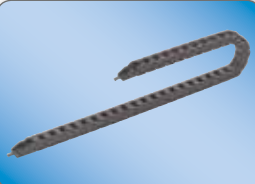




Energy chain systems




EasyLine energy chains
Simple filling with the Easy mechanism

from page 66



MultiLine energy chains
Compact dimensions, can be supplied in open and closed designs

from page 72




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

from page 170



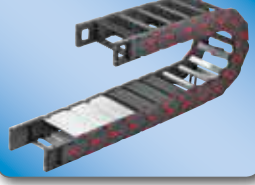
EVOCHAIN® Energy chains
Predestined for self-supporting applications with high dynamics and for long and gliding travel distances for high dynamics and workload.

from page 194



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

from page 208




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

from page 318




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 360



Strain relief systems
Strain relief and Steel Fix bow clamps

Page 453



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

Page 463



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| EVOLINE® – The evolution of the energy chain | Page | 10 – 11 |
| Success doesn't happen overnight – over 30 years of passion for innovation. | Page | 12 – 13 |
| Click lock – Click - and done | Page | 14 |
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| Assembly form | Page | 44 |
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| Energy chain systems sorted by interior height | Page | 48 – 65 |

ENERGY CHAIN SYSTEMS

| Product line | Type | Variation | Inside width | | |
|---------------------|-----------------|------------------|---------------------|------|-----------|
| EasyLine | MP 10.1 | open | 10 mm | Page | 66 – 71 |
| MultiLine | MP 14 | open | 14 mm | Page | 72 – 77 |
| MultiLine | MP 15 | open | 14 mm | Page | 78 – 83 |
| MultiLine | MP 18.1/MP 18.2 | open | 18 mm | Page | 84 – 89 |
| MultiLine | MP 18.4 | open | 18 mm | Page | 90 – 95 |
| MultiLine | MP 20.2 | open | 20 mm | Page | 96 – 101 |
| MultiLine | MP 3000 | open | 26 mm | Page | 102 – 109 |
| MultiLine | MP 25G | closed | 25 mm | Page | 110 – 117 |
| MultiLine | MP 35.1/MP 35.2 | open | 35 mm | Page | 118 – 131 |
| MultiLine | MP 36G | closed | 36 mm | Page | 132 – 139 |
| MultiLine | MP 43G | closed | 38 mm | Page | 140 – 147 |
| MultiLine | MP 45.1/MP 45.2 | open | 45 mm | Page | 148 – 161 |
| MultiLine | MP 65G | closed | 60 mm | Page | 162 – 169 |
| ModulLine | MP 25.1/.2 | open | 25 mm | Page | 170 – 181 |
| ModulLine | MP 25.3/.4 | closed | 25 mm | Page | 170 – 181 |
| ModulLine | MP 30.1/.2 | open | 30 mm | Page | 182 – 193 |
| ModulLine | MP 30.3/.4 | closed | 30 mm | Page | 182 – 193 |
| EVOCHAIN® | MP 420 | open | 42 mm | Page | 194 – 207 |
| PowerLine | MP 32.2 | open | 32 mm | Page | 208 – 221 |
| PowerLine | MP 32.3 | closed | 30 mm | Page | 208 – 221 |
| PowerLine | MP 41.2 | open | 42 mm | Page | 222 – 237 |
| PowerLine | MP 41.3 | closed | 38 mm | Page | 222 – 237 |

| | | | | | |
|------------------------------------------------------------------------|-----------|--------|------------------|------|-----------|
| PowerLine | MP 52.2 | open | 52 mm | Page | 238 – 255 |
| PowerLine | MP 52.3 | closed | 48 mm | Page | 238 – 255 |
| PowerLine | MP 52.2-D | open | 52 mm | Page | 256 – 271 |
| PowerLine | MP 52.3-D | closed | 48 mm | Page | 256 – 271 |
| PowerLine | MP 52.4 | open | 52 mm | Page | 272 – 289 |
| PowerLine | MP 52.5 | closed | 48 mm | Page | 272 – 289 |
| PowerLine | MP 52.6 | open | 52 mm | Page | 290 – 301 |
| PowerLine | MP 52.7 | closed | 48 mm | Page | 290 – 301 |
| PowerLine | MP 62.4 | open | 62 mm | Page | 302 – 317 |
| | | | | | |
| HeavyLine | MP 62.2 | open | 62 mm | Page | 318 – 333 |
| HeavyLine | MP 62.3 | closed | 62 mm | Page | 318 – 333 |
| HeavyLine | MP 82.2 | open | 82 mm | Page | 334 – 347 |
| HeavyLine | MP 82.3 | closed | 74 mm | Page | 334 – 347 |
| HeavyLine | MP 102.2 | open | 104 mm | Page | 348 – 359 |
| | | | | | |
| Murrplastik legacy products (do not use for new-build projects) | | | | | |
| MP Legacy | MP 32 | open | 32 mm | Page | 360 – 373 |
| MP Legacy | MP 35 | open | 34 mm | Page | 374 – 381 |
| MP Legacy | MP 41 | open | 42 mm | Page | 382 – 395 |
| MP Legacy | MP 44 | open | 40 mm | Page | 396 – 403 |
| MP Legacy | MP 52.1 | open | 52 mm | Page | 404 – 417 |
| MP Legacy | MP 62.1 | open | 62 mm | Page | 418 – 431 |
| MP Legacy | MP 66 | open | 60 mm | Page | 432 – 439 |
| MP Legacy | MP 72 | open | 72 mm | Page | 440 – 452 |

STRAIN RELIEF SYSTEMS

| | | |
|----------------------------------------------------------------------|------|-----------|
| Introduction | Page | 454 – 455 |
| Advantages | Page | 456 – 457 |
| Selection criteria / Guide to system design | Page | 458 |
| Design / Structure | Page | 459 |
| Strain relief system type ZL-C set and type ZL | Page | 460 |
| Strain relief system type ZL / double strain relief system | Page | 461 |
| Steel Fix bow clamp | Page | 462 |

APPENDIX

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| Protection classes DIN EN 60529 | Page | 464 |
| Fire classification according to UL 94, DIN 5510 | Page | 465 |
| Material characteristics | Page | 466 – 467 |
| Information about materials | Page | 468 – 469 |
| Chemical resistances of plastics | Page | 470 – 471 |
| Notes | Page | 472 |



Murrplastik Systemtechnik GmbH has developed a new energy chain series type EVOCHAIN® that is unique and exclusive.

It combines the latest developments and proved qualities of previous energy chains. It is predestined for long and gliding travel distances for high dynamics and workload.

This intelligent and powerful system solution is outstanding in ease of assembly, durability and noise reduction.

Under the brand name EVOLINE® Murrplastik offers EVOCHAIN® energy chains, EVOCABLE® cables and the complete assembly named EVOSYSTEM®.

EVOLINE®

EVOCHAIN®

Energy chain series with new developments and proven characteristics

mp  **420**
EVOCHAIN

mp  **560**
EVOCHAIN

EVOCABLE®

Cable range in three application-specific quality levels:

mp  **SD**
EVOCABLE

mp  **HD**
EVOCABLE

mp  **HD^{plus}**
EVOCABLE

EVOSYSTEM®

Assembly of EVOCHAIN® energy chains with EVOCABLE® cables



YOUR BENEFITS AT A GLANCE

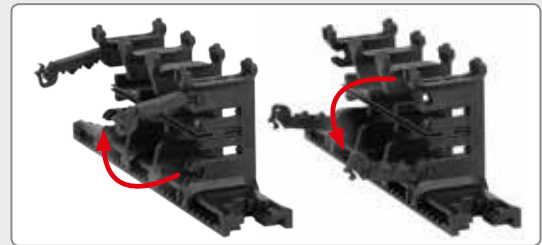
EVOLOCK[®]

Time-saving crossbar lock system



EVO RACK[®]

Shelf support system
hinged on both sides



EVOCONTROL[®]

Gliding shoe with wear control system



EVO SHOX[®]

Wear-free damping shoe
(external damper)



EVO SILENCE[®]

Noise damping system in the side link
(internal damper)



Every human needs energy. Every machine too!

SUCCESS DOESN'T HAPPEN OVERNIGHT



A SELECTION OF OUR INNOVATIONS FOR YOUR ADVANTAGE:

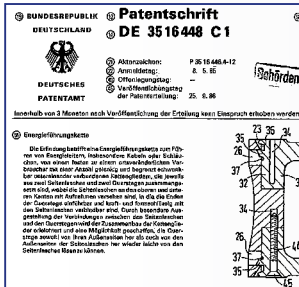
- 1984** First energy chain that can be opened
- 1987** Crossbars pivotable on both sides
- 1988** Bayonet stop system
- 1994** Integrated strain relief plate
- 1994** Guide channel system with releasable connecting glide rails
- 1996** Centre piece for guide channel systems aligned in parallel
- 1997** Guide channel system with multiple grooves
- 1998** Crossbar connectors for greater stability with large chain widths
- 2001** PowerLine 2nd Generation
- 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 energy chain system
- 2013** Gliding shoes 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
- 2018** Steel Fix bow clamps series
- 2019** Lateral holders MultiLine MP 45
- 2020** **EVOLINE® EVOCHAIN® EVOCABLE® EVOSYSTEM®**
- 2020** Lateral holders **EVOCHAIN®** MP 420

OVER 30 YEARS OF PASSION FOR INNOVATION



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1984



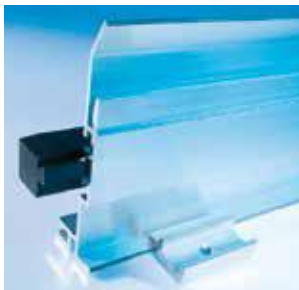
1987



1988



1994



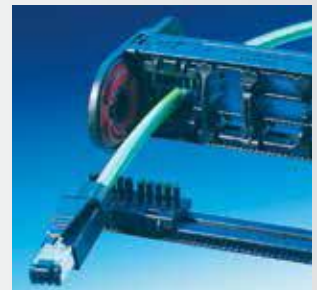
1994



2000



2003



2007



2008



2011



2013



2015



2016



2016



2016



2017



2018



2019



2019



2020

CLICK LOCK CLICK – AND DONE



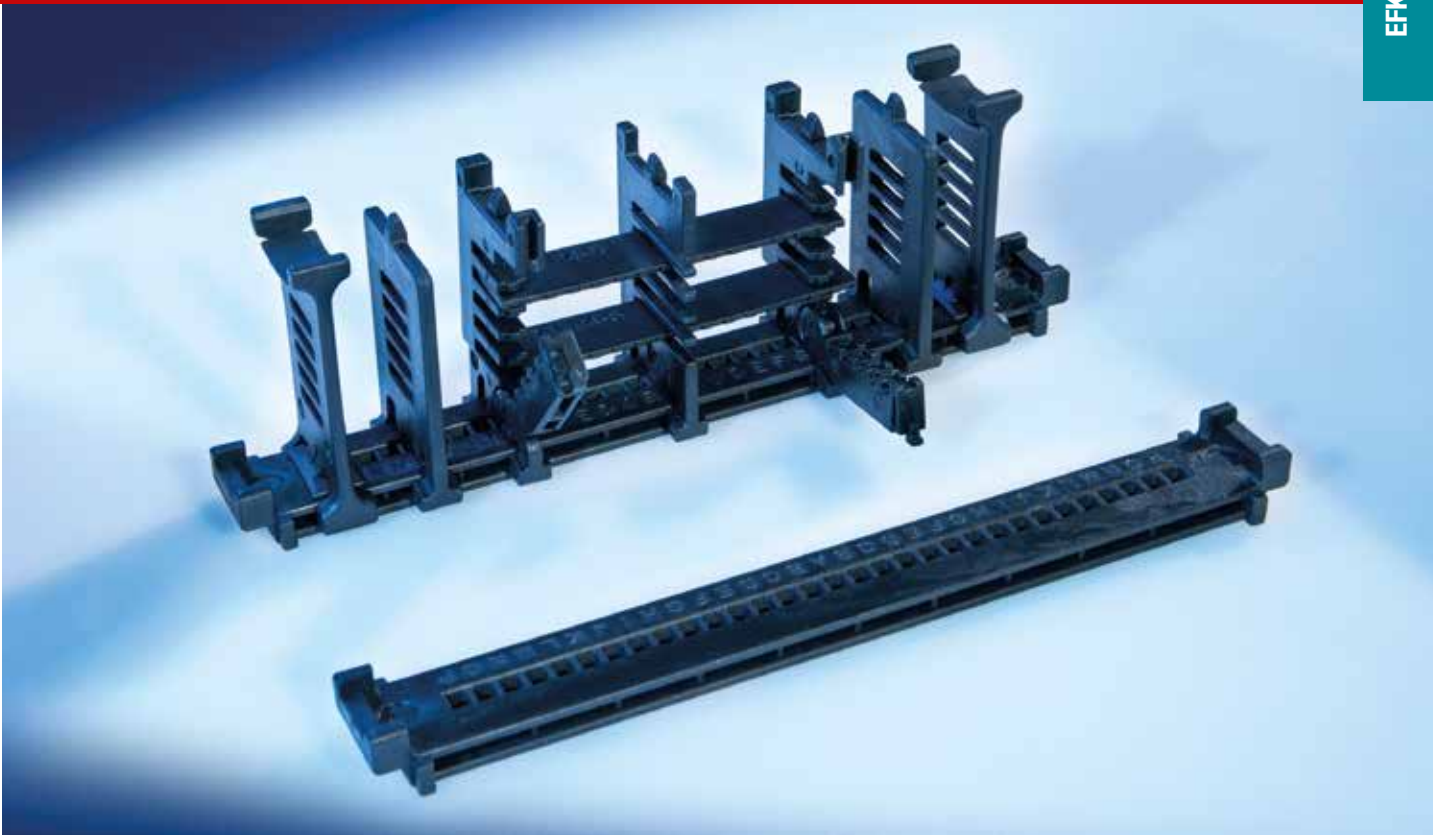
FAST AND EASY

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 energy 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 done!
- 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

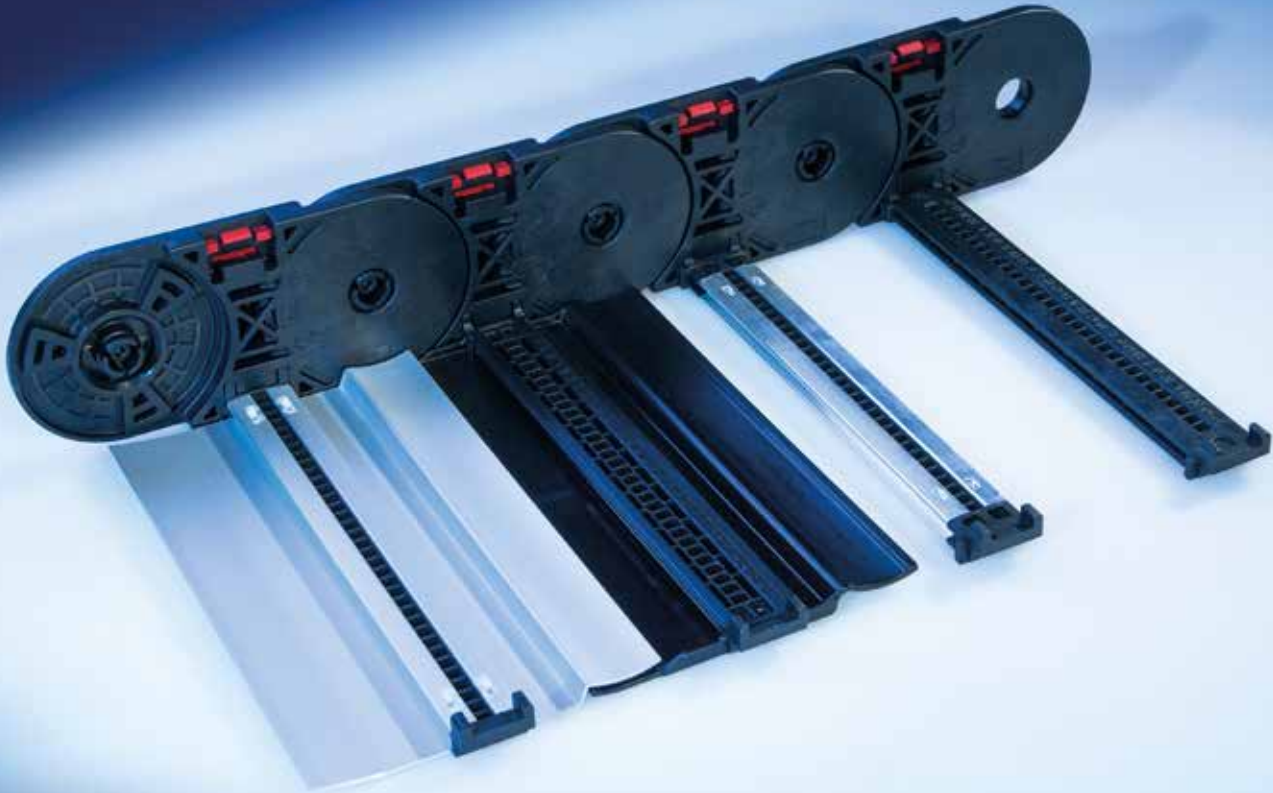
The multitude of combination options means that the perfect shelving system can be put together for any application.

The shelf separators lock firmly into the crossbars and, once in place, they cannot slip. No matter what type of installation – horizontal, rearwards, 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

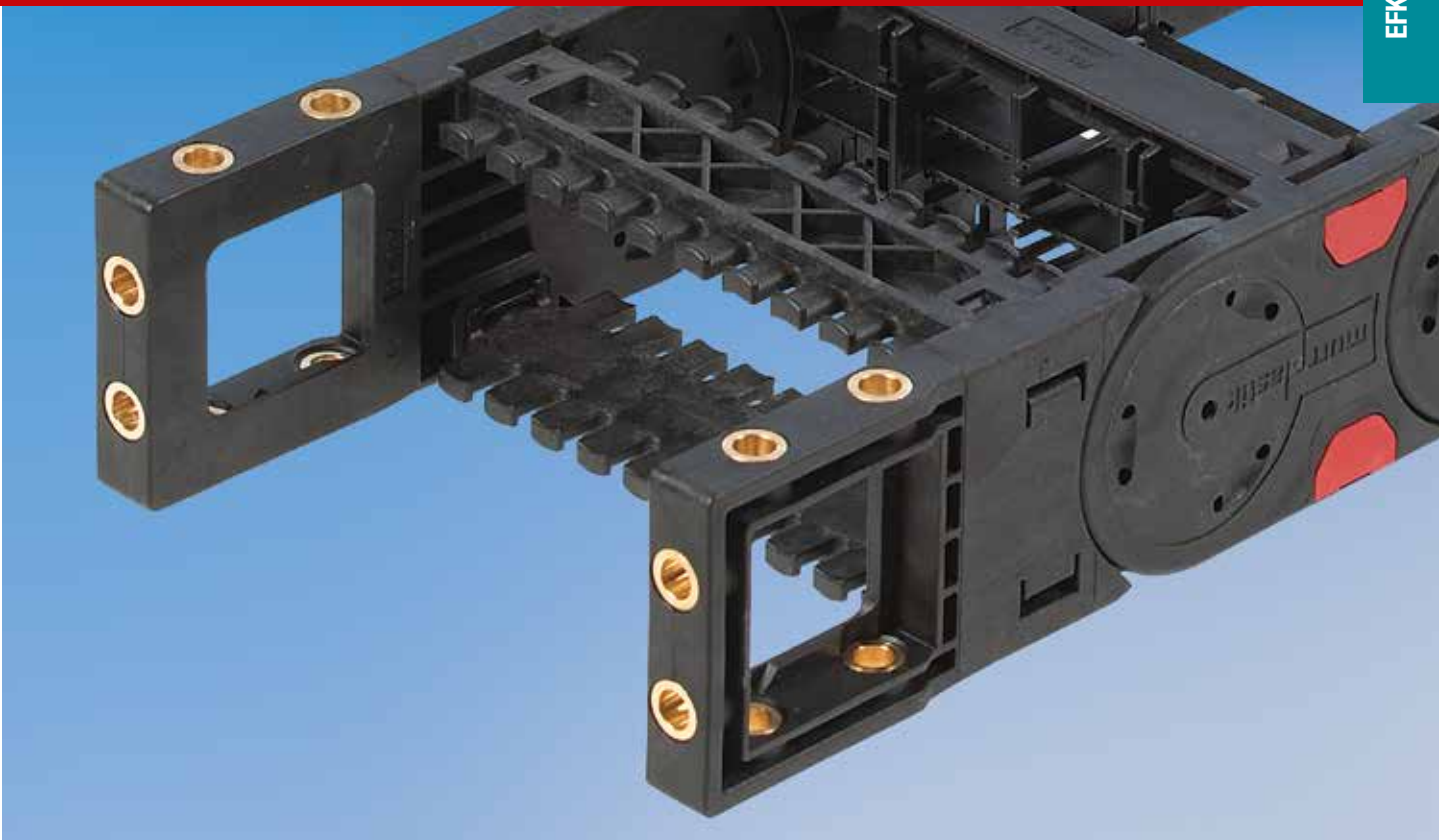
Crossbars / covers come in two alternative versions: plastic or aluminium. The plastic version is standard for crossbars and can be supplied in a range of widths. The aluminium version can be supplied in any width.

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 our 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 SECURE STRAIN RELIEF

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

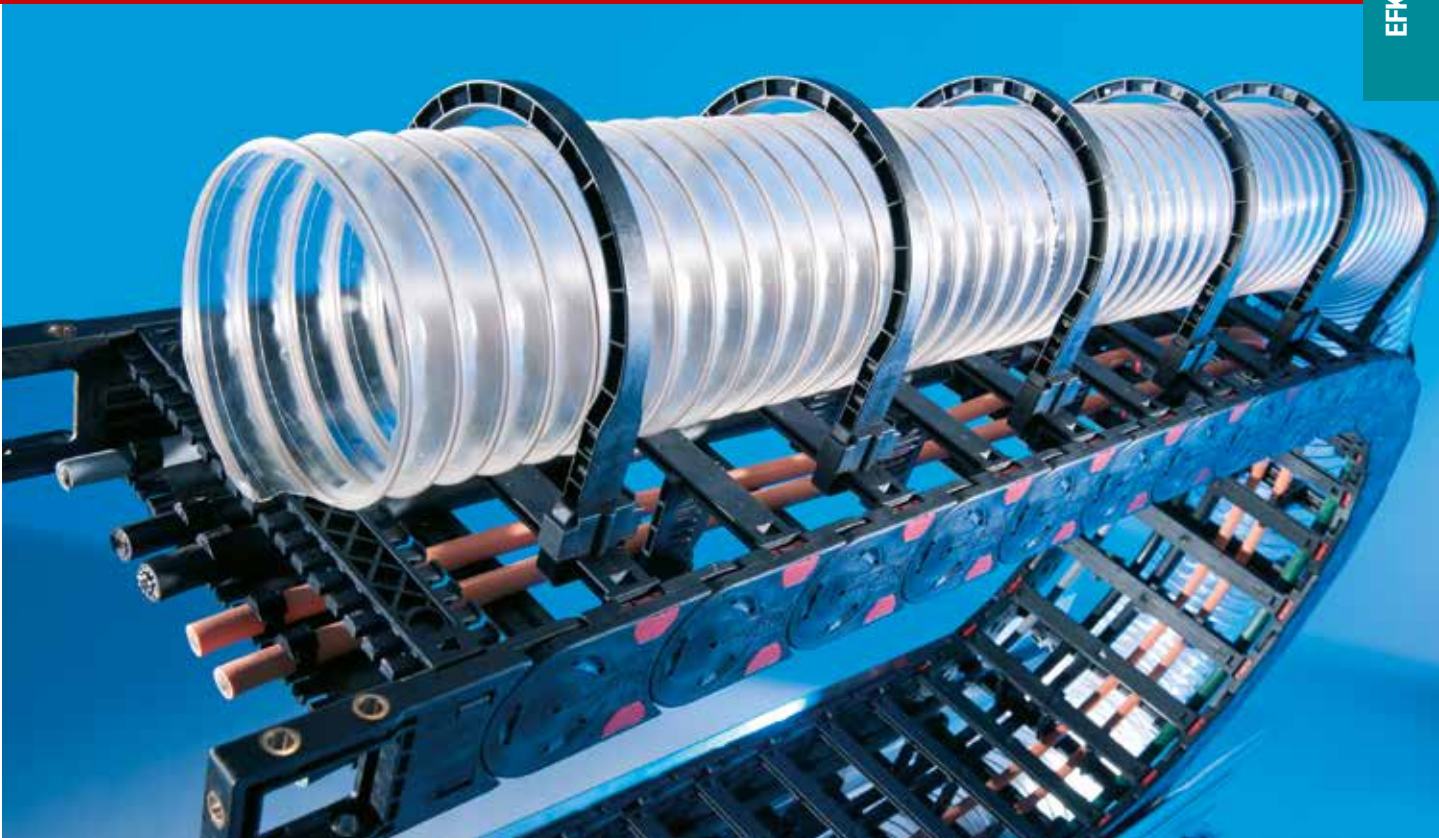
Special strain relief crossbars are used on the chain bracket. The strain relief is effected by cable ties. The cable can be fixed on the strain relief plate on two sides.

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 energy 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 ENERGY CHAIN IN GLIDING APPLICATION



GLIDING SHOES – INNOVATION AGAINST WEAR AND TEAR

Energy 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 gliding shoe. The gliding shoes are fitted onto the side links in the energy chain's inside bend without the need for any kind of tools. A screwdriver is only required to remove a gliding shoe. As a result, when the wear limit is reached, only the comparatively inexpensive gliding shoes have to be replaced and not the complete energy chain.

Practical tests show that energy chains can gain as much as a fivefold extension to their service life by using gliding shoes. An investment that amortises itself in a very short time.



WITH GLIDING SHOE



WITHOUT GLIDING SHOE

Gliding shoes are available for the following energy 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 energy 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).

Therefore, the chain does not glide on the side links of the chain but only on the gliding plates: Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding 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 energy chain when this limit has been reached.



GLP 5 GLIDING PLATE



GLP 8 GLIDING PLATE

Gliding plates are available for the following energy 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
- Energy chain can also be opened in the lateral position
- For GLP 8 and GLP 10 no tool required
- Energy chains are supplied completely mounted with the gliding plates

NOISE DAMPING SYSTEM



NOISE DAMPING 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 energy 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 energy chain series 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



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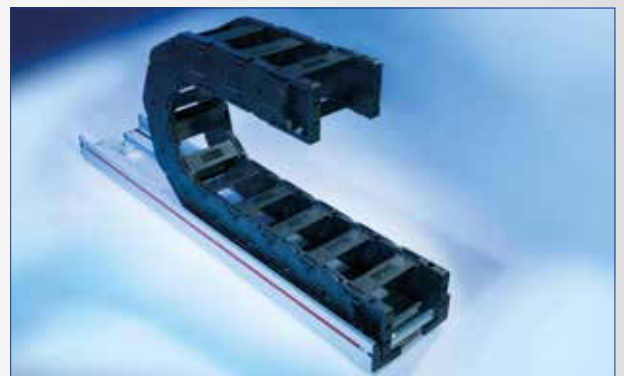
REDUCTION OF THE NOISE EMISSION

The use of energy chains generates considerable noise, especially at higher speeds. The reason for this is the non-circular rolling of the energy 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 energy chains. Since different applications require different materials, the guide channels are made of galvanised 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 connection 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 energy 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



EVERYTHING FROM ONE SOURCE

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

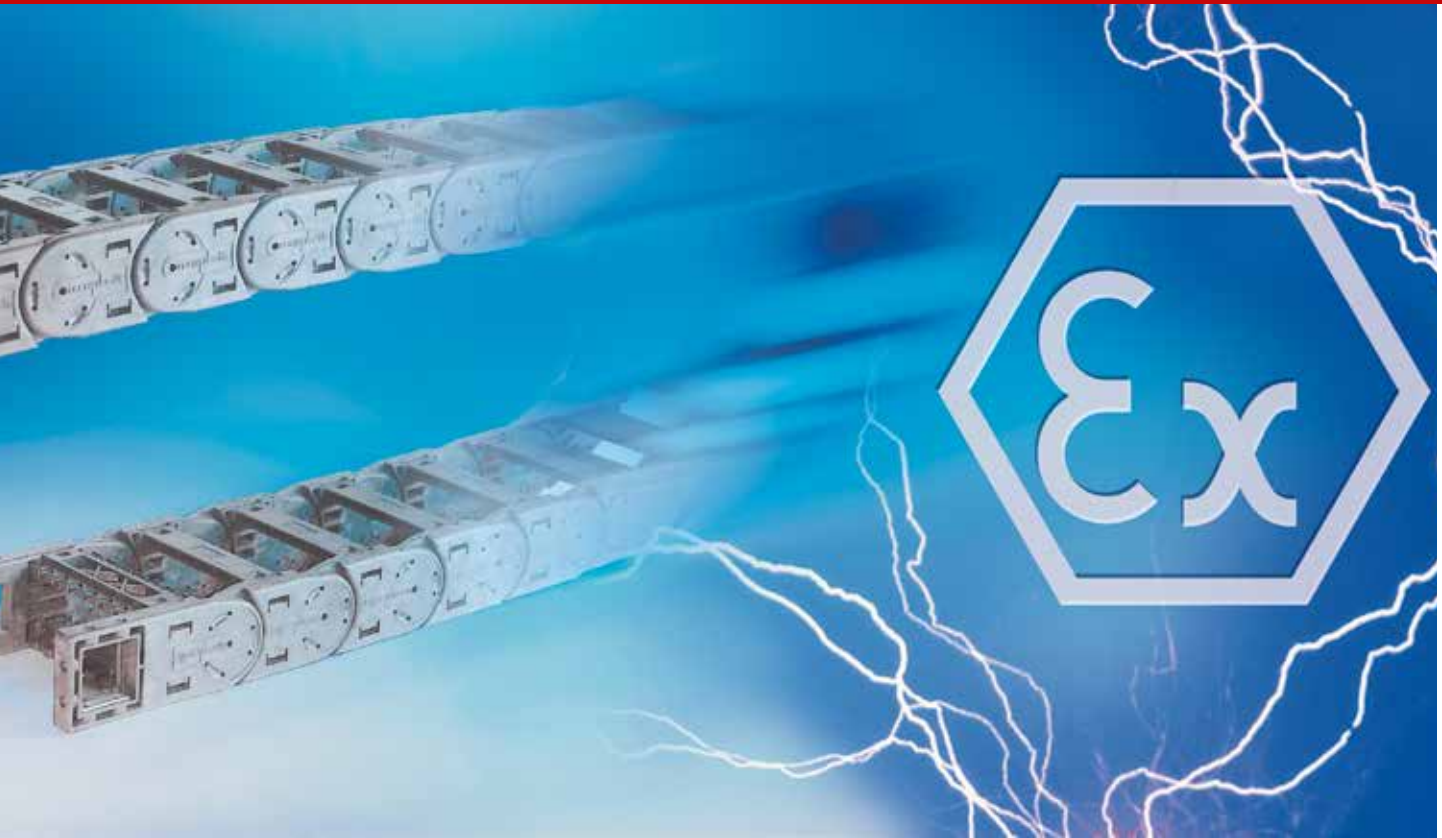
At the customer's request we assemble complete energy chains with cables. We handle the layout, assembly and ordering of individual components. The customer is supplied with a complete assembly kit that only needs to be fitted.

Thanks to our experience of energy 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 ENERGY 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, vapours, 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 energy 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 energy chains made of ESD material control and permanently dissipate electrostatic charges.



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

CLEAN ROOM ENERGY CHAINS



APPLICATION IN SENSITIVE CLEAN ENVIRONMENTS

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

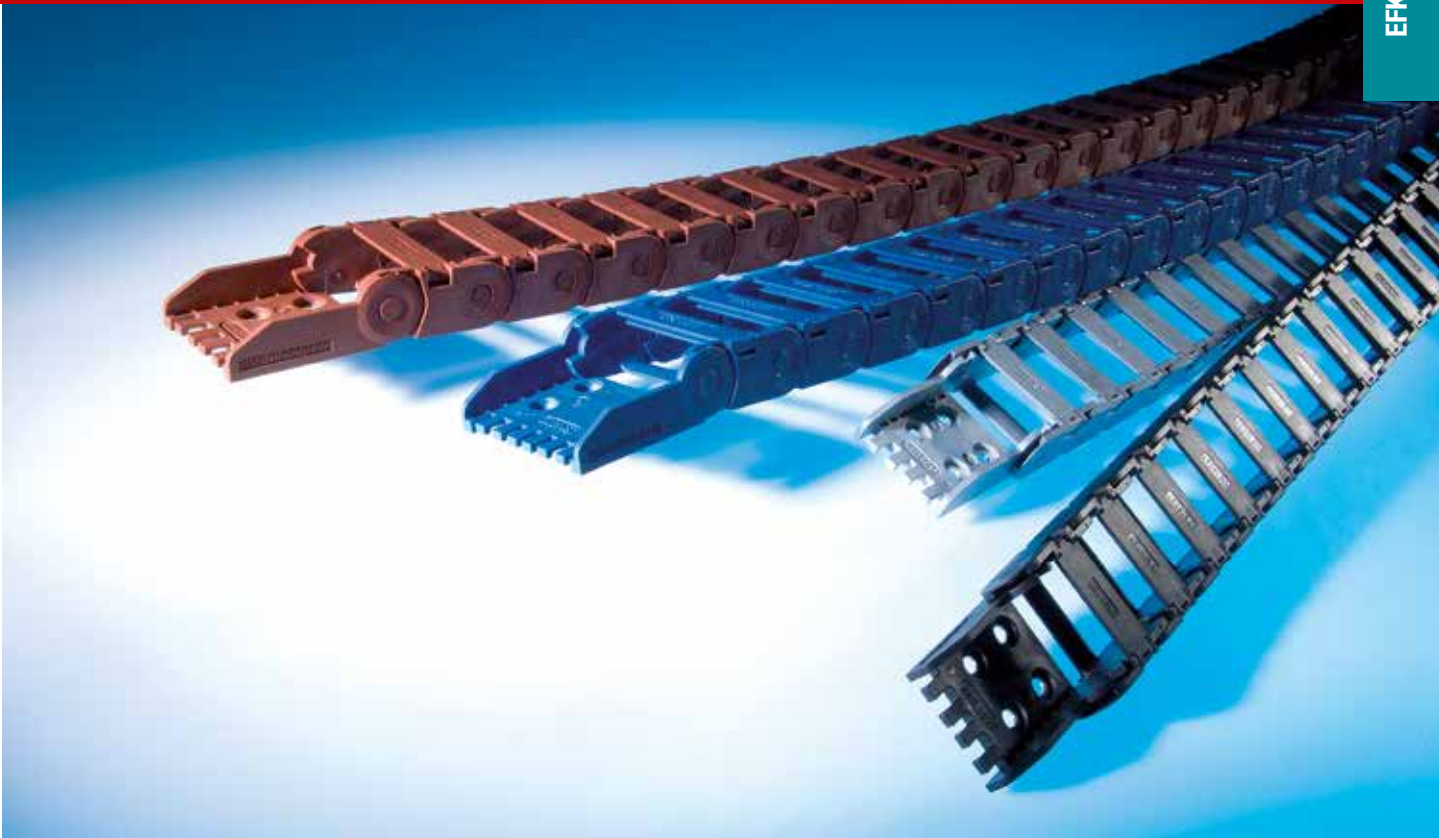
Even in continuous operation, our clean room energy chains discharge only a minimal amount of particles into the environment.

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 Europa 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 energy chain:
Polyamide (PA): standard
- Light gray energy chain:
Polyamide (PA): EMC model
- Oxide red energy chain:
Polyamide (PA), UL 94/V0
- Blue energy chain:
Polypropylene (PP)

CORPORATE IDENTITY – INDIVIDUAL ENERGY CHAIN IDENTIFICATION



INDIVIDUAL ENERGY 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 ENERGY CHAINS

IDEALLY, THE DESIGN OF AN ENERGY CHAIN SYSTEM WILL TAKE THE FOLLOWING CRITERIA INTO ACCOUNT:

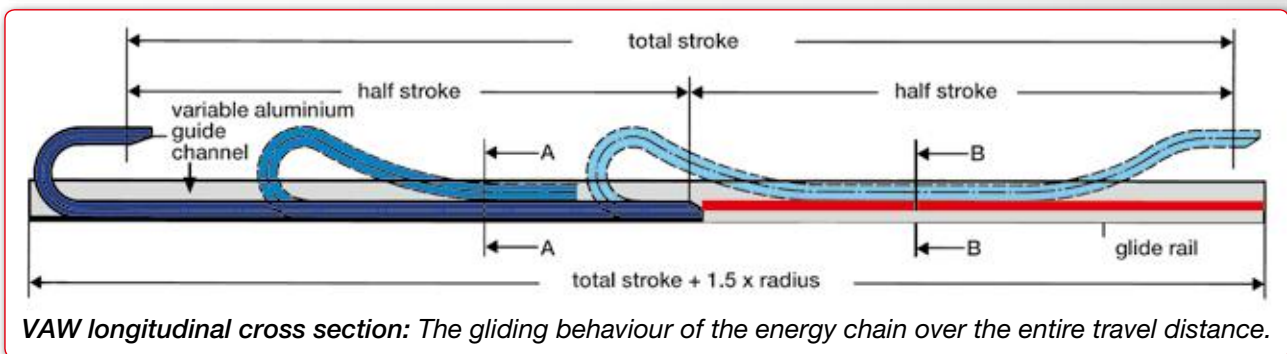
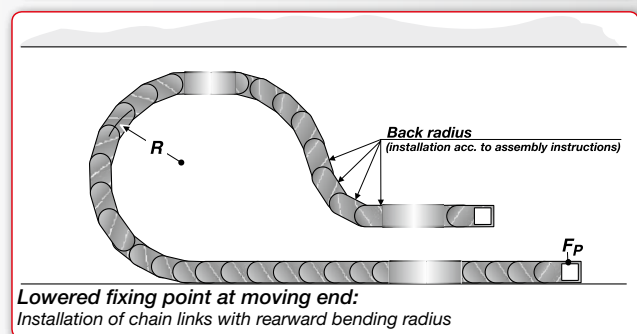
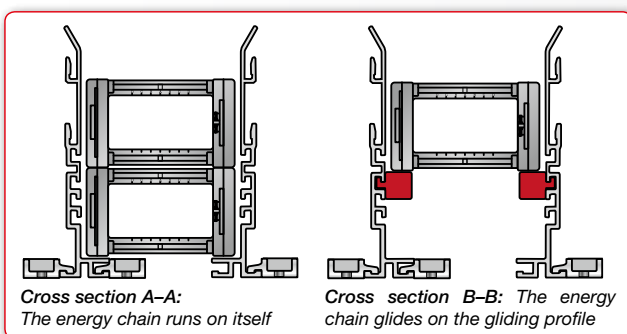
- Determine the number and outside diameter of the cables or conduits to be laid.
- For self-supporting applications, the diagram “self-supporting length” can be used to identify the matching chain using load and travel distance.
- Determine width of energy chain, design shelving system (separators, shelves, etc.).
- Determine the minimum possible bending radius of cabling and conduits, as per manufacturer specifications, and select the matching bending radius for the energy chain.
- Determine chain length respective to the travel distance and the selected bending radius. (Using a formula – see matching energy 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 energy chain project. Further information can be found in the “Manual for the design and assembly of energy chain systems”, order No. 8902804550 as well as in our online configuration <https://mymppchain.com/>



mp ChainBuilder 3.0

Configurator for cable drag chain systems

MURRPLASTIK ENERGY CHAINS

The energy chains of Murrplastik Systemtechnik are characterised by their load capacity, ease of assembly and maintenance, as well as optimum adaptation to a wide range of applications.

Our energy chains have been able to proof their quality and durability under the most extreme permanent stress and environmental conditions.

According to the motto 'Everything from one source' we offer complete solutions for the most different applications: Energy chains, guide channels, cables, shelving systems, strain relief systems, connecting components and confectioning.



mp  ChainBuilder 3.0
Configurator for cable drag chain systems

THE NEW MP-CHAINBUILDER 3.0: EASIER AND MORE EFFICIENT ONLINE CONFIGURATION OF ENERGY CHAINS.

From the extensive, constantly growing range, you have the opportunity to configure your Murrplastik energy chain for a wide variety of applications fast and conveniently online within minutes. After entering your application parameters, our new mp-ChainBuilder 3.0 supports you in selecting your individual energy chains with the best price-performance ratio.

You will receive comprehensive documentation including a 2D/3D CAD model, parts lists of the energy chain, the cable package and, if necessary, the guide channel system. After successfully saving your configuration, as a registered customer you can conveniently retrieve your complete data at any time using the unique MK-item number, make changes

if necessary and have your customer-specific net prices determined. You can also save and print your documentation as a PDF document with one click.

Our online configuration for energy chains is available in several languages.

www.mympchain.com



ADVANTAGES OF THE MP-CHAINBUILDER 3.0



INPUT

of the application parameters & configuration of the energy chain

- Fast selection of the suitable energy chain for special applications and installation variants
- Up to 60% time saving through online project planning
- Easy selection of materials, dimensions, shapes, lines and accessories
- Comfortable configuration: Changes are possible at any time at any point
- Integrated interior layout configuration: Technical drawing also available as PDF and DXF pre-selection
- Integrated guide channel configuration
- Individual selection of the assembly option
- Optional configuration of energy chain systems
- All entries are checked for plausibility
- Optional direct entry of the ordering key with subsequent configuration option



RESULT AND DOCUMENTATION

of the suitable energy chain

- Net price indication for registered customers
- Integrated database management: Save, load and manage your configurations
- Output of all energy chain dimensions depending on the particular application
- Automatic generation of the parts list
- Automatic generation of the 2D/3D-CAD model
- Simple (subsequent) ordering by issuing a unique item number for the individual energy chain or for the energy chain system

MurrplastikTV

A short instruction video on mp-ChainBuilder 3.0 can be found on our YouTube channel.




