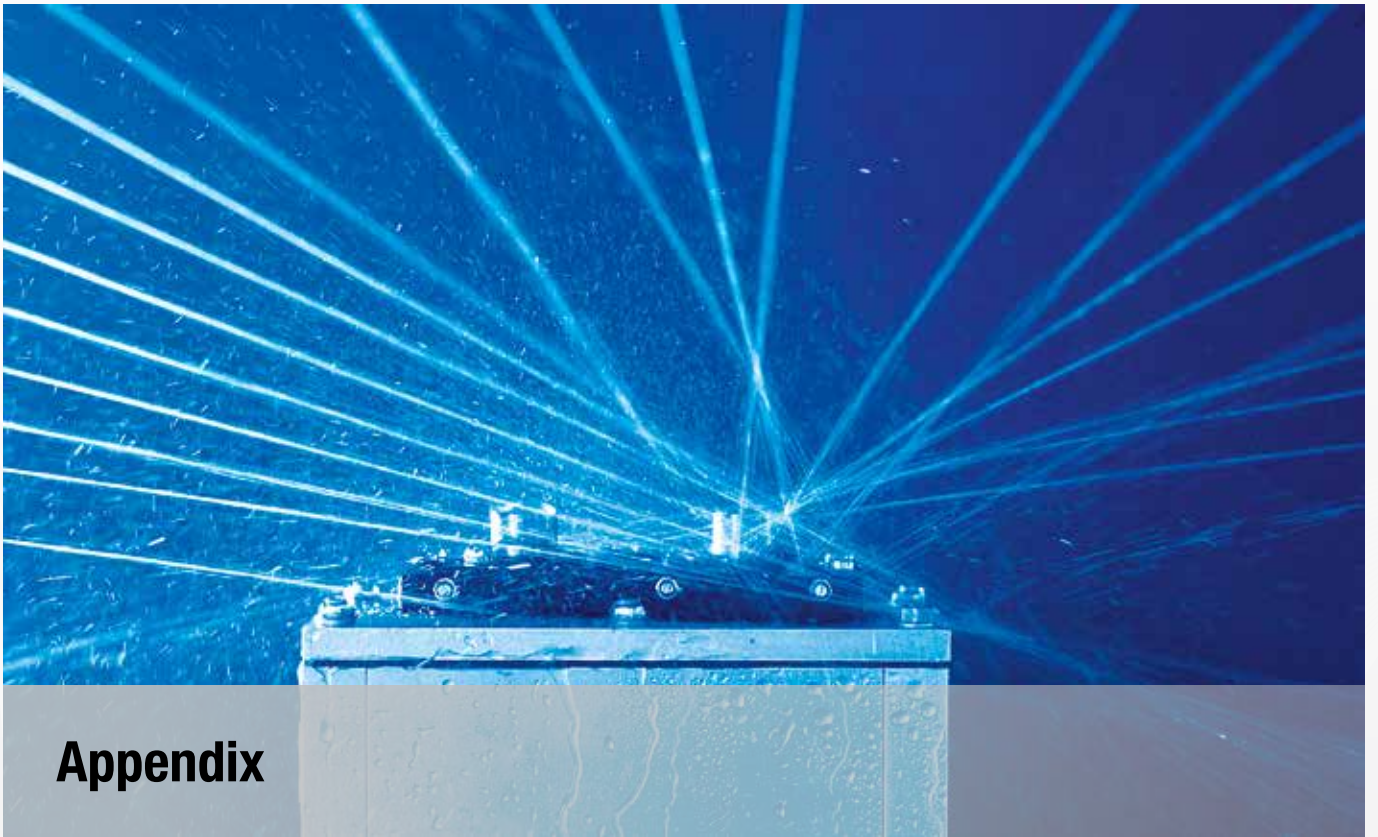
### SPECIFICATIONS



Steel


















Type	Order No.	Tensioning screw Version	Length mm	Pilot hole mm	Pack qty.
<b>Tensioning screw</b>					
SW-WE-ZS Type A	87801410	A	100.00	10.00	1
SW-WE-ZS Type B	87801412	B	100.00	11.50	1
SW-WE-ZS Type C	87801414	C	120.00	20.00	1
SW-WE-ZS Type D	87801416	D	165.00	24.00	1
SW-WE-ZS Type E	87801434	E	173.00	30.00	1
SW-WE-ZS Type F	87801436	F	141.00	20.00	1
SW-WE-ZS Type G	87801438	G	106.00	14.00	1
SW-WE-ZS Type H	87801440	H	87.00	10.00	1
SW-WE-ZS Type K	87801442	K	106.00	17.00	1
SW-WE-ZS Type L	87801444	L	87.00	10.00	1
<b>Spacer bushing set</b>					
SW-WS-DS 3-piece	87801430				1
SW-WS-DS 5-piece	87801432				1
<b>Pre-drill</b>					
SW-WE-VB 10.0 mm	87801420				1
SW-WE-VB 11.0 mm	87801422				1
SW-WE-VB 11.5 mm	87801424				1
<b>Replacement stamp for special nibbling tool</b>					
SW-ASN 15 stamp	87801374				1
SW-ASN 20 stamp	87801376				1



## Protection classes in accordance with DIN EN 60529

An important element for housings is protection of integrated elements against drilling, foreign particles and water. The various protection properties are divided into IP classes (IP = international protection). The framework conditions that a protection class must guarantee are laid out in DIN 40050 and IEC-EN 60529.

IP protection classes are indicated through a two digit code (IPXX). The first digit indicates protection against contact and foreign particles, the second the water protection factor. Accordingly the class IP65 is completely protected against contacts, dustproof (1st digit = 6) and is protected against jets of water from a nozzle in all directions (2nd digit = 5).

First index number	Contact protection	Foreign particle protection	Second index number	Brief description	Water protection
0	No protection		0	No protection	
1	Protected against solid foreign objects of 50 mm and larger	The object probe, a sphere of 50 mm in diameter, must not fully penetrate. 	1	Protected against vertical falling drops of water	Drops which fall vertically must not have any harmful effect. 
2	Protected against solid foreign substances of 12.5 mm dia. and above.	The object probe, a sphere of 12.5 mm in diameter, must not fully penetrate. 	2	Protected against diagonally falling (up to 15°) drops of water	Drops which fall vertically must not have any harmful effects if the housing is inclined at an angle of up to 15° at either side of the perpendicular. 
3	Protected against solid foreign substances of 2.5 mm dia. and above.	The object probe of diameter 2.5 mm must not penetrate at all. 	3	Protected against diagonally falling spray (up to 60°)	Water which is sprayed at an angle of up to 60° from either side of the perpendicular must not have any harmful effects. 
4	Protected against solid foreign substances of 1.0 mm dia. and above.	The object probe of diameter 1.0 mm must not penetrate at all. 	4	Protected against spray from all directions	Water splashing against the enclosure from one direction shall have no harmful effect. 
5	Dust-protected	The ingress of dust is not fully prevented; however, it must not penetrate to such an extent that satisfactory operation or safety are impaired. 	5	Protected against jets of water (nozzle)	Water which is sprayed in a jet against the housing from any direction must not have any harmful effects. 
6	Dust-tight	No ingress of dust. 	6	Protected against strong water jets (flooding)	Water projected in powerful jets from any direction against the housing shall have no harmful effects. 
			7	Protected against the effect of temporary immersion in water	Water must not penetrate to an extent that will cause harmful effects, if the housing is temporarily submerged in water, under pressure and under time conditions. 
			8	Protected against the effect of temporary submersion in water	Water must not penetrate to such an extent that it will cause harmful effects if the housing is permanently submerged in water. 
			9k	Protection against highly pressurised water/steam jet cleaning	IP x9K according to DIN 40050 Water jet at 0°, 30°, 60° and 90° Cycle: 30 seconds each Distance: 10 - 15 cm Water volume: 14 - 16 litres per minute Water temperature: 80 °C +/- 5 °C Water pressure: 80-100 bar 

## Description of fire classifications according to UL 94

### FIRE CLASSIFICATION HB

The material burns slowly in the horizontal combustion test. The rate of combustion must not exceed 3 inches/min. for wall thicknesses of up to 3 mm, and 1.5 inches/min. for wall thicknesses over 3 mm. Any materials exceeding these combustion rate limits are not registered by UL.

### FIRE CLASSIFICATION V2

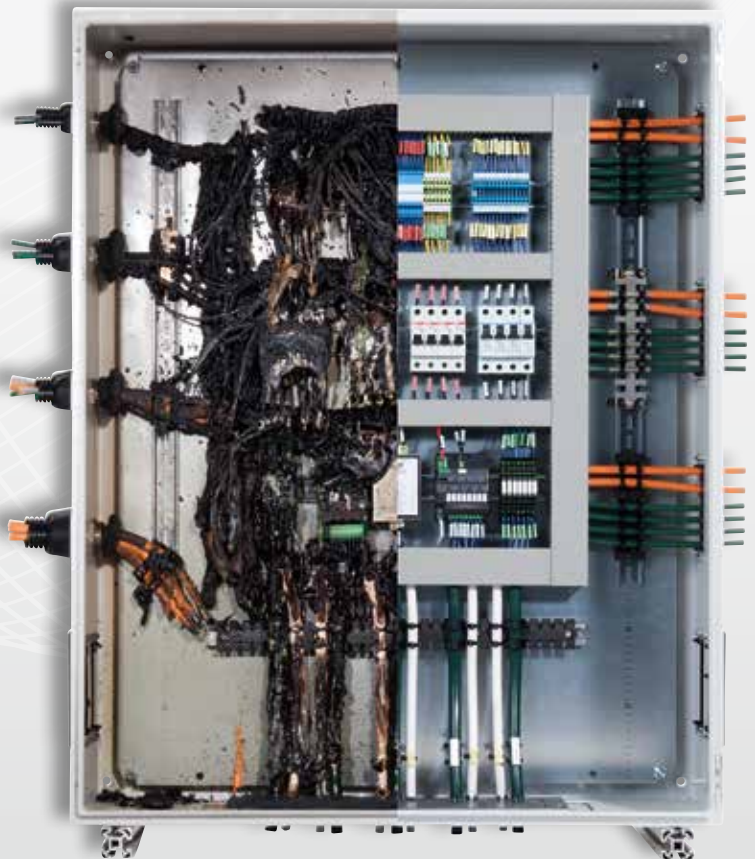
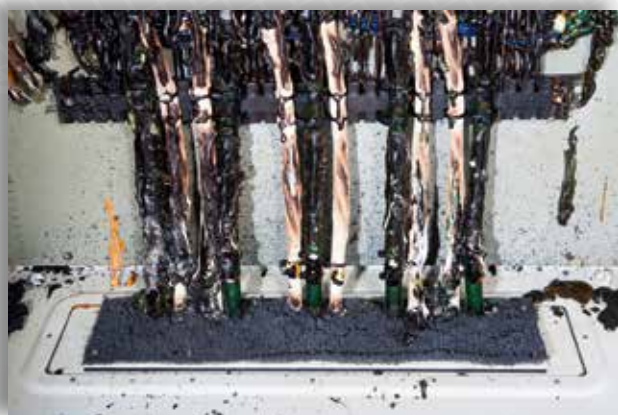
In the vertical combustion test, self-extinguishing must occur after an average of 25 seconds (individual values not to exceed 30 seconds). Any dripping material may ignite cotton wool located underneath. However, any afterglow must not exceed 60 seconds.

### FIRE CLASSIFICATION V1

In the vertical combustion test, self-extinguishing must occur also after an average of 25 seconds (individual values are not to exceed 30 seconds). However, any possible dripping material must not ignite the cotton wool. Any afterglow must not exceed 30 seconds.

### FIRE CLASSIFICATION V0

In the vertical combustion test, self-extinguishing must occur after an average of less than 5 seconds (individual values not to exceed 10 seconds). Any material dropping off must not ignite cotton wool placed underneath and any afterglow must not exceed 30 seconds.





## General information



Approved for EU railways



CSA approval



EX-approval



UR approval



CURUS approval



General technical data  
Additional information



CE (EU Directive 765/2008)



RoHS (EC Directive 2002/95/EC)



WEEE (EC Directive 2002/96/EC)

### MATERIALS

The use and combination of widely varied materials like plastics of all types, elastomer or metals means that Murrplastik products can be used in a variety of situations.



### CHEMICAL PROPERTIES

Reactions with chemical substances differ according to the individual plastics and elastomers.



### FIRE BEHAVIOUR

Self-extinguishing materials and material alloys allow for the use of plastics in critical areas.

The products or the raw material are usually certified and classified according to UL 94.



### TEMPERATURES SPECIFICATIONS

The temperature ranges quoted for the individual products must be noted in application.



### APPROVALS

Our products boast a large number of approvals and certifications, e.g. GL, UL/UR, CSA, DIN EN. Note the specifications in the catalogue and product data sheets.



### IP PROTECTION CLASS

The IP protection class indicates the tightness of products against solids and water.

The values are also related to static applications. With dynamic applications, the protection class may change.





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# Labelling systems

## PRODUCT APPROVALS



### Rail vehicles

Product approvals for rail vehicles from Siemens, Bombardier, Alstom, Talgo for local and long-distance travel and for regional travel systems.



### Automotive industry

Product approvals for plants and machinery in the auto industry including at Audi, BMW, Citroën Peugeot, Daimler AG, Fiat, Karmann, Opel, Renault, VW



### Public buildings and institutions

Product approvals for media conducting systems (electricity, air, water), supply, control, networks, warning and signalling units



### Air, water, road transport

Product approvals for  
Aircraft: media-conducting systems, electric, hydraulic  
Water craft: Electro, hydraulic, pneumatic  
Street vehicles: Bus, lorry, special vehicles



### Mechanical engineering

## SPECIFICATIONS



Temperature range



Material



Fire classification UL 94



Additional information



Adhesive

## LABELLING



Part is **halogen free**



Part is **UV-resistant**

## INSTALLATION METHOD



### Sleeve system

Mounting by sliding sleeve over product



### Direct labelling system

Direct slide-in mounting



### Cable tie system with sleeves

Mounting the sleeve with cable ties



### Cable tie system label

Mounting the labels with cable ties



### Clamping system

Mounting the sleeve with a clamping base



### Self-locking system

Self-clamping base used to mount holder



### Adhesive system

Label glued into place



### Snap-fit system

Label snapped into place



### Strip system

Strip snapped into place



### Riveting system

Label riveted into place



### Screw assembly system

Mounting the label with screws

## LABELLING TECHNOLOGY



Inscription with **plotter**



Inscription with **hand pen**



Inscription with **Office laser printer**



Inscription via **engraving**



Inscription with **matrix printer**



Inscription with **Pulsar laser**



Inscription with **thermal lamination system**



Inscription with **inkjet printer**



**Pre-inscribed** label



**Heat-shrink tube** labelling

## LABELLING SYSTEMS

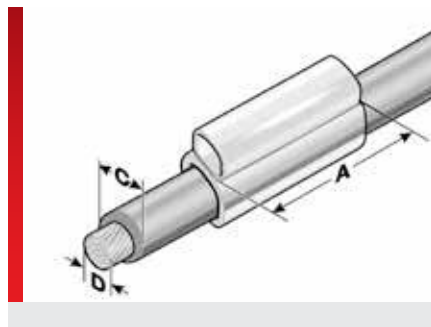
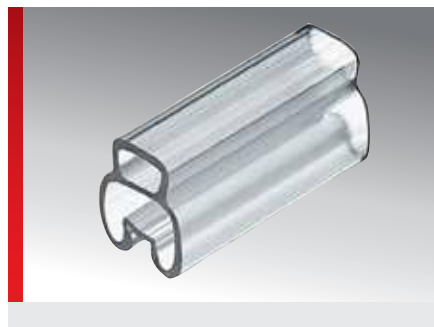
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## Single wire, cable, and conduit labelling

## KT label sleeve (standard sleeve)



### PRODUCT INFORMATION

High-quality, fully transparent label sleeves for labelling wires, cables and conduits. The KT label sleeves hold the BK idents and type KS labels.

- 7 sizes are available for wire cross sections from 0.22 – 120 mm<sup>2</sup>.
- The sleeves come in different lengths.

The KT 2/20x9 as well as KT 2/35x9 for multi-line inscription are designed to hold type KSO labels.

### SPECIFICATIONS

- 40 – 60 °C
- Polyvinyl chloride (PVC)
- V0
- Standard label sleeve
- 

Type	Order No.	Area of application from - to Ø mm (C)	Wire cross section from - to mm <sup>2</sup> (D)	Recommended label plate	No. idents BK23 / BK30	Pack qty.
<b>10 mm sleeve length (A), single line inscription</b>						
KT 0/10	86201010	1.3 – 2.0	0.22 – 0.5	KS 4/10	4 / 3	2000
KT 1/10	86201012	1.8 – 2.5	0.5 – 1.0	KS 4/10	4 / 3	2000
KT 2/10	86201014	2.5 – 4.0	0.75 – 2.5	KS 4/10	4 / 3	2000
KT 3/10	86201016	4.0 – 6.5	2.5 – 6.0	KS 4/10	4 / 3	1000
KT 4/10	86201018	6.0 – 10.0	10.0 – 25.0	KS 4/10	4 / 3	1000
KT 5/10	86201020	9.0 – 15.0	25.0 – 50.0	KS 4/10	4 / 3	1000
KT 6/10	86201022	15.0 – 23.0	50.0 – 120.0	KS 4/10	4 / 3	500
<b>12 mm sleeve length (A), single line inscription</b>						
KT 0/12	86201210	1.3 – 2.0	0.22 – 0.5	KS 4/12	5 / 4	2000
KT 1/12	86201212	1.8 – 2.5	0.5 – 1.0	KS 4/12	5 / 4	2000
KT 2/12	86201214	2.5 – 4.0	0.75 – 2.5	KS 4/12	5 / 4	2000
KT 3/12	86201216	4.0 – 6.5	2.5 – 6.0	KS 4/12	5 / 4	1000
KT 4/12	86201218	6.0 – 10.0	10.0 – 25.0	KS 4/12	5 / 4	1000
KT 5/12	86201220	9.0 – 15.0	25.0 – 50.0	KS 4/12	5 / 4	1000
KT 6/12	86201222	15.0 – 23.0	50.0 – 120.0	KS 4/12	5 / 4	500
<b>15 mm sleeve length (A), single line inscription</b>						
KT 0/15	86201510	1.3 – 2.0	0.22 – 0.5	KS 4/15	6 / 5	2000
KT 1/15	86201512	1.8 – 2.5	0.5 – 1.0	KS 4/15	6 / 5	2000
KT 2/15	86201514	2.5 – 4.0	0.75 – 2.5	KS 4/15	6 / 5	2000
KT 3/15	86201516	4.0 – 6.5	2.5 – 6.0	KS 4/15	6 / 5	1000
KT 4/15	86201518	6.0 – 10.0	10.0 – 25.0	KS 4/15	6 / 5	1000
KT 5/15	86201520	9.0 – 15.0	25.0 – 50.0	KS 4/15	6 / 5	1000

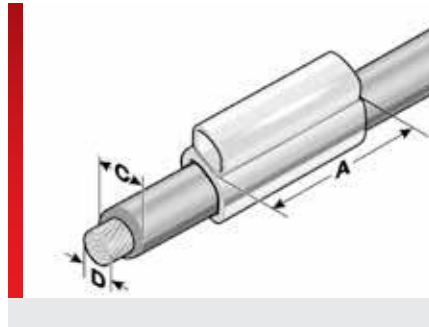
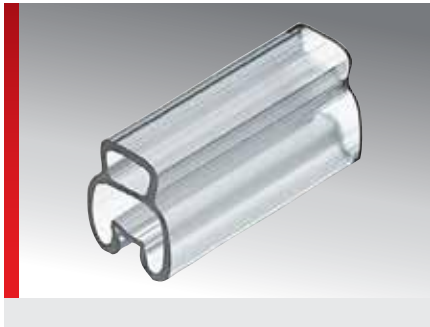


**KT label sleeve (standard sleeve)** (Continued...)

Type	Order No.	Area of application from - to Ø mm (C)	Wire cross section from - to mm <sup>2</sup> (D)	Recommended label plate	No. idents BK23 / BK30	Pack qty.
KT 6/15	86201522	15.0 – 23.0	50.0 – 120.0	KS 4/15	6 / 5	500
<b>18 mm sleeve length (A), single line inscription</b>						
KT 0/18	86201810	1.3 – 2.0	0.22 – 0.5	KS 4/18	7 / 6	2000
KT 1/18	86201812	1.8 – 2.5	0.5 – 1.0	KS 4/18	7 / 6	2000
KT 2/18	86201814	2.5 – 4.0	0.75 – 2.5	KS 4/18	7 / 6	2000
KT 3/18	86201816	4.0 – 6.5	2.5 – 6.0	KS 4/18	7 / 6	1000
KT 4/18	86201818	6.0 – 10.0	10.0 – 25.0	KS 4/18	7 / 6	1000
KT 5/18	86201820	9.0 – 15.0	25.0 – 50.0	KS 4/18	7 / 6	750
KT 6/18	86201822	15.0 – 23.0	50.0 – 120.0	KS 4/18	7 / 6	300
<b>23 mm sleeve length (A), single line inscription</b>						
KT 0/23	86202310	1.3 – 2.0	0.22 – 0.5	KS 4/23	10 / 7	2000
KT 1/23	86202312	1.8 – 2.5	0.5 – 1.0	KS 4/23	10 / 7	2000
KT 2/23	86202314	2.5 – 4.0	0.75 – 2.5	KS 4/23	10 / 7	1000
KT 3/23	86202316	4.0 – 6.5	2.5 – 6.0	KS 4/23	10 / 7	1000
KT 4/23	86202318	6.0 – 10.0	10.0 – 25.0	KS 4/23	10 / 7	1000
KT 5/23	86202320	9.0 – 15.0	25.0 – 50.0	KS 4/23	10 / 7	500
KT 6/23	86202322	15.0 – 23.0	50.0 – 120.0	KS 4/23	10 / 7	250
<b>30 mm sleeve length (A), single line inscription</b>						
KT 0/30	86203010	1.3 – 2.0	0.22 – 0.5	KS 4/30	13 / 10	1000
KT 1/30	86203012	1.8 – 2.5	0.5 – 1.0	KS 4/30	13 / 10	1500
KT 2/30	86203014	2.5 – 4.0	0.75 – 2.5	KS 4/30	13 / 10	1000
KT 3/30	86203016	4.0 – 6.5	2.5 – 6.0	KS 4/30	13 / 10	1000
KT 4/30	86203018	6.0 – 10.0	10.0 – 25.0	KS 4/30	13 / 10	500
KT 5/30	86203020	9.0 – 15.0	25.0 – 50.0	KS 4/30	13 / 10	500
KT 6/30	86203022	15.0 – 23.0	50.0 – 120.0	KS 4/30	13 / 10	200
<b>20 mm sleeve length (A), single and multi-line inscription</b>						
KT 2/20x9	86202050	2.5 – 4.0	0.75 – 2.5	KSO 20x9		1000
<b>35 mm sleeve length (A), single and multi-line inscription</b>						
KT 2/35x9	86203550	2.5 – 4.0	0.75 – 2.5	KSO 35x9		500
<b>70 mm sleeve length (A), single line inscription</b>						
KT 2/70	86207014	2.5 – 4.0	0.75 – 2.5	KS 4/30-70	30 / 23	500
KT 3/70	86207016	4.0 – 6.5	2.5 – 6.0	KS 4/30-70	30 / 23	400

\* Single wire, type H05/07V-K

## KTH label sleeve (halogen-free)



### PRODUCT INFORMATION

High-quality, fully transparent, halogen-free label sleeves for labelling wires, cables and conduits. KTH label sleeves hold the BK idents and type KS labels.

- Wire cross sections from 0.22 – 35 mm<sup>2</sup> are available.
- The sleeves come in different lengths.

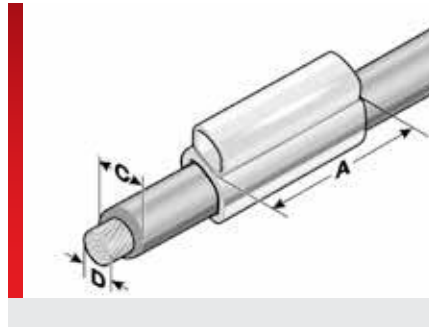
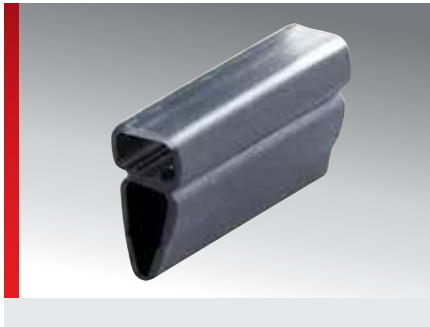
### SPECIFICATIONS

- 40 – 80 °C
- EVA
- HB
- HF
- 

Type	Order No.	Area of application from - to Ø mm (C)	Wire cross section from - to mm <sup>2</sup> (D)	Recommended label plate	No. idents BK23 / BK30	Pack qty.
<b>12 mm sleeve length (A), single line inscription</b>						
KTH 0/12	86221210	1.3 – 2.0	0.5	KS 4/12	5 / 4	2000
KTH 1/12	86221212	1.8 – 2.3	0.5	KS 4/12	5 / 4	2000
KTH 2/12	86221214	2.5 – 3.3	0.75 – 2.5	KS 4/12	5 / 4	2000
KTH 3/12	86221216	3.5 – 6.0	2.5 – 6.0	KS 4/12	5 / 4	1000
KTH 4/12	86221218	6.0 – 9.0	10.0 – 16.0	KS 4/12	5 / 4	1000
<b>18 mm sleeve length (A), single line inscription</b>						
KTH 0/18	86221810	1.3 – 2.0	0.5	KS 4/18	7 / 6	2000
KTH 1/18	86221812	1.8 – 2.3	0.5	KS 4/18	7 / 6	2000
KTH 2/18	86221814	2.5 – 3.3	0.75 – 2.5	KS 4/18	7 / 6	2000
KTH 3/18	86221816	3.5 – 6.0	2.5 – 6.0	KS 4/18	7 / 6	1000
KTH 4/18	86221818	6.0 – 9.0	10.0 – 16.0	KS 4/18	7 / 6	1000
KTH 5/18	86221820	9.0 – 14.0	25.0 – 35.0	KS 4/18	7 / 6	500
<b>23 mm sleeve length (A), single line inscription</b>						
KTH 0/23	86222310	1.3 – 2.0	0.5	KS 4/23	10 / 7	1000
KTH 1/23	86222312	1.8 – 2.3	0.5	KS 4/23	10 / 7	2000
KTH 2/23	86222314	2.5 – 3.3	0.75 – 2.5	KS 4/23	10 / 7	1000
KTH 3/23	86222316	3.5 – 6.0	2.5 – 6.0	KS 4/23	10 / 7	1000
KTH 4/23	86222318	6.0 – 9.0	10.0 – 16.0	KS 4/23	10 / 7	1000
<b>30 mm sleeve length (A), single line inscription</b>						
KTH 3/30	86222416	3.5 – 6.0	2.5 – 6.0	KS 4/30	13 / 10	1000
KTH 4/30	86222418	6.0 – 9.0	10.0 – 16.0	KS 4/30	13 / 10	500

\* Single wire, type H05/07V-K

## KTH/Q label sleeve (halogen-free / high packing density)



### PRODUCT INFORMATION

High-quality, halogen-free, two-part label sleeves for the highest demands. The sleeve geometry causes a minimum increase in cable diameter. The trapezoidal design makes for rapid and simple installation.

KTH/Q label sleeves hold the BK idents and type KS labels.

- Wire cross sections from 0.14 – 240 mm<sup>2</sup> are available.
- The sleeves come in different lengths.

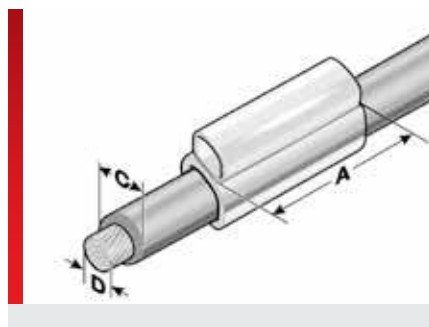
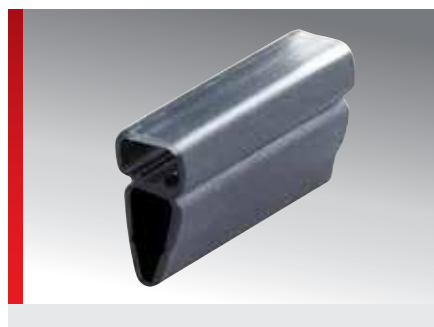
### SPECIFICATIONS

- 40 – 100 °C short term 160 °C
- TPU
- V0
- Halogen-free



Type	Order No.	Area of application from - to Ø mm (C)	Wire cross section from - to mm <sup>2</sup> (D)	Recommended label plate	No. idents BK23 / BK30	Pack qty.
<b>12 mm sleeve length (A), single line inscription</b>						
KTH/Q 0/12	86222808	0.8 – 1.5	0.5	KS 4/12	5 / 4	2000
KTH/Q 1/12	86222810	1.5 – 2.3	0.5	KS 4/12	5 / 4	2000
KTH/Q 1.5/12	86222811	1.6 – 3.2	0.5 – 0.75	KS 4/12	5 / 4	2000
KTH/Q 2/12	86222812	2.2 – 4.5	0.75 – 2.5	KS 4/12	5 / 4	2000
KTH/Q 3/12	86222814	3.7 – 6.2	2.5 – 6.0	KS 4/12	5 / 4	1000
KTH/Q 4/12	86222817	5.5 – 10.0	10.0 – 25.0	KS 4/12	5 / 4	1000
KTH/Q 5/12	86222818	8.0 – 12.0	25.0 – 35.0	KS 4/12	5 / 4	500
KTH/Q 6/12	86222820	10.0 – 14.0	50.0	KS 4/12	5 / 4	500
KTH/Q 6.5/12	86222821	12.0 – 18.0	70.0 – 95.0	KS 4/12	5 / 4	500
<b>18 mm sleeve length (A), single line inscription</b>						
KTH/Q 0/18	86223008	0.8 – 1.5	0.5	KS 4/18	7 / 6	2000
KTH/Q 1/18	86223010	1.5 – 2.3	0.5	KS 4/18	7 / 6	2000
KTH/Q 1.5/18	86223011	1.6 – 3.2	0.5 – 0.75	KS 4/18	7 / 6	2000
KTH/Q 2/18	86223012	2.2 – 4.5	0.75 – 2.5	KS 4/18	7 / 6	2000
KTH/Q 3/18	86223014	3.7 – 6.2	2.5 – 6.0	KS 4/18	7 / 6	1000
KTH/Q 4/18	86223017	5.5 – 10.0	10.0 – 25.0	KS 4/18	7 / 6	1000
KTH/Q 5/18	86223018	8.0 – 12.0	25.0 – 35.0	KS 4/18	7 / 6	500
KTH/Q 6/18	86223020	10.0 – 14.0	50.0	KS 4/18	7 / 6	500
KTH/Q 6.5/18	86223021	12.0 – 18.0	70.0 – 95.0	KS 4/18	7 / 6	500
KTH/Q 7/18	86223022	18.0 – 24.0	120.0 – 150.0	KS 4/18	7 / 6	250
KTH/Q 8/18	86223024	23.0 – 30.0	185.0 – 240.0	KS 4/18	7 / 6	250

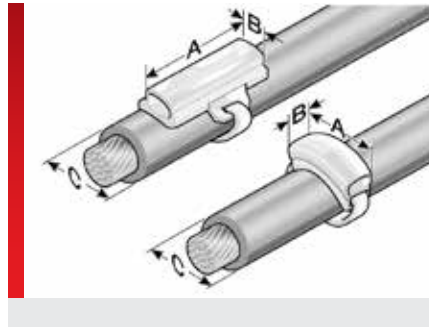
**KTH/Q label sleeve (halogen-free / high packing density)** (Continued...)



Type	Order No.	Area of application from - to Ø mm (C)	Wire cross section from - to mm <sup>2</sup> (D)	Recommended label plate	No. idents BK23 / BK30	Pack qty.
<b>23 mm sleeve length (A), single line inscription</b>						
KTH/Q 0/23	86223208	0.8 – 1.5	0.5	KS 4/23	10 / 7	2000
KTH/Q 1/23	86223210	1.5 – 2.3	0.5	KS 4/23	10 / 7	2000
KTH/Q 1.5/23	86223211	1.6 – 3.2	0.5 – 0.75	KS 4/23	10 / 7	2000
KTH/Q 2/23	86223212	2.2 – 4.5	0.75 – 2.5	KS 4/23	10 / 7	2000
KTH/Q 3/23	86223214	3.7 – 6.2	2.5 – 6.0	KS 4/23	10 / 7	1000
KTH/Q 4/23	86223217	5.5 – 10.0	10.0 – 25.0	KS 4/23	10 / 7	1000
KTH/Q 5/23	86223218	8.0 – 12.0	25.0 – 35.0	KS 4/23	10 / 7	500
KTH/Q 6/23	86223220	10.0 – 14.0	50.0	KS 4/23	10 / 7	500
KTH/Q 6.5/23	86223221	12.0 – 18.0	70.0 – 95.0	KS 4/23	10 / 7	500
KTH/Q 7/23	86223222	18.0 – 24.0	120.0 – 150.0	KS 4/23	10 / 7	250
KTH/Q 8/23	86223224	23.0 – 30.0	185.0 – 240.0	KS 4/23	10 / 7	250
<b>30 mm sleeve length (A), single line inscription</b>						
KTH/Q 0/30	86223408	0.8 – 1.5	0.5	KS 4/30	13 / 10	2000
KTH/Q 1/30	86223410	1.5 – 2.3	0.5	KS 4/30	13 / 10	2000
KTH/Q 1.5/30	86223411	1.6 – 3.2	0.5 – 0.75	KS 4/30	13 / 10	2000
KTH/Q 2/30	86223412	2.2 – 4.5	0.75 – 2.5	KS 4/30	13 / 10	2000
KTH/Q 3/30	86223414	3.7 – 6.2	2.5 – 6.0	KS 4/30	13 / 10	1000
KTH/Q 4/30	86223417	5.5 – 10.0	10.0 – 25.0	KS 4/30	13 / 10	1000
KTH/Q 5/30	86223418	8.0 – 12.0	25.0 – 35.0	KS 4/30	13 / 10	500
KTH/Q 6/30	86223420	10.0 – 14.0	50.0	KS 4/30	13 / 10	500
KTH/Q 6.5/30	86223421	12.0 – 18.0	70.0 – 95.0	KS 4/30	13 / 10	500
KTH/Q 7/30	86223422	18.0 – 24.0	120.0 – 150.0	KS 4/30	13 / 10	250
KTH/Q 8/30	86223424	23.0 – 30.0	185.0 – 240.0	KS 4/30	13 / 10	200
<b>30 mm sleeve length (A), notched</b>						
KTH/Q 1/30A	86223482	1.5 – 2.3	0.5	KS 4/30	13 / 10	2000
KTH/Q 2/30A	86223484	2.2 – 4.5	0.75 – 2.5	KS 4/30	13 / 10	2000
KTH/Q 3/30A	86223486	3.7 – 5.9	2.5 – 6.0	KS 4/30	13 / 10	500

\* Single wire, type H05/07V-K

## KM label holder (standard holder)



### PRODUCT INFORMATION

Label holder for wire, cable and conduit labels. KM label holder accommodate BK idents and type KS as well as type KSO labels.

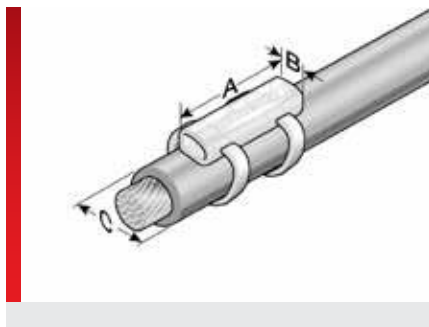
- The label holders are fixed in place with cable ties.

### SPECIFICATIONS

- 40 – 60 °C
- Polyvinyl chloride (PVC)
- V0
- Standard label holder
- 

Type	Order No.	Colour	Length mm (A)	Width mm (B)	Recommended label plate	No. idents BK23 / BK30	Cable ties max. width mm	Recommended min. diameter mm (C)	Pack qty.
<b>Labelling across the cable/the hose, single line of print</b>									
KM 3	86321018	Transparent	16.00	4.00	KS 4/12	6 / 5	5.00	5.00	2000
<b>Labelling lengthwise to the cable/the hose, single line of print</b>									
KM 4/12	86321015	Transparent	12.00	4.00	KS 4/x	5 / 3	5.00	5.00	2000
KM 4/18	86321019	Transparent	18.00	4.00	KS 4/x	7 / 6	5.00	5.00	2000
KM 4/23	86321020	Transparent	23.00	4.00	KS 4/x	10 / 7	5.00	5.00	1000
KM 4/31	86321024	Transparent	31.00	4.00	KS 4/x	13 / 10	5.00	5.00	1000
<b>Labelling lengthwise to the cable/the hose, one or more lines of print</b>									
KM 9/20	86321040	Transparent	20.00	9.00	KSO 20x9		5.00	10.00	1000
KM 9/35	86321042	Transparent	35.00	9.00	KSO 35x9		5.00	10.00	500
KM 9/70	86321045	Transparent	70.00	9.00	KSO 70x9		5.00	10.00	250
KM 15/27	86321056	Transparent	27.00	15.00	KS 15/27		5.00	14.00	500
KM 15/49	86321058	Transparent	49.00	15.00	KS 15/49		5.00	14.00	250
KM 15/67	86321060	Transparent	67.00	15.00	KS 15/67		5.00	14.00	125
<b>Pre-configured label holder, equipped with KB 55 cable ties</b>									
KKM 4/12	86321048	Transparent	12.00	4.00	KS 4/x	5 / 4	5.00	5.00	250
KKM 4/23	86321050	Transparent	23.00	4.00	KS 4/x	10 / 7	5.00	5.00	250
KKM 9/20	86321052	Transparent	20.00	9.00	KSO 20x9		5.00	10.00	250
KKM 9/35	86321054	Transparent	35.00	9.00	KSO 35x9		5.00	10.00	250

## KM label holder (standard holder, variable length)



### PRODUCT INFORMATION

Individual label holders for labelling wires, cables and conduits. The KM variable length label holders can be cut to any length and are used to hold the KS and KSO label plates.

- The label holders are fixed in place with cable ties.

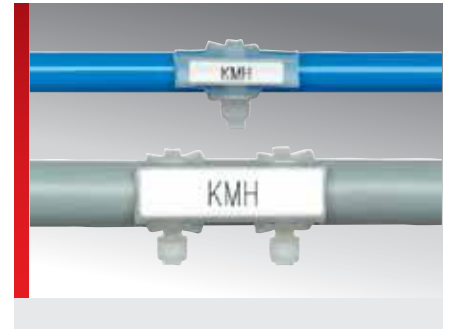
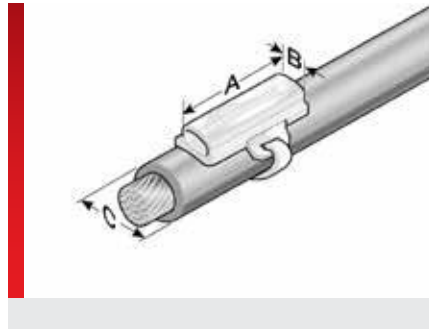
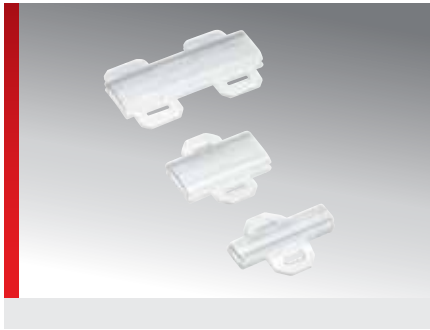
The KM-T10 multi-purpose tool can be used to cut the label holders to convenient lengths (A) for specific purposes. The tool can process KM 9 and KM 15 materials without resetting. The ACS special function tool KM-T10 is listed in "accessories".

### SPECIFICATIONS

- 40 – 60 °C
- Polyvinyl chloride (PVC)
- V0
- Individual length
- 

Type	Order No.	Colour	Length mm	Width mm (B)	Recommended label plate	Cable ties max. width mm	Recommended min. diameter mm (C)	Pack qty.
<b>Labelling lengthwise to the cable/the hose, one or more lines of print</b>								
KM 9/10000	86321070	Transparent	10000.00	9.00	KSO 9/x	5.00	5.00	1
KM 15/10000	86321072	Transparent	10000.00	15.00	KS 15/x	5.00	10.00	1

## KMH label holder (halogen-free)



### PRODUCT INFORMATION

Halogen-free label holders for wire, cable and conduit labels. KMH label holders for BK idents and type KS as well as type KSO labels.

- The label holders are fixed in place with cable ties.

### SPECIFICATIONS

- 40 – 80 °C
- EVA
- HB
- Halogen-free

**HF**

Type	Order No.	Colour	Length mm (A)	Width mm (B)	Recommended label plate	No. idents BK23 / BK30	Cable ties max. width mm	Recommended min. diameter mm (C)	Pack qty.
<b>Labelling lengthwise to the cable/the hose, single line of print</b>									
KMH 4/23	86221010	Transparent	23.00	4.00	KS 4/x	10 / 7	5.00	5.00	1000
<b>Labelling lengthwise to the cable/the hose, one or more lines of print</b>									
KMH 9/20	86221012	Transparent	20.00	9.00	KSO 20x9		5.00	10.00	1000
KMH 9/35	86221016	Transparent	35.00	9.00	KSO 35x9		5.00	10.00	500
<b>Pre-configured label holder, equipped with KB 55 cable ties</b>									
KKMH 4/23	86221050	Transparent	23.00	4.00	KS 4/x	10 / 7	5.00	5.00	250

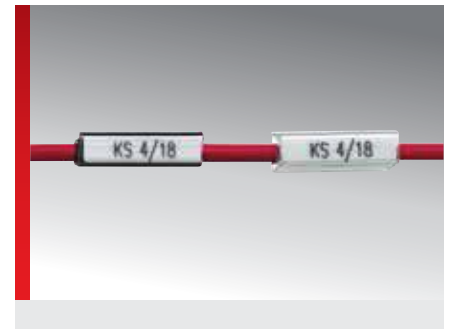
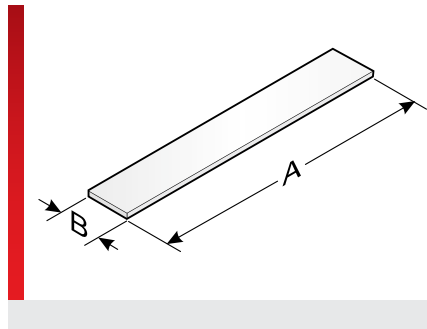
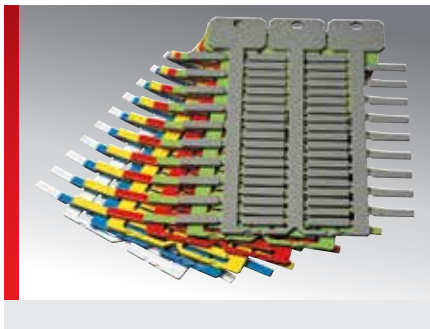








## KS Label plate (single-line)



### PRODUCT INFORMATION

High-quality, halogen-free, universal label. The KS 4/x label is used with sleeves KT, KTH, KTHQ or holders KM, KMH, KMHQ or KTN on wires, cables, lines or conduits.

- Available in various lengths and colours.
- The large printable area at the top provides room to reference individual projects.

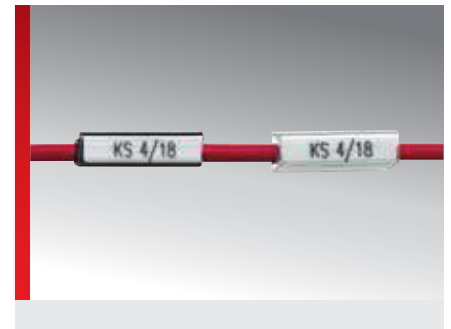
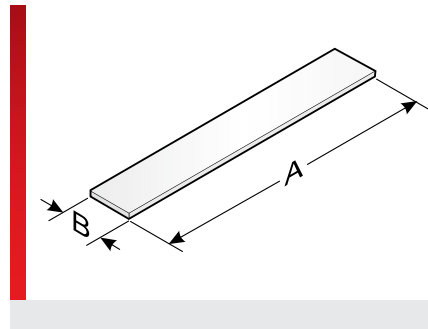
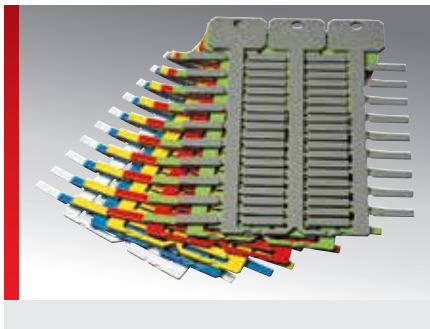
Only the long mat version labels are to be used with the mp-LM laser series.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line inscription

Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Label length 10 mm, 4-line mat design</b>										
KS 4/10 4ST	86361084	White	9016	4.0 x 10.0	4.0 x 10.0	5 / 1	64	GP4	A86	1024
<b>Label length 12 mm, 4-line mat design</b>										
KS 4/12 4ST	86361086	White	9016	4.0 x 12.0	4.0 x 12.0	6 / 1	64	GP4	A87	1024
KS 4/12 4ST	86361087	Yellow	1018	4.0 x 12.0	4.0 x 12.0	6 / 1	64	GP4	430	1024
<b>Label length 12 mm</b>										
KS 4/12	86361026	White	9016	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	6	1026
KS 4/12	86361018	Yellow	1018	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	7	1026
KS 4/12	86361020	Red	2012	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	8	1026
KS 4/12	86361022	Green	6018	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	9	1026
KS 4/12	86361024	Blue	5012	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	10	1026
KS 4/12	86361019	Orange	2011	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	60	1026
<b>Label length 12 mm (high packaging density)</b>										
KS 4/12 ST	86361072	White	9016	4.0 x 12.0	4.0 x 12.0	6 / 1	72	GP3	6ST	1296
KS 4/12 ST	86361073	Yellow	1018	4.0 x 12.0	4.0 x 12.0	6 / 1	72	GP3	7ST	1296
KS 4/12 ST	86361074	Red	2012	4.0 x 12.0	4.0 x 12.0	6 / 1	72	GP3	8ST	1296
<b>Label length 12 mm, levelled foot</b>										
KS 4/12-AF	86361027	White	9016	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	6AF	1026

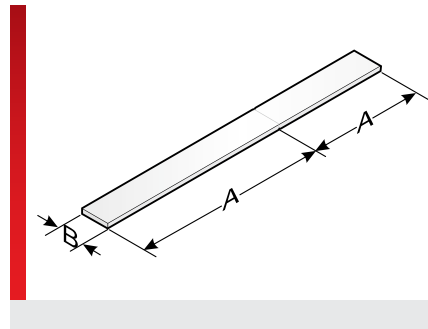
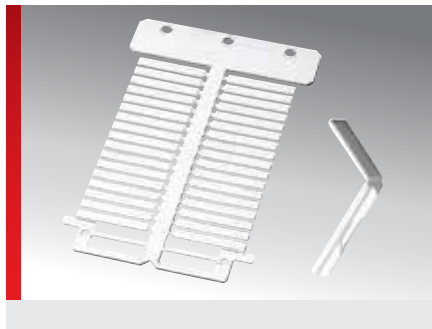
**KS Label plate (single-line)** (Continued...)



Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Label length 15 mm, 4-line mat design</b>										
KS 4/15 4ST	86361088	White	9016	4.0 x 15.0	4.0 x 15.0	8 / 1	64	GP4	A88	1024
<b>Label length 18 mm</b>										
KS 4/18	86361033	Orange	2011	4.0 x 18.0	4.0 x 18.0	10 / 1	57	GP3	10	1026
KS 4/18	86361035	Brown	8003	4.0 x 18.0	4.0 x 18.0	10 / 1	57	GP3	1B	1026
KS 4/18	86361029	Purple	4005	4.0 x 18.0	4.0 x 18.0	10 / 1	57	GP3	1L	1026
KS 4/18	86361031	Pink	4010	4.0 x 18.0	4.0 x 18.0	10 / 1	57	GP3	1R	1026
KS 4/18	86361228	Grey	7038	4.0 x 18.0	4.0 x 18.0	10 / 1	57	GP3	1G	1026
<b>Label length 18 mm (high packaging density)</b>										
KS 4/18 ST	86361080	White	9016	4.0 x 18.0	4.0 x 18.0	10 / 1	72	GP3	1ST	1296
KS 4/18 ST	86361081	Yellow	1018	4.0 x 18.0	4.0 x 18.0	10 / 1	72	GP3	2ST	1296
KS 4/18 ST	86361082	Red	2012	4.0 x 18.0	4.0 x 18.0	10 / 1	72	GP3	3ST	1296
<b>Label length 18 mm, levelled foot</b>										
KS 4/18-AF	86361037	White	9016	4.0 x 18.0	4.0 x 18.0	10 / 1	57	GP3	5AF	1026
<b>Label length 23 mm</b>										
KS 4/23	86361064	White	9016	4.0 x 23.0	4.0 x 23.0	12 / 1	34	GP3	11A	1020
KS 4/23	86361066	Yellow	1018	4.0 x 23.0	4.0 x 23.0	12 / 1	34	GP3	11B	1020
KS 4/23	86361068	Red	2012	4.0 x 23.0	4.0 x 23.0	12 / 1	34	GP3	11C	1020
<b>Label length 30 mm</b>										
KS 4/30	86361042	White	9016	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	15	1020
KS 4/30	86361246	Yellow	1018	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	17	1020
KS 4/30	86361240	Red	2012	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	16	1020
KS 4/30	86361244	Green	6018	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	19	1020
KS 4/30	86361242	Blue	5012	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	18	1020
KS 4/30 PE	86361043	Green / Yellow		4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	15P	1020
<b>Label length 12 mm, long mat design</b>										
KS 4/12 L	86362026	White	9016	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	477	1026
KS 4/12 L	86362018	Yellow	1018	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	478	1026
KS 4/12 L	86362020	Red	2012	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	479	1026
KS 4/12 L	86362022	Green	6018	4.0 x 12.0	4.0 x 12.0	6 / 1	57	GP3	480	1026



## KS label plate (single-line/divisible)



### PRODUCT INFORMATION

High-quality, halogen-free, severable label. The KS 4/x label is used with sleeves KT, KTH, KTHQ or holders KM, KMH, KMHQ or KTN on wires, cables, lines or conduits.

- Available in different colours.
- The KS 4/18-12 has a detachable section, where the necessary connection information can be stored.

- The length of the KS 4/30-70 can be modified in 10 mm increments for labels of 30 mm length or longer.

Only the long mat version labels are to be used with the mp-LM laser series.

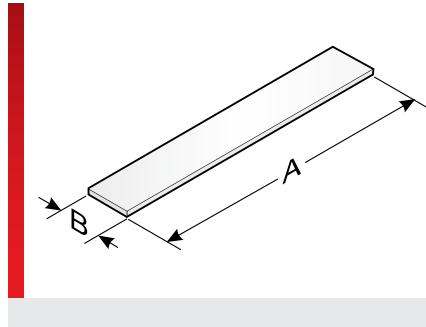
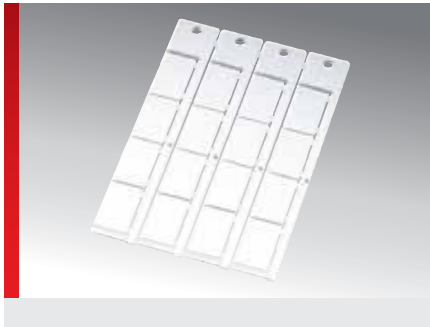
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line inscription

**HF**

Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Label length 30 mm (divided at 18 mm)</b>										
KS 4/18-12	86361048	White	9016	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	15A	1020
KS 4/18-12	86361050	Yellow	1018	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	17A	1020
KS 4/18-12	86361052	Red	2012	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	17A	1020
KS 4/18-12	86361054	Green	6018	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	18A	1020
KS 4/18-12	86361056	Blue	5012	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	18A	1020
KS 4/18-12	86361058	Grey	7038	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	20A	1020
<b>Label length 30 mm (divided at 18 mm), long mat design</b>										
KS 4/18-12 L	86362048	White	9016	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	467	1020
KS 4/18-12 L	86362050	Yellow	1018	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	468	1020
KS 4/18-12 L	86362052	Red	2012	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	469	1020
KS 4/18-12 L	86362054	Green	6018	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	470	1020
KS 4/18-12 L	86362056	Blue	5012	4.0 x 30.0	4.0 x 30.0	16 / 1	34	GP3	471	1020
<b>Label length 70 mm (divided at 30/40/50/60 mm)</b>										
KS 4/30-70	86361070	White	9016	4.0 x 70.0	4.0 x 70.0	38 / 1	18	GP3	1U	324
KS 4/30-70	86361071	Yellow	1018	4.0 x 70.0	4.0 x 70.0	38 / 1	18	GP3	1U5	324

## KS label plate (multi-line)



### PRODUCT INFORMATION

High-quality, halogen-free, universal label for multi-line inscriptions.

- Available in various lengths and colours.
- The large printable area at the top provides room to reference individual projects.

The KS 15/x may be inserted into the KM 15\* label holders or the BZS 15\* and BZS/F 15\* label rails. The KS 22x22 is suitable for Siemens 3SB push-button and signal lamp holders. Other sizes of the KS label are used for BT and BMA label holders.