Get an overview of the convenient and fast configuration of your custom-designed energy chain.



| | Inside height in mm | | Chain type | INSIDE WIDTH | | | | BENDING RADIUS |
|---------------------------|---------------------|-------------|-------------|---------------------------------------|-----------|------------------------------------|----------------------|----------------------|
| | Open | Closed | | Crossbars in mm from - to PA ALU | | Covers in mm from - to PA ALU | | |
| MURRPLASTIK SERIES | 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* |
| | 42 | MP 420 | | 50 – 400 | — | — | — | 75 – 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 | |

| | | | | | | | | |
|----------------------------------------------------------------------------|----|---------|--|----------|----------|-----------|---|-----------|
| Murrplastik legacy products (do not use for new-build projects) | 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 | |
|--|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------|-----|
| | |  | |  | |  | |
| | | Catalogue page | | | | | |
| | | Max. travel distance in m self-supporting gliding | | Max. speed of travel in m/s self-supporting gliding | | Max. acceleration in m/s ² self-supporting gliding | |
| | 1.0 | 10.0 | 4.0 | 2.0 | 2.0 | 2.0 | 64 |
| | 2.0 | 12.0 | 4.0 | 2.0 | 2.0 | 2.0 | 70 |
| | 2.0 | 12.0 | 4.0 | 2.0 | 2.0 | 2.0 | 76 |
| | 3.0 | 20.0 | 5.0 | 2.0 | 5.0 | 5.0 | 82 |
| | 3.0 | 20.0 | 5.0 | 2.0 | 5.0 | 5.0 | 88 |
| | 3.0 | not recommended | 10.0 | – | 10.0 | – | 94 |
| | 4.0 | 35.0 | 10.0 | 3.0 | 15.0 | 10.0 | 164 |
| | 4.0 | 40.0 | 6.0 | 3.0 | 15.0 | 10.0 | 108 |
| | 4.0 | not recommended | 6.0 | 3.0 | 15.0 | 10.0 | 100 |
| | 4.5 | 40.0 | 10.0 | 3.0 | 15.0 | 10.0 | 176 |
| | 4.5 | 100.0 | 20.0 | 5.0 | 30.0 | 25.0 | 188 |
| | 6.0 | 80.0 | 20.0 | 5.0 | 50.0 | 15.0 | 116 |
| | 4.0 | 60.0 | 10.0 | 3.0 | 20.0 | 15.0 | 128 |
| | 5.0 | 50.0 | 15.0 | 5.0 | 20.0 | 15.0 | 136 |
| | 7.0 | 120.0 | 20.0 | 5.0 | 30.0 | 25.0 | 202 |
| | 8.0 | 150.0 | 20.0 | 10.0 | 50.0 | 50.0 | 194 |
| | 7.0 | 80.0 | 20.0 | 5.0 | 50.0 | 15.0 | 144 |
| | 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 | 236 |
| | 7.5 | 50.0 | 20.0 | 5.0 | 30.0 | 25.0 | 254 |
| | – | 150.0 | – | 6.0 | – | 10.0 | 270 |
| | 8.0 | 60.0 | 15.0 | 5.0 | 20.0 | 15.0 | 156 |
| | 10.0 | 150.0 | 20.0 | 5.0 | 40.0 | 25.0 | 296 |
| | 7.5 | 50.0 | 20.0 | 5.0 | 30.0 | 25.0 | 280 |
| | 10.0 | 150.0 | 20.0 | 5.0 | 40.0 | 25.0 | 312 |
| | 10.5 | 150.0 | 20.0 | 5.0 | 40.0 | 25.0 | 326 |
| | 5.0 | 100.0 | 20.0 | 5.0 | 30.0 | 25.0 | 338 |
| | 4.5 | 80.0 | 10.0 | 3.0 | 20.0 | 15.0 | 352 |
| | 5.0 | 50.0 | 15.0 | 5.0 | 20.0 | 15.0 | 374 |
| | 7.0 | 120.0 | 20.0 | 5.0 | 30.0 | 25.0 | 360 |
| | 9.0 | 150.0 | 20.0 | 5.0 | 30.0 | 25.0 | 382 |
| | 8.0 | 60.0 | 15.0 | 5.0 | 20.0 | 15.0 | 410 |
| | 10.0 | 150.0 | 20.0 | 5.0 | 40.0 | 25.0 | 396 |
| | 10.0 | 150.0 | 20.0 | 5.0 | 40.0 | 25.0 | 418 |



SELECTION TABLE CONFIGURATION

| | Inside height in mm | CHAIN BRACKET | | | | | | | | | | | STRAIN RELIEF | |
|---------------------------|---------------------|---------------|-------------|---|---|---|---|---|--|---|---|---|---------------------------------|--|
| | | Open | Closed | | | | | | | | | | <i>in the chain bracket ...</i> | |
| MURRPLASTIK SERIES | 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 | | | • | • | | | | • | • | | |
| | 42 | MP 420 | | | | • | | | | | | • | • | |
| | 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 | | | | | • | | | | • | • | | | |

| | | | | | | | | | | | | | |
|----------------------------------------------------------------------------|----|---------|--|---|---|---|---|--|--|---|---|---|--|
| Murrplastik legacy products (do not use for new-build projects) | 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 | | | | | | | | |
|--|--|--|--|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|
| | | | | Gliding shoes (GS) | Damping element in side link | Gliding plates (GLP) | Bracket bars (BS) | Separator with snap-lock (TR/TRT) | Separator (TR-V) (not movable) | Separator (TR-V) (movable) | Separator fixed (fixed) | Shelving system (RTT) (foldable) | Shelving system (not foldable) | Crossbar connector (RSY) (higher stability / for higher additional weight) | H-shaped shelf unit (RE) | Catalogue page |
| | | | |  |  |  |  |  |  |  |  |  |  |  |  | |
| | | | | | | | | | | | | | | | | 64 |
| | | | | | | | | | | | | | | | | 70 |
| | | | | | | | | | | | | | | | | 76 |
| | | | | | | | | | | | | | | | | 82 |
| | | | | | | | | | | | | | | | | 88 |
| | | | | | | | | | | | | | | | | 94 |
| | | | | | | | | | | | | | | | | 164 |
| | | | | | | | | | | | | | | | | 108 |
| | | | | | | | | | | | | | | | | 100 |
| | | | | | | | | | | | | | | | | 176 |
| | | | | | | | | | | | | | | | | 188 |
| | | | | | | | | | | | | | | | | 116 |
| | | | | | | | | | | | | | | | | 128 |
| | | | | | | | | | | | | | | | | 136 |
| | | | | | | | | | | | | | | | | 202 |
| | | | | | | | | | | | | | | | | 194 |
| | | | | | | | | | | | | | | | | 144 |
| | | | | | | | | | | | | | | | | 218 |
| | | | | | | | | | | | | | | | | 236 |
| | | | | | | | | | | | | | | | | 254 |
| | | | | | | | | | | | | | | | | 270 |
| | | | | | | | | | | | | | | | | 156 |
| | | | | | | | | | | | | | | | | 296 |
| | | | | | | | | | | | | | | | | 280 |
| | | | | | | | | | | | | | | | | 312 |
| | | | | | | | | | | | | | | | | 326 |
| | | | | | | | | | | | | | | | | 338 |
| | | | | | | | | | | | | | | | | 352 |
| | | | | | | | | | | | | | | | | 374 |
| | | | | | | | | | | | | | | | | 360 |
| | | | | | | | | | | | | | | | | 382 |
| | | | | | | | | | | | | | | | | 410 |
| | | | | | | | | | | | | | | | | 396 |
| | | | | | | | | | | | | | | | | 418 |

| | 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 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 | | | |
| MURRPLASTIK SERIES | 10 | MP 10.1 | | • | | | | | | | | 64 | | |
| | 14 | MP 14 | | | | • | | | | | | 70 | | |
| | 14 | MP 15 | | • | | | | | | | | 76 | | |
| | 18 | MP 18.1/2 | | | • | • | | | | | | 82 | | |
| | 18 | MP 18.4 | | • | | | | | | | | 88 | | |
| | 20 | MP 20.2 | | | • | | | | | | | 94 | | |
| | 25 | MP 25.1/2 | 25.3/25.4 | | | | | • | • | | | | 164 | |
| | 25 | | MP 25 G | | | | • | | | | | | 108 | |
| | 26 | MP 3000 | | | | | | • | | | | | 100 | |
| | 30 | MP 30.1/2 | 30.3/4 | | | | | • | • | | | | 176 | |
| | 32/30 | MP 32.2 | MP 32.3 ALU | | | | | | | | | • | 188 | |
| | 35 | MP 35.1/2 | | | | | | • | • | | | | 116 | |
| | 36 | | MP 36 G | | | • | | | | | | | 128 | |
| | 38 | | MP 43 G | | | | | | | | • | | 136 | |
| | 42/38 | MP 41.2 | MP 41.3 | | | | | | | | | • | 202 | |
| | 42 | MP 420 | | | | | | | | | | • | 194 | |
| | 45 | MP 45.1/2 | | | | | | • | • | | | | 144 | |
| | 52/48 | MP 52.2 | MP 52.3 | | | | | | | | | • | 218 | |
| | 52/48 | MP 52.2-D | MP 52.3-D | | | | | | | | | • | 236 | |
| | 52/48 | MP 52.4 | MP 52.5 | | | | | | | | | • | 254 | |
| 52/48 | MP 52.6 | MP 52.7 ALU | | | | | | | | | • | 270 | | |
| 60 | | MP 65 G | | | | | | | | • | | 156 | | |
| 62/62 | MP 62.2 | MP 62.3 | | | | | | | | | • | 296 | | |
| 62 | MP 62.4 | MP 62.5 ALU | | | | | | | | | • | 280 | | |
| 82/74 | MP 82.2 | MP 82.3 | | | | | | | | | • | 312 | | |
| 102 | MP 102.2 | | | | | | | | | | • | 326 | | |
| Murrplastik legacy products (do not use for new-build projects) | 32 | MP 32 | | | | | | | | • | | 338 | | |
| | 34 | MP 35 | | | | | | | • | | | 352 | | |
| | 40 | MP 44 | | | | | | | | • | | 374 | | |
| | 42 | MP 41 | | | | | | | | • | | 360 | | |
| | 52 | MP 52.1 | | | | | | | | • | | 382 | | |
| | 60 | MP 66 | | | | | | | | • | | 410 | | |
| | 62 | MP 62.1 | | | | | | | | • | | 396 | | |
| | 72 | MP 72 | | | | | | | | • | | 418 | | |

* Note: not recommended for gliding applications

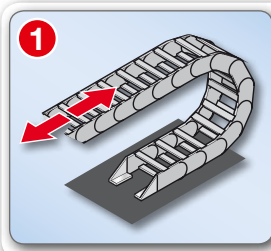
SELECTION TABLE AVAILABLE MATERIAL / RECOMMENDED GUIDE CHANNELS



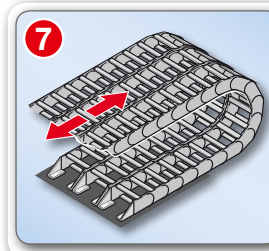
| | Inside height in mm | Chain type | | | | | MATERIAL | | | GUIDE CHANNEL | | | |
|----------------------------------------------------------------------------|---------------------|-------------|-------------|---------------------|----------|---------|----------------------|-----------------|--------|---------------|--------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------|
| | | | 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) |
| | Open | Closed | | | | | VAW | VAW | VAW-E | VAW-E | | | |
| MURRPLASTIK SERIES | 10 | MP 10.1 | | • | • | • | 25 | 80 | — | — | 64 | | |
| | 14 | MP 14 | | • | | | 25 | 80 | — | — | 70 | | |
| | 14 | MP 15 | | • | • | • | 25 | 80 | — | — | 76 | | |
| | 18 | MP 18.1/2 | | • | • | • | • | 35 | 80 | — | — | 82 | |
| | 18 | MP 18.4 | | • | | | | 35 | 80 | — | — | 88 | |
| | 20 | MP 20.2 | | • | | | | 35 | 80 | — | — | 94 | |
| | 25 | MP 25.1/2 | 25.3/25.4 | • | | | | 80 | 86 | 120 | 120 | 164 | |
| | 25 | | MP 25 G | • | • | | | 80 | 86 | 120 | 120 | 108 | |
| | 26 | MP 3000 | | • | • | • | • | 80 | 86 | 120 | 120 | 100 | |
| | 30 | MP 30.1/2 | 30.3/4 | • | | | | 80 | 86 | 120 | 120 | 176 | |
| | 32/30 | MP 32.2 | MP 32.3 ALU | • | • | | • | 86 | 106 | 120 | 120 | 188 | |
| | 35 | MP 35.1/2 | | • | | | | 80 | 86 | 120 | 120 | 116 | |
| | 36 | | MP 36 G | • | | | | 80 | 86 | 120 | 120 | 128 | |
| | 38 | | MP 43 G | • | | | | 86 | 106 | 120 | 120 | 136 | |
| | 42/38 | MP 41.2 | MP 41.3 | • | • | | • | 86 | 122 | 120 | 120 | 202 | |
| | 42 | MP 420 | | • | • | | | 86 | 146 | 120 | 120 | 194 | |
| | 45 | MP 45.1/2 | | • | | | | 86 | 106 | 120 | 120 | 144 | |
| | 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 | 236 | |
| | 52/48 | MP 52.4 | MP 52.5 | • | | | | 86 | 146 | 120 | 170 | 254 | |
| 52/48 | MP 52.6 | MP 52.7 ALU | • | | | | — | 146 | — | 170 | 270 | | |
| 60 | | MP 65 G | • | | | | 86 | 146 | 120 | 170 | 156 | | |
| 62/62 | MP 62.2 | MP 62.3 | • | • | | • | 106 | 177 | 120 | 170 | 296 | | |
| 62 | MP 62.4 | MP 62.5 ALU | • | | | | 106 | 146 | 120 | 170 | 280 | | |
| 82/74 | MP 82.2 | MP 82.3 | • | • | | • | 146 | 248 | 170 | 220 | 312 | | |
| 102 | MP 102.2 | | • | | | | 146 | 248 | 170 | | 326 | | |
| Murrplastik legacy products (do not use for new-build projects) | 32 | MP 32 | | • | | | 86 | 106 | 120 | 120 | 338 | | |
| | 34 | MP 35 | | • | | | 80 | 86 | 120 | 120 | 352 | | |
| | 40 | MP 44 | | • | | | 86 | 106 | 120 | 120 | 374 | | |
| | 42 | MP 41 | | • | | | 86 | 106 | 120 | 120 | 360 | | |
| | 52 | MP 52.1 | | • | | | 86 | 146 | 120 | 170 | 382 | | |
| | 60 | MP 66 | | • | | | 86 | 146 | 120 | 170 | 410 | | |
| | 62 | MP 62.1 | | • | | | 106 | 177 | 120 | 170 | 396 | | |
| | 72 | MP 72 | | • | | | 122 | 177 | 120 | 170 | 418 | | |

* Note: also available in galvanised steel

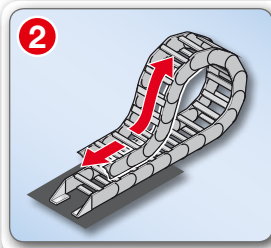
Installation options for energy chains



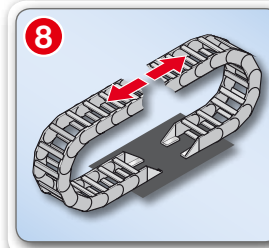
1 Installation option:
Horizontal, self-supporting



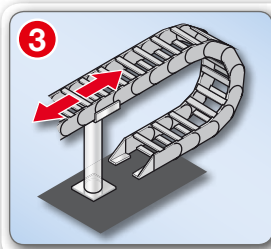
7 Installation option:
Horizontal, parallel



2 Installation option:
Horizontal, gliding



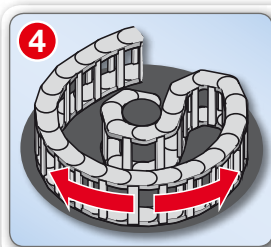
8 Installation option:
Horizontal, opposed



3 Installation option:
Horizontal, self-supporting,
overlap with support



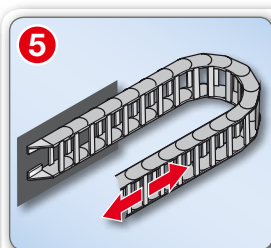
9 Installation option:
Vertical, standing



4 Installation option:
Horizontal, circular movement
Design using rearward bending radius



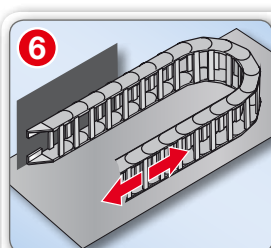
10 Installation option:
Vertical, hanging



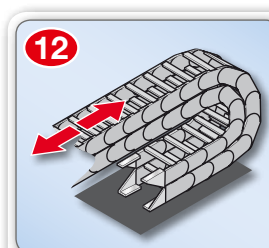
5 Installation option:
Horizontal, side-mounted
(rotated 90°)



11 Installation option:
Horizontal/vertical, combined



6 Installation option:
Horizontal, side-mounted
(rotated 90°), with support

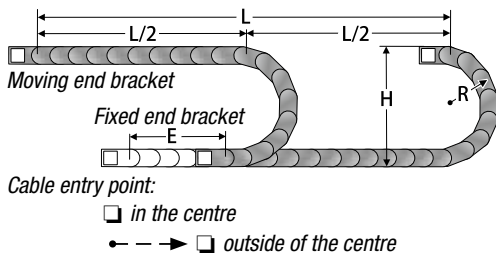


12 Installation option:
Horizontal, interlocked

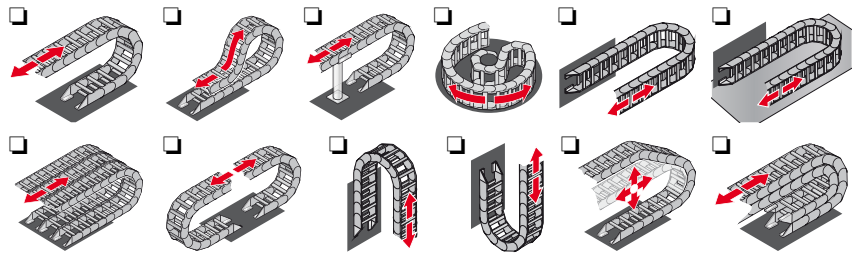
Quotation Order Date:

| | | |
|-----------------------------|------------------------------|------------------------------------------------------|
| Project description: | | Project implementation in week/year: |
| Customer No.: | Customer information: | Planning extent: |
| Company: | | <input type="checkbox"/> Energy chain |
| 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 chains: | 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 ² | | <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 the travel distance | | |
| Distance 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

Chain bracket

Fixed end bracket - no.:

Moving end bracket - no.:

9. U-part/below 10. U-part/above 11. Up 90° 12. Down 90°

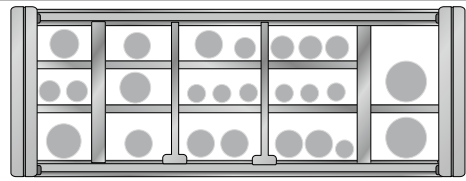
| | | |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| <p><i>Case example:</i> KA/F with C-profile and Steel Fix bow clamps</p> | <p>Strain relief</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

| | |
|-----------------------------|---------------------------------------------|
| Project description: | Project implementation in week/year: |
|-----------------------------|---------------------------------------------|

| | | |
|----------------------------------------------------|----------------------------------------|---------------------------------------|
| Opening variant energy chain (loading side) | <input type="checkbox"/> inside bend | <input type="checkbox"/> outside bend |
| | <input type="checkbox"/> on both sides | |

| | | |
|--------------------------------------------------------------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Variable guide channel system | | |
| <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 | |

| | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Partitioning the energy carriers (cables, tubes) into the internal chain compartment | |
| <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:

Quotation Order Date:

| | | |
|-----------------------------|------------------------------|---------------------------------------------|
| Project description: | | Project implementation in week/year: |
| Customer No.: | Customer information: | |
| Company: | | |
| Department: | | |
| Contact person: | | |
| Address/PO Box: | | |
| Address/PO Box: | | |
| Phone and extension no.: | | |
| Fax and extension no.: | | |
| E-mail address: | | |

| Environmental conditions of the energy chain application – required for the choice of cable types | | | |
|----------------------------------------------------------------------------------------------------------|-----|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bending radius: | mm | | <input type="checkbox"/> Oil-resistant <input type="checkbox"/> UV resistant/outdoor application <input type="checkbox"/> UL/CSA approval requested (operation in the US/Canada)* <small>* low stock, low options, long delivery times and minimum order quantity applicable</small> <input type="checkbox"/> corresponding drawing / data for wire connection attached <input type="checkbox"/> customisation: see MP wire connection form |
| Travel distance: | mm | | |
| minimum temperature: | °C | | |
| maximum temperature: | °C | | |
| Speed of travel: | m/s | | |
| Other: | | | |

| Energy chain assignment | | <i>** cables without customisation are cut to total length only per cable one wire connection form is to be attached</i> | | | | | |
|--------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------|----------------------|--------------------------------|---------------------------------|
| Pos. No. | Cables/Conduits Description, number of wires, cross sections, reference type, Order No. etc. | External \emptyset in mm | Shielding requested? | Customisation requested? ^{**} (separate form) | Total-length in m | Overlap at fixed point in m | Overlap at moving point in m |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |
| | | | <input type="checkbox"/> yes | <input type="checkbox"/> yes | | | |

Cables with green-yellow protective conductor (PE) are standard (exception: bus and data cables up to 0.75mm²).
 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 1.5mm² each.
 Please identify cables without protective/ground conductor (PE)!





| | | |
|----------------------------------------------------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project description: | | |
| Position within CDC cable request form no.: | | Features: |
| 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 |
| | | Cables with green-yellow protective conductor (PE) are standard (exception: bus and data cables up to 0.75mm²). 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 ² each. |

Customisation of cable endings

| | |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| FP aspect (fixed point connection) | MP aspect (moving point connection) |
| <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 |
| Order No. of connector | Order No. of connector |
| Description, supplier: | Description, supplier: |
| Connections (quantity of contacts): | Connections (quantity of contacts): |
| <input type="checkbox"/> Male connector | <input type="checkbox"/> Male connector |
| <input type="checkbox"/> Female connector | <input type="checkbox"/> Female connector |
| Order No. of contact: | Order No. of contact: |
| Housing for connector: | Housing for connector: |
| Order No. / design: | Order 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 |
| Cable compression gland (type): | Cable compression gland (type): |
| Wiring specifications | |
| <input type="checkbox"/> Pin assignment: see enclosed plan or chart | |
| <input type="checkbox"/> 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, Order No., size, which wire?) | (Type, supplier, Order 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: | | |

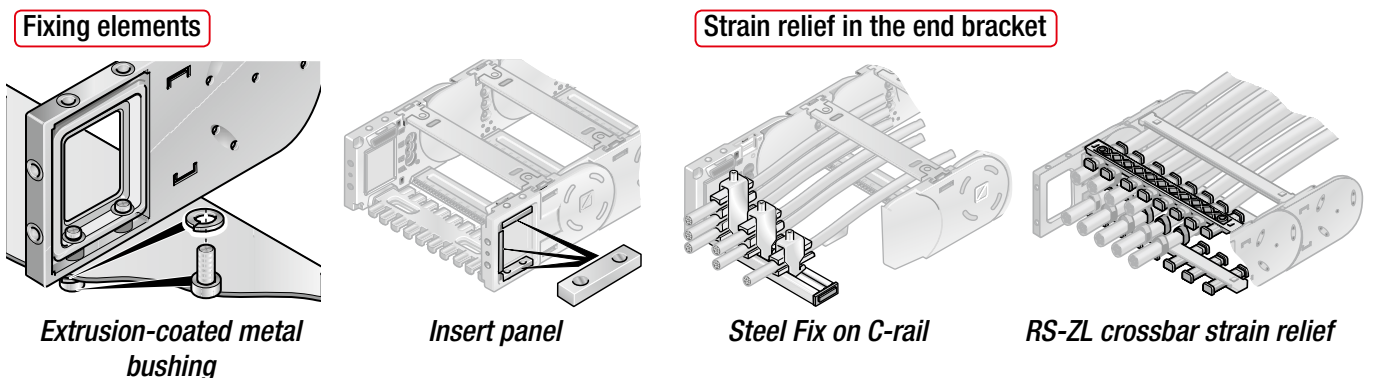
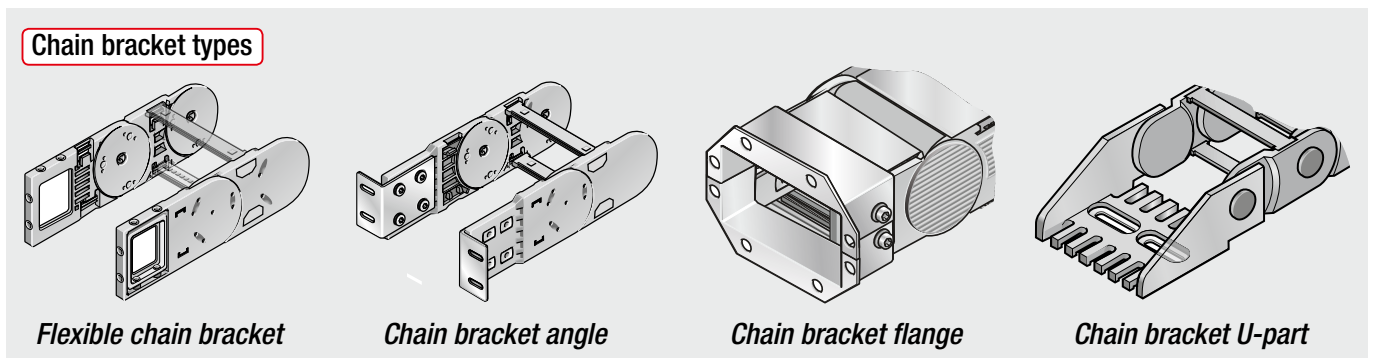
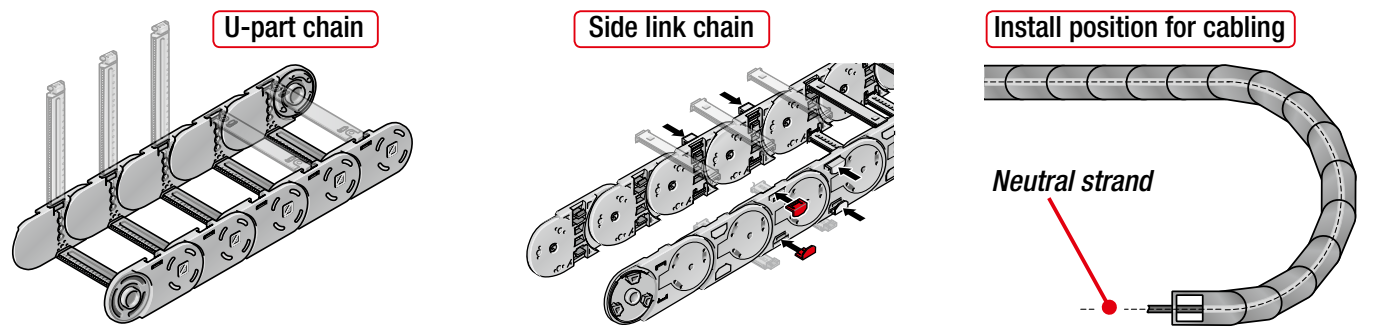
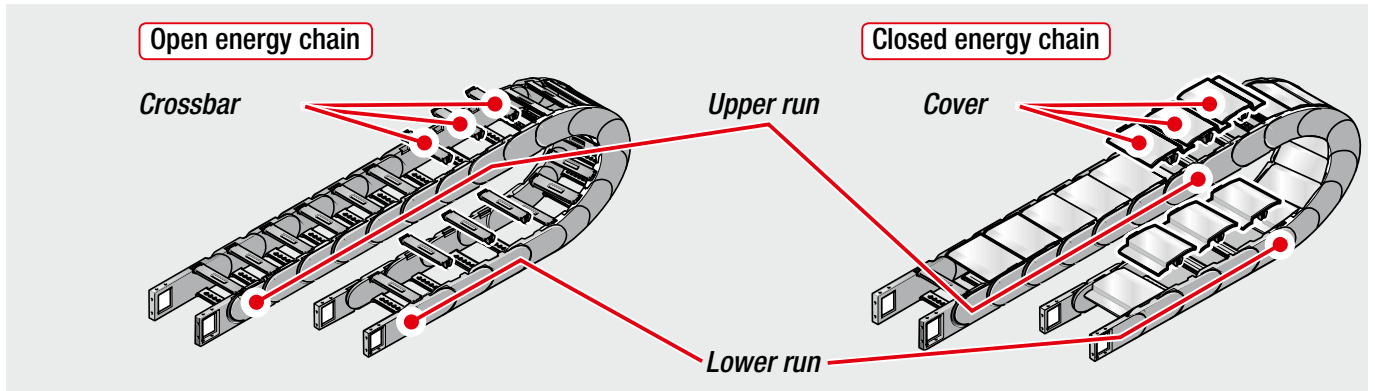
| | | | |
|--------------------------------------------------------------|-------------|-------------------------------------------------------------|-------------|
| <input type="checkbox"/> Labelling | Short text: | <input type="checkbox"/> Labelling | Short text: |
| <input type="checkbox"/> label 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.):

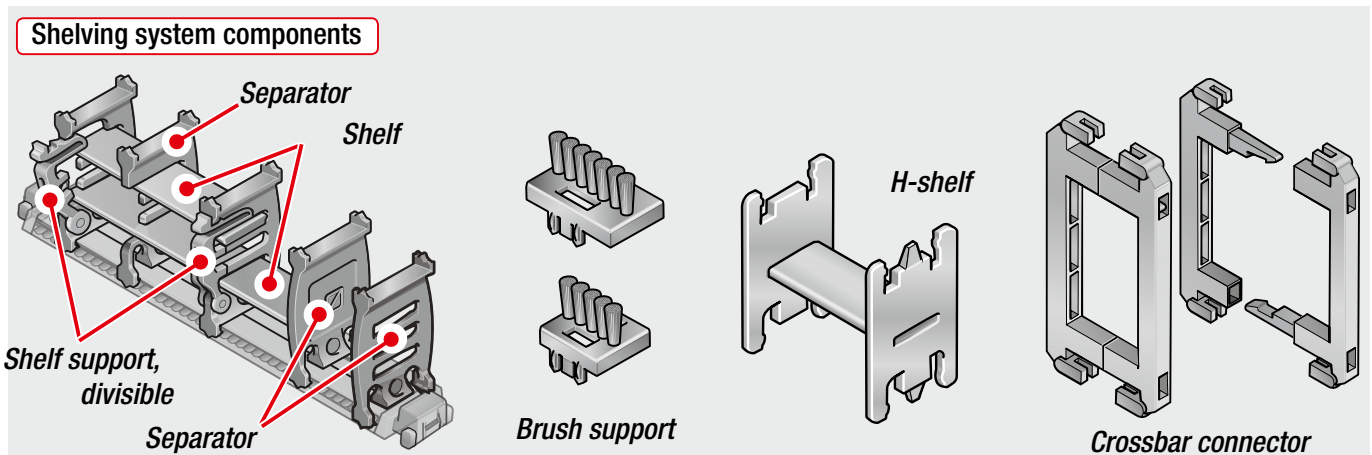
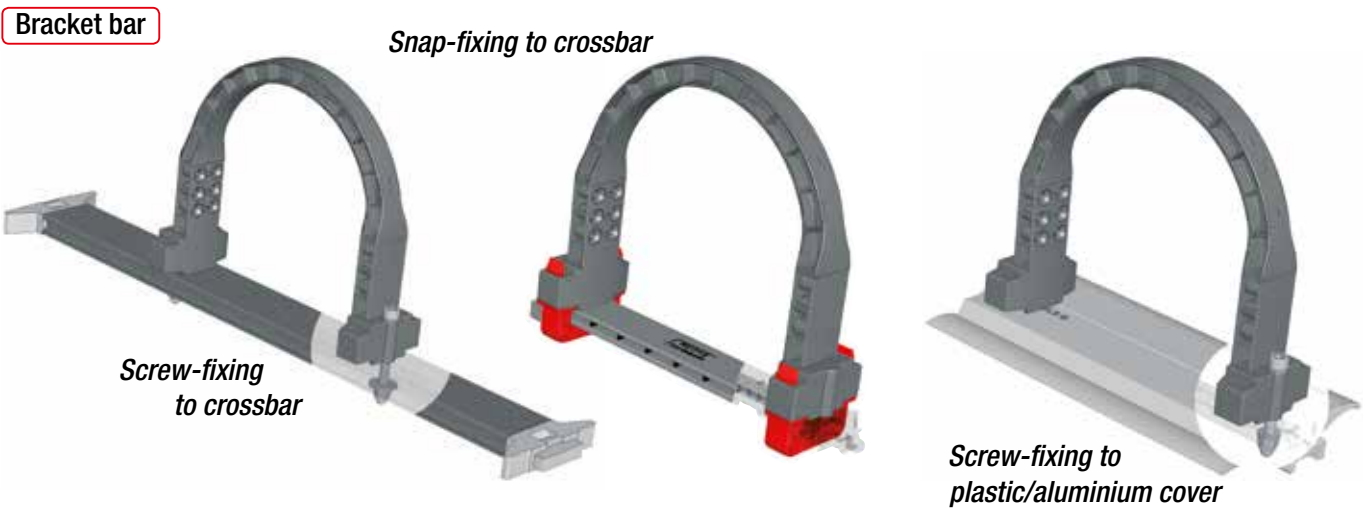
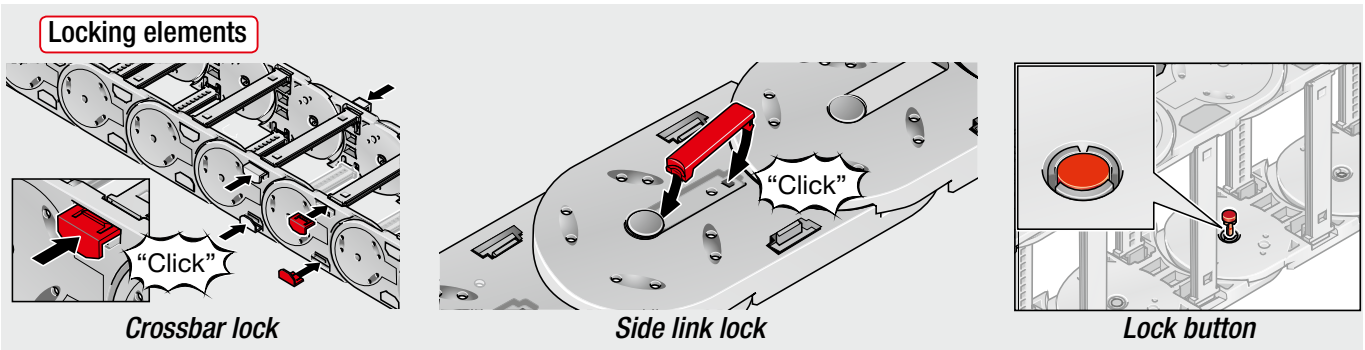
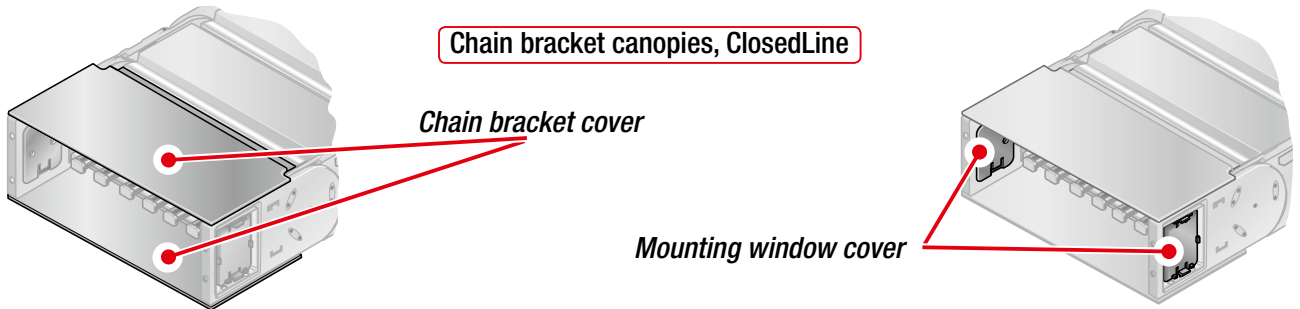
Murrplastik Glossary – So that you know what we are talking about

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.



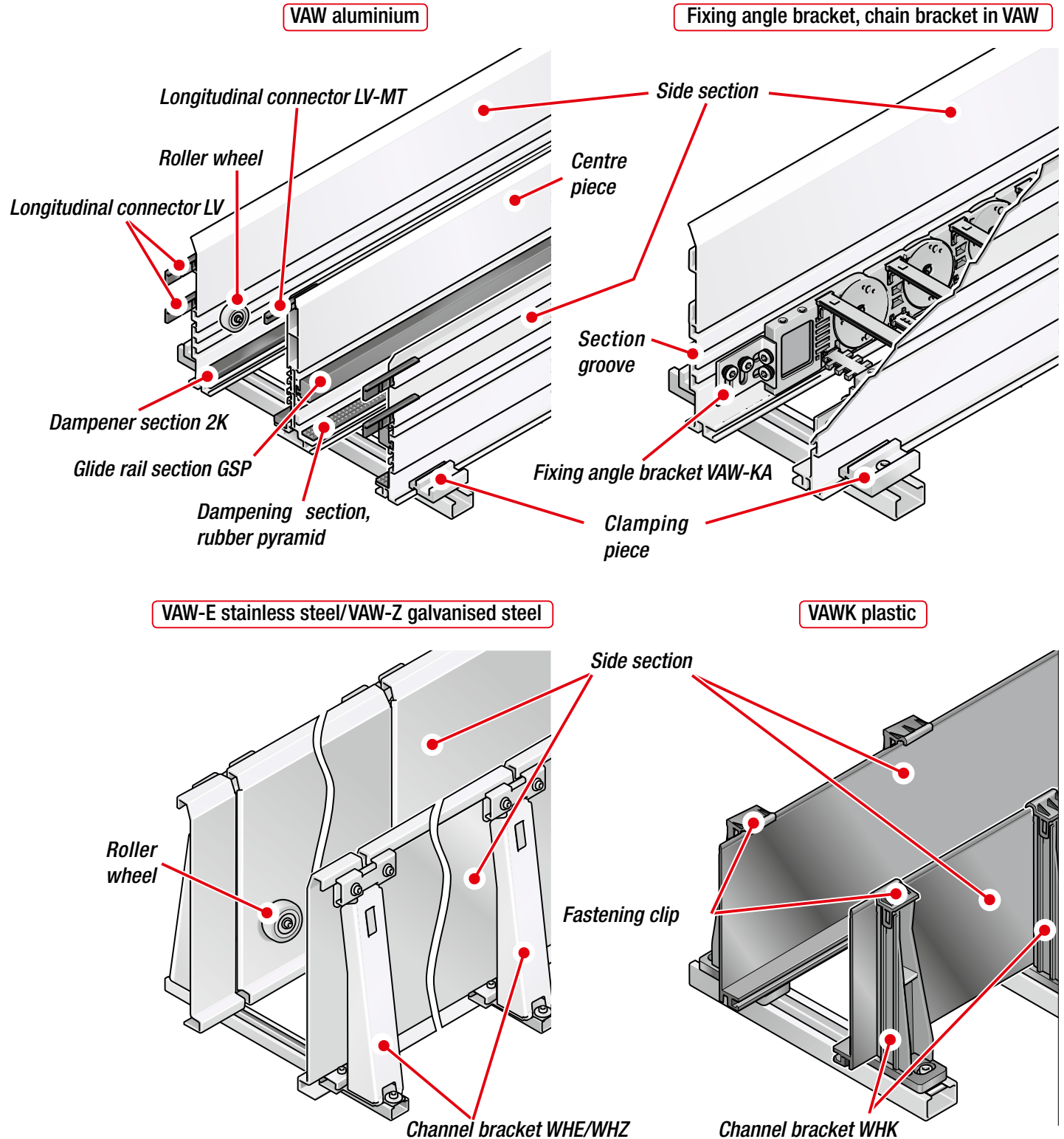
Murrplastik Glossary – So that you know what we are talking about



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?

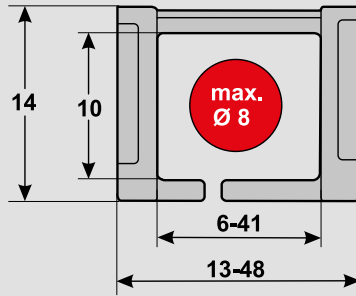
You'll find the answers in this Glossary. We have prepared some schematic drawings of sub-assemblies and individual components for you with the terms that we use for them.



EasyLine

**MP 10.1
open**

Page 66

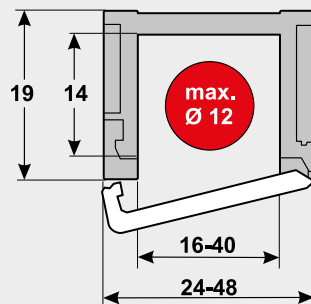


- Internal height: 10.0 mm
- Internal widths: 6.0 – 41.0 mm
- Radii: 18.0 – 58.0 mm
- Pitch: 15.0 mm
- Links per m: 67 pcs.
- Loading side: Outside bend slitted

MultiLine

**MP 14
open**

Page 72

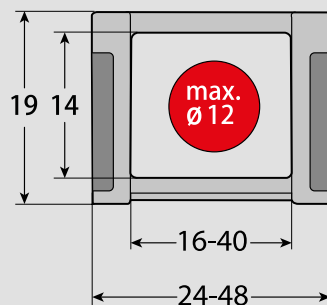


- Internal height: 14.0 mm
- Internal widths: 16.0 – 40.0 mm
- Radii: 25.0 – 75.0 mm
- Pitch: 26.0 mm
- Links per m: 39 pcs.
- Loading side: Outside bend

MultiLine

**MP 15
open**

Page 78

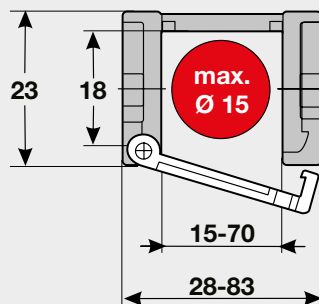


- Internal height: 14.0 mm
- Internal widths: 16.0 – 40.0 mm
- Radii: 25.0 – 75.0 mm
- Pitch: 26.0 mm
- Links per m: 39 pcs.
- Loading side: Non-opening

MultiLine

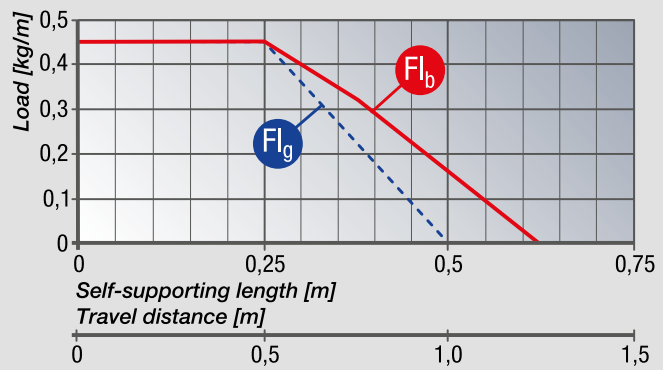
**MP 18.1
MP 18.2
open
open**

Page 84

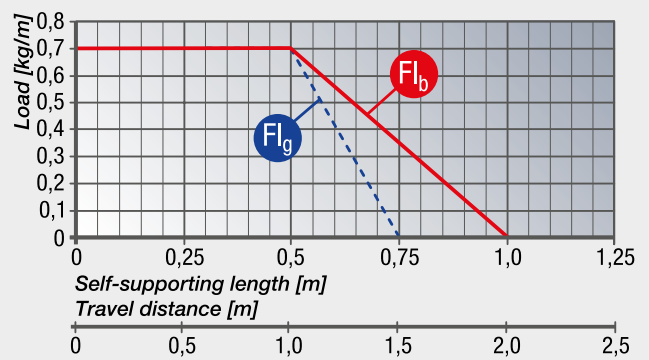


- Internal height: 18.0 mm
- Internal widths: 15.0 – 70.0 mm
- Radii: 28.0 – 78.0 mm
- Pitch: 33.0 mm
- Links per m: 30 pcs.
- Loading side: Inside or outside bend

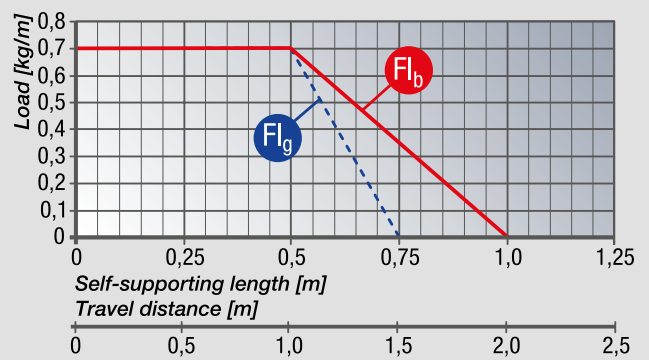
- Travel distance gliding L_g max.: 10.0 m
- Travel distance self-supporting L_f max.: see diagram on page 69
- Travel distance vertical hanging L_{vh} max.: 2.0 m
- Travel distance vertical upright L_{vs} max.: 1.0 m
- Rotated 90°, unsupported: L_{90f} max.: not recommended
- Speed, gliding V_g max.: 2.0 m/s
- Speed, self-supporting V_f max.: 4.0 m/s
- Acceleration, gliding a_g max.: 2.0 m/s²
- Acceleration, self-supporting a_f max.: 2.0 m/s²



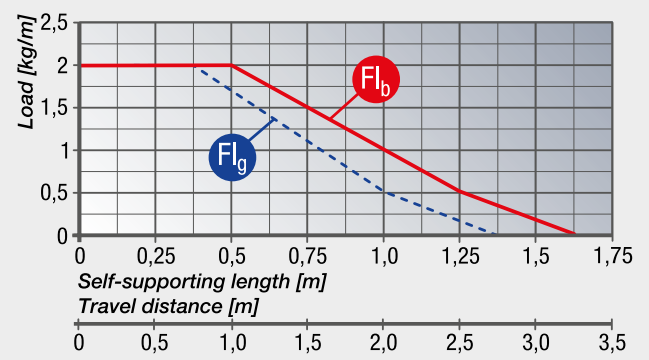
- Travel distance gliding L_g max.: 12.0 m
- Travel distance self-supporting L_f max.: see diagram on page 75
- Travel distance vertical hanging L_{vh} max.: 3.0 m
- Travel distance vertical upright L_{vs} max.: 2.0 m
- Rotated 90°, unsupported: L_{90f} max.: not recommended
- Speed, gliding V_g max.: 2.0 m/s
- Speed, self-supporting V_f max.: 4.0 m/s
- Acceleration, gliding a_g max.: 2.0 m/s²
- Acceleration, self-supporting a_f max.: 2.0 m/s²



- Travel distance gliding L_g max.: 12.0 m
- Travel distance self-supporting L_f max.: see diagram on page 81
- 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/s²
- Acceleration, self-supporting a_f max.: 2.0 m/s²



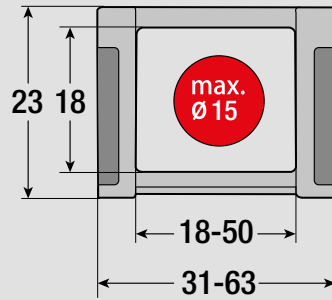
- Travel distance gliding L_g max.: 20.0 m
- Travel distance self-supporting L_f max.: see diagram on page 87
- Travel distance vertical hanging L_{vh} max.: 8.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 0.5 m
- Speed, gliding V_g max.: 2.0 m/s
- Speed, self-supporting V_f max.: 5.0 m/s
- Acceleration, gliding a_g max.: 5.0 m/s²
- Acceleration, self-supporting a_f max.: 5.0 m/s²



MultiLine

**MP 18.4
open**

Page 90

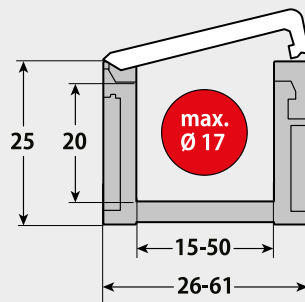


- Internal height: 18.0 mm
- Internal widths: 18.0 – 50.0 mm
- Radii: 40.0 – 80.0 mm
- Pitch: 30.0 mm
- Links per m: 33 pcs.
- Loading side: Non-opening

MultiLine

**MP 20
open**

Page 96

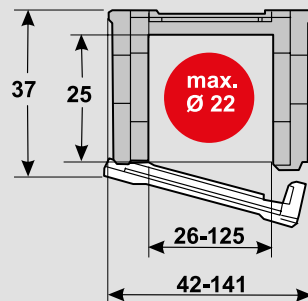


- Internal height: 20.0 mm
- Internal widths: 15.0 – 50.0 mm
- Radii: 38.0 – 125.0 mm
- Pitch: 35.0 mm
- Links per m: 29 pcs.
- Loading side: Inside bend

MultiLine

**MP 25G
Closed**

Page 110

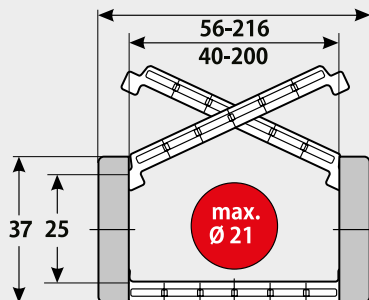


- Internal height: 25.0 mm
- Internal widths: 26.0 – 125.0 mm
- Radii: 60.0 – 250.0 mm
- Pitch: 30.0 mm
- Links per m: 33 pcs.
- Loading side: Outside bend

ModulLine

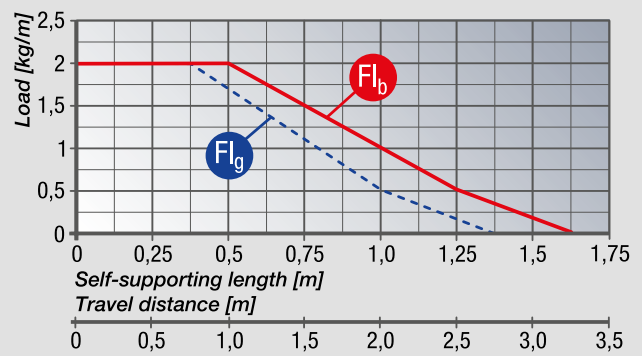
**MP 25.1/.2
MP 25.3/.4
open
Closed**

Page 170

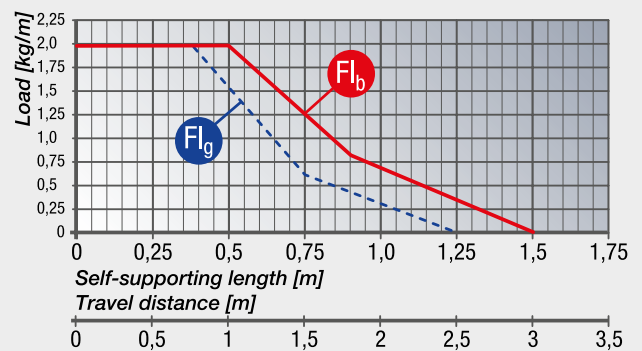


- Internal height: 25.0 mm
- Internal widths: 40.0 – 200.0 mm
- Radii: 50.0 – 300.0 mm
- Pitch: 45.0 mm
- Links per m: 22 pcs.
- Loading side: Inside or outside bend

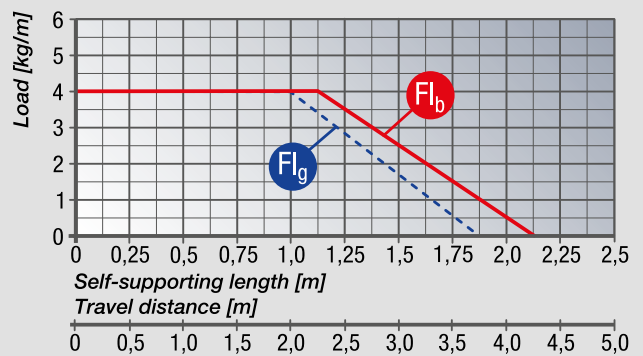
- Travel distance gliding L_g max.: 20.0 m
- Travel distance self-supporting L_f max.: see diagram on page 93
- Travel distance vertical hanging L_{vh} max.: 8.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 0.5 m
- Speed, gliding V_g max.: 2.0 m/s
- Speed, self-supporting V_f max.: 5.0 m/s
- Acceleration, gliding a_g max.: 5.0 m/s²
- Acceleration, self-supporting a_f max.: 5.0 m/s²



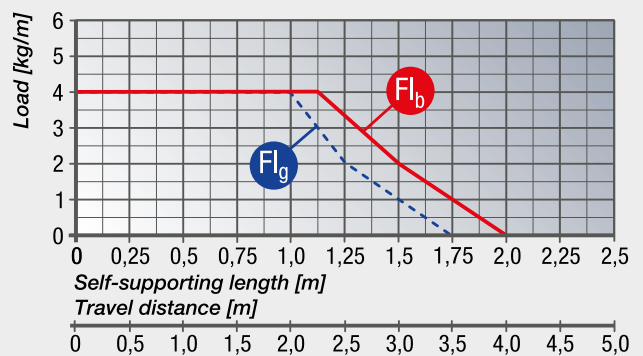
- Travel distance gliding L_g max.: not recommended
- Travel distance self-supporting L_f max.: see diagram on page 99
- Travel distance vertical hanging L_{vh} max.: 8.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 0.5 m
- Speed, self-supporting V_f max.: 10.0 m/s
- Acceleration, self-supporting a_f max.: 10.0 m/s²



- Travel distance gliding L_g max.: 40.0 m
- Travel distance self-supporting L_f max.: see diagram on page 113
- 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/s²
- Acceleration, self-supporting a_f max.: 15.0 m/s²



- Travel distance gliding L_g max.: 35.0 m
- Travel distance self-supporting L_f max.: see diagram on page 173
- 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/s²
- Acceleration, self-supporting a_f max.: 15.0 m/s²

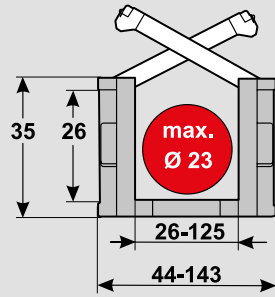


MultiLine

MP 3000

open

Page 102



- Internal height: 26.0 mm
- Internal widths: 26.0 – 125.0 mm
- Radii: 50.0 – 300.0 mm
- Pitch: 45.0 mm
- Links per m: 22 pcs.
- Loading side: Inside bend

ModulLine

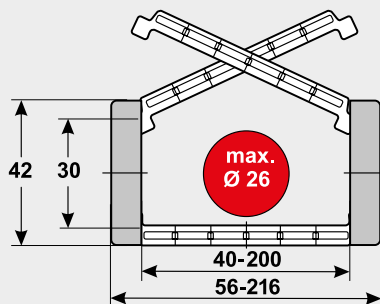
MP 30.1/.2

MP 30.3/.4

open

Closed

Page 182



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

PowerLine

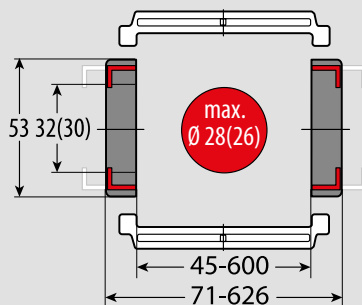
MP 32.2

MP 32.3

open

Closed

Page 208



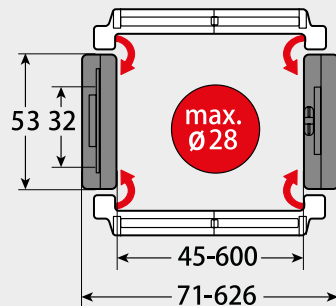
- Internal height: 32.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 80.0 – 250.0 mm
- Pitch: 64.5 mm
- Links per m: 16 pcs.
- Loading side: Inside and outside bend
- MP 32.3 inner widths 62–346 mm, radii 120–250 mm, lower inner height (values in brackets)

MP Classic

MP 32

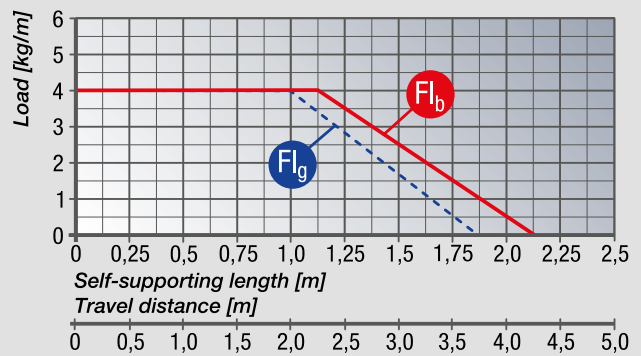
open

Page 360

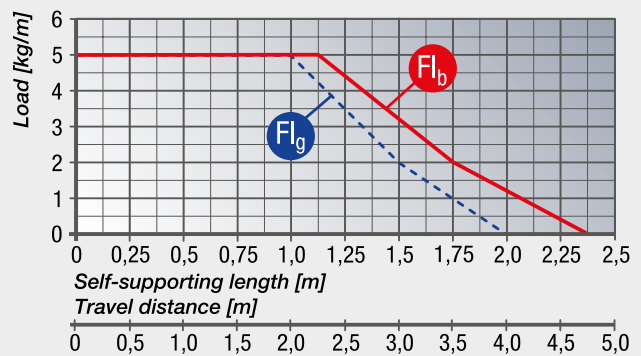


- Internal height: 32.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 80.0 – 250.0 mm
- Pitch: 64.5 mm
- Links per m: 16 pcs.
- Loading side: Inside and outside bend

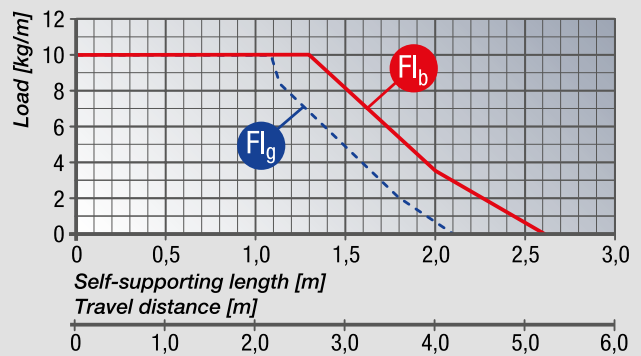
- Travel distance gliding L_g max.: 60.0 m
- Travel distance self-supporting L_f max.: see diagram on page 105
- Travel distance vertical hanging L_{vh} max.: 40.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 0.7 m
- Speed, gliding V_g max.: 3.0 m/s
- Speed, self-supporting V_f max.: 6.0 m/s
- Acceleration, gliding a_g max.: 10.0 m/s²
- Acceleration, self-supporting a_f max.: 15.0 m/s²



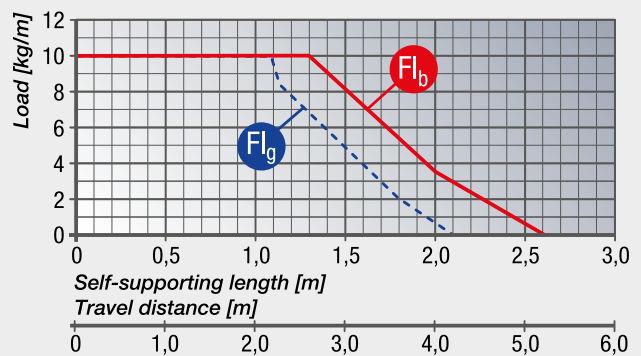
- Travel distance gliding L_g max.: 40.0 m
- Travel distance self-supporting L_f max.: see diagram on page 185
- Travel distance vertical hanging L_{vh} max.: 30.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 0.7 m
- Speed, gliding V_g max.: 3.0 m/s
- Speed, self-supporting V_f max.: 10.0 m/s
- Acceleration, gliding a_g max.: 10.0 m/s²
- Acceleration, self-supporting a_f max.: 15.0 m/s²



- Travel distance gliding L_g max.: 100.0 m
- Travel distance self-supporting L_f max.: see diagram on page 211
- 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/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



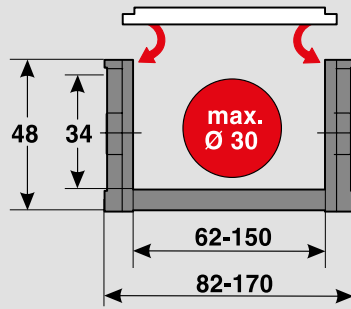
- Travel distance gliding L_g max.: 100.0 m
- Travel distance self-supporting L_f max.: see diagram on page 363
- Travel distance vertical hanging L_{vh} max.: 40.0 m
- Travel distance vertical upright L_{vs} max.: 5.0 m
- Rotated 90°, unsupported: L_{90f} max.: 2.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 25.0 m/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



MP Classic

**MP 35
open**

Page 374

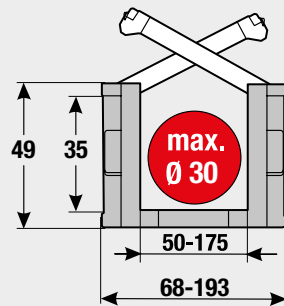


- Internal height: 34.0 mm
- Internal widths: 62.0 – 150.0 mm
- Radii: 70.0 – 300.0 mm
- Pitch: 58.0 mm
- Links per m: 17 pcs.
- Loading side: Inside bend

MultiLine

**MP 35.1
MP 35.2
open
open**

Page 118

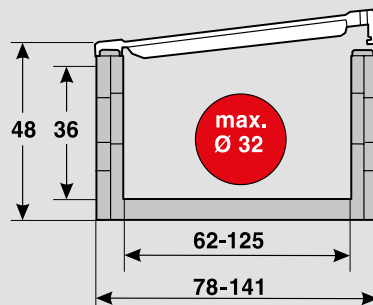


- Internal height: 35.0 mm
- Internal widths: 50.0 – 175.0 mm
- Radii: 63.0 – 250.0 mm
- Pitch: 56.0 mm
- Links per m: 18 pcs.
- Loading side: Inside or outside bend

MultiLine

**MP 36G
Closed**

Page 132

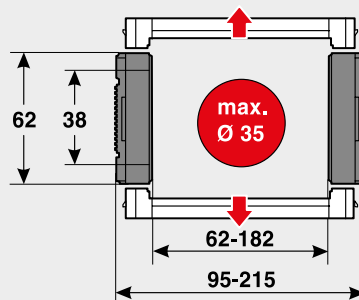


- Internal height: 36.0 mm
- Internal widths: 62.0 – 125.0 mm
- Radii: 80.0 – 200.0 mm
- Pitch: 40.0 mm
- Links per m: 25 pcs.
- Loading side: Inside bend

MultiLine

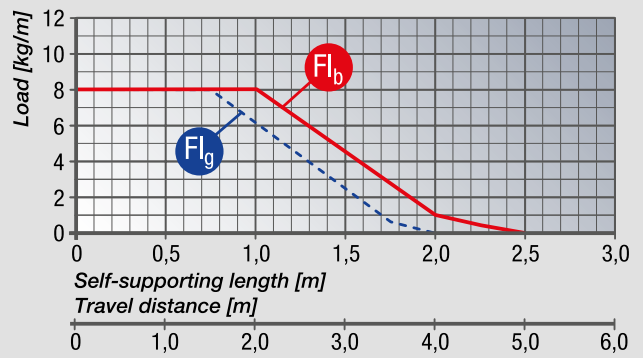
**MP 43G
Closed**

Page 140

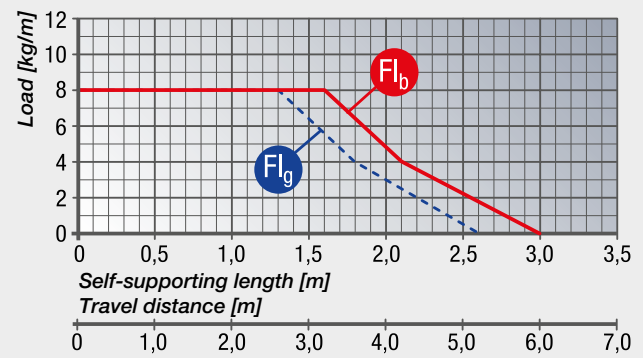


- Internal height: 38.0 mm
- Internal widths: 62.0 – 182.0 mm
- Radii: 125.0 – 400.0 mm
- Pitch: 75.5 mm
- Links per m: 13 pcs.
- Loading side: Inside and outside bend

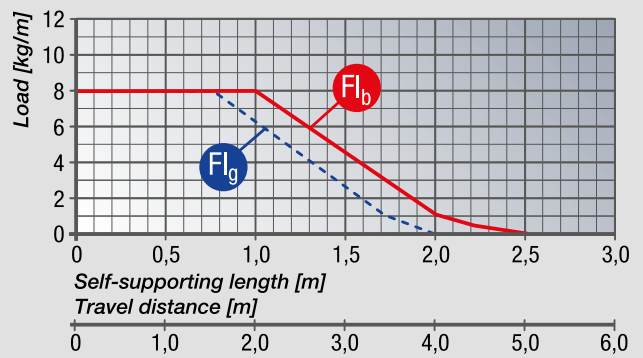
- Travel distance gliding L_g max.: 80.0 m
- Travel distance self-supporting L_f max.: see diagram on page 377
- Travel distance vertical hanging L_{vh} max.: 40.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 1.0 m
- Speed, gliding V_g max.: 3.0 m/s
- Speed, self-supporting V_f max.: 10.0 m/s
- Acceleration, gliding a_g max.: 15.0 m/s²
- Acceleration, self-supporting a_f max.: 20.0 m/s²



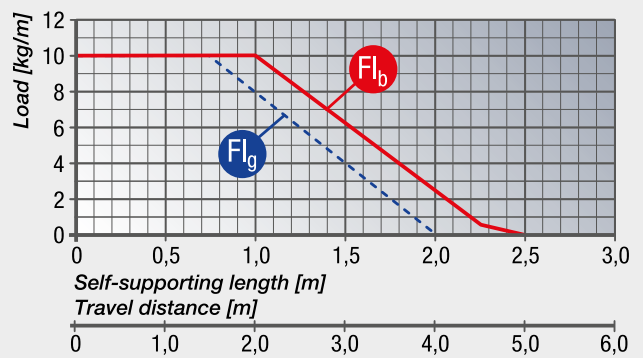
- Travel distance gliding L_g max.: 80.0 m
- Travel distance self-supporting L_f max.: see diagram on page 121
- Travel distance vertical hanging L_{vh} max.: 50.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 1.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 15.0 m/s²
- Acceleration, self-supporting a_f max.: 50.0 m/s²



- Travel distance gliding L_g max.: 60.0 m
- Travel distance self-supporting L_f max.: see diagram on page 135
- 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/s²
- Acceleration, self-supporting a_f max.: 20.0 m/s²



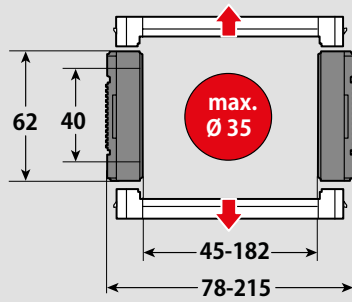
- Travel distance gliding L_g max.: 50.0 m
- Travel distance self-supporting L_f max.: see diagram on page 143
- Travel distance vertical hanging L_{vh} max.: 40.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 1.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 15.0 m/s
- Acceleration, gliding a_g max.: 15.0 m/s²
- Acceleration, self-supporting a_f max.: 20.0 m/s²



MP Classic

**MP 44
open**

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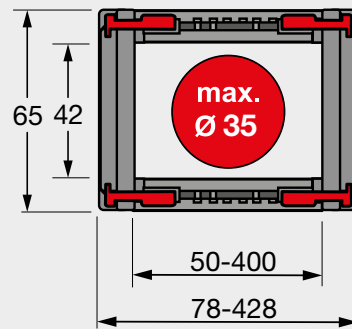


- Internal height: 40.0 mm
- Internal widths: 45.0 – 182.0 mm
- Radii: 90.0 – 400.0 mm
- Pitch: 75.5 mm
- Links per m: 13 pcs.
- Loading side: Inside and outside bend

EVOCHAIN®

**MP 420
open**

Page 194

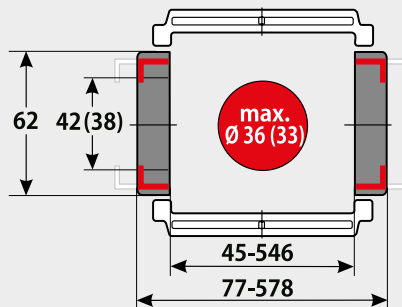


- Internal height: 42.0 mm
- Internal widths: 40.0 – 400.0 mm
- Radii: 75.0 – 350.0 mm
- Pitch: 67.0 mm
- Links per m: 15 pcs.
- Loading side: Inside and outside bend

PowerLine

**MP 41.2
MP 41.3
open
Closed**

Page 222

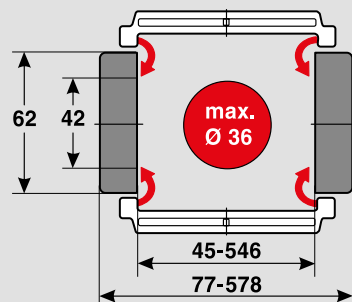


- Internal height: 42.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 90.0 – 350.0 mm
- Pitch: 77.0 mm
- Links per m: 13 pcs.
- Loading side: Inside and outside bend
- MP 41.3 inner widths 71–346 mm, radii 150-300 mm, lower inner height (values in brackets)

MP Classic

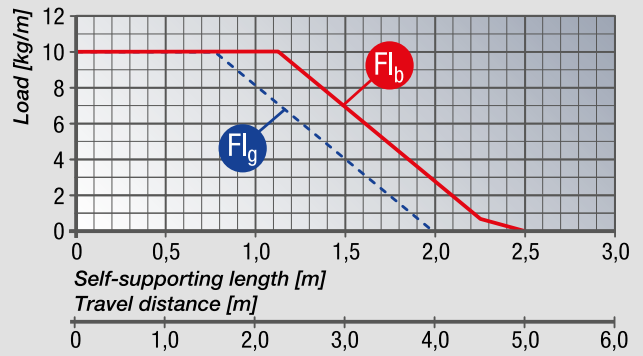
**MP 41
open**

Page 382

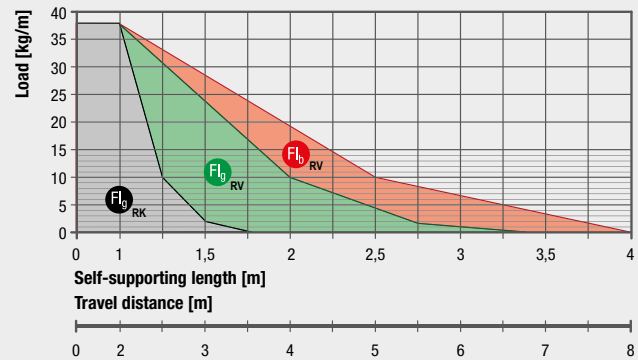


- Internal height: 42.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 90.0 – 350.0 mm
- Pitch: 77.0 mm
- Links per m: 13 pcs.
- Loading side: Inside and outside bend

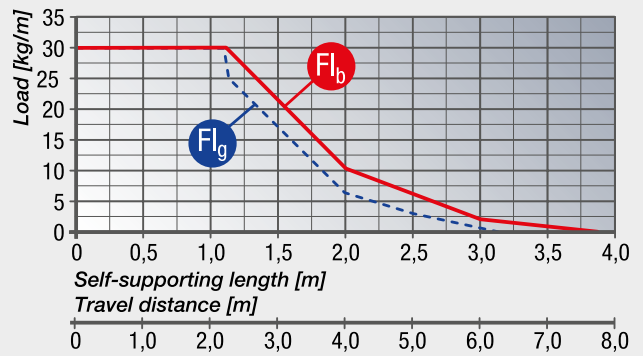
- Travel distance gliding L_g max.: 50.0 m
- Travel distance self-supporting L_f max.: see diagram on page 399
- Travel distance vertical hanging L_{vh} max.: 40.0 m
- Travel distance vertical upright L_{vs} max.: 3.0 m
- Rotated 90°, unsupported: L_{90f} max.: 1.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 15.0 m/s
- Acceleration, gliding a_g max.: 15.0 m/s²
- Acceleration, self-supporting a_f max.: 20.0 m/s²



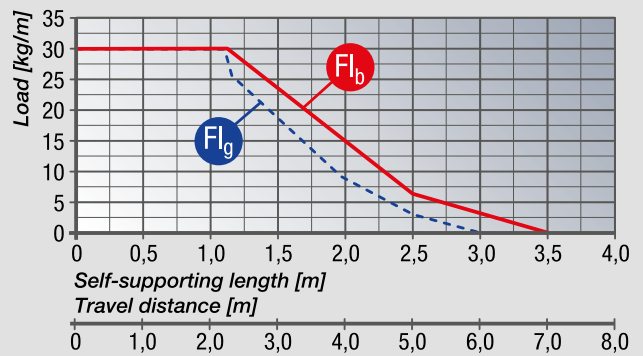
- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 197
- Travel distance vertical hanging L_{vh} max.: 100.0 m
- Travel distance vertical upright L_{vs} max.: 6.0 m
- Rotated 90°, unsupported: L_{90f} max.: 2.0 m
- Speed, gliding V_g max.: 10.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 50.0 m/s²
- Acceleration, self-supporting a_f max.: 50.0 m/s²



- Travel distance gliding L_g max.: 120.0 m
- Travel distance self-supporting L_f max.: see diagram on page 225
- 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/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



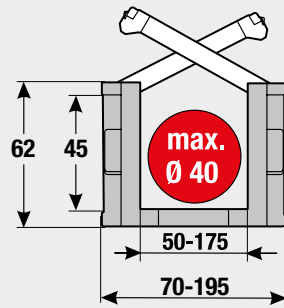
- Travel distance gliding L_g max.: 120.0 m
- Travel distance self-supporting L_f max.: see diagram on page 385
- Travel distance vertical hanging L_{vh} max.: 50.0 m
- Travel distance vertical upright L_{vs} max.: 6.0 m
- Rotated 90°, unsupported: L_{90f} max.: 2.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 25.0 m/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



MultiLine

MP 45.1
MP 45.2
open
open

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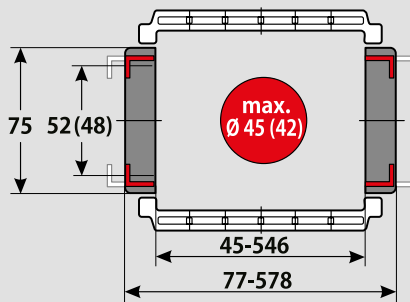


- Internal height: 45.0 mm
- Internal widths: 50.0 – 250.0 mm
- Radii: 75.0 – 300.0 mm
- Pitch: 67.0 mm
- Links per m: 15 pcs.
- Loading side: Inside or outside bend

PowerLine

MP 52.2
MP 52.3
open
Closed

Page 238

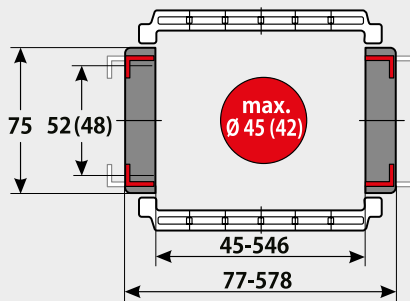


- Internal height: 52.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 100.0 – 350.0 mm
- Pitch: 91.0 mm
- Links per m: 11 pcs.
- Loading side: Inside and outside bend
- MP 52.3 inner widths 71–346 mm, radii 150-350 mm, lower inner height (values in brackets)

PowerLine

MP 52.2-D
MP 52.3-D
open
Closed

Page 256

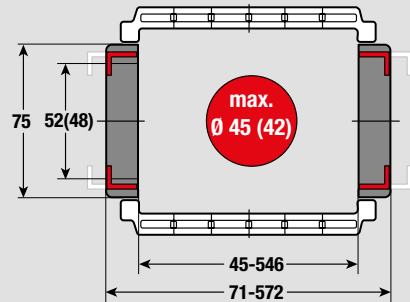


- Internal height: 52.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 200.0 mm
- Pitch: 91.0 mm
- Links per m: 11 pcs.
- Loading side: Inside and outside bend

PowerLine

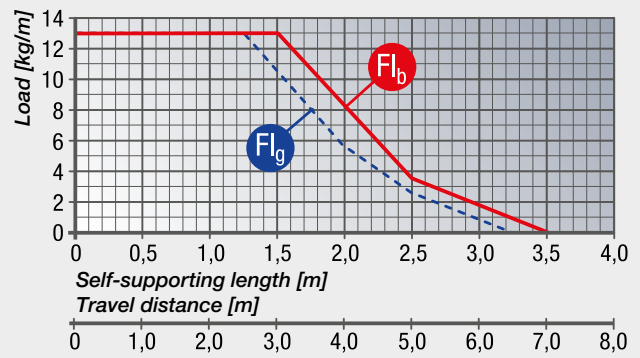
MP 52.4
MP 52.5
open
Closed

Page 272

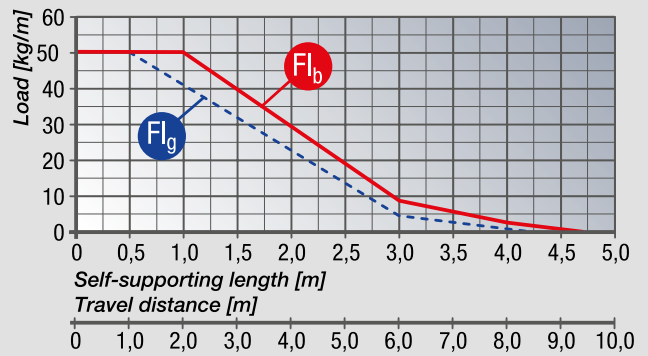


- Internal height: 52.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 125.0 – 300.0 mm
- Pitch: 91.0 mm
- Links per m: 11 pcs.
- Loading side: Inside and outside bend

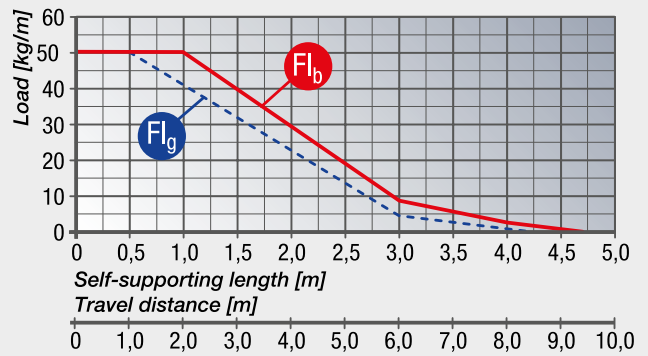
- Travel distance gliding L_g max.: 80.0 m
- Travel distance self-supporting L_f max.: see diagram on page 151
- Travel distance vertical hanging L_{vh} max.: 60.0 m
- Travel distance vertical upright L_{vs} max.: 4.0 m
- Rotated 90°, unsupported: L_{90f} max.: 1.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 15.0 m/s²
- Acceleration, self-supporting a_f max.: 50.0 m/s²



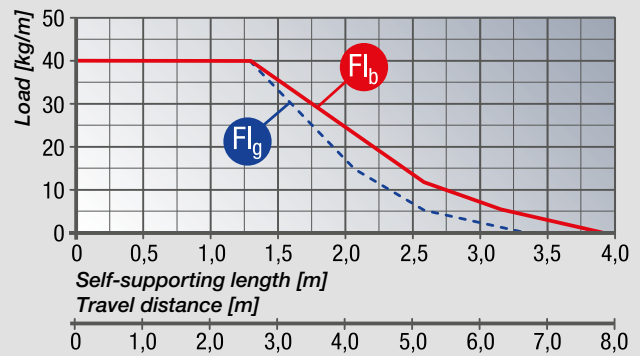
- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 241
- Travel distance vertical hanging L_{vh} max.: 60.0 m
- Travel distance vertical upright L_{vs} max.: 6.0 m
- Rotated 90°, unsupported: L_{90f} max.: 2.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 25.0 m/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 259
- 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/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



- Travel distance gliding L_g max.: 50.0 m
- Travel distance self-supporting L_f max.: see diagram on page 275
- 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/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



PowerLine

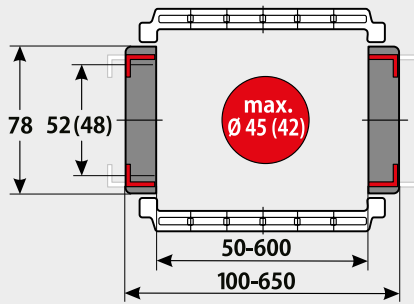
MP 52.6

MP 52.7

open

Closed

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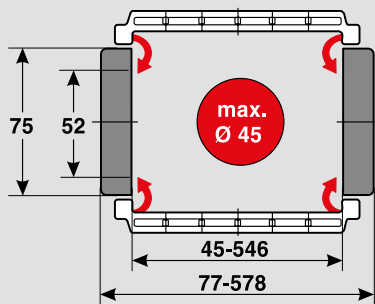
- Internal height: 52.0 mm
- Internal widths: 50.0 – 600.0 mm
- Radii: 150.0 – 300.0 mm
- Pitch: 91.0 mm
- Links per m: 11 pcs.
- Loading side: Inside and outside bend

MP Classic

MP 52.1

open

Page 404



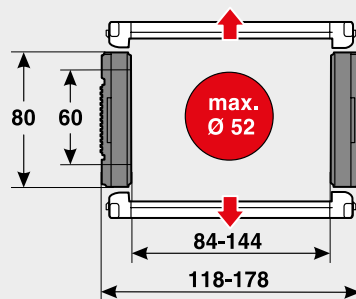
- Internal height: 52.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 100.0 – 350.0 mm
- Pitch: 91.0 mm
- Links per m: 11 pcs.
- Loading side: Inside and outside bend

MultiLine

MP 65G

Closed

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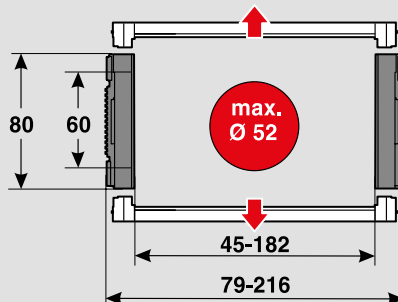
- Internal height: 60.0 mm
- Internal widths: 84.0 – 144.0 mm
- Radii: 200.0 – 400.0 mm
- Pitch: 91.5 mm
- Links per m: 11 pcs.
- Loading side: Inside and outside bend

MP Classic

MP 66

open

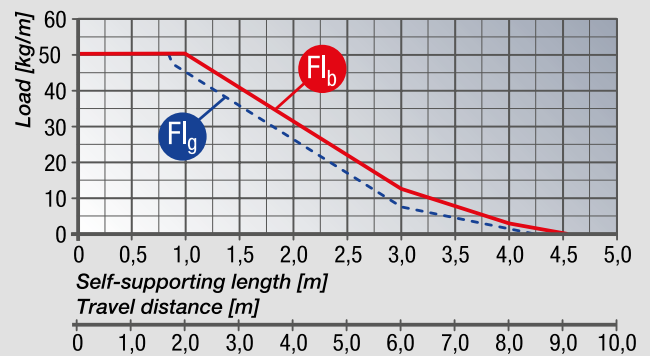
Page 432



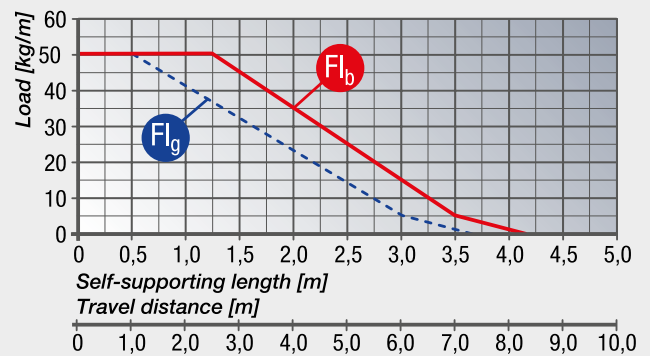
- Internal height: 60.0 mm
- Internal widths: 45.0 – 182.0 mm
- Radii: 150.0 – 400.0 mm
- Pitch: 91.5 mm
- Links per m: 11 pcs.
- Loading side: Inside and outside bend

- 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/s²

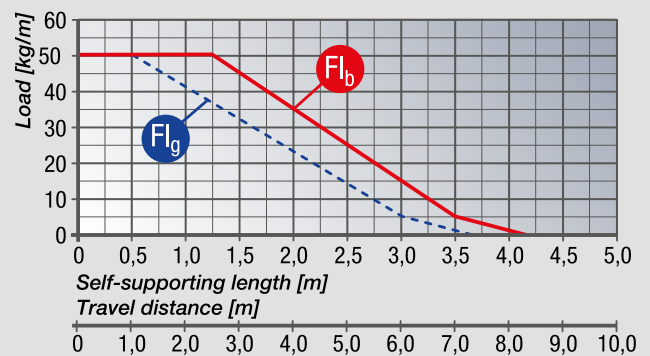
- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 407
- Travel distance vertical hanging L_{vh} max.: 60.0 m
- Travel distance vertical upright L_{vs} max.: 6.0 m
- Rotated 90°, unsupported: L_{90f} max.: 3.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 25.0 m/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



- Travel distance gliding L_g max.: 60.0 m
- Travel distance self-supporting L_f max.: see diagram on page 165
- 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/s²
- Acceleration, self-supporting a_f max.: 20.0 m/s²



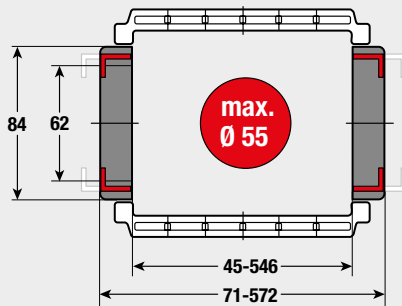
- Travel distance gliding L_g max.: 60.0 m
- Travel distance self-supporting L_f max.: see diagram on page 435
- Travel distance vertical hanging L_{vh} max.: 50.0 m
- Travel distance vertical upright L_{vs} max.: 5.0 m
- Rotated 90°, unsupported: L_{90f} max.: 2.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 15.0 m/s
- Acceleration, gliding a_g max.: 15.0 m/s²
- Acceleration, self-supporting a_f max.: 20.0 m/s²



PowerLine

**MP 62.4
open**

Page 302

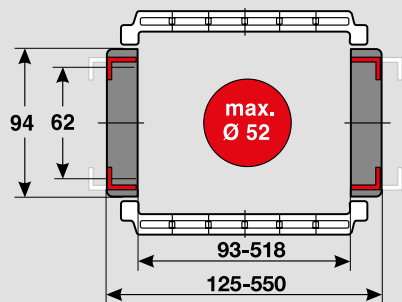


- Internal height: 62.0 mm
- Internal widths: 45.0 – 546.0 mm
- Radii: 135.0 – 300.0 mm
- Pitch: 91.0 mm
- Links per m: 11 pcs.
- Loading side: Inside and outside bend

HeavyLine

**MP 62.2
MP 62.3
open
Closed**

Page 318

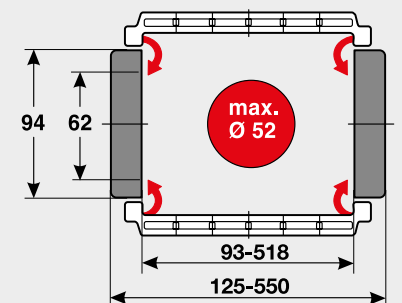


- Internal height: 62.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 150.0 – 500.0 mm
- Pitch: 100.0 mm
- Links per m: 10 pcs.
- Loading side: Inside and outside bend
- MP 62.3 inner widths 118–418 mm, radii 200–500 mm

MP Classic

**MP 62.1
open**

Page 418

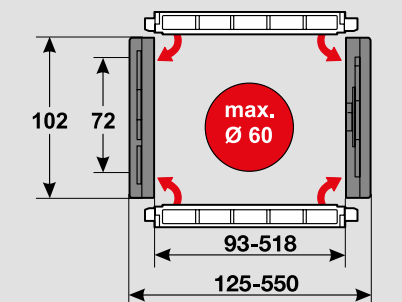


- Internal height: 62.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 150.0 – 500.0 mm
- Pitch: 100.0 mm
- Links per m: 10 pcs.
- Loading side: Inside and outside bend

MP Classic

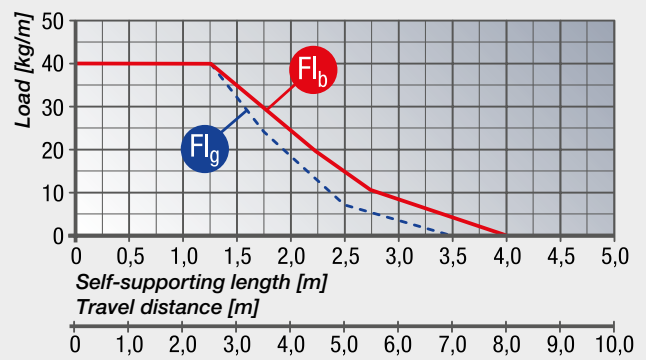
**MP 72
open**

Page 440

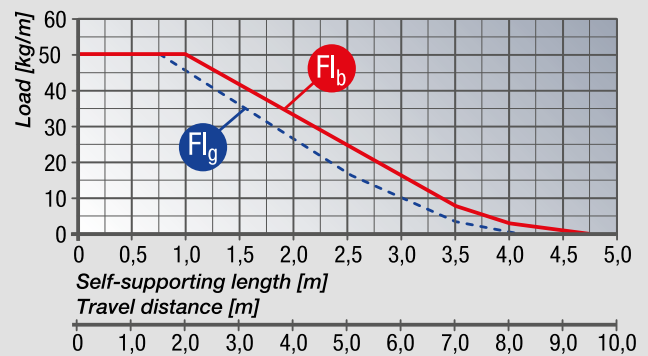


- Internal height: 72.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 150.0 – 500.0 mm
- Pitch: 100.0 mm
- Links per m: 10 pcs.
- Loading side: Inside and outside bend

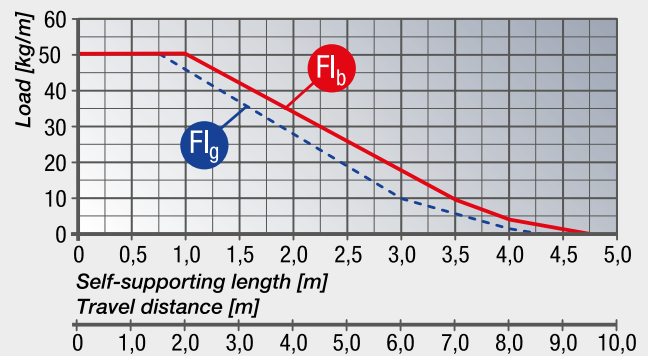
- Travel distance gliding L_g max.: 50.0 m
- Travel distance self-supporting L_f max.: see diagram on page 305
- Travel distance vertical hanging L_{vh} max.: 50.0 m
- Travel distance vertical upright L_{vs} max.: 4.0 m
- Rotated 90°, unsupported: L_{90f} max.: 1.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 25.0 m/s²
- Acceleration, self-supporting a_f max.: 30.0 m/s²



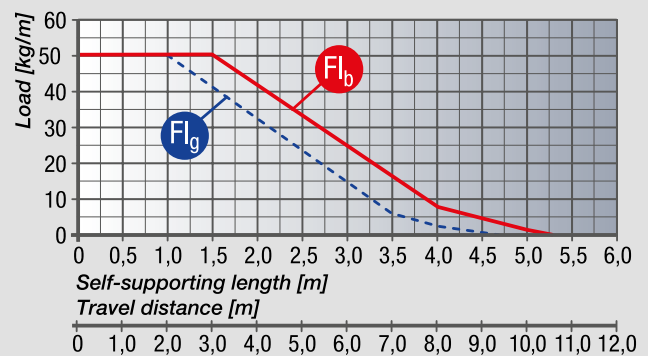
- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 321
- Travel distance vertical hanging L_{vh} max.: 65.0 m
- Travel distance vertical upright L_{vs} max.: 6.0 m
- Rotated 90°, unsupported: L_{90f} max.: 4.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 25.0 m/s²
- Acceleration, self-supporting a_f max.: 40.0 m/s²



- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 421
- 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/s²
- Acceleration, self-supporting a_f max.: 40.0 m/s²



- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 443
- 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/s²
- Acceleration, self-supporting a_f max.: 40.0 m/s²



HeavyLine

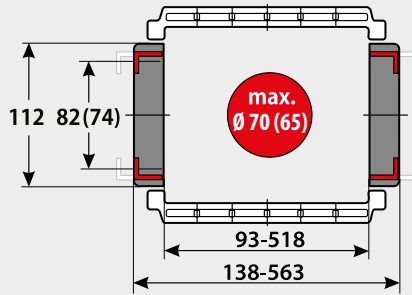
MP 82.2

MP 82.3

open

Closed

Page 334



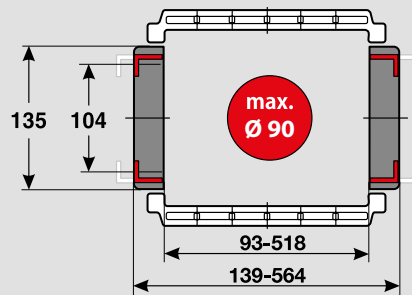
- Internal height: 82.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 150.0 – 650.0 mm
- Pitch: 118.0 mm
- Links per m: 9 pcs.
- Loading side: Inside and outside bend
- MP 82.3 inner widths 118-418 mm, radii 200-650 mm, lower inner height (values in brackets)

HeavyLine

MP 102.2

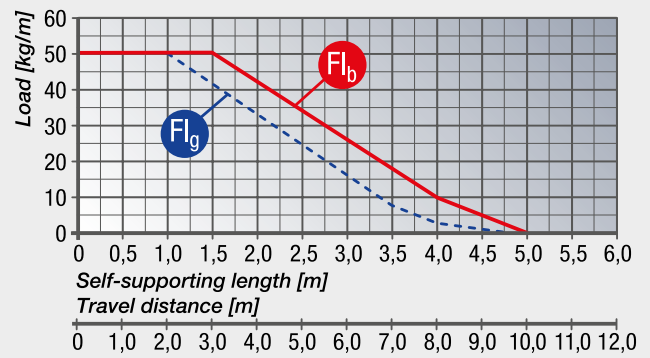
open

Page 348

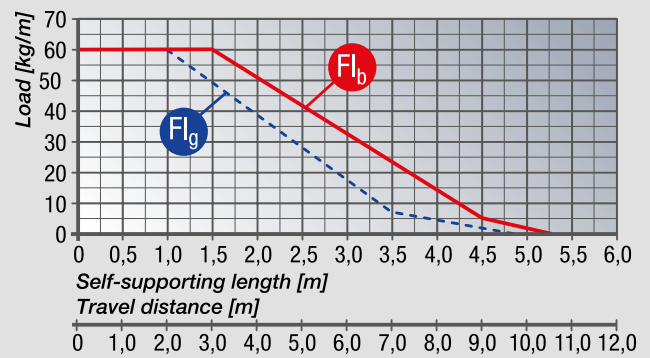


- Internal height: 104.0 mm
- Internal widths: 93.0 – 518.0 mm
- Radii: 250.0 – 500.0 mm
- Pitch: 141.0 mm
- Links per m: 7 pcs.
- Loading side: Inside and outside bend

- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 337
- 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/s²
- Acceleration, self-supporting a_f max.: 40.0 m/s²



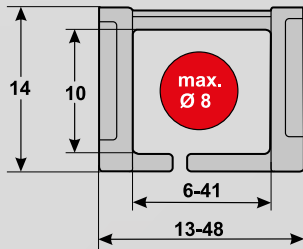
- Travel distance gliding L_g max.: 150.0 m
- Travel distance self-supporting L_f max.: see diagram on page 351
- Travel distance vertical hanging L_{vh} max.: 80.0 m
- Travel distance vertical upright L_{vs} max.: 8.0 m
- Rotated 90°, unsupported: L_{90f} max.: 8.0 m
- Speed, gliding V_g max.: 5.0 m/s
- Speed, self-supporting V_f max.: 20.0 m/s
- Acceleration, gliding a_g max.: 25.0 m/s²
- Acceleration, self-supporting a_f max.: 40.0 m/s²



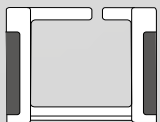
MP 10.1 OPEN



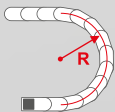
- EASY (FILL) MECHANISM
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED
- VERY FLEXIBLE, HIGH TORSION



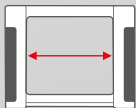
TECHNICAL DATA



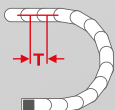
Loading side
Outside bend slitted



Available radii
18.0 – 58.0 mm



Available interior widths
With plastic crossbar
6.0 – 41.0 mm



Pitch
T = 15.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|------------------------|
| Travel distance gliding L_g max. | 10.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 69 |
| 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 ² |
| Acceleration self-supporting a_f max. | 2.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

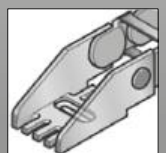


MATERIAL CHARACTERISTICS

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

Other material characteristics on request.