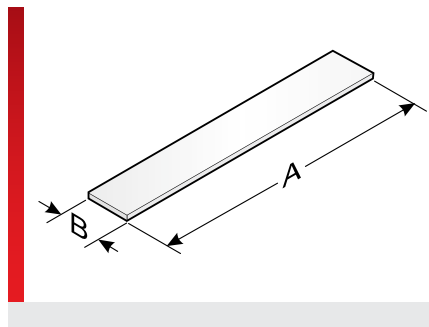
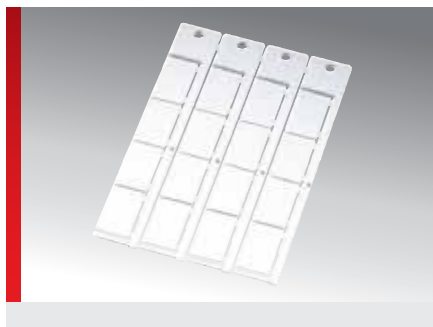
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line and multi-line inscription

HF

Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Label length 26.5 mm for BT 22.5 and BT Harmony ZB4</b>										
KS 8/26.5	86361060	White	9016	8.0 x 26.5	8.0 x 26.5	14 / 2	16	GP4	71	480
<b>17 mm label length for KM 15*, BZS 15* and BZS/F 15*</b>										
KS 15/17	86361040	White	9016	15.0 x 17.0	15.0 x 17.0	9 / 4	24	GP4	84	720
<b>27 mm label length for KM 15/27, BT 15/27, BTK 15/27, BT-SR 15x27, BTK 22,5, BZS 15* and BZS/F 15*</b>										
KS 15/27	86361010	White	9016	15.0 x 27.0	15.0 x 27.0	15 / 4	16	GP4	85	480
KS 15/27	86361012	Yellow	1018	15.0 x 27.0	15.0 x 27.0	15 / 4	16	GP4	85G	480
KS 15/27	86361008	Red	2012	15.0 x 27.0	15.0 x 27.0	15 / 4	16	GP4	85R	480
KS 15/27	86361002	Grey	7040	15.0 x 27.0	15.0 x 27.0	15 / 4	16	GP4	85U	480
<b>49 mm label length for KM 15/49, BT 15/49, BTK 15/49 and BT-SR 15/49</b>										
KS 15/49	86361014	White	9016	15.0 x 49.0	15.0 x 49.0	27 / 4	8	GP4	86	240
KS 15/49	86361015	Yellow	1018	15.0 x 49.0	15.0 x 49.0	27 / 4	8	GP4	86G	240
KS 15/49	86361013	Red	2012	15.0 x 49.0	15.0 x 49.0	27 / 4	8	GP4	86R	240
KS 15/49	86361003	Grey	7040	15.0 x 49.0	15.0 x 49.0	27 / 4	8	GP4	86U	240
<b>Label length 49 mm for BT 15/49, BTK 15/49 and BT-SR 15/49</b>										
KS 15/49 2x2.7mm	86361021	White	9016	15.0 x 49.0	15.0 x 36.0	20 / 4	8	GP4	086	240
<b>67 mm label length for KM 15/67, BT 15/67, BTK 15/67 and BT-SR 15/67</b>										
KS 15/67	86361016	White	9016	15.0 x 67.0	15.0 x 67.0	37 / 4	4	GP4	87	120
KS 15/67	86361017	Yellow	1018	15.0 x 67.0	15.0 x 67.0	37 / 4	4	GP4	87G	120
KS 15/67	86361009	Red	2012	15.0 x 67.0	15.0 x 67.0	37 / 4	4	GP4	87R	120

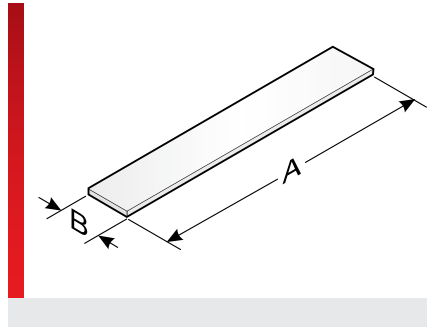
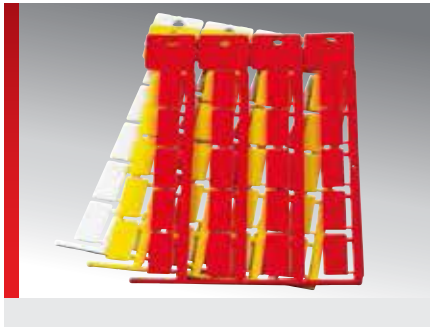
**KS label plate (multi-line)** (Continued...)



Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KS 15/67	86361004	Grey	7040	15.0 x 67.0	15.0 x 67.0	37 / 4	4	GP4	87U	120
<b>22 mm label length for Siemens 3SB push-button and signal lamp holders</b>										
KS 22x22	86361264	White	9016	22.0 x 22.0	22.0 x 22.0	12 / 6	8	GP3	113	144
KS 22x22	86361262	Grey	7040	22.0 x 22.0	22.0 x 22.0	12 / 6	8	GP3	114	144
<b>27 mm label length for BT-SR 27x12,5</b>										
KS 27/12.5	86361250	White	9016	12.5 x 27.0	12.5 x 27.0	15 / 3	12	GP3	82	216
KS 27/12.5	86361256	Grey	7040	12.5 x 27.0	12.5 x 27.0	15 / 3	12	GP3	83	216
<b>27 mm label length for BT-SR 27x18 and BT-SR 27x18 Harmony</b>										
KS 27/18	86361252	White	9016	18.0 x 27.0	18.0 x 27.0	15 / 5	10	GP3	105	180
KS 27/18	86361258	Grey	7040	18.0 x 27.0	18.0 x 27.0	15 / 5	10	GP3	89	180
<b>27 mm label length for BT-SR 27x 27</b>										
KS 27/27	86361254	White	9016	27.0 x 27.0	27.0 x 27.0	15 / 7	6	GP3	107	108
KS 27/27	86361260	Grey	7040	27.0 x 27.0	27.0 x 27.0	15 / 7	6	GP3	106	108



## KSO label plate



### PRODUCT INFORMATION

High-quality, halogen-free, universal label for single-line and multi-line inscriptions.

- Available in various lengths and colours.
- The large printable area at the top provides room to reference individual projects.

The KSO label is mounted on cables, lines or conduits with KT series sleeves or the KM, KMH, KMH/Q carriers.

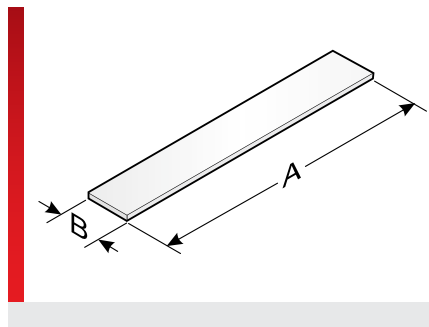
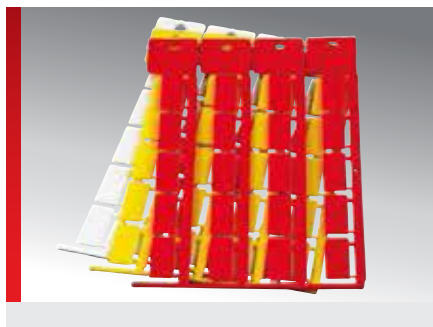
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line and multi-line inscription

HF

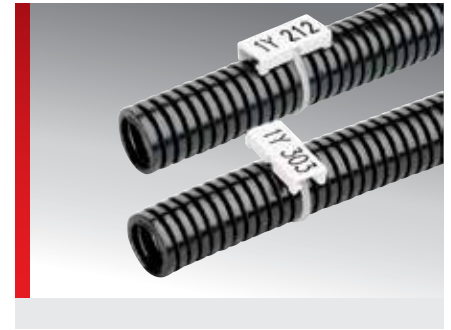
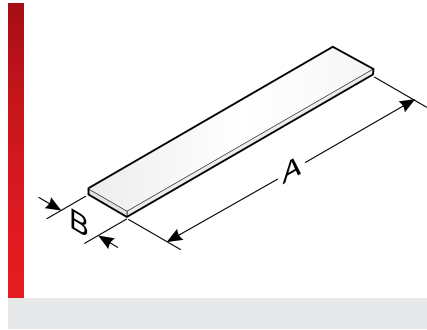
Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Label length 11 mm</b>										
KSO 11x9	86421024	White	9016	9.0 x 11.0	9.0 x 11.0	6 / 2	44	GP4	60	1400
KSO 11x9	86421013	Yellow	1018	9.0 x 11.0	9.0 x 11.0	6 / 2	44	GP4	60G	1400
KSO 11x9	86421015	Red	2012	9.0 x 11.0	9.0 x 11.0	6 / 2	44	GP4	60R	1400
<b>Label length 15 mm</b>										
KSO 15x9	86421026	White	9016	9.0 x 15.0	9.0 x 15.0	8 / 2	44	GP4	62	1400
KSO 15x9	86421027	Yellow	1018	9.0 x 15.0	9.0 x 15.0	8 / 2	44	GP4	62G	1400
KSO 15x9	86421019	Red	2012	9.0 x 15.0	9.0 x 15.0	8 / 2	44	GP4	62R	1400
<b>Label length 17.5 mm</b>										
KFM 17,5x8	86421071	White	9016	8.0 x 17.5	8.0 x 17.5	9 / 2	24	GP4	550	720
<b>Label length 20 mm</b>										
KSO 20x9	86421028	White	9016	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	64	680
KSO 20x9	86421080	Yellow	1018	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	65G	680
KSO 20x9	86421030	Red	2012	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	65R	680
<b>Label length 20 mm, long mat design</b>										
KSO 20x9L	86421230	White	9016	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	551	640
KSO 20x9L	86421232	Yellow	1018	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	552	640
KSO 20x9L	86421234	Red	2012	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	553	640
<b>Label length 35 mm</b>										
KSO 35x9	86421064	White	9016	9.0 x 35.0	9.0 x 35.0	19 / 2	12	GP4	69W	360

**KSO label plate** (Continued...)



Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KSO 35x9	86421065	Yellow	1018	9.0 x 35.0	9.0 x 35.0	19 / 2	12	GP4	69G	360
KSO 35x9	86421066	Red	2012	9.0 x 35.0	9.0 x 35.0	19 / 2	12	GP4	69R	360
KSO 35x9 2x2,5mm	86421068	White	9016	9.0 x 35.0	9.0 x 35.0	19 / 2	12	GP4	303	360
<b>Label length 70 mm</b>										
KSO 70x9	86421082	White	9016	9.0 x 70.0	9.0 x 70.0	38 / 2	11	GP5	280	330
KSO 70x9	86421083	Yellow	1018	9.0 x 70.0	9.0 x 70.0	38 / 2	11	GP5	282	330
KSO 70x9	86421084	Red	2012	9.0 x 70.0	9.0 x 70.0	38 / 2	11	GP5	281	330

## BS label plate



### PRODUCT INFORMATION

High-quality, halogen-free label plate for single-line and multi-line inscription. The BS label is mounted directly with a cable tie.

BS 5 and BS 5-2 are suitable for longitudinal mounting. BS 6 can be mounted lengthways and across.

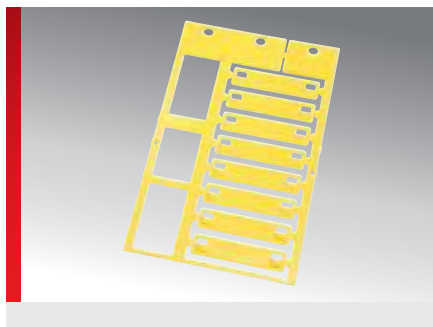
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line and multi-line inscription. Mounted lengthways and crossways.

**HF**

Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Labelling area mm	No. characters/lines	Cable ties max. width mm	No. per frame	Base plate	Software type	Pack qty.
<b>For lengthways affixing (long mat version)</b>											
BS 5L	86281070	White	9016	12.0 x 27.0	12.0 x 27.0	15 / 3	3.00	16	GP4L	80D	192
BS 5L	86281071	Yellow	1018	12.0 x 27.0	12.0 x 27.0	15 / 3	3.00	16	GP4L	80E	192
<b>For lengthways and crossways affixing (long mat version)</b>											
BS 6L	86281076	White	9016	12.0 x 27.0	12.0 x 27.0	15 / 3	3.00	16	GP4L	81A	192
<b>For lengthways affixing</b>											
BS 5	86281020	White	9016	12.0 x 27.0	12.0 x 27.0	15 / 3	3.00	16	none	80	190
BS 5	86281021	Yellow	1018	12.0 x 27.0	12.0 x 27.0	15 / 3	3.00	16	none	109	190
BS 5-2	86281031	Yellow	1018	12.0 x 55.0	12.0 x 55.0	30 / 3	3.00	8	none	108	96
<b>For lengthways or crossways affixing</b>											
BS 6	86281022	White	9016	12.0 x 27.0	12.0 x 27.0	15 / 3	3.00	16	none	81	190

## KSM label plate



### PRODUCT INFORMATION

High-quality, halogen-free label for subsequent direct labelling of wires.  
 The KSM is made of PC material and has been developed for direct and subsequent marking of cables and wires.  
 Only cable ties are required for assembly.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line and multi-line inscription

HF

Type	Order No.	Colour	RAL equiv.	Minimum diameter mm	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>For lengthways affixing</b>											
KSM 35x8 PC	86281410	White	9016	5.00	8.0 x 35.0	8.0 x 18.0	10 / 2	16	GP3M	514	320
KSM 35x8 PC	86281420	Yellow	1018	5.00	8.0 x 35.0	8.0 x 18.0	10 / 2	16	GP3M	519	320
KSM 45x10 PC	86281412	White	9016	5.00	10.0 x 45.0	10.0 x 28.0	15 / 2	8	GP3M	515	160
KSM 45x10 PC	86281422	Yellow	1018	5.00	10.0 x 45.0	10.0 x 28.0	15 / 2	8	GP3M	520	160
KSM 55x12 PC	86281414	White	9016	5.00	12.0 x 55.0	12.0 x 38.0	21 / 3	6	GP3M	516	120
KSM 55x12 PC	86281424	Yellow	1018	5.00	12.0 x 55.0	12.0 x 38.0	21 / 3	6	GP3M	521	120
KSM 65x14 PC	86281418	White	9016	5.00	14.0 x 65.0	14.0 x 48.0	26 / 4	6	GP3M	518	120
KSM 65x14 PC	86281428	Yellow	1018	5.00	14.0 x 65.0	14.0 x 48.0	26 / 4	6	GP3M	523	120
KSM 70x10 PC	86281416	White	9016	5.00	10.0 x 70.0	10.0 x 53.0	29 / 2	8	GP3M	517	160
KSM 70x10 PC	86281426	Yellow	1018	5.00	10.0 x 70.0	10.0 x 53.0	29 / 2	8	GP3M	522	160

## KSM label plate (Polypropylene)



### PRODUCT INFORMATION

High-quality label to attach with cable ties directly onto the cables.  
The KSM labels are a product that is used for the subsequent marking of cables.

**The material Polypropylene (PP) is intended only for labels created with the MP laser system.**

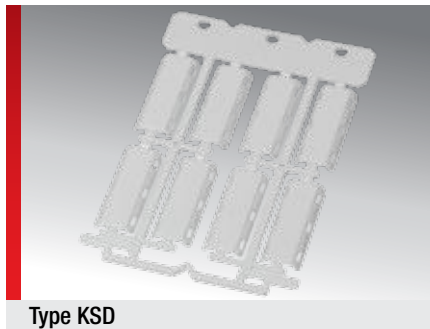
Also available as easily detectable KSM-D labels.

### SPECIFICATIONS

- 30 – 90 °C
- Polypropylene (PP)
- HB
- Detectable labels
- Single-line and multi-line inscription

Type	Order No.	Colour	RAL equiv.	Minimum diameter mm	Labelling area mm	No. characters/lines	Cable ties width mm	Cable ties length mm	No. per frame	Base plate	Software	Pack qty.
<b>Labels for longitudinal installation; for labelling with the MP laser system</b>												
KSM 35x8 PP	86281610	White	9016	5.00	8.0 x 18.0	10 / 2			16	GP3M	524	320
KSM 35x8 PP	86281620	Yellow	1018	5.00	8.0 x 18.0	10 / 2			16	GP3M	529	320
KSM 45x10 PP	86281612	White	9016	5.00	10.0 x 28.0	15 / 2			8	GP3M	525	160
KSM 45x10 PP	86281622	Yellow	1018	5.00	10.0 x 28.0	15 / 2			8	GP3M	530	160
KSM 55x12 PP	86281614	White	9016	5.00	12.0 x 38.0	21 / 3			6	GP3M	526	108
KSM 55x12 PP	86281624	Yellow	1018	5.00	12.0 x 38.0	21 / 3			6	GP3M	531	108
KSM 65x14 PP	86281618	White	9016	5.00	14.0 x 48.0	26 / 4			6	GP3M	528	108
KSM 65x14 PP	86281628	Yellow	1018	5.00	14.0 x 48.0	26 / 4			6	GP3M	533	108
KSM 70x10 PP	86281616	White	9016	5.00	10.0 x 53.0	29 / 2			8	GP3M	527	144
KSM 70x10 PP	86281626	Yellow	1018	5.00	10.0 x 53.0	29 / 2			8	GP3M	532	144
<b>Noticeable cable ties for longitudinal installation; for labelling with the MP laser system</b>												
KSM-D 35x8 PP	86281810	Grey	7038	5.00	8.0 x 18.0	10 / 2			16	GP3M	534	320
KSM-D 45x10 PP	86281812	Grey	7038	5.00	10.0 x 28.0	15 / 2			8	GP3M	535	160
KSM-D 55x12 PP	86281814	Grey	7038	5.00	12.0 x 38.0	21 / 3			6	GP3M	536	108
KSM-D 65x14 PP	86281818	Grey	7038	5.00	14.0 x 48.0	26 / 4			6	GP3M	538	108
KSM-D 70x10 PP	86281816	Grey	7038	5.00	10.0 x 53.0	29 / 2			8	GP3M	537	144
<b>Noticeable cable ties</b>												
KB-D 20	88661252	Blue					2.50	100.00				100
KB-D 25	88661256	Blue					3.50	140.00				100
KB-D 55	88661266	Blue					4.50	200.00				100
KB-D 75	88661268	Blue					4.50	280.00				100

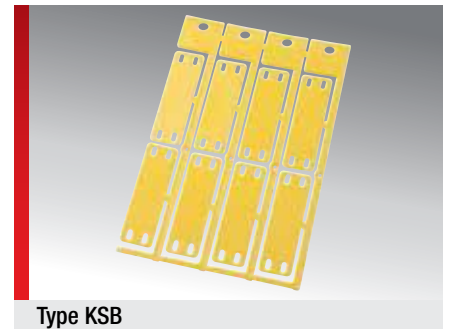
## KSD/KSB label plate (Polypropylene)



Type KSD



Type KSD application



Type KSB

### PRODUCT INFORMATION

High-quality label to attach with cable ties directly onto the cables.

#### KSD/KSB label applications

The KSD/KSB label is a product designed for the subsequent marking of cables; it features a low-profile. The low-profile design requires that cable ties must not be tightened with a force higher than (50-60 N / 5-6 kg). Since

the force intensifies considerably at the tongues for these small cable diameters, you must observe the recommended areas of application.

**The material Polypropylene (PP) is intended only for labels created with the MP laser system.**

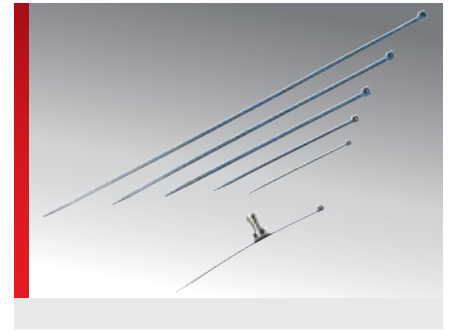
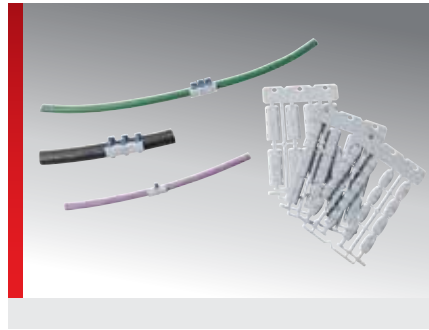
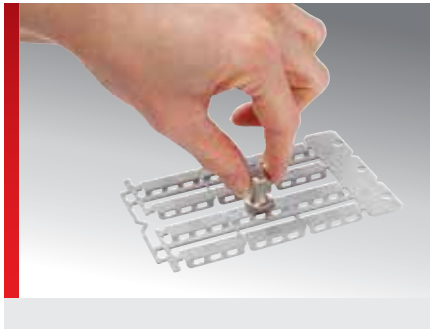
### SPECIFICATIONS

- 30 – 90 °C
- Polypropylene (PP)
- HB
- Single-line and multi-line inscription

Type	Order No.	Colour	RAL equiv.	Minimum diameter mm	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>For longitudinal installation and labelling with the MP labelling system</b>											
KSD 20x5 PP <sup>1)</sup>	86281054	White	9016	5.00	5.0 x 20.0	5.0 x 20.0	11 / 1	16	GP3K	445	480
KSD 30x8 PP <sup>1)</sup>	86281052	White	9016	8.00	8.0 x 30.0	8.0 x 30.0	16 / 2	12	GP3K	444	360
KSD 40x10 PP <sup>1)</sup>	86281036	White	9016	10.00	10.0 x 40.0	10.0 x 40.0	22 / 2	8	GP3K	271	240
KSD 40x10 PP <sup>1)</sup>	86281038	Yellow	1018	10.00	10.0 x 40.0	10.0 x 40.0	22 / 2	8	GP3K	272	240
<b>For longitudinal mounting (long mat version); for labelling with the MP laser system</b>											
KSD 20x5L PP <sup>1)</sup>	86281080	White	9016	5.00	5.0 x 20.0	5.0 x 20.0	11 / 1	16	GP3K	501	480
KSD 20x5L PP <sup>1)</sup>	86281082	Yellow	1018	5.00	5.0 x 20.0	5.0 x 20.0	11 / 1	16	GP3K	502	480
KSD 30x8L PP <sup>1)</sup>	86281086	White	9016	8.00	8.0 x 30.0	8.0 x 30.0	16 / 2	12	GP3K	504	216
KSD 30x8L PP <sup>1)</sup>	86281088	Yellow	1018	8.00	8.0 x 30.0	8.0 x 30.0	16 / 2	12	GP3K	505	216
KSD 40x10L PP <sup>1)</sup>	86281090	White	9016	10.00	10.0 x 40.0	10.0 x 40.0	22 / 2	8	GP3K	507	240
KSD 40x10L PP <sup>1)</sup>	86281092	Yellow	1018	10.00	10.0 x 40.0	10.0 x 40.0	22 / 2	8	GP3K	508	240
<b>Custom variants upon request (for longitudinal installation and labelling with the MP labelling system)</b>											
KSB 52x15 PP <sup>1)</sup>	86281210	Yellow	1018	5.00	15.0 x 52.0	15.0 x 40.0	22 / 4	8	GP4	440	240

<sup>1)</sup> Label size specifications (B x A) are shown in width x length.

## KSD-D Detectable label plate (Polypropylene)



### PRODUCT INFORMATION

High-quality detectable label to attach with detectable cable ties directly onto the cables.

#### KSD label applications

The KSD label is a product designed for the subsequent marking of cables; it features a low-profile. The low-profile design requires that cable ties must not be tightened with a force higher than (50-60 N / 5-6 kg). Since

the force intensifies considerably at the tongues for these small cable diameters, you must observe the recommended areas of application.

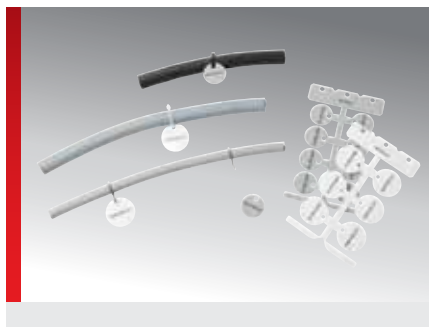
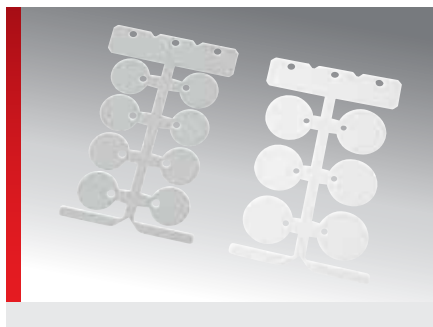
**The material Polypropylene (PP) is intended only for labels created with the MP laser system.**

### SPECIFICATIONS

- 30 – 90 °C
- Polypropylene (PP)
- HB
- Noticeable labels and cable ties
- Single-line and multi-line inscription

Type	Order No.	Colour	RAL equiv.	Minimum diameter mm	Labelling area mm	No. characters/lines	Cable ties width mm	Cable ties length mm	No. per frame	Base plate	Software type	Pack qty.
<b>Noticeable cable ties for longitudinal installation; for labelling with the MP laser system</b>												
KSD-D 20x5 PP	86281066	Grey	7038	5.00	5.0 x 20.0	11 / 1			16	GP3K	483	480
KSD-D 30x8 PP	86281064	Grey	7038	8.00	8.0 x 30.0	16 / 2			12	GP3K	484	360
KSD-D 40x10 PP	86281062	Grey	7038	10.00	10.0 x 40.0	22 / 2			8	GP3K	485	240
<b>Noticeable labels for longitudinal mounting; for labelling with the MP laser system</b>												
KSD-D 20x5L PP	86281083	Grey	7038	5.00	5.0 x 20.0	11 / 1			16	GP3K	503	480
KSD-D 30x8L PP	86281089	Grey	7038	8.00	8.0 x 30.0	16 / 2			12	GP3K	506	216
KSD-D 40x10L PP	86281093	Grey	7038	10.00	10.0 x 40.0	22 / 2			8	GP3K	505	240
<b>Noticeable cable ties</b>												
KB-D 20	88661252	Blue					2.50	100.00				100
KB-D 25	88661256	Blue					3.50	140.00				100
KB-D 55	88661266	Blue					4.50	200.00				100
KB-D 75	88661268	Blue					4.50	280.00				100
KB-D 100	88661270	Blue					4.50	380.00				100

## KSR label plate



### PRODUCT INFORMATION

High-quality, halogen-free round label plate (PC circular blank) for subsequent labelling of cables, lines and conduits.

Fastened with either a cable tie or the S-hook.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line and multi-line inscription

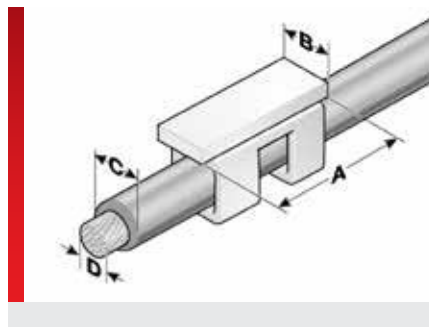
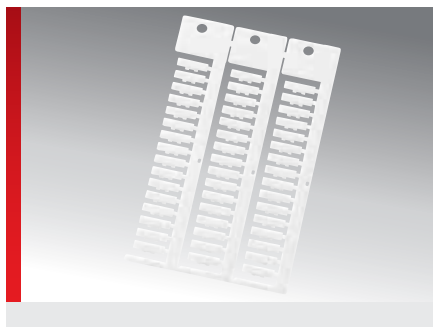
HF

Type	Order No.	Colour	RAL equiv.	Label size Ø mm	Fastening hole Ø mm	Cable ties max. width mm	No. per frame	Base plate	Software type	Pack qty.
<b>Mounting hole 3.5 mm</b>										
KSR D20-3,5	86411210	White	9016	20.00	1x 3,5	2.90	8	GP3	447	120
KSR D20-3,5	86411222	Grey	7038	20.00	1x 3,5	2.90	8	GP3	453	120
KSR D25-3,5	86411214	White	9016	25.00	1x 3,5	2.90	8	GP3	449	120
KSR D25-3,5	86411226	Grey	7038	25.00	1x 3,5	2.90	8	GP3	455	120
KSR D30-3,5	86411218	White	9016	30.00	1x 3,5	2.90	6	GP3	451	90
KSR D30-3,5	86411230	Grey	7038	30.00	1x 3,5	2.90	6	GP3	457	90
<b>Mounting hole 4.2 mm</b>										
KSR D20-4,2	86411212	White	9016	20.00	1x 4,2	3.60	8	GP3	448	120
KSR D20-4,2	86411224	Grey	7038	20.00	1x 4,2	3.60	8	GP3	454	120
KSR D25-4,2	86411216	White	9016	25.00	1x 4,2	3.60	8	GP3	450	120
KSR D25-4,2	86411228	Grey	7038	25.00	1x 4,2	3.60	8	GP3	456	120
KSR D30-4,2	86411220	White	9016	30.00	1x 4,2	3.60	6	GP3	452	90
KSR D30-4,2	86411232	Grey	7038	30.00	1x 4,2	3.60	6	GP3	458	90

The S-hook is listed in Accessories in the ACS catalogue. The correct KB cable ties sizes are listed in Accessories in the KDH catalogue.



## KDE label plate



### PRODUCT INFORMATION

The KDE label plates are pushed directly onto the single wires.

- For wire cross sections from 0.5 – 4 mm<sup>2</sup> (AWG 20 – 12).
- Available in two lengths, in the colours white and yellow.

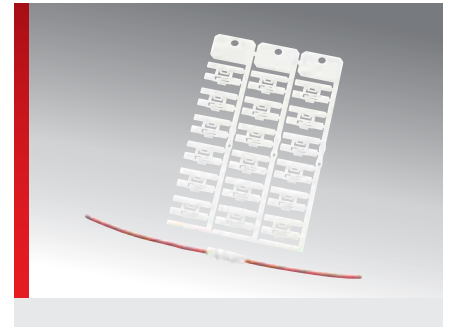
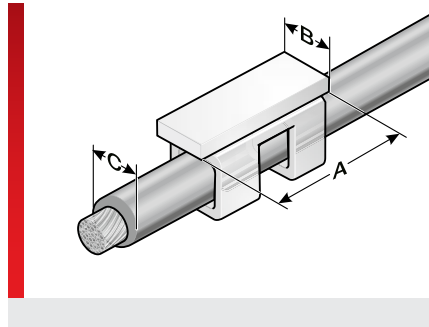
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line inscription. Suitable for use with narrow wire bending radii.

HF

Type	Order No.	Colour	RAL equiv.	Application range from - to Ø mm (C)	Wire cross-section from - to mm <sup>2</sup> (D)	Label size mm (B x A)	No. per frame	Base plate	Software type	Pack qty.
<b>Label length 11 mm</b>										
KDE 11x4-3,2	86381240	White	9016	1.7 – 3.2	0.5 – 1.5	4.0 x 11.0	48	GP KDE	A78	576
KDE 11x4-3,2	86381241	Yellow	1018	1.7 – 3.2	0.5 – 1.5	4.0 x 11.0	48	GP KDE	A79	576
KDE 11x4-4,2	86381242	White	9016	2.0 – 4.2	1.0 – 4.0	4.0 x 11.0	48	GP KDE	A80	576
KDE 11x4-4,2	86381243	Yellow	1018	2.0 – 4.2	1.0 – 4.0	4.0 x 11.0	48	GP KDE	A81	576
<b>Label length 16 mm</b>										
KDE 16x4-3,2	86381244	White	9016	1.7 – 3.2	0.5 – 1.5	4.0 x 16.0	48	GP KDE	A82	576
KDE 16x4-3,2	86381245	Yellow	1018	1.7 – 3.2	0.5 – 1.5	4.0 x 16.0	48	GP KDE	A83	576
KDE 16x4-4,2	86381246	White	9016	2.0 – 4.2	1.0 – 4.0	4.0 x 16.0	48	GP KDE	A84	576
KDE 16x4-4,2	86381247	Yellow	1018	2.0 – 4.2	1.0 – 4.0	4.0 x 16.0	48	GP KDE	A85	576

## KNC label plate



### PRODUCT INFORMATION

High-quality, halogen-free label for subsequent direct labelling of wires. The KNC is made of PC material and has been developed for direct and subsequent marking of cables and wires. No tools required.

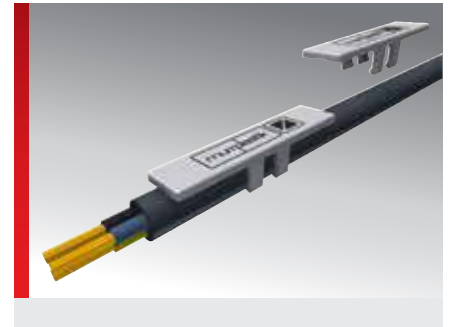
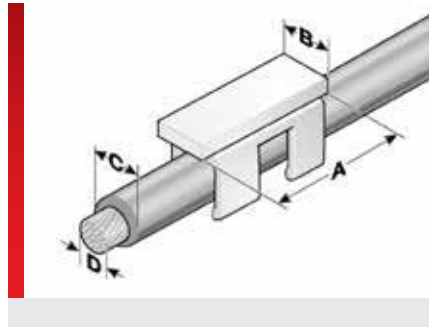
Available in three sizes for diameter of 2,0 – 5,1 mm.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- 

Type	Order No.	Colour	Application range from - to Ø mm (C)	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>For cable diameters of 2.0 mm to 3.1 mm</b>										
KNC 4,0/12-2,0	86381912	White	2.0 – 3.1	4.0 x 12.0	4.0 x 12.0	6 / 1	18	GP3C	C00	234
KNC 4,0/12-2,0	86381942	Yellow	2.0 – 3.1	4.0 x 12.0	4.0 x 12.0	6 / 1	18	GP3C	C01	234
KNC 4,0/18-2,0	86381914	White	2.0 – 3.1	4.0 x 18.0	4.0 x 18.0	10 / 1	18	GP3C	C02	234
KNC 4,0/18-2,0	86381944	Yellow	2.0 – 3.1	4.0 x 18.0	4.0 x 18.0	10 / 1	18	GP3C	C03	234
KNC 4,0/23-2,0	86381916	White	2.0 – 3.1	4.0 x 23.0	4.0 x 23.0	12 / 1	18	GP3C	C04	234
KNC 4,0/23-2,0	86381946	Yellow	2.0 – 3.1	4.0 x 23.0	4.0 x 23.0	12 / 1	18	GP3C	C05	234
<b>For cable diameters of 3.0 mm to 4.1 mm</b>										
KNC 4,8/12-3,0	86381922	White	3.0 – 4.1	4.8 x 12.0	4.8 x 12.0	6 / 1	18	GP3C	C06	234
KNC 4,8/12-3,0	86381952	Yellow	3.0 – 4.1	4.8 x 12.0	4.8 x 12.0	6 / 1	18	GP3C	C07	234
KNC 4,8/18-3,0	86381924	White	3.0 – 4.1	4.8 x 18.0	4.8 x 18.0	10 / 1	18	GP3C	C08	234
KNC 4,8/18-3,0	86381954	Yellow	3.0 – 4.1	4.8 x 18.0	4.8 x 18.0	10 / 1	18	GP3C	C09	234
KNC 4,8/23-3,0	86381926	White	3.0 – 4.1	4.8 x 23.0	4.8 x 23.0	12 / 1	18	GP3C	C10	234
KNC 4,8/23-3,0	86381956	Yellow	3.0 – 4.1	4.8 x 23.0	4.8 x 23.0	12 / 1	18	GP3C	C11	234
<b>For cable diameters of 4.0 mm to 5.1 mm</b>										
KNC 5,5/12-4,0	86381932	White	4.0 – 5.1	5.5 x 12.0	5.5 x 12.0	6 / 1	18	GP3C	C12	234
KNC 5,5/12-4,0	86381962	Yellow	4.0 – 5.1	5.5 x 12.0	5.5 x 12.0	6 / 1	18	GP3C	C13	234
KNC 5,5/18-4,0	86381934	White	4.0 – 5.1	5.5 x 18.0	5.5 x 18.0	10 / 1	18	GP3C	C14	234
KNC 5,5/18-4,0	86381964	Yellow	4.0 – 5.1	5.5 x 18.0	5.5 x 18.0	10 / 1	18	GP3C	C15	234
KNC 5,5/23-4,0	86381936	White	4.0 – 5.1	5.5 x 23.0	5.5 x 23.0	12 / 1	18	GP3C	C16	234
KNC 5,5/23-4,0	86381966	Yellow	4.0 – 5.1	5.5 x 23.0	5.5 x 23.0	12 / 1	18	GP3C	C17	234

## KNQ label plate



### PRODUCT INFORMATION

High-quality, halogen-free label for subsequent direct labelling of wires. The KNQ label can be clipped onto wired single cores by hand without prior disconnection. No tools required.

Available in three sizes for wire cross-sections of 0.5 - 6 mm<sup>2</sup>.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line inscription  
Retrofitting.

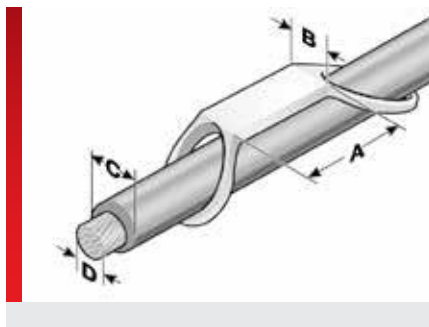


Type	Order No.	Colour	RAL equiv.	Application range from - to Ø mm (C)	Wire cross-section from - to mm <sup>2</sup> (D)	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Soft-ware type	Pack qty.
KNQ 3,8/12-2,0	86381810	White	9016	2.0 – 2.6	0.5 – 0.75	3.8 x 12.0	3.8 x 12.0	6 / 1	48	GP3Q	400	720
KNQ 3,8/18-2,0	86381812	White	9016	2.0 – 2.6	0.5 – 0.75	3.8 x 18.0	3.8 x 18.0	10 / 1	48	GP3Q	401	720
KNQ 3,8/23-2,0	86381814	White	9016	2.0 – 2.6	0.5 – 0.75	3.8 x 23.0	3.8 x 23.0	12 / 1	48	GP3Q	402	720
KNQ 3,8/12-2,5	86381820	White	9016	2.5 – 3.1	0.75 – 1.5	3.8 x 12.0	3.8 x 12.0	6 / 1	48	GP3Q	403	720
KNQ 3,8/18-2,5	86381822	White	9016	2.5 – 3.1	0.75 – 1.5	3.8 x 18.0	3.8 x 18.0	10 / 1	48	GP3Q	404	720
KNQ 3,8/23-2,5	86381824	White	9016	2.5 – 3.1	0.75 – 1.5	3.8 x 23.0	3.8 x 23.0	12 / 1	48	GP3Q	405	720
KNQ 4,8/12-3,0	86381830	White	9016	3.0 – 3.6	1.5 – 2.5	4.8 x 12.0	4.8 x 12.0	6 / 1	48	GP3Q	406	720
KNQ 4,8/18-3,0	86381832	White	9016	3.0 – 3.6	1.5 – 2.5	4.8 x 18.0	4.8 x 18.0	10 / 1	48	GP3Q	407	720
KNQ 4,8/23-3,0	86381834	White	9016	3.0 – 3.6	1.5 – 2.5	4.8 x 23.0	4.8 x 23.0	12 / 1	48	GP3Q	408	720
KNQ 4,8/12-3,5	86381840	White	9016	3.5 – 4.3	2.5 – 4.0	4.8 x 12.0	4.8 x 12.0	6 / 1	48	GP3Q	409	720
KNQ 4,8/18-3,5	86381842	White	9016	3.5 – 4.3	2.5 – 4.0	4.8 x 18.0	4.8 x 18.0	10 / 1	48	GP3Q	410	720
KNQ 4,8/23-3,5	86381844	White	9016	3.5 – 4.3	2.5 – 4.0	4.8 x 23.0	4.8 x 23.0	12 / 1	48	GP3Q	411	720
KNQ 5,5/12-4,2	86381850	White	9016	4.2 – 5.1	4.0 – 6.0	5.5 x 12.0	5.5 x 12.0	6 / 1	48	GP3Q	412	720
KNQ 5,5/18-4,2	86381852	White	9016	4.2 – 5.1	4.0 – 6.0	5.5 x 18.0	5.5 x 18.0	10 / 1	48	GP3Q	413	720
KNQ 5,5/23-4,2	86381854	White	9016	4.2 – 5.1	4.0 – 6.0	5.5 x 23.0	5.5 x 23.0	12 / 1	48	GP3Q	414	720

#### KNQ assembly tools

MW-KNQ 3,8 assembly tools	86381620	Red										1
MW-KNQ 4,8 assembly tools	86381622	Red										1
MW-KNQ 5,5 assembly tools	86381624	Red										1

## KSE label plate



### PRODUCT INFORMATION

The KSE label plates are pushed directly onto the single wires.

- Two sizes cover the wire cross sections from 0.25 – 1.5 mm<sup>2</sup>.
- Available in white.

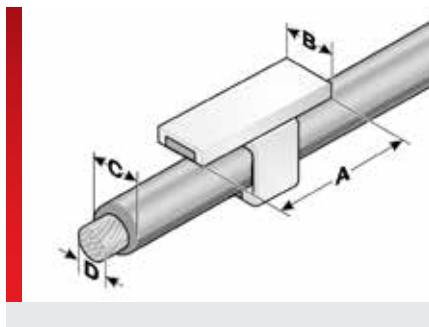
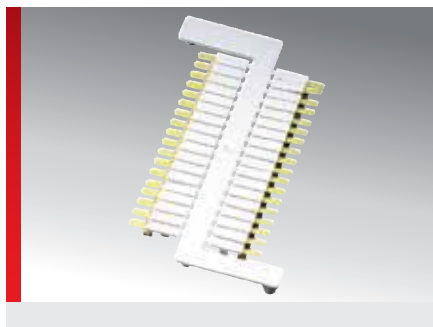
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line inscription

**HF**

Type	Order No.	Colour	RAL equiv.	Application range from - to Ø mm (C)	Wire cross-section from - to mm <sup>2</sup> (D)	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Usable label length 10 mm</b>												
KSE 4/10-0.75	86381010	White	9016	1.5 – 2.5	0.25 – 0.75	6.0 x 18.0	4.0 x 10.0	5 / 1	60	GRPD/10	92	1500
KSE 4/10-1.5	86381012	White	9016	2.5 – 3.0	0.75 – 1.5	6.0 x 18.0	4.0 x 10.0	5 / 1	60	GRPD/10	93	1500
<b>Usable label length 18 mm</b>												
KSE 4/18-1.5	86381014	White	9016	2.5 – 3.0	0.75 – 1.5	6.0 x 26.0	4.0 x 18.0	10 / 1	40	GRPD/18	94	1000

## KSN label plate



### PRODUCT INFORMATION

High-quality, halogen-free label for subsequent direct labelling of wires. The KSN label can be attached to wired single cores without disconnecting them.

They can be fitted easily and quickly with the MW1 assembly tool.

- Available in three sizes for wire cross-sections of 0.5 - 2.5 mm<sup>2</sup>.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line inscription Retrofitting.



Type	Order No.	Colour	RAL equiv.	Application range from - to Ø mm (C)	Wire cross-section from - to mm <sup>2</sup> (D)	Label size mm (B x A)	Labelling area mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KSN-A	86381410	White	9016	2.1 – 2.5	0.5 – 0.75	5.0 x 14.0	5.0 x 14.0	7 / 1	36	none	12	360
KSN-B	86381412	White	9016	2.6 – 3.0	1.0 – 1.5	5.0 x 14.0	5.0 x 14.0	7 / 1	36	none	13	360
KSN-C	86381414	White	9016	3.0 – 3.7	1.75 – 2.5	5.0 x 14.0	5.0 x 14.0	7 / 1	36	none	14	360

#### KSN sample set, consisting of 1 each of KSN frame, MW1 installation tools and MPKSN mounting plate

KSN sample set	86391010	Material-typical										1
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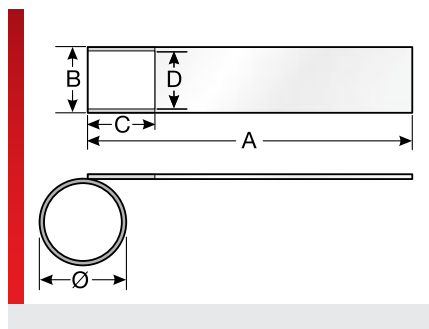
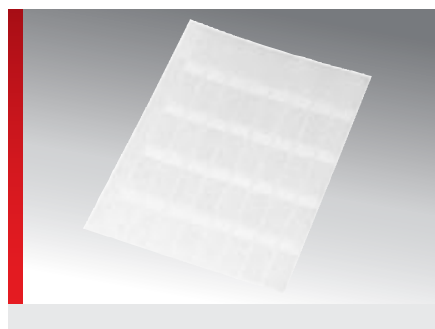
#### Assembly tool

MW 1	86381610	Material-typical										1
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#### Mounting plate

MPKSN	86381612	Material-typical										1
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## ESL self-laminating label



### PRODUCT INFORMATION

Self-laminating, high-quality polyester sheet labels for single-line and multi-line inscriptions. The transparent extension strip sticks over the printable area and keeps the inscription clean and intact. The grid system allows direct removal of each label.

### SPECIFICATIONS

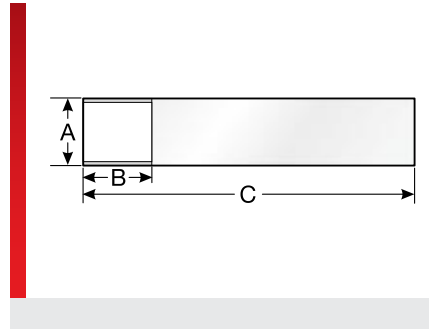
- 40 – 150 °C
  - Polyester film
  - V0
  - Single-line and multi-line inscription.  
A4 sheets
- 

Type	Order No.	Colour	RAL equiv.	Label size mm (B x A)	Printable area mm (D x C)	No. of columns	No. per sheet	Software type	Pack qty.
ESL 20x12R <sup>1)</sup>	86562450	White	9016	12.0 x 20.0	12.0 x 7.0	13	156	126	1560
ESL 35x17R <sup>1)</sup>	86562452	White	9016	17.0 x 35.0	17.0 x 9.0	10	70	124	1400
ESL 56x21R <sup>1)</sup>	86562454	White	9016	21.0 x 56.0	21.0 x 13.0	8	32	113	800
ESL 56x21R <sup>1)</sup>	86562460	Yellow	1018	21.0 x 56.0	21.0 x 13.0	8	32	A41	800
ESL 93x31R <sup>1)</sup>	86562456	White	9016	31.0 x 93.0	31.0 x 25.0	5	15	127	300
ESL 140x47R <sup>1)</sup>	86562458	White	9016	47.0 x 140.0	47.0 x 30.0	4	8	125	200

Please note: Labels processed at min. 10°C

<sup>1)</sup> Calculation of the maximum application areas:  $\emptyset = (A-C) / 3,14$

## TES – self-laminating cable tag



### PRODUCT INFORMATION

These self-laminating cable tags are ideal for labelling cables, lines and wiring. They provide a printable, coloured field on the upper edge and can be removed easily from the backing paper after printing. As an additional protection from external environmental factors, the lettering is wrapped with self-adhesive laminate.

In addition, the backing paper is printed with precisely-dimensioned stripes for optimum sensor detection. The special film is only 0.05 mm thick and is highly flexible and supple. This ensures that the cable tag will






not peel back up, even when used for cables with small diameters. The high-transparency laminate ensures the printed lettering remains easy to read.

TES - Self-laminating cable markers are suitable for

- wire and cable labelling

**Suitable for use with pavonis thermal transfer printers and the mp-TM series (with external unwinder).**

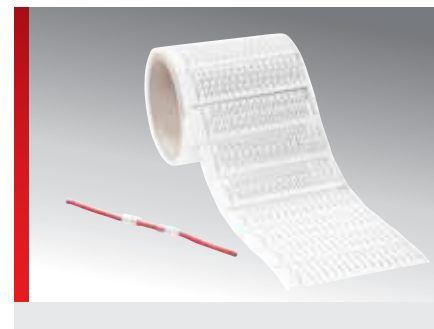
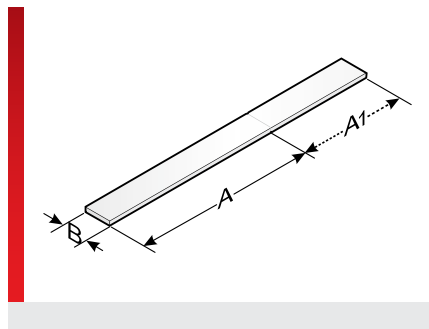
### SPECIFICATIONS

	-20 – 80 °C
	Polyester film
	Label rail with thermal transfer printer Roll core diameter 1 inch
	

Type	Order No.	Colour	Label size mm (A x B)	Holder length mm (C)	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
TES 14x6x22 <sup>1)</sup>	86498101	White	14.0 x 6.0	22.00	102.00	FHW 110mm x 300m	N46	14000
TES 20x8x32 <sup>1)</sup>	86498102	White	20.0 x 8.0	32.00	104.00	FHW 110mm x 300m	N47	10000
TES 20x8x32 <sup>1)</sup>	86498302	Yellow	20.0 x 8.0	32.00	104.00	FHW 110mm x 300m	047	10000
TES 25x13x43 <sup>1)</sup>	86498104	White	25.0 x 13.0	43.00	104.00	FHW 110mm x 300m	N49	6000
TES 25x13x43 <sup>1)</sup>	86498304	Yellow	25.0 x 13.0	43.00	104.00	FHW 110mm x 300m	049	6000
TES 25x14x35 <sup>1)</sup>	86498103	White	25.0 x 14.0	35.00	104.00	FHW 110mm x 300m	N48	10000
TES 25x17x70 <sup>1)</sup>	86498105	White	25.0 x 17.0	70.00	105.00	FHW 110mm x 300m	N50	4000
TES 25x17x70 <sup>1)</sup>	86498305	Yellow	25.0 x 17.0	70.00	105.00	FHW 110mm x 300m	050	4000
TES 25x25x70 <sup>1)</sup>	86498106	White	25.0 x 25.0	70.00	105.00	FHW 110mm x 300m	N51	4000
TES 34x17x70 <sup>1)</sup>	86498107	White	34.0 x 17.0	70.00	105.00	FHW 110mm x 300m	N52	3000
TES 34x26x100 <sup>1)</sup>	86498108	White	34.0 x 26.0	100.00	106.00	FHW 110mm x 300m	N53	2000
TES 34x26x100 <sup>1)</sup>	86498308	Yellow	34.0 x 26.0	100.00	106.00	FHW 110mm x 300m	053	2000
TES 34x32x150 <sup>1)</sup>	86498109	White	34.0 x 32.0	150.00	106.00	FHW 110mm x 300m	N54	2000
TES 34x32x150 <sup>1)</sup>	86498309	Yellow	34.0 x 32.0	150.00	106.00	FHW 110mm x 300m	054	2000

<sup>1)</sup> Calculation of the maximum application areas:  $\emptyset = (A-C) / 3,14$

## KCE-ECO single wire labelling



### PRODUCT INFORMATION

The KCE-ECO label plates are made of PE composite material on a transparent carrier film and a 3" core; they can be used as an alternative to the PC labels in the KS series.

Each of the individual labels is 4 mm wide and available in lengths of 12 mm, 18 mm, 23 mm or 30 mm.

In addition to the label length, there is a

10 mm section for bending, which can also be used to print additional information.

The plate is bent by 180° at the bending point and pushed into the sleeve, where it is then held in place by bracing.

**Suitable for mp-TM series thermal transfer printers.**

### SPECIFICATIONS

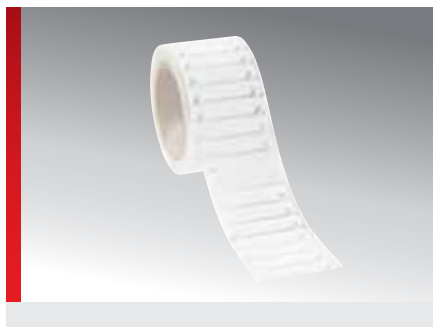
- 40 – 90 °C
- Polyethylene (PE)
- Can be inscribed with thermal transfer printer, 3 in roll core diameter  
Primarily for inside use
- High tensile strength and tear resistance  
In compliance with the requirements of REACH and RoHS



Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
KCE-ECO 4x12	86513000	White	12.0 x 4.0	104.00	FB-TM 110 mm x 300 m	QA0	10000
KCE-ECO 4x18	86513001	White	18.0 x 4.0	104.00	FB-TM 110 mm x 300 m	QA1	10000
KCE-ECO 4x23	86513002	White	23.0 x 4.0	104.00	FB-TM 110 mm x 300 m	QA2	10000
KCE-ECO 4x30	86513003	White	30.0 x 4.0	104.00	FB-TM 110 mm x 300 m	QA3	10000



## KCM-ECO manual cable labelling



### PRODUCT INFORMATION

The KCM-ECO label plates are made of PE composite material on a transparent carrier film and a 3" core. The KCM-ECO plates are used for subsequent labelling of cables and thicker wires with labels and cable ties.

The special feature of the KCM-ECO label plates is the eyelet open on one side for faster feed-through of the cable tie. The cable tie only has to be threaded in on one side.

KCM-ECO label plates for subsequent manual cable labelling are available in sizes 60x12 mm and 75x15 mm in white or yellow.

**Suitable for mp-TM series thermal transfer printers.**

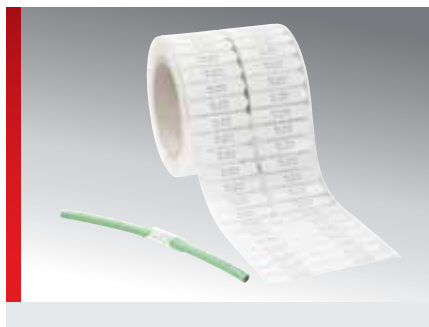
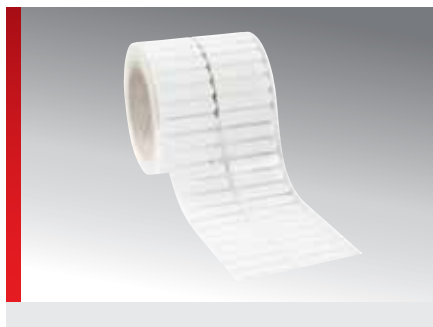
### SPECIFICATIONS

- 40 – 90 °C
- Polyethylene (PE)
- Can be inscribed with thermal transfer printer, 3 in roll core diameter  
Primarily for inside use
- High tensile strength and tear resistance  
In compliance with the requirements of REACH and RoHS



Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
KCM-ECO 60x12	86513301	White	60.0 x 12.0	66.00	FB-TM 110 mm x 300 m	QE1	1000
KCM-ECO 60x12	86513351	Yellow	60.0 x 12.0	66.00	FB-TM 110 mm x 300 m	QE6	1000
KCM-ECO 75x15	86513300	White	75.0 x 15.0	81.00	FB-TM 110 mm x 300 m	QE0	1000
KCM-ECO 75x15	86513350	Yellow	75.0 x 15.0	81.00	FB-TM 110 mm x 300 m	QE5	1000

## KCL-ECO cable labelling







### PRODUCT INFORMATION

The KCL-ECO label plates are made of PE composite material on a transparent carrier film and a 3" core; they are used for direct wire and cable labelling.

KCL-ECO label plates for wire and cable labelling are available in various sizes for cable diameters of 0.75 mm to 7 mm in white or yellow.

**Suitable for mp-TM series thermal transfer printers.**

### SPECIFICATIONS

-  -40 – 90 °C
-  Polyethylene (PE)
-  Can be inscribed with thermal transfer printer, 3 in roll core diameter  
Primarily for inside use
-  High tensile strength and tear resistance  
In compliance with the requirements of REACH and RoHS



Type	Order No.	Colour	Label size Length x width mm	Area of application from - to Ø mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
KCL-ECO 28x5.5	86513400	White	28.0 x 5.5	0.75 – 2.4	96.00	FB-TM 110 mm x 300 m	QF0	3000
KCL-ECO 28x5.5	86513450	Yellow	28.0 x 5.5	0.75 – 2.4	96.00	FB-TM 110 mm x 300 m	QG0	3000
KCL-ECO 34x6.5	86513401	White	34.0 x 6.5	2.0 – 3.5	77.00	FB-TM 110 mm x 300 m	QF1	3000
KCL-ECO 34x6.5	86513451	Yellow	34.0 x 6.5	2.0 – 3.5	77.00	FB-TM 110 mm x 300 m	QG1	3000
KCL-ECO 38x7.5	86513402	White	38.0 x 7.5	3.0 – 4.5	85.00	FB-TM 110 mm x 300 m	QF2	3000
KCL-ECO 38x7.5	86513452	Yellow	38.0 x 7.5	3.0 – 4.5	85.00	FB-TM 110 mm x 300 m	QG2	3000
KCL-ECO 39x8.5	86513403	White	39.0 x 8.5	4.0 – 5.5	87.00	FB-TM 110 mm x 300 m	QF3	3000
KCL-ECO 39x8.5	86513453	Yellow	39.0 x 8.5	4.0 – 5.5	87.00	FB-TM 110 mm x 300 m	QG3	3000
KCL-ECO 47x10	86513404	White	47.0 x 10.0	5.0 – 7.0	103.00	FB-TM 110 mm x 300 m	QF4	3000
KCL-ECO 47x10	86513454	Yellow	47.0 x 10.0	5.0 – 7.0	103.00	FB-TM 110 mm x 300 m	QG4	3000

## KCB-ECO cable tie labelling







### PRODUCT INFORMATION

The KCB-ECO label plates are made of PE composite material on a transparent carrier film and a 3" core; they are used for subsequent labelling of wires and cables with diameters starting at 7 mm.