CHAIN BRACKET



Chain bracket U-part

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | 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 | 006¹⁾ [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 ESD (PA/light grey) | |
| | | 041 [1.61] | 048 [1.89] | | | 048 [1.89] | | 9 Special version (on request) | |
| | | | | | | 058 [2.28] | | | |

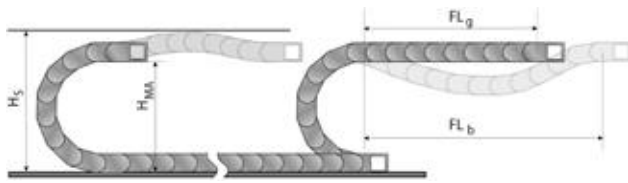


ORDERING EXAMPLE: 0101 22 006 018 0 0 1065

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

¹⁾ max. line diameter 5 mm

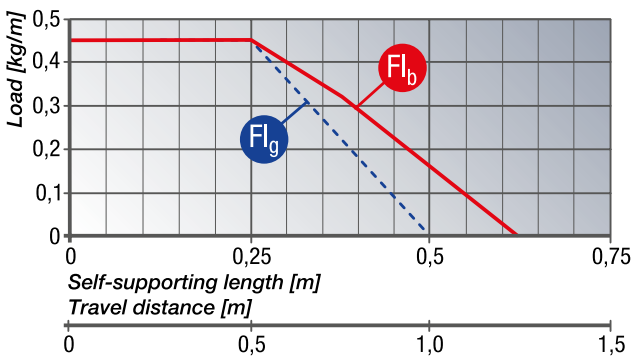
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

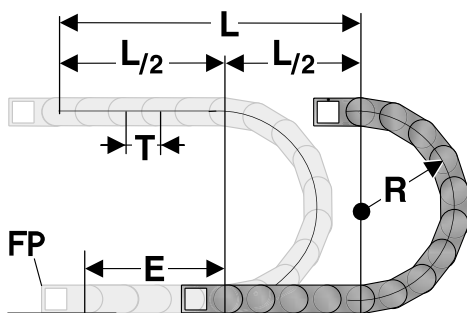
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

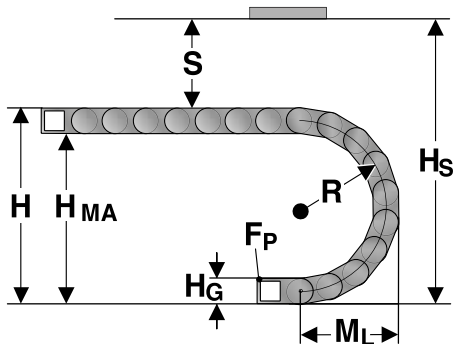


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
1 m chain = 67 links, 15.0 mm each

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

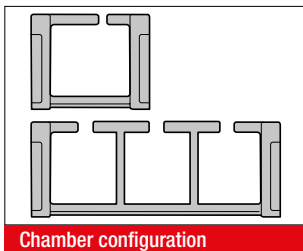
INSTALLATION DIMENSIONS



The moving end chain bracket 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_G) | 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

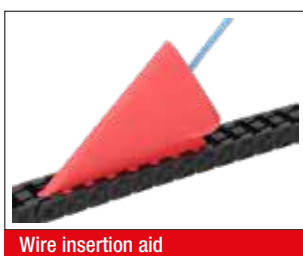


Chamber configuration

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 pcs. | 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

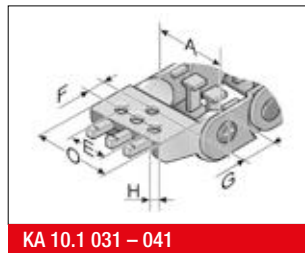
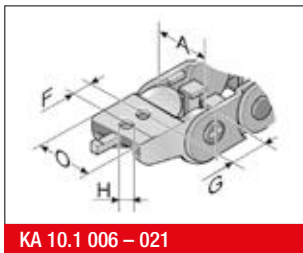


Wire insertion aid

The wire insertion tool facilitates the quick and simple insertion of cables and conduits into the energy chain.

| Type | Order No. | Colour | Max. cable Ø mm | MOQ Pcs. |
|------|-----------|--------|-----------------|----------|
| KE | 83729010 | Red | 22.00 | 1 |

KA 10.1 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.

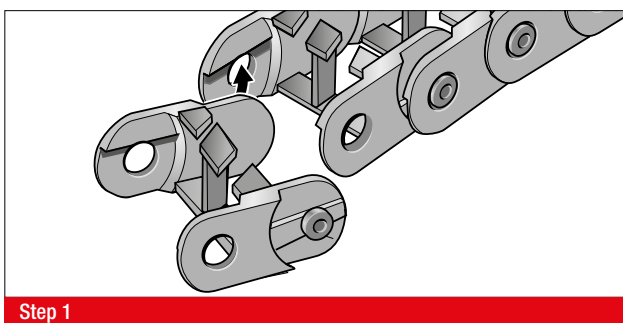
KA 10.1 006 - 021

KA 10.1 031 - 041

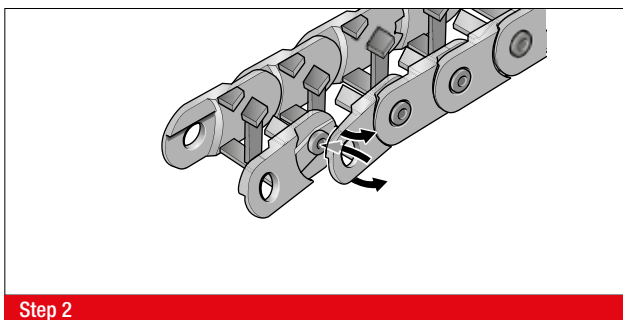
| Type | Order No. | Material | Inside width | | | | | Outside width |
|------------------------|--------------|----------|--------------|-------|------|------|--------|---------------|
| | | | A mm | E mm | F mm | G mm | Ø H mm | KA 0 mm |
| KA 10.1 006 Female end | 010100005000 | Plastic | 6.0 | | 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

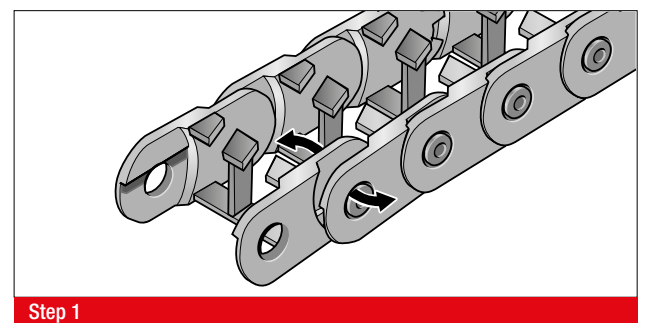
DISASSEMBLY



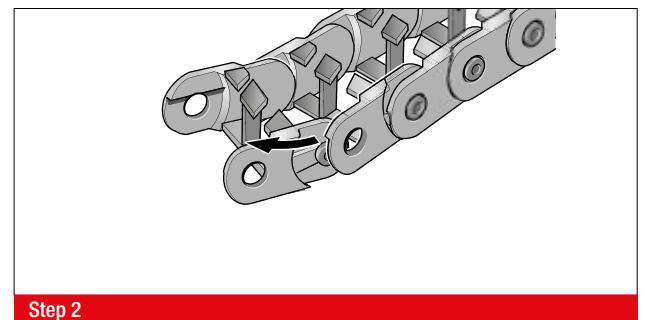
Step 1



Step 2



Step 1

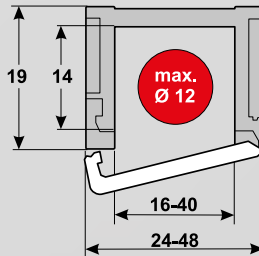


Step 2

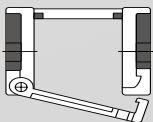
MP 14 OPEN



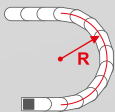
- LOW-COST VARIANT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED



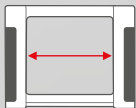
TECHNICAL DATA



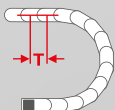
Loading side
Outside bend



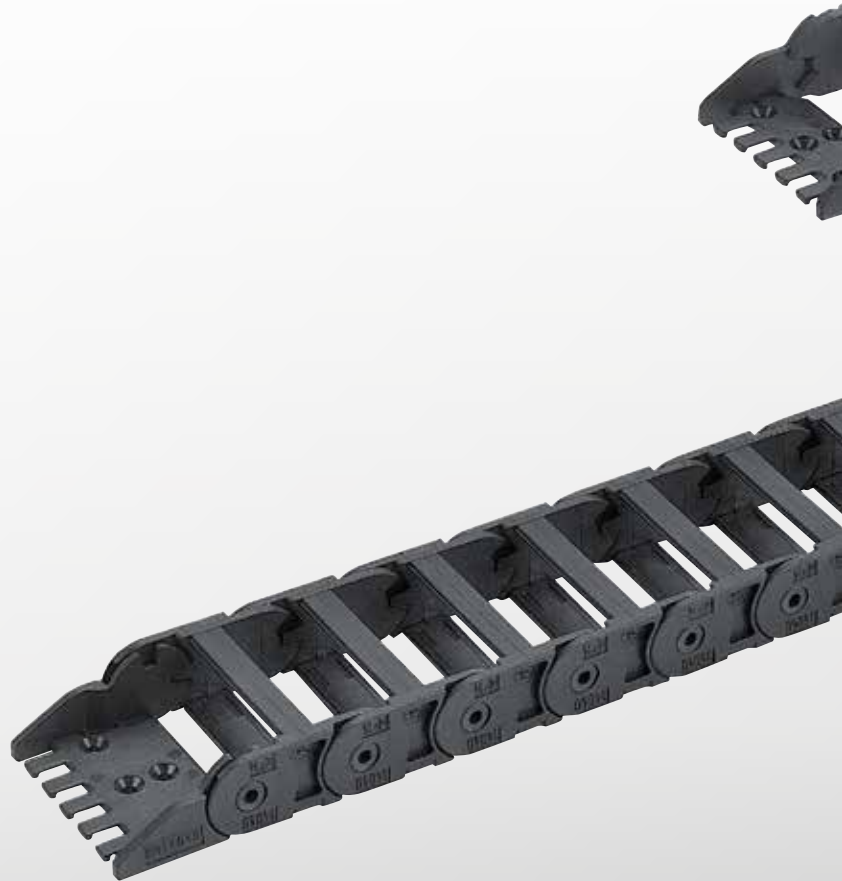
Available radii
25.0 – 75.0 mm



Available interior widths
With plastic crossbar
16.0 – 40.0 mm



Pitch
T = 26.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|------------------------|
| Travel distance gliding L_g max. | 12.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 25 |
| 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 ² |
| Acceleration self-supporting a_f max. | 2.0 m/s ² |

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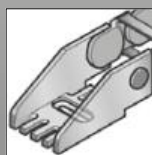


MATERIAL CHARACTERISTICS

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

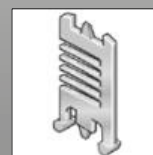
Other material characteristics on request.

CHAIN BRACKET



Chain bracket U-part

SHELVING SYSTEM



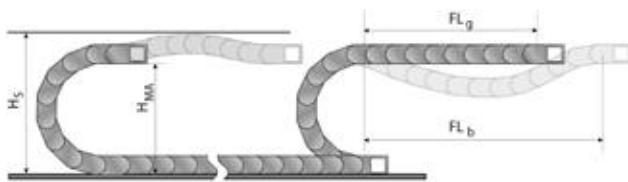
Separator TR

GUIDE CHANNELS



VAW aluminium

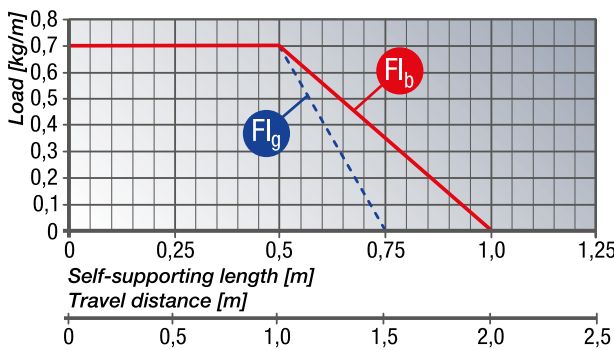
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

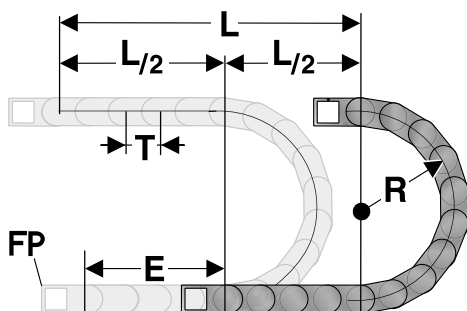
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

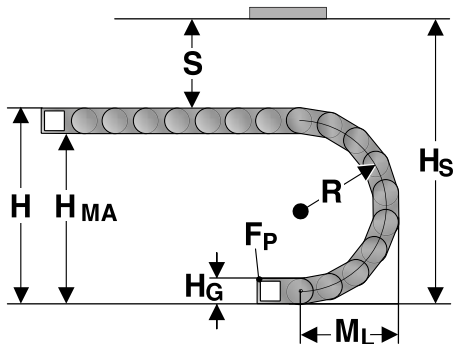


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
 1 m chain = 39 links, 26.0 mm each

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

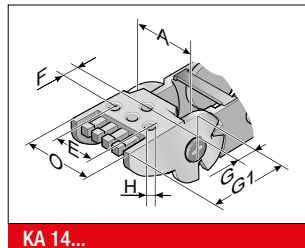
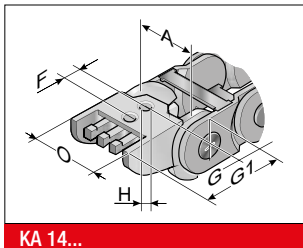
INSTALLATION DIMENSIONS



The moving end chain bracket 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 |

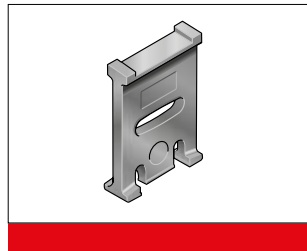
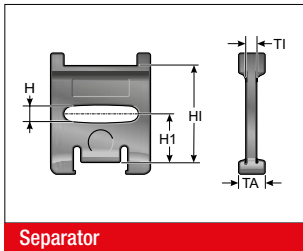
KA 14 / 15 CHAIN BRACKET U-PART



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 |
|---------------------|--------------|----------|--------------|-------|------|------|-------|--------|---------------|
| | | | A mm | E mm | F mm | G mm | G1 mm | Ø H 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 |

TR 14 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 | HI mm |
|-------|--------------|-------------|---------|-------|-------|-------|
| TR 14 | 014000009200 | Separator | movable | 1.5 | 6.0 | 14.0 |

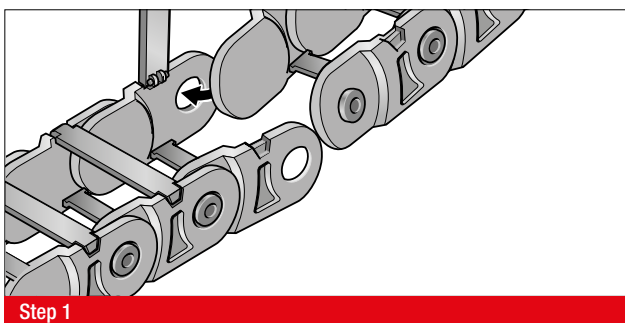
GUIDE CHANNEL VAW (ALUMINIUM)



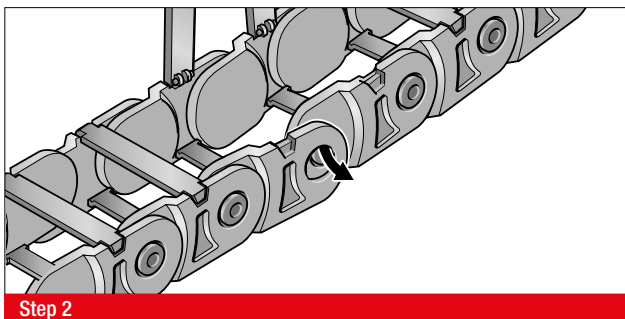
VAW aluminium

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.

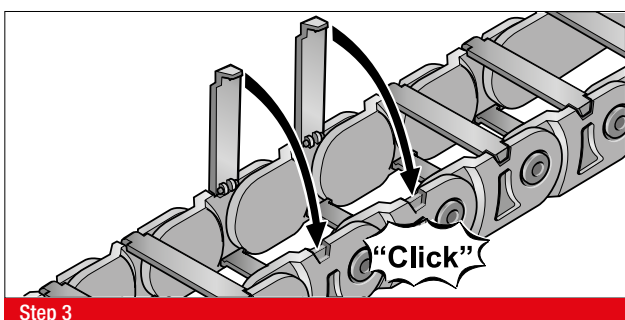
ASSEMBLY



Step 1

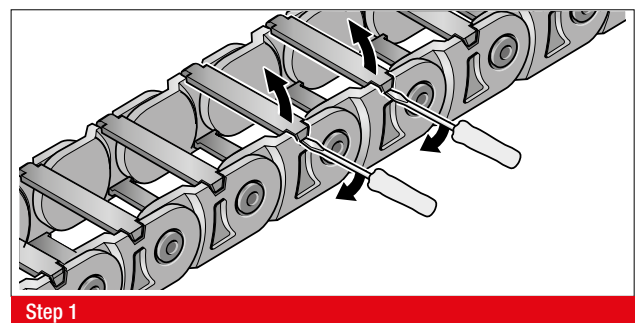


Step 2

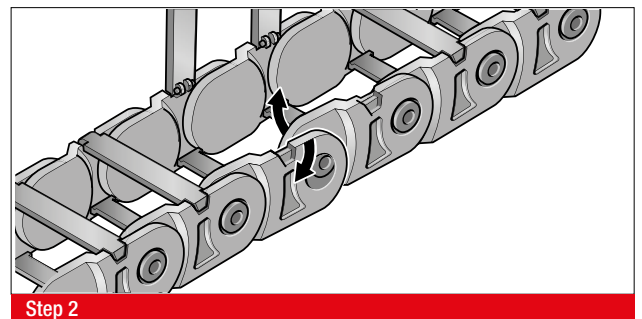


Step 3

DISASSEMBLY



Step 1

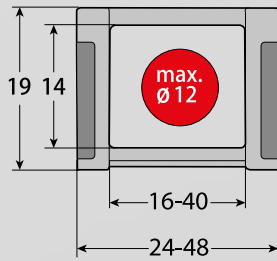


Step 2

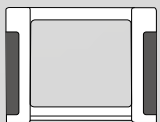
MP 15 OPEN



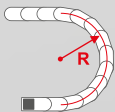
- LOW-COST VARIANT
- COMPACT DESIGN (NON-OPENING)
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED
- NON-OPENING



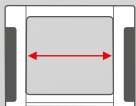
TECHNICAL DATA



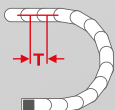
Loading side
Non-opening



Available radii
25.0 – 75.0 mm



Available interior widths
With plastic crossbar
16.0 – 40.0 mm



Pitch
T = 26.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|------------------------|
| Travel distance gliding L_g max. | 12.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 81 |
| 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 ² |
| Acceleration self-supporting a_f max. | 2.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

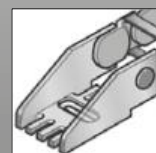


MATERIAL CHARACTERISTICS

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

Other material characteristics on request.

CHAIN BRACKET



Chain bracket U-part

GUIDE CHANNELS

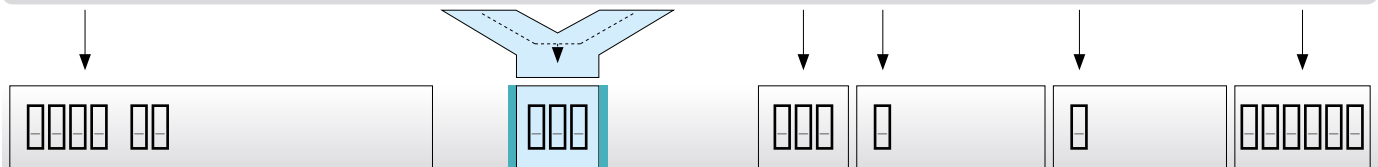


VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

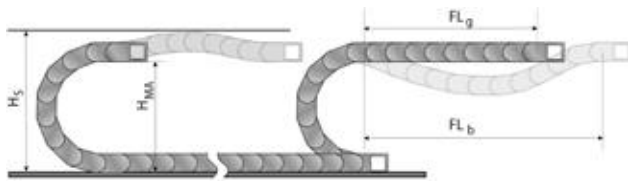
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|----------------------|-------------------------------------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



ORDERING EXAMPLE: 0150 34 016 025 0 0 1092

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

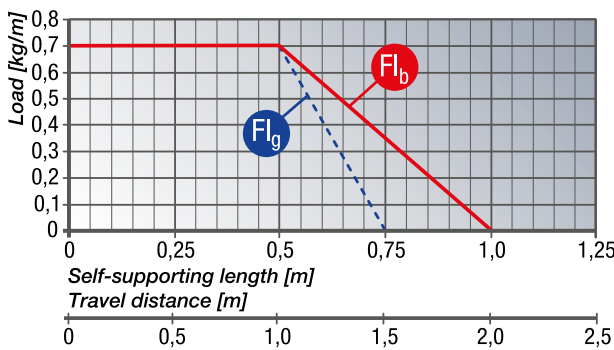
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

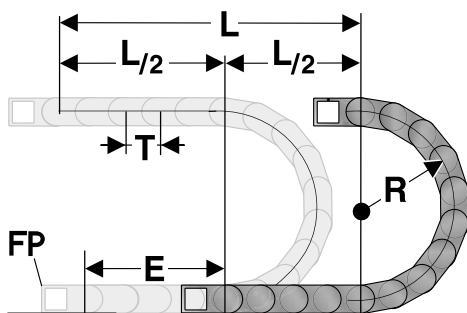
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

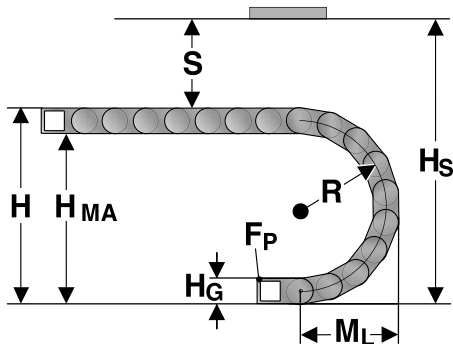


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
 1 m chain = 39 links, 26.0 mm each

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

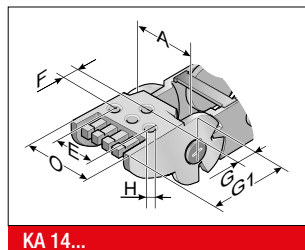
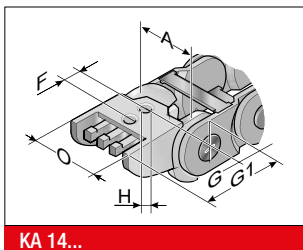
INSTALLATION DIMENSIONS



The moving end chain bracket 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.

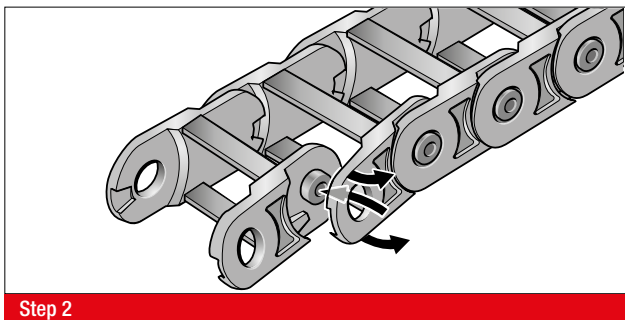
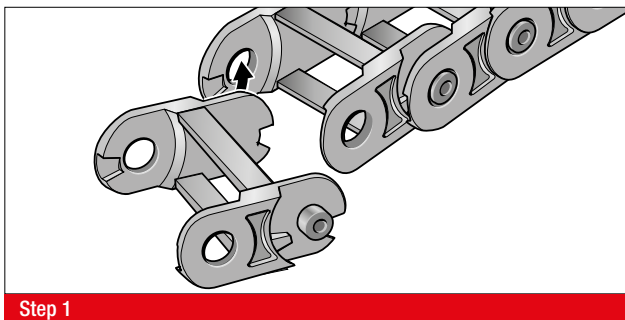
| Type | Order No. | Material | Inside width | | | | | | Outside width | |
|---------------------|--------------|----------|--------------|-------|------|------|-------|--------|---------------|--|
| | | | A mm | E mm | F mm | G mm | G1 mm | Ø H mm | KA O mm | |
| KA 14016 Female end | 014000005000 | 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)

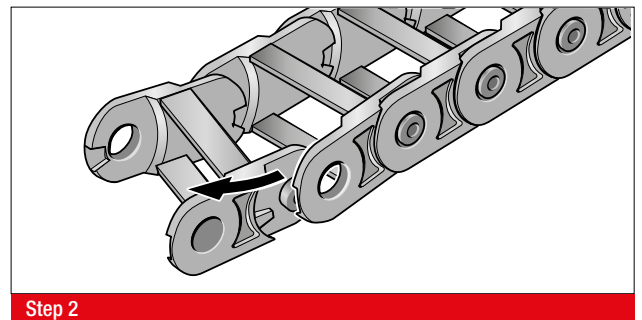
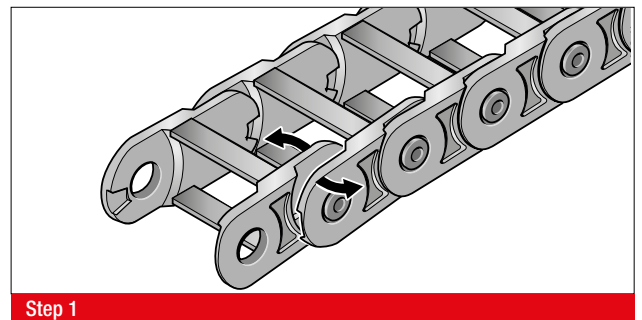


A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY



DISASSEMBLY



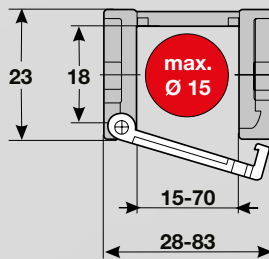
MP 18.1
OPEN



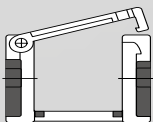
MP 18.2
OPEN



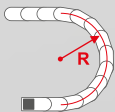
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED



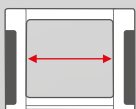
TECHNICAL DATA



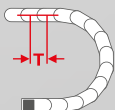
Loading side
Inside or outside bend



Available radii
28.0 – 78.0 mm



Available interior widths
With plastic crossbar
15.0 – 70.0 mm



Pitch
T = 33.0 mm





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|------------------------|
| Travel distance gliding L_g max. | 20.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 87 |
| Travel distance vertical hanging L_{vh} max. | 8.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 5.0 m/s ² |

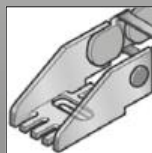
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 characteristics on request.

CHAIN BRACKET



Chain bracket U-part

SHELVING SYSTEM



Separator TR

GUIDE CHANNELS

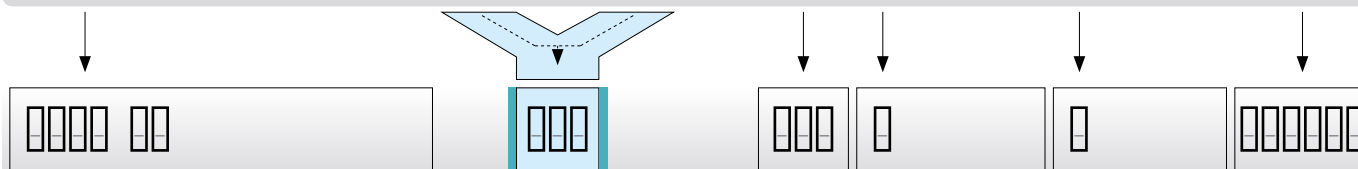


VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|----------------------------------------------------------------------------------------------|-----------------------------|---------------|--------------|---------------|---------------|---------------------------------|---------------------------------|--------------|-----------------------|---------------------------------------------------------------------------------------------|---------------|---------------|--|--|---------------|--|----------------------------|--|---------------|---------------|---------------|---------------|--|--|---------------|---------------|-----------------------|--|---------------|--|---------------------------|--|--|--|---------------|---------------|--------------------------------|--|---------------|--|-----------------------|--|--|--|--|--|
| 0181 01 ¹⁾ | MP 18.1 open Crossbar on outside bend Crossbar on inside bend Opens on outside bend | 015 ³⁾ [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 ²⁾ | 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 ESD (PA/light grey) | | | | | |
| 0182 02 ²⁾ | 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 ESD (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 ESD (PA/light grey) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

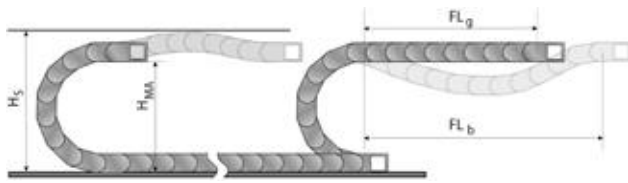


ORDERING EXAMPLE: 0181 01 015 028 0 0 1122

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

¹⁾ for type 0181 only
²⁾ for type 0182 only
³⁾ max. line diameter 13 mm

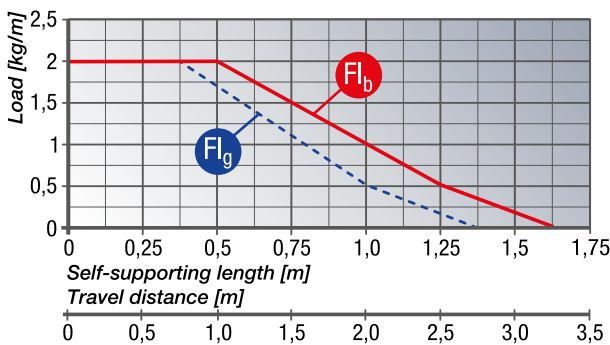
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

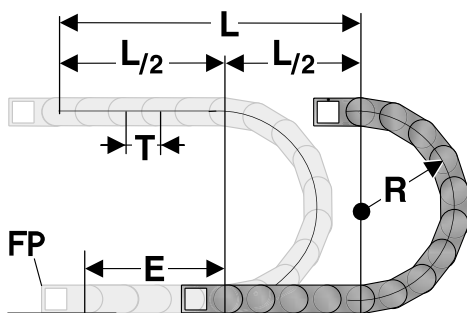
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

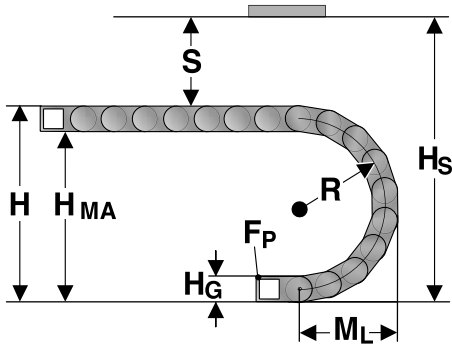


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
 1 m chain = 30 links, 33.0 mm each

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

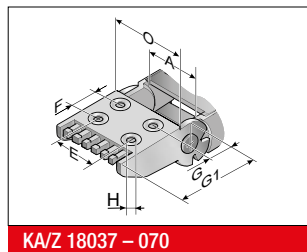
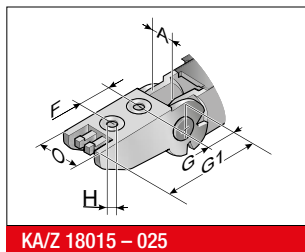
INSTALLATION DIMENSIONS



The moving end chain bracket 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 |

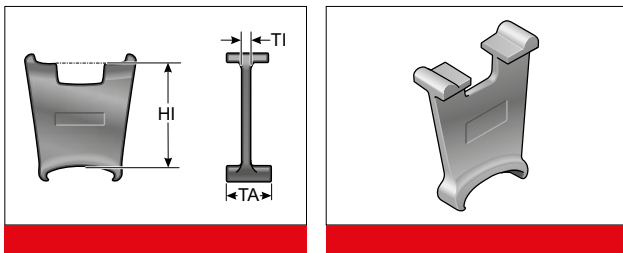
KA 18.1 / 18.2 CHAIN BRACKET U-PART



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 KA O mm |
|-----------------------|--------------|----------|--------------|---------|---------|---------|----------|-----------|--------|-----------------------------|
| | | | A mm | E mm | F mm | G mm | G1 mm | Ø H 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 | |

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 | TA mm | HI mm |
|----------|--------------|-------------|-------|-------|-------|
| TR 14/18 | 018200009000 | Separator | 1.4 | 7.4 | 18.0 |

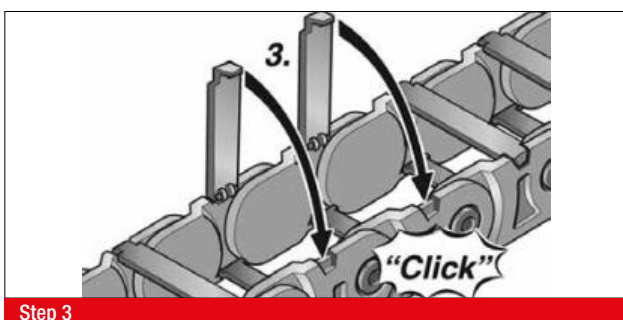
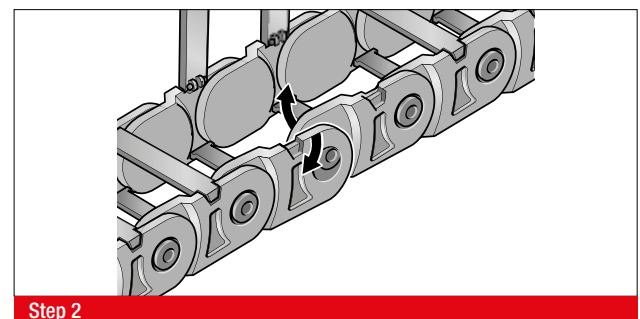
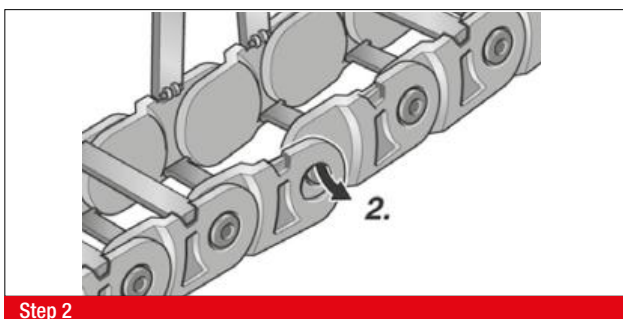
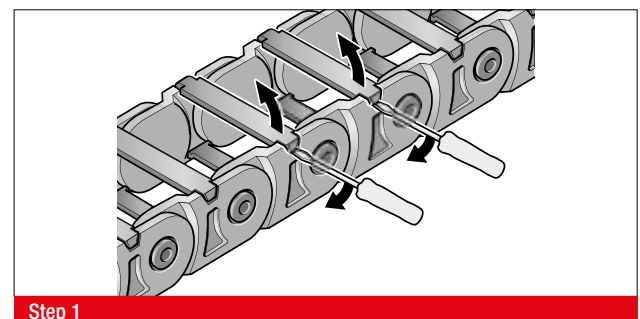
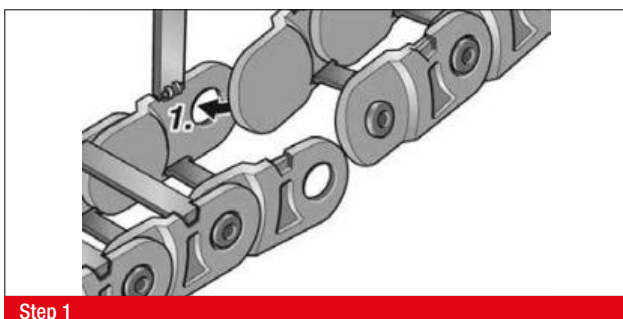
GUIDE CHANNEL VAW (ALUMINIUM)



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

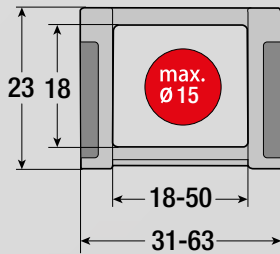
DISASSEMBLY



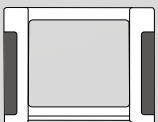
MP 18.4 OPEN



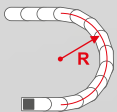
- HIGH STABILITY
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- VERY FLEXIBLE, HIGH TORSION
- NON-OPENING



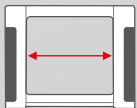
TECHNICAL DATA



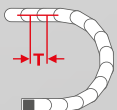
Loading side
Non-opening



Available radii
40.0 – 80.0 mm

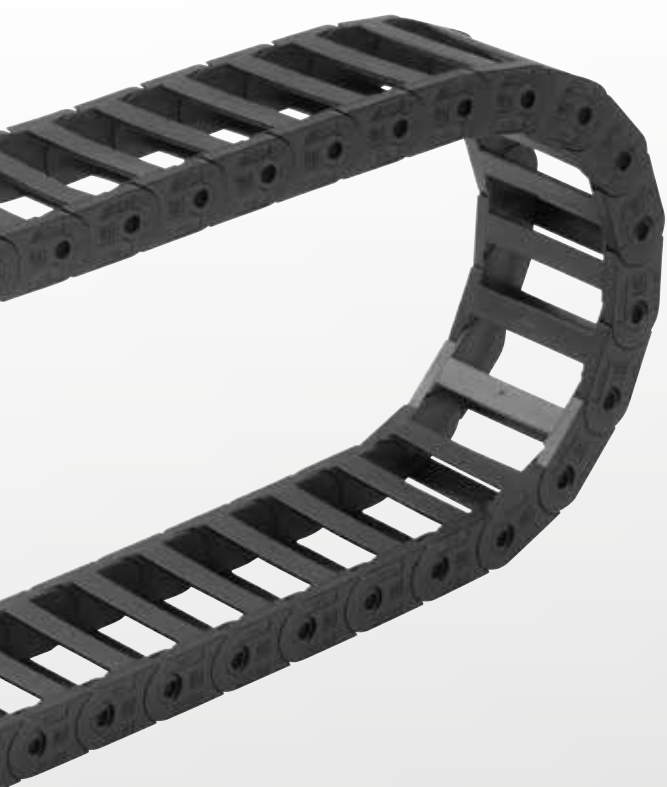


Available interior widths
With plastic crossbar
18.0 – 50.0 mm



Pitch
T = 30.0 mm





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|------------------------|
| Travel distance gliding L_g max. | 20.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 93 |
| Travel distance vertical hanging L_{vh} max. | 8.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 5.0 m/s ² |

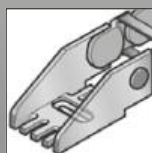
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 |

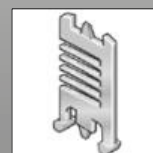
Other material characteristics on request.

CHAIN BRACKET



Chain bracket U-part

SHELVING SYSTEM



Separator TR

GUIDE CHANNELS

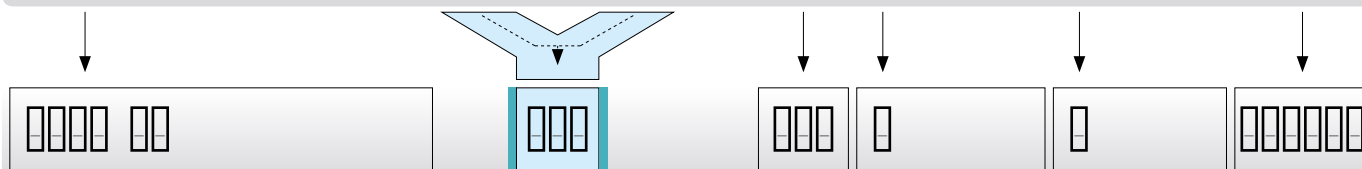


VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|-----------------------------------|----------------------------------------|----------------------------------------|--------------|
| 0184 34 | Crossbar on outside bend Crossbar on inside bend Non-opening | 018 [0.71] | 031 [1.22] | | | 040¹⁾ [1.57] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 025 [0.98] | 038 [1.50] | | | | | | |
| | | 037 [1.46] | 050 [1.97] | | | 050²⁾ [1.97] | | | |
| | | 050 [1.97] | 063 [2.48] | | | | | | |
| | | | | | | 080³⁾ [3.15] | | | |
| | | | | | | | | | |

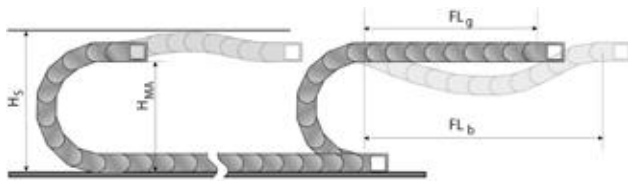


ORDERING EXAMPLE: 0184 34 025 050 0 0 1020

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

¹⁾ Only for inner width of 18, 25, 37 mm
²⁾ Only for inner width of 18 mm
³⁾ Only for inner width 25, 50 mm

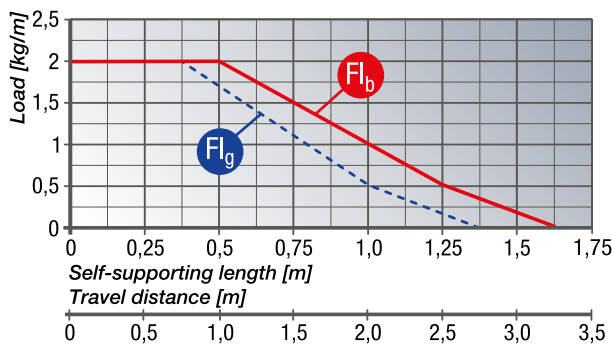
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

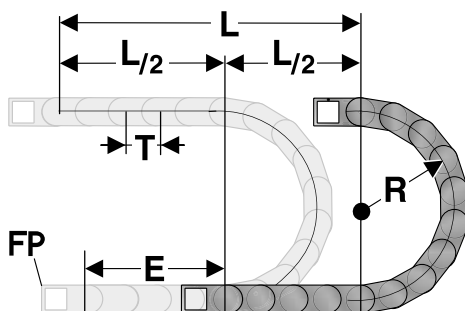
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

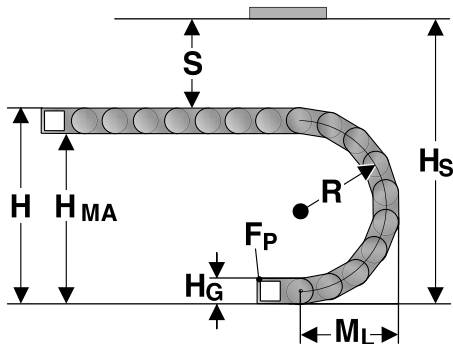


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
1 m chain = 33 links, 30.0 mm each

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

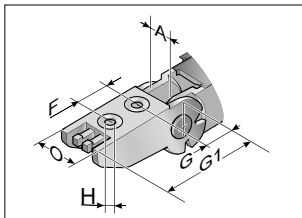
INSTALLATION DIMENSIONS



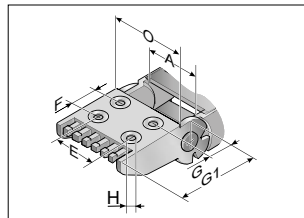
The moving end chain bracket is to be screw fixed at height H_{MA} for the respective radius.
For the installed dimension the “Installed height H_S ” value has to be taken into account.

| 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) | 82 | 92 | 122 |

KA 18.4 CHAIN BRACKET U-PART



KA/Z 18015 – 025

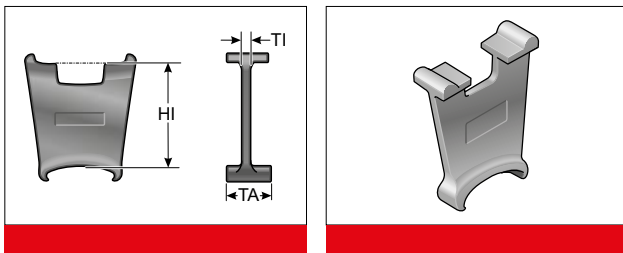


KA/Z 18037 – 070

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 | | | | | Ø H mm | Outside width KA 0 mm |
|------------------------|--------------|----------|--------------|--------|------|------|-------|--------|-----------------------|
| | | | A mm | E mm | F mm | G mm | G1 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 | TA mm | HI mm |
|----------|--------------|-------------|-------|-------|-------|
| TR 14/18 | 018200009000 | Separator | 1.4 | 7.4 | 18.0 |

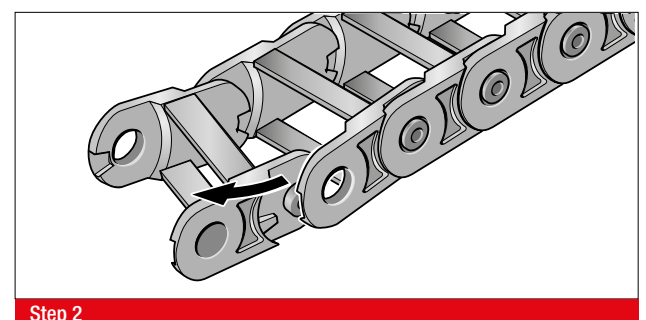
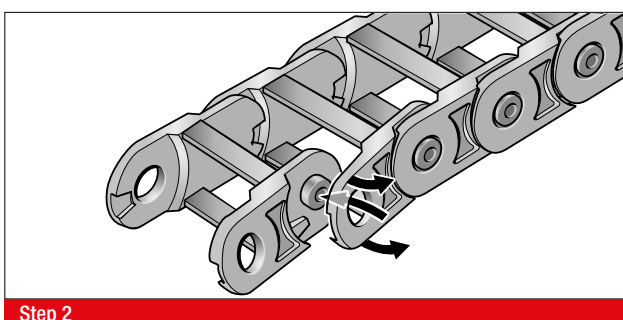
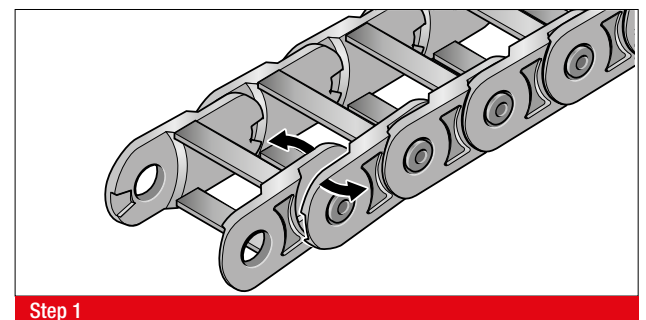
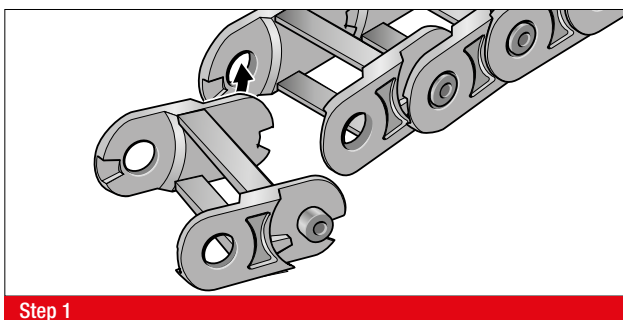
GUIDE CHANNEL VAW (ALUMINIUM)



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

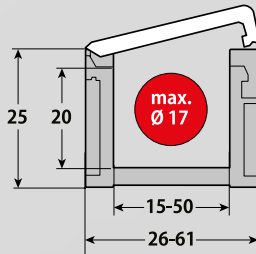
DISASSEMBLY



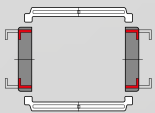
MP 20 OPEN



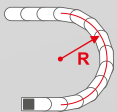
- LOW-COST VARIANT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CROSSBAR WITH INTEGRAL HINGE



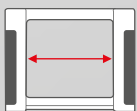
TECHNICAL DATA



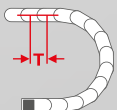
Loading side
Inside bend



Available radii
38.0 – 125.0 mm



Available interior widths
With plastic crossbar
15.0 – 50.0 mm



Pitch
T = 35.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|------------------------|
| Travel distance gliding L_g max. | not recommended |
| Travel distance self-supporting L_f max. | see diagram on page 99 |
| Travel distance vertical hanging L_{vh} max. | 8.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} max. | 0.5 m |
| Speed, self-supporting V_f max. | 10.0 m/s |
| Acceleration self-supporting a_f max. | 10.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

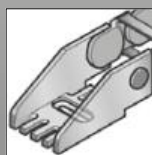


MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 |

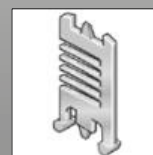
Other material characteristics on request.

CHAIN BRACKET



Chain bracket U-part

SHELVING SYSTEM



Separator TR

GUIDE CHANNELS

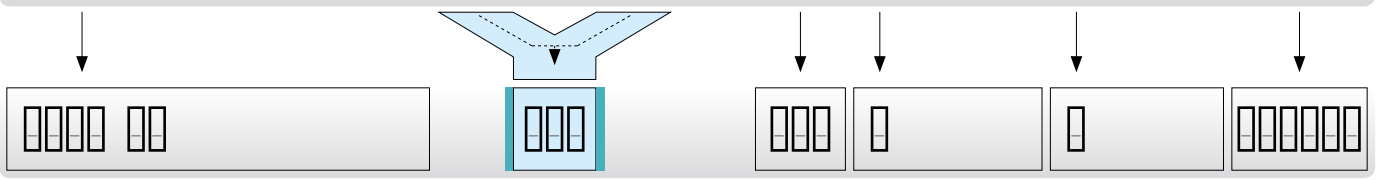


VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|-----------------------------------------------------------------------------|-----------------------------------|----------------------|--------------|---------------|----------------------|----------------------------------------|----------------------------------------|--------------|
| 0202 02 | Crossbar on outside bend Crossbar on inside bend Opens on inside bend | 015¹⁾ [0.59] | 026 [1.02] | | | 038 [1.50] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 025 [0.98] | 036 [1.42] | | | | | | |
| | | 038 [1.50] | 049 [1.93] | | | 048 [1.89] | | | |
| | | 050 [1.97] | 061 [2.40] | | | | | | |
| | | | | | | 075 [2.95] | | | |
| | | | | | | | | | |
| | | | | | | 100 [3.94] | | | |
| | | | | | | | | | |
| | | | | | | 125 [4.92] | | | |
| | | | | | | | | | |

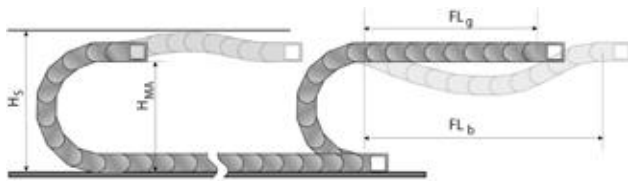


ORDERING EXAMPLE: 0202 02 025 048 0 0 770

Crossbar in inside and outside bend; to be opened from outside bend
 Inside width 25 mm; radius 48 mm
 Full-ridged with bias, material black-coloured polyamide
 Chain length 770 mm (22 links)

¹⁾ max. line diameter 13 mm

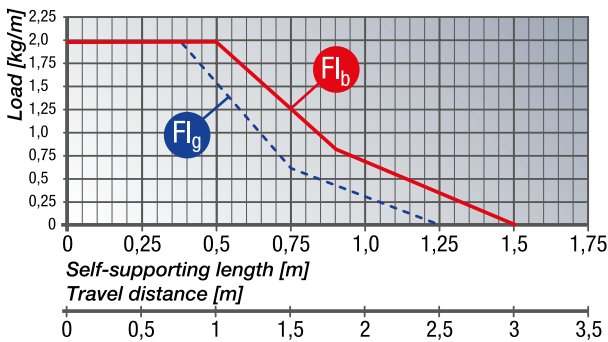
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

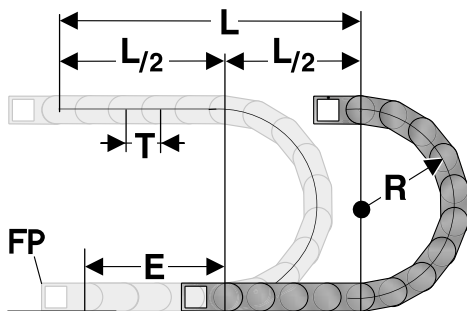
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

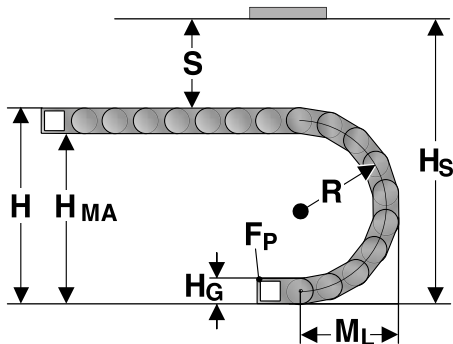


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
1 m chain = 29 links, 35.0 mm each

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

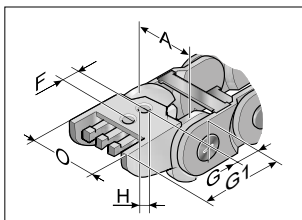
INSTALLATION DIMENSIONS



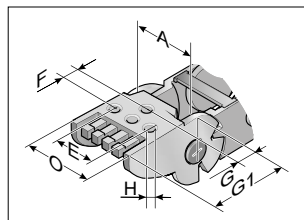
The moving end chain bracket is to be screw fixed at height H_{MA} for the respective radius.
For the installed dimension the "Installed height H_S " value has to be taken into account.

| 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



KA 20015 – 20025

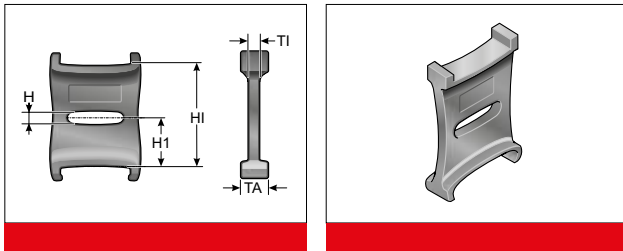


KA 20038 – 20050

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 | |
|---------------------|--------------|----------|--------------|--------|------|------|-------|--------|---------------|--|
| | | | A mm | E mm | F mm | G mm | G1 mm | Ø H mm | KA O 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 | movable | 1.6 | 8.0 | 2.5 | 10.0 | 10.0 |

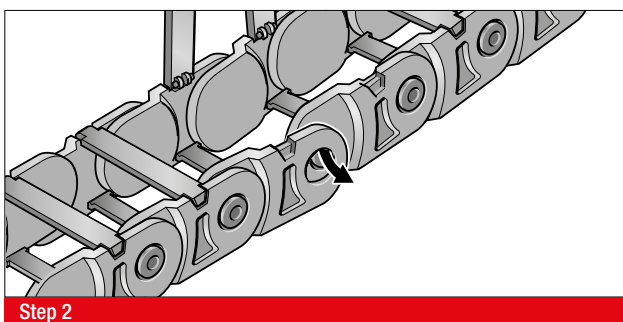
GUIDE CHANNEL VAW (ALUMINIUM)



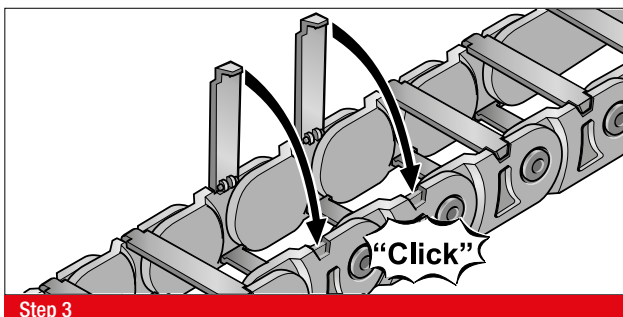
VAW aluminium

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

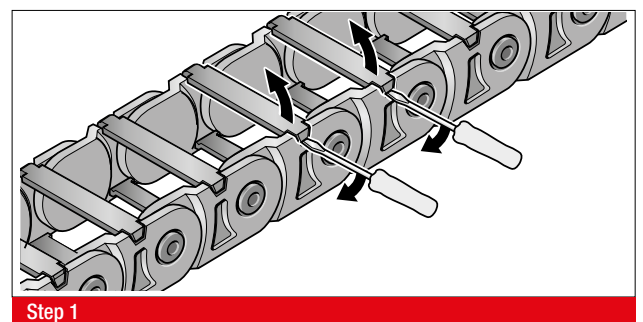


Step 2

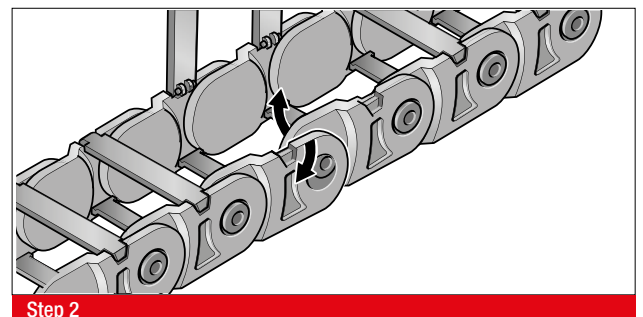


Step 3

DISASSEMBLY



Step 1

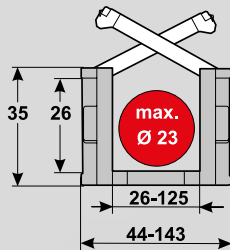


Step 2

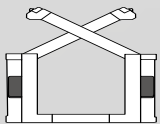
MP 3000 OPEN



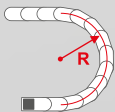
- LOW-COST VARIANT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF



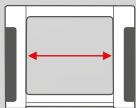
TECHNICAL DATA



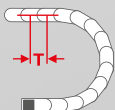
Loading side
Inside bend



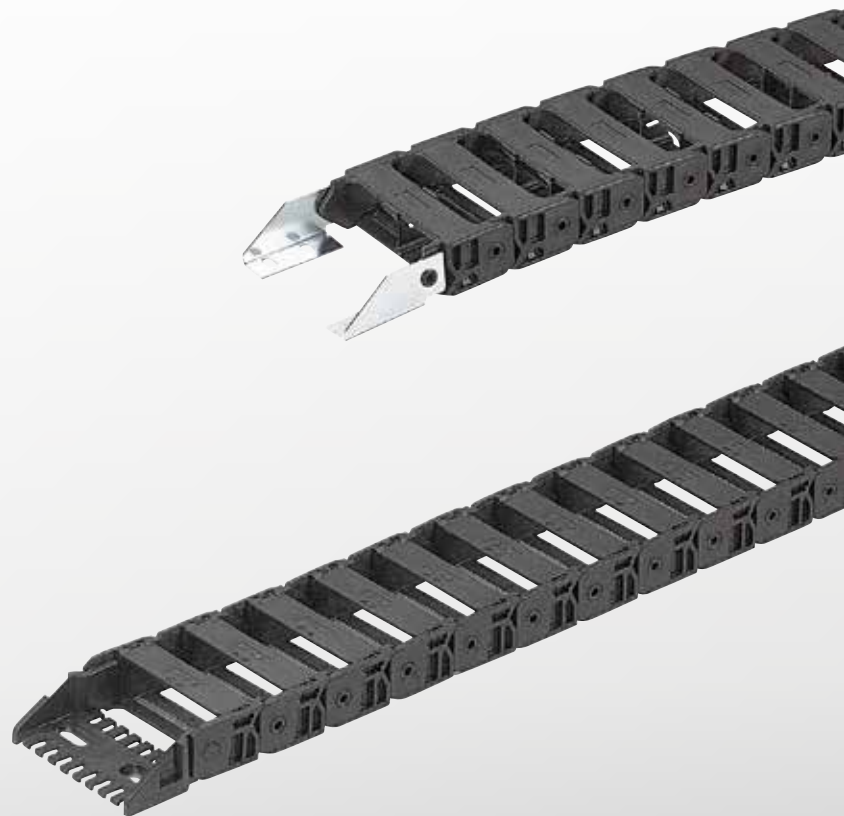
Available radii
50.0 – 300.0 mm



Available interior widths
With plastic crossbar
26.0 – 125.0 mm



Pitch
T = 45.0 mm





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 60.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 105 |
| Travel distance vertical hanging L_{vh} max. | 40.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 15.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

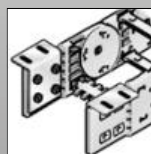
MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 |

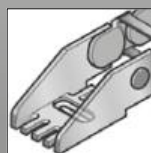
Other material characteristics on request.

SHELVING SYSTEM

CHAIN BRACKET



Chain bracket angle



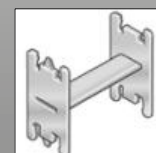
Chain bracket U-part



Separator TR



RS shelving system



H-shaped shelf unit (RE)

GUIDE CHANNELS



VAW galvanised steel / stainless steel



VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

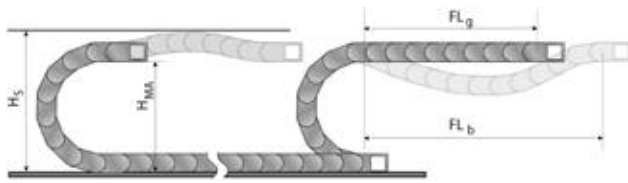
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|-----------------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|-----------------------|---------------------------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



ORDERING EXAMPLE: 0300 02 026 050 0 0 1215

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

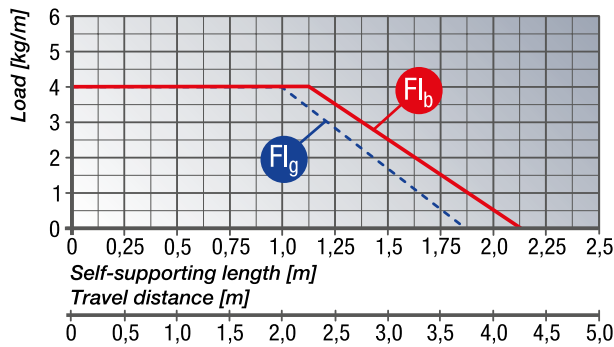
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

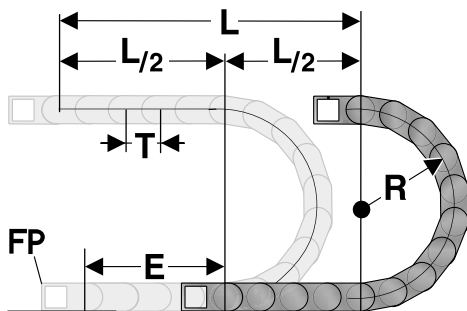
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

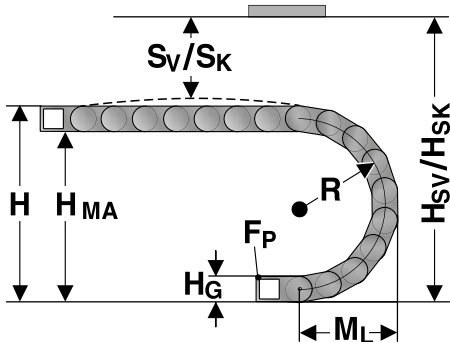


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
 1 m chain = 22 links, 45.0 mm each

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

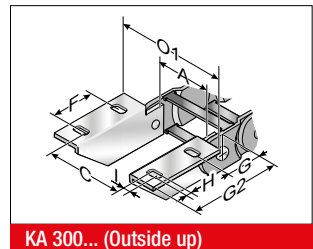
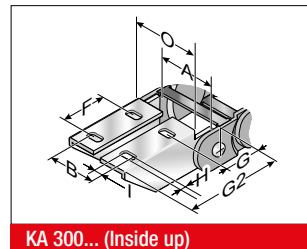
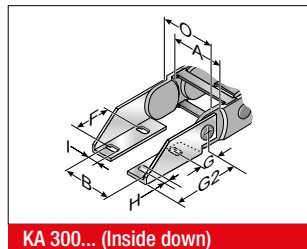
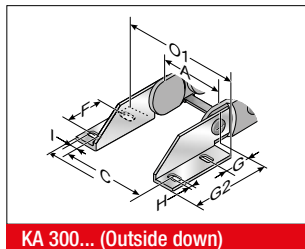
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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

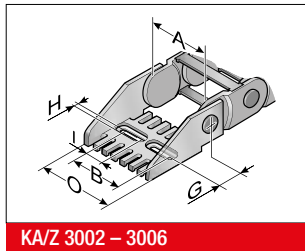
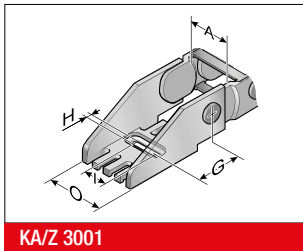


The chain bracket can be supplied either in galvanised sheet steel or stainless steel. To secure an energy chain, you will need two angle brackets (left and right) with drilled holes and two

angle brackets (left and right) with bolts. The order numbers given below each comprise a left and right angle bracket.

| Type | Order No. | Material | Inside width | | | | | | | | Outside width | |
|--------------------|------------|------------------------|--------------|-------|--------|------|------|-------|--------|------|---------------|----------|
| | | | A mm | B mm | C mm | F mm | G mm | G2 mm | Ø H mm | I mm | KA 0 mm | KA 01 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 | 58.0 | 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 | 58.0 | 6.5 | 4.5 | A+9.0 | A+40.0 |

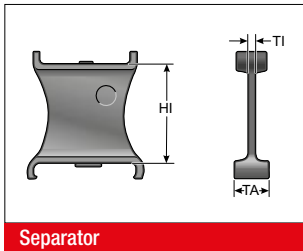
KA 3000 CHAIN BRACKET U-PART



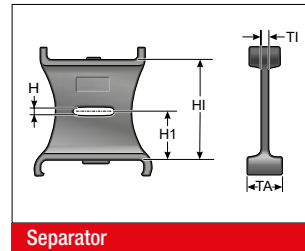
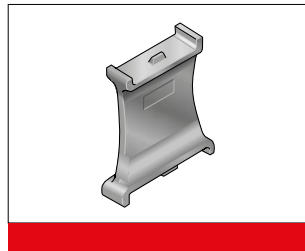
The chain bracket, type KA/Z 3001 – 3006, is a plastic part with extrusion-coated metal insert. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened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

| Type | Order No. | Material | Inside width | | | | | | Outside width |
|------------------------|-------------|---------------------------|--------------|---------|---------|----------|-----------|---------|---------------|
| | | | A mm | B mm | G mm | G1 mm | Ø H mm | I mm | KA O mm |
| KA/Z 3001 Female end | 03000008000 | Plastic with metal insert | 26.0 | | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3001 Male end | 03000008100 | Plastic with metal insert | 26.0 | | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3002 Female end | 03000008200 | Plastic with metal insert | 37.0 | A-7.0 | 31.5 | 57.0 | 6.5 | 7.5 | A+18.0 |
| KA/Z 3002 Male end | 03000008300 | Plastic with metal insert | 37.0 | A-7.0 | 31.5 | 57.0 | 6.5 | 7.5 | A+18.0 |
| KA/Z 3002.5 Female end | 03000007600 | Plastic with metal insert | 56.0 | A-8.0 | 31.5 | 57.0 | 6.5 | 7.5 | A+18.0 |
| KA/Z 3002.5 Male end | 03000007700 | Plastic with metal insert | 56.0 | A-8.0 | 31.5 | 57.0 | 6.5 | 7.5 | A+18.0 |
| KA/Z 3003 Female end | 03000008400 | Plastic with metal insert | 62.0 | A-7.0 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3003 Male end | 03000008500 | Plastic with metal insert | 62.0 | A-7.0 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3003.5 Female end | 03000007800 | Plastic with metal insert | 76.0 | A-8.0 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3003.5 Male end | 03000007900 | Plastic with metal insert | 76.0 | A-8.0 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3004 Female end | 03000008600 | Plastic with metal insert | 87.0 | A-7.0 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3004 Male end | 03000008700 | Plastic with metal insert | 87.0 | A-7.0 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3005 Female end | 03000008800 | Plastic with metal insert | 101.0 | A-7.0 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3005 Male end | 03000008900 | Plastic with metal insert | 101.0 | A-7.0 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3006 Female end | 03000009300 | Plastic with metal insert | 125.0 | A-6.5 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |
| KA/Z 3006 Male end | 03000009400 | Plastic with metal insert | 125.0 | A-6.5 | 31.5 | 57.0 | 6.5 | 18.5 | A+18.0 |

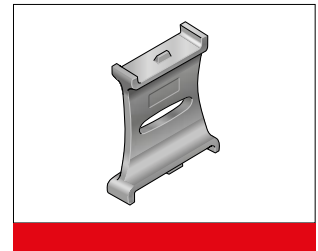
TR 3000 SEPARATOR



Separator



Separator

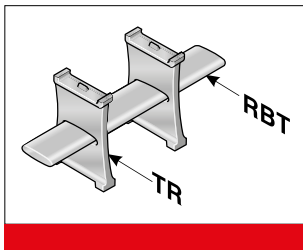


We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

The lockable (unmovable) separator must be used for energy chains that need to be side mounted.

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | HI mm |
|---------|--------------|-------------------|----------|-------|-------|------|-------|-------|-------|
| TR 3000 | 030000009000 | Separator | movable | 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 |

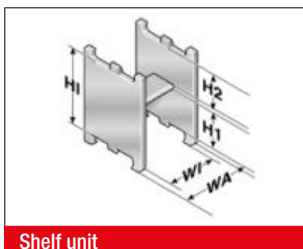
MP 3000 SHELVING SYSTEM



In connection with at least two separators the shelf becomes a shelving system. The additional levels prevent the cables from twisting 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



Shelf unit

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

| Type | Order No. | Description | WA mm | W1 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 26/51 | 100000265110 | H-shaped shelf unit | 53.5 | 48.5 | 13.7 | 9.6 | 26.0 |

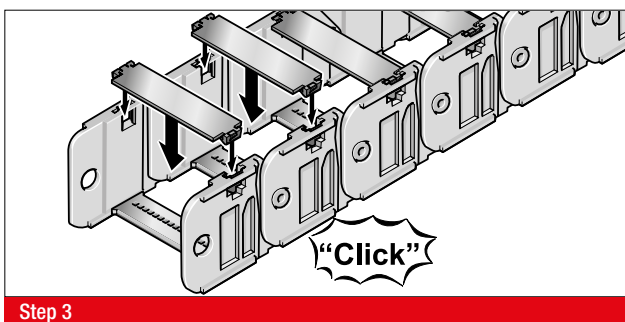
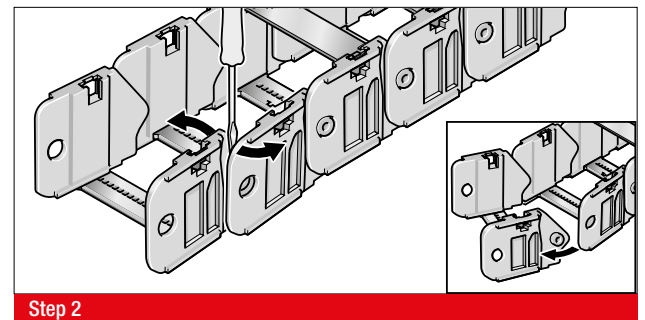
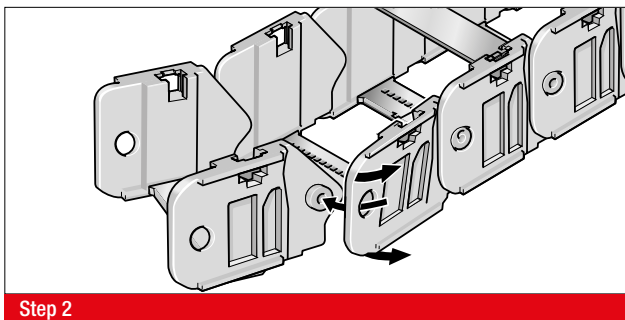
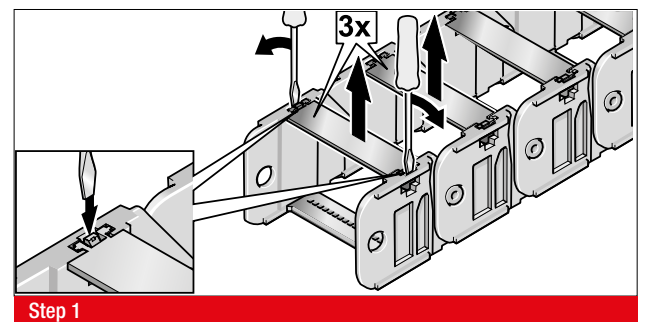
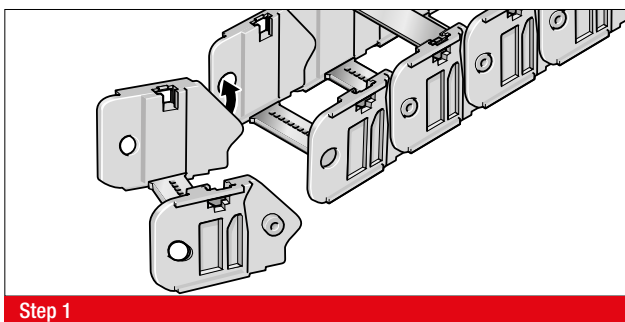
GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



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

DISASSEMBLY

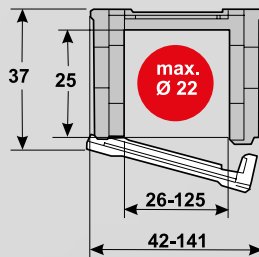


MP 25G

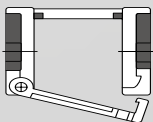
CLOSED



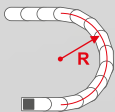
- CLOSED VARIANTS, STARTING WITH R60
- COMPACT DESIGN



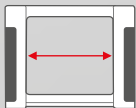
TECHNICAL DATA



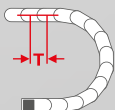
Loading side
Outside bend



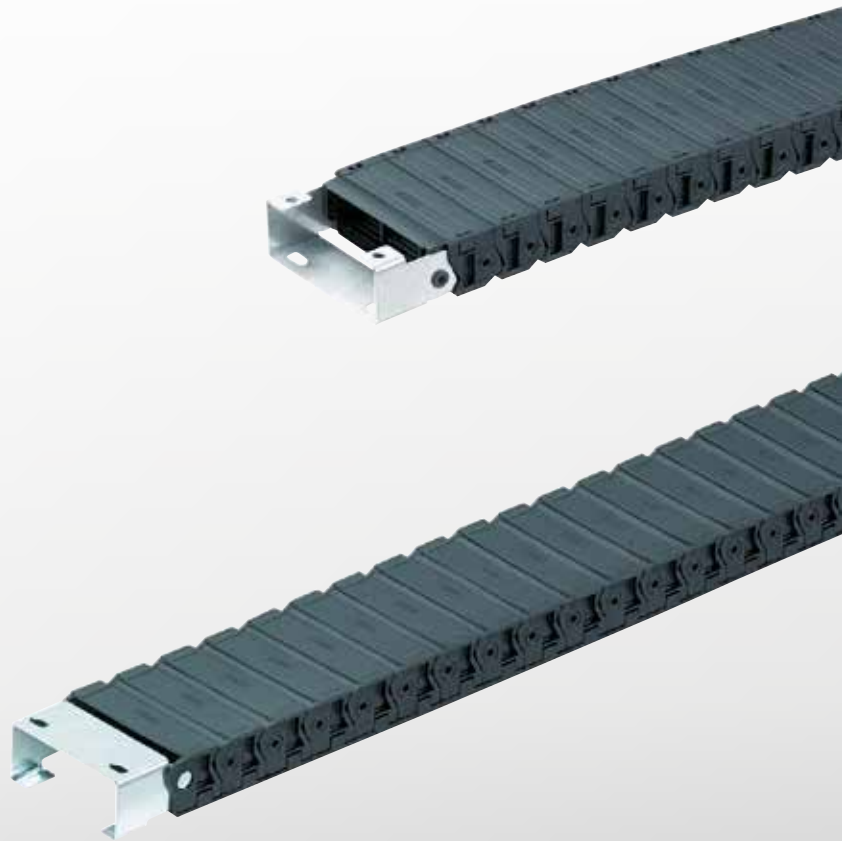
Available radii
60.0 – 250.0 mm



Available interior widths
With plastic crossbar
26.0 – 125.0 mm



Pitch
T = 30.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 40.0 m |
| Travel distance self-supporting L_r max. | see diagram on page 113 |
| Travel distance vertical hanging L_{vh} max. | 25.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90r} 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 ² |
| Acceleration self-supporting a_r max. | 15.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de



MATERIAL CHARACTERISTICS

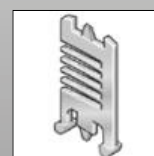
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | According to 94 HB |

Other material characteristics on request.

SHELVING SYSTEM

GUIDE CHANNELS

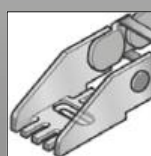
CHAIN BRACKET



Separator TR



VAW galvanised steel
/ stainless steel



Chain bracket U-part



RS shelving system



VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

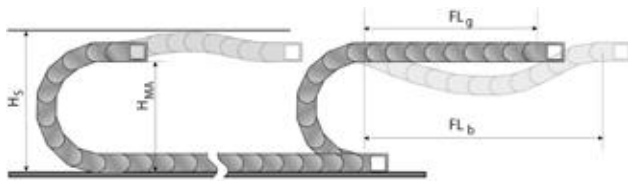
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|------------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|----------------------|---------------------------------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



ORDERING EXAMPLE: 0250 03 026 060 0 0 1230

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

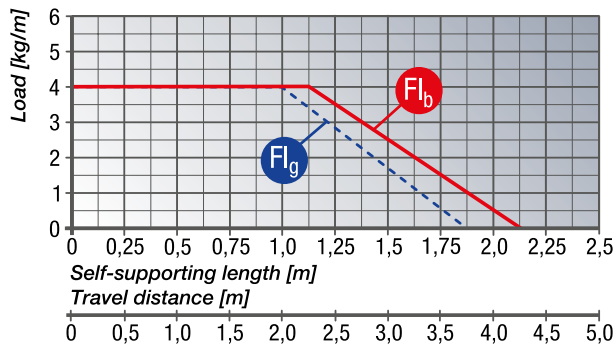
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

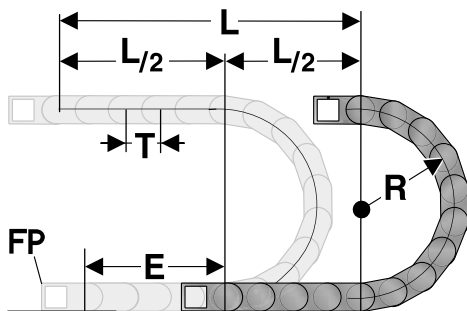
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

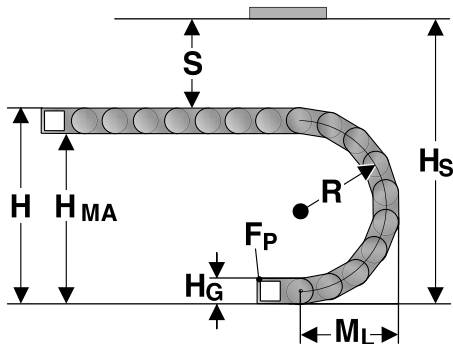


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
 1 m chain = 33 links, 30.0 mm each

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

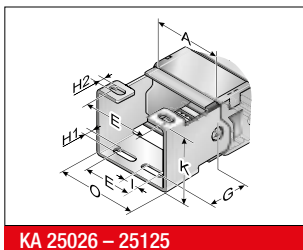
INSTALLATION DIMENSIONS



The moving end chain bracket 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



KA 25026 – 25125

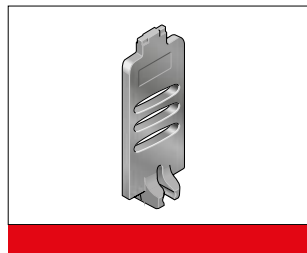
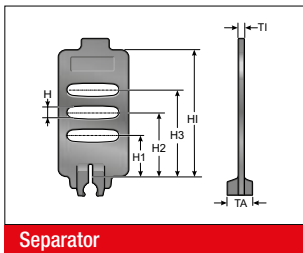
The chain bracket can be supplied either in galvanised sheet steel or stainless steel. To secure one energy chain, you will need a bracket with a drilled hole and a bracket with a bolt.

| Type | Order No. | Material | Inside width | | | | | | | Outside width 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 |
|-----------------------|--------------|------------------------|--------------|--------|------|-------|-------|------|------|---------|---------------|
| | | | A mm | E mm | G mm | H1 mm | H2 mm | I mm | K mm | KA 0 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 | |

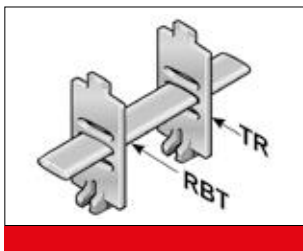
TR 25G SEPARATOR



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 | HI mm |
|--------|--------------|-------------|----------|-------|-------|------|-------|-------|-------|-------|
| TR 25G | 025000009200 | Separator | lockable | 2.0 | 8.0 | 2.5 | 8.3 | 12.8 | 17.3 | 25.0 |

MP 25G SHELVING SYSTEM



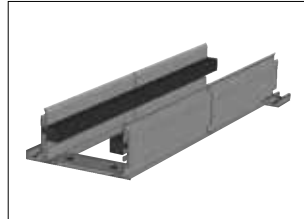
In connection with at least two separators the shelf becomes a shelving system. The additional levels prevent the cables from twisting and minimise the friction between them. The shelves are matched to the available chain widths.

| 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)



VAW steel galvanised / stainless steel

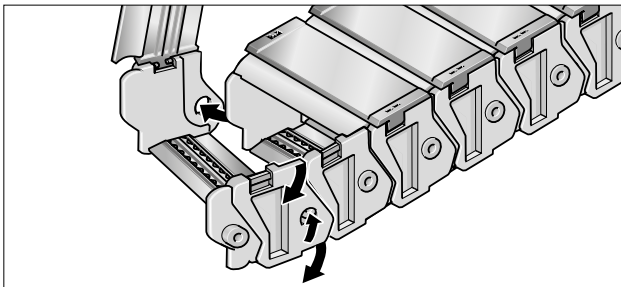


VAW aluminium

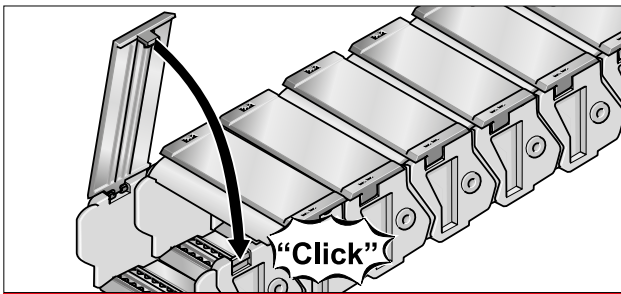
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

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

ASSEMBLY

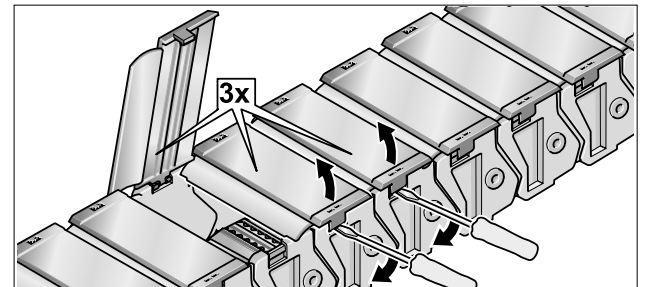


Step 1

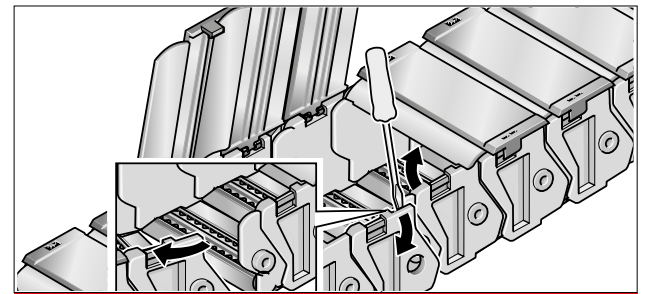


Step 2

DISASSEMBLY



Step 1



Step 2

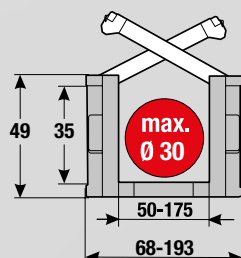
MP 35.1
OPEN



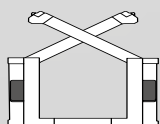
MP 35.2
OPEN



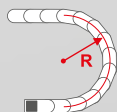
- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- SUITABLE FOR UNIVERSAL USE
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- EXTENSIVE AND EASY TO INSTALL INTERIOR PARTITIONING



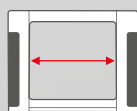
TECHNICAL DATA



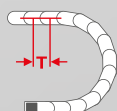
Loading side
Inside or outside bend



Available radii
63.0 – 250.0 mm



Available interior widths
With plastic crossbar
50.0 – 175.0 mm



Pitch
T = 56.0 mm



Noise damper





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 80.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 121 |
| 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 ² |
| Acceleration self-supporting a_f max. | 50.0 m/s ² |

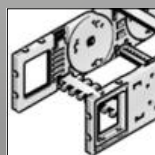
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 |

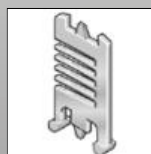
Other material characteristics on request.