KCB-ECO label plates are available in sizes 23.5x19 mm and 35x26 mm in white or yellow. Fastened with cable ties.

**Suitable for mp-TM series thermal transfer printers.**

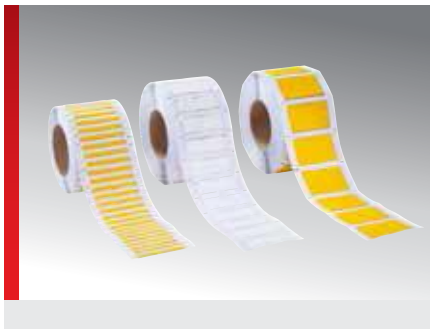
### SPECIFICATIONS

-  -40 – 90 °C
-  Polyethylene (PE)
-  Can be inscribed with thermal transfer printer, 3 in roll core diameter  
Primarily for inside use
-  High tensile strength and tear resistance  
In compliance with the requirements of REACH and RoHS



Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
KCB-ECO 23.5x19	86513500	White	23.5 x 19.0	82.50	FB-TM 110 mm x 300 m	QH0	2000
KCB-ECO 23.5x19	86513550	Yellow	23.5 x 19.0	82.50	FB-TM 110 mm x 300 m	QI0	2000
KCB-ECO 35x26	86513501	White	35.0 x 26.0	79.00	FB-TM 110 mm x 300 m	QH1	2000
KCB-ECO 35x26	86513551	Yellow	35.0 x 26.0	79.00	FB-TM 110 mm x 300 m	QI1	2000

## ST-BT-H Rail technology, taped



### PRODUCT INFORMATION

#### Polyolefine (PO) heat-shrink conduit, type ST-BT-H

Halogen-free Polyolefine heat-shrink conduit for labelling cables with excellent properties for use with the thermal transfer method. This conduit, with its special approvals, is particularly suitable for applications in the fields of air and rail transport, marine, off-shore and tunnel construction.

The pre-perforated ST-BT-H 20/12 heat-shrink conduit is divided into a 20 mm long section for cable identification and a 12 mm long section, which contains information to simplify wiring the circuits. This section can be discarded after the circuit is wired. This method helps to significantly reduce the processing time

#### Properties

- Excellent printing properties
- Flat-rolled for thermal transfer method printing
- Halogen-free, thin-walled
- Shrink ratio of 2:1 (the recommended shrink range is -20 % of the max. value and +20 % of the min. value)

- Vehicle category 1a according to BS 6853 (1999)
- Fire resistance ASTM D 635-HB
- Shrink temperature >90°C
- Application temperature -55°C to +105°C

#### Standards

ASTM D 635-HB flammability  
Boeing BSS 7239, formation of toxic gases during M7 material incineration





#### Rail standards

EN 45545-2 Tier 3x HL3 (R22)  
BS6853 (1999) vehicle category 1a  
UNI CEI 11170-3 Tier LR4  
DIN 5510-2 Annex C Low Smoke Toxicity  
DIN 5510-2 Drip Class ST2  
DIN 5510-2 Smoke Formation Tier SR2

#### Colour ribbon

The matching colour ribbon is listed under "Labelling System" in the "Thermal Transfer System" section with "Consumables".

### SPECIFICATIONS

	-55 – 105 °C
	Polyolefin
	ASTM D 635-HB
	Heat-shrink conduit for railway technology; meets railway standard EN 45545-2 Tier 3x HL3 (R22)



Type	Order No.	Colour	Marker length mm	Flat area mm	Max. wire cross section mm	Shrinkage area from - to Ø mm	Recommended colour ribbon	Software type	Pack qty.
<b>Railway technology, taped, marking length 20 mm, with 12 mm printable info section</b>									
ST-BT-H 20/12-3,2	86531100	White	20.00	6.20	3.20	3.2 – 1.6	FB-BT 80mm x 300m	A70	2000
ST-BT-H 20/12-3,2	86532100	Yellow	20.00	6.20	3.20	3.2 – 1.6	FB-BT 80mm x 300m	A74	2000
ST-BT-H 20/12-4,8	86531101	White	20.00	8.50	4.80	4.8 – 2.4	FB-BT 80mm x 300m	A71	2000
ST-BT-H 20/12-4,8	86532101	Yellow	20.00	8.50	4.80	4.8 – 2.4	FB-BT 80mm x 300m	A75	2000
ST-BT-H 20/12-12,7	86531102	White	20.00	20.90	12.70	12.7 – 6.4	FB-BT 80mm x 300m	A72	1000
ST-BT-H 20/12-12,7	86532102	Yellow	20.00	20.90	12.70	12.7 – 6.4	FB-BT 80mm x 300m	A76	1000
ST-BT-H 20/12-25,4	86531103	White	20.00	40.50	25.40	25.4 – 12.7	FB-BT 80mm x 300m	A73	600
ST-BT-H 20/12-25,4	86532103	Yellow	20.00	40.50	25.40	25.4 – 12.7	FB-BT 80mm x 300m	A77	600
<b>Railway technology, taped, marking length 20 mm, with 12 mm printable info section (maxi-size roll)</b>									
ST-BT-H 20/12-3,2	86531000	White	20.00	6.20	3.20	3.2 – 1.6	FB-BT 80mm x 300m	A70	20000
ST-BT-H 20/12-3,2	86532000	Yellow	20.00	6.20	3.20	3.2 – 1.6	FB-BT 80mm x 300m	A74	20000



## ST-BT-H rail technology, continuous



### PRODUCT INFORMATION

#### Polyolefine (PO) heat-shrink conduit, type ST-BT-H Continuous

Halogen-free Polyolefine heat-shrink conduit for labelling cables with excellent properties for use with the thermal transfer method. This conduit, with its special approvals, is particularly suitable for applications in the fields of air and rail transport, marine, off-shore and tunnel construction.

#### Properties

- Excellent printing properties
- Flat-rolled for thermal transfer method printing
- Halogen-free, thin-walled
- Shrink ratio of 2:1 (the recommended shrink range is -20 % of the max. value and +20 % of the min. value)
- Vehicle category 1a according to BS 6853 (1999)
- Fire resistance ASTM D 635-HB

- Shrink temperature >90°C
- Application temperature -55°C to +105°C

#### Standards

ASTM D 635-HB flammability  
Boeing BSS 7239, formation of toxic gases during M7 material incineration

#### Rail standards

EN 45545-2 Tier 3x HL3 (R22)  
BS6853 (1999) vehicle category 1a  
UNI CEI 11170-3 Tier LR4  
DIN 5510-2 Annex C Low Smoke Toxicity  
DIN 5510-2 Drip Class ST2  
DIN 5510-2 Smoke Formation Tier SR2

#### Colour ribbon

The matching colour ribbon is listed under "Labelling System" in the "Thermal Transfer System" section with "Consumables".

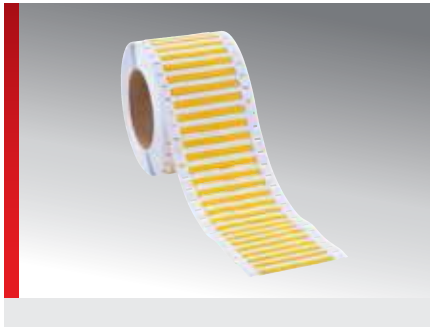
### SPECIFICATIONS

	-55 – 105 °C		
	Polyolefin		
	ASTM D 635-HB		
	Heat-shrink conduit for railway technology; meets railway standard EN 45545-2 Tier 3x HL3 (R22)		

Type	Order No.	Colour	Flat area mm	Max. wire cross section mm	Shrinkage area from - to Ø mm	Recommended colour ribbon	Software type	Pack qty.
<b>Continuous roll ware; 22 m roll<sup>1)</sup></b>								
ST-BT-H 2,4 - 22m <sup>1)</sup>	86533300	White	4.20	2.40	2.4 – 1.2	FB-BT 40mm x 300m	AB7	22
ST-BT-H 3,2 - 22m <sup>1)</sup>	86533301	White	6.20	3.20	3.2 – 1.6	FB-BT 40mm x 300m	AB8	22
ST-BT-H 4,8 - 22m <sup>1)</sup>	86533302	White	8.50	4.80	4.8 – 2.4	FB-BT 40mm x 300m	AB0	22

<sup>1)</sup>Information about packaging unit = roll length (m)

## ST-ECO taped



### PRODUCT INFORMATION

#### Polyolefine (PO) heat-shrink conduit, type ST-ECO

Flat, thin-walled heat-shrink conduit.

Flame retardant i.a.w. UL224. Shrink ratio 3:1  
Particularly well-suited for use in labelling and identification.

#### Properties

- Excellent printing results
- Very good chemical, physical and electrical properties
- Greatly flame retardant in accordance with UL224
- Ready to use with thermal transfer printers







- Shrink ratio of 3:1 (the recommended shrink range is -20 % of the max. value and +20 % of the min. value)
- Shrink temperature >90°C
- Application temperature -55°C to +135°C

Standard colours: White, yellow  
Available upon request: Blue, red, green

#### Colour ribbon

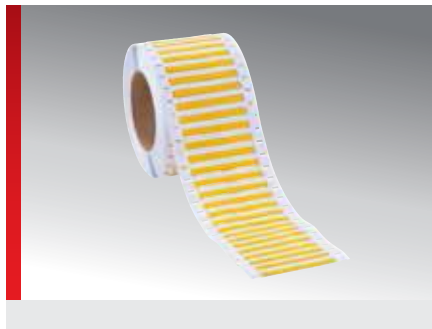
The matching colour ribbon is listed under "Labelling System" in the "Thermal Transfer System" section with "Consumables".

### SPECIFICATIONS

	-55 – 135 °C
	Polyolefin
	Highly flame retardant in accordance with UL 224/CSA
	Taped ECO heat-shrink conduits
	

Type	Order No.	Colour	Marker length mm	Flat area mm	Max. wire cross section mm	Shrinkage area from - to Ø mm	Recommended colour ribbon	Software type	Pack qty.
<b>Roll material taped, marker length 16 mm</b>									
ST-ECO 16-2,4	86531200	White	16.00	4.20	2.40	2.4 – 0.8	FHW 100mm x 300m	AAA	4000
ST-ECO 16-2,4	86532200	Yellow	16.00	4.20	2.40	2.4 – 0.8	FHW 100mm x 300m	ABA	4000
ST-ECO 16-3,2	86531201	White	16.00	5.60	3.20	3.2 – 1.1	FHW 100mm x 300m	AAB	4000
ST-ECO 16-3,2	86532201	Yellow	16.00	5.60	3.20	3.2 – 1.1	FHW 100mm x 300m	ABB	4000
ST-ECO 16-4,8	86531202	White	16.00	7.60	4.80	4.8 – 1.6	FHW 100mm x 300m	AAC	4000
ST-ECO 16-4,8	86532202	Yellow	16.00	7.60	4.80	4.8 – 1.6	FHW 100mm x 300m	ABC	4000
<b>Roll material taped, marker length 32 mm</b>									
ST-ECO 32-2,4	86531203	White	32.00	4.20	2.40	2.4 – 0.8	FHW 100mm x 300m	AAD	2000
ST-ECO 32-2,4	86532203	Yellow	32.00	4.20	2.40	2.4 – 0.8	FHW 100mm x 300m	ABD	2000
ST-ECO 32-3,2	86531204	White	32.00	5.60	3.20	3.2 – 1.1	FHW 100mm x 300m	AAE	2000
ST-ECO 32-3,2	86532204	Yellow	32.00	5.60	3.20	3.2 – 1.1	FHW 100mm x 300m	ABE	2000
ST-ECO 32-4,8	86531205	White	32.00	7.60	4.80	4.8 – 1.6	FHW 100mm x 300m	AAF	2000
ST-ECO 32-4,8	86532205	Yellow	32.00	7.60	4.80	4.8 – 1.6	FHW 100mm x 300m	ABF	2000
ST-ECO 32-6,4	86531206	White	32.00	10.70	6.40	6.4 – 2.15	FHW 100mm x 300m	AAG	2000
ST-ECO 32-6,4	86532206	Yellow	32.00	10.70	6.40	6.4 – 2.15	FHW 100mm x 300m	ABG	2000
ST-ECO 32-9,5	86531207	White	32.00	15.10	9.50	9.5 – 3.2	FHW 100mm x 300m	AAH	1000
ST-ECO 32-9,5	86532207	Yellow	32.00	15.10	9.50	9.5 – 3.2	FHW 100mm x 300m	ABH	1000
<b>Roll material taped, marker length 64 mm</b>									
ST-ECO 64-2,4	86531208	White	64.00	4.20	2.40	2.4 – 0.8	FHW 100mm x 300m	AAI	1000

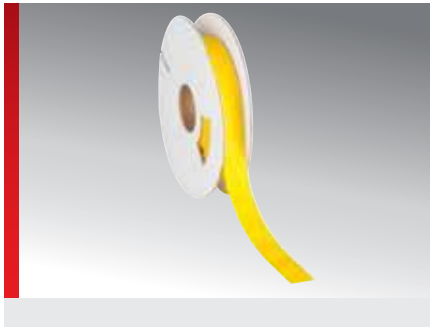
**ST-ECO taped** (Continued...)



Type	Order No.	Colour	Marker length mm	Flat area mm	Max. wire cross section mm	Shrinkage area from - to Ø mm	Recommended colour ribbon	Software type	Pack qty.
ST-ECO 64-2,4	86532208	Yellow	64.00	4.20	2.40	2.4 – 0.8	FHW 100mm x 300m	ABI	1000
ST-ECO 64-3,2	86531209	White	64.00	5.60	3.20	3.2 – 1.1	FHW 100mm x 300m	AAJ	1000
ST-ECO 64-3,2	86532209	Yellow	64.00	5.60	3.20	3.2 – 1.1	FHW 100mm x 300m	ABJ	1000
ST-ECO 64-4,8	86531210	White	64.00	7.60	4.80	4.8 – 1.6	FHW 100mm x 300m	AAK	1000
ST-ECO 64-4,8	86532210	Yellow	64.00	7.60	4.80	4.8 – 1.6	FHW 100mm x 300m	ABK	1000
ST-ECO 64-6,4	86531211	White	64.00	10.70	6.40	6.4 – 2.15	FHW 100mm x 300m	AAL	1000
ST-ECO 64-6,4	86532211	Yellow	64.00	10.70	6.40	6.4 – 2.15	FHW 100mm x 300m	ABL	1000
ST-ECO 64-9,5	86531212	White	64.00	15.10	9.50	9.5 – 3.2	FHW 100mm x 300m	AAM	500
ST-ECO 64-9,5	86532212	Yellow	64.00	15.10	9.50	9.5 – 3.2	FHW 100mm x 300m	ABM	500
ST-ECO 64-12,7	86531213	White	64.00	20.90	12.70	12.7 – 4.25	FHW 100mm x 300m	AAN	500
ST-ECO 64-12,7	86532213	Yellow	64.00	20.90	12.70	12.7 – 4.25	FHW 100mm x 300m	ABN	500
ST-ECO 64-19,1	86531214	White	64.00	30.90	19.10	19.1 – 6.4	FHW 100mm x 300m	AAO	500
ST-ECO 64-19,1	86532214	Yellow	64.00	30.90	19.00	19.0 – 6.4	FHW 100mm x 300m	ABO	500
ST-ECO 64-25,4	86531215	White	64.00	40.50	25.40	25.4 – 8.5	FHW 100mm x 300m	AAP	300
ST-ECO 64-25,4	86532215	Yellow	64.00	40.50	25.40	25.4 – 8.5	FHW 100mm x 300m	ABP	300
ST-ECO 64-38,1	86531216	White	64.00	60.50	38.10	38.1 – 12.7	FHW 100mm x 300m	AAQ	100
ST-ECO 64-38,1	86532216	Yellow	64.00	60.50	38.10	38.1 – 12.7	FHW 100mm x 300m	ABQ	100



## ST-ECO continuous-feed



### PRODUCT INFORMATION

#### Continuous-feed Polyolefine heat-shrink conduit, type ST-ECO

Flat, continuous-feed heat shrink conduit for labelling cables with excellent properties for the thermal transfer method.

This heat-shrink conduit is particularly suitable for applications in the fields of switching cabinet construction, shipbuilding and the labelling of wiring harnesses.

#### Properties

- Excellent printing results
- Very good chemical, physical and electrical properties
- Greatly flame retardant in accordance with UL224/CSA
- Ready to use with thermal transfer printers







- Shrink ratio of 3:1 (the recommended shrink range is -20 % of the max. value and +20 % of the min. value)
- Heat-shrink conduit may be any length
- Shrink temperature >90°C
- Application temperature -55°C to +135°C

Standard colours: White, yellow  
Available upon request: Blue, red, green

#### Colour ribbon

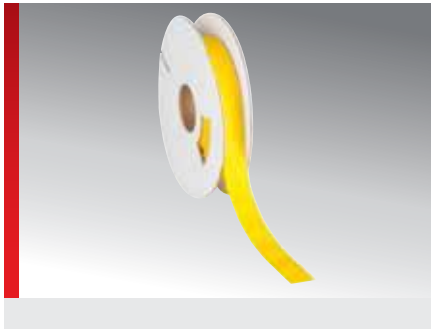
The matching colour ribbon is listed under "Labelling System" in the "Thermal Transfer System" section with "Consumables".

### SPECIFICATIONS

	-55 – 135 °C
	Polyolefin
	Highly flame retardant in accordance with UL 224/CSA
	Continuous ECO heat-shrink conduits
	

Type	Order No.	Colour	Flat area mm	Max. wire cross section mm	Shrinkage area from - to Ø mm	Recommended colour ribbon	Software type	Pack qty.
<b>Continuous roll ware; 12 m roll<sup>1)</sup></b>								
ST-ECO 4,8 - 12m <sup>1)</sup>	86531300	White	7.60	4.80	4.8 – 1.6	FHW 40mm x 300m	AA0	12
ST-ECO 4,8 - 12m <sup>1)</sup>	86532300	Yellow	7.60	4.80	4.8 – 1.6	FHW 40mm x 300m	AB0	12
ST-ECO 6,4 - 12m <sup>1)</sup>	86531301	White	10.70	6.40	6.4 – 2.15	FHW 40mm x 300m	AA1	12
ST-ECO 6,4 - 12m <sup>1)</sup>	86532301	Yellow	10.70	6.40	6.4 – 2.15	FHW 40mm x 300m	AB1	12
ST-ECO 9,5 - 12m <sup>1)</sup>	86531302	White	15.10	9.50	9.5 – 3.2	FHW 40mm x 300m	AA2	12
ST-ECO 9,5 - 12m <sup>1)</sup>	86532302	Yellow	15.10	9.50	9.5 – 3.2	FHW 40mm x 300m	AB2	12
ST-ECO 12,7 - 12m <sup>1)</sup>	86531303	White	20.90	12.70	12.7 – 4.25	FHW 40mm x 300m	AA3	12
ST-ECO 12,7 - 12m <sup>1)</sup>	86532303	Yellow	20.90	12.70	12.7 – 4.25	FHW 40mm x 300m	AB3	12
<b>Continuous roll ware; 9 m roll<sup>1)</sup></b>								
ST-ECO 19,1 - 9m <sup>1)</sup>	86531304	White	30.90	19.10	19.1 – 6.4	FHW 40mm x 300m	AA4	9
ST-ECO 19,1 - 9m <sup>1)</sup>	86532304	Yellow	30.90	19.10	19.1 – 6.4	FHW 40mm x 300m	AB4	9
ST-ECO 25,4 - 9m <sup>1)</sup>	86531305	White	40.50	25.40	25.4 – 8.5	FHW 40mm x 300m	AA5	9
ST-ECO 25,4 - 9m <sup>1)</sup>	86532305	Yellow	40.50	25.40	25.4 – 8.5	FHW 40mm x 300m	AB5	9
ST-ECO 38,1 - 9m <sup>1)</sup>	86531306	White	60.50	38.10	38.1 – 12.7	FHW 40mm x 300m	AA6	9
ST-ECO 38,1 - 9m <sup>1)</sup>	86532306	Yellow	60.50	38.10	38.1 – 12.7	FHW 40mm x 300m	AB6	9

**ST-ECO continuous-feed** (Continued...)



Type	Order No.	Colour	Flat area mm	Max. wire cross section mm	Shrinkage area from - to Ø mm	Recommended colour ribbon	Software type	Pack qty.
<b>Continuous roll ware; 100 m roll (maxi-size)<sup>1)</sup></b>								
ST-ECO 4,8 - 100m <sup>1)</sup>	86532310	Yellow	7.60	4.80	4.8 – 1.6	FHW 40mm x 300m	AB0	100
ST-ECO 6,4 - 100m <sup>1)</sup>	86532311	Yellow	10.70	6.40	6.4 – 2.15	FHW 40mm x 300m	AB1	100
ST-ECO 9,5 - 100m <sup>1)</sup>	86531310	White	15.10	9.50	9.5 – 3.2	FHW 40mm x 300m	AA2	100
ST-ECO 9,5 - 100m <sup>1)</sup>	86532312	Yellow	15.10	9.50	9.5 – 3.2	FHW 40mm x 300m	AB2	100
ST-ECO 12,7 - 100m <sup>1)</sup>	86532313	Yellow	20.90	12.70	12.7 – 4.25	FHW 40mm x 300m	AB3	100

<sup>1)</sup>Information about packaging unit = roll length (m)

## Continuous heat-shrink conduit










### PRODUCT INFORMATION

Labels cannot be applied to the heat-shrink conduit. It is designed to:

- protect from moisture
- protect against contamination

Its shrinking takes place by applying heat. Available in various colours and sizes in dispenser boxes.

### SPECIFICATIONS

	-55 – 135 °C
	Polyolefin
	Highly flame retardant in accordance with UL 224 – VW-1
	Not intended for labelling Roll ware / continuous-feed material
	
	
	

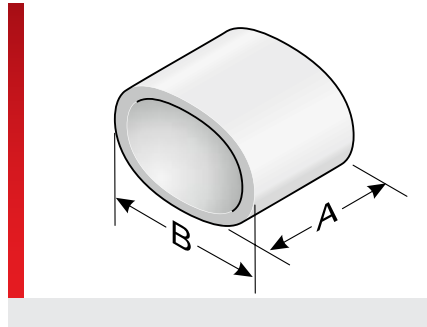
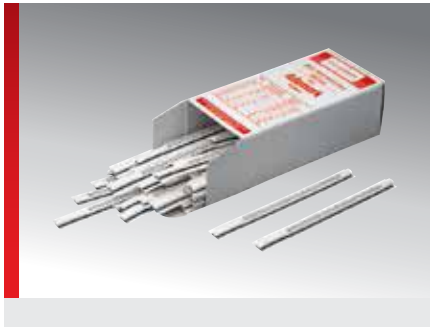
Type	Order No.	Colour	Max. wire cross section mm	Shrinkage area from - to Ø mm	Pack qty.
<b>Continuous roll ware; 15 m roll</b>					
HSD-T2 Box 1,6/0,8 - 15m	88861100	Red	1.60	1.6 – 0.8	1
HSD-T2 Box 1,6/0,8 - 15m	88861200	Blue	1.60	1.6 – 0.8	1
HSD-T2 Box 1,6/0,8 - 15m	88861300	Green / Yellow	1.60	1.6 – 0.8	1
HSD-T2 Box 1,6/0,8 - 15m	88861000	Black	1.60	1.6 – 0.8	1
HSD-T2 Box 2,4/1,2 - 15m	88861101	Red	2.40	2.4 – 1.2	1
HSD-T2 Box 2,4/1,2 - 15m	88861201	Blue	2.40	2.4 – 1.2	1
HSD-T2 Box 2,4/1,2 - 15m	88861301	Green / Yellow	2.40	2.4 – 1.2	1
HSD-T2 Box 2,4/1,2 - 15m	88861001	Black	2.40	2.4 – 1.2	1
<b>Continuous roll ware; 10 m roll</b>					
HSD-T2 Box 12,7/6,4 - 10m	88861106	Red	12.70	12.7 – 6.4	1
HSD-T2 Box 12,7/6,4 - 10m	88861206	Blue	12.70	12.7 – 6.4	1
HSD-T2 Box 12,7/6,4 - 10m	88861306	Green / Yellow	12.70	12.7 – 6.4	1
HSD-T2 Box 12,7/6,4 - 10m	88861006	Black	12.70	12.7 – 6.4	1
HSD-T2 Box 3,2/1,6 - 10m	88861102	Red	3.20	3.2 – 1.6	1
HSD-T2 Box 3,2/1,6 - 10m	88861202	Blue	3.20	3.2 – 1.6	1
HSD-T2 Box 3,2/1,6 - 10m	88861302	Green / Yellow	3.20	3.2 – 1.6	1
HSD-T2 Box 3,2/1,6 - 10m	88861002	Black	3.20	3.2 – 1.6	1
HSD-T2 Box 4,8/2,4 - 10m	88861103	Red	4.80	4.8 – 2.4	1
HSD-T2 Box 4,8/2,4 - 10m	88861203	Blue	4.80	4.8 – 2.4	1
HSD-T2 Box 4,8/2,4 - 10m	88861303	Green / Yellow	4.80	4.8 – 2.4	1
HSD-T2 Box 4,8/2,4 - 10m	88861003	Black	4.80	4.8 – 2.4	1
HSD-T2 Box 6,4/3,2 - 10m	88861104	Red	6.40	6.4 – 3.2	1
HSD-T2 Box 6,4/3,2 - 10m	88861204	Blue	6.40	6.4 – 3.2	1

## Continuous heat-shrink conduit (Continued...)



Type	Order No.	Colour	Max. wire cross section mm	Shrinkage area from - to Ø mm	Pack qty.
HSD-T2 Box 6,4/3,2 - 10m	88861304	Green / Yellow	6.40	6.4 – 3.2	1
HSD-T2 Box 6,4/3,2 - 10m	88861004	Black	6.40	6.4 – 3.2	1
HSD-T2 Box 9,5/4,8 - 10m	88861105	Red	9.50	9.5 – 4.8	1
HSD-T2 Box 9,5/4,8 - 10m	88861205	Blue	9.50	9.5 – 4.8	1
HSD-T2 Box 9,5/4,8 - 10m	88861305	Green / Yellow	9.50	9.5 – 4.8	1
HSD-T2 Box 9,5/4,8 - 10m	88861005	Black	9.50	9.5 – 4.8	1
<b>Continuous roll ware; 5 m roll</b>					
HSD-T2 Box 19,1/9,5 - 5m	88861107	Red	19.10	19.1 – 9.5	1
HSD-T2 Box 19,1/9,5 - 5m	88861207	Blue	19.10	19.1 – 9.5	1
HSD-T2 Box 19,1/9,5 - 5m	88861307	Green / Yellow	19.10	19.1 – 9.5	1
HSD-T2 Box 19,1/9,5 - 5m	88861007	Black	19.10	19.1 – 9.5	1
<b>Continuous roll ware; 3 m roll</b>					
HSD-T2 Box 25,4/12,7 - 3m	88861108	Red	25.40	25.4 – 12.7	1
HSD-T2 Box 25,4/12,7 - 3m	88861208	Blue	25.40	25.4 – 12.7	1
HSD-T2 Box 25,4/12,7 - 3m	88861308	Green / Yellow	25.40	25.4 – 12.7	1
HSD-T2 Box 25,4/12,7 - 3m	88861008	Black	25.40	25.4 – 12.7	1

## Idents BK 23 white



### PRODUCT INFORMATION






Pre-inscribed murr-fix idents made from special PVC. The individual labels come on plastic strips, each containing 20 labels.

BK 23: Label width 2.3 mm (A); Label height 4.0 mm (B)  
Font width 1.6 mm; font height 3.5 mm;  
black lettering

Suitable for KT\*-, KTH\*-, and KTH/Q\* sleeves, as well as KM\*-, KKM\*-, KMH\*-, KMH/Q\*-, and KTN\* label holders.

Recommended tools to process idents (mounting frames, metal tab, metal hook) are listed in "Accessories".

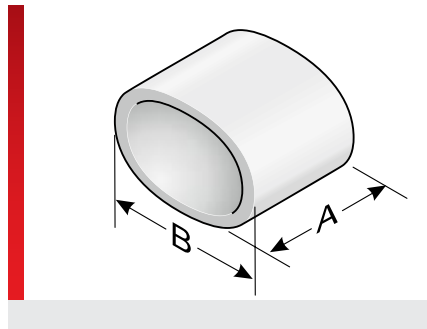
### SPECIFICATIONS

-  -30 – 80 °C
-  Polyvinyl chloride (PVC)
-  V0
-  Holder frame AK is recommended for mounting.
-  MZ assembly aid, available in various sizes.



Type	Order No.	Colour	Pack qty.
<b>Upper case letters</b>			
A	86131811	White	1000
B	86131812	White	1000
C	86131813	White	1000
D	86131814	White	1000
E	86131815	White	1000
s	86131816	White	1000
G	86131817	White	1000
H	86131818	White	1000
I	86131819	White	1000
J	86131820	White	1000
K	86131821	White	1000
L	86131822	White	1000
M	86131823	White	1000
N	86131824	White	1000
O	86131825	White	1000
P	86131826	White	1000
Q	86131827	White	1000
R	86131828	White	1000
S	86131829	White	1000
T	86131830	White	1000
U	86131831	White	1000
V	86131832	White	1000
W	86131833	White	1000

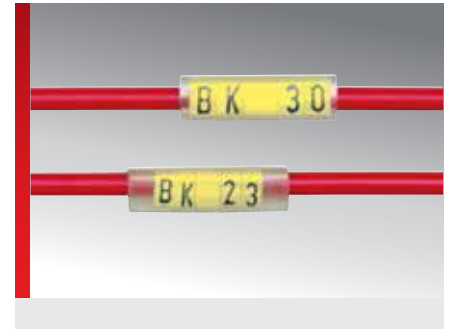
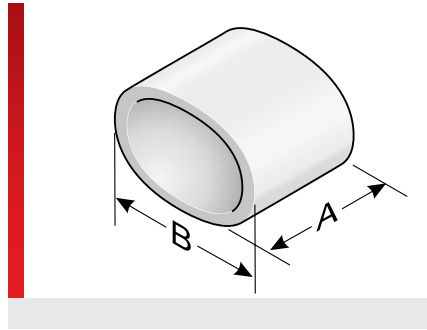
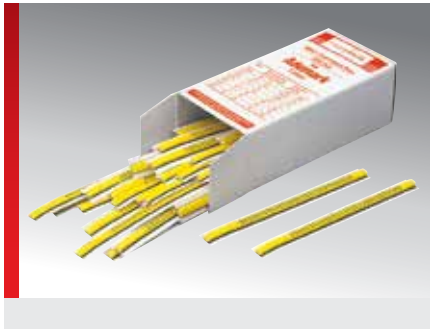
**Idents BK 23 white** (Continued...)



Type	Order No.	Colour	Pack qty.
X	86131834	White	1000
Y	86131835	White	1000
Z	86131836	White	1000
<b>Lower case letters</b>			
a	86131837	White	1000
b	86131838	White	1000
c	86131839	White	1000
d	86131840	White	1000
e	86131841	White	1000
f	86131842	White	1000
g	86131843	White	1000
h	86131844	White	1000
i	86131845	White	1000
j	86131846	White	1000
k	86131847	White	1000
l	86131848	White	1000
m	86131849	White	1000
n	86131850	White	1000
o	86131851	White	1000
p	86131852	White	1000
q	86131853	White	1000
r	86131854	White	1000
s	86131855	White	1000
t	86131856	White	1000
u	86131857	White	1000
v	86131858	White	1000
w	86131859	White	1000
x	86131860	White	1000
y	86131861	White	1000
z	86131862	White	1000
<b>Numbers</b>			
0	86131810	White	1000
1	86131877	White	1000
2	86131878	White	1000
3	86131879	White	1000
4	86131880	White	1000



## Idents BK 23 yellow



### PRODUCT INFORMATION

Pre-inscribed murr-fix idents made from special PVC. The individual labels come on plastic strips, each containing 20 labels.

BK 23: Label width 2.3 mm (A); Label height 4.0 mm (B)  
Font width 1.6 mm; font height 3.5 mm;  
black lettering

Suitable for KT\*-, KTH\*-, and KTH/Q\* sleeves, as well as KM\*-, KKM\*-, KMH\*-, KMH/Q\*-, and KTN\* label holders.

Recommended tools to process idents (mounting frames, metal tab, metal hook) are listed in "Accessories".

### SPECIFICATIONS

- 30 – 80 °C
- Polyvinyl chloride (PVC)
- V0
- Holder frame AK is recommended for mounting.
- MZ assembly aid, available in various sizes.



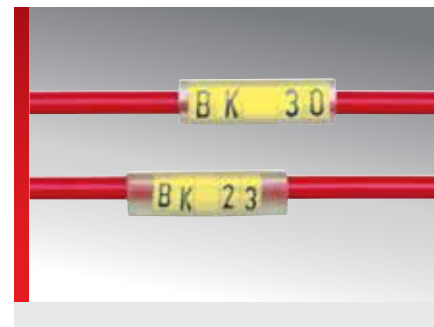
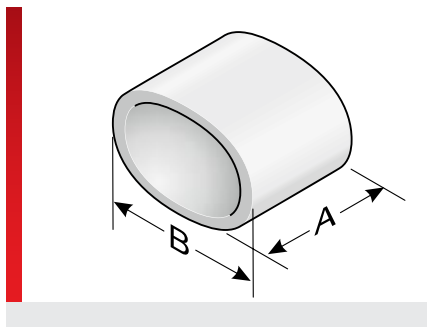
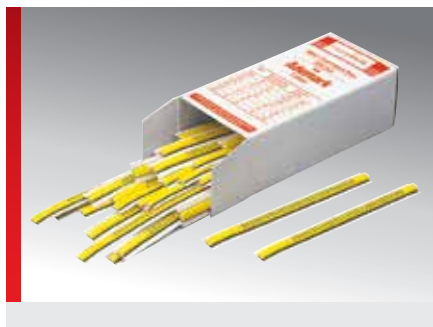
Type	Order No.	Colour	Pack qty.
<b>Upper case letters</b>			
A	86132012	Yellow	1000
B	86132014	Yellow	1000
C	86132016	Yellow	1000
D	86132018	Yellow	1000
E	86132020	Yellow	1000
s	86132022	Yellow	1000
G	86132024	Yellow	1000
H	86132026	Yellow	1000
I	86132028	Yellow	1000
J	86132030	Yellow	1000
K	86132032	Yellow	1000
L	86132034	Yellow	1000
M	86132036	Yellow	1000
N	86132038	Yellow	1000
O	86132040	Yellow	1000
P	86132042	Yellow	1000
Q	86132044	Yellow	1000
R	86132046	Yellow	1000
S	86132048	Yellow	1000
T	86132050	Yellow	1000
U	86132052	Yellow	1000
V	86132054	Yellow	1000
W	86132056	Yellow	1000



## Idents BK 23 yellow (Continued...)

Type	Order No.	Colour	Pack qty.
X	86132058	Yellow	1000
Y	86132060	Yellow	1000
Z	86132062	Yellow	1000
<b>Lower case letters</b>			
a	86132064	Yellow	1000
b	86132066	Yellow	1000
c	86132068	Yellow	1000
d	86132070	Yellow	1000
e	86132072	Yellow	1000
f	86132074	Yellow	1000
g	86132076	Yellow	1000
h	86132078	Yellow	1000
i	86132080	Yellow	1000
j	86132082	Yellow	1000
k	86132084	Yellow	1000
l	86132086	Yellow	1000
m	86132088	Yellow	1000
n	86132090	Yellow	1000
o	86132092	Yellow	1000
p	86132094	Yellow	1000
q	86132096	Yellow	1000
r	86132098	Yellow	1000
s	86132100	Yellow	1000
t	86132102	Yellow	1000
u	86132104	Yellow	1000
v	86132106	Yellow	1000
w	86132108	Yellow	1000
x	86132110	Yellow	1000
y	86132112	Yellow	1000
z	86132114	Yellow	1000
<b>Numbers</b>			
0	86132010	Yellow	1000
1	86132144	Yellow	1000
2	86132146	Yellow	1000
3	86132148	Yellow	1000
4	86132150	Yellow	1000
5	86132152	Yellow	1000
6	86132154	Yellow	1000
7	86132156	Yellow	1000
8	86132158	Yellow	1000
9	86132160	Yellow	1000
<b>Signs</b>			
+	86132116	Yellow	1000
-	86132118	Yellow	1000

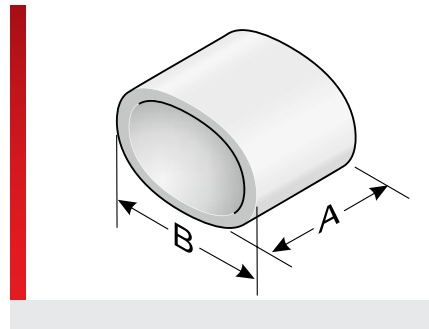
**Idents BK 23 yellow** (Continued...)



Type	Order No.	Colour	Pack qty.
/	86132120	Yellow	1000
=	86132122	Yellow	1000
.	86132124	Yellow	1000
*	86132126	Yellow	1000
:	86132128	Yellow	1000
<b>Special characters</b>			
Left arrow	86132130	Yellow	1000
Right arrow	86132132	Yellow	1000
AC voltage	86132134	Yellow	1000
Earthing symbol	86132136	Yellow	1000
Star connection	86132138	Yellow	1000
Delta connection	86132140	Yellow	1000
<b>Blank space</b>			
Blank	86132142	Yellow	1000

Font colours red, yellow, green, brown, as well as special characters upon request

## Idents BK 30 white



### PRODUCT INFORMATION

Pre-inscribed murr-fix idents made from special PVC. The individual labels come on plastic strips, each containing 20 labels.

BK 30: Label width 3.0 mm (A); Label height 4.0 mm (B)  
Font width 2.0 mm; font height 3.5 mm;  
black lettering

Suitable for KT<sup>\*</sup>-, KTH<sup>\*</sup>- and KTH/Q<sup>\*</sup> sleeves, as well as KM<sup>\*</sup>-, KKM<sup>\*</sup>-, KMH<sup>\*</sup>-, KMH/Q<sup>\*</sup>- and KTN<sup>\*</sup> label holders.

Recommended tools to process idents (mounting frames, metal tab, metal hook) are listed in "Accessories".

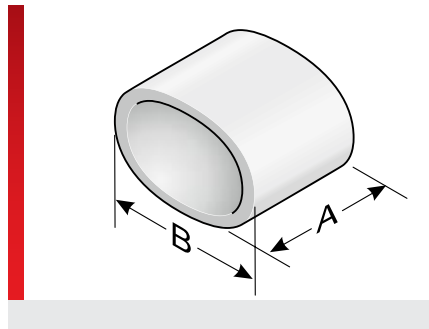
### SPECIFICATIONS

- 30 – 80 °C
- Polyvinyl chloride (PVC)
- V0
- Holder frame AK is recommended for mounting.
- MZ assembly aid, available in various sizes.



Type	Order No.	Colour	Pack qty.
<b>Upper case letters</b>			
A	86131211	White	1000
B	86131212	White	1000
C	86131213	White	1000
D	86131214	White	1000
E	86131215	White	1000
s	86131216	White	1000
G	86131217	White	1000
H	86131218	White	1000
I	86131219	White	1000
J	86131220	White	1000
K	86131221	White	1000
L	86131222	White	1000
M	86131223	White	1000
N	86131224	White	1000
O	86131225	White	1000
P	86131226	White	1000
Q	86131227	White	1000
R	86131228	White	1000
S	86131229	White	1000
T	86131230	White	1000
U	86131231	White	1000
V	86131232	White	1000
W	86131233	White	1000

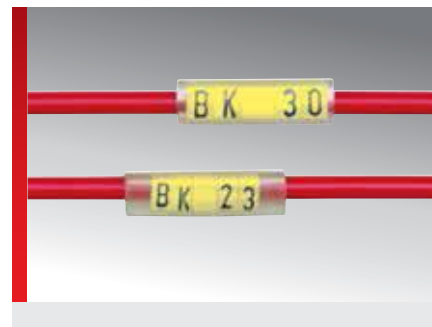
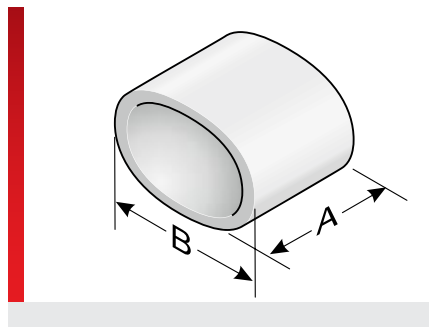
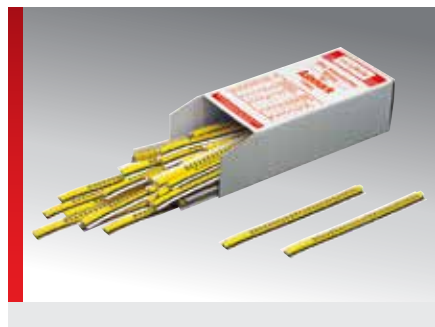
**Idents BK 30 white** (Continued...)



Type	Order No.	Colour	Pack qty.
X	86131234	White	1000
Y	86131235	White	1000
Z	86131236	White	1000
<b>Lower case letters</b>			
a	86131237	White	1000
b	86131238	White	1000
c	86131239	White	1000
d	86131240	White	1000
e	86131241	White	1000
f	86131242	White	1000
g	86131243	White	1000
h	86131244	White	1000
i	86131245	White	1000
j	86131246	White	1000
k	86131247	White	1000
l	86131248	White	1000
m	86131249	White	1000
n	86131250	White	1000
o	86131251	White	1000
p	86131252	White	1000
q	86131253	White	1000
r	86131254	White	1000
s	86131255	White	1000
t	86131256	White	1000
u	86131257	White	1000
v	86131258	White	1000
w	86131259	White	1000
x	86131260	White	1000
y	86131261	White	1000
z	86131262	White	1000
<b>Numbers</b>			
0	86131210	White	1000
1	86131278	White	1000
2	86131279	White	1000
3	86131280	White	1000



## Idents BK 30 yellow



### PRODUCT INFORMATION

Pre-inscribed murr-fix idents made from special PVC. The individual labels come on plastic strips, each containing 20 labels.

BK 30: Label width 3.0 mm (A); Label height 4.0 mm (B)  
Font width 2.0 mm; font height 3.5 mm; black lettering

Suitable for KT\*-, KTH\*- and KTH/Q\* sleeves, as well as KM\*-, KKM\*-, KMH\*-, KMH/Q\* - and KTN\* label holders.

Recommended tools to process idents (mounting frames, metal tab, metal hook) are listed in "Accessories".

### SPECIFICATIONS

- 30 – 80 °C
- Polyvinyl chloride (PVC)
- V0
- Holder frame AK is recommended for mounting.
- MZ assembly aid, available in various sizes.

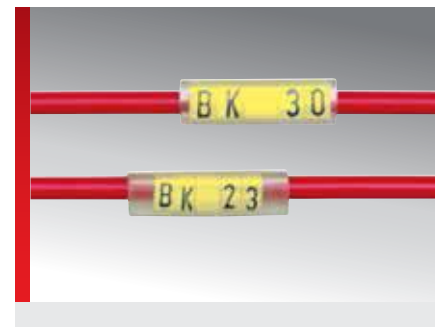
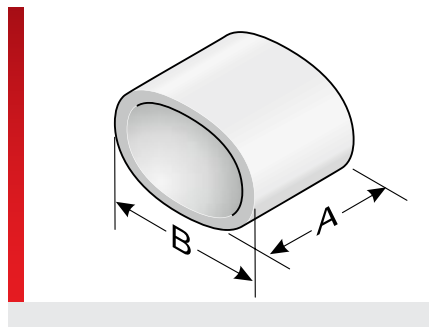
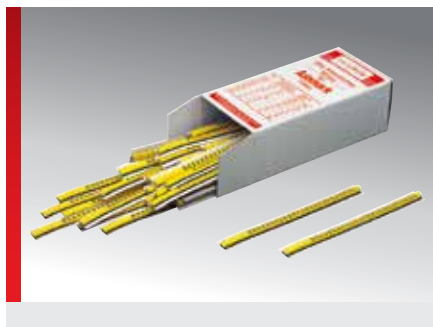


Type	Order No.	Colour	Pack qty.
<b>Upper case letters</b>			
A	86131411	Yellow	1000
B	86131412	Yellow	1000
C	86131413	Yellow	1000
D	86131414	Yellow	1000
E	86131415	Yellow	1000
s	86131416	Yellow	1000
G	86131417	Yellow	1000
H	86131418	Yellow	1000
I	86131419	Yellow	1000
J	86131420	Yellow	1000
K	86131421	Yellow	1000
L	86131422	Yellow	1000
M	86131423	Yellow	1000
N	86131424	Yellow	1000
O	86131425	Yellow	1000
P	86131426	Yellow	1000
Q	86131427	Yellow	1000
R	86131428	Yellow	1000
S	86131429	Yellow	1000
T	86131430	Yellow	1000
U	86131431	Yellow	1000
V	86131432	Yellow	1000
W	86131433	Yellow	1000

**Idents BK 30 yellow** (Continued...)

Type	Order No.	Colour	Pack qty.
X	86131434	Yellow	1000
Y	86131435	Yellow	1000
Z	86131436	Yellow	1000
<b>Lower case letters</b>			
a	86131437	Yellow	1000
b	86131438	Yellow	1000
c	86131439	Yellow	1000
d	86131440	Yellow	1000
e	86131441	Yellow	1000
f	86131442	Yellow	1000
g	86131443	Yellow	1000
h	86131444	Yellow	1000
i	86131445	Yellow	1000
j	86131446	Yellow	1000
k	86131447	Yellow	1000
l	86131448	Yellow	1000
m	86131449	Yellow	1000
n	86131450	Yellow	1000
o	86131451	Yellow	1000
p	86131452	Yellow	1000
q	86131453	Yellow	1000
r	86131454	Yellow	1000
s	86131455	Yellow	1000
t	86131456	Yellow	1000
u	86131457	Yellow	1000
v	86131458	Yellow	1000
w	86131459	Yellow	1000
x	86131460	Yellow	1000
y	86131461	Yellow	1000
z	86131462	Yellow	1000
<b>Numbers</b>			
0	86131410	Yellow	1000
1	86131610	Yellow	1000
2	86131611	Yellow	1000
3	86131612	Yellow	1000
4	86131613	Yellow	1000
5	86131614	Yellow	1000
6	86131615	Yellow	1000
7	86131616	Yellow	1000
8	86131617	Yellow	1000
9	86131618	Yellow	1000
<b>Signs</b>			
+	86131463	Yellow	1000
-	86131464	Yellow	1000

**Idents BK 30 yellow** (Continued...)

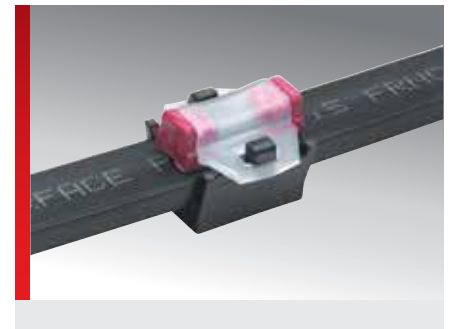
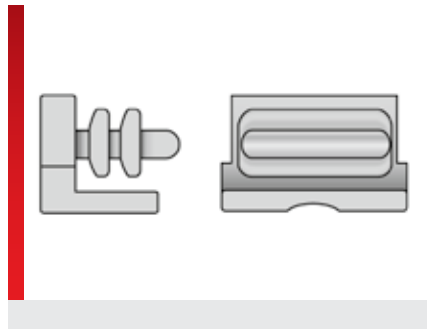


Type	Order No.	Colour	Pack qty.
/	86131465	Yellow	1000
=	86131466	Yellow	1000
.	86131467	Yellow	1000
*	86131468	Yellow	1000
:	86131469	Yellow	1000
<b>Special characters</b>			
Left arrow	86131470	Yellow	1000
Right arrow	86131471	Yellow	1000
AC voltage	86131472	Yellow	1000
Earthing symbol	86131473	Yellow	1000
Star connection	86131474	Yellow	1000
Delta connection	86131475	Yellow	1000
<b>Blank space</b>			
Blank	86131476	Yellow	1000

Font colours red, yellow, green, brown, as well as special characters upon request



## Sealing plug KM








### PRODUCT INFORMATION

The KM sealing plugs for closing off the KM and KMH label holders are available in 4 mm, 9 mm and 15 mm width and are watertight.

The seal provides long-term protection of the required labelling throughout the wet areas of the plant.

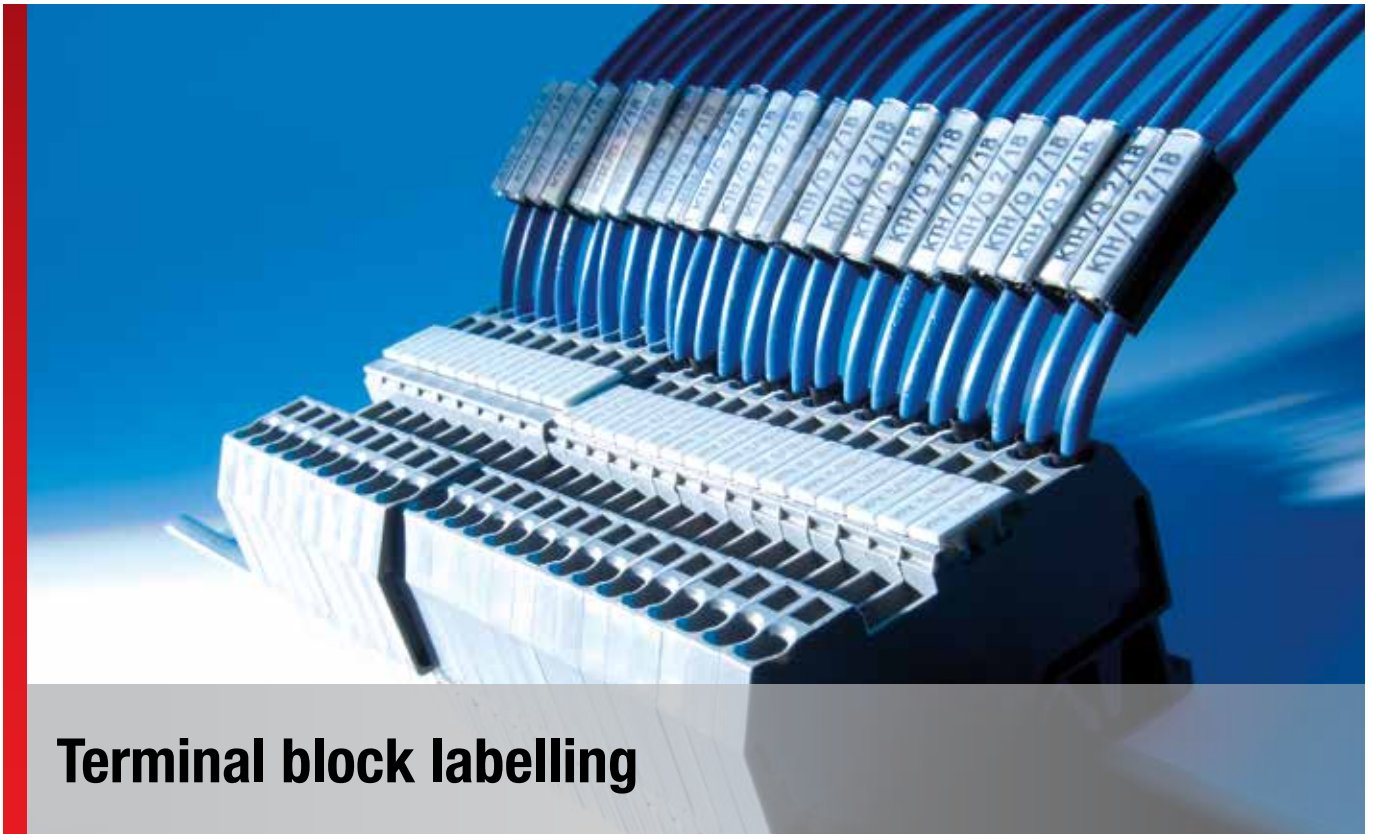
The sealing plugs are available in a wide variety of own colours in order to identify different media.

### SPECIFICATIONS

	-40 – 100 °C
	TPE
	V0
	Media distinction with colour code
	For labelling in wet areas

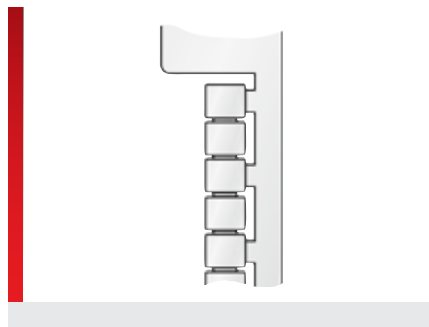
Type	Order No.	Colour	RAL equiv.	Pack qty.
<b>4 mm width</b>				
KM 4 Plug	86321214	Yellow	1018	100
KM 4 Plug	86321212	Red	2012	100
KM 4 Plug	86321216	Green	6018	100
KM 4 Plug	86321218	Blue	5012	100
KM 4 Plug	86321210	Black	9004	100
<b>9 mm width</b>				
KM 9 Plug	86321224	Yellow	1018	100
KM 9 Plug	86321222	Red	2012	100
KM 9 Plug	86321226	Green	6018	100
KM 9 Plug	86321228	Blue	5012	100
KM 9 Plug	86321220	Black	9004	100
<b>15 mm width</b>				
KM 15 Plug	86321234	Yellow	1018	100
KM 15 Plug	86321232	Red	2012	100
KM 15 Plug	86321236	Green	6018	100
KM 15 Plug	86321238	Blue	5012	100
KM 15 Plug	86321230	Black	9004	100





## Terminal block labelling

## BEC terminal block label



### PRODUCT INFORMATION

**BEC** - for terminal manufacturer **Beckhoff**. High-quality, halogen-free snap-in label plates. Labels available for mounting individually or in strips. The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems.

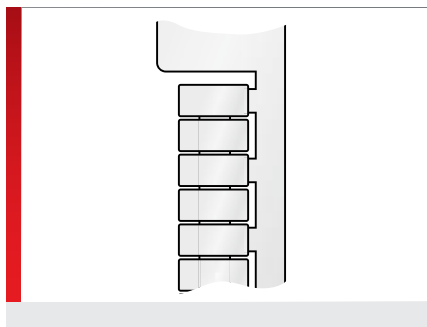
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Individual and strip mounting

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
BEC 5/5-5	86401840	White	9016	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	265	1100
BEC 5/5-5	86401841	Yellow	1018	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	266	1100
BEC 5/5-5	86401845	Green	6018	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	259	1100
BEC 5/5-5	86401844	Red	2012	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	269	1100
BEC 5/5-5	86401842	Blue	5012	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	267	1100
BEC 5/5-5	86401843	Orange	2011	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	268	1100

\* Specifications of the label size / printable area is shown in Width x Length.

## CAB terminal block label



### PRODUCT INFORMATION

**CAB** - for terminal manufacturer **Cabur**.  
 High-quality, halogen-free, snap-in label plates for individual mounting needs. The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems.

### SPECIFICATIONS

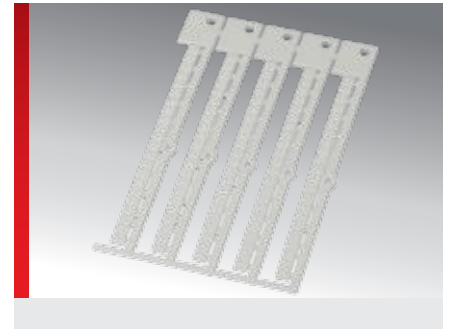
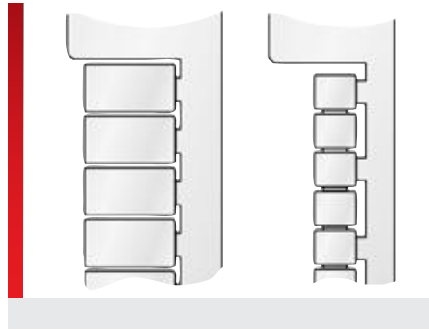
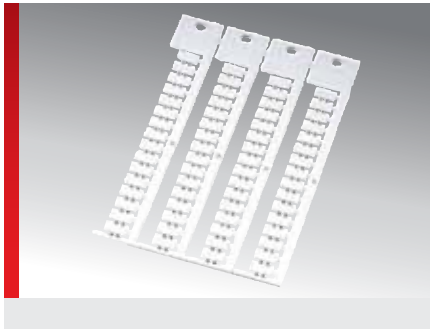
- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single installation

HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
CAB 5/10	86403001	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	72	GP4	310	1008

\* Specifications of the label size / printable area is shown in Width x Length.

## KAB terminal block label



### PRODUCT INFORMATION

**KAB** - for terminal manufacturers **Allen Bradley, ABB Entelec, Lütze, Woertz** and **Weidmüller (WDU, WPU)**.

High-quality, halogen-free snap-in label plates. Labels available for mounting individually or in strips.

The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems.

### SPECIFICATIONS

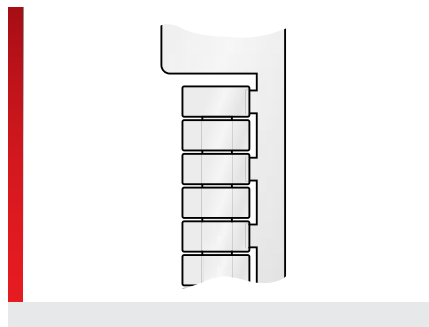
- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Individual and strip mounting

HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>Single labels</b>											
KAB 6/12	86402014	White	9016	6.0 x 12.0	6.0 x 12.0	6 / 1	4	72	GP4	112	1000
<b>5 mm pitch strips in a row</b>											
KAB 5/5.4-5	86402004	White	9016	5.0 x 5.4	5.0 x 5.4	3 / 1	5	110	GP5	55	1430
KAB 5/9-5	86402006	White	9016	5.0 x 9.0	5.0 x 9.0	5 / 1	4	88	GP4	110	1400
KAB 5/12-5	86402008	White	9016	5.0 x 12.0	5.0 x 12.0	6 / 1	4	88	GP4	111	1400
<b>6 mm pitch strips in a row</b>											
KAB 6/9-6	86402010	White	9016	6.0 x 9.0	6.0 x 9.0	5 / 1	4	72	GP4	50	1000
KAB 6/10-6	86402022	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	72	GP4	56	1000
KAB 6/12-6	86402012	White	9016	6.0 x 12.0	6.0 x 12.0	6 / 1	4	72	GP4	51	1000
<b>8 mm pitch strips in a row</b>											
KAB 8/9-8	86402016	White	9016	8.0 x 9.0	8.0 x 9.0	5 / 2	4	52	GP4	53	1040
KAB 8/12-8	86402018	White	9016	8.0 x 12.0	8.0 x 12.0	6 / 2	4	52	GP4	54	1040

\* Specifications of the label size / printable area is shown in Width x Length.

## KET terminal block label



### PRODUCT INFORMATION

**KET** - for terminal manufacturers **ABB**, **ABB Entrelec** and **Schneider**.

High-quality, halogen-free snap-in label plates. Labels available for mounting individually or in strips.

The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems.

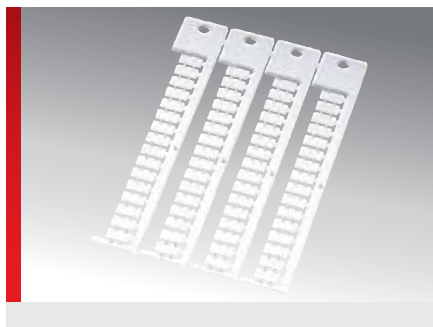
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Individual and strip mounting

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>5 mm pitch strips in a row</b>											
KET 5/10-5	86402610	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	84	GP4E	121	1428
KET SNK 5/12-5	86402612	White	9016	5.0 x 12.0	5.0 x 12.0	6 / 1	4	80	GP4E	124	2000
<b>6 mm pitch strips in a row</b>											
KET 6/10-6	86402620	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	72	GP4E	122	2016
KET SNK 6/12-6	86402622	White	9016	6.0 x 12.0	6.0 x 12.0	6 / 1	4	60	GP4E	125	1500
<b>8 mm pitch strips in a row</b>											
KET 8/10-8	86402630	White	9016	8.0 x 10.0	8.0 x 10.0	5 / 2	4	56	GP4E	123	1512
KET SNK 8/12-8	86402632	White	9016	8.0 x 12.0	8.0 x 12.0	6 / 2	4	40	GP4E	126	1000

\* Specifications of the label size / printable area is shown in Width x Length.

## KLG terminal block label



### PRODUCT INFORMATION

**KLG** - for terminal manufacturer **Legrand**.  
 High-quality, halogen-free, snap-in label plates for individual mounting needs. The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single installation

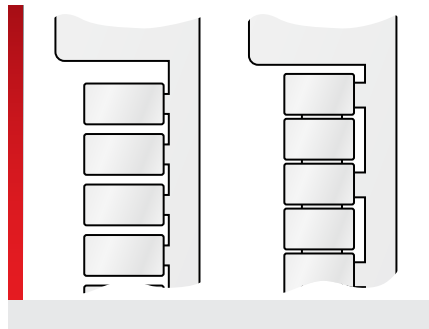
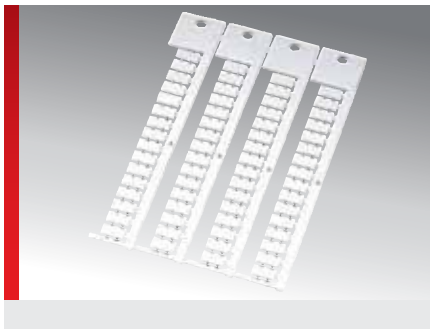
HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
KLG 5/10	86421022	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	64	GP4	098	1024

\* Specifications of the label size / printable area is shown in Width x Length.



## KMR terminal block label



### PRODUCT INFORMATION

**KMR** - for terminal manufacturers **Weidmüller, Conta Clip, ABB Entelec, Klemсан, Schlegel** and **Wago**. High-quality, halogen-free snap-in label plates. Labels available for mounting individually or in strips.

The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems. Label plates designated as "5 - 6 mm pitch strips" can be adapted to terminal block widths of 5 mm or 6 mm by means of a flexible connection.

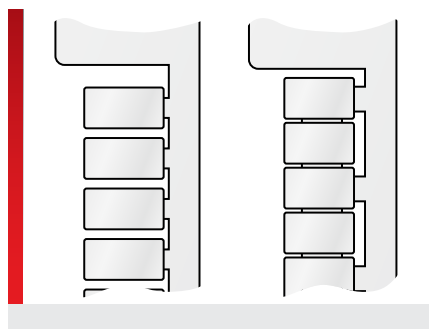
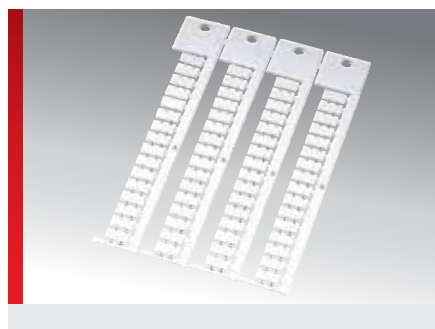
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Individual and strip mounting

HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>Single labels</b>											
KMR 5/10	86401010	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	64	GP4	30	1000
KMR 5/15	86401014	White	9016	5.0 x 15.0	5.0 x 15.0	8 / 1	4	64	GP4	31	1000
KMR 6/10	86401018	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	64	GP4	32	1000
KMR 6/15	86401022	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	64	GP4	33	1000
KMR 5/10 FA	86401032	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	64	GP4	160	1024
<b>3.5 mm pitch strips in a row</b>											
KMR 3.5/7.5-3.5	86401034	White	9016	3.5 x 7.5	3.5 x 7.5	4 / 1	4	120	GP4	161	1200
KMR 3.5/10-3.5	86401046	White	9016	3.5 x 10.0	3.5 x 10.0	5 / 1	4	120	GP4	423	1200
<b>5 mm pitch strips in a row</b>											
KMR 5/7.5-5	86401026	White	9016	5.0 x 7.5	5.0 x 7.5	4 / 1	4	88	GP4	34	1400
KMR 5/7.5-5	86401036	Yellow	1018	5.0 x 7.5	5.0 x 7.5	4 / 1	4	88	GP4	34G	1400
KMR 5/7.5-5	86401044	Red	2012	5.0 x 7.5	5.0 x 7.5	4 / 1	4	88	GP4	262	1400
KMR 5/7.5-5	86401040	Blue	5012	5.0 x 7.5	5.0 x 7.5	4 / 1	4	88	GP4	260	1400
KMR 5/7.5-5	86401042	Orange	2011	5.0 x 7.5	5.0 x 7.5	4 / 1	4	88	GP4	261	1400
KMR 5/10-5	86401012	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	35	1400
KMR 5/15-5	86401016	White	9016	5.0 x 15.0	5.0 x 15.0	8 / 1	4	88	GP4	36	1400
KMR 5/15-5	86401017	Yellow	1018	5.0 x 15.0	5.0 x 15.0	8 / 1	4	88	GP4	36G	1400
<b>5.1 mm pitch strips in a row</b>											
KMR 5/5-5.1	86401011	White	9016	5.0 x 5.0	5.0 x 5.0	2 / 1	4	100	GP5	319	1100
KMR 5/7.5-5.1	86401027	White	9016	5.0 x 7.5	5.0 x 7.5	4 / 1	4	84	GP4	276	1008
KMR 5/7.5-5.1	86401037	Yellow	1018	5.0 x 7.5	5.0 x 7.5	4 / 1	4	84	GP4	286	1008

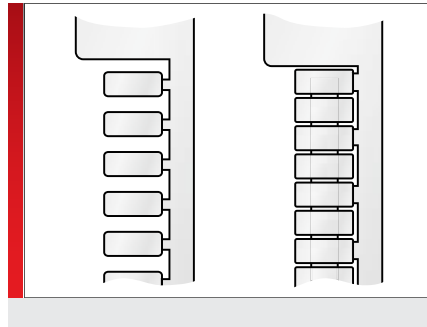
## KMR terminal block label (Continued...)



Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
KMR 5/7.5-5.1	86401043	Orange	2011	5.0 x 7.5	5.0 x 7.5	4 / 1	4	84	GP4	296	1008
KMR 5/10-5.1	86401013	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	84	GP4	277	1008
KMR 5/15-5.1	86401015	White	9016	5.0 x 15.0	5.0 x 15.0	8 / 1	4	84	GP4	278	1008
KMR 5/10-5,1 FA	86401048	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	84	GP4	487	1008
<b>5 – 6 mm pitch strips</b>											
KMR 5/10-5...6	86401038	White	9016	4.0 x 10.0	4.0 x 10.0	5 / 1	4	88	GP4	35U	1400
<b>6 mm pitch strips in a row</b>											
KMR 6/10-6	86401020	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	72	GP4	37	1000
KMR 6/15-6	86401024	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	72	GP4	38	1000
<b>6.1 mm pitch strips in a row</b>											
KMR 6/10-6.1	86401021	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	72	GP4	37A	1008
KMR 6/15-6.1	86401025	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	72	GP4	38A	1008
<b>6.7 mm pitch strips in a row</b>											
KMR 6/15-6.7	86401028	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	64	GP4	39	1700

\* Specifications of the label size / printable area is shown in Width x Length.

## KPX terminal block label



### PRODUCT INFORMATION

**KPX** - for terminal manufacturers **Phoenix**, **ABB Entelec**, **Murrelektronik**, **Siemens** and **Wago**.

High-quality, halogen-free snap-in label plates. Labels available for mounting individually or in strips.

The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems.

Label plates designated as "5 - 6 mm-pitch strips" can be adapted to terminal block widths of 5 mm or 6 mm by means of an extension spring joint.

Label plates designated as "Universal strip" can be used on various different terminal block widths.

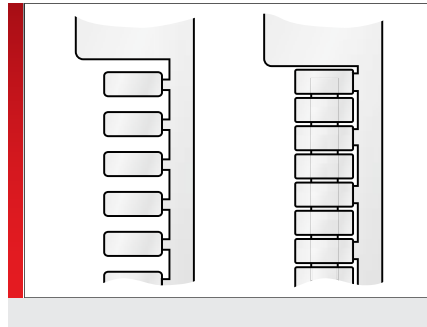
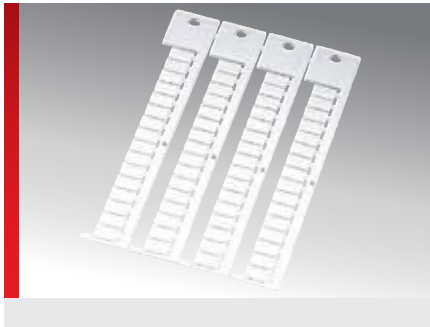
The 6/180 labelling strips can be printed with a laser printer set up for the required terminal block width.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Individual and strip mounting

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>Single labels</b>											
KPX 4/10	86401224	White	9016	4.0 x 10.0	4.0 x 10.0	5 / 1	4	64	GP4	97	1024
KPU 5/10	86401231	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	72	GP4	42E	1008
KPX 6/10	86401214	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	64	GP4	40	1000
KPX 6/15	86401218	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	64	GP4	41	1000
<b>3.5 mm pitch strips in a row</b>											
KPX 3.5/10-3.5	86401225	White	9016	3.5 x 10.0	3.5 x 10.0	5 / 1	4	120	GP4	486	1800
<b>4 mm pitch strips in a row</b>											
KPX 4/10-4	86401226	White	9016	4.0 x 10.0	4.0 x 10.0	5 / 1	4	100	GP4	98	1400
<b>5 mm pitch strips in a row</b>											
KPX 5/10-5	86401210	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	42	1400
KPX 5/10-5	86401211	Yellow	1018	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	42G	1400
KPX 5/15-5	86401212	White	9016	5.0 x 15.0	5.0 x 15.0	8 / 1	4	88	GP4	43	1400
<b>5.2 mm pitch strips in a row</b>											
KPX 5/10-5.2	86401208	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	84	GP4	279	1008
KPX 5/10-5.2	86401209	Yellow	1018	5.0 x 10.0	5.0 x 10.0	5 / 1	4	84	GP4	289	1008
KPX 5/15-5.2	86401213	White	9016	5.0 x 15.0	5.0 x 15.0	8 / 1	4	84	GP4	311	1008

## KPX terminal block label (Continued...)



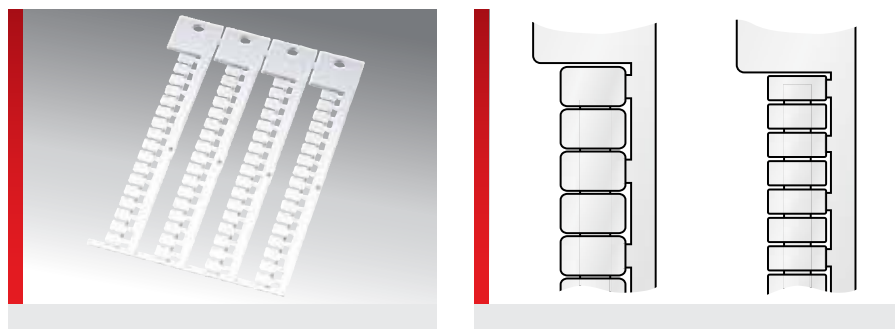
Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>5 – 6 mm pitch strips</b>											
KPX 5/10-5...6	86401242	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	42U	1400
<b>6 mm pitch strips in a row</b>											
KPX 6/10-6	86401216	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	72	GP4	44	1000
KPX 6/15-6	86401220	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	72	GP4	45	1000
<b>6.2 mm pitch strips in a row</b>											
KPX 6/10-6.2	86401217	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	68	GP4	308	1020
KPX 6/15-6.2	86401219	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	68	GP4	309	1020
<b>6.8 mm pitch strips in a row</b>											
KPX 6/10-6.8	86401222	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	64	GP4	46	1000
<b>3.5 mm pitch strips in a row, flat foot (ZS)</b>											
KPX 3.5/5-3.5 ZS	86401223	White	9016	3.5 x 5.0	3.5 x 5.0	2 / 1	5	150	GP5	416	3000
<b>4.2 mm pitch strips in a row, flat foot (ZS)</b>											
KPX 4.2/5-4.2 ZS	86401248	White	9016	4.2 x 5.0	4.2 x 5.0	2 / 1	5	125	GP5	47Z	2500
<b>5 mm pitch strips in a row, flat foot (ZS)</b>											
KPX 5/5-5 ZS	86401232	White	9016	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	42Z	2090
KPX 5/5-5 ZS	86401233	Yellow	1018	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	43G	2090
KPX 5/7.5-5 ZS	86401254	White	9016	5.0 x 7.5	5.0 x 7.5	4 / 1	4	88	GP4	49Z	1408
KPX 5/10-5 ZS	86401234	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	43Z	1400
<b>5 – 6 mm pitch strips in a row, flat foot (ZS)</b>											
KPX 5/10-5...6 ZS	86401244	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	43U	1400
<b>6 mm pitch strips in a row, flat foot (ZS)</b>											
KPX 6/5-6 ZS	86401228	White	9016	5.0 x 6.0	5.0 x 6.0	3 / 1	5	90	GP5	44Z	2070
KPX 6/10-6 ZS	86401236	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	72	GP4	45Z	1000
<b>Single labels, flat foot (ZS)</b>											
KPX 8.2/5 ZS	86401252	White	9016	8.2 x 5.0	8.2 x 5.0	2 / 2	5	65	GP5	48Z	1040
KPX 10/5 ZS	86401246	White	9016	10.0 x 5.0	10.0 x 5.0	2 / 2	5	55	GP5	41Z	1320

**KPX terminal block label** (Continued...)

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>12 mm pitch strips in a row, flat foot (ZS)</b>											
KPX 12/5-12 ZS	86401240	White	9016	5.0 x 12.0	5.0 x 12.0	6 / 1	5	45	GP5	46Z	1080
<b>Universal strips, divisible (maximum length 104 mm, minimum length 4.2 mm), flat foot (ZS)</b>											
KPX U/5 ZS	86401230	White	9016	5.0 x 104.0	5.0 x 104.0	57 / 1	5	100	GP5	180	2000
<b>Labelling strip on label sheet in A4 format</b>											
KPX 6/180	86402510	White	9016	6.0 x 180.0	6.0 x 180.0	100 / 1	1	20		180	100

\* Specifications of the label size / printable area is shown in Width x Length.

## KSI terminal block label



### PRODUCT INFORMATION

**KSI** - for terminal manufacturer **Siemens**. High-quality, halogen-free snap-in label plates. Labels available for mounting individually or in strips. The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems.

### SPECIFICATIONS

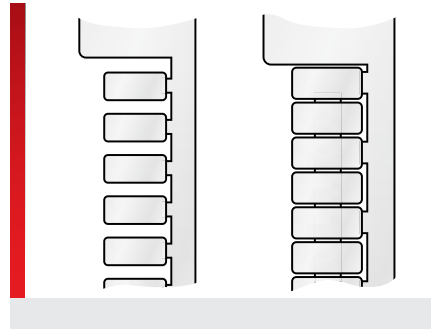
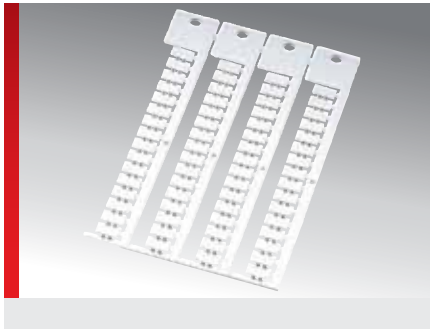
- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Individual and strip mounting

HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>Single labels</b>											
KSI 5/7	86401610	White	9016	5.0 x 7.0	5.0 x 7.0	3 / 1	4	68	GP4E	47	1020
KSI 5/10	86401612	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	68	GP4E	48	1020
<b>5 mm pitch strips in a row</b>											
KSI 5/7-5	86401620	White	9016	5.0 x 7.0	5.0 x 7.0	3 / 1	4	80	GP4E	133	1200
KSI 5/10-5	86401624	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	80	GP4E	132	1200
<b>6 mm pitch strips in a row</b>											
KSI 6/7-6	86401630	White	9016	6.0 x 7.0	6.0 x 7.0	3 / 1	4	72	GP4E	131	1080
KSI 6/10-6	86401634	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	72	GP4E	130	1080

\* Specifications of the label size / printable area is shown in Width x Length.

## KWI terminal block label



### PRODUCT INFORMATION

**KWI** - for terminal manufacturers **Wieland**, **ABB Entelec**, **D+E**, **Legrand**, **Sprecher + Schuh**, **Telemecanique** and **Wago**. High-quality, halogen-free snap-in label plates. Labels available for mounting individually or in strips.

The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems. Label plates designated as "5 - 6 mm-pitch strips" can be adapted to terminal block widths of 5 mm or 6 mm by means of an extension spring joint.

### SPECIFICATIONS

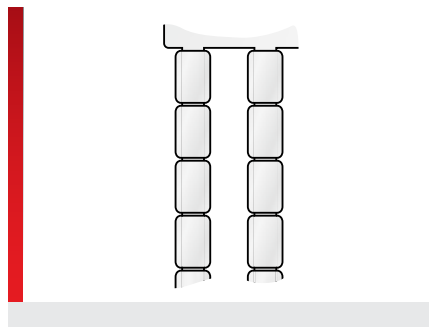
- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Individual and strip mounting

HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>Single labels</b>											
KWI 5/10	86401410	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	64	GP4	20	1000
KWI 5/15	86401414	White	9016	5.0 x 15.0	5.0 x 15.0	8 / 1	4	64	GP4	21	1000
KWI 6/10	86401420	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	64	GP4	22	1000
KWI 6/15	86401426	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	64	GP4	23	1000
KWI 6/15	86401450	Orange	2011	6.0 x 15.0	6.0 x 15.0	8 / 1	4	64	GP4	230	1000
<b>5 mm pitch strips in a row</b>											
KWI 5/8.6-5	86401418	White	9016	5.0 x 8.6	5.0 x 8.6	4 / 1	4	88	GP4	24	1400
KWI 5/10-5	86401412	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	25	1400
KWI 5/15-5	86401416	White	9016	5.0 x 15.0	5.0 x 15.0	8 / 1	4	88	GP4	26	1400
<b>5 – 6 mm pitch strips</b>											
KWI 5/10-5...6	86401432	White	9016	5.0 x 10.0	4.0 x 10.0	5 / 1	4	88	GP4	25U	1400
<b>6 mm pitch strips in a row</b>											
KWI 6/8.2-6	86401430	White	9016	6.0 x 8.2	6.0 x 8.2	4 / 1	4	72	GP4	270	1000
KWI 6/10-6	86401422	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	72	GP4	27	1000
KWI 6/15-6	86401428	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	4	72	GP4	28	1000
<b>6.8 mm pitch strips in a row</b>											
KWI 6/10-6.8	86401424	White	9016	6.0 x 10.0	6.0 x 10.0	5 / 1	4	64	GP4	29	1000

\* Specifications of the label size / printable area is shown in Width x Length.





## TK terminal block label





### PRODUCT INFORMATION

Polyamide label for insertion in transformer terminals. Suitable for: transformer terminal blocks with nail clip.

### SPECIFICATIONS

-  -40 – 130 °C
-  Polyamide (PA)
-  V2
-  Individual and strip mounting

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>7 mm pitch strips in a row</b>											
TK 4.5-7.0	86402412	White	9016	4.5 x 7.0	4.5 x 7.0	3 / 1	5	50	GP1	90	450
<b>7.5 mm pitch strips in a row</b>											
TK 4.5-7.5	86402410	White	9016	4.5 x 7.5	4.5 x 7.5	4 / 1	5	50	GP1	91	450

\* Specifications of the label size / printable area is shown in Width x Length.



## WGO terminal block label



### PRODUCT INFORMATION

**WGO** - for terminal manufacturers **Wago**, **Beckhoff** and **ABB Entelec**. High-quality, halogen-free snap-in label plates. Labels available for mounting individually or in strips.

The large printable area at the top allows room for individual project and terminal block reference, dispensing with the need for additional organisational systems.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Individual and strip mounting

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. Trees	No. per frame	Base plate	Software type	Pack qty.
<b>4-4.2 mm pitch strips in a row, with contoured foot</b>											
WGO 3.4/10-4...4.2 F	86401806	White	9016	3.4 x 10.0	3.4 x 10.0	5 / 1	4	100	GP4	499	1300
<b>4 mm pitch strips in a row, with contoured foot</b>											
WGO 4/10-4 F	86401808	White	9016	4.0 x 10.0	4.0 x 10.0	5 / 1	4	100	GP4	162	1300
<b>5.1 mm pitch strips in a row</b>											
WGO 5/5-5.1 L	86401870	White	9016	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	541	1100
WGO 5/5-5.1 L	86401872	Yellow	1018	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	542	1100
WGO 5/5-5.1 L	86401874	Red	2012	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	544	1100
WGO 5/5-5.1 L	86401876	Green	6018	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	546	1100
WGO 5/5-5.1 L	86401878	Blue	5012	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	543	1100
WGO 5/5-5.1 L	86401873	Orange	2011	5.0 x 5.0	5.0 x 5.0	2 / 1	5	110	GP5	545	1100
<b>5 mm pitch strips in a row</b>											
WGO 5/10-5	86401810	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	49	2000
<b>5 mm pitch strips in a row, with contoured foot</b>											
WGO 5/10-5 F	86401813	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	139	1400
<b>5 mm pitch strips in a row (can be applied to a 6mm pitch pattern)</b>											
WGO 5/10-5...6 F	86401812	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	4	88	GP4	141	1400
<b>6.2 mm pitch strips in a row (can be applied to a 7.5 mm pitch pattern)</b>											
WGO 5.2/10-6.2...7.5 F	86401850	White	9016	5.2 x 10.0	5.2 x 10.0	5 / 1	4	68	GP4	540	1088

## KCK-ECO terminal block labelling



### PRODUCT INFORMATION

The KCK-ECO label plates are made of PE composite material on a transparent carrier film and a 3" core; they can be used as an alternative to the PC labels for terminal block labelling.

The individual labels are strips with a length of 102 mm for insertion into the terminal cut-out and can be cut to the required length.

KCK-ECO label plates for terminal blocks are available in widths of 6.2 mm and 10 mm and **specifically for Phoenix terminal blocks** by design.

**Suitable for mp-TM series thermal transfer printers.**

### SPECIFICATIONS

- 40 – 90 °C
- Polyethylene (PE)
- Can be inscribed with thermal transfer printer, 3 in roll core diameter  
Primarily for inside use
- High tensile strength and tear resistance  
In compliance with the requirements of REACH and RoHS



Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
KCK-ECO 102x6.2	86513100	White	102.0 x 6.2	104.00	FB-TM 110 mm x 300 m	QB0	1000
KCK-ECO 102x10	86513101	White	102.0 x 10.0	104.00	FB-TM 110 mm x 300 m	QB1	1000







## KM 2 / KM 20 (adhesive holder)



### PRODUCT INFORMATION

High-quality, halogen-free adhesive label holders.  
If the bonding surface is clean, dry and free of grease, the acrylic adhesive can form a permanent bond.

### SPECIFICATIONS

-  -40 – 60 °C
-  Polyvinyl chloride (PVC)
-  V0
- 

Type	Order No.	Colour	Length mm	Width mm	Recommended label plate	Label size mm	No. idents BK23 / BK30	Pack qty.
<b>Self-adhesive (for smooth surfaces)</b>								
KM 2/16	86321010	White / Transparent	16.00	9.00	KS 4/x	4.0 x 16.0	6 / 5	1000
KM 2/22	86321012	White / Transparent	22.00	9.00	KS 4/x	4.0 x 22.0	9 / 7	1000
KM 2/25	86321014	White / Transparent	25.00	9.00	KS 4/x	4.0 x 25.0	10 / 8	1000
KM 20	86321016	White / Transparent	20.00	10.00	KSO 20x9	9.0 x 20.0		1000





## KM 6



### PRODUCT INFORMATION

High-quality, transparent label holder for component labelling.  
 Assembly is via snap-in action.  
 Adapters render the label holders usable for component location labelling.

### SPECIFICATIONS

-  -40 – 60 °C
-  Polyvinyl chloride (PVC)
-  V0
- 

Type	Order No.	Colour	Length mm	Width mm	Recommended label plate	Label size mm	No. idents BK23 / BK30	Pack qty.
KM 6/15	86321030	White / Transparent	15.00	6.00	KS 4/x	4.0 x 15.0	6 / 5	1000
KM 6/18	86321032	White / Transparent	18.00	6.00	KS 4/x	4.0 x 18.0	7 / 6	1000
KM 6/21	86321034	White / Transparent	21.00	6.00	KS 4/x	4.0 x 21.0	9 / 7	1000
KM 6/27	86321036	White / Transparent	27.00	6.00	KS 4/x	4.0 x 27.0	11 / 9	1000

## BS (BS labelling system)



### PRODUCT INFORMATION

The BS labelling system consists of various components and is used for retrospective labelling of device locations or switchgear.

- **BS 1:** consists of the clamping piece BS 3, transparent top and 27 x 8 mm paper strip on a DIN A-4 sheet with perforated edges.
- **BS 2:** consists of the clamping piece BS 3 and transparent label holder KM 7 to retain the KS 4/x series labels or BK inserts.

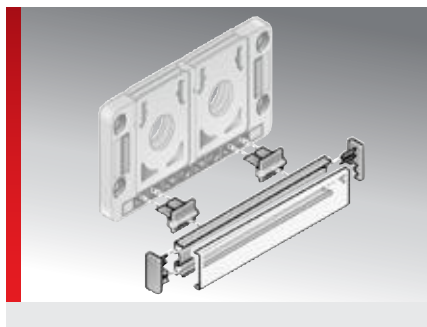
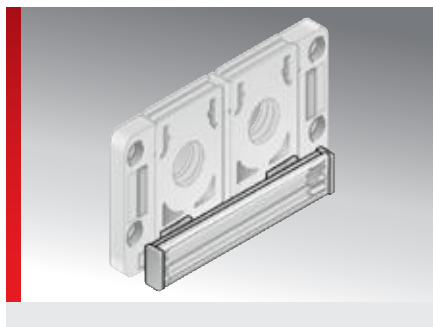
- **BS 3:** clamping piece for the transparent label holder KM 7 or for the BS 5 label.
- **BS 4:** consists of the clamping piece BS 3 and the BS 5 label.
- **BS 9 / BS 10:** label holder for KSS 20x9 labels or for KM 6/18 transparent label holders with KS 4/18 label. Mounting is accomplished with a self-clamping (spring-loaded) foot.

### SPECIFICATIONS

	-40 – 60 °C
	Polyvinyl chloride (PVC) BS 5 label Polycarbonate (PC)
	V0

Type	Order No.	Colour	Area of application from - to Ø mm	Wire cross-section from - to mm <sup>2</sup>	Printable area mm	No. idents BK23 / BK30	No. per sheet	No. per frame	Software type	Pack qty.
<b>BS 3 clamping wedge, with transparent top and DIN A4 paper strip</b>										
BS 1	86281010	Black	0.25 – 3.7	0.5 – 2.5						500
<b>DIN A4 paper sheet with punched margin for BS 1</b>										
Paper sheet	86281013	White			8.0 x 25.0		256		BSM	2560
<b>Clamping piece BS 3 with transparent label KM 7: for KS 4/x or for idents BK</b>										
BS 2	86281014	Black	0.25 – 3.7	0.5 – 2.5	4.0 x 27.0	11 / 9				500
<b>Clamping piece: for transparent label holder KM 7 or for label BS 5</b>										
BS 3	86281016	Black	0.25 – 3.7	0.5 – 2.5						190
<b>Clamping piece BS 3 with label BS 5</b>										
BS 4	86281018	Black	0.25 – 3.7	0.5 – 2.5	12.0 x 27.0			16	79	190
<b>Label holder (self-clamping): for labels KSS 20x9 or for transparent label holders KM 6/18</b>										
BS 9	86281024	Black	max.4.0							50
BS 10	86281026	Black	4.0 – 11.0							50

## SKDL/E (for cable entry plate KDL/E)



### PRODUCT INFORMATION

#### Adapter set for KDL/E cable entry system

The labelling set for the KDL/E cable entry system was developed as a simple means of accommodating a great deal of labelling information in or on the KDL/E cable entry system.





Adapted to various cable entry systems, different versions are available.

The set consists of a holder, label rail for KS 9/x or KS 15/x labels, sealing plug and transparent cover.

#### An alternative to the adapter set

The KS KDL/E label, for direct mounting on the KDL/E cable entry system. (Item no. 86421090)

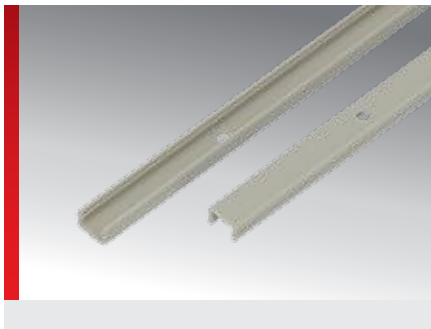
### SPECIFICATIONS

-  -40 – 80 °C
-  Polyvinyl chloride (PVC)
-  V0
-  Labelling system to cable entry system KDL/E



Type	Order No.	Recommended label plate	Pack qty.
BZS 9 SKDL/E 16	86301232	KS 9/x	1
BZS 9 SKDL/E 24	86301236	KS 9/x	1
BZS 15 SKDL/E 16	86301234	KS 15/x	1
BZS 15 SKDL/E 24	86301238	KS 15/x	1

## BZS label rail - grey - 9 mm









### PRODUCT INFORMATION

Label holders for designating component locations as base holders for rivets, screws or for glue fastening.

The pre-drilled holes have a diameter of 4 mm and a hole distance of 100 mm.

### SPECIFICATIONS

-  -40 – 80 °C
-  Polyvinyl chloride (PVC)
-  V0

Type	Order No.	Colour	Length mm	Width mm	Recommended label plate	Pack qty.
<b>With drilled holes</b>						
BZS 37	86301010	Grey	37.00	9.00	KS0 x/9	100
BZS 500	86301012	Grey	500.00	9.00	KS0 x/9	10
BZS 600	86301014	Grey	600.00	9.00	KS0 x/9	10
BZS 1000	86301016	Grey	1000.00	9.00	KS0 x/9	10
BZS 1300	86301017	Grey	1300.00	9.00	KS0 x/9	10
<b>With drilled holes and adhesive strips as assembly aid</b>						
BZS 500 K	86301018	Grey	500.00	9.00	KS0 x/9	10
BZS 600 K	86301020	Grey	600.00	9.00	KS0 x/9	10
BZS 1000 K	86301022	Grey	1000.00	9.00	KS0 x/9	10
BZS 1300 K	86301027	Grey	1300.00	9.00	KS0 x/9	10
<b>Self-adhesive (no holes) for uneven surfaces (hammer enamel)</b>						
BZS 500 SK	86301032	Grey	500.00	9.00	KS0 x/9	10
BZS 600 SK	86301034	Grey	600.00	9.00	KS0 x/9	10
BZS 1000 SK	86301036	Grey	1000.00	9.00	KS0 x/9	10



## BZS/F label rail - black - 9 and 15 mm



BZS/F rail (cover and label not included in delivery)

### PRODUCT INFORMATION

The BZS/F labelling system was developed as a simple means of accommodating a great deal of labelling information in or on the control cabinet.







The label holder with the snap-in labels provides vertical and horizontal designations on terminal blocks and other components. It may be fitted on the top-hat rail, C-rail or the cable duct with a high degree of flexibility.

The label holder can be cut to any length.

The BZS/F label holders are available in 9 mm and 15 mm widths.

- BZS/F: with pre-punched holes (distance between holes 100 mm; hole diameter 3.6 mm).
- BZS/F K: with pre-punched holes (distance between holes 100 mm; hole diameter 3.6 mm) and adhesive strip (adhesive 4930) as a mounting aid
- BZS/F SK: self-adhesive label rail (adhesive 1780) without drilled holes for uneven surfaces (hammered enamel)

### SPECIFICATIONS

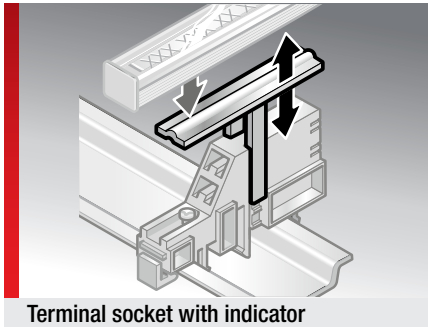
	-40 – 80 °C
	Polyvinyl chloride (PVC)
	V0
	
	
	

Type	Order No.	Colour	Length mm	Width mm	Recommended label plate	Pack qty.
<b>Label rail with drilled holes at 9 mm width</b>						
BZS/F 09 - 500	86301634	Black	500.00	9.00	KS0 x/9	25
BZS/F 09 - 600	86301636	Black	600.00	9.00	KS0 x/9	25
BZS/F 09 - 1000	86301638	Black	1000.00	9.00	KS0 x/9	25
BZS/F 09 - 1300	86301640	Black	1300.00	9.00	KS0 x/9	25
<b>Label rail with drilled holes and adhesive strips (adhesive 4930) as assembly aid at 9 mm width</b>						
BZS/F 09 - 500 K	86301684	Black	500.00	9.00	KS0 x/9	25
BZS/F 09 - 600 K	86301686	Black	600.00	9.00	KS0 x/9	25
BZS/F 09 - 1000 K	86301688	Black	1000.00	9.00	KS0 x/9	25
BZS/F 09 - 1300 K	86301690	Black	1300.00	9.00	KS0 x/9	25
<b>Self-adhesive label rail (adhesive 1780) without drilled holes for uneven surfaces (hammered enamel) at 9 mm width</b>						
BZS/F 09 - 500 SK	86301654	Black	500.00	9.00	KS0 x/9	25
BZS/F 09 - 600 SK	86301656	Black	600.00	9.00	KS0 x/9	25
BZS/F 09 - 1000 SK	86301658	Black	1000.00	9.00	KS0 x/9	25
BZS/F 09 - 1300 SK	86301660	Black	1300.00	9.00	KS0 x/9	25
<b>Label rail with drilled holes at 15 mm width</b>						
BZS/F 15 - 500	86301834	Black	500.00	15.00	KS 15/x	25
BZS/F 15 - 600	86301836	Black	600.00	15.00	KS 15/x	25
BZS/F 15 - 1000	86301838	Black	1000.00	15.00	KS 15/x	25
BZS/F 15 - 1300	86301840	Black	1300.00	15.00	KS 15/x	25

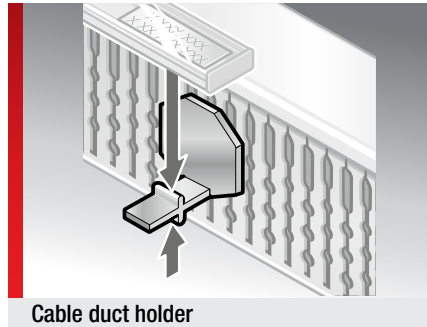




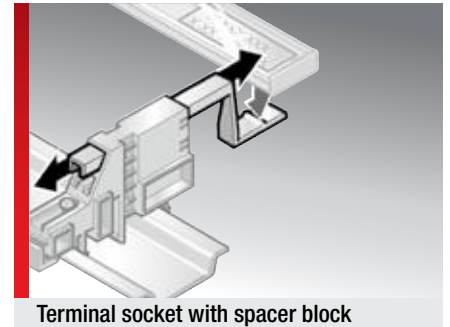
## BZS labelling system - attachment



Terminal socket with indicator



Cable duct holder



Terminal socket with spacer block

### PRODUCT INFORMATION

The BZS labelling system can be tailored to any labelling requirement, offering horizontal or vertical markings in control cabinets, labelling outside or inside control cabinets, any length of label carriers and any number of label plates.

The BZS 09 and BZS 15 do not feature an adhesive film, they are clamped to the cable duct holder, the spacer block or the indicator, depending on the mounting type requested.

The terminal bases attached to the top-hat rail, C-rail or cable ducts can be spaced with distance plates to maintain certain distances.

The mounting modules listed here are suitable for the BZS labelling system and label holders only.

### SPECIFICATIONS

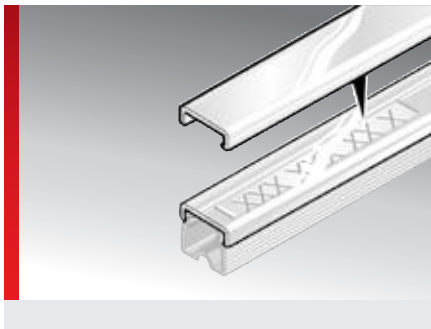
-40 – 80 °C

Polyamide (PA)

V0

Type	Order No.	Colour	Pack qty.
<b>End cap for label rail BZS 9</b>			
End cap for BZS 09	86301219	Black	80
<b>End cap for label rail BZS 15</b>			
End cap for BZS 15	86301259	Black	80
<b>Terminal base for mounting distance plate / indicator / spacer block</b>			
Clamping socket	86301210	Black	30
<b>Distance plate for clamping socket</b>			
Distance plate clamping socket	86301218	Black	100
<b>Indicator for mounting the label rail</b>			
Indicator	86301212	Black	100
<b>Spacer for mounting label rail</b>			
Spacer block	86301214	Black	100
<b>Adapter for cable duct for mounting label rail</b>			
Cable duct holder	86301216	Black	100

## BZS and BZS/F labelling rail - cover







### PRODUCT INFORMATION

Transparent cover for BZS and BZS/F label holders.

The cover can be cut to any length.

They are available in 9 mm and 15 mm widths.

### SPECIFICATIONS

-  -40 – 80 °C
-  Polyvinyl chloride (PVC)
-  V0
- 

Type	Order No.	Colour	Length mm	Width mm	Pack qty.
<b>Transparent cover for BZS and BZS/F label rail in 9 mm width</b>					
BZS 09 - 500 cover	86301242	Transparent	500.00	9.00	25
BZS 09 - 600 cover	86301244	Transparent	600.00	9.00	25
BZS 09 - 1000 cover	86301246	Transparent	1000.00	9.00	25
BZS 09 - 1300 cover	86301248	Transparent	1300.00	9.00	25
<b>Transparent cover for BZS and BZS/F label rail in 15 mm width</b>					
BZS 15 - 430 cover	86301283	Transparent	430.00	15.00	25
BZS 15 - 500 cover	86301282	Transparent	500.00	15.00	25
BZS 15 - 600 cover	86301284	Transparent	600.00	15.00	25
BZS 15 - 630 cover	86301285	Transparent	630.00	15.00	25
BZS 15 - 650 cover	86301287	Transparent	650.00	15.00	25
BZS 15 - 1000 cover	86301286	Transparent	1000.00	15.00	25
BZS 15 - 1300 cover	86301288	Transparent	1300.00	15.00	25

## Type ABB







### PRODUCT INFORMATION

**ABB** - for devices made by **ABB**, **Finder**, **Lumberg** and **Wago**.

High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

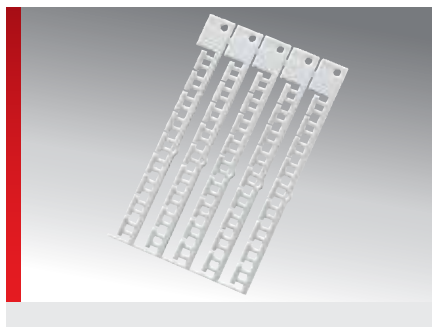
-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Switch gear labelling



Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
ABB 17x9	86421020	White	9016	9.0 x 17.0	9.0 x 17.0	9 / 2	24	GP4	68	384
ABB 17x9	86421021	Pastel turquoise	6034	9.0 x 17.0	9.0 x 17.0	9 / 2	24	GP4	68P	384

\* Specifications of the label size / printable area is shown in Width x Length.

## Type B+R



### PRODUCT INFORMATION

**B&R - for B&R X20 switchgear.**  
High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- For labelling equipment and connecting labelling

HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Terminal block marking</b>										
B+R 12x3.3	86402800	White	9016	3.3 x 12.0	3.3 x 12.0	6 / 1	45	GP5	201	675
B+R 12x3.3	86402802	Red	2012	3.3 x 12.0	3.3 x 12.0	6 / 1	45	GP5	204	675
B+R 12x3.3	86402804	Blue	5012	3.3 x 12.0	3.3 x 12.0	6 / 1	45	GP5	203	675
<b>Device marking</b>										
B+R 12x6.7	86402810	White	9016	6.7 x 12.0	6.7 x 12.0	6 / 1	45	GP5	230	675

\* Specifications of the label size / printable area is shown in Width x Length.

## Type KAB







### PRODUCT INFORMATION

**KAB** - for devices made by **ABB**, **Allen Bradley** and **Finder**.  
High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Switch gear labelling

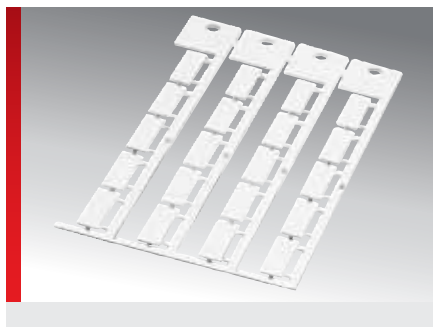


Type	Order No.	Colour	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KAB 9x6	86421017	White	6.0 x 9.0	6.0 x 9.0	5 / 1	50	GP5	549	1200
KAB 17x10	86421016	White	10.0 x 17.0	10.0 x 17.0	9 / 2	30	GP5	52	750

\* Specifications of the label size / printable area is shown in Width x Length.



## Type KES



### PRODUCT INFORMATION

**KES** - for devices made by **Escha, Murrelektronik** and **Turck**.

High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

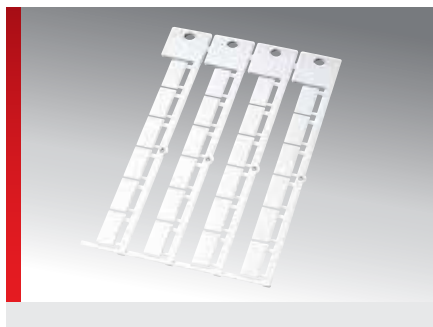
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Labelling distribution boxes

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KES 20x8	86421052	White	9016	8.0 x 20.0	8.0 x 20.0	11 / 2	20	GP4	99	380
KES 20x8	86421058	Yellow	1018	8.0 x 20.0	8.0 x 20.0	11 / 2	20	GP4	273	380
KES 20x8	86421057	Red	2012	8.0 x 20.0	8.0 x 20.0	11 / 2	20	GP4	443	380
KES 20x8	86421061	Green	6018	8.0 x 20.0	8.0 x 20.0	11 / 2	20	GP4	441	380
KES 20x8	86421059	Blue	5012	8.0 x 20.0	8.0 x 20.0	11 / 2	20	GP4	442	380

\* Specifications of the label size / printable area is shown in Width x Length.

## Type KMO







### PRODUCT INFORMATION

**KMO** - for devices made by **Moeller, In-dramat** and **Murrelektronik**.  
High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Switch gear labelling



Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KMO 17.5x8	86421070	White	9016	8.0 x 17.5	8.0 x 17.5	9 / 2	24	GP4	190	720
<b>Installation adapter towards the DILER and DILET devices, for devices without auxiliary contacts</b>										
KMO adaptor	86421074	White								380
KSS 20x9 label plate required (please order separately)										

\* Specifications of the label size / printable area is shown in Width x Length.

## Type KPF












### PRODUCT INFORMATION

**KPF** - for devices made by **Pepperl + Fuchs**.  
High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

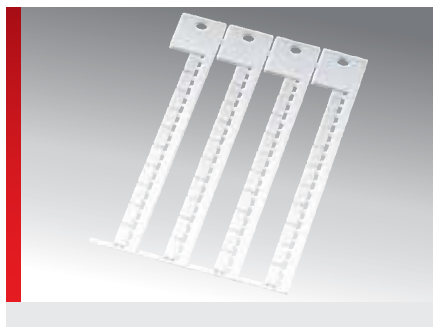
-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Labelling distribution boxes

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KPF 18.5x8	86421054	White	9016	8.0 x 18.5	8.0 x 18.5	10 / 2	20	GP4	250	480

\* Specifications of the label size / printable area is shown in Width x Length.

## Type KS



### PRODUCT INFORMATION





**KS** - for devices made by **Escha, IFM, Lumberg, Murrelektronik, Pepperl + Fuchs** and **Turck**.






**KS KDL/E** For the KDL/E cable entry system by **Murrplastik**.

High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

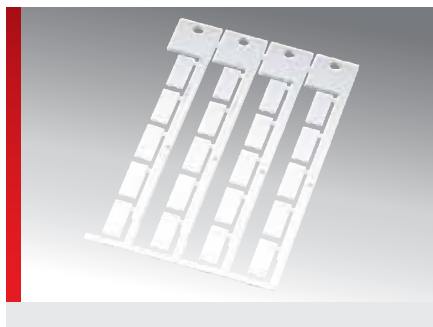
-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Switch gear labelling

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>For devices by Escha, IFM, Lumberg, Murrelektronik, Pepperl + Fuchs and Turk</b>										
KS 5/10	86402210	White	9016	5.0 x 10.0	5.0 x 10.0	5 / 1	40	GP4E	88	1000
<b>For Murrplastik KDL/E cable entry system</b>										
KS KDL/E	86421090	White	9016	5.8 x 98.0	5.8 x 98.0	54 / 1	4	GP4	290	100

\* Specifications of the label size / printable area is shown in Width x Length.

## Type KSA



### PRODUCT INFORMATION

**KSA** - for devices made by **AEG** and **Square D**. High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Switch gear labelling



Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KSA 19x8	86421012	White	9016	8.0 x 19.0	8.0 x 19.0	10 / 2	20	GP4	70	380

\* Specifications of the label size / printable area is shown in Width x Length.

## Type KSF







### PRODUCT INFORMATION

**KSF** - for devices made by **Festo, Lumberg, Moeller, Murrelektronik** and **Pepperl + Fuchs**.

High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

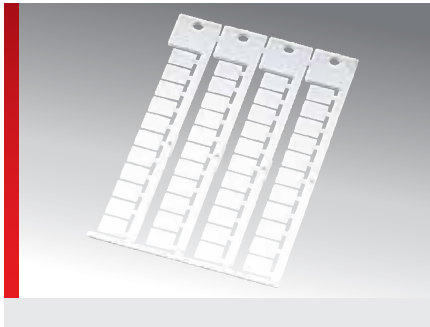
-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Switch gear and valve labelling



Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KSF 4.5x9	86421046	White	9016	4.5 x 9.0	4.5 x 9.0	5 / 1	80	GP4	176	1040
KSF 10x8	86421050	White	9016	8.0 x 10.0	8.0 x 10.0	5 / 2	44	none	175	440
KSF 20x9	86421042	White	9016	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	174	380

\* Specifications of the label size / printable area is shown in Width x Length.

## KSK (universal adhesive label)



### PRODUCT INFORMATION

**KSK type (universal adhesive label)** - for devices by various manufacturers. High-quality, halogen-free adhesive label plates. The large printable area at the top allows room for individual project and component

reference, dispensing with the need to organise additional systems. The flat construction allows the label holder to be used as a component location marker inside the top hat rail.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Device and device location labelling

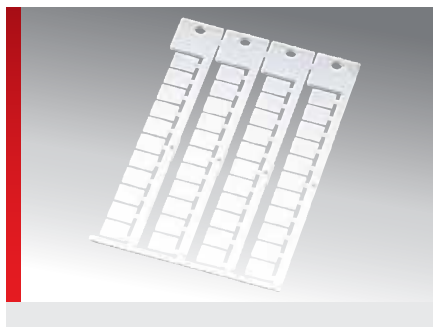
**HF**

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KSK 5x15	86421092	White	9016	5.0 x 15.0	5.0 x 15.0	8 / 1	64	GP4	438	1024
KSK 5x15	86421094	Yellow	1018	5.0 x 15.0	5.0 x 15.0	8 / 1	64	GP4	495	1024
KSK 6x15	86421093	White	9016	6.0 x 15.0	6.0 x 15.0	8 / 1	64	GP4	439	1024
KSK 6x15	86421095	Yellow	1018	6.0 x 15.0	6.0 x 15.0	8 / 1	64	GP4	497	1024
KSK 11x9	86421034	White	9016	9.0 x 11.0	9.0 x 11.0	6 / 2	44	GP4	61	1400
KSK 11x9	86421035	Yellow	1018	9.0 x 11.0	9.0 x 11.0	6 / 2	44	GP4	61G	1400
KSK 11x9	86421039	Red	2012	9.0 x 11.0	9.0 x 11.0	6 / 2	44	GP4	61R	1400
KSK 15x9	86421036	White	9016	9.0 x 15.0	9.0 x 15.0	8 / 2	44	GP4	63	1400
KSK 15x9	86421037	Yellow	1018	9.0 x 15.0	9.0 x 15.0	8 / 2	44	GP4	63G	1400
KSK 15x9	86421041	Red	2012	9.0 x 15.0	9.0 x 15.0	8 / 2	44	GP4	63R	1400
KSK 20x9	86421038	White	9016	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	66	680
KSK 20x9	86421088	Yellow	1018	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	66G	680
KSK 20x9	86421043	Red	2012	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	66R	680
KSK 35x9	86421045	White	9016	9.0 x 35.0	9.0 x 35.0	19 / 2	12	GP4	58W	360
KSK 35x9	86421047	Yellow	1018	9.0 x 35.0	9.0 x 35.0	19 / 2	12	GP4	58G	360
KSK 35x9	86421049	Red	2012	9.0 x 35.0	9.0 x 35.0	19 / 2	12	GP4	58R	360
KSK 70x9	86421051	White	9016	9.0 x 70.0	9.0 x 70.0	38 / 2	11	GP5	57W	330
KSK 70x9	86421053	Yellow	1018	9.0 x 70.0	9.0 x 70.0	38 / 2	11	GP5	57G	330
KSK 70x9	86421055	Red	2012	9.0 x 70.0	9.0 x 70.0	38 / 2	11	GP5	57R	330

**No information about packing unit (VPE). Request a quotation for minimum order quantity please.**

KSK 5x15	86421096	Red	2012	5.0 x 15.0	5.0 x 15.0	8 / 1	64	GP4	496	1024
KSK 6x15	86421097	Red	2012	6.0 x 15.0	6.0 x 15.0	8 / 1	64	GP4	498	1024

**KSK (universal adhesive label)** (Continued...)

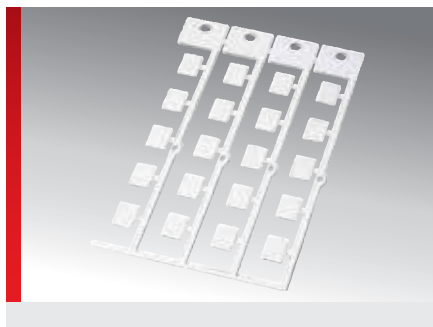


Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Long mat version</b>										
KSK 20x9 L	86421240	White	9016	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	554	640
KSK 20x9 L	86421242	Yellow	1018	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	555	640
KSK 20x9 L	86421244	Red	2012	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	556	640

\* Specifications of the label size / printable area is shown in Width x Length.