CHAIN BRACKET

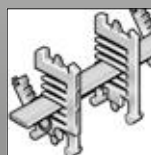


Chain bracket flexible

SHELVING SYSTEM



Separator TR

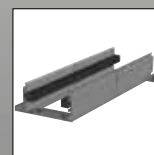


RS shelving system

GUIDE CHANNELS

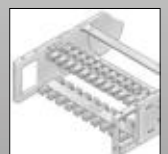


VAW galvanised steel / stainless steel



VAW aluminium

STRAIN RELIEF



RS-ZL crossbar

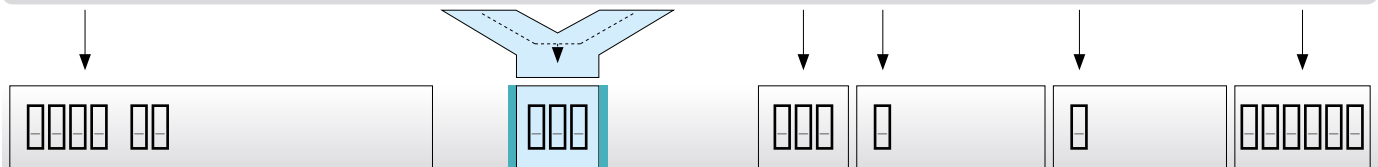


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

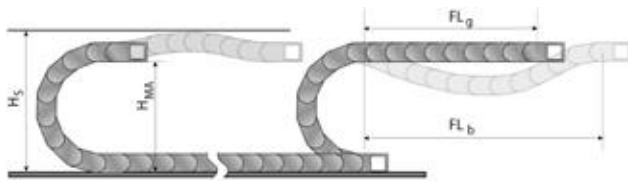
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|----------------------------------------------------------------------------------------------|---------------|---------------|--------------|---------------|---------------|------------------------------------|-------------------------------------------|--------------|---------|---------------------------------------------------------------------------------------------|---------------|---------------|--|--|---------------|------------------------------------|----------------------------------------|--|---------------|---------------|---------------|---------------|--|--|---------------|---------------|---------------|---------------|---------------|--|-----------------------|--|--------------------------------|--|---------------|---------------|---------------|---------------|--|--|---------------|---------------|--|--|---------------|--|--------------------------------|--|--|--|---------------|---------------|--|--|--|--|---------------|--|--|--|---------------|--|--|--|--|--|---------------|--|--|--|---------------|--|--|--|--|--|---------------|--|--|--|---------------|--|--|--|--|--|--|--|
| 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 [2.56] | 083 [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 [3.54] | 108 [4.25] | | | | | 100 [3.94] | 118 [4.65] | | | 100 [3.94] | | 7 ESD (PA/light grey) | | | | 125 [4.92] | 143 [5.63] | | | | | 150 [5.91] | 168 [6.61] | | | 125 [4.92] | | 9 Special version (on request) | | | | 175 [6.89] | 193 [7.60] | | | | | | | | | 150 [5.91] | | | | | | | | | | 175 [6.89] | | | | | | | | | | 200 [7.87] | | | | | | | |
| 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 [3.54] | 108 [4.25] | | | | | | | | | 100 [3.94] | 118 [4.65] | | | 100 [3.94] | | 7 ESD (PA/light grey) | | | | 125 [4.92] | 143 [5.63] | | | | | 150 [5.91] | 168 [6.61] | | | 125 [4.92] | | 9 Special version (on request) | | | | 175 [6.89] | 193 [7.60] | | | | | | | | | 150 [5.91] | | | | | | | | | | 175 [6.89] | | | | | | | | | | 200 [7.87] | | | | | | | | | | 250 [9.84] | | | | | | | | | | | |
| | | 100 [3.94] | 118 [4.65] | | | 100 [3.94] | | 7 ESD (PA/light grey) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 125 [4.92] | 143 [5.63] | | | | | | | | | 150 [5.91] | 168 [6.61] | | | 125 [4.92] | | 9 Special version (on request) | | | | 175 [6.89] | 193 [7.60] | | | | | | | | | 150 [5.91] | | | | | | | | | | 175 [6.89] | | | | | | | | | | 200 [7.87] | | | | | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 150 [5.91] | 168 [6.61] | | | 125 [4.92] | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 175 [6.89] | 193 [7.60] | | | | | | | | | | | | | 150 [5.91] | | | | | | | | | | 175 [6.89] | | | | | | | | | | 200 [7.87] | | | | | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 150 [5.91] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 175 [6.89] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 200 [7.87] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



ORDERING EXAMPLE: 0352 02 075 100 0 3 2016

Crossbar in outside bend, crossbar in inside bend, to 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 2016 mm (36 links)

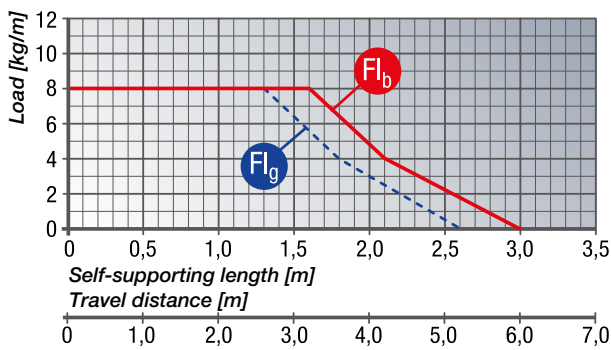
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

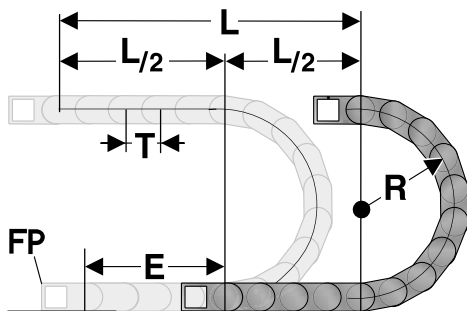
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

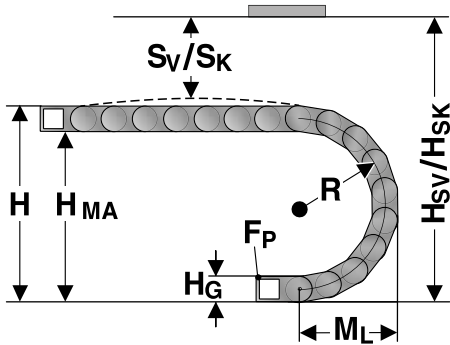


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
1 m chain = 18 links, 56.0 mm each

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

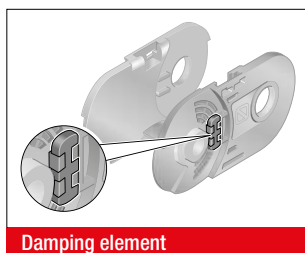
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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.

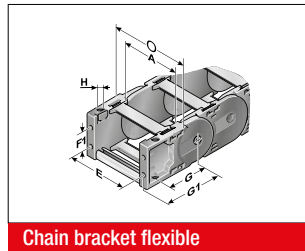
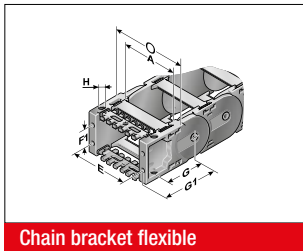
| Radius R | 63 | 75 | 100 | 125 | 150 | 175 | 200 | 250 |
|--------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Outside height of chain link (H_G) | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| Height of bend (H) | 175 | 199 | 249 | 299 | 349 | 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



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 FLEXIBLE CHAIN BRACKET



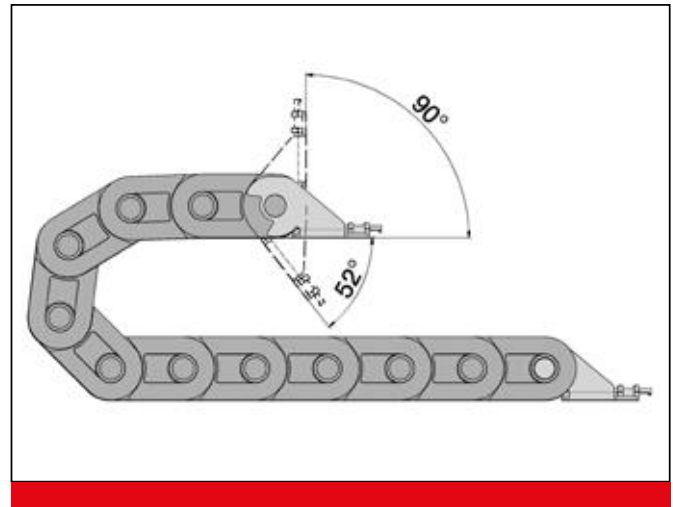
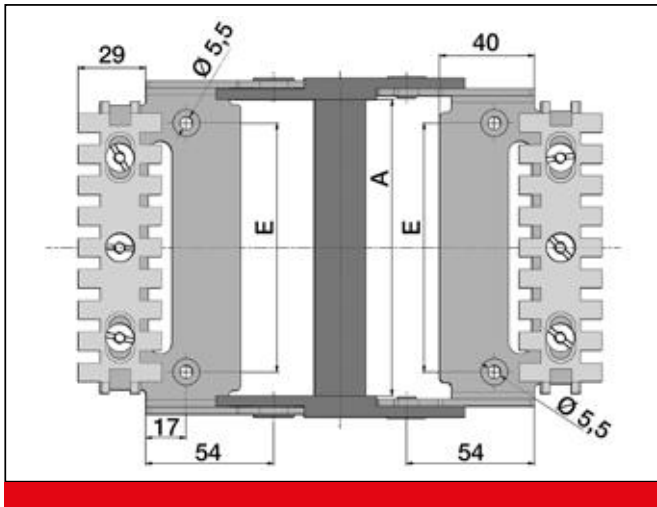
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the energy chain like a side link. This allows the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. M5 screws are used to secure the brackets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

The chain bracket can then be optionally fitted with crossbar 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 | ØH mm | KA O 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 | |

KA 35.1 CHAIN BRACKET U-PART

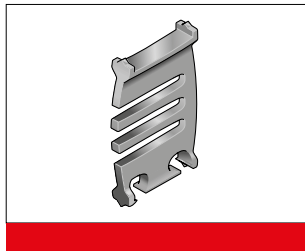
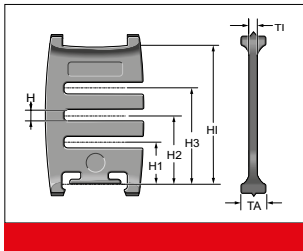


The metal chain bracket (U-part) is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Each energy chain requires one female and one male chain bracket.

The brackets should be fastened with M5 screws. To fix the cables or conduits directly in the chain bracket, use the order number including strain relief.

| Type | Order No. none Strain relief | Order No. with Strain relief | No. teeth | Material | Inside width A mm | Drilling dimension E mm |
|----------------------------------------|------------------------------------|------------------------------------|--------------|----------|-------------------------|-------------------------------|
| KA 35.1 050 U Female end, pendular, pc | 035150505000 | 0351506050 | 5 | Steel | 50 | 30 |
| KA 35.1 050 U Female end, pc | 035150005000 | 0351501050 | 5 | Steel | 50 | 30 |
| KA 35.1 050 U Male end, pc | 035160005000 | 0351601050 | 5 | Steel | 50 | 30 |
| KA 35.1 065 U Female end, pendular, pc | 035150506500 | 0351506065 | 6 | Steel | 65 | 45 |
| KA 35.1 065 U Female end, pc | 035150006500 | 0351501065 | 6 | Steel | 65 | 45 |
| KA 35.1 065 U Male end, pc | 035160006500 | 0351601065 | 6 | Steel | 65 | 45 |
| KA 35.1 075 U Female end, pendular, pc | 035150507500 | 0351506075 | 7 | Steel | 75 | 55 |
| KA 35.1 075 U Female end, pc | 035150007500 | 0351501075 | 7 | Steel | 75 | 55 |
| KA 35.1 075 U Male end, pc | 035160007500 | 0351601075 | 7 | Steel | 75 | 55 |
| KA 35.1 090 U Female end, pendular, pc | 035150509000 | 0351506090 | 8 | Steel | 90 | 70 |
| KA 35.1 090 U Female end, pc | 035150009000 | 0351501090 | 8 | Steel | 90 | 70 |
| KA 35.1 090 U Male end, pc | 035160009000 | 0351601090 | 8 | Steel | 90 | 70 |
| KA 35.1 100 U Female end, pendular, pc | 035150510000 | 0351506100 | 8 | Steel | 100 | 80 |
| KA 35.1 100 U Female end, pc | 035150010000 | 0351501100 | 8 | Steel | 100 | 80 |
| KA 35.1 100 U Male end, pc | 035160010000 | 0351601100 | 8 | Steel | 100 | 80 |
| KA 35.1 125 U Female end, pendular, pc | 035150512500 | 0351506125 | 9 | Steel | 125 | 105 |
| KA 35.1 125 U Female end, pc | 035150012500 | 0351501125 | 9 | Steel | 125 | 105 |
| KA 35.1 125 U Male end, pc | 035160012500 | 0351601125 | 9 | Steel | 125 | 105 |
| KA 35.1 150 U Female end, pendular, pc | 035150515000 | 0351506150 | 11 | Steel | 150 | 130 |
| KA 35.1 150 U Female end, pc | 035150015000 | 0351501150 | 11 | Steel | 150 | 130 |
| KA 35.1 150 U Male end, pc | 035160015000 | 0351601150 | 11 | Steel | 150 | 130 |
| KA 35.1 175 U Female end, pendular, pc | 035150517500 | 0351506175 | 13 | Steel | 175 | 155 |
| KA 35.1 175 U Female end, pc | 035150017500 | 0351501175 | 13 | Steel | 175 | 155 |
| KA 35.1 175 U Male end, pc | 035160017500 | 0351601175 | 13 | Steel | 175 | 155 |

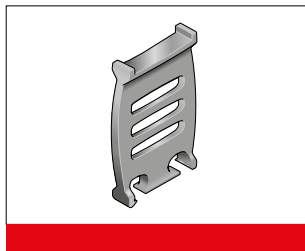
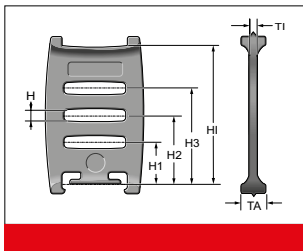
TRT 35 DIVISIBLE SEPARATOR



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 |

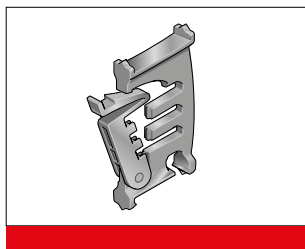
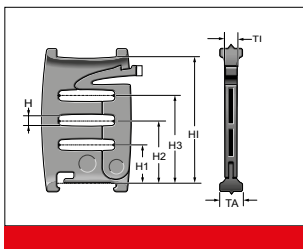
TR 35-V SEPARATOR



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

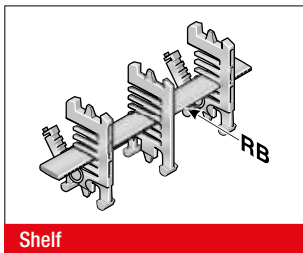
| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm |
|---------|--------------|-------------------|---------|----------|----------|---------|----------|----------|----------|----------|
| TR 35-V | 035000009300 | TR 35-V Separator | movable | 3.0 | 8.0 |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

RTT 35 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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

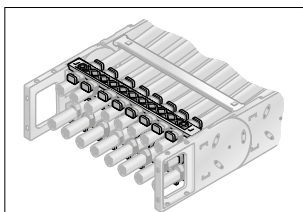
The shelf RBD creates a horizontal division over the entire inner width of the chain link. When used together with the TRT separator, an additional vertical division can be realised.

| Type | Order No. | Description | Width mm | for inner 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 | for inner 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

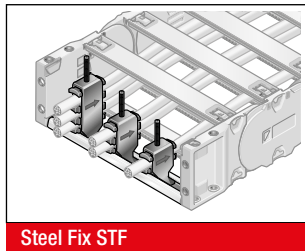
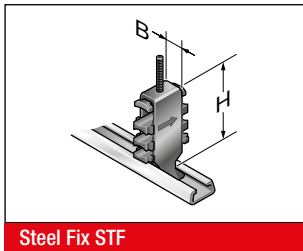


Crossbar strain relief plate

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

| Type | Order No. | Description | for inner 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 |

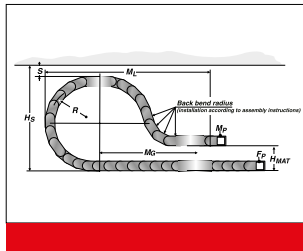
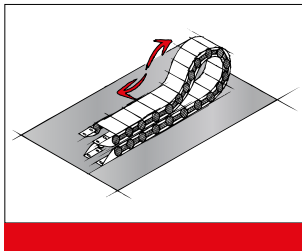
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

LOWERED FIXING POINT MP 35



Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _s) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



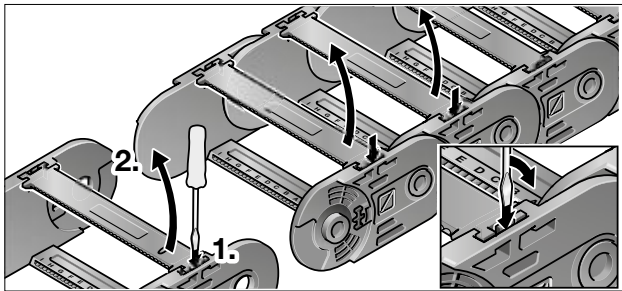
VAW aluminium

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

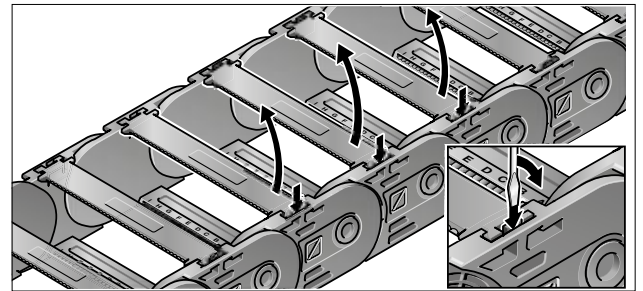
The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

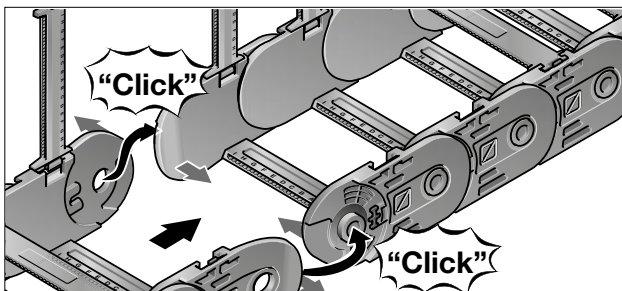
DISASSEMBLY



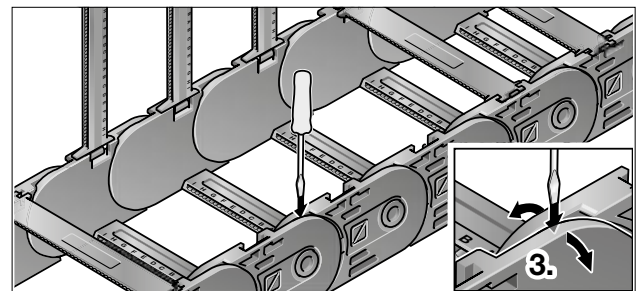
Step 1



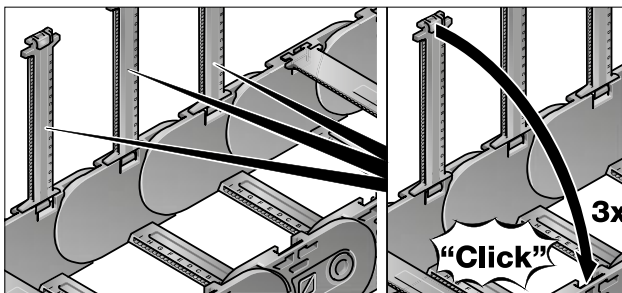
Step 1



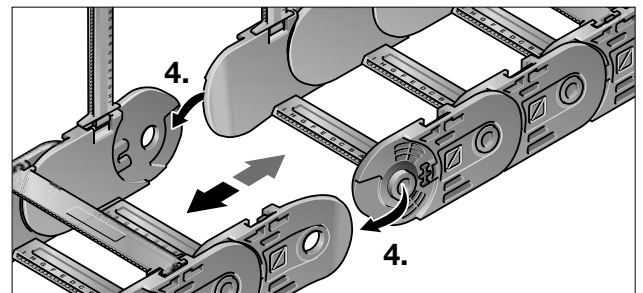
Step 2



Step 2



Step 3



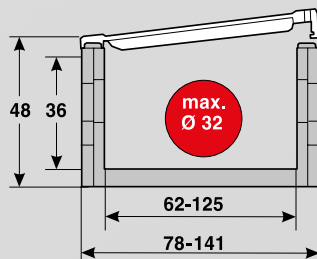
Step 3

MP 36G

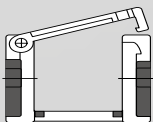
CLOSED



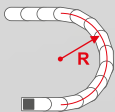
- CLOSED VARIANTS, STARTING WITH R80
- METAL CHAIN BRACKET



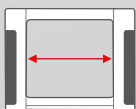
TECHNICAL DATA



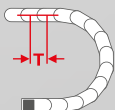
Loading side
Inside bend



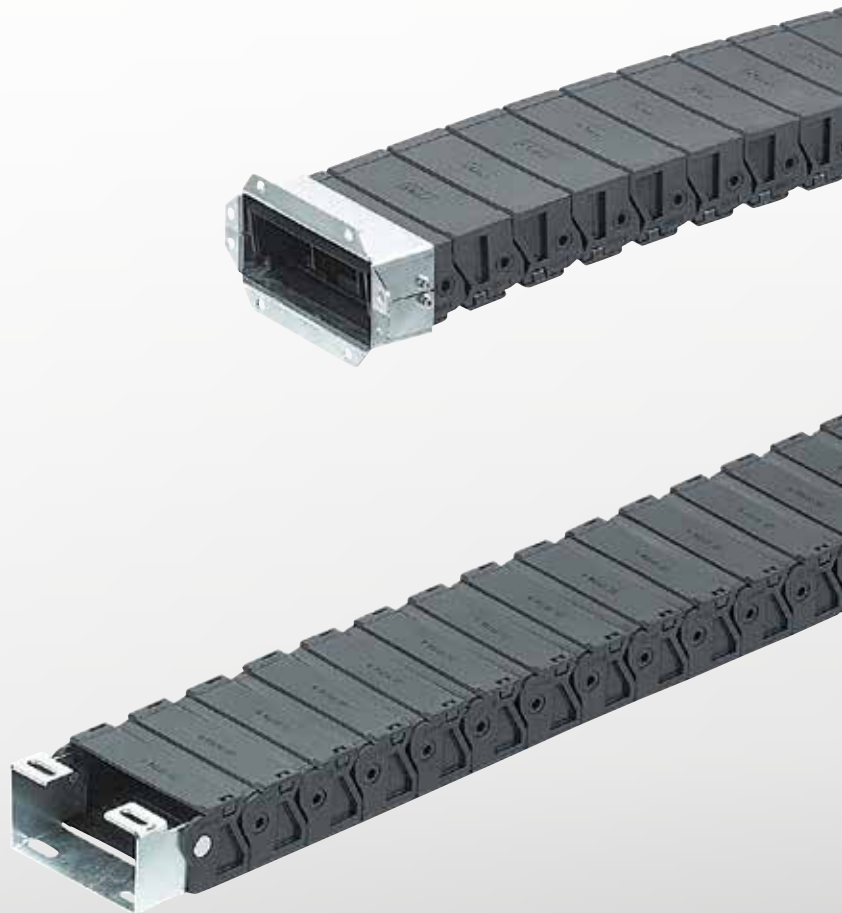
Available radii
80.0 – 200.0 mm



Available interior widths
With plastic crossbar
62.0 – 125.0 mm



Pitch
T = 40.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 60.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 135 |
| Travel distance vertical hanging L_{vh} max. | 30.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 20.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

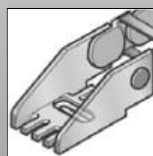


MATERIAL CHARACTERISTICS

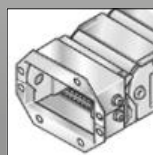
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | According to 94 HB |

Other material characteristics on request.

CHAIN BRACKET



Chain bracket U-part



Chain bracket flange

SHELVING SYSTEM



Separator TR



RS shelving system

GUIDE CHANNELS



VAW galvanised steel
/ stainless steel

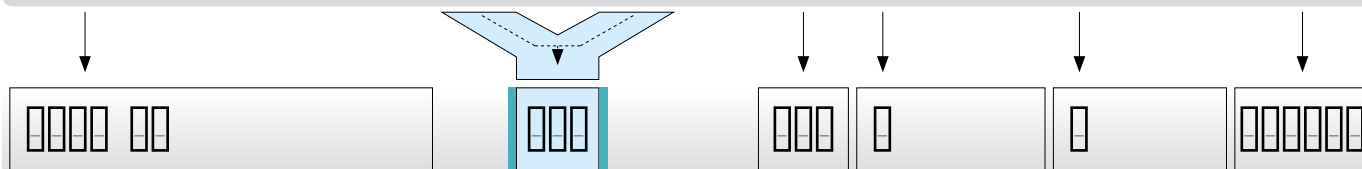


VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

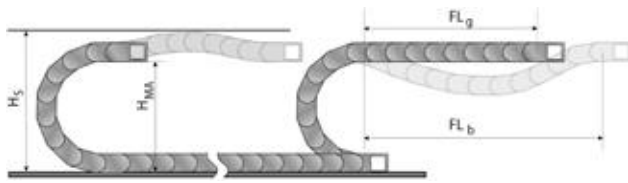
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|-----------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|----------------------|----------------------------------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



ORDERING EXAMPLE: 0360 04 062 080 0 0 1280

Cover in outside bend, cover in inside bend, to be opened on inside bend
 Inside width 62 mm; radius 80 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1280 mm (32 links)

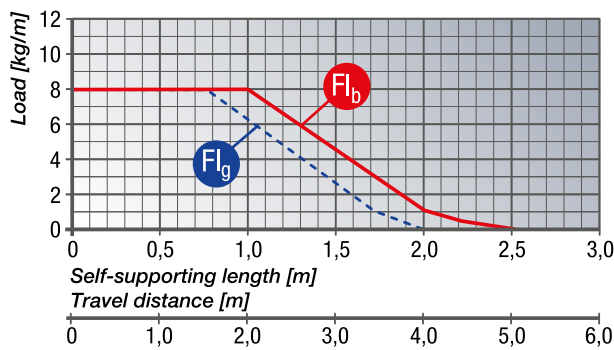
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

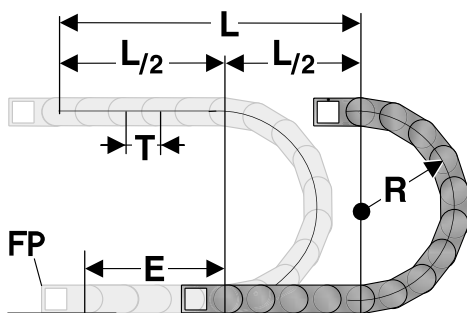
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

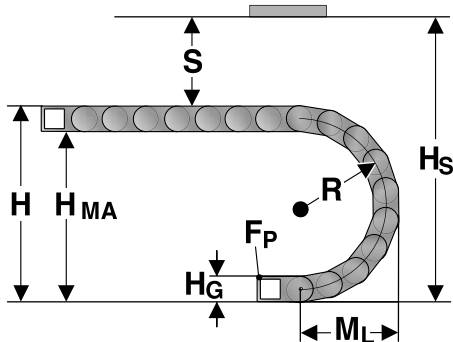


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
 1 m chain = 25 links, 40.0 mm each

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

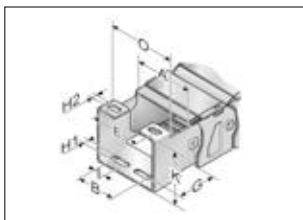
INSTALLATION DIMENSIONS



The moving end chain bracket 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

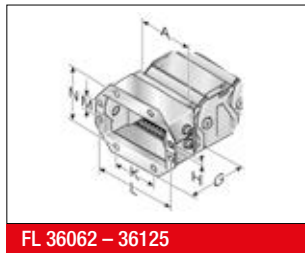
The chain bracket can be supplied either in galvanised sheet steel or stainless steel. To secure one energy chain, you will need a bracket with a drilled hole and a bracket with a bolt.

| Type | Order No. | Material | Inside width | | | | | | | | Outside width KA O mm |
|-----------------------|--------------|------------------------|--------------|---------|---------|----------|----------|----------|---------|---------|-----------------------------|
| | | | A mm | E mm | G mm | G1 mm | H1 mm | H2 mm | I mm | K mm | |
| KA 36062 C Female end | 036000001000 | Sheet steel | 62.0 | A-7.5 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 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 | 32.0 | 42.0 | 6.6 | 6.6 | 15.5 | 48.8 | A+12.0 |

KA 36 G CHAIN BRACKET U-PART

| Type | Order No. | Material | Inside width | | | | | | | | Outside width |
|-----------------------|--------------|------------------------|--------------|-------|------|-------|-------|-------|------|------|---------------|
| | | | A mm | E mm | G mm | G1 mm | H1 mm | H2 mm | I mm | K mm | KA 0 mm |
| KA 36102 C Male end | 036000002500 | Stainless steel 1.4301 | 102.0 | A-7.5 | 32.0 | 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 | 32.0 | 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 | 32.0 | 42.0 | 6.6 | 6.6 | 15.5 | 48.8 | A+8.0 |

KA 36 G END BRACKETS FLANGE

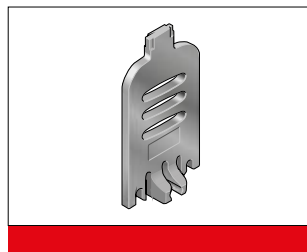
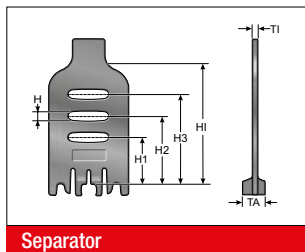


An energy chain requires two chain brackets. The divisible flange connection has been specifically designed for commissioning and re-installation. This keeps the chain in the installed position.

FL 36062 – 36125

| Type | Order No. | Material | Inside width | | | | | | |
|----------|------------|------------------------|--------------|------|--------|-------|-------|------|------|
| | | | A mm | G mm | Ø H mm | K mm | L mm | M mm | N mm |
| FL 36062 | 0360062054 | Sheet steel | 62.0 | 56.0 | 7.0 | 40.0 | 97.9 | 18.0 | 68.5 |
| FL 36086 | 0360086054 | Sheet steel | 86.0 | 56.0 | 7.0 | 64.0 | 121.9 | 18.0 | 68.5 |
| FL 36102 | 0360102054 | Sheet steel | 102.0 | 56.0 | 7.0 | 80.0 | 137.9 | 18.0 | 68.5 |
| FL 36125 | 0360125054 | Sheet steel | 125.0 | 56.0 | 7.0 | 103.0 | 160.9 | 18.0 | 68.5 |
| FL 36062 | 0360062056 | Stainless steel 1.4301 | 62.0 | 56.0 | 7.0 | 40.0 | 97.9 | 18.0 | 68.5 |
| FL 36086 | 0360086056 | Stainless steel 1.4301 | 86.0 | 56.0 | 7.0 | 64.0 | 121.9 | 18.0 | 68.5 |
| FL 36102 | 0360102056 | Stainless steel 1.4301 | 102.0 | 56.0 | 7.0 | 80.0 | 137.9 | 18.0 | 68.5 |
| FL 36125 | 0360125056 | Stainless steel 1.4301 | 125.0 | 56.0 | 7.0 | 103.0 | 160.9 | 18.0 | 68.5 |

TR 36G SEPARATOR

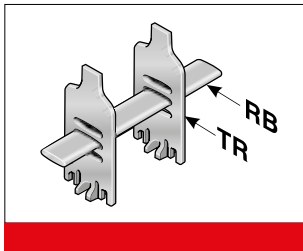


Separator

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 36G | 036000009200 | Separator | lockable | 2.5 | 10.5 | 2.5 | 13.5 | 19.5 | 25.5 | 36.5 |

MP 36G SHELVING SYSTEM



In connection with at least two separators the shelf becomes a shelving system. The additional levels prevent the cables from twisting 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)



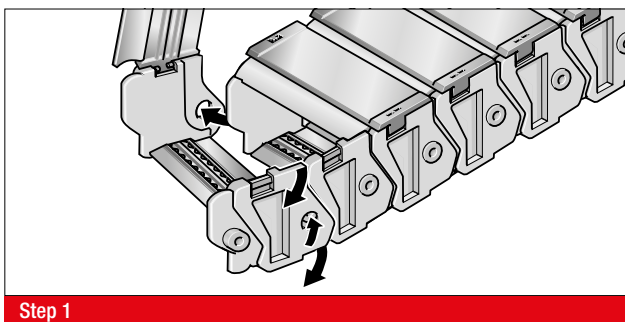
VAW steel galvanised / stainless steel



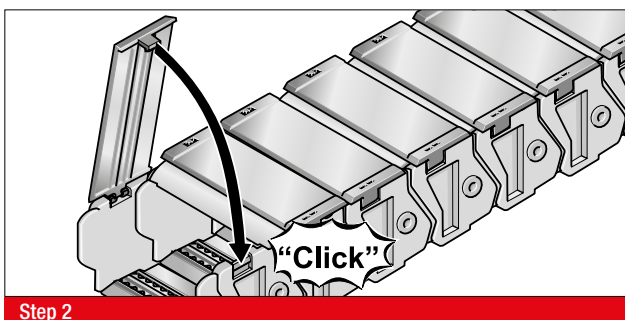
VAW aluminium

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

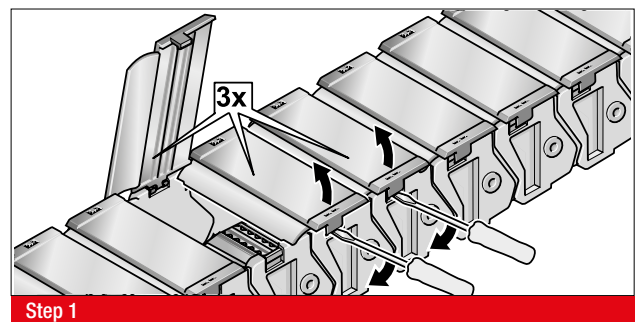


Step 1

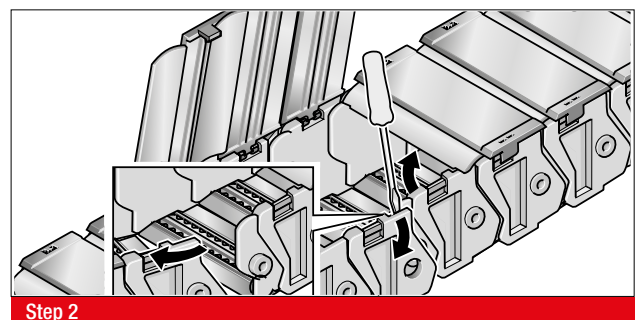


Step 2

DISASSEMBLY



Step 1



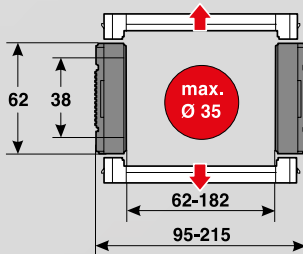
Step 2

MP 43G

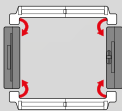
CLOSED



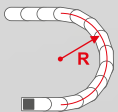
- METAL CHAIN BRACKET
- TO BE OPENED FROM INSIDE AND OUTSIDE BEND



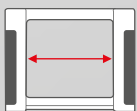
TECHNICAL DATA



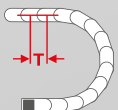
Loading side
Inside and outside bend



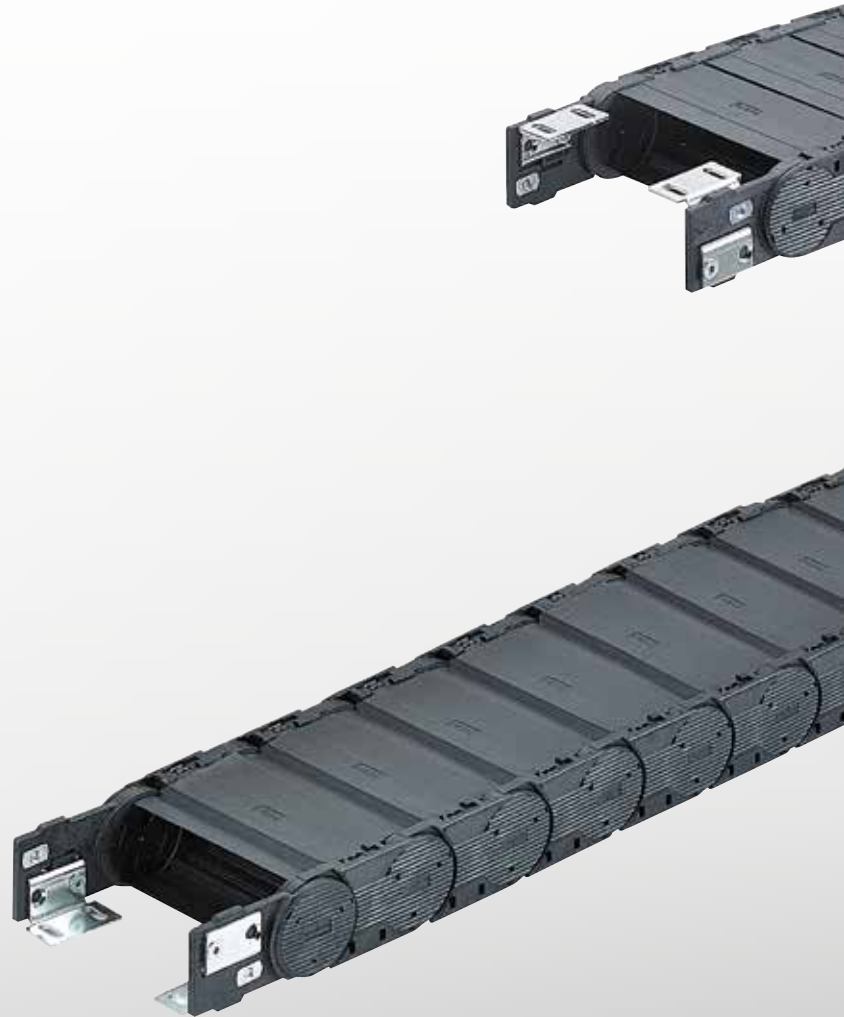
Available radii
125.0 – 400.0 mm



Available interior widths
With plastic crossbar
62.0 – 182.0 mm



Pitch
T = 75.5 mm





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 50.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 143 |
| 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 ² |
| Acceleration self-supporting a_f max. | 20.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

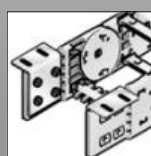
MATERIAL CHARACTERISTICS

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

Other material characteristics on request.