## Type KSL







### PRODUCT INFORMATION

**KSL** - for devices made by **Bosch/Rexroth** and **Lumberg**.

High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

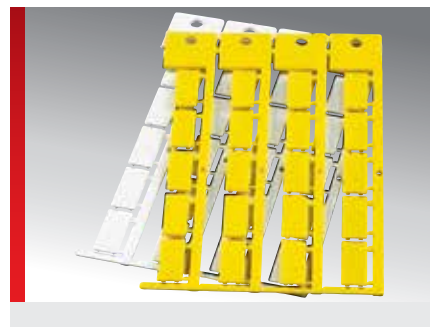
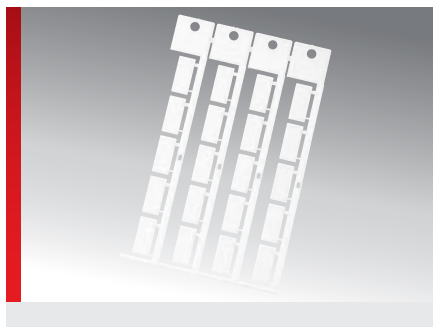
-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Labelling distribution boxes



Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KSL 12x9	86421060	White	9016	9.0 x 12.0	9.0 x 12.0	6 / 2	20	GP4	170	380
KSL 20x9	86421062	White	9016	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	171	380

\* Specifications of the label size / printable area is shown in Width x Length.

## Type KSS



### PRODUCT INFORMATION

**KSS** - for devices made by **ABB, Conta Clip, Escha, Festo, IFM, Pepperl + Fuchs, Siemens** and **Turck**.

High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Switch gear labelling



Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KSS 10x8 for ASI	86421006	White	9016	8.0 x 10.0	8.0 x 10.0	5 / 2	40	GP4	77	800
KSS 10x8 for ASI	86421008	Pastel turquoise	6034	8.0 x 10.0	8.0 x 10.0	5 / 2	40	GP4	78	800
KSS 20x9 <sup>1)</sup>	86421010	White	9016	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	67	380
KSS 20x9 <sup>1)</sup>	86421011	Yellow	1018	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	67G	380
KSS 20x9 <sup>1)</sup>	86421009	Pastel turquoise	6034	9.0 x 20.0	9.0 x 20.0	11 / 2	20	GP4	67P	380

\* Specifications of the label size / printable area is shown in Width x Length.

<sup>1)</sup> Device location marking in conjunction with label holder BS 9, BS 10 or label rail BZS

## Type KSZ



### PRODUCT INFORMATION

**KSZ** - for heavy plug connectors by **Harting**.  
High-quality, halogen-free label plates for marking Harting connector housings (heavy connectors).

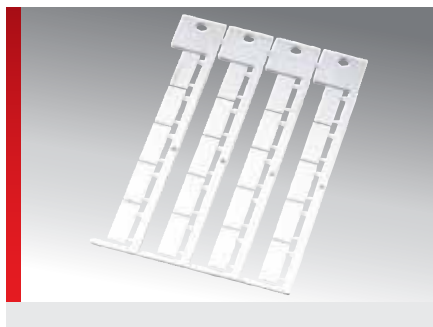
### SPECIFICATIONS

- 40 – 130 °C
  - Polycarbonate (PC)
  - V0
  - Connecting labelling
- HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KSZ 20x7	86421040	White	9016	7.0 x 20.0	7.0 x 20.0	11 / 2	20	GP1	200	100

\* Specifications of the label size / printable area is shown in Width x Length.

## Type KTE












### PRODUCT INFORMATION

**KTE** - for devices made by **ABB**, **IFM**, **Murrelektronik** and **Telemecanique**. High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Switch gear labelling

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
KTE 17x8	86421018	White	9016	8.0 x 17.0	8.0 x 17.0	9 / 2	20	GP4	73	340
KTE 21x8	86421014	White	9016	8.0 x 21.0	8.0 x 21.0	11 / 2	20	GP4	72	340

\* Specifications of the label size / printable area is shown in Width x Length.

## Type SKS



### PRODUCT INFORMATION

**SKS** - for devices made by **Siemens** (Series **SIRIUS**) and devices by **Lütze**.  
High-quality, halogen-free label plates to snap into components of the Siemens SIRIUS series.

The large printable area at the top of the SKS labels allows room to reference individual projects and components, dispensing with the need for additional organisational systems.

### SPECIFICATIONS

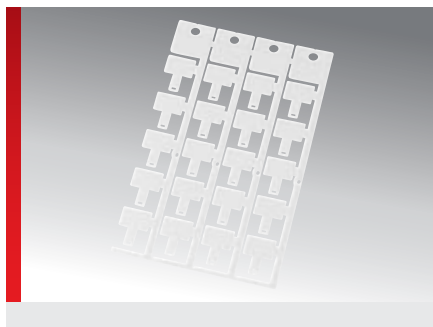
- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Switch gear labelling

HF

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
<b>Label for Siemens SIRIUS series</b>										
SKS 10x7 Sirius	86401652	White	9016	7.0 x 10.0	7.0 x 10.0	5 / 2	48	GP4	96	816
SKS 10x7 Sirius	86401668	Yellow	1018	7.0 x 10.0	7.0 x 10.0	5 / 2	48	GP4	136	816
SKS 10x7 Sirius	86401662	Pastel turquoise	6034	7.0 x 10.0	7.0 x 10.0	5 / 2	48	GP4	096	816
SKS 11x4 Sirius	86401658	White	9016	4.0 x 11.0	4.0 x 11.0	6 / 1	80	GP4	134	1200
SKS 11x4 Sirius	86401666	Yellow	1018	4.0 x 11.0	4.0 x 11.0	6 / 1	80	GP4	137	1200
SKS 11x4 Sirius	86401660	Pastel turquoise	6034	4.0 x 11.0	4.0 x 11.0	6 / 1	80	GP4	135	1200
SKS 20x7 Sirius	86401656	White	9016	7.0 x 20.0	7.0 x 20.0	11 / 2	20	GP4	95	340
SKS 20x7 Sirius	86401669	Yellow	1018	7.0 x 20.0	7.0 x 20.0	11 / 2	20	GP4	138	340
SKS 20x7 Sirius	86401664	Pastel turquoise	6034	7.0 x 20.0	7.0 x 20.0	11 / 2	20	GP4	095	340
<b>Label for Siemens SIRIUS series, self-adhesive</b>										
SKSK 20x7 Sirius	86401657	White	9016	7.0 x 20.0	7.0 x 20.0	11 / 2	20	GP4	95A	340
SKSK 20x7 Sirius	86401653	Pastel turquoise	6034	7.0 x 20.0	7.0 x 20.0	11 / 2	20	GP4	95B	340

\* Specifications of the label size / printable area is shown in Width x Length.

## Type SKS ET 200












### PRODUCT INFORMATION

**SKS ET 200** - for devices made by **Siemens** (Series **SIMATIC ET 200**).  
High-quality, halogen-free label plates to snap into components of the Siemens SIMATIC series.

The large printable area at the top of the SKS ET 200 labels allows room to reference individual projects and components, dispensing with the need for additional organisational systems.

### SPECIFICATIONS

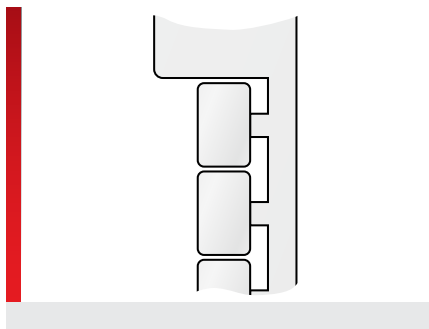
-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  Switch gear labelling

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
SKS 15x10 ET 200	86401670	White	9016	10.0 x 15.0	10.0 x 15.0	8 / 2	20	GP4	437	680

\* Specifications of the label size / printable area is shown in Width x Length.

## Type WGO







### PRODUCT INFORMATION






**WGO** - for devices made by **Wago**, **Beckhoff** and **Euchner**.

High-quality, halogen-free label plates to snap into devices.

The large printable area at the top allows room for individual project and component reference, dispensing with the need to organise additional systems.

### SPECIFICATIONS

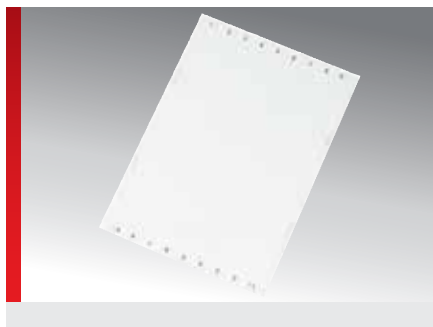
-  -40 – 130 °C
-  Polycarbonate (PC)
-  V0
-  For labelling equipment and connecting labelling

Type	Order No.	Colour	RAL equiv.	Label size * mm	Printable area * mm	No. characters/lines	No. per frame	Base plate	Software type	Pack qty.
WGO 12/7	86401822	White	9016	7.0 x 12.0	7.0 x 12.0	6 / 2	36	GP4	140	750

\* Specifications of the label size / printable area is shown in Width x Length.

## ELO polycarbonate label, perforated



### PRODUCT INFORMATION

High-quality polycarbonate sheet labels may be separated easily at the perforation; they are designed for single-line or multi-line inscribing with the Pictor printer, plotter and laser printer.

### SPECIFICATIONS

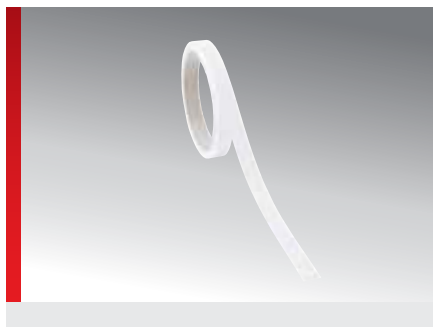
- 40 – 140 °C
- Polycarbonate
- V0
- Single-line and multi-line inscription.  
A4 sheets

Type	Order No.	Colour	Sheet labels size mm	Printable area mm	No. of columns	No. per sheet	Software type	Pack qty.
<b>For labelling Siemens S7 assemblies<sup>1)</sup></b>								
ELO 27.5x12.85 <sup>1)</sup>	86561268	Opaque	27.5 x 12.85	27.5 x 12.85	14	126	E24	1260
ELO 28x17,5 <sup>1)</sup>	86561267	Opaque	28.0 x 17.5	28.0 x 17.5	7	112	AAR	1120
ELO 50x12,85 <sup>1)</sup>	86561264	Opaque	50.0 x 12.85	50.0 x 12.85	14	70	E22	700
ELO 50x25,5 <sup>1)</sup>	86561266	Opaque	50.0 x 25.5	50.0 x 25.5	7	35	E23	350
ELO 103.5x17.45 <sup>1)</sup>	86561262	Opaque	103.5 x 17.45	103.5 x 17.45	10	20	E21	200
ELO 103.5x22.85 <sup>1)</sup>	86561260	Opaque	103.5 x 22.85	103.5 x 22.85	8	16	E20	160

<sup>1)</sup>\* The specified software types are blank templates. The predefined types EA0 and ED7 should be used for Siemens S7 assemblies.



## KCS-ECO Siemens PLC, continuous








### PRODUCT INFORMATION

The KCS-ECO label strips are made of a PET foil. The core diameter is "3". The label strips are used for the identification of Siemens series ET-200 and S7.

KCS-ECO endless rolls are available in the standard widths in white, yellow or pastel turquoise.

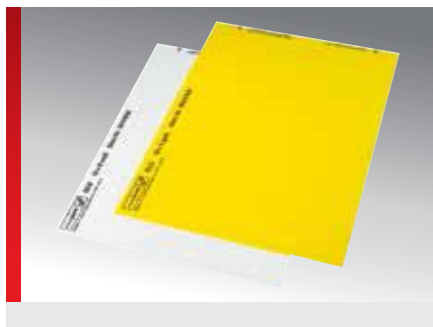
**Suitable for mp-TM series thermal transfer printers.**

### SPECIFICATIONS

-  -40 – 150 °C
-  Polyethylene terephthalate (PET)
-  Can be inscribed with thermal transfer printer, 3 in roll core diameter  
Primarily for inside use
-  

Type	Order No.	Colour	Roll width mm	Roll length m	Recommended colour ribbon	Software type	Pack qty.
KCS-ECO 12.9 - 15m	86513600	White	12.90	15.00	FB-TM 40 mm x 300 m	QJ0	15
KCS-ECO 12.9 - 15m	86513610	Yellow	12.90	15.00	FB-TM 40 mm x 300 m	QJ0	15
KCS-ECO 12.9 - 15m	86513620	Pastel turquoise	12.90	15.00	FB-TM 40 mm x 300 m	QJ0	15
KCS-ECO 17.5 - 15m	86513601	White	17.50	15.00	FB-TM 40 mm x 300 m	QJ1	15
KCS-ECO 17.5 - 15m	86513611	Yellow	17.50	15.00	FB-TM 40 mm x 300 m	QJ1	15
KCS-ECO 17.5 - 15m	86513621	Pastel turquoise	17.50	15.00	FB-TM 40 mm x 300 m	QJ1	15
KCS-ECO 22.9 - 15m	86513602	White	22.90	15.00	FB-TM 40 mm x 300 m	QJ2	15
KCS-ECO 22.9 - 15m	86513612	Yellow	22.90	15.00	FB-TM 40 mm x 300 m	QJ2	15
KCS-ECO 22.9 - 15m	86513622	Pastel turquoise	22.90	15.00	FB-TM 40 mm x 300 m	QJ2	15
KCS-ECO 25.5 - 15m	86513603	White	25.50	15.00	FB-TM 40 mm x 300 m	QJ3	15
KCS-ECO 25.5 - 15m	86513613	Yellow	25.50	15.00	FB-TM 40 mm x 300 m	QJ3	15
KCS-ECO 25.5 - 15m	86513623	Pastel turquoise	25.50	15.00	FB-TM 40 mm x 300 m	QJ3	15

## ELW / ELG / ELPT - self-adhesive label











### PRODUCT INFORMATION

Self-adhesive polyester labels on an A4 sheet, available in the colours white, yellow and pastel turquoise.

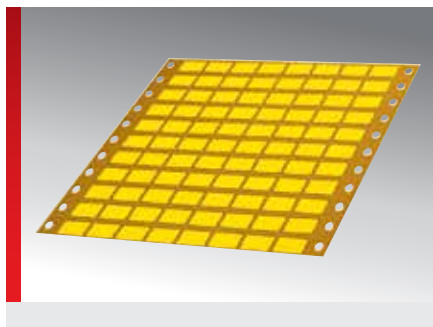
Easy handling because of the lock tabs. Clear positioning by labelling columns and lines.

### SPECIFICATIONS

	-40 – 150 °C		
	Polyester film		
	V0		
	Single-line and multi-line inscription. A4 sheets		
			

Type	Order No.	Colour	RAL equiv.	Sheet labels size mm	Printable area mm	No. of columns	No. per sheet	Software type	Pack qty.
<b>Labels on A4 sheet, self-adhesive, white</b>									
ELW 11x9R	86561224	White	9016	11.0 x 9.0	11.0 x 9.0	16	400	95	4000
ELW 15x6R	86561228	White	9016	15.0 x 6.0	15.0 x 6.0	11	374	88L	3740
ELW 19x6R	86561220	White	9016	19.0 x 6.0	19.0 x 6.0	9	306	97	3060
ELW 19x8R	86561222	White	9016	19.0 x 8.0	19.0 x 8.0	10	270	99	2700
ELW 64x34R	86561226	White	9016	64.0 x 34.0	64.0 x 34.0	3	24	93	240
<b>Labels on A4 sheet, self-adhesive, yellow</b>									
ELG 11x9R	86562018	Yellow	1018	11.0 x 9.0	11.0 x 9.0	16	400	94	4000
ELG 15x6R	86562022	Yellow	1018	15.0 x 6.0	15.0 x 6.0	11	374	082	3740
ELG 19x6R	86562014	Yellow	1018	19.0 x 6.0	19.0 x 6.0	9	306	96	3060
ELG 19x8R	86562016	Yellow	1018	19.0 x 8.0	19.0 x 8.0	10	270	98	2700
ELG 64x34R	86562020	Yellow	1018	64.0 x 34.0	64.0 x 34.0	3	24	R91	240
<b>Labels on A4 sheet, self-adhesive, pastel turquoise</b>									
ELPT 19x6	86561820	Pastel turquoise	6034	19.0 x 6.0	19.0 x 6.0	9	306	110	3060

## EDG self-adhesive textile label



### PRODUCT INFORMATION

Self-adhesive textile labels in zig-zag fold and punched hole margin for matrix printers.

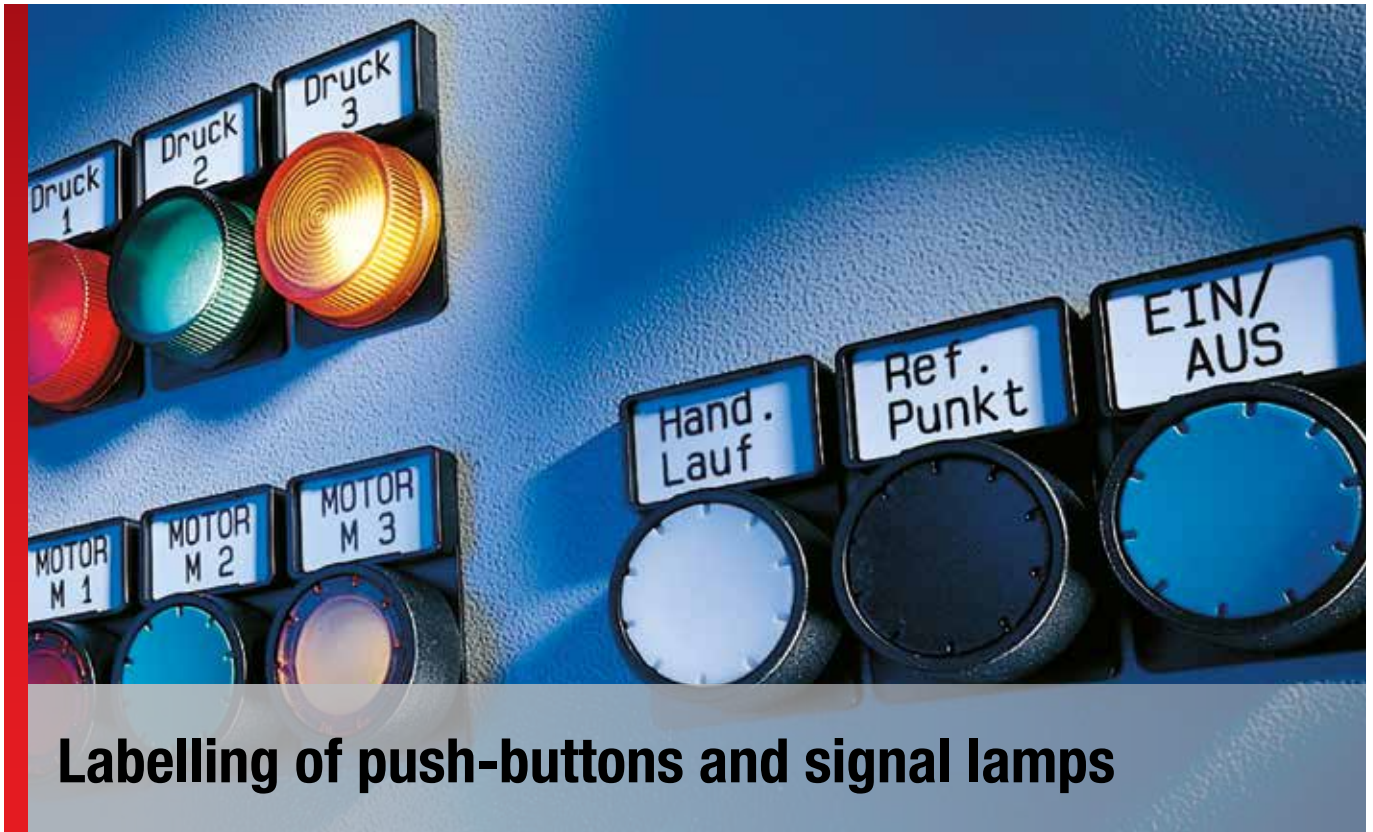
Especially tear resistant and therefore particularly well-suited for glueing edges.

### SPECIFICATIONS

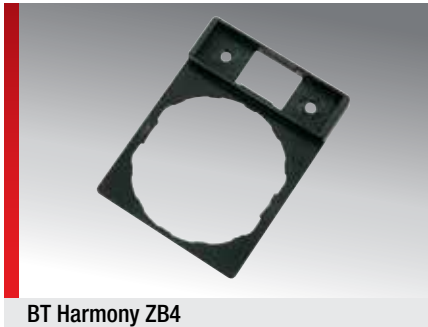
- 0 – 80 °C
- Reinforced textile
- Single-line and multi-line inscription
- 
- 

Type	Order No.	Colour	RAL equiv.	Sheet labels size mm	Printable area mm	No. of columns	No. per sheet	Software type	Pack qty.
EDG 15x10	86561630	Bright yellow	1026	15.0 x 10.0	15.0 x 10.0	12	336	1P	3360
EDG 18x9	86561620	Yellow	1018	18.0 x 9.0	18.0 x 9.0	8	96	50	9600

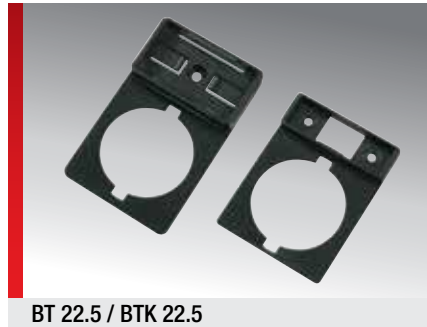




## BT label holder



BT Harmony ZB4



BT 22.5 / BTK 22.5



BT 15/xx / BTK 15/xx

### PRODUCT INFORMATION







The BT and BTK label holders are used for labelling non-proprietary components and assemblies.

Fastened with self-tapping screws.

Self-adhesive film is supplied with the BTK version as an installation aid.

The transparent cover keeps the inserted label plates clean and free from mechanical load.

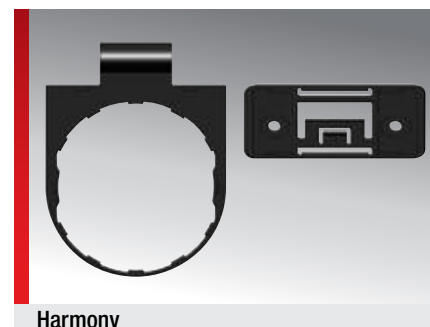
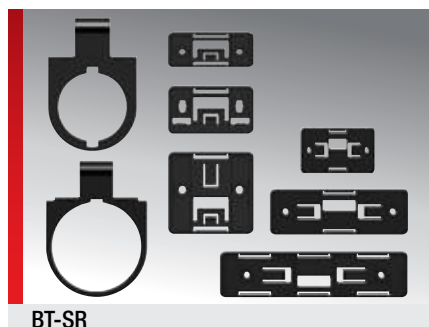
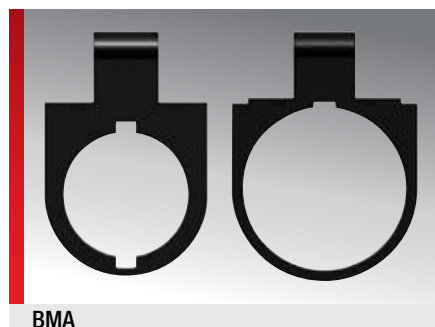
### SPECIFICATIONS

-  -40 – 80 °C
  -  BT and BTK Polyvinyl chloride (PVC)  
TA: Polycarbonate (PC)
  -  V0
  -  Single-line and multi-line inscription
- 


Type	Order No.	Colour	Recommended label plate	Pack qty.
<b>Label holders</b>				
BT 15/27	86441010	Black	KS 15/27	250
BT 15/49	86441012	Black	KS 15/49	250
BT 15/67	86441014	Black	KS 15/67	250
<b>Label holder with adhesive strip on the back</b>				
BTK 15/27	86441210	Black	KS 15/27	250
BTK 15/49	86441212	Black	KS 15/49	250
BTK 15/67	86441214	Black	KS 15/67	250
<b>Label holder for Ø 22.5 mm elements</b>				
BT 22.5	86442018	Black	KS 8/26.5	250
<b>Label holder for elements with Ø 22.5 mm, with adhesive strip on the back</b>				
BTK 22.5	86441016	Black	KS 15/27	250
<b>Label holder for Moeller elements with Ø 28 mm</b>				
BT Harmony ZB4	86442016	Black	KS 8/26.5	250
<b>Transparent cover for label holder</b>				
TA 8/26.5	86441418	Transparent		480
TA 15/27	86441410	Transparent		480
TA 15/49	86441412	Transparent		240
TA 15/67	86441414	Transparent		120



## Label holder BMA



### PRODUCT INFORMATION

The BMA system is a flexible system for the labelling of push-buttons and signal lamps.

The neutral BMA type label holders can be equipped with various BT-SR type label frames, depending on the labelling requirement or request.

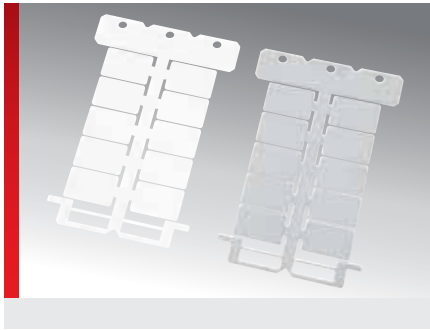
### SPECIFICATIONS

- 40 – 80 °C
  - BT-SR and BMA: Polyvinyl chloride (PVC)  
TA: Polycarbonate (PC)
  - V0
  - Single-line and multi-line inscription
- 

Type	Order No.	Colour	Recommended Label plate	Pack qty.
<b>Holder standard</b>				
BMA 22.5	86442020	Black		50
BMA 30.0	86442024	Black		50
<b>Standard label frame</b>				
BT-SR 15x27	86442034	Black	KS 15/27	10
BT-SR 15x49	86442036	Black	KS 15/49	10
BT-SR 15x67	86442038	Black	KS 15/67	10
BT-SR 27x12.5	86442028	Black	KSK 27x12.5	10
BT-SR 27x18	86442030	Black	KSK 27x18	10
BT-SR 27x27	86442032	Black	KSK 27x27	10
<b>Holder Harmony</b>				
BMA 22,5 Harmony	86442022	Black		50
<b>Harmony label frame</b>				
BT-SR 8x26.5 Harmony	86442026	Black	KS 8/26.5	10
BT-SR 27x18 Harmony	86442042	Black	KSK 27x18	10
<b>Transparent cover for label holder</b>				
TA 8/26.5	86441418	Transparent		
TA 15/27	86441410	Transparent		
TA 15/49	86441412	Transparent		
TA 15/67	86441414	Transparent		
TA 27/12.5	86441420	Transparent		216
TA 27/18	86441422	Transparent		180



## KSK (label plate adhesive)



### PRODUCT INFORMATION

High-quality, halogen-free, self-adhesive label.

- The KS 22x22 is suitable for Siemens 3SB push-button and signal lamp holders.
- The KSK 95x75 may be used alone, as a self-adhesive type plate, or with the TA 95x75 transparent cover with magnifying function (Item no. 86464014).
- Other available sizes of the self-adhesive KSK label are used with BT-SR label holders as well as label holders of other manufacturers.

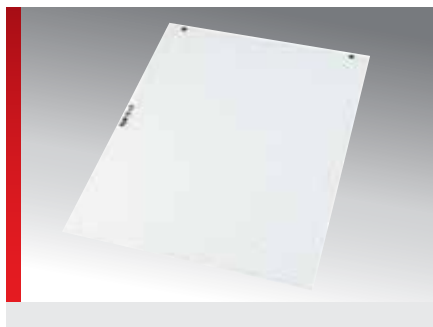
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line and multi-line inscription

Type	Order No.	Colour	Label size * mm	Printable area * mm	No. characters/ lines	No. per frame	Base plate	Software type	Pack qty.
<b>For Siemens 3SB push-button and signal lamp holders</b>									
KSK 22x22	86361278	White	22.0 x 22.0	22.0 x 22.0	12 / 6	8	GP3	128	144
KSK 22x22	86361280	Grey	22.0 x 22.0	22.0 x 22.0	12 / 6	8	GP3	129	144
<b>For BT-SR 27x12.5</b>									
KSK 27x12,5	86361266	White	12.5 x 27.0	12.5 x 27.0	15 / 3	12	GP3	115	216
KSK 27x12,5	86361268	Grey	12.5 x 27.0	12.5 x 27.0	15 / 3	12	GP3	116	216
<b>For BT-SR 27x18 and BT-SR 27x18 Harmony</b>									
KSK 27x18	86361270	White	18.0 x 27.0	18.0 x 27.0	15 / 5	10	GP3	117	180
KSK 27x18	86361272	Grey	18.0 x 27.0	18.0 x 27.0	15 / 5	10	GP3	118	180
<b>For BT-SR 27x27</b>									
KSK 27x27	86361274	White	27.0 x 27.0	27.0 x 27.0	15 / 7	6	GP3	119	108
KSK 27x27	86361276	Grey	27.0 x 27.0	27.0 x 27.0	15 / 7	6	GP3	127	108
<b>Base carrier type plate</b>									
KSK 95x75	86464016	White	75.0 x 95.0	75.0 x 95.0	52 / 22	1	GP1	300	20

\* Specifications of the label size / printable area is shown in Width x Length.

## ELW polyester label / ELO polycarbonate label







### PRODUCT INFORMATION

#### Labelling of Siemens 3SB push-button and signal lamp holders

High-quality sheet labels, made of Polyester foil in white (ELW) and made of Polycarbonate foil in opaque (ELO), for single and multi-line inscriptions.

The sheet labels are designated for laser printing in A4 format and may be separated to accommodate A5 format as needed.

### SPECIFICATIONS

-  -40 – 140 °C
-  ELW label: Polyester film  
ELO label: Polycarbonate foil
-  V0
-  Single-line and multi-line inscription.  
A4 sheets



Type	Order No.	Colour	Sheet labels size mm	Sheet labels diameter mm	Labelling area mm	No. characters/lines	No. per sheet	Software type	Pack qty.
<b>Polyester label, rectangular version</b>									
ELW 22x22	86561248	White	22.0 x 22.0		22.0 x 22.0	12 / 6	70	M09	1050
ELW 27x12,5	86561244	White	27.0 x 12.5		27.0 x 12.5	15 / 3	96	M03	960
ELW 27x27	86561246	White	27.0 x 27.0		27.0 x 27.0	15 / 7	48	M05	960
<b>Polycarbonate label, rectangular version</b>									
ELO 28x17,5	86561242	Opaque	28.0 x 17.5		28.0 x 17.5	15 / 5	72	M07	1080
<b>Polycarbonate label, round version</b>									
ELO Ø17.9	86561240	Opaque		17.90			96	M01	960
ELO Ø18.8	86561241	Opaque		18.80			70	A91	700

## KCT-ECO button labelling







### PRODUCT INFORMATION

The KCT-ECO label plates are made of PE composite material on a transparent carrier film and a 3" core; they can be used as an alternative to the PC labels for key/button labelling.

KCT-ECO label plates for button labelling are available in various sizes in white or silver.

**Suitable for mp-TM series thermal transfer printers.**

### SPECIFICATIONS

-  -40 – 90 °C
-  Polyethylene (PE)
-  Can be inscribed with thermal transfer printer, 3 in roll core diameter  
Primarily for inside use
-  High tensile strength and tear resistance  
In compliance with the requirements of REACH and RoHS



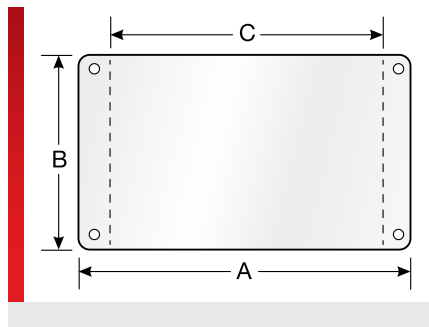
Type	Order No.	Colour	Sheet labels size mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
KCT-ECO 22x22	86513200	White	22.0 x 22.0	28.00	FB-TM 40 mm x 300 m	QC0	900
KCT-ECO 22x22	86513250	Silver	22.0 x 22.0	28.00	FB-TM 40 mm x 300 m	QD0	900
KCT-ECO 27x12.5	86513201	White	27.0 x 12.5	33.00	FB-TM 40 mm x 300 m	QC1	900
KCT-ECO 27x12.5	86513251	Silver	27.0 x 12.5	33.00	FB-TM 40 mm x 300 m	QD1	900
KCT-ECO 27x15	86513202	White	27.0 x 15.0	33.00	FB-TM 40 mm x 300 m	QC2	900
KCT-ECO 27x15	86513252	Silver	27.0 x 15.0	33.00	FB-TM 40 mm x 300 m	QD2	900
KCT-ECO 27x18	86513203	White	27.0 x 18.0	33.00	FB-TM 40 mm x 300 m	QC3	900
KCT-ECO 27x18	86513253	Silver	27.0 x 18.0	33.00	FB-TM 40 mm x 300 m	QD3	900
KCT-ECO 27x27	86513204	White	27.0 x 27.0	33.00	FB-TM 40 mm x 300 m	QC4	900
KCT-ECO 27x27	86513254	Silver	27.0 x 27.0	33.00	FB-TM 40 mm x 300 m	QD4	900





## System labelling

## KST type plate



### PRODUCT INFORMATION

Type plate for marking installations, components, housings, and appliances. Fixing with self-adhesive foil. The option of additional securing via rivets or screw-mounting.

#### Base plates

GPU 140x140 (pulsar)  
GPU A4 (plotter)  
Label plate (pictor<sup>2</sup>)

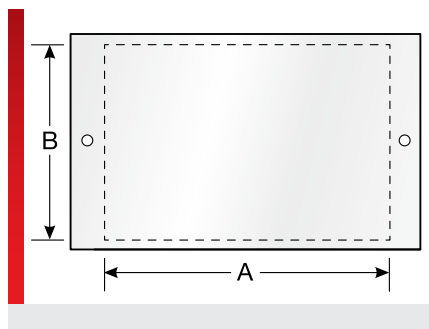
### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate
- V0
- Universal label holder

**HF**

Type	Order No.	Colour	Label size mm (A x B)	Printable area mm (C x B)	No. characters/ lines	Software type	Pack qty.
KST 52x26 R3	8607140006	White	52.0 x 26.0	37.0 x 26.0	20 / 7	L36	10
KST 74x37 R3	8607140005	White	74.0 x 37.0	59.0 x 37.0	32 / 10	L35	10
KST 84x54 R3	8607140004	White	84.0 x 54.0	69.0 x 54.0	38 / 15	L34	10
KST 100x60 R5	8607140003	White	100.0 x 60.0	82.5 x 60.0	45 / 17	L33	10
KST 120x70 R5	8607140002	White	120.0 x 70.0	102.5 x 70.0	56 / 20	L32	10
KST 139x85 R5	8607140001	White	139.0 x 85.0	121.5 x 85.0	67 / 25	L31	10
KST 139x139 R5	8607140000	White	139.0 x 139.0	121.5 x 139.0	67 / 40	L30	10

## Type plate-set TS



### PRODUCT INFORMATION

Type plate for marking installations, components, housings, and appliances. Additional protection with the transparent cover. Secure attachment with rivets or screw-mounting.

- The complete set consists of the KS base carrier and cover with TA zoom function. These parts are also available individually.
- Instead of the base carrier, you can also label the optional ELO insert and place it between the base carrier and cover.

### SPECIFICATIONS

- 40 – 130 °C
- (KS label and transparent cover TA) Polycarbonate  
(ELO label, perforated) Polyester film
- V0
- Universal label holder
- Printable KS base plates are halogen-free per DIN/VDE 0472, Part 815

HF

Type	Order No.	Colour	Label size mm (A x B)	Sheet labels size mm	Printable area mm (C x B)	No. characters/lines	No. per frame	No. per sheet	Base plate type	Soft-ware type	Pack qty.
<b>Complete set, consisting of printable base carrier and transparent cover with magnifying function</b>											
TS 75x50	86464020	White / Transparent									10
TS 95x75	86464010	White / Transparent									10
<b>Printable base carrier</b>											
KS 75x50	86464022	White	75.0 x 50.0		75.0 x 50.0	41 / 14	1		GP1	301	20
KS 95x75	86464012	White	95.0 x 75.0		95.0 x 75.0	52 / 22	1		GP1	300	20
<b>Transparent cover with magnifying function</b>											
TA 75x50	86464024	Transparent									10
TA 95x75	86464014	Transparent									10
<b>Perforated ELO insert label, suitable for TS type plate set</b>											
ELO 95x55	86561263	Opaque		95.0 x 55.0	95.0 x 55.0	52 / 16		10		AAT	100
ELO 110x75	86561261	Opaque		110.0 x 75.0	110.0 x 75.0	61 / 22		4		AAS	40
Optional KSK 95x75 base carrier, self-adhesive (Pack 20 pcs.), part number 86464016 (not available as TS complete set)											

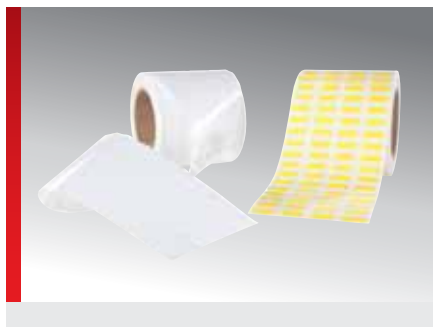






## Thermal transfer labels

## ECP-Premium polyester label







### PRODUCT INFORMATION

Polyester label for any labelling purpose. Suitable for use in automotive, electronics industries, logistics, machine and plant construction, as well as in medical technology and in the chemical industry.

- Excellent adhesive properties on many surfaces.
- May also be used on powder coated surfaces
- UL and cUL recognised

**Suitable for mp-TM series thermal transfer printers.**

### SPECIFICATIONS

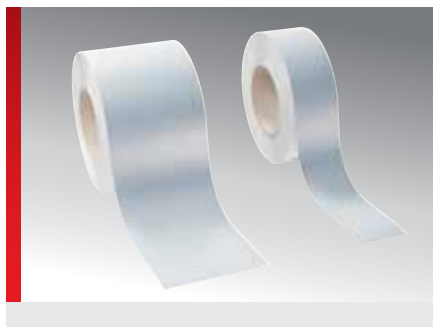
-  -40 – 150 °C
-  Polyester film
-  Label rail with thermal transfer printer  
Roll core diameter 3 inch
-  Self-extinguishing after 15 seconds.  
Non-drip.



Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
<b>ECP-Premium labels, white</b>							
ECP-Premium 11x6	86511100	White	11.0 x 6.0	100.00	FB-TM 110 mm x 300 m	Q00	10000
ECP-Premium 11x9	86511101	White	11.0 x 9.0	100.00	FB-TM 110 mm x 300 m	Q01	10000
ECP-Premium 15x6	86511102	White	15.0 x 6.0	108.00	FB-TM 110 mm x 300 m	Q02	10000
ECP-Premium 18x6	86511103	White	18.0 x 6.0	108.00	FB-TM 110 mm x 300 m	Q03	10000
ECP-Premium 18x9	86511104	White	18.0 x 9.0	108.00	FB-TM 110 mm x 300 m	Q04	10000
ECP-Premium 20x8	86511114	White	20.0 x 8.0	108.00	FB-TM 110 mm x 300 m	Q12	10000
ECP-Premium 22x22	86511108	White	22.0 x 22.0	108.00	FB-TM 110 mm x 300 m	Q08	2500
ECP-Premium 27x12.5	86511105	White	27.0 x 12.5	108.00	FB-TM 110 mm x 300 m	Q05	5000
ECP-Premium 27x17.5	86511106	White	27.0 x 17.5	108.00	FB-TM 110 mm x 300 m	Q06	5000
ECP-Premium 27x27	86511107	White	27.0 x 27.0	108.00	FB-TM 110 mm x 300 m	Q07	2500
ECP-Premium 60x40	86511111	White	60.0 x 40.0	64.00	FB-TM 110 mm x 300 m	Q09	1500
ECP-Premium 90x60	86511112	White	90.0 x 60.0	94.00	FB-TM 110 mm x 300 m	Q10	1500
ECP-Premium 100x150	86511113	White	100.0 x 150.0	104.00	FB-TM 110 mm x 300 m	Q11	500
<b>ECP-Premium labels, silver</b>							
ECP-Premium 11x6	86511200	Silver	11.0 x 6.0	100.00	FB-TM 110 mm x 300 m	Q26	10000
ECP-Premium 11x9	86511201	Silver	11.0 x 9.0	100.00	FB-TM 110 mm x 300 m	Q27	10000
ECP-Premium 15x6	86511202	Silver	15.0 x 6.0	108.00	FB-TM 110 mm x 300 m	Q28	10000
ECP-Premium 15x250	86511220	Silver	15.0 x 250.0	95.00	FB-TM 110 mm x 300 m	QN5	1500
ECP-Premium 17x40	86511221	Silver	40.0 x 17.0	63.00	FB-TM 110 mm x 300 m	QN6	5000
ECP-Premium 18x6	86511203	Silver	18.0 x 6.0	108.00	FB-TM 110 mm x 300 m	Q29	10000
ECP-Premium 18x9	86511204	Silver	18.0 x 9.0	108.00	FB-TM 110 mm x 300 m	Q30	10000
ECP-Premium 18x52	86511224	Silver	18.0 x 52.0	82.00	FB-TM 110 mm x 300 m	Q01	5000
ECP-Premium 19x250	86511219	Silver	19.0 x 250.0	92.00	FB-TM 110 mm x 300 m	QN4	1200



## ECP-Premium continuous polyester label



### PRODUCT INFORMATION






Continuous Polyester label for any labelling purpose. Suitable for use in automotive, electronics industries, logistics, machine and plant construction, as well as in medical technology and in the chemical industry.

- Continuous material allows the production of labels in any length

- Excellent adhesive properties on many surfaces
- May also be used on powder coated surfaces
- UL and cUL recognised

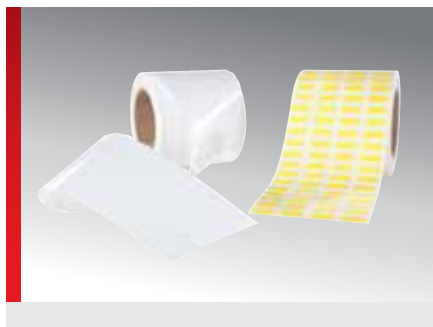
**Suitable for mp-TM series thermal transfer printers.**

### SPECIFICATIONS

-  -40 – 150 °C
-  Polyester film
-  Label rail with thermal transfer printer  
Roll core diameter 3 inch
-  Self-extinguishing after 15 seconds.  
Non-drip.
- 

Type	Order No.	Colour	Sheet labels width mm	Roll length m	Recommended colour ribbon	Software type	Pack qty.
<b>Infinite length roll materials</b>							
ECP-Premium 15 - 100m	86511160	White	15.00	100.00	FB-TM 110 mm x 300 m	QP2	100
ECP-Premium 19 - 100m	86511161	White	19.00	100.00	FB-TM 110 mm x 300 m	QP1	100
ECP-Premium 25 - 100m	86511260	Silver	25.00	100.00	FB-TM 110 mm x 300 m	QQ0	100
ECP-Premium 50 - 100m	86511261	Silver	50.00	100.00	FB-TM 110 mm x 300 m	QQ1	100
ECP-Premium 54 - 100m	86511162	White	54.00	100.00	FB-TM 110 mm x 300 m	QP0	100
ECP-Premium 100 - 100m	86511060	Yellow	100.00	100.00	FB-TM 110 mm x 300 m	QR0	100
ECP-Premium 100 - 100m	86511262	Silver	100.00	100.00	FB-TM 110 mm x 300 m	QQ2	100

## ECP-ECO polyester label



### PRODUCT INFORMATION

Polyester label for any number of labelling needs. Suitable for use in the automotive, electronics industries, logistics, machine and plant construction.

- Good adhesive properties for many surfaces.
- Cost-effective solution

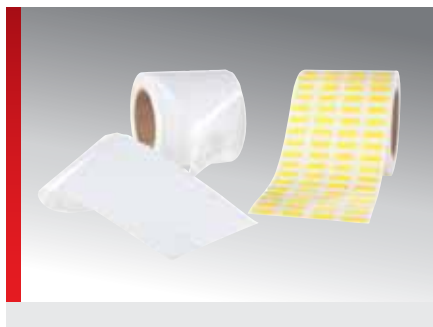
**Suitable for mp-TM series thermal transfer printers.**

### SPECIFICATIONS

- 20 – 120 °C
- Polyester film
- Label rail with thermal transfer printer  
Roll core diameter 3 inch
- Primarily for inside use

Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
<b>ECP-ECO labels, white</b>							
ECP-ECO 11x6	86511600	White	11.0 x 6.0	93.00	FB-TM 110 mm x 300 m	Q50	10000
ECP-ECO 11x9	86511601	White	11.0 x 9.0	93.00	FB-TM 110 mm x 300 m	Q51	10000
ECP-ECO 15x6	86511602	White	15.0 x 6.0	87.00	FB-TM 110 mm x 300 m	Q52	10000
ECP-ECO 18x6	86511603	White	18.0 x 6.0	102.00	FB-TM 110 mm x 300 m	Q53	10000
ECP-ECO 18x9	86511604	White	18.0 x 9.0	102.00	FB-TM 110 mm x 300 m	Q54	10000
ECP-ECO 22x22	86511608	White	22.0 x 22.0	98.00	FB-TM 110 mm x 300 m	Q58	10000
ECP-ECO 27x12.5	86511605	White	27.0 x 12.5	89.00	FB-TM 110 mm x 300 m	Q55	10000
ECP-ECO 27x17.5	86511606	White	27.0 x 17.5	89.00	FB-TM 110 mm x 300 m	Q56	10000
ECP-ECO 27x27	86511607	White	27.0 x 27.0	89.00	FB-TM 110 mm x 300 m	Q57	10000
ECP-ECO 60x40	86511611	White	60.0 x 40.0	64.00	FB-TM 110 mm x 300 m	Q59	2000
ECP-ECO 90x60	86511612	White	90.0 x 60.0	94.00	FB-TM 110 mm x 300 m	Q60	1500
ECP-ECO 100x150	86511613	White	100.0 x 150.0	104.00	FB-TM 110 mm x 300 m	Q61	600
<b>ECP-ECO labels, silver</b>							
ECP-ECO 11x6	86511700	Silver	11.0 x 6.0	93.00	FB-TM 110 mm x 300 m	Q74	10000
ECP-ECO 11x9	86511701	Silver	11.0 x 9.0	93.00	FB-TM 110 mm x 300 m	Q75	10000
ECP-ECO 15x6	86511702	Silver	15.0 x 6.0	87.00	FB-TM 110 mm x 300 m	Q76	10000
ECP-ECO 18x6	86511703	Silver	18.0 x 6.0	102.00	FB-TM 110 mm x 300 m	Q77	10000
ECP-ECO 18x9	86511704	Silver	18.0 x 9.0	102.00	FB-TM 110 mm x 300 m	Q78	10000
ECP-ECO 22x22	86511708	Silver	22.0 x 22.0	98.00	FB-TM 110 mm x 300 m	Q82	10000
ECP-ECO 27x12.5	86511705	Silver	27.0 x 12.5	89.00	FB-TM 110 mm x 300 m	Q79	10000
ECP-ECO 27x17.5	86511706	Silver	27.0 x 17.5	89.00	FB-TM 110 mm x 300 m	Q80	10000
ECP-ECO 27x27	86511707	Silver	27.0 x 27.0	89.00	FB-TM 110 mm x 300 m	Q81	10000
ECP-ECO 60x40	86511711	Silver	60.0 x 40.0	64.00	FB-TM 110 mm x 300 m	Q83	2000

**ECP-ECO polyester label** (Continued...)



Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
ECP-ECO 90x60	86511712	Silver	90.0 x 60.0	94.00	FB-TM 110 mm x 300 m	Q84	1500
ECP-ECO 100x150	86511713	Silver	100.0 x 150.0	104.00	FB-TM 110 mm x 300 m	Q85	600
<b>ECP-ECO labels, yellow</b>							
ECP-ECO 11x6	86511500	Yellow	11.0 x 6.0	93.00	FB-TM 110 mm x 300 m	Q62	10000
ECP-ECO 11x9	86511501	Yellow	11.0 x 9.0	93.00	FB-TM 110 mm x 300 m	Q63	10000
ECP-ECO 15x6	86511502	Yellow	15.0 x 6.0	87.00	FB-TM 110 mm x 300 m	Q64	10000
ECP-ECO 18x6	86511503	Yellow	18.0 x 6.0	102.00	FB-TM 110 mm x 300 m	Q65	10000
ECP-ECO 18x9	86511504	Yellow	18.0 x 9.0	102.00	FB-TM 110 mm x 300 m	Q66	10000
ECP-ECO 22x22	86511508	Yellow	22.0 x 22.0	98.00	FB-TM 110 mm x 300 m	Q70	10000
ECP-ECO 27x12.5	86511505	Yellow	27.0 x 12.5	89.00	FB-TM 110 mm x 300 m	Q67	10000
ECP-ECO 27x17.5	86511506	Yellow	27.0 x 17.5	89.00	FB-TM 110 mm x 300 m	Q68	10000
ECP-ECO 27x27	86511507	Yellow	27.0 x 27.0	89.00	FB-TM 110 mm x 300 m	Q69	10000
ECP-ECO 60x40	86511511	Yellow	60.0 x 40.0	64.00	FB-TM 110 mm x 300 m	Q71	2000
ECP-ECO 90x60	86511512	Yellow	90.0 x 60.0	94.00	FB-TM 110 mm x 300 m	Q72	1500
ECP-ECO 100x150	86511513	Yellow	100.0 x 150.0	104.00	FB-TM 110 mm x 300 m	Q73	600



## TEA - polyester label



### PRODUCT INFORMATION

The TEA (Thermotransfer-Etikett-Automotive) label series was developed especially for the automotive industry to meet the need for an efficient, customer optimised solution. It complies with the current requirements. Polyester 50 µm film comes with a slight gloss and a surface coating to ensure outstanding colour fixing when inscribing with thermal transfer print systems and synthetic resin-based thermal transfer ribbons. The smooth surface of the material enables full-coverage colour transfer, ensuring precise lettering. The polyester labels are suitable for adhesion to metal, gloss paints and high surface energy plastics. The permanent ac-






rylate adhesive exhibits high initial adhesion and at least 1006 N/m FTM 1 on steel after 72 hours. The silver polyester labels are UL-certified for thermal transfer printing using our resin ribbons.

TEA - Polyester labels are suitable for

- Device identification in areas protected from the weather
- Components with smooth surfaces
- Components without curves or corners

**Suitable for mp-TM series thermal transfer printers and pavonis (with external unwinder).**

### SPECIFICATIONS

	-40 – 150 °C
	Polyester film
	Label rail with thermal transfer printer Roll core diameter 3 inch
	

Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
<b>Rectangular design</b>							
TEA 15x250	86496555	Silver	15.0 x 250.0	97.00	FH 110mm x 300m	QR6	1500
TEA 18x52	86496557	Silver	18.0 x 52.0	104.00	FH 110mm x 300m	QR8	5000
TEA 19x250	86496556	Silver	19.0 x 250.0	104.00	FH 110mm x 300m	QR7	1000
TEA 26x70	86496558	Silver	26.0 x 70.0	96.00	FH 110mm x 300m	QR9	2500
TEA 27x86	86496559	Silver	27.0 x 86.0	99.00	FH 110mm x 300m	QS0	2000
TEA 45x110	86496560	Silver	45.0 x 110.0	102.00	FH 110mm x 300m	QS1	1300
TEA 54x125	86496552	Silver	54.0 x 125.0	58.00	FH 110mm x 300m	QR3	500
TEA 54x188	86496553	Silver	54.0 x 188.0	58.00	FH 110mm x 300m	QR4	400
TEA 54x250	86496554	Silver	54.0 x 250.0	58.00	FH 110mm x 300m	QR5	300
TEA 70x213	86496561	Silver	70.0 x 213.0	76.00	FH 110mm x 300m	QS2	350
TEA 100x150	86496550	Silver	100.0 x 150.0	104.00	FH 110mm x 300m	QR1	500
TEA 105x429	86496551	Silver	105.0 x 429.0	108.00	FH 110mm x 300m	QR2	180



## TEP - polyester label



### PRODUCT INFORMATION

Polyester 50 µm film comes with a slight gloss and a surface coating to ensure outstanding colour fixing when inscribing with thermal transfer print systems and synthetic resin-based thermal transfer ribbons. The smooth surface of the material enables full-coverage colour transfer, ensuring precise lettering. The polyester labels are suitable for adhesion to metal, gloss paints and high surface energy plastics. The permanent acrylate adhesive exhibits high initial adhesion and at least 1006 N/m FTM 1 on steel after 72 hours. The silver polyester labels are UL-




certified for thermal transfer printing using our resin ribbons.



TEP - Polyester labels are suitable for

- Device identification in areas protected from the weather
- Components with smooth surfaces
- Components without curves or corners

**Suitable for use with pavonis thermal transfer printers and the mp-TM series (with external unwinder).**

### SPECIFICATIONS

-  -40 – 150 °C
-  Polyester film
-  Label rail with thermal transfer printer  
Roll core diameter 1 inch

Type	Order No.	Colour	Label size Length x width mm	Sheet labels diameter mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
<b>Rectangular design</b>								
TEP 6.35x6.35	86496100	White	6.35 x 6.35		104.00	FH 90mm x 300m	N00	10000
TEP 12.7x11	86496101	White	12.7 x 11.0		85.00	FH 90mm x 300m	N01	10000
TEP 12.7x11	86496301	Yellow	12.7 x 11.0		85.00	FH 90mm x 300m	O01	10000
TEP 12.7x11	86496501	Silver	12.7 x 11.0		85.00	FH 90mm x 300m	P01	10000
TEP 15x6,35	86496102	White	15.0 x 6.35		105.00	FH 110mm x 300m	N02	10000
TEP 15x6,35	86496302	Yellow	15.0 x 6.35		105.00	FH 110mm x 300m	O02	10000
TEP 15x6,35	86496502	Silver	15.0 x 6.35		105.00	FH 110mm x 300m	P02	10000
TEP 16x9	86496103	White	16.0 x 9.0		98.00	FH 110mm x 300m	N03	10000
TEP 16x9	86496303	Yellow	16.0 x 9.0		98.00	FH 110mm x 300m	O03	10000
TEP 16x9	86496503	Silver	16.0 x 9.0		98.00	FH 110mm x 300m	P03	10000
TEP 16.5x5.1	86496104	White	16.5 x 5.1		80.00	FH 80mm x 300m	N04	10000
TEP 16.5x5.1	86496304	Yellow	16.5 x 5.1		80.00	FH 80mm x 300m	O04	10000
TEP 16.5x5.1	86496504	Silver	16.5 x 5.1		80.00	FH 80mm x 300m	P04	10000
TEP 17x7,4	86496105	White	17.0 x 7.4		96.00	FH 110mm x 300m	N05	10000
TEP 17x7,4	86496305	Yellow	17.0 x 7.4		96.00	FH 110mm x 300m	O05	10000
TEP 18x8	86496106	White	18.0 x 8.0		105.00	FH 110mm x 300m	N06	10000
TEP 18x8	86496306	Yellow	18.0 x 8.0		105.00	FH 110mm x 300m	O06	10000
TEP 18x8	86496506	Silver	18.0 x 8.0		105.00	FH 110mm x 300m	P06	10000
TEP 18x12,7	86496107	White	18.0 x 12.7		93.00	FH 110mm x 300m	N07	10000
TEP 18x12,7	86496507	Silver	18.0 x 12.7		93.00	FH 110mm x 300m	P07	10000
TEP 19x6,35	86496108	White	19.0 x 6.35		85.00	FH 90mm x 300m	N08	10000
TEP 19x6,35	86496308	Yellow	19.0 x 6.35		85.00	FH 90mm x 300m	O08	10000

**TEP - polyester label** (Continued...)



Type	Order No.	Colour	Label size Length x width mm	Sheet labels diameter mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
TEP 19x6,35	86496508	Silver	19.0 x 6.35		85.00	FH 90mm x 300m	P08	10000
TEP 20x8	86496109	White	20.0 x 8.0		105.00	FH 110mm x 300m	N09	10000
TEP 20x8	86496309	Yellow	20.0 x 8.0		105.00	FH 110mm x 300m	O09	10000
TEP 20x8	86496509	Silver	20.0 x 8.0		105.00	FH 110mm x 300m	P09	10000
TEP 20x9	86496110	White	20.0 x 9.0		101.00	FH 110mm x 300m	N10	10000
TEP 20x9	86496310	Yellow	20.0 x 9.0		101.00	FH 110mm x 300m	O10	10000
TEP 20x9	86496510	Silver	20.0 x 9.0		101.00	FH 110mm x 300m	P10	10000
TEP 22x22	86496545	Silver	22.0 x 22.0		90.00	FH 90mm x 300m	P45	10000
TEP 23x6	86496111	White	23.0 x 6.0		110.00	FH 110mm x 300m	N11	10000
TEP 25x8	86496112	White	25.0 x 8.0		85.00	FH 90mm x 300m	N12	10000
TEP 25x8	86496312	Yellow	25.0 x 8.0		85.00	FH 90mm x 300m	O12	10000
TEP 25x8	86496512	Silver	25.0 x 8.0		85.00	FH 90mm x 300m	P12	10000
TEP 25.4x12.7	86496113	White	25.4 x 12.7		85.00	FH 90mm x 300m	N13	9000
TEP 25.4x12.7	86496313	Yellow	25.4 x 12.7		85.00	FH 90mm x 300m	O13	9000
TEP 25.4x12.7	86496513	Silver	25.4 x 12.7		85.00	FH 90mm x 300m	P13	9000
TEP 27x12,5	86496548	Silver	27.0 x 12.5		90.00	FH 90mm x 300m	P48	10000
TEP 27x18	86496547	Silver	27.0 x 18.0		90.00	FH 90mm x 300m	P47	10000
TEP 27x27	86496546	Silver	27.0 x 27.0		90.00	FH 90mm x 300m	P46	10000
TEP 31.8x9.4	86496114	White	31.8 x 9.4		70.00	FH 70mm x 300m	N14	10000
TEP 31.8x9.4	86496314	Yellow	31.8 x 9.4		70.00	FH 70mm x 300m	O14	10000
TEP 31.8x9.4	86496514	Silver	31.8 x 9.4		70.00	FH 70mm x 300m	P14	10000
TEP 36x12,7	86496115	White	36.0 x 12.7		80.00	FH 80mm x 300m	N15	10000
TEP 36x12,7	86496315	Yellow	36.0 x 12.7		80.00	FH 80mm x 300m	O15	10000
TEP 36x12,7	86496515	Silver	36.0 x 12.7		80.00	FH 80mm x 300m	P15	10000
TEP 38.1x6.35	86496116	White	38.1 x 6.35		85.00	FH 90mm x 300m	N16	10000
TEP 38.1x6.35	86496516	Silver	38.1 x 6.35		85.00	FH 90mm x 300m	P16	10000
TEP 38x19	86496117	White	38.0 x 19.0		85.00	FH 90mm x 300m	N17	4000
TEP 38x19	86496317	Yellow	38.0 x 19.0		85.00	FH 90mm x 300m	O17	4000
TEP 38x19	86496517	Silver	38.0 x 19.0		85.00	FH 90mm x 300m	P17	4000
TEP 38x23	86496118	White	38.0 x 23.0		85.00	FH 90mm x 300m	N18	3000
TEP 38x23	86496318	Yellow	38.0 x 23.0		85.00	FH 90mm x 300m	O18	3000
TEP 38x23	86496518	Silver	38.0 x 23.0		85.00	FH 90mm x 300m	P18	3000
TEP/S 45x40	86492300	Yellow	45.0 x 40.0		94.00	FH 110mm x 300m	O55	1500
TEP 48x8	86496119	White	48.0 x 8.0		56.00	FH 60mm x 300m	N19	10000
TEP 48x8	86496519	Silver	48.0 x 8.0		56.00	FH 60mm x 300m	P19	10000
TEP 50.8x25.4	86496120	White	50.8 x 25.4		57.00	FH 60mm x 300m	N20	3000
TEP 50.8x25.4	86496320	Yellow	50.8 x 25.4		57.00	FH 60mm x 300m	O20	3000

## TEP - polyester label (Continued...)

Type	Order No.	Colour	Label size Length x width mm	Sheet labels diameter mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
TEP 50.8x25.4	86496520	Silver	50.8 x 25.4		57.00	FH 60mm x 300m	P20	3000
TEP 55x15	86496121	White	55.0 x 15.0		60.00	FH 60mm x 300m	N21	5000
TEP 55x15	86496321	Yellow	55.0 x 15.0		60.00	FH 60mm x 300m	O21	5000
TEP 55x15	86496521	Silver	55.0 x 15.0		60.00	FH 60mm x 300m	P21	5000
TEP 56x9,5	86496122	White	56.0 x 9.5		60.00	FH 60mm x 300m	N22	3000
TEP 60x34	86496123	White	60.0 x 34.0		64.00	FH 70mm x 300m	N23	2500
TEP 60x34	86496323	Yellow	60.0 x 34.0		64.00	FH 70mm x 300m	O23	2500
TEP 60x34	86496523	Silver	60.0 x 34.0		64.00	FH 70mm x 300m	P23	2500
TEP 60x40	86496124	White	60.0 x 40.0		64.00	FH 70mm x 300m	N24	2500
TEP 60x40	86496324	Yellow	60.0 x 40.0		64.00	FH 70mm x 300m	O24	2500
TEP 60x40	86496524	Silver	60.0 x 40.0		64.00	FH 70mm x 300m	P24	2500
TEP 70x25,4	86496125	White	70.0 x 25.4		76.00	FH 80mm x 300m	N25	3000
TEP 70x25,4	86496325	Yellow	70.0 x 25.4		76.00	FH 80mm x 300m	O25	3000
TEP 70x25,4	86496525	Silver	70.0 x 25.4		76.00	FH 80mm x 300m	P25	3000
TEP 70x32	86496126	White	70.0 x 32.0		76.00	FH 80mm x 300m	N26	3000
TEP 70x32	86496326	Yellow	70.0 x 32.0		76.00	FH 80mm x 300m	O26	3000
TEP 70x32	86496526	Silver	70.0 x 32.0		76.00	FH 80mm x 300m	P26	3000
TEP 74x37	86496127	White	74.0 x 37.0		80.00	FH 80mm x 300m	N27	2000
TEP 74x37	86496327	Yellow	74.0 x 37.0		80.00	FH 80mm x 300m	O27	2000
TEP 74x37	86496527	Silver	74.0 x 37.0		80.00	FH 80mm x 300m	P27	2000
TEP 76.2x25.4	86496128	White	76.2 x 25.4		80.00	FH 80mm x 300m	N28	3000
TEP 76.2x25.4	86496328	Yellow	76.2 x 25.4		80.00	FH 80mm x 300m	O28	3000
TEP 76.2x25.4	86496528	Silver	76.2 x 25.4		80.00	FH 80mm x 300m	P28	3000
TEP 76.2x50.8	86496129	White	76.2 x 50.8		80.00	FH 80mm x 300m	N29	2500
TEP 76.2x50.8	86496329	Yellow	76.2 x 50.8		80.00	FH 80mm x 300m	O29	2500
TEP 76.2x50.8	86496529	Silver	76.2 x 50.8		80.00	FH 80mm x 300m	P29	2500
TEP 80x8	86496130	White	80.0 x 8.0		85.00	FH 90mm x 300m	N30	3000
TEP 80x8	86496530	Silver	80.0 x 8.0		85.00	FH 90mm x 300m	P30	3000
TEP 80x40	86496131	White	80.0 x 40.0		85.00	FH 90mm x 300m	N31	3000
TEP 80x40	86496331	Yellow	80.0 x 40.0		85.00	FH 90mm x 300m	O31	3000
TEP 80x40	86496531	Silver	80.0 x 40.0		85.00	FH 90mm x 300m	P31	3000
TEP 90x45	86496132	White	90.0 x 45.0		96.00	FH 110mm x 300m	N32	2500
TEP 90x45	86496532	Silver	90.0 x 45.0		96.00	FH 110mm x 300m	P32	2500
TEP 90x60	86496133	White	90.0 x 60.0		96.00	FH 110mm x 300m	N33	2000
TEP 90x60	86496333	Yellow	90.0 x 60.0		96.00	FH 110mm x 300m	O33	2000
TEP 90x60	86496533	Silver	90.0 x 60.0		96.00	FH 110mm x 300m	P33	2000
TEP 100x150	86496134	White	100.0 x 150.0		104.00	FH 110mm x 300m	N34	500
TEP 100x150	86496334	Yellow	100.0 x 150.0		104.00	FH 110mm x 300m	O34	500
TEP 100x150	86496534	Silver	100.0 x 150.0		104.00	FH 110mm x 300m	P34	500
TEP 105x52	86496135	White	105.0 x 52.0		110.00	FH 110mm x 300m	N35	1000
TEP 105x52	86496335	Yellow	105.0 x 52.0		110.00	FH 110mm x 300m	O35	1000
TEP 105x52	86496535	Silver	105.0 x 52.0		110.00	FH 110mm x 300m	P35	1000
TEP 105x52	86496145	Signal yellow	105.0 x 52.0		110.00	FH 110mm x 300m	A67	1000
<b>Safety label</b>								
TEP 16x9	86496549	Silver	16.0 x 9.0		98.00	FH 110mm x 300m	N81	10000

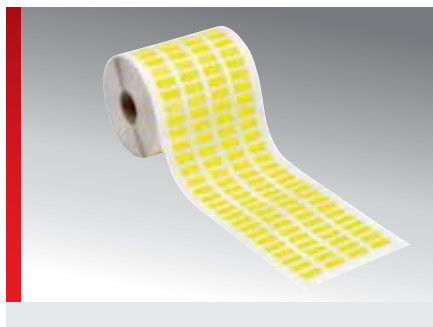
**TEP - polyester label** (Continued...)



Type	Order No.	Colour	Label size Length x width mm	Sheet labels diameter mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
<b>Round design</b>								
TEP Ø 30,0	86496340	Yellow		30.00	108.00	FH 110mm x 300m	O40	3000
TEP Ø 30,0	86496540	Silver		30.00	108.00	FH 110mm x 300m	P40	3000
<b>Continuous-feed material; roll length 40 m<sup>1)</sup></b>								
TEP 25E <sup>1)</sup>	86496141	White	25.0		30.00	FH 40mm x 300m	N41	40
TEP 25E <sup>1)</sup>	86496541	Silver	25.0		30.00	FH 40mm x 300m	P41	40
TEP 50E <sup>1)</sup>	86496142	White	50.0		55.00	FH+ 55mm x 300m	N42	40
TEP 50E <sup>1)</sup>	86496342	Yellow	50.0		55.00	FH+ 55mm x 300m	O42	40
TEP 50E <sup>1)</sup>	86496542	Silver	50.0		55.00	FH+ 55mm x 300m	P42	40
TEP 75E <sup>1)</sup>	86496143	White	75.0		80.00	FH 80mm x 300m	N43	40
TEP 75E <sup>1)</sup>	86496343	Yellow	75.0		80.00	FH 80mm x 300m	O43	40
TEP 75E <sup>1)</sup>	86496543	Silver	75.0		80.00	FH 80mm x 300m	P43	40
TEP 100E <sup>1)</sup>	86496144	White	100.0		105.00	FH 110mm x 300m	N44	40
TEP 100E <sup>1)</sup>	86496344	Yellow	100.0		105.00	FH 110mm x 300m	O44	40
TEP 100E <sup>1)</sup>	86496544	Silver	100.0		105.00	FH 110mm x 300m	P44	40

<sup>1)</sup>Label size information for continuous-feed material = label size

## TEG - fabric label



### PRODUCT INFORMATION

This self-adhesive, silicon-free, woven nylon fabric is both flexible and tear-resistant. Fabric labels have a surface coating to ensure outstanding colour fixing when lettering using thermal transfer print systems and resin- or wax/resin-based thermal transfer ribbons. The permanent acrylate adhesive features high initial adhesion, meaning labels can be processed easily. These labels are especially well suited for marking electrical systems, tagging devices, for adhesion over edges or radii, for cable designations or for use in switching cabinet installations.

- TEG - fabric labels are suitable for
- device identification of all kinds
  - components with smooth and textured surface finishes
  - components with and without curves or corners

**Suitable for use with pavonis thermal transfer printers and the mp-TM series (with external unwinder).**

### SPECIFICATIONS

- 30 – 100 °C
- Nylon fabric
- Label rail with thermal transfer printer  
Roll core diameter 1 inch



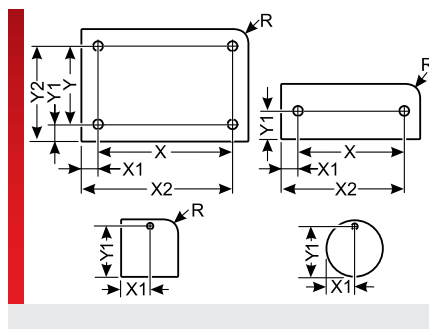
Type	Order No.	Colour	Label size Length x width mm	Roll width mm	Recommended colour ribbon	Software type	Pack qty.
TEG 11x6	86497121	White	11.0 x 6.0	94.00	FH 110mm x 300m	N80	10000
TEG 15x6	86497315	Yellow	15.0 x 6.0	105.00	FH 110mm x 300m	071	10000
TEG 15x9	86497116	White	15.0 x 9.0	105.00	FH 110mm x 300m	N72	10000
TEG 15x9	86497316	Yellow	15.0 x 9.0	105.00	FH 110mm x 300m	072	10000
TEG 17x6	86497317	Yellow	17.0 x 6.0	96.00	FH 110mm x 300m	073	10000
TEG 17x9	86497318	Yellow	17.0 x 9.0	96.00	FH 110mm x 300m	074	10000
TEG 18x8	86497100	White	18.0 x 8.0	105.00	FH 110mm x 300m	N56	10000
TEG 18x8	86497300	Yellow	18.0 x 8.0	105.00	FH 110mm x 300m	056	10000
TEG 19x6	86497319	Yellow	19.0 x 6.0	85.00	FH 90mm x 300m	075	10000
TEG 19x9	86497320	Yellow	19.0 x 9.0	85.00	FH 90mm x 300m	076	10000
TEG 20x8	86497102	White	20.0 x 8.0	105.00	FH 110mm x 300m	N58	10000
TEG 20x8	86497302	Yellow	20.0 x 8.0	105.00	FH 110mm x 300m	058	10000
TEG 25x8	86497305	Yellow	25.0 x 8.0	85.00	FH 90mm x 300m	061	10000
TEG 25.4x12.7	86497106	White	25.4 x 12.7	85.00	FH 90mm x 300m	N62	9000
TEG 25.4x12.7	86497306	Yellow	25.4 x 12.7	85.00	FH 90mm x 300m	062	9000
TEG 38x19	86497109	White	38.0 x 19.0	85.00	FH 90mm x 300m	N65	4000
TEG 38x19	86497309	Yellow	38.0 x 19.0	85.00	FH 90mm x 300m	065	4000
TEG 38.1x6.35	86497108	White	38.1 x 6.35	85.00	FH 90mm x 300m	N64	10000
TEG 50.8x25.4	86497111	White	50.8 x 25.4	57.00	FH 60mm x 300m	N67	3000
TEG 50.8x25.4	86497311	Yellow	50.8 x 25.4	57.00	FH 60mm x 300m	067	3000
TEG 76.2x25.4	86497113	White	76.2 x 25.4	80.00	FH 80mm x 300m	N69	3000





## Laser labelling materials

## EST stainless steel type plate



### PRODUCT INFORMATION

V4A stainless steel label plates to be used as type plates. Fastened with either rivets or screws.

Marking can only be done with a laser printer system (e.g. pulsar) or with an engraving system suitable for engraving stainless steel (e.g. CAM).

Special design for demanding environments like

- in the chemical or petrochemical industries
- in the mining industry
- in the ship building industry
- in wind energy plants
- in the food industry

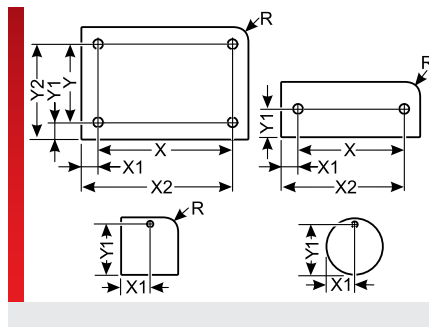
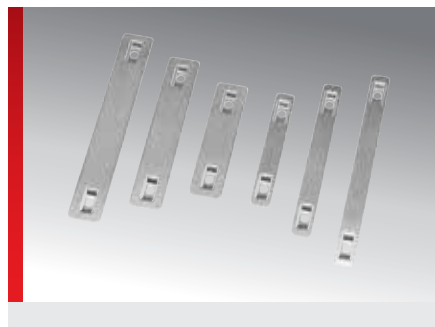
### SPECIFICATIONS

- 80 – 500 °C
- V4A stainless steel
- V0
- Single-line and multi-line inscription

Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Software type	Pack qty.
<b>Stainless steel single label</b>								
EST 30x30 R5	8605148007	Brushed stainless steel	1.00	30.0 x 22.0	16 / 6	1x 4,0	A62	90
EST 52x26 R3	8605148006	Brushed stainless steel	1.00	37.0 x 26.0	20 / 7	2x 2,5	L16	40
EST 74x37 R3	8605148005	Brushed stainless steel	1.00	59.0 x 37.0	32 / 10	4x 2,5	L15	20
EST 84x54 R3	8605148004	Brushed stainless steel	1.00	69.0 x 54.0	38 / 15	4x 2,5	L14	10
EST 100x60 R5	8605148003	Brushed stainless steel	1.00	82.5 x 60.0	45 / 17	4x 3,7	L13	10
EST 120x70 R5	8605148002	Brushed stainless steel	1.00	102.5 x 70.0	56 / 20	4x 3,7	L12	10
EST 139x85 R5	8605148001	Brushed stainless steel	1.00	121.5 x 85.0	67 / 25	4x 3,7	L11	10
EST 139x139 R5	8605148000	Brushed stainless steel	1.00	121.5 x 139.0	67 / 40	4x 3,7	L10	10



## ESK cable designation on stainless steel



### PRODUCT INFORMATION

V4A stainless steel labels for cable designation with a material thickness of 0.5 mm. Mounted with cable ties. The labels are installed on a plastic holder.

Marking can only be done with a laser printer system (e.g. mp-LM series).

Special design for demanding environments like

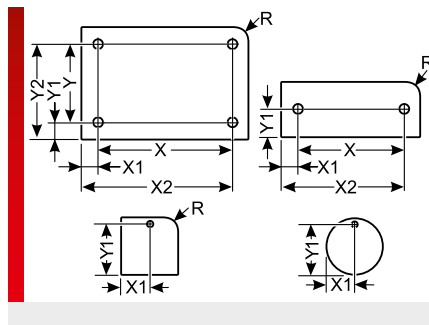
- in the chemical or petrochemical industries
- in the mining industry
- in the ship building industry
- in wind energy plants
- in the food industry

### SPECIFICATIONS

- 80 – 500 °C
- V4A stainless steel
- V0
- 
- 

Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	No. per frame	Software type	Pack qty.
ESK 60x9 L	8605190015	Brushed stainless steel	0.50	28.0 x 9.0	15 / 2	2x 3,5	10	L05	30
ESK 80x9 L	8605190014	Brushed stainless steel	0.50	48.0 x 9.0	26 / 2	2x 3,5	10	L04	30
ESK 100x9 L	8605190013	Brushed stainless steel	0.50	68.0 x 9.0	37 / 2	2x 3,5	10	L03	30
ESK 60x15 L	8605190012	Brushed stainless steel	0.50	28.0 x 15.0	15 / 4	2x 3,5	7	L02	21
ESK 80x15 L	8605190011	Brushed stainless steel	0.50	48.0 x 15.0	26 / 4	2x 3,5	7	L01	21
ESK 100x15 L	8605190010	Brushed stainless steel	0.50	68.0 x 15.0	37 / 4	2x 3,5	7	L00	21

# LA Laser alu



## INFORMATIONS PRODUITS

The laser has served us well for years, especially for engraving and labelling of metals. Marking anodised aluminium with the laser produces great contrast, durability, precision, great readability and can be done with great speed.

- Optionally available with self-adhesive foil (SK), strong self-adhesive foil (SSK) or adhesive foil (HF)
- Available in square versions with and without corner radius, in round versions (circular blanks), optionally with holes, slots or granulation

## SPÉCIFICATIONS

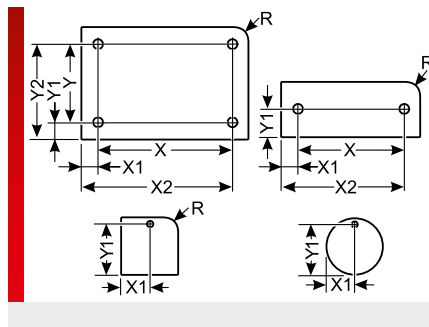
- 40 – 140 °C temporaire 200 °C
- Aluminium anodisé (ALU)
- V0

Type	Order No.	Colour	Label size mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diame-ter mm	No. per frame	Soft-ware type	Pack qty.
<b>Rectangular without radius</b>										
LA 45x12 HF	8610100037	Black	45,0 x 12,0	45,0 x 12,0	25 / 3			16	LI7	64
LA 45x12 SK	8610100042	Black	45,0 x 12,0	45,0 x 12,0	25 / 3			16	LM8	64
<b>Rectangular without radius, 1x hole</b>										
LA 45x29 HF, 1x22,5MM	8610100050	Black	45,0 x 29,0	18,0 x 29,0	10 / 8	1x 22,5		6	LR2	24
<b>Rectangular without radius, 2x hole</b>										
LA 40x10 HF, 2x3,0MM	8610100051	Silver	40,0 x 10,0	24,0 x 10,0	13 / 2	2x 3,0		20	LR3	80
LA 40x15 HF, 2x3,0MM	8610100059	Silver	40,0 x 15,0	24,0 x 15,0	13 / 4	2x 3,0		14	LS6	56
<b>Rectangular with radius</b>										
LA 30x15 R2 SKS	8610100029	Silver	30,0 x 15,0	30,0 x 15,0	16 / 4			21	LH9	84
LA 40x80 R2 SK	8610100036	Silver	40,0 x 80,0	40,0 x 80,0	22 / 23			2	LI6	8
LA 50x15 R2 SKS	8610100034	Black	50,0 x 15,0	50,0 x 15,0	27 / 4			14	LI4	56
LA 50x15 R2 SKS	8610100035	Silver	50,0 x 15,0	50,0 x 15,0	27 / 4			14	LI5	56
LA 100x50 R2 SKS	8610100032	Black	100,0 x 50,0	100,0 x 50,0	55 / 14			2	LI2	8
LA 100x50 R2 SKS	8610100031	Silver	100,0 x 50,0	100,0 x 50,0	55 / 14			2	LI1	8
LA 100x100 R2 SKS	8610100033	Silver	100,0 x 100,0	100,0 x 100,0	55 / 29			1	LI3	4
LA 110x30 R4 SKS	8610100040	Black	110,0 x 30,0	110,0 x 30,0	61 / 8			2	LL8	12
<b>Rectangular with radius, 1x hole</b>										
LA 20x20 R7 HF, 1x2,5MM	8610100039	Black	20,0 x 20,0	20,0 x 13,5	11 / 3	1x 2,5		25	LL5	100
<b>Rectangular with radius, 2x hole</b>										
LA 30x15 R2 HF, 2x3,5MM	8610100002	Anodised silver	30,0 x 15,0	17,0 x 15,0	9 / 4	2x 3,5		21	LC1	72

## LA Laser alu (suite)

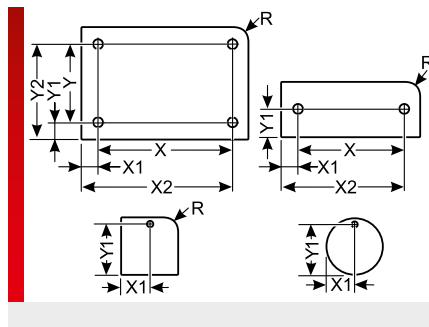
Type	Order No.	Colour	Label size mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diame-ter mm	No. per frame	Soft-ware type	Pack qty.
LA 30x15 R2 HF, 2x3,5MM	8610100016	Anodised black	30,0 x 15,0	17,0 x 15,0	9 / 4	2x 3,5		21	LD5	72
LA 30x15 R2 HF, 2x4,2MM	8610100004	Anodised silver	30,0 x 15,0	15,0 x 15,0	8 / 4	2x 4,2		21	LC3	72
LA 30x15 R2 HF, 2x4,2MM	8610100018	Anodised black	30,0 x 15,0	15,0 x 15,0	8 / 4	2x 4,2		21	LD7	72
LA 40x15 R2 HF, 2x3,0MM	8610100056	Silver	40,0 x 15,0	25,0 x 15,0	13 / 4	2x 3,0		14	LS3	56
LA 50x15 R2 HF, 2x3,0MM	8610100003	Anodised silver	50,0 x 15,0	36,0 x 15,0	20 / 4	2x 3,0		12	LC2	48
LA 50x15 R2 HF, 2x3,0MM	8610100017	Anodised black	50,0 x 15,0	36,0 x 15,0	20 / 4	2x 3,0		12	LD6	48
LA 50x15 R2 HF, 2x4,2MM	8610100005	Anodised silver	50,0 x 15,0	34,0 x 15,0	18 / 4	2x 4,2		12	LC4	48
LA 50x15 R2 HF, 2x4,2MM	8610100019	Anodised black	50,0 x 15,0	34,0 x 15,0	18 / 4	2x 4,2		12	LD8	48
LA 50x15,1 R2 HF, 2x3,5MM	8610100048	Silver	50,0 x 15,1	32,5 x 15,1	18 / 4	2x 3,5		12	LO2	48
LA 52x18 R2 HF, 2x2,8MM	8610100006	Anodised silver	52,0 x 18,0	38,0 x 18,0	21 / 5	2x 2,8		10	LC5	40
LA 52x18 R2 HF, 2x2,8MM	8610100020	Anodised black	52,0 x 18,0	38,0 x 18,0	21 / 5	2x 2,8		10	LD9	40
LA 52x18 R2 HF, 2x3,2MM	8610100052	Silver	52,0 x 18,0	38,0 x 18,0	21 / 5	2x 3,2		10	LR9	40
LA 55x35 R2 HF, 2x3,0MM	8610100057	Silver	55,0 x 35,0	40,0 x 35,0	22 / 10	2x 3,0		6	LS4	24
LA 60x40 R3 HF, 2x4,5MM	8610100053	Silver	60,0 x 40,0	41,0 x 40,0	22 / 11	2x 4,5		2	LS0	8
LA 70x27 R2 HF, 2x3,3MM	8610100054	Silver	70,0 x 27,0	55,0 x 27,0	30 / 7	2x 3,3		4	LS1	16
LA 74x18 R2,5 HF, 2x3,2MM	8610100028	Anodised black	74,0 x 18,0	60,6 x 18,0	33 / 5	2x 3,2		6	LE7	24
LA 80x18 R2 HF, 2x3,2MM	8610100055	Silver	80,0 x 18,0	67,6 x 18,0	37 / 5	2x 3,2		5	LS2	20
LA 100x50 R2 HF, 2x3,0MM	8610100058	Silver	100,0 x 50,0	85,0 x 50,0	47 / 14	2x 3,0		2	LS5	8
<b>Rectangular with radius, 4x hole</b>										
LA 60x15 R2 HF, 4x3,0MM	8610100043	Silver	60,0 x 15,0	45,0 x 15,0	25 / 4	4x 3,0		7	LM9	28
LA 60x30 R2 HF, 4x3,0MM	8610100044	Silver	60,0 x 30,0	45,0 x 30,0	25 / 8	4x 3,0		3	LN0	12
LA 100x40 R2 SK, 4x3,0MM	8610100030	Silver	100,0 x 40,0	85,0 x 40,0	47 / 11	4x 3,0		2	LI0	8
LA 100x50 R2 SK, 4x2,5MM	8610100049	Silver	100,0 x 50,0	86,4 x 50,0	48 / 14	4x 2,5		2	LQ2	8
LA 100x60 R2 HF, 4x3,0MM	8610100045	Silver	100,0 x 60,0	85,0 x 60,0	47 / 17	4x 3,0		1	LN1	4
LA 111x111 R2 HF, 4x3,0MM	8610100046	Silver	111,0 x 111,0	96,0 x 111,0	53 / 32	4x 3,0		1	LN2	4
<b>Rectangular with radius, 4x oblong hole</b>										
LA 40x12 R1,5 HF, 4x (5x3MM)	8610100007	Anodised silver	40,0 x 12,0	23,0 x 12,0	12 / 3	4x (5,0x3,0)		16	LC6	64
LA 40x12 R1,5 HF, 4x (5x3MM)	8610100021	Anodised black	40,0 x 12,0	23,0 x 12,0	12 / 3	4x (5,0x3,0)		16	LE0	64
LA 40x12 R2 HF, 4x (5x3MM)	8610100047	Silver	40,0 x 12,0	23,0 x 12,0	12 / 3	4x (5,0x3,0)		16	LO0	64
LA 60x12 R2 HF, 4x (5x3MM)	8610100001	Anodised silver	60,0 x 12,0	42,0 x 12,0	23 / 3	4x (5,0x3,0)		8	LC0	32
LA 60x12 R2 HF, 4x (5x3MM)	8610100015	Anodised black	60,0 x 12,0	42,0 x 12,0	23 / 3	4x (5,0x3,0)		8	LD4	32
LA 60x17 R1,5 HF, 4x (7x3MM)	8610100000	Anodised silver	60,0 x 17,0	36,0 x 17,0	20 / 5	4x (7,0x3,0)		6	LB9	24
LA 60x17 R1,5 HF, 4x (7x3MM)	8610100014	Anodised black	60,0 x 17,0	36,0 x 17,0	20 / 5	4x (7,0x3,0)		6	LD3	24
<b>Circular blanks (round version), 1 hole</b>										
LA Ronds D=20 HF, 1x3,5MM	8610100008	Anodised silver				1x 3,5	20,00	25	LC7	100
LA Ronds D=20 HF, 1x3,5MM	8610100022	Anodised black				1x 3,5	20,00	25	LE1	100
LA Ronds D=20 HF, 1x4,2MM	8610100011	Anodised silver				1x 4,2	20,00	25	LD0	100
LA Ronds D=20 HF, 1x4,2MM	8610100025	Anodised black				1x 4,2	20,00	25	LE4	100
LA Ronds D=25 HF, 1x3,5MM	8610100038	Black				1x 3,2	25,00	16	LL4	64
LA Ronds D=25 HF, 1x3,5MM	8610100009	Anodised silver				1x 3,5	25,00	16	LC8	64
LA Ronds D=25 HF, 1x3,5MM	8610100023	Anodised black				1x 3,5	25,00	16	LE2	64
LA Ronds D=25 HF, 1x4,2MM	8610100012	Anodised silver				1x 4,2	25,00	16	LD1	64
LA Ronds D=25 HF, 1x4,2MM	8610100026	Anodised black				1x 4,2	25,00	16	LE5	64

LA Laser alu (suite)



Type	Order No.	Colour	Label size mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diame-ter mm	No. per frame	Soft-ware type	Pack qty.
LA Ronds D=30 HF, 1x3,5MM	8610100010	Anodised silver				1x 3,5	30,00	9	LC9	36
LA Ronds D=30 HF, 1x3,5MM	8610100024	Anodised black				1x 3,5	30,00	9	LE3	36
LA Ronds D=30 HF, 1x4,2MM	8610100013	Anodised silver				1x 4,2	30,00	9	LD2	36
LA Ronds D=30 HF, 1x4,2MM	8610100027	Anodised black				1x 4,2	30,00	9	LE6	36

## LAM Laser Alumatt



### INFORMATIONS PRODUITS

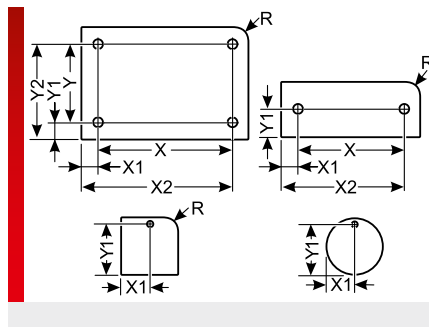
Laser Alumatt consists of coated aluminium, suitable for laser engraving. The surface is coated for laser engraving. After laser marking with a Murrplastik mp-LM series laser marking system the engraving appears in black.

### SPÉCIFICATIONS

- 20 – 80 °C temporaire 120 °C
- Aluminium laqué (ALU)
- A1

Type	Order No.	Colour	Label size mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diameter mm	No. per frame	Software type	Pack qty.
<b>Rectangular with radius</b>										
LAM 25x10 R2 SK	8610140061	Silver	25,0 x 10,0	25,0 x 10,0	13 / 2			40	LQ3	160
LAM 30x10 R2 SKS	8610140057	Silver	30,0 x 10,0	30,0 x 10,0	16 / 2			30	LP2	120
LAM 55x55 R2 SK	8610140055	Silver	55,0 x 55,0	55,0 x 55,0	30 / 16			4	LN4	16
LAM 70x18 R2 SKS	8610140060	Silver	70,0 x 18,0	70,0 x 18,0	38 / 5			5	LP8	20
<b>Rectangular without radius, 1x hole</b>										
LAM 30x12 HF, 1x2,5MM	8610140044	Silver	30,0 x 12,0	30,0 x 6,0	16 / 1	1x 2,5		24	LG8	96
<b>Rectangular without radius, 2x hole</b>										
LAM 36x36 HF, 2x2,5MM	8610140038	Silver	36,0 x 36,0	26,0 x 36,0	14 / 10	2x 2,5		9	LG3	36
LAM 37x9 HF, 2x2,5MM	8610140037	Silver	37,0 x 9,0	25,4 x 9,0	14 / 2	2x 2,5		33	LG4	132
LAM 40x15 HF, 2x3,2MM	8610140033	Silver	40,0 x 15,0	23,6 x 15,0	13 / 4	2x 3,2		14	LG6	56
LAM 40x25 HF, 2x3,2MM	8610140034	Silver	40,0 x 25,0	23,6 x 25,0	13 / 7	2x 3,2		8	LG7	32
LAM 40x25 HF, 2x3,5MM	8610140051	Silver	40,0 x 25,0	25,0 x 25,0	13 / 7	2x 3,5		8	LM4	32
LAM 40x40 HF, 2x3,5MM	8610140052	Silver	40,0 x 40,0	25,0 x 40,0	13 / 11	2x 3,5		4	LM5	16
LAM 60x25 HF, 2x3,5MM	8610140053	Silver	60,0 x 25,0	45,0 x 25,0	25 / 7	2x 3,5		4	LM6	16
LAM 60x40 HF, 2x3,5MM	8610140054	Silver	60,0 x 40,0	45,0 x 40,0	25 / 11	2x 3,5		2	LM7	8
LAM 74x52 SK, 2x2,6MM	8610140049	Silver	74,0 x 52,0	63,0 x 52,0	35 / 15	2x 2,6		2	LK9	8
<b>Rectangular without radius, 4x oblong hole</b>										
LAM 40x12 HF, 4x (5,0x3,0MM)	8610140056	Silver	40,0 x 12,0	20,0 x 12,0	11 / 3	4x (5,0x3,0)		16	LO1	64
<b>Rectangular without radius, 4x hole</b>										
LAM 74x52 SK, 4x2,6MM	8610140050	Silver	74,0 x 52,0	59,0 x 52,0	32 / 15	4x 2,6		2	LL6	8

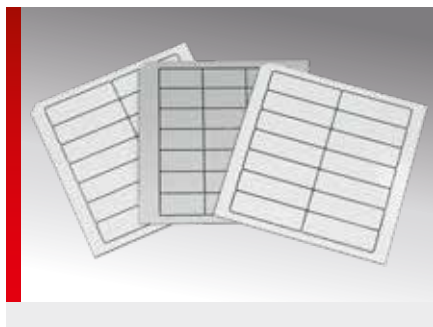
## LAM Laser Alumatt (suite)



Type	Order No.	Colour	Label size mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diameter mm	No. per frame	Software type	Pack qty.
<b>Rectangular with radius, 1x hole</b>										
LAM 20x20 R7 HF, 1x2,5MM	8610140046	Silver	20,0 x 20,0	20,0 x 13,7	11 / 4	1x 2,5		25	LK4	100
<b>Rectangular with radius, 2x hole</b>										
LAM 30x15 R2 HF, 2x3,5MM	8610140002	Silver	30,0 x 15,0	17,0 x 15,0	9 / 4	2x 3,5		18	LA2	72
LAM 30x15 R2 HF, 2x4,2MM	8610140004	Silver	30,0 x 15,0	15,0 x 15,0	8 / 4	2x 4,2		18	LA4	72
LAM 37x13 R2 HF, 2x2,6MM	8610140062	Silver	37,0 x 13,0	24,0 x 13,0	13 / 3	2x 2,6		16	LQ4	64
LAM 37x13 R2 SK, 2x2,6MM	8610140047	Silver	37,0 x 13,0	25,0 x 13,0	13 / 3	2x 2,6		16	LK7	64
LAM 45x10 R2 HF, 2x2,5MM	8610140045	Silver	45,0 x 10,0	32,4 x 10,0	18 / 2	2x 2,5		20	LI9	80
LAM 50x15 R2 HF, 2x3,0MM	8610140003	Silver	50,0 x 15,0	36,0 x 15,0	20 / 4	2x 3,0		12	LA3	48
LAM 50x15 R2 HF, 2x4,2MM	8610140005	Silver	50,0 x 15,0	34,0 x 15,0	18 / 4	2x 4,2		12	LA5	48
LAM 52x18 R2 HF, 2x2,8MM	8610140006	Silver	52,0 x 18,0	38,0 x 18,0	21 / 5	2x 2,8		10	LA6	40
LAM 70x27 R2 HF, 2x3,3MM	8610140039	Silver	70,0 x 27,0	55,4 x 27,0	30 / 7	2x 3,3		4	LH3	16
<b>Rectangular with radius, 4x hole</b>										
LAM 85x65 R2 HF, 4x4,0MM (E)	8610140042	Silver	85,0 x 65,0	67,0 x 65,0	37 / 19	4x 4,0		1	LH6	4
LAM 100x40 R2 HF, 4x3,3MM (E)	8610140040	Silver	100,0 x 40,0	85,4 x 40,0	47 / 11	4x 3,3		1	LH4	4
LAM 100x60 R2 HF, 4x3,3MM (E)	8610140041	Silver	100,0 x 60,0	85,4 x 60,0	47 / 17	4x 3,3		1	LH5	4
<b>Rectangular with radius, 2x oblong hole</b>										
LAM 37x9 R2 HF, 2x (2,8x5,0MM)	8610140043	Silver	37,0 x 9,0	25,4 x 9,0	14 / 2	2x (2,8x5,0)		33	LH8	132
<b>Rectangular with radius, 4x oblong hole</b>										
LAM 34x10 R1 HF, 4x (5,4x2MM)	8610140010	Silver	34,0 x 10,0	18,0 x 10,0	10 / 2	4x (5,4x2,0)		27	LB0	108
LAM 40x12 R1,5 HF, 4x (5x3MM)	8610140007	Silver	40,0 x 12,0	23,0 x 12,0	12 / 3	4x (5,0x3,0)		16	LA7	64
LAM 44x10 R1 HF, 4x (5,4x2MM)	8610140009	Silver	44,0 x 10,0	28,0 x 10,0	15 / 2	4x (5,4x2,0)		18	LA9	72
LAM 54x12 R1 HF, 4x (5,4x2MM)	8610140008	Silver	54,0 x 12,0	38,0 x 12,0	21 / 3	4x (5,4x2,0)		16	LA8	64
LAM 54x20 R2 HF, 4x (6,0x2,5MM)	8610140059	Silver	54,0 x 20,0	33,0 x 20,0	18 / 5	4x (6,0x2,5)		10	LP4	40
LAM 60x12 R2 HF, 4x (5x3MM)	8610140001	Silver	60,0 x 12,0	42,0 x 12,0	23 / 3	4x (5,0x3,0)		8	LA1	32
LAM 60x17 R1,5 HF, 4x (7x3MM)	8610140000	Silver	60,0 x 17,0	36,0 x 17,0	20 / 5	4x (7,0x3,0)		6	LA0	24
LAM 64x14 R1 HF, 4x (5,4x2MM)	8610140011	Silver	64,0 x 14,0	48,0 x 14,0	26 / 4	4x (5,4x2,0)		7	LB1	28
LAM 68x10 R1 HF, 4x (5,4x2MM)	8610140012	Silver	68,0 x 10,0	53,0 x 10,0	29 / 2	4x (5,4x2,0)		9	LB2	36
LAM 80x20 R2 HF, 4x (6,0x2,5MM)	8610140058	Silver	80,0 x 20,0	59,0 x 20,0	32 / 5	4x (6,0x2,5)		5	LP3	20
<b>Circular blanks (round version), 1 hole</b>										
LAM D=20 HF, 1x3,5MM	8610140013	Silver				1x 3,5	20,00	25	LB3	100
LAM D=20 HF, 1x4,2MM	8610140016	Silver				1x 4,2	20,00	25	LB6	100



## LM Laser Mat



### INFORMATIONS PRODUITS

Laser Mat is a double-layer material with an UV resistant colour outer layer for marking with a laser from the mp-LM family.

- Optionally available with self-adhesive foil (SK), strong self-adhesive foil (SSK) or adhesive foil (HF)

- Available in square versions with and without corner radius, in round versions (circular blanks), optionally with holes, slots or granulation
- Thickness: 0.8 mm or 1.5 mm

### SPÉCIFICATIONS



-20 – 85 °C



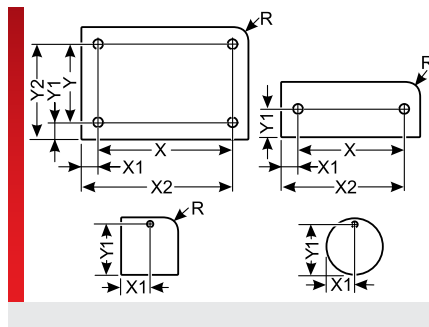
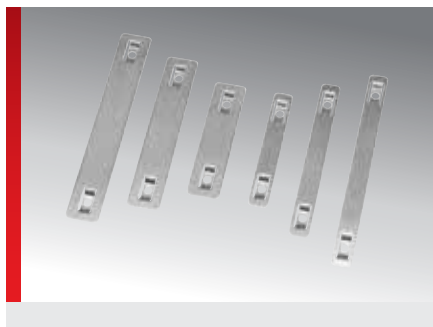
Marquage monoligne et multiligne



Type	Order No.	Colour	Label size mm	Printable area mm	No. characters/lines	No. per frame	Software type	Pack qty.
<b>Rectangular design</b>								
LM 18.5x9.5 SK	8610200009	Siemens silver/black	0.80	18.5 x 9.5	10 / 2	55	L98	220
LM 22x10 SK	8610200003	Siemens silver/black	0.80	22.0 x 10.0	12 / 2	50	L92	200
LM 22x10 SK	8610200020	White / Black	0.80	22.0 x 10.0	12 / 2	50	LI8	200
LM 22x22 SK	8610200002	Siemens silver/black	0.80	22.0 x 22.0	12 / 6	25	L91	100
LM 27x15 SK	8610200064	White / Black	0.80	27.0 x 15.0	15 / 4	28	LU2	112
LM 27x18 HF	8610200043	Siemens silver/black	0.80	27.0 x 18.0	15 / 5	24	LP9	96
LM 27x18 HF	8610200084	White / Black	0.80	27.0 x 18.0	15 / 5	24	LZ6	96
LM 27x18 SK	8610200004	Siemens silver/black	0.80	27.0 x 18.0	15 / 5	24	L93	96
LM 28x15 HF	8610200073	White / Black	0.80	28.0 x 15.0	15 / 4	21	LW0	84
LM 30x15 SK	8610200028	Siemens silver/black	0.80	30.0 x 15.0	16 / 4	21	LN5	84
LM 30x15 HF	8610200016	Siemens silver/black	0.80	30.0 x 15.0	16 / 4	21	M30	84
LM 40x7.3 HF	8610200027	White / Black	0.80	40.0 x 7.3	22 / 2	28	LM2	112
LM 40x9 HF	8610200055	Siemens silver/black	0.80	40.0 x 9.0	22 / 2	22	LS7	88
LM 40x20 SKS	8610200044	White / Black	0.80	40.0 x 20.0	22 / 5	10	LQ0	40
LM 55x19 SKS	8610200077	White / Black	0.80	55.0 x 19.0	30 / 5	10	LY0	40
LM 74x37 SKS	8610200061	Siemens silver/black	0.80	74.0 x 37.0	41 / 10	3	LT7	12
LM 95x45 SK	8610200098	Siemens silver/black	0.80	95.0 x 45.0	52 / 13	2	LOZ	8
LM 95x120 SK	8610200069	White / Black	0.80	95.0 x 120.0	52 / 35	1	LV1	4
LM 120x120 HF	8610200046	Siemens silver/black	0.80	120.0 x 120.0	66 / 35	1	LQ5	4
LM 120x120 HF	8610200104	White / Black	0.80	120.0 x 120.0	66 / 35	1	L1H	4
LM 120x120 HF	8610200103	Yellow / Black	0.80	120.0 x 120.0	66 / 35	1	L1G	4
LM 120x120 SK	8610200047	Siemens silver/black	0.80	120.0 x 120.0	66 / 35	1	LQ6	4
LM 120x120 SKS	8610200048	Siemens silver/black	0.80	120.0 x 120.0	66 / 35	1	LQ7	4



## ESK cable designation on stainless steel



### PRODUCT INFORMATION

V4A stainless steel labels for cable designation with a material thickness of 0.5 mm. Mounted with cable ties. The labels are installed on a plastic holder.

Marking can only be done with a laser printer system (e.g. pulsar).

Special design for demanding environments

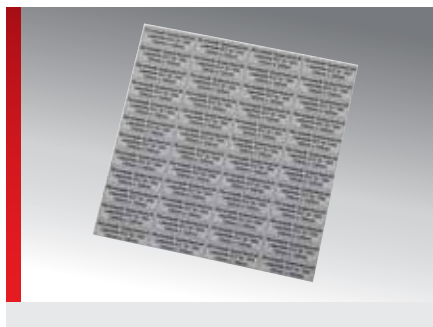
- in the chemical or petrochemical industries
- in the mining industry
- in the ship building industry
- in wind energy plants
- in the food industry

### SPECIFICATIONS

- 80 – 500 °C
- V4A stainless steel
- V0
- Single-line and multi-line inscription

Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	No. per frame	Software type	Pack qty.
ESK 60x9	8605190005	Brushed stainless steel	0.50	28.0 x 9.0	15 / 2	2x 3,5	10	L05	120
ESK 80x9	8605190004	Brushed stainless steel	0.50	48.0 x 9.0	26 / 2	2x 3,5	10	L04	120
ESK 100x9	8605190003	Brushed stainless steel	0.50	68.0 x 9.0	37 / 2	2x 3,5	10	L03	120
ESK 60x15	8605190002	Brushed stainless steel	0.50	28.0 x 15.0	15 / 4	2x 3,5	7	L02	80
ESK 80x15	8605190001	Brushed stainless steel	0.50	48.0 x 15.0	26 / 4	2x 3,5	7	L01	80
ESK 100x15	8605190000	Brushed stainless steel	0.50	68.0 x 15.0	37 / 4	2x 3,5	7	L00	80

## ELF laser label foil



### PRODUCT INFORMATION

The double-layer ELF laser label foil is ideal for the production of custom adhesive labels and displays a reliable, permanent adhesion on Polyolefine (PE/PP), slightly oily or powder coated surfaces.

The halogen-free Polyacrylate foil is very resistant to chemicals, temperature and other environmental influences and in case of fire it is self-extinguishing after 15 seconds. Complete cover of high-contrast base colours. Labelling and cutting is done with a laser labelling system.

The user can freely define the size and number of labels within the printable area.

#### External extraction system

For laser inscribing of ELF laser label foil, you must scrub the exhaust air or route it outside (observing statutory provisions) as a precautionary measure to ensure that the strong odours that the machine can produce do not endanger the health of employees. An external extraction system can be connected directly to the MP laser labelling system using an adapter.

### SPECIFICATIONS

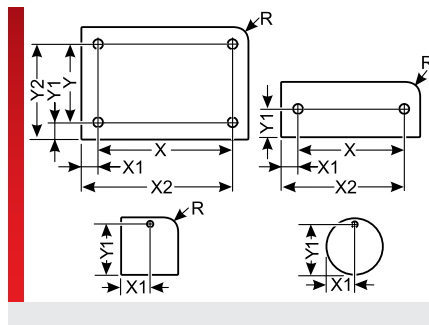
- 40 – 300 °C
- Polyacrylate
- Single-line and multi-line inscription
- External suction system mandatory



Type	Order No.	Colour	Printable area mm	No. characters/lines	Software type	Pack qty.
ELF 120x120 SI/SW	86563002	Silver / Black	119.0 x 119.0	66 / 35	A64	100
ELF 120x120 SW/WS	86563050	Black / White	118.0 x 118.0	65 / 34	A63	100



## Aluminium anodised ALU/K



### PRODUCT INFORMATION

The ALU/K labelling material, in mat size 139x139 mm, has been developed especially for the pulsar laser printer.

- Coloured anodised aluminium material
- Available with self-adhesive foil (SK) or with adhesive foil (HF).
- Individual or prefab labels

- Temperature range up to approx. 200 °C
- Thickness: 1.0 mm
- Inscription technique: Lasers

ALU/K is available with self-adhesive foil (SK), self-adhesive foil with foam adhesive (SKS), speciality adhesive foil (SOK) or with adhesive foil (HF).