SHELVING SYSTEM

CHAIN BRACKET



Chain bracket angle

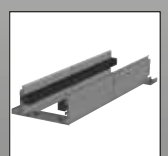


Separator TR

GUIDE CHANNELS



RS shelving system

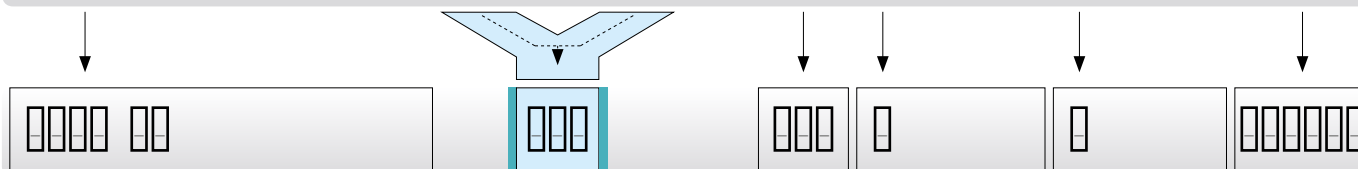


VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

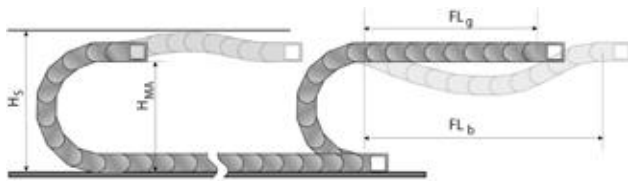
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|----------------------------------------------------------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



ORDERING EXAMPLE: 0430 44 062 125 0 0 1435

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

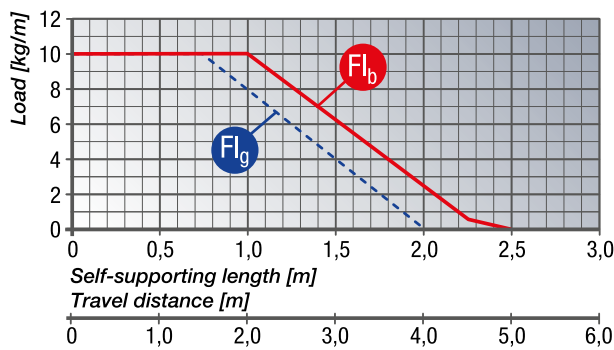
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

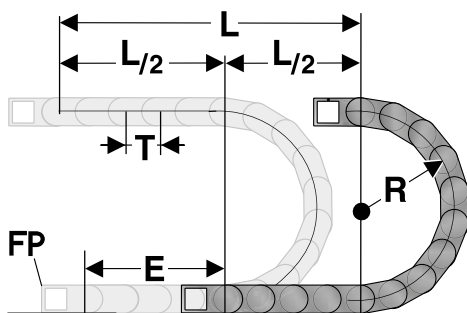
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

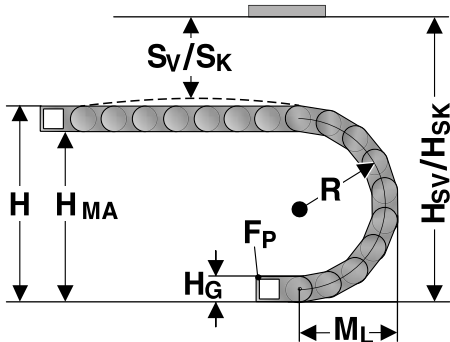


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
1 m chain = 13 links, 75.5 mm each

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

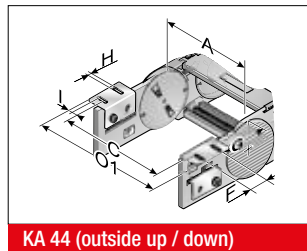
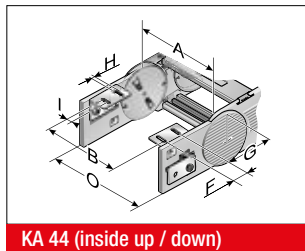
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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 |

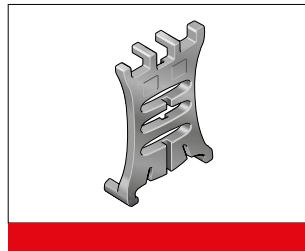
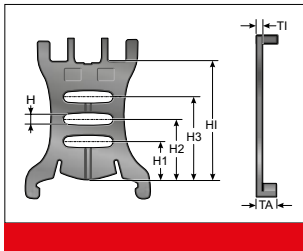
KA 44 CHAIN BRACKET ANGLE



There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. 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 | | |
|-------|------------|------------------------|--------------|--------|--------|--------|------|------|-------|--------|---------------|---------|----------|
| | | | A mm | B mm | C mm | E mm | F mm | G mm | G1 mm | Ø H mm | I mm | KA 0 mm | KA 01 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 |

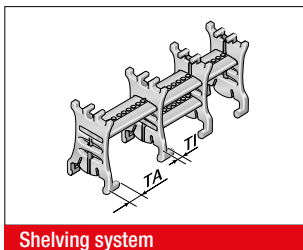
TR 43G SEPARATOR



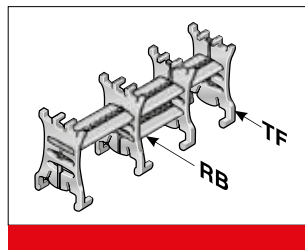
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

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

MP 43G SHELVING SYSTEM



Shelving system



In connection with at least two separators the shelf becomes a shelving system. The additional levels prevent the cables from twisting 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)

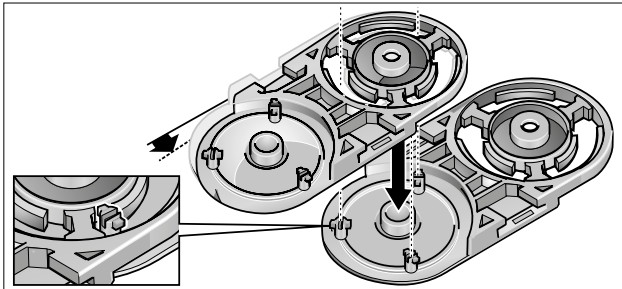


VAW aluminium

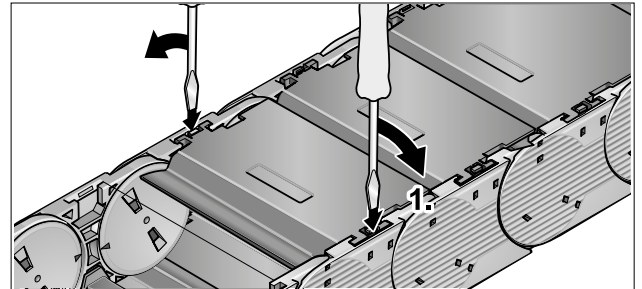
A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

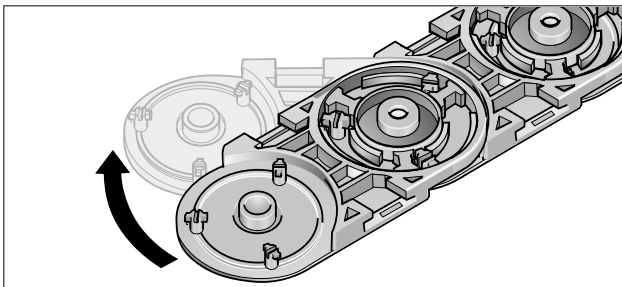
DISASSEMBLY



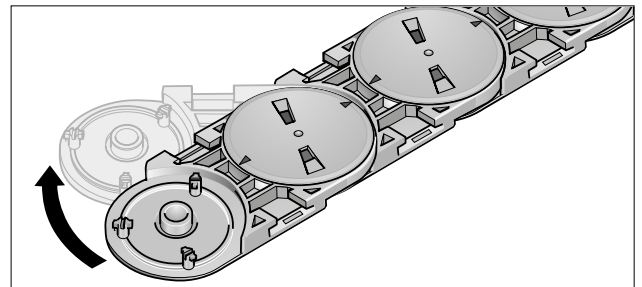
Step 1



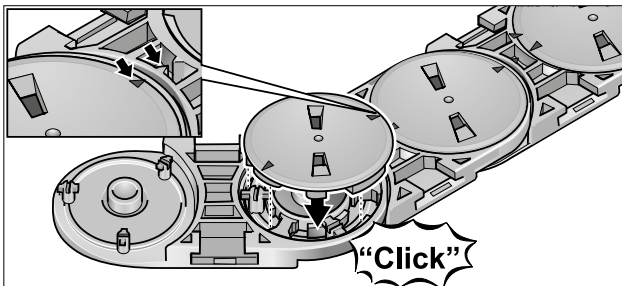
Step 1



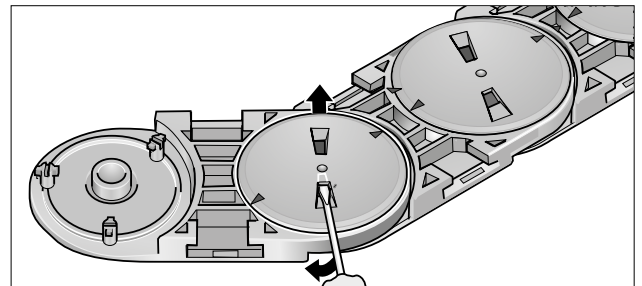
Step 2



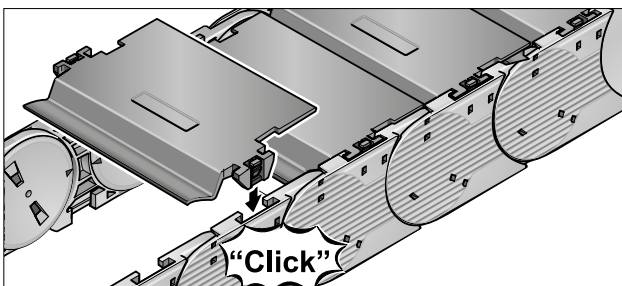
Step 2



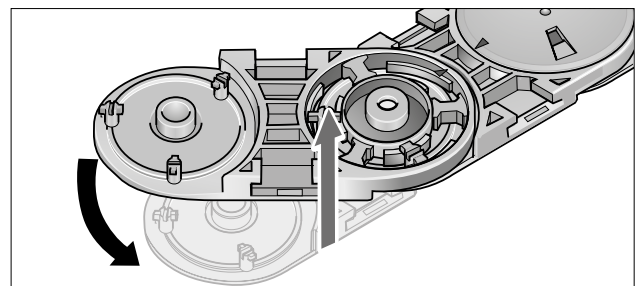
Step 3



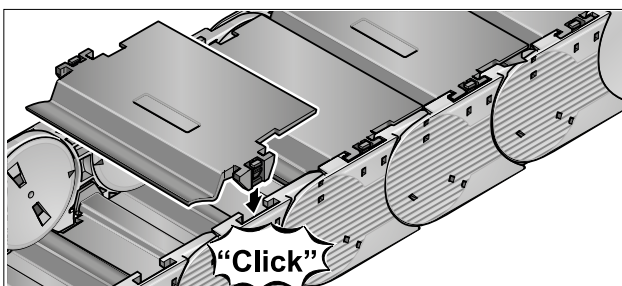
Step 3



Step 4



Step 4



Step 5

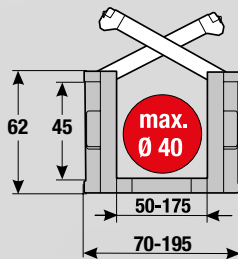
MP 45.1
OPEN



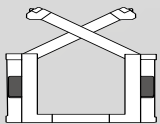
MP 45.2
OPEN



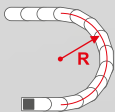
- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- SUITABLE FOR UNIVERSAL USE
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- BROAD INTERIOR LAYOUT



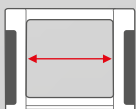
TECHNICAL DATA



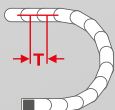
Loading side
Inside or outside bend



Available radii
75.0 – 300.0 mm



Available interior widths
With plastic crossbar
50.0 – 250.0 mm



Pitch
T = 67.0 mm



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





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 80.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 151 |
| 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 ² |
| Acceleration self-supporting a_f max. | 50.0 m/s ² |

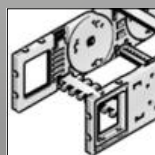
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 |

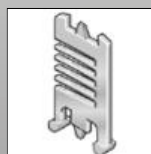
Other material characteristics on request.

CHAIN BRACKET

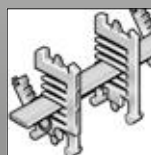


Chain bracket flexible

SHELVING SYSTEM



Separator TR

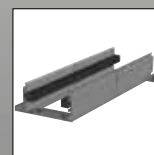


RS shelving system

GUIDE CHANNELS

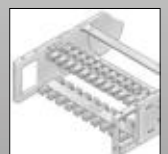


VAW galvanised steel / stainless steel



VAW aluminium

STRAIN RELIEF



RS-ZL crossbar

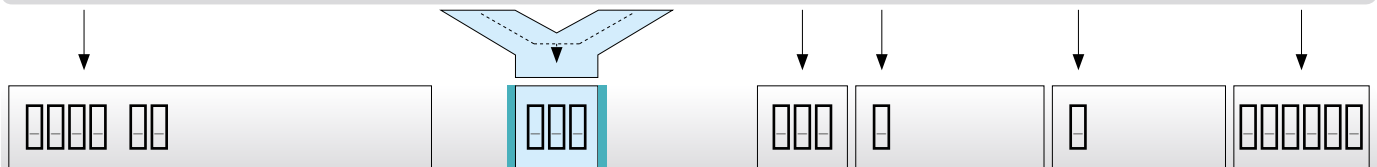


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

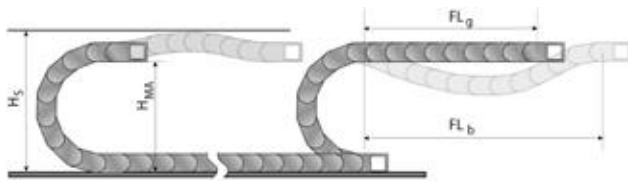
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|----------------------------------------------------------------------------------------------|---------------|----------------|--------------|---------------|----------------|------------------------------------|-------------------------------------------|--------------|---------|---------------------------------------------------------------------------------------------|---------------|---------------|--|--|----------------|------------------------------------|----------------------------------------|--|---------------|---------------|---------------|----------------|--|--|---------------|---------------|---------------|---------------|---------------|--|-----------------------|--|--------------------------------|--|---------------|---------------|---------------|----------------|--|--|---------------|---------------|---------------|---------------|---------------|--|--------------------------------|--|--|--|---------------|---------------|---------------|----------------|--|--|---------------|---------------|--|--|---------------|--|----------------|--|--|--|---------------|----------------|--|--|--|--|--|--|--|--|---------------|--|----------------|--|--|--|--|--|--|--|--|--|--|--|--|--|----------------|--|--|--|
| 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] | | 7 ESD (PA/light grey) | | | | 150 [5.91] | 170 [6.69] | | | | | 175 [6.89] | 195 [7.68] | | | 150 [5.91] | | 9 Special version (on request) | | | | 200 [7.87] | 220 [8.66] | | | | | 225 [8.86] | 245 [9.65] | | | 200 [7.87] | | | | | | 250 [9.84] | 270 [10.63] | | | | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | 300 [11.81] | | | |
| 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] | | 7 ESD (PA/light grey) | | | | 150 [5.91] | 170 [6.69] | | | | | 175 [6.89] | 195 [7.68] | | | 150 [5.91] | | 9 Special version (on request) | | | | 200 [7.87] | 220 [8.66] | | | | | 225 [8.86] | 245 [9.65] | | | 200 [7.87] | | | | | | 250 [9.84] | 270 [10.63] | | | | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | 300 [11.81] | | | | | | | | | | | | | | | | | |
| | | 125 [4.92] | 145 [5.71] | | | 125 [4.92] | | 7 ESD (PA/light grey) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 150 [5.91] | 170 [6.69] | | | | | | | | | 175 [6.89] | 195 [7.68] | | | 150 [5.91] | | 9 Special version (on request) | | | | 200 [7.87] | 220 [8.66] | | | | | 225 [8.86] | 245 [9.65] | | | 200 [7.87] | | | | | | 250 [9.84] | 270 [10.63] | | | | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | 300 [11.81] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 175 [6.89] | 195 [7.68] | | | 150 [5.91] | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 200 [7.87] | 220 [8.66] | | | | | | | | | 225 [8.86] | 245 [9.65] | | | 200 [7.87] | | | | | | 250 [9.84] | 270 [10.63] | | | | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | 300 [11.81] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 225 [8.86] | 245 [9.65] | | | 200 [7.87] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 250 [9.84] | 270 [10.63] | | | | | | | | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | 300 [11.81] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 250 [9.84] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 300 [11.81] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 300 [11.81] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



ORDERING EXAMPLE: 0452 02 075 100 0 3 2010

Crossbar in outside bend, crossbar in inside bend, to 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 2010 mm (30 links)

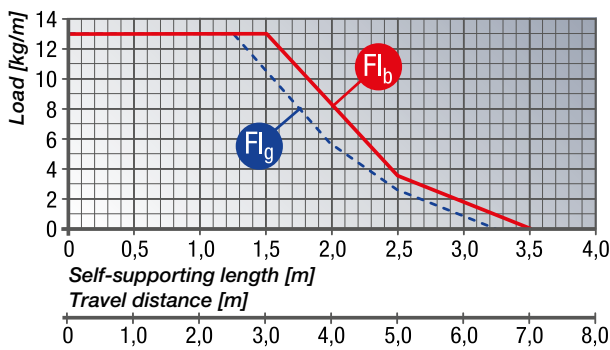
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

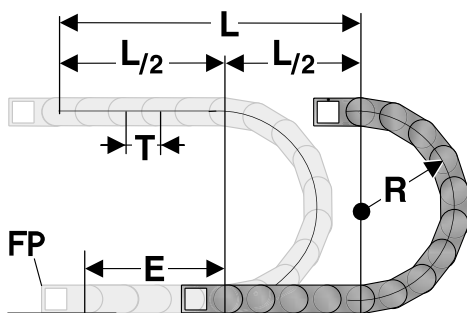
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

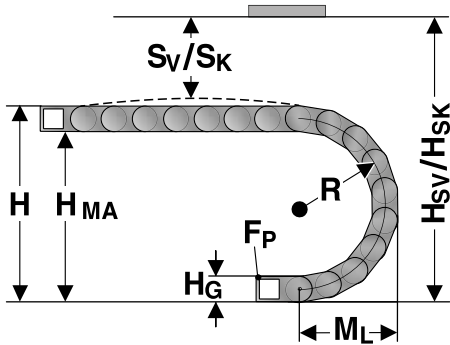


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 15 links, 67.0 mm each

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

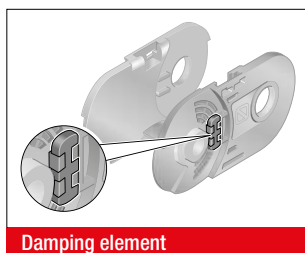
INSTALLATION DIMENSIONS



The moving end chain bracket 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 “Installation height with bias H_{SV} without damper” or “Installation height without bias H_{SK} without damper” must be observed
 If the chain links are equipped with damping elements, the value “Installation height with bias H_{SV} with damper” or “Installation height without bias H_{SK} with damper” must be observed.

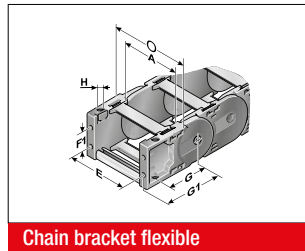
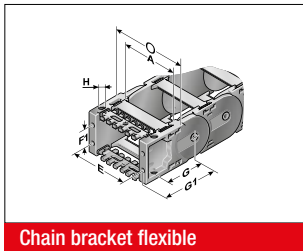
| Radius R | 75 | 100 | 125 | 150 | 200 | 250 | 300 |
|--------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|
| Outside height of chain link (H_G) | 62 | 62 | 62 | 62 | 62 | 62 | 62 |
| Height of bend (H) | 212 | 262 | 312 | 362 | 462 | 562 | 662 |
| 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



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 FLEXIBLE CHAIN BRACKET



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 crossbars.

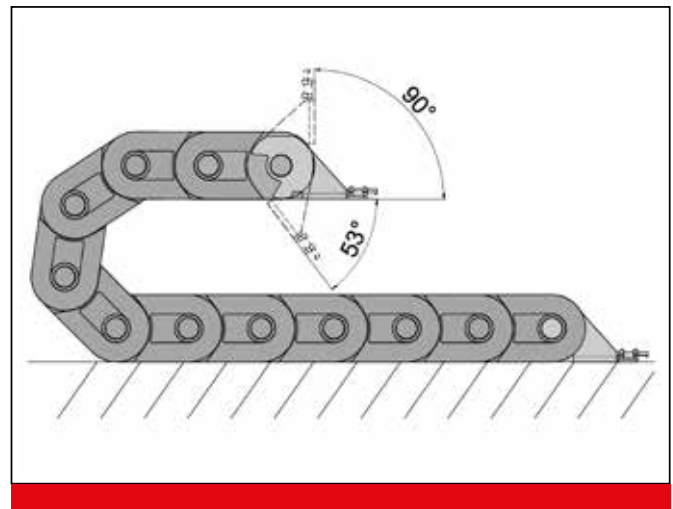
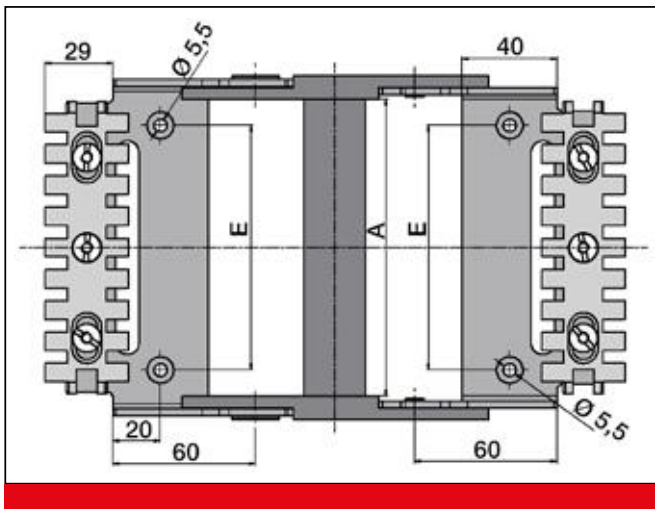
The chain bracket can then be optionally fitted with crossbar strain relief plates (RS-ZL) or with strain relief using C-rails and type STF bow clamps.

| Type | Order No. | Material | Inside width | | | | | | Outside width | |
|----------------------------------------------|------------|----------|--------------|---------|----------|---------|----------|---------|---------------|------------|
| | | | A mm | E mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 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-FB Female end, 200, complete | 0450020050 | Plastic | 200.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Female end, 200, pendular, complete | 0450020052 | Plastic | 200.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Male end, 200, complete | 0450020051 | Plastic | 200.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Male end, 200, pendular, complete | 0450020053 | Plastic | 200.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Female end, 225, complete | 0450022550 | Plastic | 225.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Female end, 225, pendular, complete | 0450022552 | Plastic | 225.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Male end, 225, complete | 0450022551 | Plastic | 225.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 5.5 | A+24.0 | |

KA 45 FLEXIBLE CHAIN BRACKET

| Type | Order No. | Material | Inside width | | | | | | | Outside width | |
|----------------------------------------------|------------|----------|--------------|---------|----------|---------|----------|------|-----------|---------------|--|
| | | | A mm | E mm | F1 mm | G mm | G1 mm | H | Ø H mm | KA O mm | |
| KA 45-FB Male end, 225, pendular, complete | 0450022553 | Plastic | 225.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Female end, 250, complete | 0450025050 | Plastic | 250.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Female end, 250, pendular, complete | 0450025052 | Plastic | 250.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Male end, 250, complete | 0450025051 | Plastic | 250.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 82.0 | 5.5 | A+24.0 | |
| KA 45-FB Male end, 250, pendular, complete | 0450025053 | Plastic | 250.0 | A+13.0 | 22.0 | 60.0 | 82.0 | 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 | M5 | | A+24.0 | |
| KA 45-FG Female end, 050, pendular, complete | 0450005056 | Plastic | 50.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 050, complete | 0450005055 | Plastic | 50.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 050, pendular, complete | 0450005057 | Plastic | 50.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 075, complete | 0450007554 | Plastic | 75.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 075, pendular, complete | 0450007556 | Plastic | 75.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 075, complete | 0450007555 | Plastic | 75.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 075, pendular, complete | 0450007557 | Plastic | 75.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 100, complete | 0450010054 | Plastic | 100.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 100, pendular, complete | 0450010056 | Plastic | 100.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 100, complete | 0450010055 | Plastic | 100.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 100, pendular, complete | 0450010057 | Plastic | 100.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 115, complete | 0450011554 | Plastic | 115.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 115, pendular, complete | 0450011556 | Plastic | 115.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 115, complete | 0450011555 | Plastic | 115.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 115, pendular, complete | 0450011557 | Plastic | 115.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 125, complete | 0450012554 | Plastic | 125.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 125, pendular, complete | 0450012556 | Plastic | 125.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 125, complete | 0450012555 | Plastic | 125.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 125, pendular, complete | 0450012557 | Plastic | 125.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 150, complete | 0450015054 | Plastic | 150.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 150, pendular, complete | 0450015056 | Plastic | 150.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 150, complete | 0450015055 | Plastic | 150.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 150, pendular, complete | 0450015057 | Plastic | 150.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 175, complete | 0450017554 | Plastic | 175.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 175, pendular, complete | 0450017556 | Plastic | 175.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 175, complete | 0450017555 | Plastic | 175.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 175, pendular, complete | 0450017557 | Plastic | 175.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 200, complete | 0450020054 | Plastic | 200.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 200, pendular, complete | 0450020056 | Plastic | 200.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 200, complete | 0450020055 | Plastic | 200.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 200, pendular, complete | 0450020057 | Plastic | 200.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 225, complete | 0450022554 | Plastic | 225.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 225, pendular, complete | 0450022556 | Plastic | 225.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 225, complete | 0450022555 | Plastic | 225.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 225, pendular, complete | 0450022557 | Plastic | 225.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 250, complete | 0450025054 | Plastic | 250.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Female end, 250, pendular, complete | 0450025056 | Plastic | 250.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 250, complete | 0450025055 | Plastic | 250.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |
| KA 45-FG Male end, 250, pendular, complete | 0450025057 | Plastic | 250.0 | A+13.0 | 22.0 | 60.0 | 82.0 | M5 | | A+24.0 | |

KA 45.1 CHAIN BRACKET U-PART

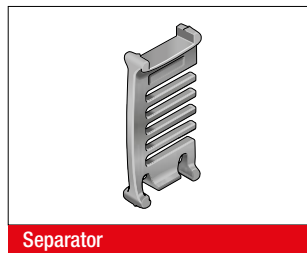
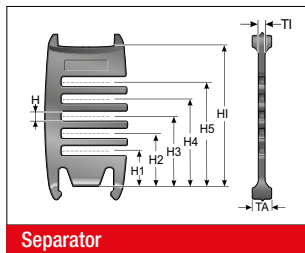


The metal chain bracket (U-part) is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Each energy chain requires one female and one male chain bracket.

The brackets should be fastened with M5 screws. To fix the cables or conduits directly in the chain bracket, use the order number including strain relief.

| Type | Order No. none Strain relief | Order No. with Strain relief | No. teeth | Material | Inside width A mm | Drilling dimension E mm |
|----------------------------------------|------------------------------|------------------------------|-----------|----------|-------------------|-------------------------|
| KA 45.1 050 U Female end, pendular, pc | 045150505000 | 0451506050 | 5 | Steel | 50 | 28 |
| KA 45.1 050 U Female end, pc | 045150005000 | 0451501050 | 5 | Steel | 50 | 28 |
| KA 45.1 050 U Male end, pc | 045160005000 | 0451601050 | 5 | Steel | 50 | 28 |
| KA 45.1 075 U Female end, pendular, pc | 045150507500 | 0451506075 | 7 | Steel | 75 | 53 |
| KA 45.1 075 U Female end, pc | 045150007500 | 0451501075 | 7 | Steel | 75 | 53 |
| KA 45.1 075 U Male end, pc | 045160007500 | 0451601075 | 7 | Steel | 75 | 53 |
| KA 45.1 100 U Female end, pendular, pc | 045150510000 | 0451506100 | 8 | Steel | 100 | 78 |
| KA 45.1 100 U Female end, pc | 045150010000 | 0451501100 | 8 | Steel | 100 | 78 |
| KA 45.1 100 U Male end, pc | 045160010000 | 0451601100 | 8 | Steel | 100 | 78 |
| KA 45.1 115 U Female end, pendular, pc | 045150511500 | 0451506115 | 9 | Steel | 115 | 93 |
| KA 45.1 115 U Female end, pc | 045150011500 | 0451501115 | 9 | Steel | 115 | 93 |
| KA 45.1 115 U Male end, pc | 045160011500 | 0451601115 | 9 | Steel | 115 | 93 |
| KA 45.1 125 U Female end, pendular, pc | 045150512500 | 0451506125 | 9 | Steel | 125 | 103 |
| KA 45.1 125 U Female end, pc | 045150012500 | 0451501125 | 9 | Steel | 125 | 103 |
| KA 45.1 125 U Male end, pc | 045160012500 | 0451601125 | 9 | Steel | 125 | 103 |
| KA 45.1 150 U Female end, pendular, pc | 045150515000 | 0451506150 | 11 | Steel | 150 | 128 |
| KA 45.1 150 U Female end, pc | 045150015000 | 0451501150 | 11 | Steel | 150 | 128 |
| KA 45.1 150 U Male end, pc | 045160015000 | 0451601150 | 11 | Steel | 150 | 128 |
| KA 45.1 175 U Female end, pendular, pc | 045150517500 | 0451506175 | 13 | Steel | 175 | 153 |
| KA 45.1 175 U Female end, pc | 045150017500 | 0451501175 | 13 | Steel | 175 | 153 |
| KA 45.1 175 U Male end, pc | 045160017500 | 0451601175 | 13 | Steel | 175 | 153 |

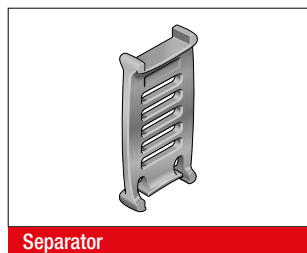
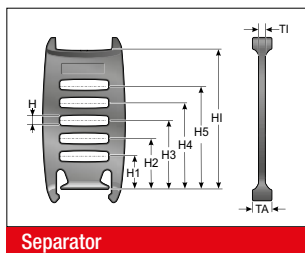
TRT 45 DIVISIBLE SEPARATOR



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

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm | H5 mm | HI 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 |

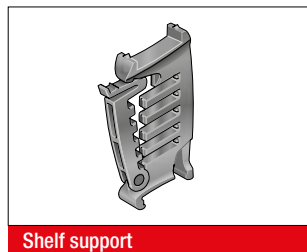
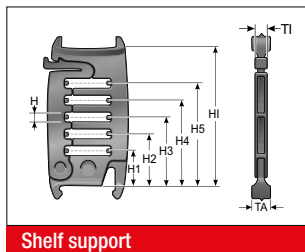
TR 45-V SEPARATOR



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 | movable | 3.0 | 8.0 | 3.2 | 11.3 | 16.9 | 22.5 | 28.1 | 33.7 | 45.0 |

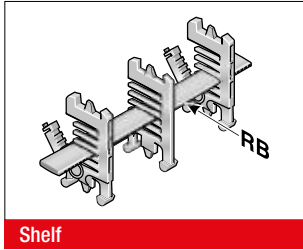
RTT 45 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



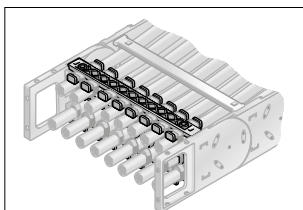
The shelf RBD creates a horizontal division over the entire inner width of the chain link. When used together with the TRT separator, an additional vertical division can be realised.

| Type | Order No. | Description | Width mm | for inner 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-3 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|----------|--------------------|
| 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 |

RS-ZL-3 ZLA MP 45 CROSSBAR STRAIN RELIEF

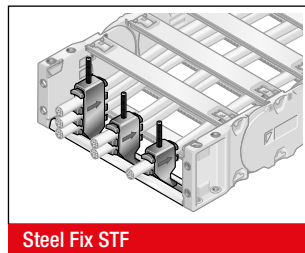
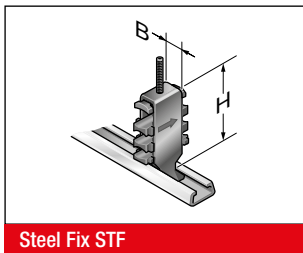


Crossbar strain relief plate

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

| Type | Order No. | Description | for inner 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 |

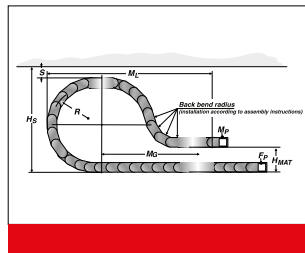
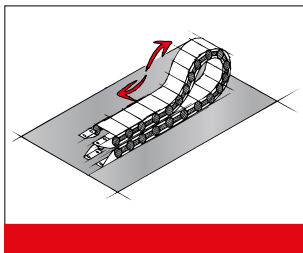
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 45 LOWERED FIXING POINT



Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

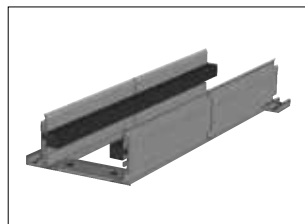
Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M _L) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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 |

GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



VAW steel galvanised / stainless steel



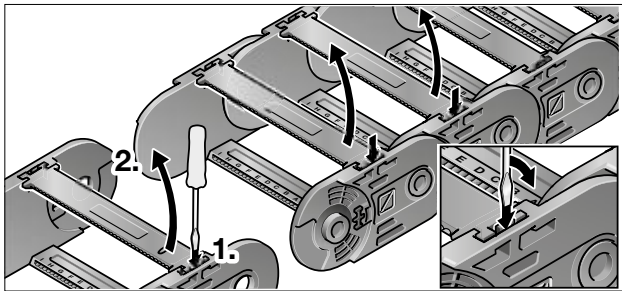
VAW aluminium

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

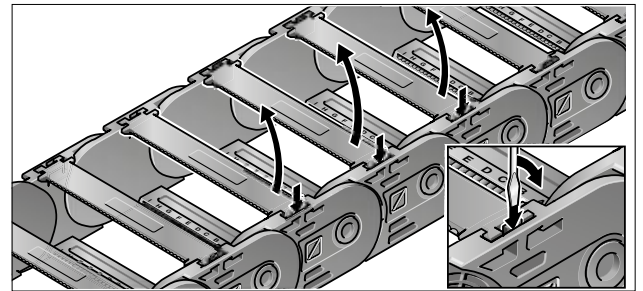
The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

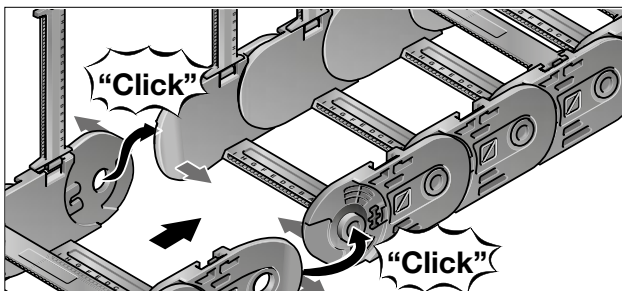
DISASSEMBLY



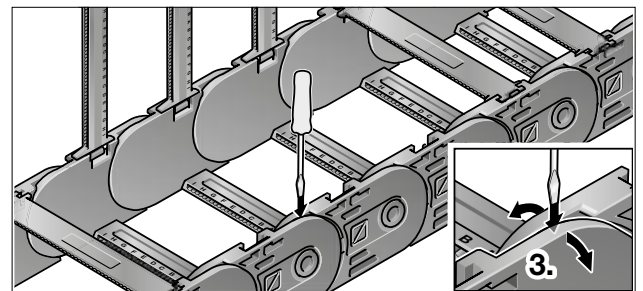
Step 1



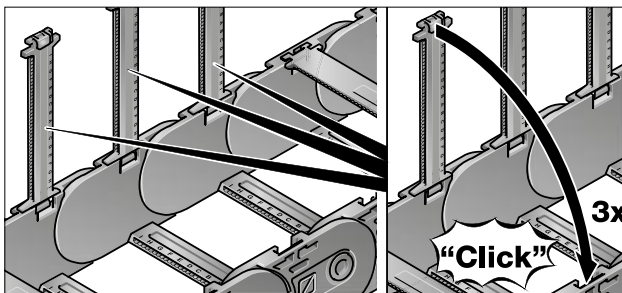
Step 1



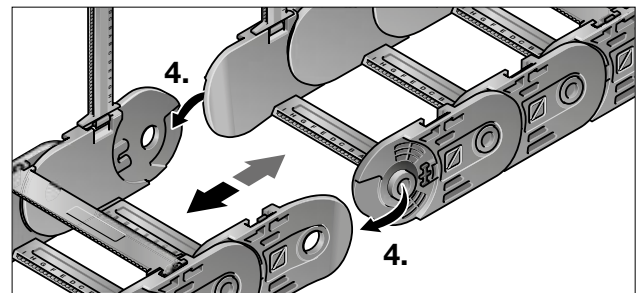
Step 2



Step 2



Step 3



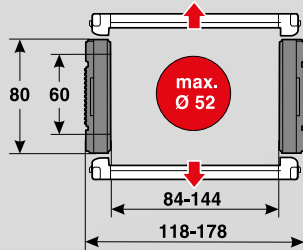
Step 3

MP 65G

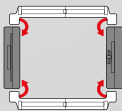
CLOSED



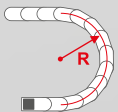
- PLASTIC VARIANT
- METAL CHAIN BRACKET
- TO BE OPENED FROM INSIDE AND OUTSIDE BEND



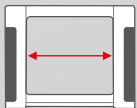
TECHNICAL DATA



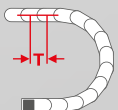
Loading side
Inside and outside bend



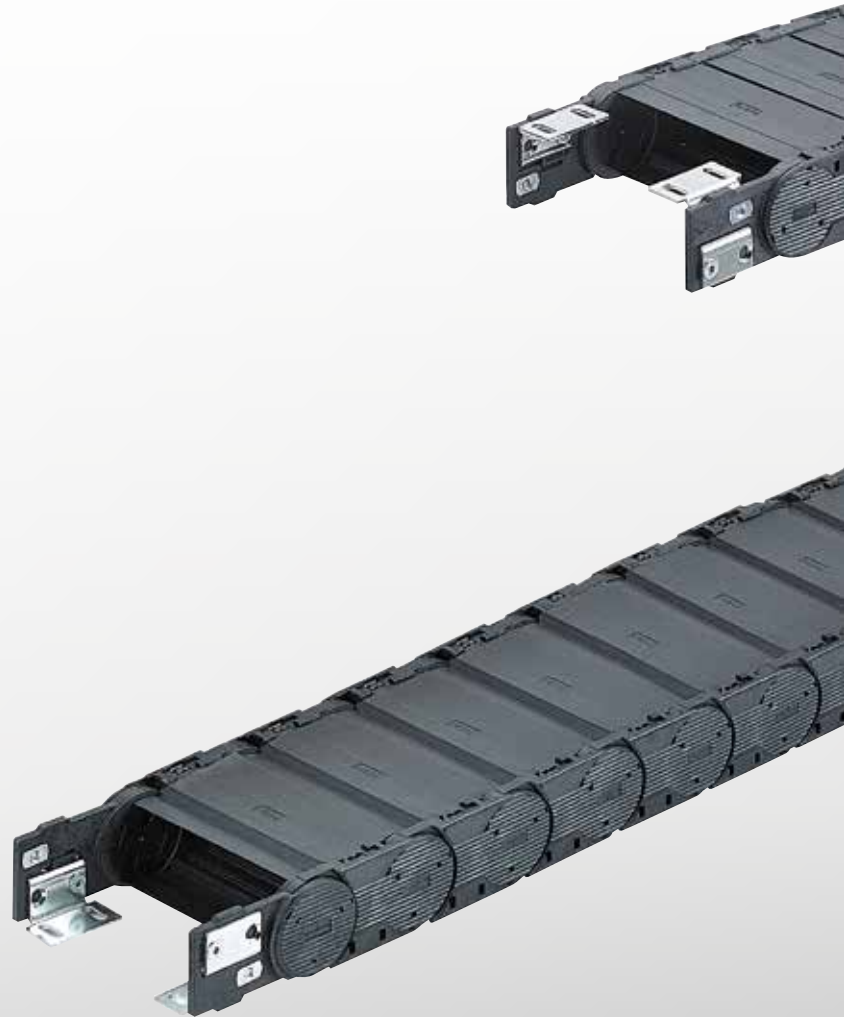
Available radii
200.0 – 400.0 mm



Available interior widths
with plastic cover
84.0 – 144.0 mm



Pitch
T = 91.5 mm





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 60.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 165 |
| 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 ² |
| Acceleration self-supporting a_f max. | 20.0 m/s ² |

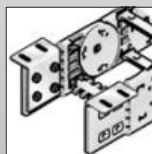
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

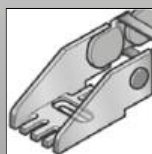
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | According to 94 HB |

Other material characteristics on request.

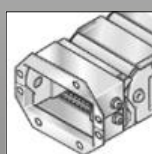
CHAIN BRACKET



Chain bracket angle



Chain bracket U-part

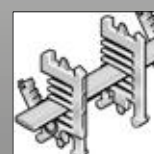


Chain bracket flange

SHELVING SYSTEM

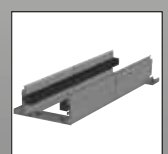


Separator TR



RS shelving system

GUIDE CHANNELS

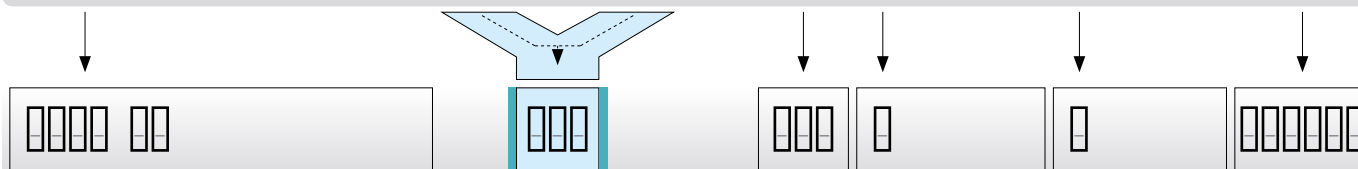


VAW aluminium

ORDERING KEY

Dimensions in mm [US inch]

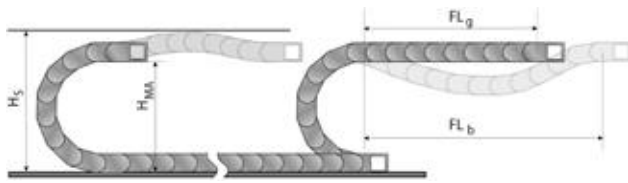
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|-----------------------|------------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



ORDERING EXAMPLE: 0650 44 084 200 0 0 1556

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

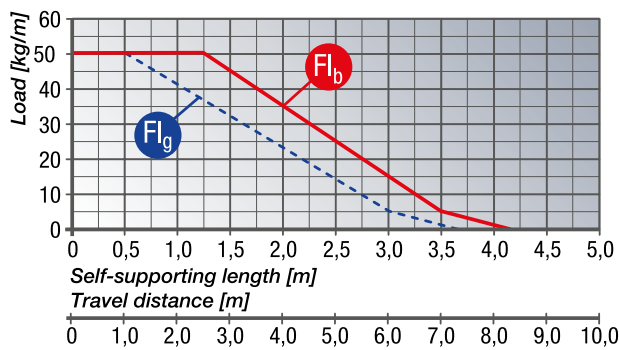
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

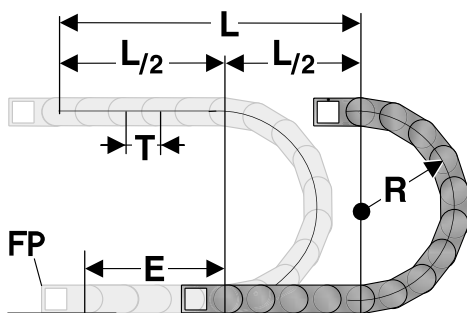
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

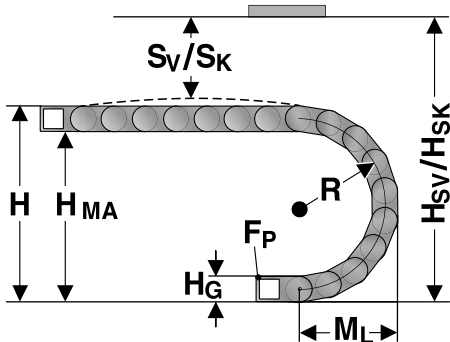


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 11 links, 91.5 mm each

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

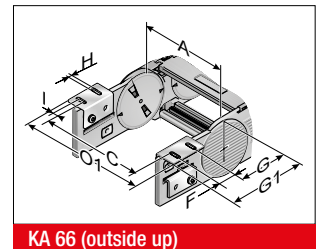
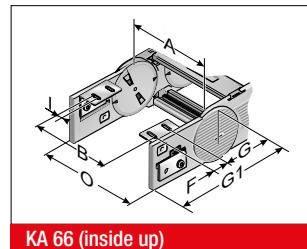
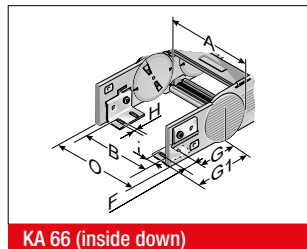
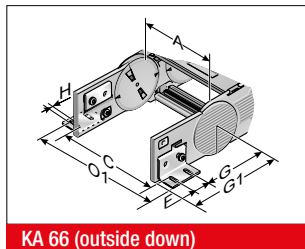
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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

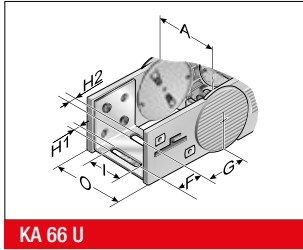


There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. However, any other combination can be supplied upon request. The chain bracket

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 KA 0 | Outside width KA 01 | |
|-------|------------|------------------------|--------------|--------|--------|------|------|-------|------------|--------------------|---------------------|--------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | G2, Ø H mm | | | I mm |
| KA 66 | 0660000050 | Sheet steel | 62.0 – 182.0 | A-17.0 | A+51.0 | 45.0 | 50.5 | 105.5 | 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 | 105.5 | 9.0 | 10.0 | A+34.0 | A+64.0 |

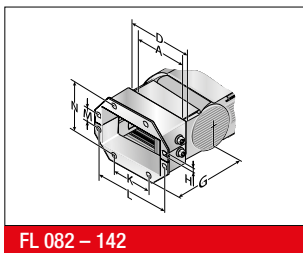
KA 66 U-PART CHAIN BRACKET



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 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 |

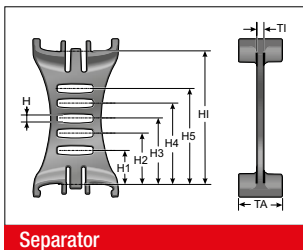
KA 65 G END BRACKETS FLANGE



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.

| Type | Order No. | Material | Inside width | | | | | | |
|--------|------------|------------------------|--------------|---------|-----------|---------|---------|---------|---------|
| | | | A mm | G mm | Ø H 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 |

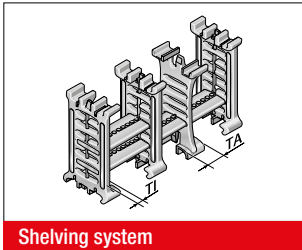
TR 66 SEPARATOR



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 | H1 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

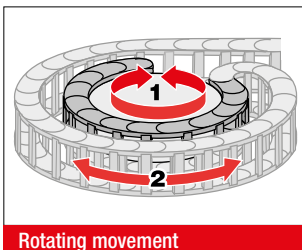


Shelving system

In connection with at least two shelf supports the shelf becomes a shelving system. The additional levels prevent the cables from twisting and minimise the friction between them. The shelving system may be pre-assembled 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



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)