### SPECIFICATIONS

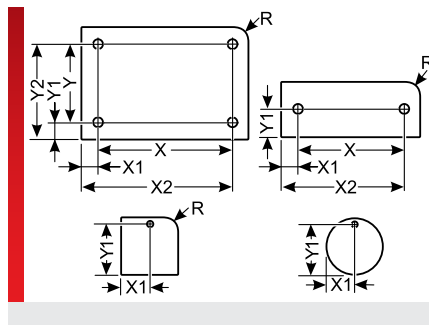
- 40 – 100 °C
- Aluminium anodised (ALU/K)
- V0
- 
- 

Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diameter mm	Software type	Pack qty.
<b>Rectangular design</b>									
ALU/K 30x20 HF	8606206003	Anodised black	1.00	30.0 x 20.0	16 / 5			I82	240
ALU/K 100x50 HF	8606206001	Anodised black	1.00	100.0 x 50.0	55 / 14			D08	20
ALU/K 130x55 HF	8606206002	Anodised black	1.00	130.0 x 55.0	72 / 16			D09	20
<b>Rectangular design, with one hole</b>									
ALU/K 30x20 SK, 1x3.0 mm	8606210001	Anodised silver	1.00	30.0 x 14.0	16 / 4	1x 3,0		H24	240
ALU/K 30x60 HF, 1x22.5 mm	8606216002	Anodised silver	1.00	30.0 x 20.0	16 / 5	1x 22,5		G80	80
ALU/K 50x30 HF, 1x22.5 mm	8606216001	Anodised silver	1.00	50.0 x 30.0	27 / 8	1x 22,5		E43	80
<b>Rectangular design with 2 holes</b>									
ALU/K 26x15 SKS, 2x2.3 mm	8606222006	Anodised black	1.00	16.8 x 15.0	9 / 4	2x 2,3		I71	450
ALU/K 37x13 HF, 2x2.5 mm	8606226011	Anodised black	1.00	27.0 x 13.0	15 / 3	2x 2,5		M43	300
ALU/K 40x15 HF, 2x2.5 mm	8606226000	Anodised silver	1.00	30.0 x 15.0	16 / 4	2x 2,5		I02	270
ALU/K 40x20 SKS, 2x2.3 mm	8606222005	Anodised black	1.00	30.8 x 20.0	17 / 5	2x 2,3		I70	180
ALU/K 40x30 HF, 2x2.5 mm	8606226010	Anodised black	1.00	30.0 x 30.0	16 / 8	2x 2,5		M42	120
ALU/K 45x15 HF, 2x2.5 mm	8606226026	Anodised black	1.00	35.0 x 15.0	19 / 4	2x 2,5		H63	270
ALU/K 45x25 HF, 2x4.2 mm	8606226003	Anodised black	1.00	28.2 x 25.0	15 / 7	2x 4.2		I40	150
ALU/K 45x25 HF, 2x4.2 mm	8606226002	Silver / Black	1.00	28.2 x 25.0	15 / 7	2x 4.2		I40	150
ALU/K 50x13 HF, 2x2.5 mm	8606226005	Anodised silver	1.00	40.0 x 13.0	22 / 3	2x 2,5		D71	200
ALU/K 60x10 HF, 2x3,5MM	8606226012	Anodised black	1.00	50.5 x 10.0	28 / 2	2x 3,5		Z29	260
ALU/K 60x15 SKS, 2x2.3 mm	8606222004	Anodised black	1.00	50.8 x 15.0	28 / 4	2x 2,3		I69	180
ALU/K 60x60 HF, 2x2.5 mm	8606226009	Anodised black	1.00	50.0 x 60.0	27 / 17	2x 2,5		M41	40
ALU/K 70x10 SK, 2x2.2 mm	8606220001	Anodised black	1.00	61.2 x 10.0	34 / 2	2x 2,2		H32	130
ALU/K 80x15 SKS, 2x2.3 mm	8606222003	Anodised black	1.00	70.8 x 15.0	39 / 4	2x 2,3		I68	90
ALU/K 90x25 HF, 2x3.0 mm	8606226007	Anodised black	1.00	78.0 x 25.0	43 / 7	2x 3,0		J22	50
ALU/K 90x30 HF, 2x3.5 mm	8606226001	Anodised silver	1.00	76.0 x 30.0	42 / 8	2x 3,5		I16	40

## Aluminium anodised ALU/K (Continued...)

Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diameter mm	Software type	Pack qty.
ALU/K 100x15 HF, 2x2.50 mm	8606226004	Anodised red	1.00	90.0 x 15.0	50 / 4	2x 2,5		D02	90
ALU/K 100x30 HF, 2x3.0 mm	8606226008	Anodised black	1.00	88.0 x 30.0	48 / 8	2x 3,0		J23	40
ALU/K 100x30 HF, 2x3.0 mm	8606226006	Anodised Blue	1.00	88.0 x 30.0	48 / 8	2x 3,0		J19	40
ALU/K 100x70 SKS, 2x2.3 mm	8606222002	Anodised black	1.00	90.8 x 70.0	50 / 20	2x 2,3		I67	10
ALU/K 139x25 SKS, 2x2.3 mm	8606222001	Anodised black	1.00	129.8 x 25.0	72 / 7	2x 2,3		I66	50
<b>Rectangular design with 4 holes</b>									
ALU/K 100x80 HF, 4x4.0 mm	8606246001	Anodised black	1.00	84.0 x 80.0	46 / 23	4x 4,0		J20	10
ALU/K 105x52 HF, 4x2.5 mm	8606246000	Anodised red	1.00	95.0 x 52.0	52 / 15	4x 2,5		I37	20
ALU/K 110x55 HF, 4x3.0 mm	8606246002	Anodised black	1.00	98.0 x 55.0	54 / 16	4x 3,0		J21	20
ALU/K 120x34 HF, 4x3,5MM	8606246013	Anodised black	1.00	109.5 x 34.0	60 / 10	4x 3,5		Z30	40
ALU/K 120x120 HF, 4x2.5 mm	8606246003	Anodised black	1.00	110.0 x 120.0	61 / 35	4x 2,5		M40	10
ALU/K 139,8x60 HF, 4x3,4MM	8606246014	Anodised black	1.00	126.6 x 60.0	70 / 17	4x 3,4		Z31	20
<b>Rectangular design with corner radius</b>									
ALU/K° 13x8 R2 SOK	8606104000	Anodised black	1.00	13.0 x 8.0	7 / 2			D36	1700
ALU/K 22x22 R2 SK	8606100005	Anodised black	1.00	22.0 x 22.0	12 / 6			H07	360
ALU/K 22x22 R2 SK	8606100004	Anodised silver	1.00	22.0 x 22.0	12 / 6			E49	360
ALU/K 25x10 R2 SK	8606100000	Anodised silver	1.00	25.0 x 10.0	13 / 2			I14	650
ALU/K° 25x10 R2 SK	8606100001	Anodised black	1.00	25.0 x 10.0	13 / 2			I15	650
ALU/K° 25x10 R2 SK	8606100003	Silver / Black	1.00	25.0 x 10.0	13 / 2			I28	650
ALU/K 27x18 R2 SK	8606100010	Anodised black	1.00	27.0 x 18.0	15 / 5			L42	350
ALU/K 27x18 R2 SK	8606100011	Silver / Black	1.00	27.0 x 18.0	15 / 5			L43	350
ALU/K 27x27 R2 SK	8606100006	Anodised silver	1.00	27.0 x 27.0	15 / 7			H23	250
ALU/K 50x25 R2 SK	8606100009	Anodised black	1.00	50.0 x 25.0	27 / 7			K94	100
ALU/K 139,5x139,5 R2 SK	8606100007	Anodised black	1.00	139.5 x 139.5	77 / 41			K87	10
ALU/K 139,5x139,5 R2 SK	8606100008	Silver / Black	1.00	139.5 x 139.5	77 / 41			K88	10
ALU/K° 130x30 R4 SKS	8606102001	Anodised black	1.00	130.0 x 30.0	72 / 8			I39	40
<b>Rectangular design with corner radius and 1 hole</b>									
ALU/K 19x15 R9.5 HF, 1x3.2 mm	8606116006	Anodised black	1.00	19.0 x 8.6	10 / 2	1x 3,2		G27	630
ALU/K° 20x20 R7 HF, 1x2.5 mm	8606116001	Anodised black	1.00	20.0 x 15.0	11 / 4	1x 2,5		I05	360
ALU/K° 20x20 R7 HF, 1x2.5 mm	8606116000	Anodised silver	1.00	20.0 x 15.0	11 / 4	1x 2,5		I00	360
ALU/K° 20x20 R7 HF, 1x2.5 mm	8606116002	Silver / Black	1.00	20.0 x 15.0	11 / 4	1x 2,5		I20	360
ALU/K 20x20 R7 HF, 1x2.6 mm	8606116004	Anodised silver	1.00	10.0 x 20.0	5 / 5	1x 2,6		D89	360
ALU/K 25x20 R2 HF, 1x3.0 mm	8606116007	Anodised black	1.00	25.0 x 14.0	13 / 4	1x 3,0		H99	300
ALU/K 25x20 R2 HF, 1x3.0 mm	8606116008	Anodised silver	1.00	25.0 x 14.5	13 / 4	1x 3,0		K47	300
ALU/K 38x30 R1 HF, 1x16.5 mm	8606116005	Anodised silver	1.00	38.0 x 30.0	21 / 8	1x 16,5		G22	120
<b>Rectangular design with corner radius and 2 holes</b>									
ALU/K° 30x8 R2 HF, 2x2.5 mm	8604126031	Anodised black	1.00	20.0 x 8.0	11 / 2	2x 2,5		I51	680
ALU/K° 30x8 R2 HF, 2x2.5 mm	8606126006	Silver / Black	1.00	20.0 x 8.0	11 / 2	2x 2,5		I22	680
ALU/K° 30x8 R2 SK, 2x2.5 mm	8604120004	Anodised black	1.00	20.0 x 8.0	11 / 2	2x 2,5		I52	680
ALU/K° 30x8 R2 SK, 2x2.5 mm	8606120001	Silver / Black	1.00	20.0 x 8.0	11 / 2	2x 2,5		I23	680
ALU/K 30x8 R2 SOK, 2x2.5 mm	8606124001	Anodised black	1.00	20.0 x 8.0	11 / 2	2x 2,5		H31	680
ALU/K 30x8 R2 HF, 2x3.0 mm	8606126026	Anodised black	1.00	18.0 x 8.0	10 / 2	2x 3,0		J29	0

## Aluminium anodised ALU/K (Continued...)

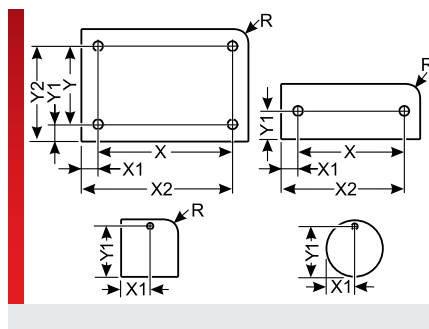


Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diameter mm	Software type	Pack qty.
ALU/K 30x10 R1 SK, 2x2.5 mm	8606120008	Anodised black	1.00	22.5 x 10.0	12 / 2	2x 2,5		K45	520
ALU/K 30x10 R1 SK, 2x2.5 mm	8606120009	Silver / Black	1.00	22.5 x 10.0	12 / 2	2x 2,5		K46	192
ALU/K 30x10 R1 HF, 2x2.5 mm	8606126011	Anodised silver	1.00	20.0 x 10.0	11 / 2	2x 2,5		I33	520
ALU/K 30x15 R2 HF, 2x2.5 mm	8606126025	Anodised black	1.00	20.0 x 15.0	11 / 4	2x 2,5		H62	360
ALU/K 30x15 R1 SK, 2x2.5 mm	8606120006	Anodised black	1.00	22.5 x 15.0	12 / 4	2x 2,5		K43	360
ALU/K 30x15 R1 SK, 2x2.5 mm	8606120007	Silver / Black	1.00	22.5 x 15.0	12 / 4	2x 2,5		K44	360
ALU/K° 30x15 R2 HF, 2x4.0 mm	8606126004	Anodised black	1.00	14.0 x 15.0	7 / 4	2x 4,0		I07	360
ALU/K° 30x15 R2 HF, 2x4.0 mm	8606126000	Anodised silver	1.00	14.0 x 15.0	7 / 4	2x 4,0		I01	360
ALU/K° 30x15 R2 HF, 2x4.0 mm	8606126005	Silver / Black	1.00	14.0 x 20.0	7 / 5	2x 4,0		I21	360
ALU/K 34x9 R2 HF, 2x2.5 mm	8606126015	Anodised silver	1.00	24.0 x 9.0	13 / 2	2x 2,5		D96	600
ALU/K 40x10 R2 HF, 2x2.5 mm	8606126014	Anodised black	1.00	30.0 x 10.0	16 / 2	2x 2,5		D48	390
ALU/K° 45x10 R2 HF, 2x2.5 mm	8606126003	Anodised black	1.00	35.0 x 10.0	19 / 2	2x 2,5		I06	390
ALU/K° 45x10 R2 HF, 2x2.5 mm	8606126002	Anodised silver	1.00	35.0 x 10.0	19 / 2	2x 2,5		I04	390
ALU/K° 45x10 R2 HF, 2x2.5 mm	8606126007	Silver / Black	1.00	35.0 x 10.0	19 / 2	2x 2,5		I24	390
ALU/K 45x14 R1 HF, 2x2.5 mm	8606126018	Anodised silver	1.00	35.0 x 14.0	19 / 4	2x 2,5		E44	270
ALU/K 45x18 R2 HF, 2x3.5 mm	8606126012	Anodised silver	1.00	31.0 x 18.0	17 / 5	2x 3,5		B80	210
ALU/K 45x26 R1 HF, 2x2.5 mm	8606126022	Anodised silver	1.00	35.0 x 26.0	19 / 7	2x 2,5		E48	150
ALU/K 50x15 R2 SK, 2x3.0 mm	8606120004	Anodised black	1.00	38.0 x 15.0	21 / 4	2x 3,0		I88	180
ALU/K 50x15 R2 SK, 2x3.0 mm	8606120005	Silver / Black	1.00	38.0 x 15.0	21 / 4	2x 3,0		I89	180
ALU/K° 50x15 R2 HF, 2x3.5 mm	8606126001	Anodised silver	1.00	36.0 x 15.0	20 / 4	2x 3,5		I03	180
ALU/K 52x18 R2 HF, 2x2.5 mm	8606126013	Anodised black	1.00	42.0 x 18.0	23 / 5	2x 2,5		D47	140
ALU/K 60x30 R2 HF, 2x3.0 mm	8606126024	Anodised silver	1.00	48.0 x 30.0	26 / 8	2x 3,0		H25	80
ALU/K 70x27 R2 SK, 2x3.0 mm	8606120003	Anodised black	1.00	58.0 x 27.0	32 / 7	2x 3,0		H06	50
ALU/K 74x18 R1 HF, 2x2.5 mm	8606126019	Anodised silver	1.00	64.0 x 18.0	35 / 5	2x 2,5		E45	70
ALU/K 74x26 R1 HF, 2x2.5 mm	8606126020	Anodised silver	1.00	64.0 x 26.0	35 / 7	2x 2,5		E46	50
ALU/K 74x74 R1 HF, 2x2.5 mm	8606126021	Anodised silver	1.00	64.0 x 74.0	35 / 21	2x 2,5		E47	10
ALU/K 75x10 R2 HF, 2x2.5 mm	8606126016	Anodised black	1.00	65.0 x 10.0	36 / 2	2x 2,5		E40	130
ALU/K 75x10 R2 HF, 2x2.5 mm	8606126017	Anodised silver	1.00	65.0 x 10.0	36 / 2	2x 2,5		E41	130
ALU/K 100x20 R2 HF, 2x3.0 mm	8606126027	Anodised black	1.00	89.0 x 20.0	49 / 5	2x 3,0		J83	60
<b>Rectangular design with corner radius and 4 holes</b>									
ALU/K° 100x60 R2 HF, 4x2.5 mm	8606146001	Anodised black	1.00	86.5 x 60.0	48 / 17	4x 2,5		I09	20
ALU/K° 100x60 R2 HF, 4x2.5 mm	8606146000	Anodised silver	1.00	86.5 x 60.0	48 / 17	4x 2,5		I08	20
ALU/K° 100x60 R2 HF, 4x2.5 mm	8606146010	Silver / Black	1.00	86.5 x 60.0	48 / 17	4x 2,5		I27	20
ALU/K° 120x70 R2 HF, 4x3.7 mm	8606146003	Anodised black	1.00	105.0 x 70.0	58 / 20	4x 3,7		I11	20
ALU/K° 120x70 R2 HF, 4x3.7 mm	8606146002	Anodised silver	1.00	105.0 x 70.0	58 / 20	4x 3,7		I10	20

## Aluminium anodised ALU/K (Continued...)

Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diameter mm	Software type	Pack qty.
ALU/K° 120x70 R2 HF, 4x3.7 mm	8606146009	Silver / Black	1.00	105.0 x 70.0	58 / 20	4x 3,7		I26	20
ALU/K° 130x80 R2, 4x2.6 mm	8606148001	Anodised black	1.00	122.0 x 80.0	67 / 23	4x 2,6		I38	10
ALU/K° 140x85 R2 HF, 4x3.7 mm	8606146005	Anodised black	1.00	125.0 x 85.0	69 / 25	4x 3,7		I13	10
ALU/K° 140x85 R2 HF, 4x3.7 mm	8606146004	Anodised silver	1.00	125.0 x 85.0	69 / 25	4x 3,7		I12	10
ALU/K° 140x85 R2 HF, 4x3.7 mm	8606146008	Silver / Black	1.00	125.0 x 85.0	69 / 25	4x 3,7		I25	10
<b>Rectangular design with corner radius and 4 longitudinal slots</b>									
ALU/K 40x12 R1 HF, 4x (5.0x2.0 mm)	8604146013	Anodised black	1.00			4x (5.0x2.0)		K37	390
ALU/K 60x12 R2 HF, 4x (4.0x2.0 mm)	8606146011	Anodised black	1.00	50.0 x 12.0	27 / 3	4x (2.0x4.0)		I34	220
ALU/K 60x12 R2 HF, 4x (4.0x2.0 mm)	8606146006	Anodised silver	1.00	50.0 x 12.0	27 / 3	4x (2.0x4.0)		I19	220
ALU/K 60x12 R2 HF, 4x (4.0x2.0 mm)	8606146012	Silver / Black	1.00	50.0 x 12.0	27 / 3	4x (2.0x4.0)		I35	220
ALU/K 60x12 R2 HF, 4x (5,0x3.0MM)	8606146013	Anodised silver	1.00	44.0 x 12.0	24 / 3	4x (5.0x3.0)		M74	220
<b>Circular blanks (round version), 1 hole</b>									
ALU/K° D=25 HF, 1x3,2MM	8606316001	Anodised black	1.00			1x 3,2	25.00	I18	250
ALU/K° D=25 HF, 1x3,2MM	8606316000	Anodised silver	1.00			1x 3,2	25.00	I17	250
ALU/K° D=25 HF, 1x3,2MM	8606316003	Silver / Black	1.00			1x 3,2	25.00	I29	250
ALU/K D=30 HF, 1x4,2MM	8606316006	Anodised black	1.00			1x 4,2	30.00	QL3	160
ALU/K D=30 HF, 1x4,2MM	8606316005	Anodised silver	1.00			1x 4,2	30.00	QL2	160
ALU/K° D=130 HF, 1x108MM	8606316004	Anodised silver	1.00			1x 108.0	130.00	D39	1

## Monomatt MM/K



### PRODUCT INFORMATION

The Monomatt labelling material, in mat size 139x139 mm, has been developed especially for the pulsar laser printer.

The 1 mm thick, single layer, white polycarbonate is characterised by its excellent labelling property and has been among the

best materials available for label plates for many years.

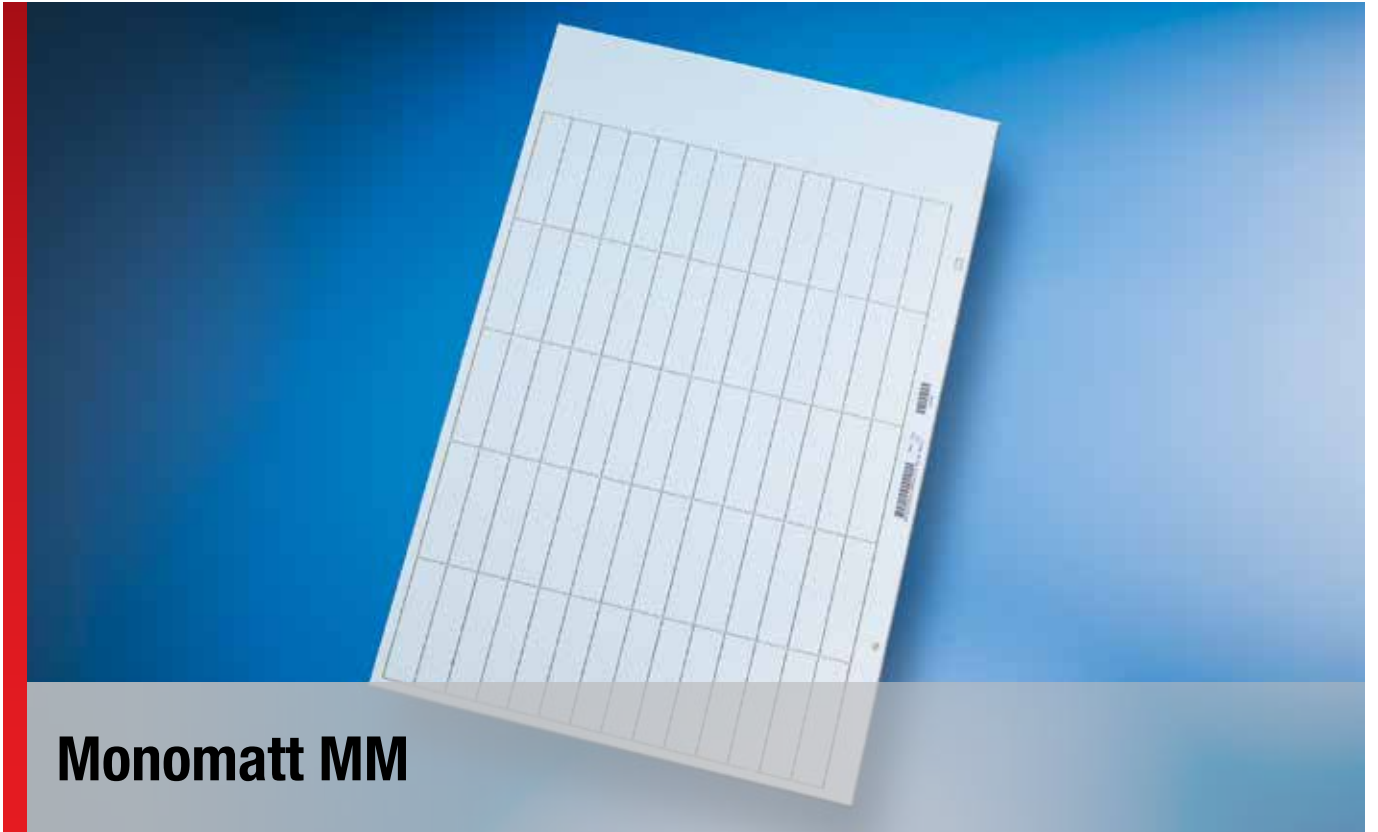
Monomatt MM/K is available with self-adhesive foil (SK) or with adhesive foil (HF).

### SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0
- Single-line and multi-line inscription

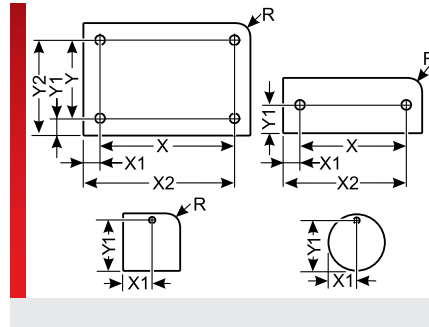
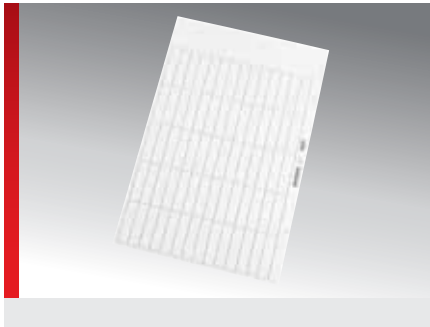
Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diameter mm	Software type	Pack qty.
<b>Rectangular design, self-adhesive (for smooth surfaces)</b>									
MM/K 10.5x9.5 SK	8608200006	White	1.00	10.5 x 9.5	5 / 2			K89	156
MM/K 30x12 SK	8608200005	White	1.00	30.0 x 12.0	16 / 3			G29	44
MM/K 60x20 SK	8608200001	White	1.00	60.0 x 20.0	33 / 5			D27	12
MM/K 70x27 SK	8608200002	White	1.00	70.0 x 27.0	38 / 7			D26	5
MM/K 82x22 SK	8608200003	White	1.00	82.0 x 22.0	45 / 6			D25	6
MM/K 95x45 SK	8608200004	White	1.00	95.0 x 45.0	52 / 13			D24	3
<b>Rectangular design with adhesive foil and 2 holes</b>									
MM/K 30x12 HF, 2x3.1MM	8608226001	White	1.00	18.6 x 12.0	10 / 3	2x 3,1		G28	44
MM/K 30x12 HF, 2x3.5MM	8608226002	White	1.00	20.0 x 12.0	11 / 3	2x 3,5		I99	20
<b>Rectangular design with adhesive foil and 4 holes</b>									
MM/K 34x38 HF, 4x4,0MM	8608246001	White	1.00	34.0 x 22.0	18 / 6	4x 4,0		B01	6
<b>Rectangular design with corner radius, self-adhesive (for smooth surfaces)</b>									
MM/K 18x9 R2 SK	8608100001	White	1.00	18.0 x 9.0	10 / 2			D33	72
MM/K 28x9 R2 SK	8608100006	White	1.00	28.0 x 9.0	15 / 2			D28	48
<b>Round design, with adhesive foil, 1 drilled hole</b>									
MM/K D=30 HF, 1x5,0MM	8608316001	White	1.00			1x 5,0	30.00	D49	16





# Monomatt MM

# Monomatt MM



## PRODUCT INFORMATION

Single-layer polycarbonate with the excellent properties of our label plates. This is a white solid-coloured material that also meets the specifications of the standard material for the terminal strip markers. The high-gloss surface is protected by a yellowish protective foil when shipped.

Monomatt (MM) is available with self-adhesive foil (SK) or with adhesive foil (HF).

Monomatt (MM) with mat size 300x200 mm is designed for labelling with the Murrplastik p<sup>3</sup>b and pictor<sup>2</sup> inkjet systems, but can also be used with the plotter.

## SPECIFICATIONS

- 40 – 130 °C
- Polycarbonate (PC)
- V0

Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Diameter mm	Software type	Pack qty.
<b>Rectangular design (single label)</b>									
MM 300x200 HF	8607206003	White	1.00	300.0 x 200.0	166 / 58			ZM1	1
MM 300x200 SK	8607200004	White	1.00	300.0 x 200.0	166 / 58			ZM1	1
<b>Rectangular design</b>									
MM 6x15 SK	8607200015	White	1.00	6.0 x 15.0	3 / 4			I58	540
MM 8.5x30 SK	8607200012	White	1.00	8.5 x 30.0	4 / 8			H57	192
MM 14x45 SK	8607200016	White	1.00	14.0 x 45.0	7 / 13			I90	80
MM 24x84.5 SK	8607200018	White	1.00	24.0 x 84.5	13 / 24			I92	24
MM 25x5 SK	8607200009	White	1.00	25.0 x 5.0	13 / 1			D52	374
MM 25x8 SK	8607200008	White	1.00	25.0 x 8.0	13 / 2			D51	242
MM 27x15 HF	8607206004	White	1.00	27.0 x 15.0	15 / 4			D07	120
MM 27x18 SK	8607200021	White	1.00	27.0 x 18.0	15 / 5			L69	100
MM 27x18 SKS	8607202001	White	1.00	27.0 x 18.0	15 / 5			L48	100
MM 30x10 SK	8607200007	White	1.00	30.0 x 60.0	16 / 17			D50	153
MM 30x15 SK	8607200020	White	1.00	30.0 x 15.0	16 / 4			J68	108
MM 30x60 SK	8607200010	White	1.00	30.0 x 60.0	16 / 17			D60	27
MM 33x7.5 SK	8607200005	White	1.00	33.0 x 7.5	18 / 2			Z08	184
MM 40x7 HF	8607206005	White	1.00	40.0 x 7.0	22 / 2			D37	175
MM 40x80 SK	8607200011	White	1.00	40.0 x 80.0	22 / 23			D61	14
MM 50x12.5 SK	8607200014	White	1.00	50.0 x 12.5	27 / 3			H97	70
MM 95x45 SK	8607200017	White	1.00	95.0 x 45.0	52 / 13			I91	12
MM 95x145 SK	8607200006	White	1.00	95.0 x 145.0	52 / 42			D35	3
MM 118x92 SK	8607200019	White	1.00	118.0 x 92.0	65 / 27			J09	4
MM 120x120 HF	8607206006	White	1.00	120.0 x 120.0	66 / 35			M35	2

**Monomatt MM** (Continued...)

Type	Order No.	Colour	Material thickness mm	Printable area mm	No. characters/lines	Hole patterns Number x Ø mm	Dia-meter mm	Soft-ware type	Pack qty.
<b>Rectangular design with corner radius</b>									
MM 9x15 R2 SKS	8607402001	White	1.00	9.0 x 15.0	5 / 4			I95	372
MM 22x8 R2 SK	8607100001	White	1.00	22.0 x 8.0	12 / 2			H81	216
MM 40x20 R2 SK	8607400002	White	1.00	40.0 x 20.0	22 / 5			Z11	63
MM 40x20 R2 SKS	8607102000	White	1.00	40.0 x 20.0	22 / 5			D91	56
MM 110x60 R2 SK	8607400001	White	1.00	110.0 x 60.0	61 / 17			J10	6
<b>Rectangular design with 2 holes</b>									
MM 95x75 HF, 2X3.2MM	8607226001	White	1.00	85.6 x 75.0	47 / 22	2x 3,2		J86	6
MM 95x75 SK, 2X3.2MM	8607240001	White	1.00	85.6 x 75.0	47 / 22	2x 3,2		L64	6
<b>Rectangular design with corner radius and 2 holes</b>									
MM 41x17 R2 HF, 2.3MM	8607426001	White	1.00	29.0 x 17.0	16 / 5	2x 3,0		J84	70
MM 52x26 R5 HF, 2X2.5MM	8607126000	White	1.00	32.0 x 26.0	17 / 7	2x 2,5		Z00	30
MM 110x75 HF, 2X3,2MM	8607226002	White	1.00	97.8 x 75.0	54 / 22	2x 3,2		K22	4
<b>Rectangular design with corner radius and 4 holes</b>									
MM 74x37 R5 HF, 4X2.5MM	8607146000	White	1.00	54.0 x 37.0	30 / 10	4x 2,5		Z01	12
MM 84x54 R5 HF, 4X2.5MM	8607146001	White	1.00	64.0 x 54.0	35 / 15	4x 2,5		Z02	9
MM 100x60 R5 HF, 4X3.7MM	8607146002	White	1.00	80.0 x 60.0	44 / 17	4x 3,7		Z03	6
MM 120x70 R5 HF, 4X3.7MM	8607146003	White	1.00	100.0 x 70.0	55 / 20	4x 3,7		Z04	4
MM 139x85 R5 HF, 4X3.7MM	8607146004	White	1.00	119.0 x 85.0	66 / 25	4x 3,7		Z05	4
MM 139x139 R5 HF, 4X3.7MM	8607146005	White	1.00	119.0 x 139.0	66 / 40	4x 3,7		Z06	2
<b>Circular blanks (round version)</b>									
MM D=22 mm SK	8607300001	White	1.00				22.00	H22	96





## Laser systems









## Accessories and spare parts for the mp-LM



mp-LM F



Separator plates set



Receiving container (catch tank)

### PRODUCT INFORMATION

#### mp-LM F Extraction and filter unit

Robust suction unit for the mp-LM series to extract harmful dust, gases and vapours that accrue during the laser labelling process.

#### mp-LM separator plates set

Contains 5 separator plates, which are necessary for separating materials in mixed magazine population.

#### mp-LM receiving container (catch tank)

Receiving container for labelling mats, especially designed for the labelling process of the mp-LM.

Type	Order No.	Pack qty.
<b>Collecting device for labelled materials</b>		
mp-LM receiving container (catch tank)	86624116	1
<b>Separator plates for magazine loading</b>		
mp-LM separator plates set	86624117	5
<b>Premium carrier plate with adhesive foil to hold any labelling material</b>		
mp-LM Trägerplatte Premium	86624135	1
mp-LM Trägerplatte Premium Set + Box	86624136	1
<b>SK carrier plates to hold labelling material</b>		
mp-LM SK carrier plate	86624127	5
mp-LM carrier plate set SK + box	86624128	1
<b>Spare glue dots for SK carrier plate</b>		
mp-LM SK glue dots	86624191	48
<b>Spare glue dots for HF ALU+V4A carrier plate</b>		
mp-LM glue dots HF ALU+V4A	86624190	48
<b>HF ALU-V4A carrier plate to hold labelling materials</b>		
mp-LM Trägerplatte HF ALU-V4A	86624125	5
mp-LM Trägerplatte Set HF Alu-V4A + Box	86624126	1
<b>Adapter plates for accepting single line of 3-line labelling materials</b>		
mp-LM single tree adapter 3	86624131	1
<b>Adapter plates for accepting single line of 4-line labelling materials</b>		
mp-LM single tree adapter 4	86624132	1





## pulsar A6



### PRODUCT INFORMATION

#### More productivity through automation

Increase productivity with the automation of the laser device by using a modular expansion unit.

One beneficial side effect of this is that application errors can be minimized, ensuring consistent quality regardless of the operator. With the new automation unit, the proven pulsar technology can be turned into a completely autonomous unit. This unit can handle up to 100 mats (e.g. 5,700 KS labels) autonomously, no human interaction required. Automation makes the pulsar 16 times more productive. Until now, the laser marking device required the presence and attention of the operator at all times. The pulsar now works completely independently. With a simple adaptation to the existing pulsar M6 units (generation 2 and newer) and the option to continue using the device manually after adapting the automation unit, manufacturers can offer a high degree of flexibility for the user.

The device includes a set of 2 base plates and magazines. This set is customised, because of the large range of materials available. Depending on the actual variances, an additional set may have to be added.

#### Benefits

- Can be adapted retrospectively
- Magazine of up to 100 mats

- More than 10,000 signs/hr independent working time.
- Fully automated inscription process
- All pulsar M6 features remain
- Low operating and maintenance costs
- Manual operation still serviceable
- Pick and Place
- Simple handling of the magazines

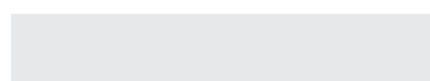
#### Labelling a variety of Murrplastik materials

Stainless steel, anodised aluminium, Polycarbonate signs, Monomatt, Polypropylene signs, laser foil

#### Technical data: pulsar A6

- Laser source: 6 watt solid state laser
- Wavelength: 1064 nm
- Modulation: Frequency 15 KHz - 200 KHz
- Cooling: Air
- Pneumatic: 4 bar, > 200 l/min (DIN ISO 8573-1: 2010)
- Input voltage: 230 V / 50-60 Hz
- Power: 1 kW (with pulsar M6)
- Dimensions: 630 x 1050 x 920 mm (H x W x D)
- Weight: 110 kg (with pulsar M6)
- Interface: USB
- Safety: Laser class 1
- Printable area 140 x 140 mm

### SPECIFICATIONS



Type	Order No.	Pack qty.
pulsar A6 laser labelling system	86624013	1







## Inkjet-systems















## Plotter systems

## mp-PM Basic



### PRODUCT INFORMATION

**Flexible and handy plotter with no pen station that helps you label marking elements quickly and easily.**

Rugged construction in stylish aluminium; Labelling area 273 mm x 305 mm for six aluminium base plates GPx or a base plate GPU A4;

Easy to change fixtures to suit a variety of marking elements;

Universal power supply of 100-240 V AC / 50-60 Hz;

Neat labelling right from the very first marking element;

PC interface: USB port;

Control language: HPGL;

Engraving option mp-EM Opt. optionally adaptable.

#### mp-PM Basic Plotter-System

- Plotter mp-PM Basic incl. base plate
- USB data cable
- Power supply 100-240 V Euro adapter attached
- Mains adapter USA and UK
- Operating instructions

#### mp-PM Basic Plotter-Set

- Plotter mp-PM Basic incl. base plate
- 3 base plates type GP 3
- 3 base plates type GP 4
- Ink pen disposable MP2.0 – 0.35 mm
- ACS Gold Studio software
- USB data cable
- Power supply 100-240 V Euro adapter attached
- Mains adapter USA and UK
- Operating instructions

### SPECIFICATIONS



Type	Order No.	Pack qty.
mp-PM Basic system	86622074	1
mp-PM Basic set	86622072	1
<b>Aluminium transport case</b>		
mp-PM Basic / MGS 50 Alu-Case	86622078	1



## mp-EM opt.



### PRODUCT INFORMATION

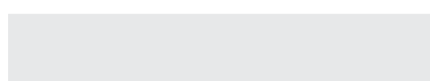
**Designed to quickly and economically convert the plotters of the mp-PM family into a fully adequate engraving unit with suction.**

The new engraving option offers a digital engraving depth counter, an adjustment aid (zero setting) as well as a holding bracket to store the plotter module resp. the engraving module in disuse. The new spindle generation also allows in cooperation with the depth controller an accurate setting of the engraving depth in 0.025 mm steps.

### Scope of supply

- Engraving head with engraving spindle and digital engraving depth counter
- Engraving burin 0.5 mm / 15°
- Engraving spindle connection cable
- Controller
- Controller connection cable
- Vacuum cleaner with suction hose and suction bracket.
- Vacuum cleaner connection cable
- Holding bracket
- Calibration stud
- Power cord

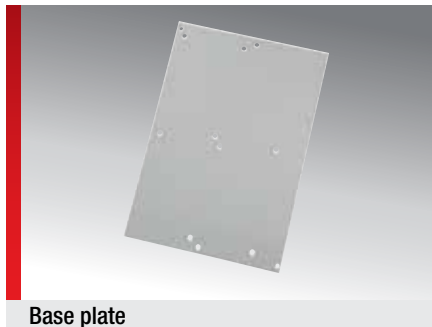
### SPECIFICATIONS



Type	Order No.	Pack qty.
<b>Engraving option for mp-PM plotter systems</b>		
mp-EM opt.	86622075	1
<b>Accessories</b>		
Engraving option suction unit G3 / VC	86622060	1
Engraving option / MGS vacuum cleaner bag set	86691072	1
<b>Spare parts</b>		
mp-EM opt. lifting unit	86691088	1
Engraving option control unit G3 VEC	86691038	1
Engraving option cable set	86691036	1
Engraving option suction hose	86691044	1



## mp-PM replacement parts



Base plate

### PRODUCT INFORMATION

#### Base plates

Mounting adaptors for the various labelling materials used on plotter systems. The mounting adapter is the connector piece between the plotter housing and the base plate.

#### Base plates

Base plates for mounting of labels like Mono-matt, Duomatt, aluminium and stickers are listed in the accessories area.

Type	Order No.	Pack qty.
<b>Support adapters for base plates</b>		
mp-PM/MVPS basic base plate	86621031	1
mp-PM/MVPS G3 base plate	86622011	1
<b>Ink pen receptacle</b>		
mp-PM pin unit	86691081	1
<b>Integrated electronic components<sup>1)</sup></b>		
mp-PM input board <sup>1)</sup>	86691084	1
mp-PM basic control board <sup>1)</sup>	86691083	1
mp-PM A3 control board <sup>1)</sup>	86691082	1

<sup>1)</sup> Requires opening the device and may only be carried out by the Murrplastik service team while still under warranty.

## Special writing pens for plotter systems



Refillable pen



Disposable pen

### PRODUCT INFORMATION

#### Disposable pen (full)

Available in different line thicknesses. Robust action. The pen is activated by assembling and locking the two parts together (pen tip and non-refillable ink cartridge).

#### Refillable pen (empty)

Available in different line thicknesses. The pen can be filled with replaceable cartridges (1 ml) or with ink from a bottle (30 ml).

#### Refillable pen for fabric labels (empty)

Special ink pen for textile labels (e.g. EDG type). The pen can be filled with replaceable cartridges (1 ml) or with ink from a bottle (30 ml).

**Please note: All writing pens (excepting non-refillable ones) are delivered unfilled. Writing ink (bottles/cartridges) must be ordered separately.**

### SPECIFICATIONS



Type	Order No.	Pack qty.
<b>Disposable pens MP2.0 (full)</b>		
MP2.0 0.18 mm disposable ink pen	86621464	1
MP2.0 0.25 mm disposable ink pen	86621466	1
MP2.0 0.35 mm disposable ink pen	86621468	1
MP2.0 0.5 mm disposable ink pen	86621472	1
MP2.0 0.7 mm disposable ink pen	86621474	1
MP2.0 1.0 mm disposable ink pen	86621476	1
<b>Disposable pens IPC (full)</b>		
MP-IPC 0.18 mm disposable ink pen	86621490	1
MP-IPC 0.25 mm disposable ink pen	86621492	1
MP-IPC 0.35 mm disposable ink pen	86621494	1
<b>Reusable pen MP2.0 (empty)</b>		
MP2.0 0.18 mm ink pen	86621480	1
MP2.0 0.25 mm ink pen	86621481	1
MP2.0 0.35 mm ink pen	86621482	1
MP2.0 0.5 mm ink pen	86621483	1
MP2.0 0.7 mm ink pen	86621484	1
MP2.0 1.0 mm ink pen	86621485	1
<b>Reusable pen for MP2.0 fabric labels (full)</b>		
MP2.0 0.35 mm ink pen labels	86621471	1

## Ink and cleaner with accessories



Ink



Cleaner



Cleaning appliances

### PRODUCT INFORMATION

#### Ink

Etching ink for UV stable labelling with the reusable pen. The ink's outstanding feature is its high stability on various forms of media.

#### Cleaner

The MP2.0 cleaner has been developed for the cleaning and care of the ink pens.

#### Cleaning set

Includes the MP2.0 cleaner, a collection beaker and a cleaning cloth.

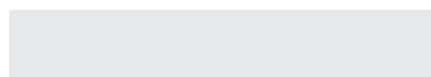
#### Cleaning Unit

Includes a collection beaker and a cleaning cloth.

#### Pressure ball

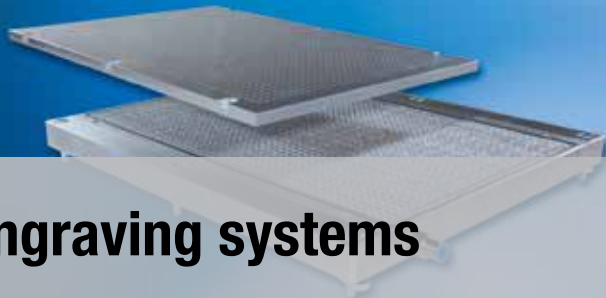
The pressure ball activates ink flow in the reusable pen after a refill, or longer periods of inactivity.

### SPECIFICATIONS



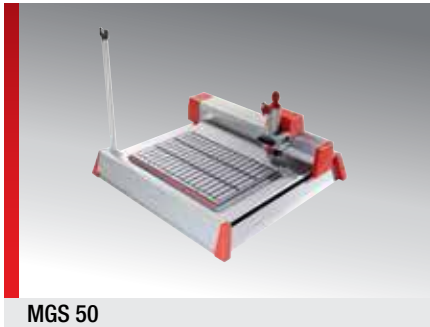
Type	Order No.	Pack qty.
<b>MP2 ink for refillable pen</b>		
MP2.0 (5 x 1 ml) ink cartridge	86621233	1
MP2.0 ink (30 ml)	86621235	1
<b>Cleaning fluid for MP2.0 ink</b>		
MP2.0 (2 x 10 ml) cleaner cartridge	86621244	1
MP2.0 30 ml cleaner	86621243	1
<b>Cleaning kit and accessories</b>		
MP2.0 cleaner set (MP2.0 cleaner and cleaning unit)	86621241	1
Pressure ball	86351050	1





## Engraving systems

## MGS 50 / MGS 60



MGS 50



MGS 60

### PRODUCT INFORMATION

**Flexible and handy engraving device, for engraving plastic and aluminium materials (DM, DMG, ALU, ALM).**

Engraving system based on a plotter design, with permanent engraving head (lifting unit). Available in A4 (MGS 50) and A3 (MGS 60).

The MGS 50 or 60 features a digital display of the engraving depth. Thus, when setting the engraving depth, the individual steps in

rotating the depth control no longer need to be counted. Settings are in 0.025 mm increments.

#### Base plates

Suitable GPU A4 or GPU A3 base plates are listed with the "Accessories"; they are not part of the engraving system's scope of delivery.

### SPECIFICATIONS



Type	Order No.	Pack qty.
MGS 50 A4 engraving system	86622026	1
MGS 60 A3 engraving system	86622028	1
<b>Accessories</b>		
Engraving option suction unit G3 / VC	86622060	1
Engraving option / MGS vacuum cleaner bag set	86691072	1
MGS (40-TO/50/60) vacuum plate <sup>1)</sup>	86622064	1
MGS (40-TO/50/60) vacuum plate <sup>1)</sup>	86622066	1
MGS (40-TO/50/60) suction adapter set	86622062	1
mp-PM Basic / MGS 50 Alu-Case	86622078	
<b>Spare parts</b>		
MGS 50 / MGS 60 depth adjuster	86691037	1
MGS 50 / MGS 60 engraving spindle	86691035	1

<sup>1)</sup> to be used only with vacuum plate



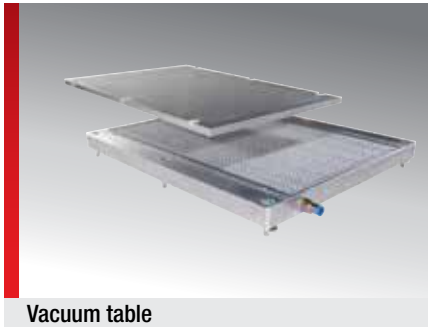








## CAM vacuum table



Vacuum table

### PRODUCT INFORMATION

Clamping as if by magic. We can supply a vacuum grid table matching the engraving machine model for the specific purpose of clamping our Duomatt, Alumatt and aluminium mats or for level work pieces. If there is no compressed air supply at the site of installation it will be necessary to order an electric vacuum pump instead of the standard chip vacuum pump.

#### CAM 100 vacuum table

Technical data:

- Size approx. 355 x 290 mm
- Raster gap 3 mm

Scope of delivery:

- Vacuum raster plate of aluminium
- Chip vacuum pump incl. accessories
- Sealing cord

#### CAM 200 vacuum table

Technical data:

- Size approx. 540 x 485 mm
- Raster gap 3 mm

Scope of delivery:

- Vacuum raster plate of aluminium
- Chip vacuum pump incl. accessories
- Sealing cord

#### Optional with a new order in conjunction with CAM 100

Electric vacuum pump instead of chip vacuum pump (surcharge)

#### Spare parts

Sealing cord  
Electric vacuum pump  
Vacuum grid plate  
Perforated vacuum plate

### SPECIFICATIONS

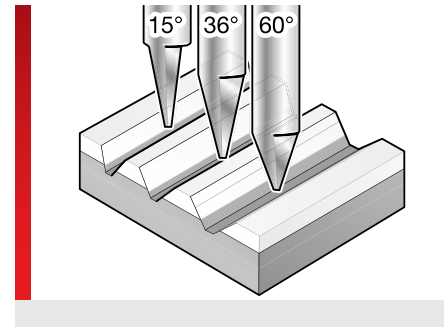
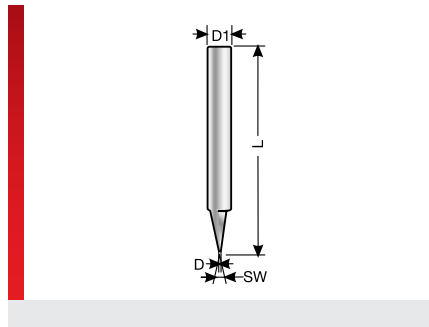


Type	Order No.	Pack qty.
<b>Vacuum table</b>		
CAM 100 Grid vacuum base plate ALU	86701614	1
CAM 100 ALU perforated vacuum plate	86701616	1
CAM 100 vacuum table pitch pattern	86701610	1
CAM 200 vacuum table pitch pattern	86701612	1
<b>Optional, in case of CAM reorder</b>		
CAM series elect. vacuum pump	86701618	1
Electric vacuum pump instead of chip vacuum pump (surcharge)	86901614	1
<b>Accessories</b>		
Replacement sealing cord	86721018	3





## Graver



### PRODUCT INFORMATION

Gravers are conical tools (halved solid metal round bar, ground smooth) with a cutting edge. In principle, the smaller the angle at the point, the more constant is the engraving width, even if the material to be engraved is not flat. We would recommend our special 15° gravers when working with spindles without height scanning. The overall diameter gives the minimum engraving width. The deeper it presses into the material, the wider the engraving width. Ratio of plunge depth:

engraving width is predominantly determined by the angle at the point.

- Universal graver for engraving work
- For use with a wide range of materials (plastic, aluminium,...)

#### Engraving systems

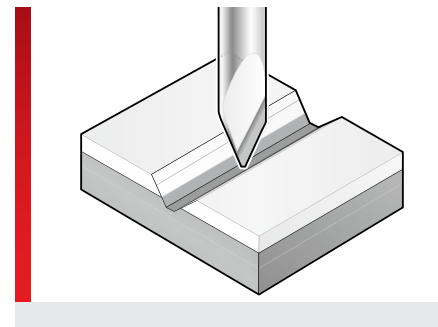
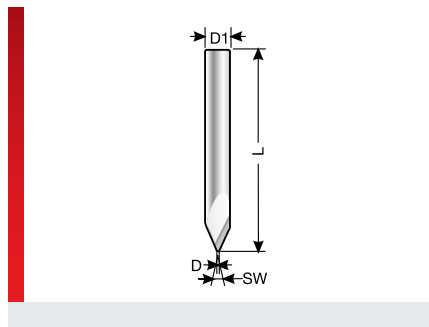
The graver can be used in conjunction with the MGS series CAM engraving system and the engraving option.

### SPECIFICATIONS



Type	Order No.	Colour stop ring	D Ø mm	D1 Ø mm	L mm	Sectional view Angle °	Pack qty.
<b>Nose angle 15 degree</b>							
Graver 15° d = 0.2 mm	86721424	White	0.20	3.00	40.00	15.00	1
Graver 15° d = 0.3 mm	86721426	White	0.30	3.00	40.00	15.00	1
Graver 15° d = 0.4 mm	86721428	White	0.40	3.00	40.00	15.00	1
Graver 15° d = 0.5 mm	86721430	White	0.50	3.00	40.00	15.00	1
Graver 15° d = 0.7 mm	86721432	White	0.70	3.00	40.00	15.00	1
<b>Nose angle 36 degree</b>							
Graver 36° d = 0.2 mm	86721435	Yellow	0.20	3.00	40.00	36.00	1
Graver 36° d = 0.3 mm	86721436	Yellow	0.30	3.00	40.00	36.00	1
Graver 36° d = 0.4 mm	86721437	Yellow	0.40	3.00	40.00	36.00	1
Graver 36° d = 0.5 mm	86721438	Yellow	0.50	3.00	40.00	36.00	1
Graver 36° d = 0.7 mm	86721439	Yellow	0.70	3.00	40.00	36.00	1
Graver 36° d = 1.0 mm	86721440	Yellow	1.00	3.00	40.00	36.00	1
<b>Nose angle 60 degree</b>							
Graver 60° d = 0.2 mm	86721444	Orange	0.20	3.00	40.00	60.00	1
Graver 60° d = 0.3 mm	86721446	Orange	0.30	3.00	40.00	60.00	1
Graver 60° d = 0.4 mm	86721448	Orange	0.40	3.00	40.00	60.00	1
Graver 60° d = 0.5 mm	86721450	Orange	0.50	3.00	40.00	60.00	1
Graver 60° d = 0.7 mm	86721452	Orange	0.70	3.00	40.00	60.00	1
Graver 60° d = 1.0 mm	86721454	Orange	1.00	3.00	40.00	60.00	1

## Milling cutter



### PRODUCT INFORMATION

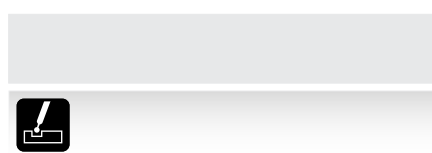
Milling cutters are conical tools with a cutting edge. The recently incorporated chip groove (spiral shaped) is able to remove chips very well. This will clear the engraving and leave it without burrs and clean. This tool has proved itself to be a veritable all-rounder!

- Speciality cutter for acrylic glass engravings
- For a variety of materials (plastics, aluminium, non-ferrous metals...)

#### Engraving systems

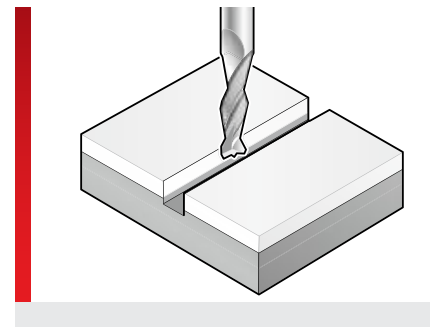
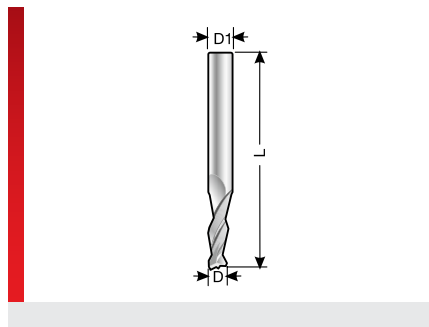
The milling cutter can be used in conjunction with the MGS series CAM engraving system and the engraving option.

### SPECIFICATIONS



Type	Order No.	Colour stop ring	D Ø mm	D1 Ø mm	L mm	Sectional view Angle °	Pack qty.
Milling cutter 30° d = 0.5mm	86721474	Yellow	0.50	3.00	40.00	30.00	1
Milling cutter 60° d = 0.2 mm	86721470	Orange	0.20	3.00	40.00	60.00	1
Milling cutter 60° d = 0.5 mm	86721472	Orange	0.50	3.00	40.00	60.00	1

## Single tool cutter and double-fluted cutter



### PRODUCT INFORMATION

#### Single tooth cutter

The single tool cutter is a speciality tool for flush trimming of the vacuum table.

#### Double-fluted cutter

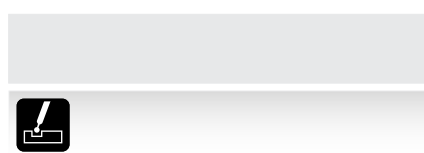
Double-fluted cutter, right-cutting with a fish-tail cut, so that it can be pressed easily even into hard materials.

- Affordably priced universal double-fluted cutter
- For milling non-ferrous metals and plastics

#### Engraving systems

The double-fluted cutter can be used in conjunction with the MGS series CAM engraving system and the engraving option.

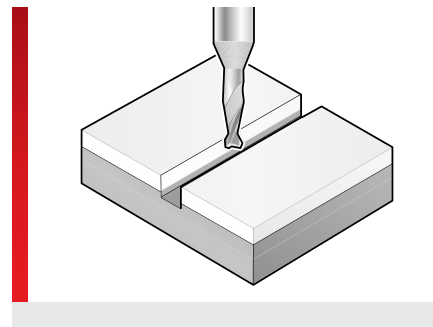
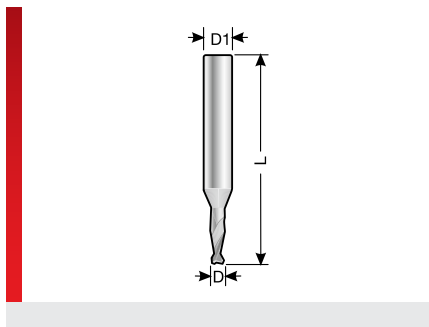
### SPECIFICATIONS



Type	Order No.	Colour stop ring	D Ø mm	D1 Ø mm	L mm	Sectional view Angle °	Pack qty.
<b>Single tooth cutter</b>							
CAM single tool cutter d = 3.0 mm	86721482	Black	3.00	3.00	40.00	180.00	1
<b>Double-fluted cutter</b>							
Double-fluted cutter d = 2.0 mm	86721420	Green	2.00	3.00	40.00	180.00	1
Double-fluted cutter d = 2.4 mm	86721421	Green	2.40	3.00	40.00	180.00	1
Double-fluted cutter d = 3.0 mm	86721422	Green	3.00	3.00	40.00	180.00	1



## Rub-out cutter



### PRODUCT INFORMATION

The rub-out cutter has a lower breaking risk than the double-fluted cutter with fishtail cut, because of the shorter cutting edge; it is therefore better suited for diameters up to 1 mm.

- Engraving and milling of non-ferrous metals
- Suitable for hard plastics

#### Engraving systems

The rub-out cutter can be used in conjunction with the CAM engraving system.

### SPECIFICATIONS



Type	Order No.	Colour stop ring	D Ø mm	D1 Ø mm	L mm	Sectional view Angle °	Pack qty.
<b>For CAM engraving systems</b>							
Rub-out cutter d = 0.5 mm	86721414	Blue	0.50	3.00	30.00	180.00	1
Rub-out cutter d = 1.0 mm	86721416	Blue	1.00	3.00	30.00	180.00	1









**Thermal transfer systems**

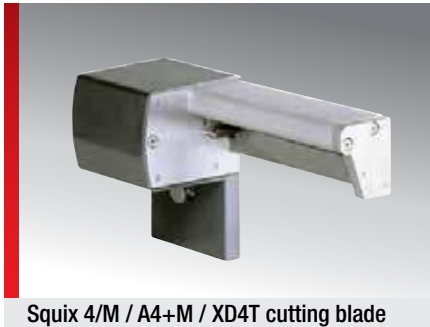




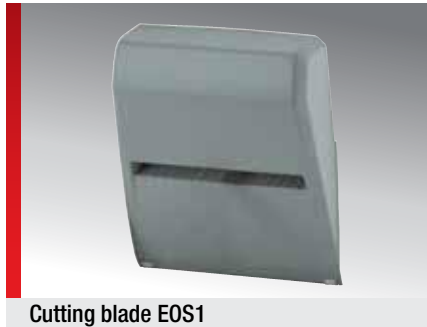




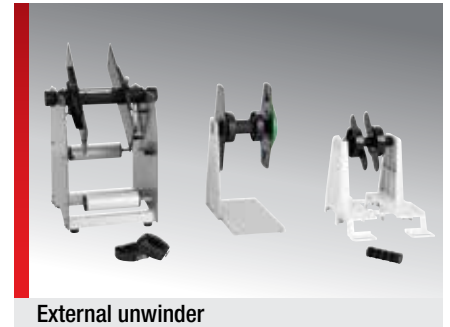
## Accessories for mp-TM systems



Squix 4/M / A4+M / XD4T cutting blade



Cutting blade EOS1



External unwinder

### PRODUCT INFORMATION

#### Cutters

The cutting blade separates all printable materials. Depending on the type of printer used, paper labels, self-adhesive labels, cardboard or fabric labels and plastic materials, as well as heat-shrink tubing can be cut.

#### Perforation blade

The perforating blade allows for optional perforation of the materials, in addition to the cutting, so that it may be separated by hand at a later time.

#### External unwinder

The external unwinder is needed for rolls of material that are too large to fit into the printer. It automatically centres the rolls of materials when placed into the equipment and makes an even feed of heavy rolls possible. Externally wound, as well as internally

wound rolls can be processed. The external unwinder has been designed to hold 3 in cab-label rolls. There is one version for the mp-TM EOS1 and one version for the mp-TM A4+M and mp-TM XD4T Twin.

#### External unwinder for 1" core

The external unwinder for 1" cores is suitable for holding 1 inch label rolls, such as pavonis label rolls and can also be used for the mp-TM EOS1, den mp-TM A4+M and den mp-TM XD4T Twin.

#### Internal roll holder for 1" core

The internal roll holder for 1 "core is required for printing TEP and TEG series labels.

#### Margin stop

The margin stop centres the label rolls and is available for reorder as a spare part.

### SPECIFICATIONS



Type	Order No.	Pack qty.
<b>Accessories for mp-TM EOS1</b>		
mp-TM EOS1 cutting blade	86661820	1
mp-TM EOS1 perforation blade	86661821	1
mp-TM EOS1 external unwinder	86661825	1
<b>Accessories for mp-TM Squix 4/M</b>		
mp-TM SQUIX 4/M cutting blade	86661841	1
mp-TM SQUIX 4/M perforation blade	86661842	1
<b>Accessories for mp-TM A4+M and mp-TM XD4T Twin</b>		
mp-TM cutting blade	86661810	1
mp-TM perforation blade	86661811	1
mp-TM external unwinder	86661815	1
<b>Accessories for mp-TM A4+M</b>		
mp-TM internal roll holder for 1" Core	86661832	1



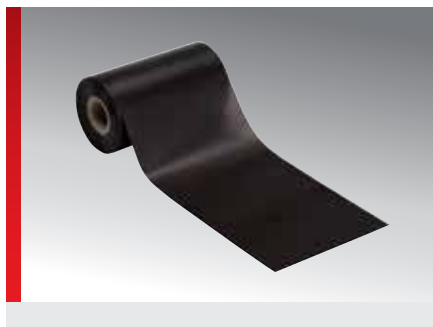








## FHW - resin/wax colour printer ribbon



### PRODUCT INFORMATION

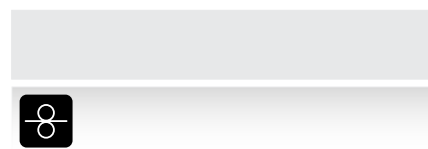
Printing with the FHW resin/wax colour ribbons is done at normal heat. In general, printing with FHW resin-wax ribbons offers a broad field of applications for almost all materials requiring medium to low durability.

The FHW colour ribbons, based on a mix of resin and wax are ideal for printing onto matte synthetic films and laminated

or coated papers, matte polyesters, polypropylene, Polyolefins (heat-shrink conduits), polyethylene, vinyl (PVC) and Polyamide.

Furthermore, smooth and shiny synthetic film surfaces can be printed just like with the FH colour ribbons. But we recommend FH+ or FH++ colour ribbons in this case for higher durability.

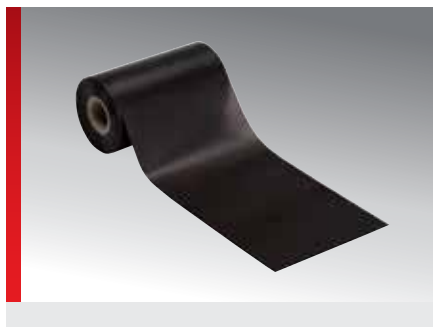
### SPECIFICATIONS



Type	Order No.	Colour	Roll width mm	Roll length m	Pack qty.
<b>FHW - colour ribbons for thermal transfer printers<sup>1)</sup></b>					
FHW 40x300 <sup>1)</sup>	86662100	Black	40	300	300
FHW 50x300 <sup>1)</sup>	86662101	Black	50	300	300
FHW 60x300 <sup>1)</sup>	86662102	Black	60	300	300
FHW 70x300 <sup>1)</sup>	86662103	Black	70	300	300
FHW 80x300 <sup>1)</sup>	86662104	Black	80	300	300
FHW 90x300 <sup>1)</sup>	86662105	Black	90	300	300
FHW 100x300 <sup>1)</sup>	86662106	Black	100	300	300
FHW 110x300 <sup>1)</sup>	86662107	Black	110	300	300
FHW 110x300 <sup>1)</sup>	86662108	Red	110	300	300
FHW 110x300 <sup>1)</sup>	86662109	Green	110	300	300
FHW 110x300 <sup>1)</sup>	86662110	Reflecting blue	110	300	300
FHW 110x300 <sup>1)</sup>	86662111	White	110	300	300
FHW 110x300 <sup>1)</sup>	86662112	Almond brown	110	300	300
FHW 110x300 <sup>1)</sup>	86662113	Violet	110	300	300
FHW 110x300 <sup>1)</sup>	86662114	Matt gold	110	300	300
FHW 110x300 <sup>1)</sup>	86662115	Matt silver	110	300	300
FHW 110x300 <sup>1)</sup>	86662116	Metallic gold	110	300	300
FHW 110x300 <sup>1)</sup>	86662117	Metallic silver	110	300	300

<sup>1)</sup>Information about packaging unit = roll length (m)

## FH - resin colour printer ribbon



### PRODUCT INFORMATION

The FH resin-based ribbons are ideal for printing on glossy synthetic films. Printing takes place at high temperatures for optimum durability.

#### FH series

The most common field of application for FH resin-based ribbons is that of synthetic labels with a need for high durability.

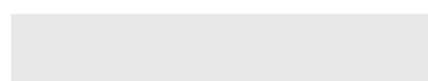
#### FH+ series

While the FH series already offers good smudge-proof qualities at optimum printing temperature, the FH+ series is smudge- and scratch-proof, and is also resistant to many cleaning agents and oils.

#### FH++ series

Optimum durability is offered by the FH++ series, which is resistant to exposure of most industrial cleaners and oil vapours.

### SPECIFICATIONS



Type	Order No.	Colour	Roll width mm	Roll length m	Pack qty.
<b>FH colour ribbons for thermal transfer printers<sup>1)</sup></b>					
FH 40x300 <sup>1)</sup>	86662200	Black	40	300	300
FH 50x300 <sup>1)</sup>	86662202	Black	50	300	300
FH 60x300 <sup>1)</sup>	86662205	Black	60	300	300
FH 70x300 <sup>1)</sup>	86662208	Black	70	300	300
FH 80x300 <sup>1)</sup>	86662210	Black	80	300	300
FH 90x300 <sup>1)</sup>	86662212	Black	90	300	300
FH 110x300 <sup>1)</sup>	86662214	Black	110	300	300
<b>FH+ colour ribbons for thermal transfer printers<sup>1)</sup></b>					
FH+ 40x300 <sup>1)</sup>	86662201	Black	40	300	300
FH+ 50x300 <sup>1)</sup>	86662203	Black	50	300	300
FH+ 55x300 <sup>1)</sup>	86662204	Black	55	300	300
FH+ 60x300 <sup>1)</sup>	86662206	Black	60	300	300
FH+ 70x300 <sup>1)</sup>	86662209	Black	70	300	300
FH+ 80x300 <sup>1)</sup>	86662211	Black	80	300	300
FH+ 90x300 <sup>1)</sup>	86662213	Black	90	300	300
FH+ 110x300 <sup>1)</sup>	86662215	Black	110	300	300
FH+ 110x300 <sup>1)</sup>	86662217	Signal red	110	300	300
FH+ 110x300 <sup>1)</sup>	86662218	Signal green	110	300	300
FH+ 110x300 <sup>1)</sup>	86662219	Signal blue	110	300	300
FH+ 110x300 <sup>1)</sup>	86662220	Signal white	110	300	300
FH+ 110x300 <sup>1)</sup>	86662221	Signal grey	110	300	300
FH+ 110x300 <sup>1)</sup>	86662222	Signal orange	110	300	300
FH+ 110x300 <sup>1)</sup>	86662223	Signal yellow	110	300	300



**FH - resin colour printer ribbon** (Continued...)

Type	Order No.	Colour	Roll width mm	Roll length m	Pack qty.
FH+ 110x300 <sup>1)</sup>	86662224	Metallic gold	110	300	300
FH+ 110x300 <sup>1)</sup>	86662225	Metallic silver	110	300	300
<b>FH++ colour ribbons for thermal transfer printers<sup>1)</sup></b>					
FH++ 60x300 <sup>1)</sup>	86662207	Black	60	300	300
FH++ 110x300 <sup>1)</sup>	86662216	Black	110	300	300

<sup>1)</sup> Information about packaging unit = roll length (m)





**Software**









## Accessories

## Base plates for labelling systems



### PRODUCT INFORMATION

Adaptor to accommodate the various label materials on Murrplastik labelling systems.

Type	Order No.	Pack qty.
<b>Base plates for labels</b>		
GP1	86351210	1
GP3	86351212	1
GP3C	86661050	1
GP3K	86661034	1
GP3M	86661031	1
GP3Q	86661035	1
GP4	86351214	1
GP4E	86351216	1
GP4L	86351217	1
GP5	86351218	1
GP KDE	86661037	1
GRPD/10	86351016	1
GRPD/18	86351018	1
<b>Base plates for Duomatt, Monomatt, Alu, Alumatt and labels</b>		
GPU A3	86621026	1
GPU A4	86621023	1
<b>Replacement mat for base plates GPU A3 and GPU A4</b>		
GPU A3 420x300 adhesive mat	86721022	1
GPU A4 305x205 adhesive mat	86721020	1

The pulsar GPU 140x140 base plate with adhesive properties for mounting the ESK, EST, ALU/K, MM/K and ELF is listed in labelling materials in the labelling system of pulsar M6 / pulsar A6 accessories.

The label plate and exchange plate for the pictor<sup>2</sup> are listed in the labelling systems section under pictor<sup>2</sup> / pictor<sup>2</sup> Black accessories.













# Appendix



# Selection table combination options labels/base plates

TYPE OF LABEL PLATE	BASE PLATES														SHEET / LABEL MATERIALS		
	GP1 86351210	GP3 86351212	GP3C 86661050	GP3K 86661034	GP3Q 86661035	GP4 86351214	GP4E 86351216	GP4L 86351217	GP5 86351218	GP KDE 86661037	GRPD/10 86351016	GRPD/18 86351018	GPU A3 86621026	GPU A4 86621023	pulsar GPU 140x140 86621029	no base plate required	
ABB																	
ALM																	
ALU																	
ALU/K																	
B&R																	
BEC																	
BS																	
BS 5L																	
BS 6L																	
DM																	
EDG																	
ELF																	
ELF/T																	
ELG																	
ELPT																	
ELW																	
ES																	
ESK																	
ESL																	
EST																	
KAB																	
KAB 17/10																	
KAB 5/5.4-5																	
KBT																	
KDE																	
KDL/E																	
KES																	
KET																	
KLG																	
KMO																	
KMR (> *5*)																	
KMR 5/5-5.1																	
KNC																	
KNQ																	
KPF																	
KPX */10*																	
KPX */15*																	
KPX */5*																	
KPX */7.5*																	
KPX U/5 ZS																	
KS 15/*																	
KS 4/*																	
KS 4/* 4ST																	
KS 5/10																	
KS 75/50																	
KS 95/75																	
KSA																	
KSB																	
KSD																	
KSE */10																	
KSE */18																	
KSF 10/8																	
KSI																	

Continued on the next page

TYPE OF LABEL PLATE	BASE PLATES												SHEET / LABEL MATERIALS			
	GP1 86351210	GP3 86351212	GP3C 86661050	GP3K 86661034	GP3Q 86661035	GP4 86351214	GP4E 86351216	GP4L 86351217	GP5 86351218	GP KDE 86661037	GRPD/10 86351016	GRPD/18 86351018	GPU A3 86621026	GPU A4 86621023	pulsar GPU 140x140 86621029	no base plate required
KSL																
KSN																
KSO / KSK																
KSO / KSK 70x9																
KSS																
KST																
KSZ																
KTE																
KWI																
MM																
MM/K																
SKS																
TBT																
TK																
TS																
TTE/L																
WGO																
WGO 5/5-5																

### Selection table Combination options Devices/Base plates

DEVICES	BASE PLATES												SHEET / LABEL MATERIALS			
	GP1 86351210	GP3 86351212	GP3C 86661050	GP3K 86661034	GP3Q 86661035	GP4 86351214	GP4E 86351216	GP4L 86351217	GP5 86351218	GP KDE 86661037	GRPD/10 86351016	GRPD/18 86351018	GPU A3 86621026	GPU A4 86621023	pulsar GPU 140x140 86621029	pictor <sup>2</sup> label plate 86625147
<b>Plotter and engraving option</b>																
mp-PM Basic																
mp-EM opt. Basic																
mp-PM A3																
mp-EM opt. A3																
<b>Engraving</b>																
MGS 50																
MGS 60																
<b>Inkjet printer</b>																
pictor <sup>2</sup>																
p <sup>3b</sup>																
<b>Laser devices</b>																
pulsar M6																
mp-LM 1,3,10																



## Material descriptions

### **PMMA Polymethyl methacrylate Co-Polymer**

DuoMatt is UV-stable material that has been tested under extreme conditions for resistance to deterioration. It retains its physical properties and its brilliant surface over many years (approx. 10 to 20 years). DuoMatt is halogen-free and silicone-free.

Processing temperature:	-3 °C to 82 °C
Flammability:	Fire classification HB according to UL-94
Water absorption:	0.36 %
Crack resistance:	35 %
Impact strength:	58.5 J/m <sup>2</sup>

### **ABS Acrylonitrile butadiene styrene**

The thin surface on DuoMatt Siemens silver SSI and SI brushed facilitates a finer typeface than DuoMatt. But the silvercoloured foil is less hard wearing than standard DuoMatt material.

Processing temperature:	-20 °C to 85 °C
Flammability:	Fire classification HB according to UL-94
Water absorption:	0.36 %
Crack resistance:	30 %
Impact strength:	no break

### **PC Polycarbonate**

Excellent surface gloss and transparency (natural), high mechanical strength and dimensional stability under heat, outstanding electrical and dielectric properties, superb dimensional accuracy and low water absorption. Impact resistance up to approx. 140 °C and, as a general rule, PC is self-extinguishing even without the addition of fire-retardants.

Temperature stability:	to 140 °C
Resistance to deformation:	at 1.8 N/mm 135 °C
Flammability:	V0 according to UL94
Halogen-free	according to DIN/VDE 0472, part 815
UV-stabilised	

### **PP Polypropylene**

Polypropylene demonstrates good mechanical properties. No tendencies toward stress crack corrosion. Surface hardness, tensile strength, temperature stability and long-term stress resilience values are greater than those of Polyethylenes. The material contains no halogens and laser inscription is possible.

Water absorption:	ISO 62	0.04 %
Moisture absorption:	ISO 62	0.01 %
Heat distortion	ISO 75	90 °C
Flammability:	Fire classification HB according to UL94	
Surface resistance:	ASTM D257 Ohm/sq 10(to the 14th power)	

### **PA Polyamide**

Broad range of properties covered by different types (PA 6 and PA6.6 are frequently used). Generally good electrical and mechanical properties with distinctive resistance to impact and abrasion being particularly strong. When dry, PA is sensitive to impact. Water absorption renders PA flexible.

Temperature stability:	up to 140 °C
Fire classification:	V2 according to UL94

### **PVC Polyvinyl chloride**

Soft PVC is made from polyvinyl chloride, softeners and process materials, e.g. stabilisers and lubricants. PVC is resistant to corrosive saline solutions and most acids.

Temperature stability:	up to 60 °C
Fire classification:	V0 according to UL94

### **TPU Thermoplastic Polyurethane**

Outstanding features of this material include its outstanding flexibility, even at very low temperatures, high continuous operating temperature and excellent resistance to tear propagation, as well as very good restoring forces, high resistance to grease, oil, solvents, high-energy radiation and ultraviolet light.

Continuous operation use:	-35 °C to 120 °C
Fire classification:	V0 according to UL94
Halogen-free	according to DIN/VDE 0472, part 815



## Material descriptions

### Label laser foil (ELF)

#### **PAK Polyacrylate**

Available in the colours silver/black and black/white.  
The foil demonstrates a reliable, permanent adhesive strength for applications on Polyolefine (PE/PP), slightly oily base surfaces and powder coatings. The Polyacrylate foil is halogen-free and very resistant to chemicals, extreme temperatures and other environmental influences.

Temperature-resistant: -40 °C to +300 °C  
Self-extinguishing after 15 seconds in case of fire  
Non-drip. Covers highly contrasting base/primer colours.

### Heat-shrink tubes

#### **Type ST-BT**

- Halogen-free Polyolefin
- Application: Aviation, railway and marine industries, tunnel construction
- Shrink rate 2:1
- EN 45545-2:2013 R22/R23

Usage temperature: -55 °C to +105 °C  
Tensile strength: 10N/mm<sup>2</sup>  
Crack resistance: 200 %  
Flammability rating: HB per ASTM D 635

#### **Type ST-ECO**

- Application: general labelling
- Shrink rate 3:1
- Flame resistant
- Excellent printing results

Usage temperature: -55 °C to +135 °C  
Water absorption: 0.20 %  
Break resistance: kl. 11N/mm<sup>2</sup>  
Spec. Volume resistance: 10<sup>16</sup> Ohm/cm  
Flammability rating: UL 224, 125 °C

### Self-adhesive sheet labels

Self-adhesive films are tested and approved in conjunction with specific substrates under the UL classification "Polymer Adhesive Systems". For this reason, all self-adhesive films should be tested on the respective substrates instead of merely testing the self-adhesive film alone.

Sheet labels of types	Material	Thermal stability	Fire classification	Adhesive strength
ELG / ELW / ELO / ES / ESL	Polyester film	-40 °C to 150 °C permanent min. processing temperature 5 °C	V0 according to UL94	17 N/10 mm
EDG	Reinforced textile	0 °C to 80 °C		9 N/25 mm

#### **Adhesive 467**

- Acrylat A-30
- Fire classifications: MIL-P-19834 B, Amend 1Typ1  
UL approved (MH-11410)  
complies with AGA and CSA requirements
- Adhesive thickness: 0.05 mm

Adhesive strength: 11 N/10 mm  
Thermal stability: -40 °C to 150 °C permanent  
200 °C transient  
Processing temperature: 18 °C minimum



## Material descriptions

### Adhesive 468

- Acrylat A-30
- Fire classifications: MIL-P-19834 B, Amend 1Typ1  
UL approved (MH-11410)  
complies with AGA and CSA requirements
- Suitable for rough and textured surfaces
- RoHS-specified
- Adhesive thickness 0.13 mm

Adhesive strength:	11 N/10 mm
Thermal stability:	-40 °C to 150 °C permanent 200 °C short term
Processing temperature:	18 °C minimum

### Adhesive 1780

- Polyethylene foam

Adhesive strength:	10 N/15 mm
Thermal stability:	-40 °C to 150 °C permanent
Processing temperature:	10 °C to 80 °C

### Adhesive 1917

- Natural rubber with acrylic-coated fabric
- Weather and water proof
- High adhesive strength

Adhesive power on steel:	3.8 N/cm
Ultimate elongation:	7%
Tear strength:	100 N/cm
Thermal stability:	180 °C (30 min)

### Adhesive 4830

- Polyester film with liner
- UL listed
- Interior / exterior application

Thermal stability:	-40 °C to 150 °C
Processing temperature:	10 °C minimum
Shelf life	2 years at 21° C and 50% humidity

### Adhesive 4883

- Stable, durable acrylate
- Universal adhesive with high tack  
and extreme adhesive power

Adhesive power on glass:	15 N/25mm
Thermal stability:	-40 °C to 150 °C permanent
Processing temperature:	5 °C minimum
Solubility:	soluble

### Adhesive 4930

- Polyacrylate mixed with adhesive resin

Thermal stability:	93 °C maximum 149 °C short term
Processing temperature:	10 °C minimum
Solubility:	insoluble

### Adhesive 4965

- Polyacrylate mixed with adhesive resin

Thermal stability:	93 °C maximum 149 °C short term
Processing temperature:	10 °C minimum
Solubility:	insoluble

### Adhesive 5917

- Natural rubber, heat tempered
- High adhesive power on most substrates
- Quick and easy removal

Adhesive power on steel:	9.5 N/25mm
Storage:	not above 25 °C and 55 % rel. humidity

### Adhesive 9088

- Modified acrylate
- High-performance, double-sided adhesive tape
- High holding force on high- and low-energy surfaces (e.g. PE, PP)
- Suitable for rough and textured surfaces
- Developed for strong adhesion

Adhesive strength:	150 (N/100 mm)
Thermal stability:	-4 °C to +93 °C permanent 150 °C short term
Processing temperature:	18 °C minimum
Resistance to solvents:	good

## Material properties

Murrplastik Systemtechnik uses high-quality polycarbonate for your label plates, meeting the requirements laid down by UL94 for the top fire classification V0. This offers clear advantages over the polyamides as used by our competitors.

Polycarbonate (PC) is used for any applications requiring a high-quality surface finish with respect to scratch resistance and gloss level. For instance, PC is often used in the automotive sector for headlight lenses and as PC/ABS blends for the interior. By contrast, polyamide (PA) is rarely found in interior fittings, even as a blend. Polyamides are, however, prevalent under the hood, for example, where less significance is attached to the appearance.




For use as a label plate, polyamide has another unfavourable property: ambient water absorption of approx. two percent by weight. This will cause dimensional variations (smaller dimensions at low temperatures and low air humidity, larger dimensions at high temperatures and high air humidity). The absorption of water does not tend to affect the dimensions of the label plates too severely, but it does make an undue impact on the properties of the material. Indeed, if water absorption is low, the material is very brittle and tends to break (e.g. when latching

onto a terminal block). Conversely, if water absorption is high, then it is very soft and it may be difficult to separate plates from each other (tear response).

Polycarbonate provides a clear advantage compared to Polyamide, especially with regard to printability. Since PC is more prone to chemical reaction, it lends itself well to labelling with ink and pigments and also to laser inscription. Whereas PA scarcely reacts to the energy application of laser light, the colour change achieved with PC is outstanding.

The chemical reactivity of polycarbonate during the inscription process makes inks and pigments very abrasion-resistant. If the resistance to abrasion and water is good in both materials, then the inscription on polyamide wears off significantly, if it comes into contact with oil, petrol or spirit. Polycarbonate, however, is resistant to these substances as well.

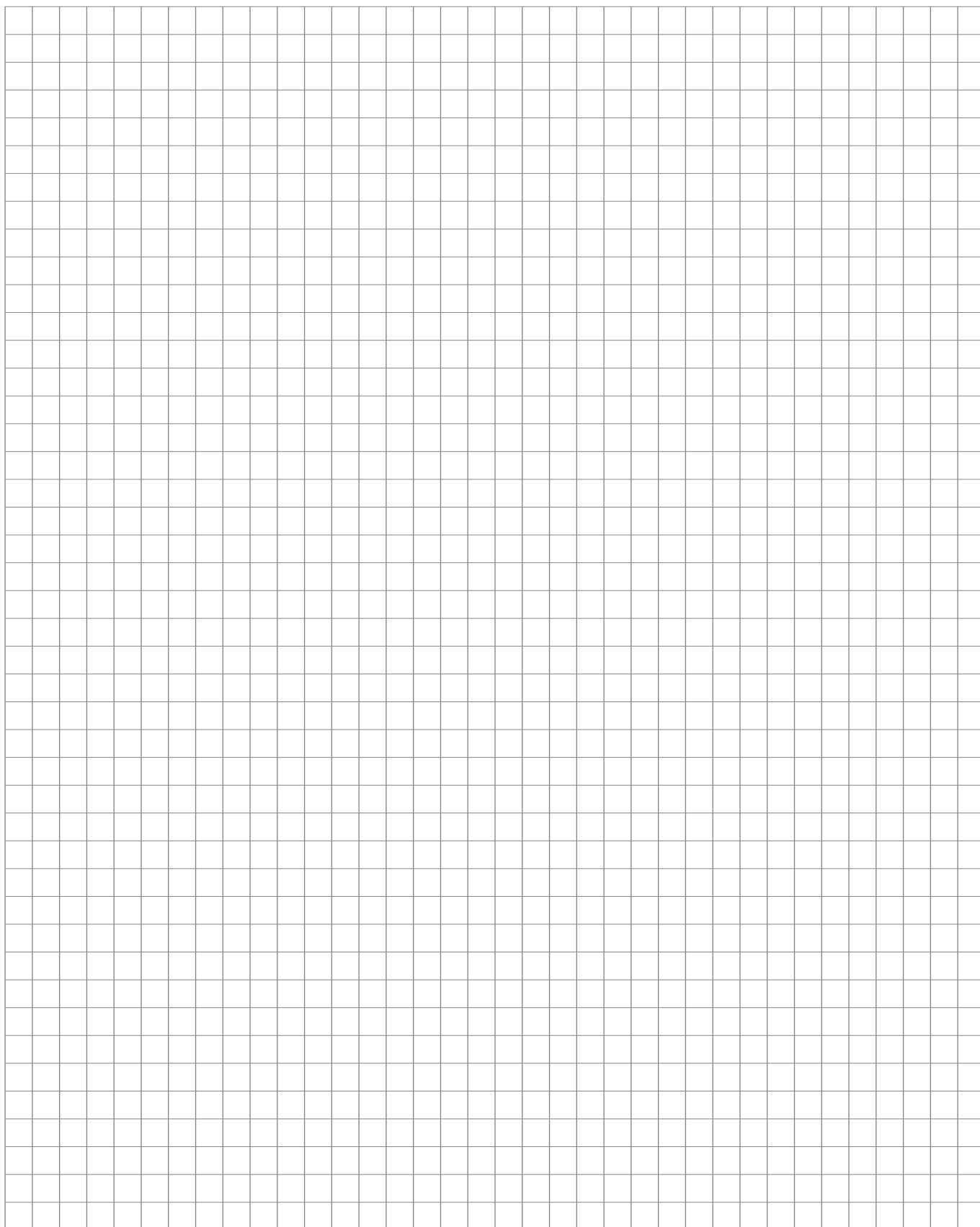
## Tested material properties and associated test procedures

Characteristic	Test procedure
 Flammability	Flammability according to UL94
 Halogen-free rating	The material for the ACS label plates may be described as halogen-free according to DIN/VDE 0472, Section 814. This means a total bromine and chlorine content < 0.2 % and fluorine < 0.1 %.
 UV-resistance	Test in UV light chamber in accordance with Murrplastik in-house standard. Assessment of labelling for clear legibility based on DIN EN ISO-4892-2.
Ageing	Regular testing in climate simulation chamber as per Murrplastik in-house standard
Functional testing	Trial mounting of sleeves at different temperatures. Assessment of fit at maximum and minimum diameters. Handling test on carrier/plate. Test of fit of plate in sleeve.
Hardness testing	Test based on Shore A - ISO 868
Vibration, shock and impact properties	Vibration, shock and impact test conforming to DIN EN 50155 Point 10.2.11 Simulated durability test using increased wide band random vibration as specified by DIN EN 16373 (VDE 0155 Part 103): 1999-11 Point 9.1 Category 1B.
Smear resistance	Tests measuring resistance to wiping off when exposed to machine oil, water, ethyl alcohol and hand perspiration.
Scratch/abrasion resistance	Test determining changes to legibility with different types of inscription (ink / printing / laser) pursuant to Murrplastik in-house standard.
Chemical resistance of the inscription	Test for chemical resistance based on Murrplastik in-house standard.



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## Notes





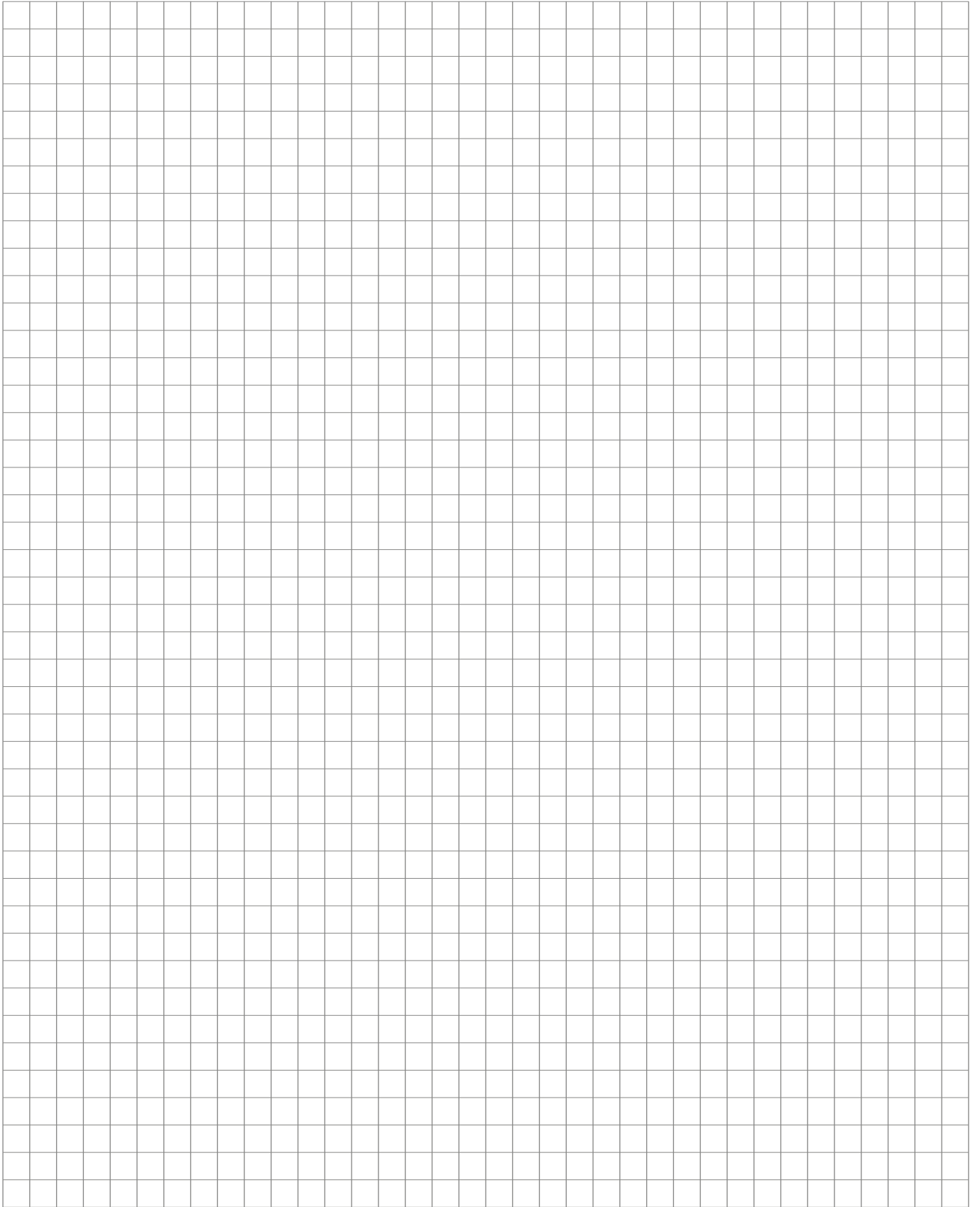


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## Notes



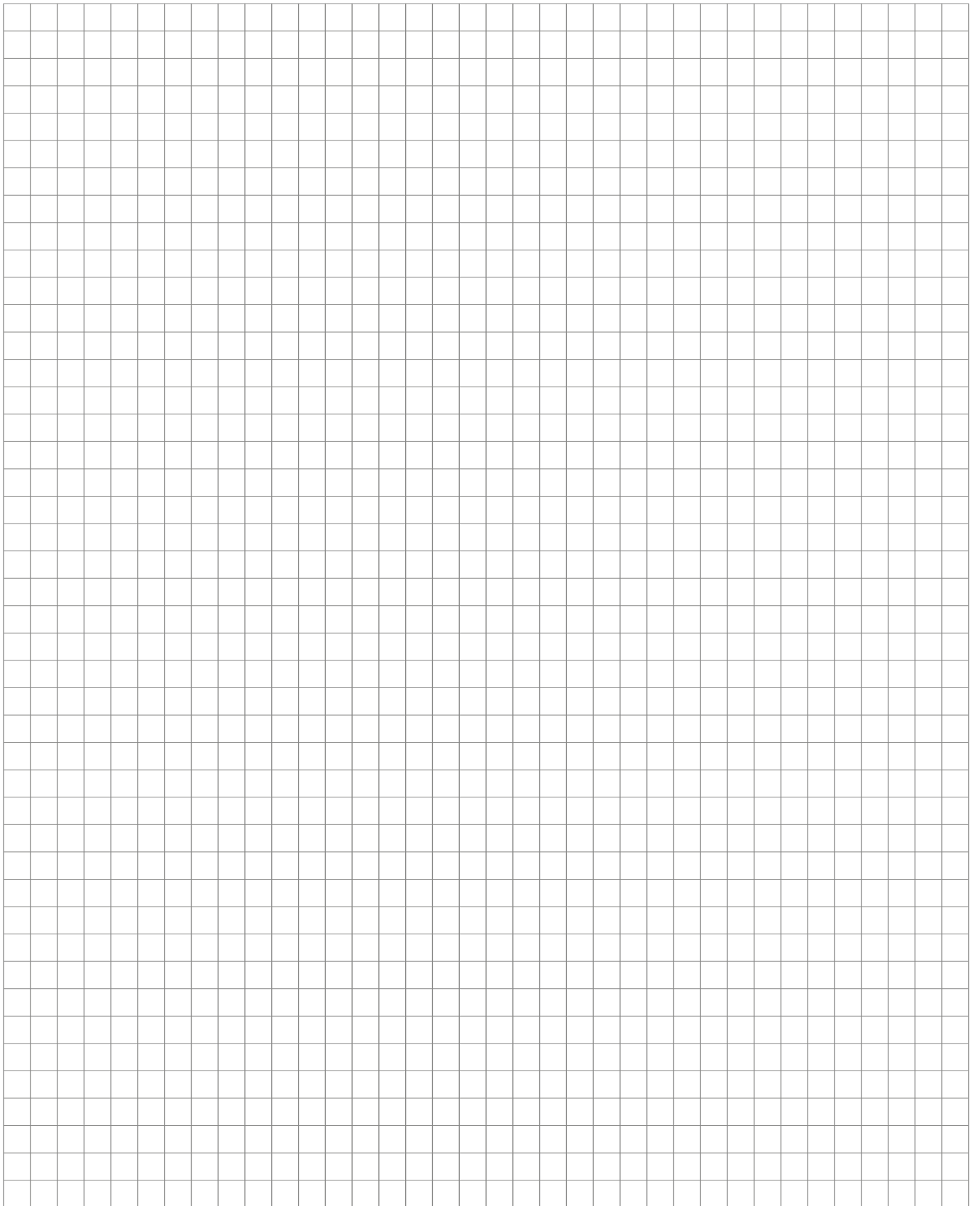
## Notes





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# Notes







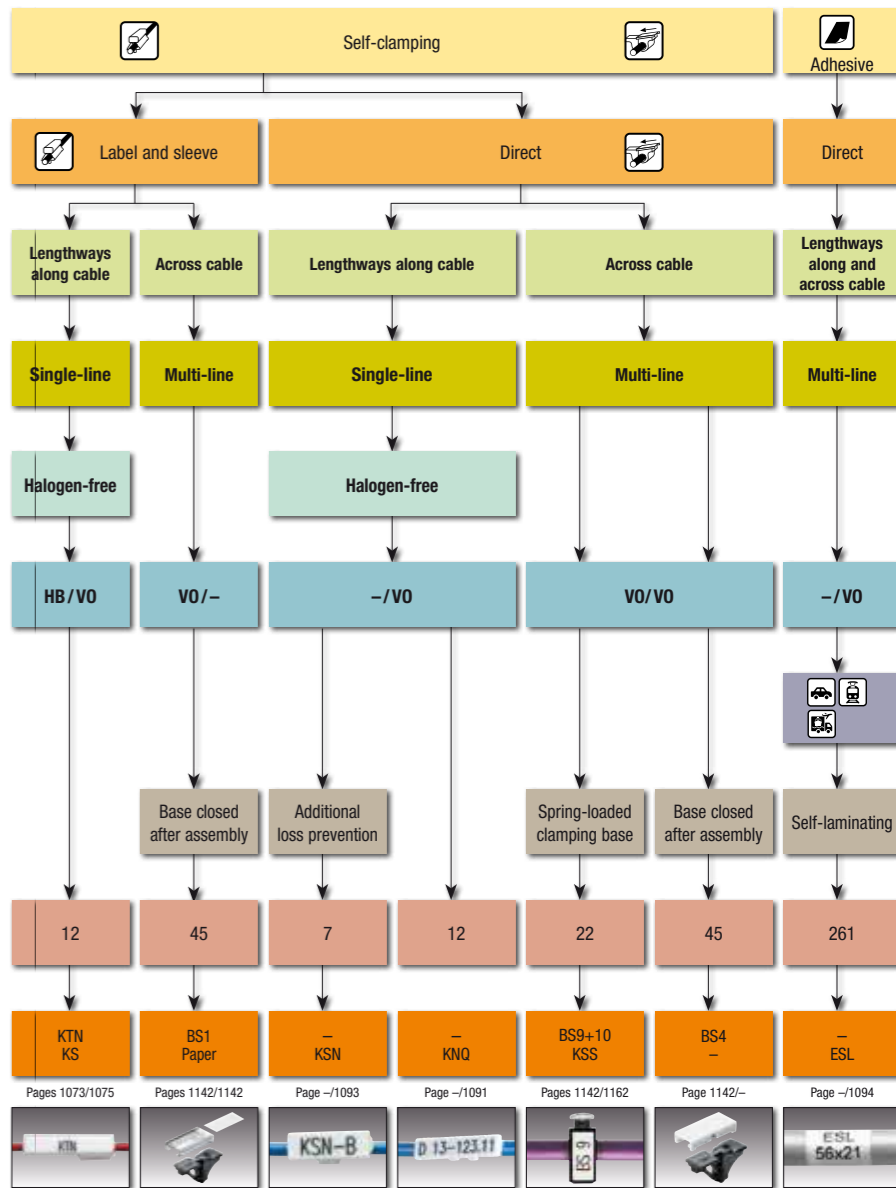
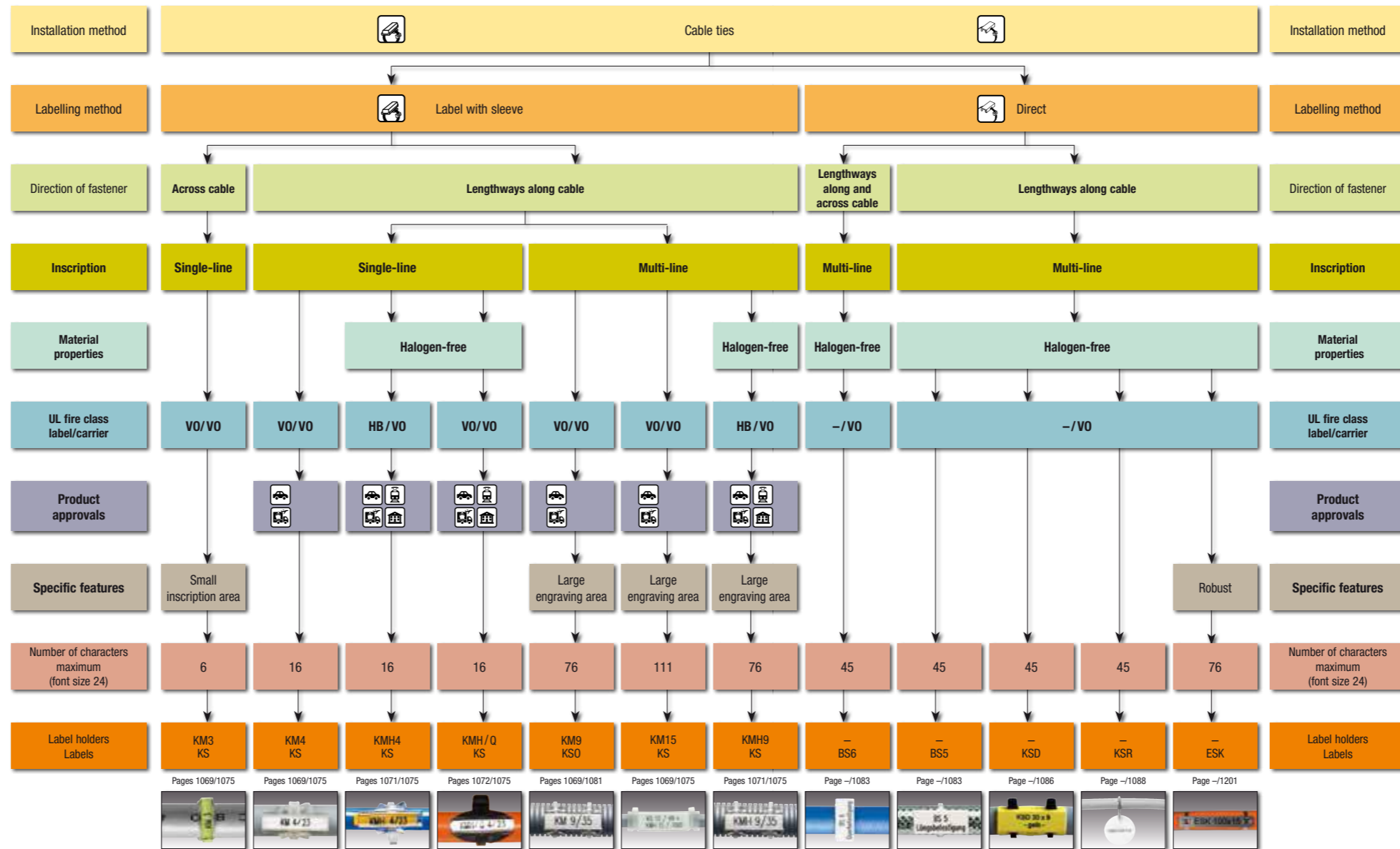
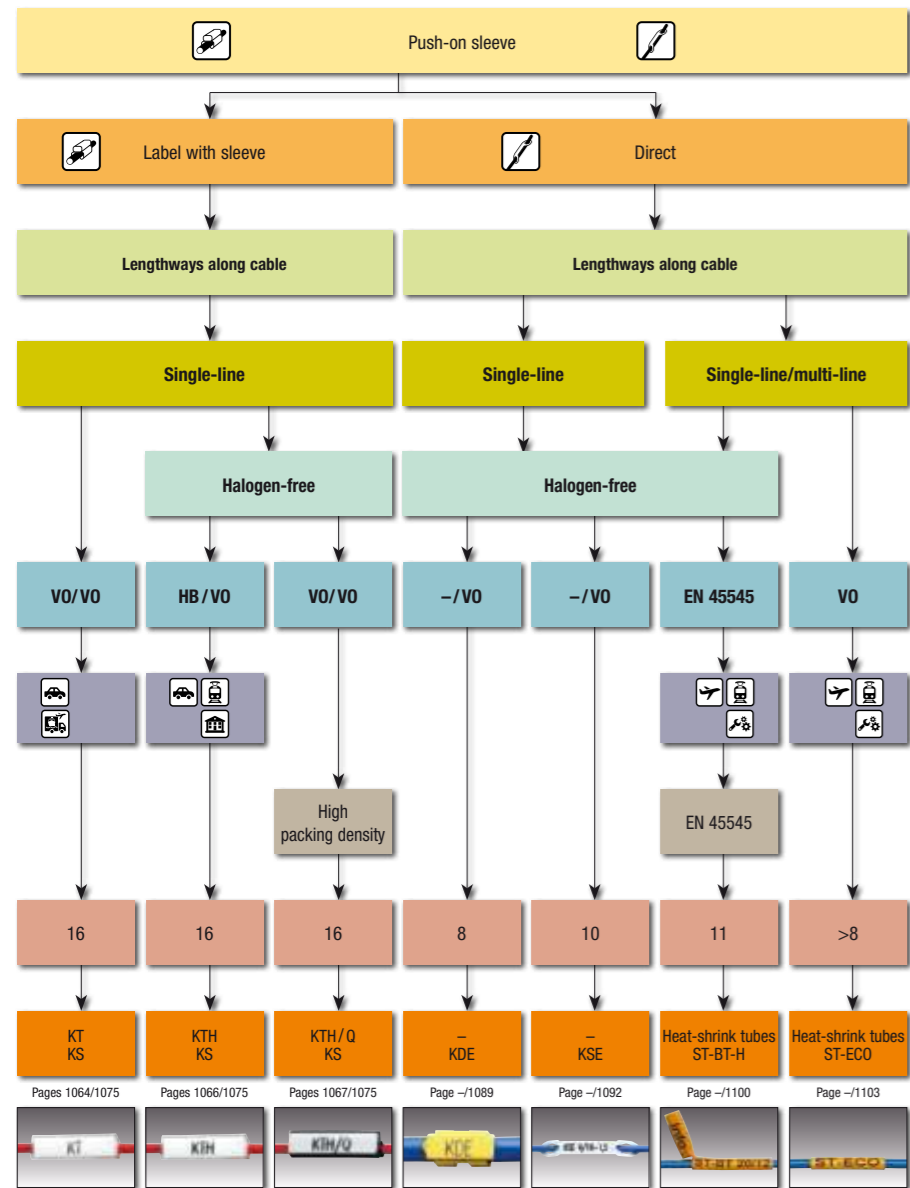


TYPE	PAGE
ABB	1150
AK	1281
ALU/K	1212
Aluminium oxide	1253
ALU-N lubricant	1253
ASI-Snap	1074
B+R	1151
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BK30	1115, 1118
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ELF	1210
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FB-BT	1268
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FHW	1271
GP KDE	1280
GP*	1280
GPU*	1280
Graver	1254
GRPD*	1280
HK	1281
HSD-T2	1107

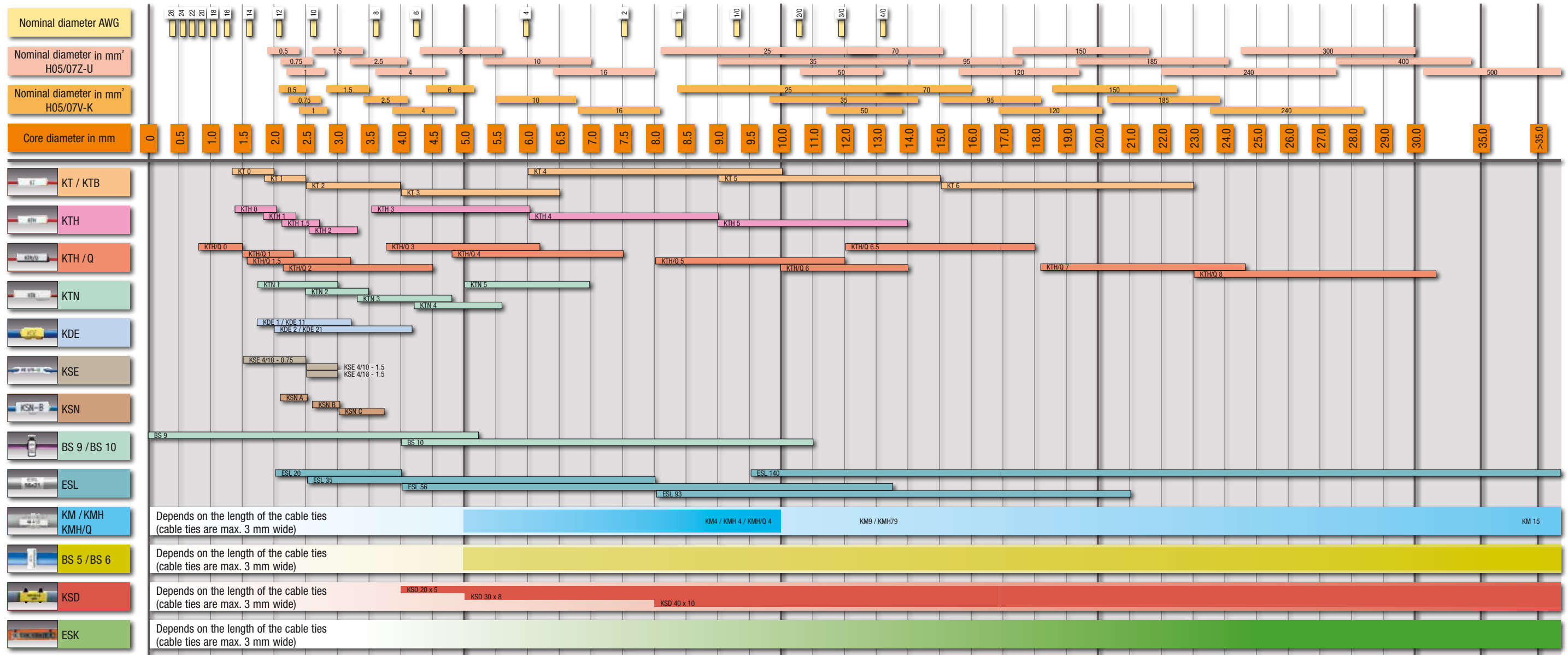
TYPE	PAGE
Ink	1234
Ink pens	1242
Isolation engraver	1258
KAB	1126, 1152
KB-D	1085, 1087
KCB-ECO	1099
KCE-ECO	1096
KCK-ECO	1138
KCL-ECO	1098
KCM-ECO	1097
KCS-ECO	1169
KCT-ECO	1179
KDE	1089
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KM 20	1140
KM 6	1141
KM T10	1282
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KPF	1155
KPU	1131
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KS KDL/E	1156
KSA	1157
KSB	1086
KSD	1086
KSD-D	1087
KSE	1092
KSF	1158
KSI	1134
KSK	1159, 1177
KSL	1161
KSM	1084, 1085
KSM-D	1085
KSN	1093
KSO	1081
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KSS	1154, 1162
KST	1182
KSZ	1163
KT	1064

TYPE	PAGE
KTE	1164
KTH	1066
KTH/Q	1067
KTN	1073
KWI	1135
LA	1202
LAM	1205
LM	1208
MGS	1246
MM/K	1216
MonoMatt (MM)	1218
MP2.0	1242
MP4SN	1093
mp-EM-Option	1240
MP-IPC	1242
MPKSN	1093
mp-LM	1222 – 1226
mp-PM A3	1239
mp-PM Basic	1238
mp-TM Accessories	1265
mp-TM EOS1	1262
mp-TM SQUIX 4/M	1263
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MW-KNQ	1091
MZ	1281
p3b	1232, 1235
pavonis	1269 – 1270
pictor <sup>2</sup>	1235
pulsar	1227 – 1229
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S-BTK	1175
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Set of tools	1259
S-hook	1283
Single tooth cutter	1256
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SKS	1165
SKS ET 200	1166
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ST-ECO	1103, 1105
TA	1174, 1176, 1183
TEA	1192
TEG	1197
TEP	1193
TES	1095
TK	1136
TS	1183
WGO	1137, 1167

### Selection table single wire, cable and conduit labelling



### Allocation table









**POLTECHNIK**

ELEKTROTECHNIKA PRZEMYSŁOWA

**www.mp.de**

**Germany** (Head Office)

Murrplastik Systemtechnik GmbH  
Dieselstraße 10  
71570 Oppenweiler  
☎ +49 7191 4820  
www.murrplastik.de  
info@murrplastik.de

**Americas** (North/South)

Murrplastik Systems, Inc.  
1175 US Highway 50  
Milford, OH 45150  
☎ +1 513 201 30 69  
www.murrplastik.com  
cablemgmt@murrplastik.com

**Austria**

Murrplastik Systemtechnik GmbH  
☎ +43 732 660 870  
www.murrplastik.at  
info@murrplastik.at

**China**

Murrplastik Asia Co., Ltd.  
1802 Rm. No. 218  
Hengfeng Rd.  
200070 Shanghai  
☎ +86 21 512 869 25  
www.murrplastik.com.cn  
info@murrplastik.com.cn

**Denmark**

Filial af Murrplastik  
Systemtechnik GmbH Tyskland  
Stenager 2  
6400 Sønderborg  
☎ +45 2347 00 24  
www.murrplastik.dk  
info@murrplastik.dk

**France**

Murrplastik S.à.r.l.  
Zone industrielle Sud,  
6 rue Manurhin B.P. 62  
68120 Richwiller  
☎ +33 389 570 010  
www.murrplastik.fr  
info@murrplastik.fr

**Italy**

Murrplastik Italia S.r.l.  
Via Circo, 18  
20123 Milano  
☎ +39 02 856 805 70  
☎ +39 392 3456 456  
www.murrplastik.it  
info@murrplastik.it

**Russia**

Офис компании  
Murrplastik в Москве  
Gilyarovskogo 57, building 1  
129110 Moscow  
☎ +7 495 684 17 37  
www.murrplastik.ru  
info@murrplastik.ru

**Spain**

Murrplastik S.L.  
Paseo Ubarburu, 76  
Pabellón 34, polígono 27  
20014 San Sebastián  
☎ +34 943 444 837  
www.murrplastik.es  
info@murrplastik.es

**Switzerland**

Murrplastik AG  
Ratihard 40  
8253 Willisdorf  
☎ +41 52 646 06 46  
www.murrplastik.ch  
info@murrplastik.ch