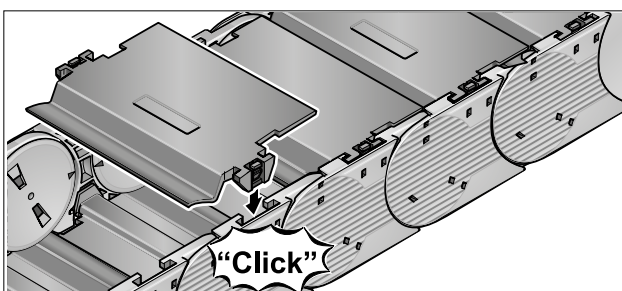
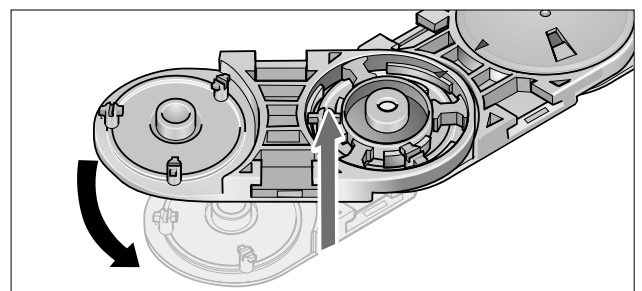
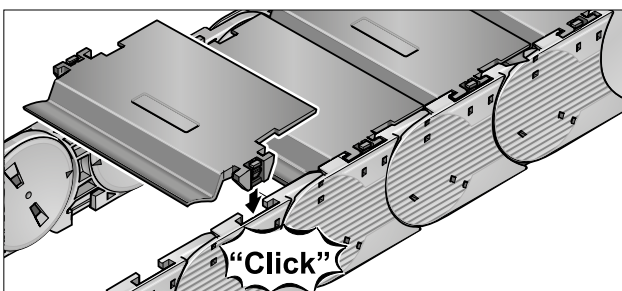
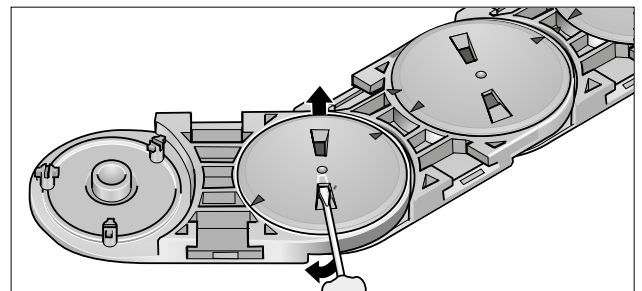
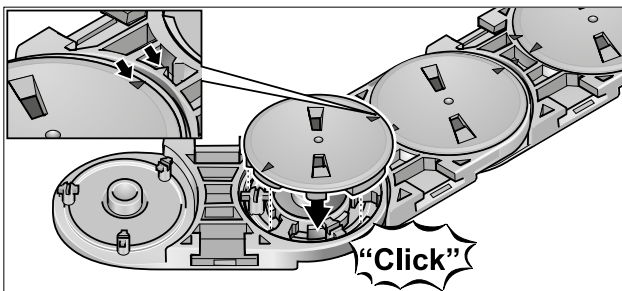
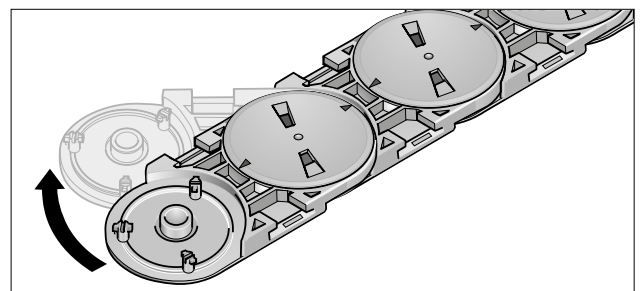
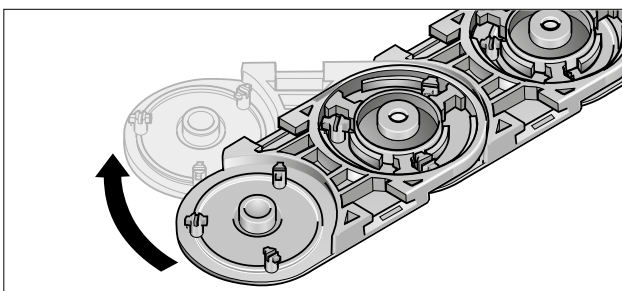
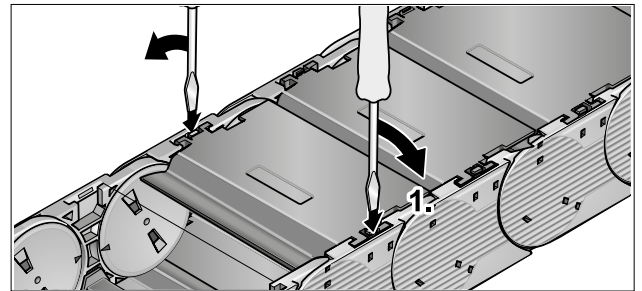
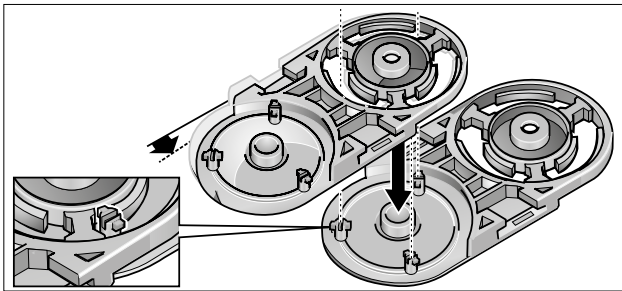


VAW aluminium

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



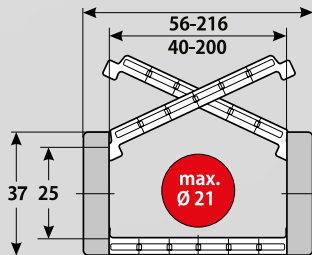
MP 25.1/.2
OPEN



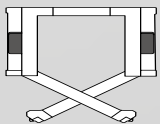
MP 25.3/.4
CLOSED



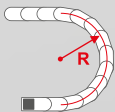
- BROAD INTERIOR LAYOUT
- BRUSH SUPPORT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- SUITABLE FOR UNIVERSAL USE



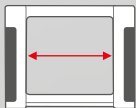
TECHNICAL DATA



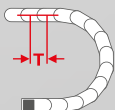
Loading side
Inside or outside bend



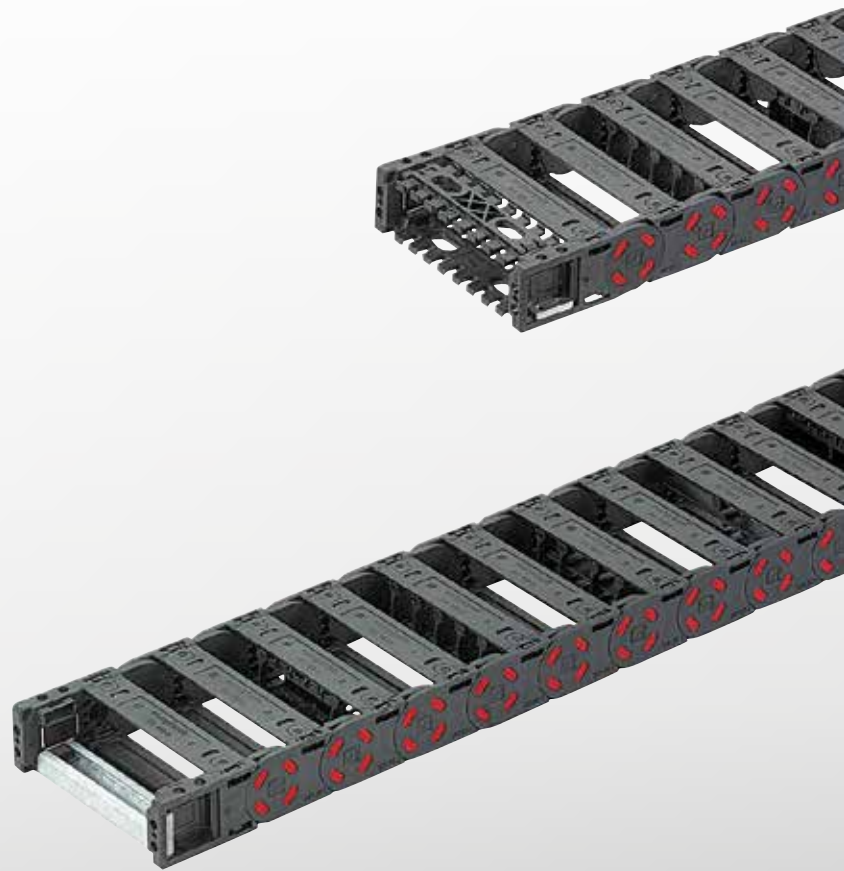
Available radii
50.0 – 300.0 mm



Available interior widths
With plastic crossbar
40.0 – 200.0 mm



Pitch
T = 45.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 35.0 m |
| Travel distance self-supporting L_s max. | see diagram on page 173 |
| Travel distance vertical hanging L_{vh} max. | 25.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} max. | 0.7 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. | 10.0 m/s ² |
| Acceleration self-supporting a_s max. | 15.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

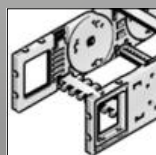


MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 characteristics on request.

CHAIN BRACKET

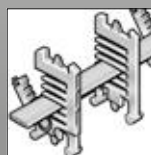


Chain bracket flexible

SHELVING SYSTEM



Separator TR

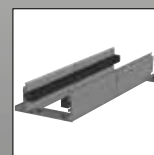


RS shelving system

GUIDE CHANNELS

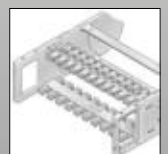


VAW galvanised steel / stainless steel



VAW aluminium

STRAIN RELIEF



RS-ZL crossbar



Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | 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] | | | 050¹⁾ [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] | | | 075¹⁾ [2.95] | 1 Plastic full-ridged without bias | 7 ESD (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] | | | 075¹⁾ [2.95] | 1 Plastic full-ridged without bias | 7 ESD (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] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 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 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 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 08 | Crossbar on outside bend Cover on inside bend Opens on inside bend | | | | | 300 [11.81] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

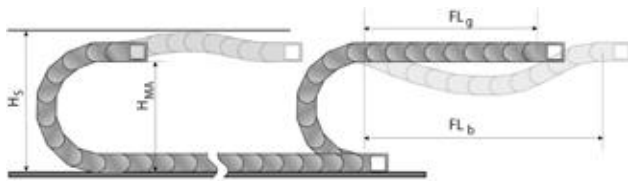


ORDERING EXAMPLE: 0025 01 040 050 0 0 1125

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

¹⁾ only for variant 01 and 02

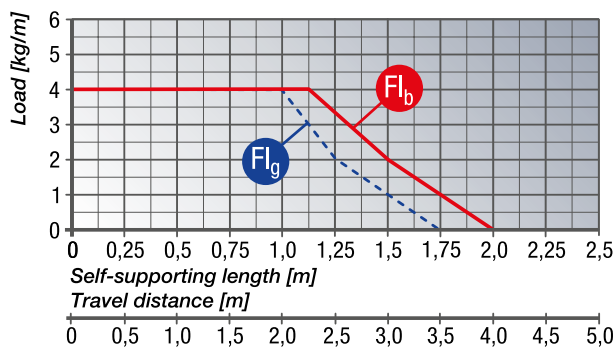
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

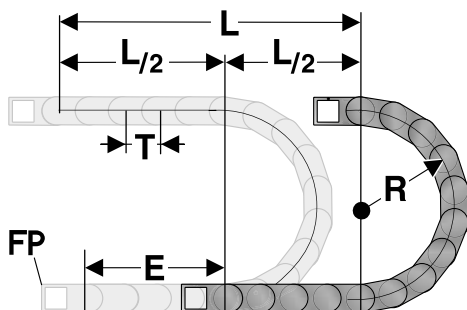
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

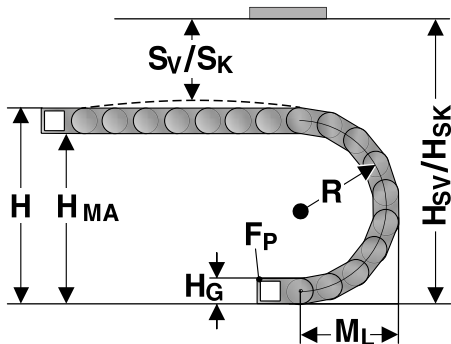


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
1 m chain = 22 links, 45.0 mm each

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

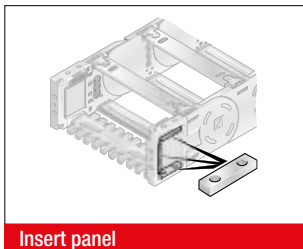
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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 |

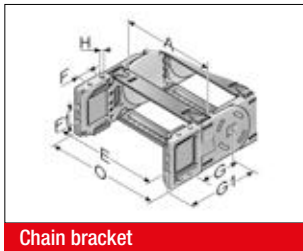
EB 25/30 INSERT PANEL



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

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

KA 25 FLEXIBLE CHAIN BRACKET



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 energy 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 crossbars. The chain bracket can then be optionally fitted with crossbar 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 | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 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 bracket KA 25

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 = Flexible chain bracket for MP 25
- Internal width = 085 mm
- Radius = 250 mm
- Crossbar strain relief (RS-ZL) = 2 pieces
- C-Profile = 0 pieces
- Insert panel (EB) = 2 pieces

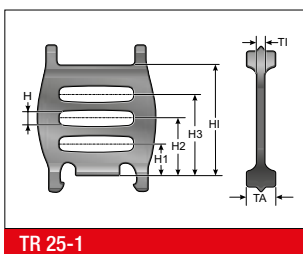
* One set chain bracket is needed per chain, containing male and female end

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

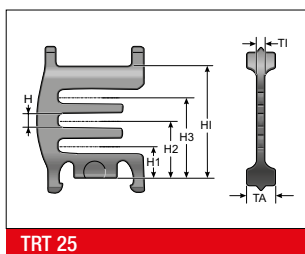
Note:

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

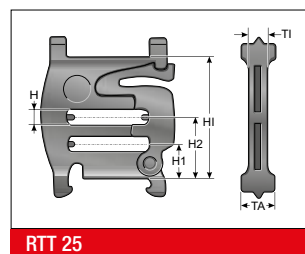
MP 25 SEPARATOR / SHELVING SYSTEM



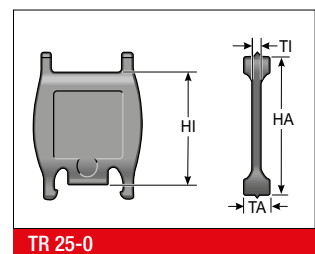
TR 25-1



TRT 25



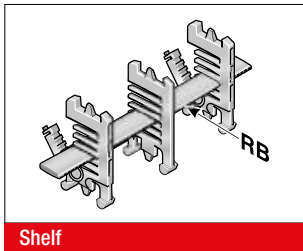
RTT 25



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 | HI 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

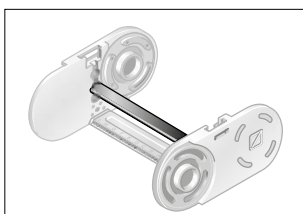
The shelf RBD creates a horizontal division over the entire inner width of the chain link. When used together with the TRT separator, an additional vertical division can be realised.

| Type | Order No. | Description | Width mm | for inner 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 | for inner 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

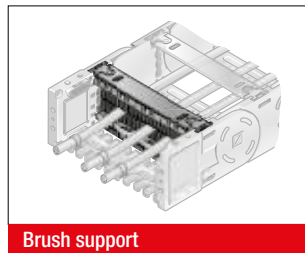
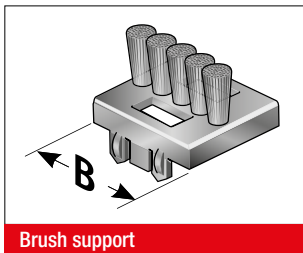


Shelf, end-to-end RBD

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 | for inner 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 |

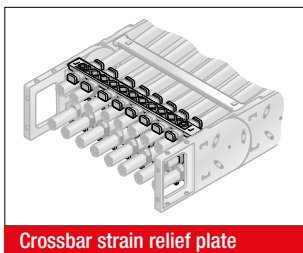
MP 25 BRUSH SUPPORT



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 |

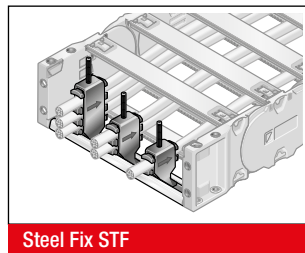
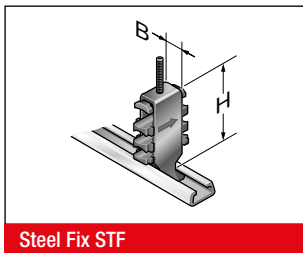
RS-ZL-3 CROSSBAR STRAIN RELIEF



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

| Type | Order No. | Description | for inner 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 |

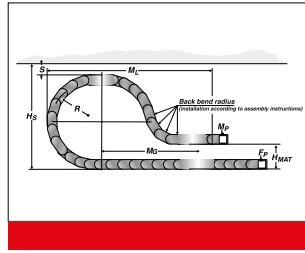
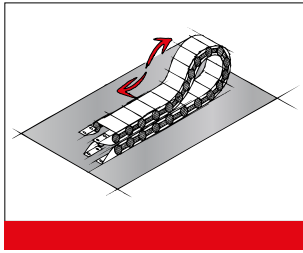
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 25 LOWERED FIXING POINT



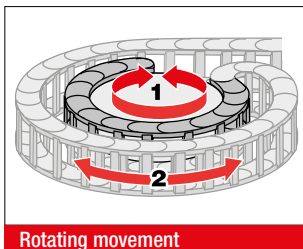
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M _L) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



Rotating movement

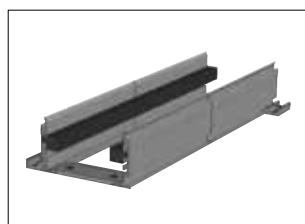
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. The appropriate number of washer discs have to be placed into the side links to achieve the rearward radius.

| Type | Order No. |
|--------------------------|--------------|
| AS 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



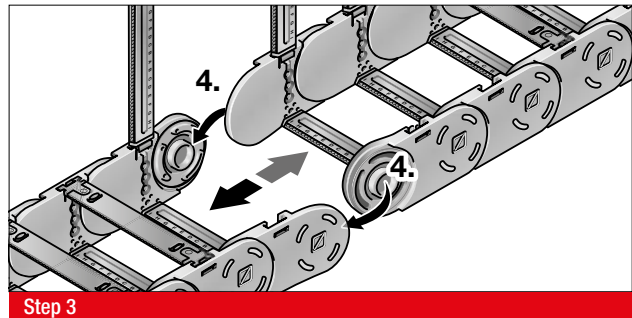
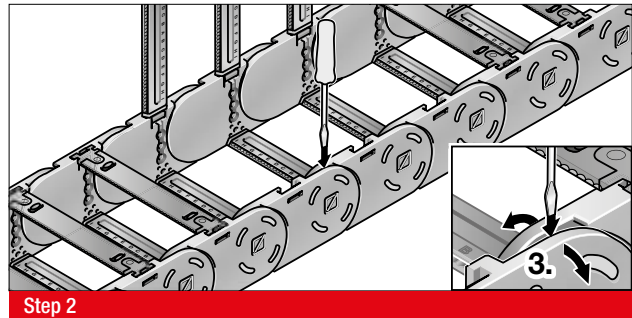
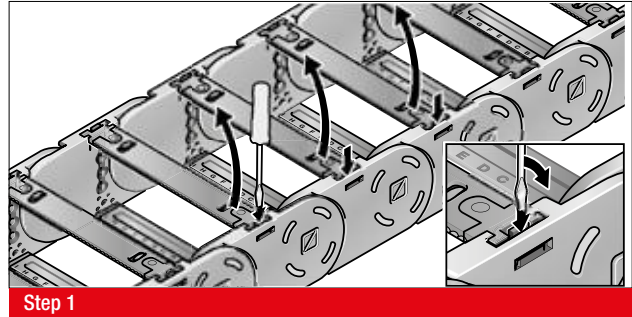
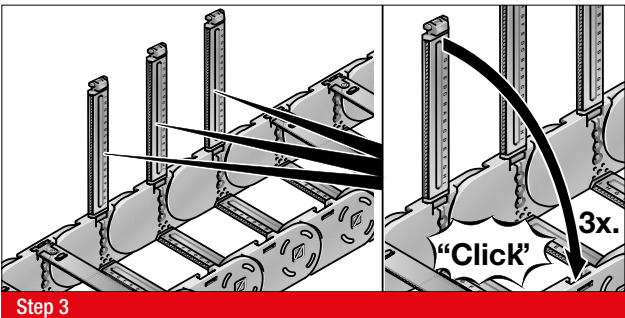
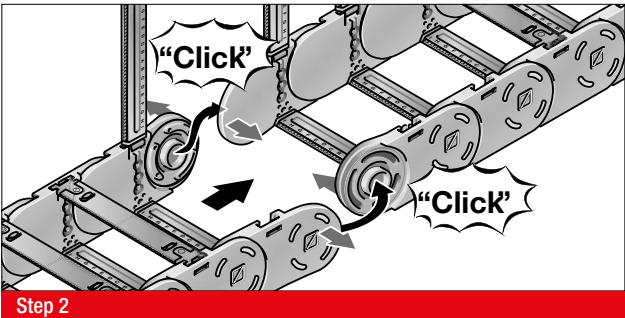
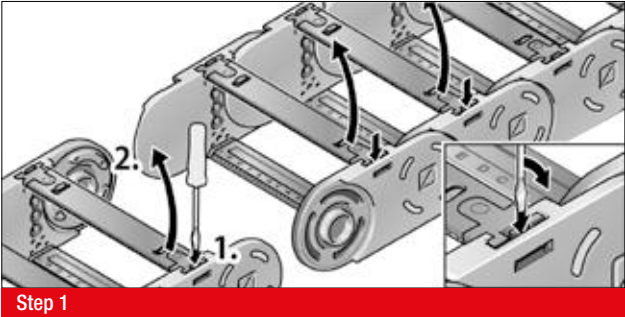
VAW aluminium

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

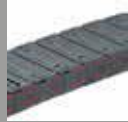
DISASSEMBLY



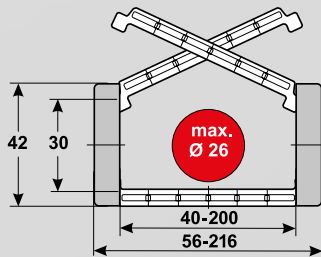
MP 30.1/.2
OPEN



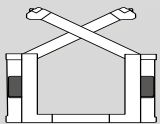
MP 30.3/.4
CLOSED



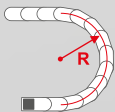
- BROAD INTERIOR LAYOUT
- BRUSH SUPPORT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- SUITABLE FOR UNIVERSAL USE



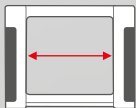
TECHNICAL DATA



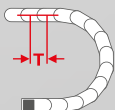
Loading side
Inside or outside bend



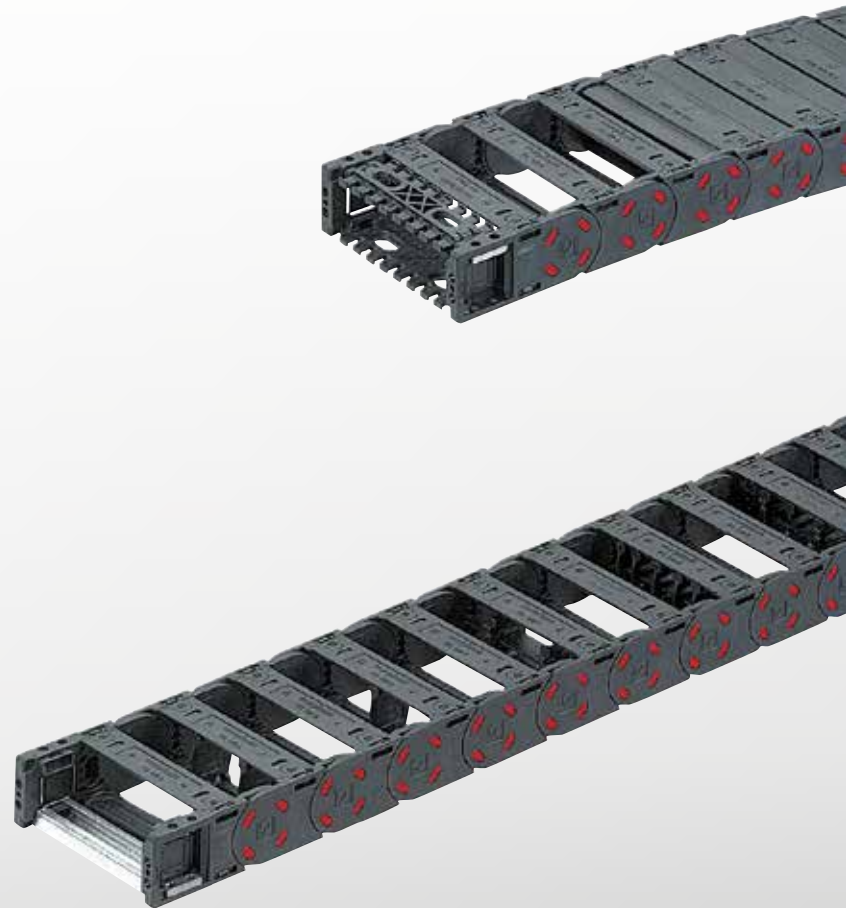
Available radii
60.0 – 300.0 mm



Available interior widths
With plastic crossbar
40.0 – 200.0 mm



Pitch
T = 50.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 40.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 185 |
| Travel distance vertical hanging L_{vh} max. | 30.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 15.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

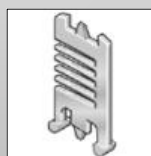


MATERIAL CHARACTERISTICS

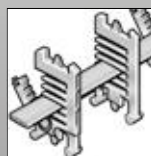
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

SHELVING SYSTEM

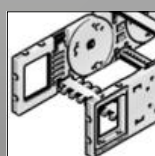


Separator TR

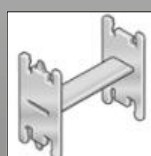


RS shelving system

CHAIN BRACKET



Chain bracket flexible

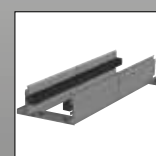


H-shaped shelf unit (RE)

GUIDE CHANNELS

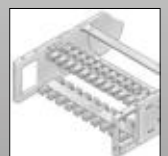


VAW galvanised steel / stainless steel

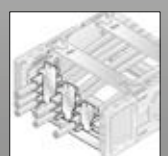


VAW aluminium

STRAIN RELIEF



RS-ZL crossbar



Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | 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 ¹⁾ [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 ¹⁾ [2.95] | 1 Plastic full-ridged without bias | 7 ESD (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 02 | Crossbar on outside bend Crossbar on inside bend Opens on inside bend | 060 [2.36] | 076 [2.99] | | | 075 ¹⁾ [2.95] | 1 Plastic full-ridged without bias | 7 ESD (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] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 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 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 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 08 | Crossbar on outside bend Cover on inside bend Opens on inside bend | | | | | 300 [11.81] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

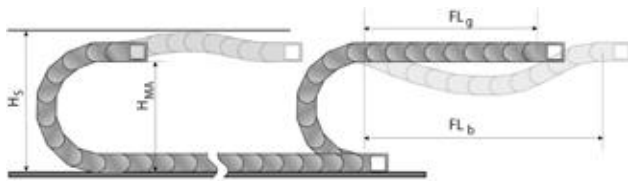


ORDERING EXAMPLE: 0030 01 040 060 0 0 1250

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

¹⁾ only for variant 01 and 02

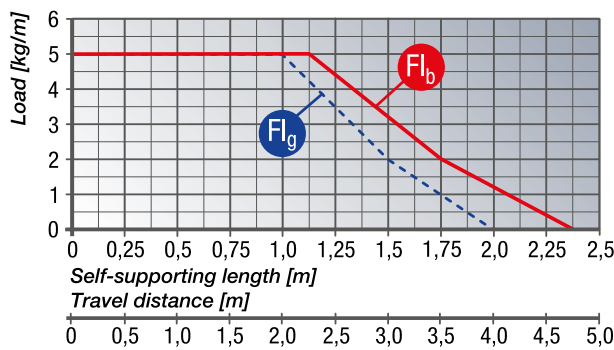
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

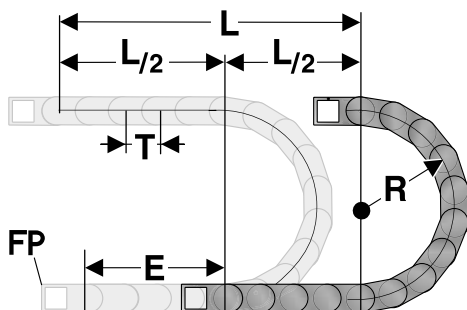
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

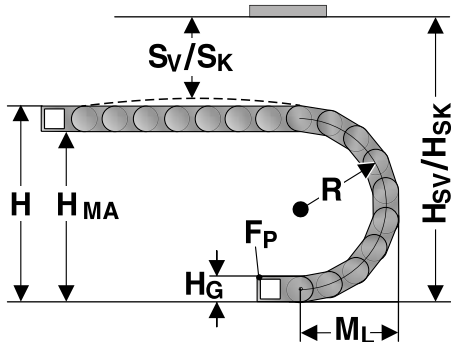


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
1 m chain = 20 links, 50.0 mm each

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

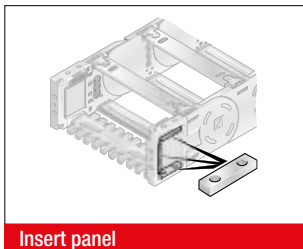
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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 |

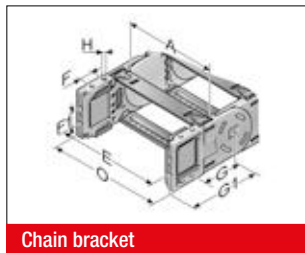
EB 25/30 INSERT PANEL



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

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

KA 30 FLEXIBLE CHAIN BRACKET



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 energy 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 crossbars. The chain bracket can then be optionally fitted with crossbar 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 KA 0 mm |
|------|-----------|----------|--------------|---------|---------|----------|---------|----------|---------|----------|-----------------------------|
| | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | ØH 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 quantity Pieces | C-profile number of Pieces | No. of EB** Pieces |
|---------|--------------------|--------------|--------------------------|-------------------------------|-----------------------|
| KA 30* | 085 | 250 | 2 | 0 | 2 |

Ordering example:

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

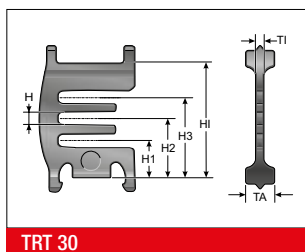
* One set chain bracket is needed per chain, containing male and female end

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

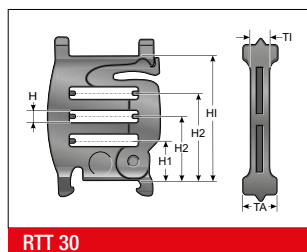
Note:

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

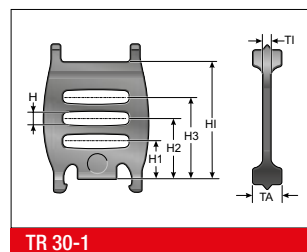
MP 30 SEPARATOR / SHELVING SYSTEM



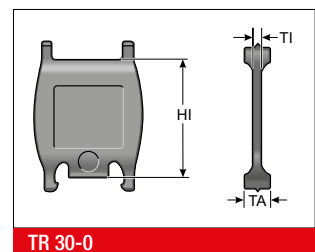
TRT 30



RTT 30



TR 30-1

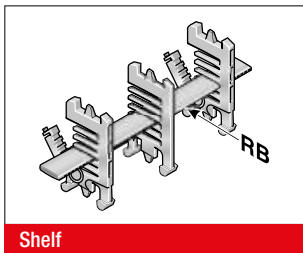


TR 30-0

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



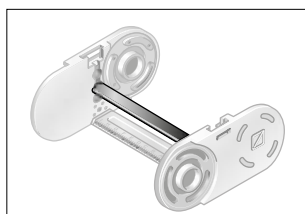
The shelf RBD creates a horizontal division over the entire inner width of the chain link. When used together with the TRT separator, an additional vertical division can be realised.

| Type | Order No. | Description | Width mm | for inner 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 | for inner 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

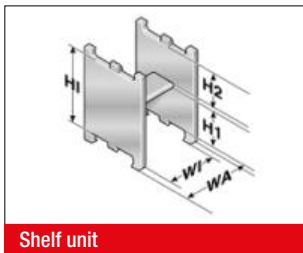


Shelf, end-to-end RBD

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 | for inner 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

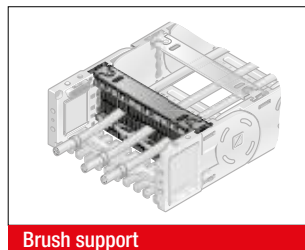
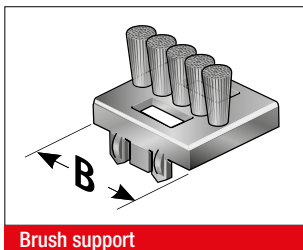


One-piece shelving system, the shelf cannot be varied in height.

Shelf unit

| 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



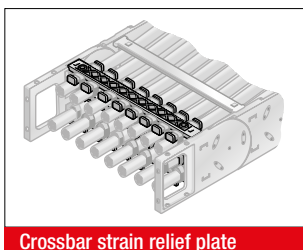
The cables in the neutral strand are routed through the brush supports. This innovative solution was developed especially for applications where cables are subjected to higher levels of wear from cyclical movement.

Brush support

Brush support

| 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

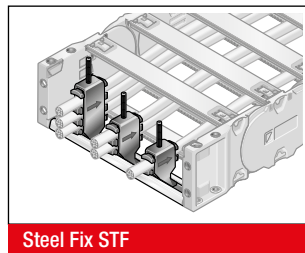
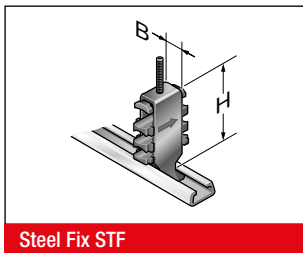


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 200 mm. Can be assembled on the inside and outside bends at both chain ends.

Crossbar strain relief plate

| Type | Order No. | Description | for inner 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 |

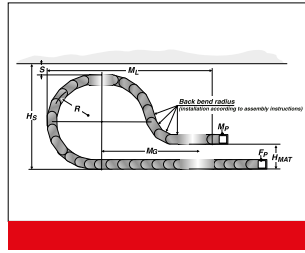
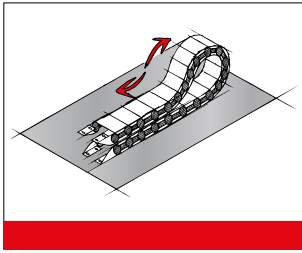
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 30 LOWERED FIXING POINT



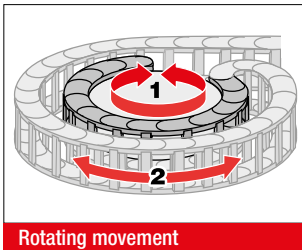
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M _L) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



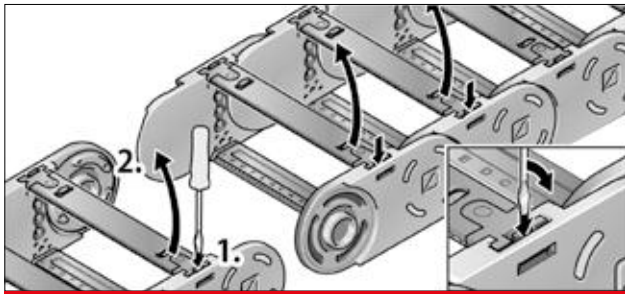
VAW aluminium

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

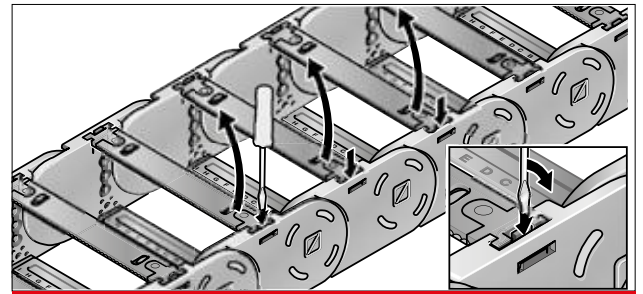
The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

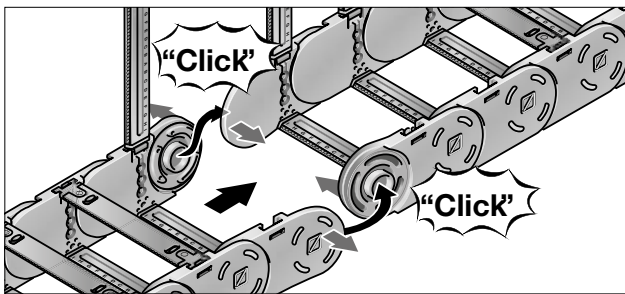
DISASSEMBLY



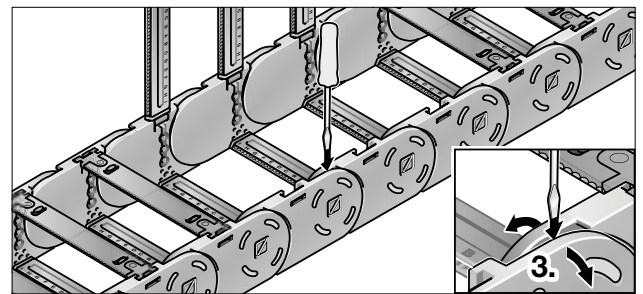
Step 1



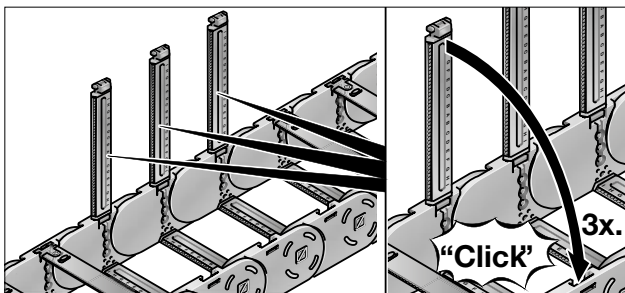
Step 1



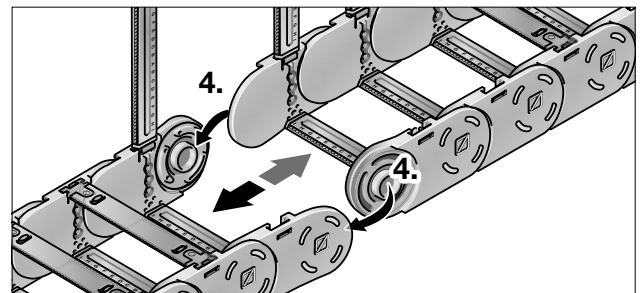
Step 2



Step 2



Step 3



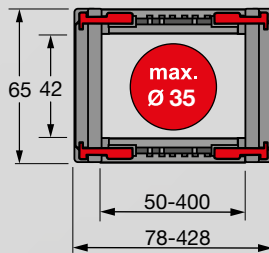
Step 3

MP 420 OPEN

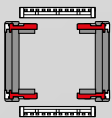


More information about the MP 420 EVOCHAIN® can be found on the internet www.mp.de/420

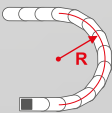
- EASY TO ASSEMBLE WITH THE **EVOLOCK®** CROSSBAR LOCK SYSTEM
- FAST TOOL-FREE OPENING AND CLOSING OF THE SHELVING SYSTEM IN THE INSIDE AND OUTSIDE BEND WITH THE **EVORACK®** SHELF SUPPORT THAT CAN BE OPENED ON BOTH(!) SIDES
- EXTREMELY DURABLE **EVOSILENCE®** NOISE DAMPING SYSTEM IN THE CHAIN LINK WITH A SPECIALLY DEVELOPED ELASTOMER
- QUIET AND LOW-VIBRATION UNROLLING WITH THE **EVOSHUX®** DAMPING SHOE
- GREATLY EXTENDED SERVICE LIFE WITH THE **EVOCONTROL®** GLIDING SHOE WITH INTEGRATED WEAR CONTROL INDICATOR
- PARTICULARLY HIGH SERVICE LIFE FOR APPLICATIONS WITH LATERAL ACCELERATION



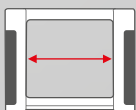
TECHNICAL DATA



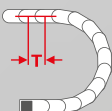
Loading side
Inside and outside bend



Available radii
75.0 – 350.0 mm



Available interior widths
With plastic crossbar
50.0 – 400.0 mm



Pitch
T = 67.0 mm



EVOSILENCE®
Noise damping in side link
Noise reduction of up to 10 dB(A) with damping elements in the chain links.



EVOSHUX® Damping shoe
Noise reduction of up to 25 dB(A) in combination with the noise damping in the chain link.





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-----------------------|
| Travel distance gliding L_g max. | 150.0 m |
| Travel distance self-supporting L_s max. | 8.0 m |
| Travel distance vertical hanging L_{vh} max. | 100.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} max. | 2.0 m |
| Speed gliding V_g max. | 10.0 m/s |
| Speed, self-supporting V_s max. | 20.0 m/s |
| Acceleration, gliding a_g max. | 50.0 m/s ² |
| Acceleration self-supporting a_s max. | 50.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 |

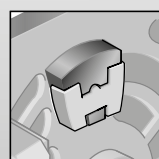
Other material characteristics on request.

ADDITIONAL INFORMATION MATERIAL

On our YouTube channel we provide video material on the topics of function, assembly and disassembly.
<https://www.youtube.com/user/MurrplastikTV>



ACCESSORIES



Damping element
EVOSILENCE® in side link

CROSSBAR LOCK



Crossbar lock
EVOLOCK®

SHELVING SYSTEM



Separator TR

GUIDE CHANNELS



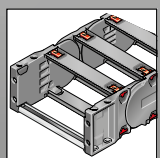
VAW steel galvanised / stainless steel

STRAIN RELIEF



Strain relief ZL-C

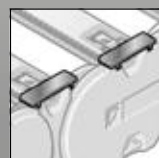
CHAIN BRACKET



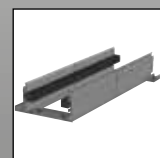
Chain bracket flexible



Shelving system RS
EVORACK®



Gliding shoe
EVOCONTROL®



VAW aluminium

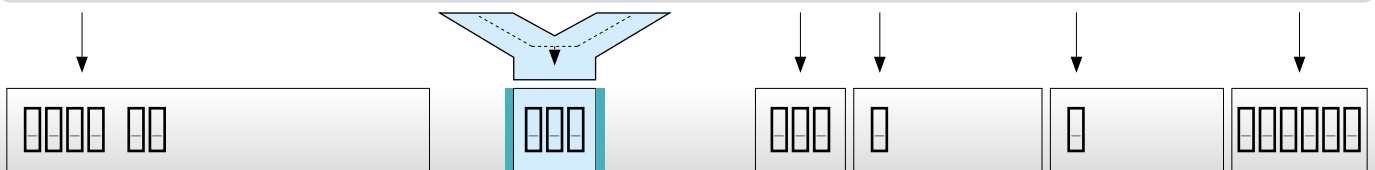


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

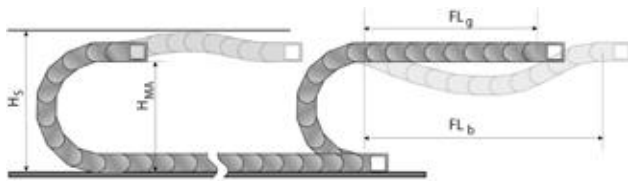
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|-----------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------------------------|----------------------------------------------|--------------|
| 0420 30 | MP 420 open Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 050 [1.97] | 078 [3.07] | 287 [11.30] | 315 [12.40] | 075 [2.95] | 0 Plastic full-ridged with bias (RV) | 2 Polyamide without damper (PA/black) | |
| | | 068 [2.68] | 096 [3.78] | 300 [11.81] | 328 [12.91] | | | | |
| | | 075 [2.95] | 103 [4.06] | 312 [12.28] | 340 [13.39] | 100 [3.94] | 1 Plastic full-ridged without bias (RK) | 3 Polyamide with damper (PA/black) | |
| | | 087 [3.43] | 115 [4.53] | 325 [12.80] | 353 [13.90] | | | | |
| | | 097 [3.82] | 125 [4.92] | 337 [13.27] | 365 [14.37] | 115 [4.53] | 2 Plastic half-ridged with bias (RV) | 9 Special version (on request) | |
| | | 100 [3.94] | 128 [5.04] | 350 [13.78] | 378 [14.88] | | | | |
| | | 108 [4.25] | 136 [5.35] | 362 [14.25] | 390 [15.35] | 125 [4.92] | 3 Plastic half-ridged without bias (RK) | | |
| | | 112 [4.41] | 140 [5.51] | 375 [14.67] | 403 [15.87] | | | | |
| | | 125 [4.92] | 153 [6.02] | 387 [15.24] | 415 [16.34] | 150 [5.91] | 9 Special version (on request) | | |
| | | 137 [5.39] | 165 [6.50] | 400 [15.75] | 428 [16.85] | | | | |
| | | 150 [5.91] | 178 [7.01] | | | 160 [6.30] | | | |
| | | 162 [6.38] | 190 [7.48] | | | | | | |
| | | 168 [6.61] | 196 [7.72] | | | 175 [6.89] | | | |
| | | 175 [6.89] | 203 [7.99] | | | | | | |
| | | 187 [7.36] | 215 [8.46] | | | 200 [7.87] | | | |
| | | 200 [7.87] | 228 [8.98] | | | | | | |
| | | 212 [8.35] | 240 [9.45] | | | 250 [9.84] | | | |
| | | 225 [8.862] | 253 [9.96] | | | | | | |
| | | 237 [9.33] | 265 [10.43] | | | 300 [11.81] | | | |
| | | 250 [9.84] | 278 [10.94] | | | | | | |
| | | 262 [10.31] | 290 [11.42] | | | 350 [13.78] | | | |
| | | 275 [10.83] | 303 [11.93] | | | | | | |



ORDERING EXAMPLE: 0420 30 200 100 0 2 1005

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 200 mm, Radius 100 mm
 Plastic crossbar, full-ridged with bias, material polyamide without damper (PA/black)
 Chain length 1005 mm (15 links)

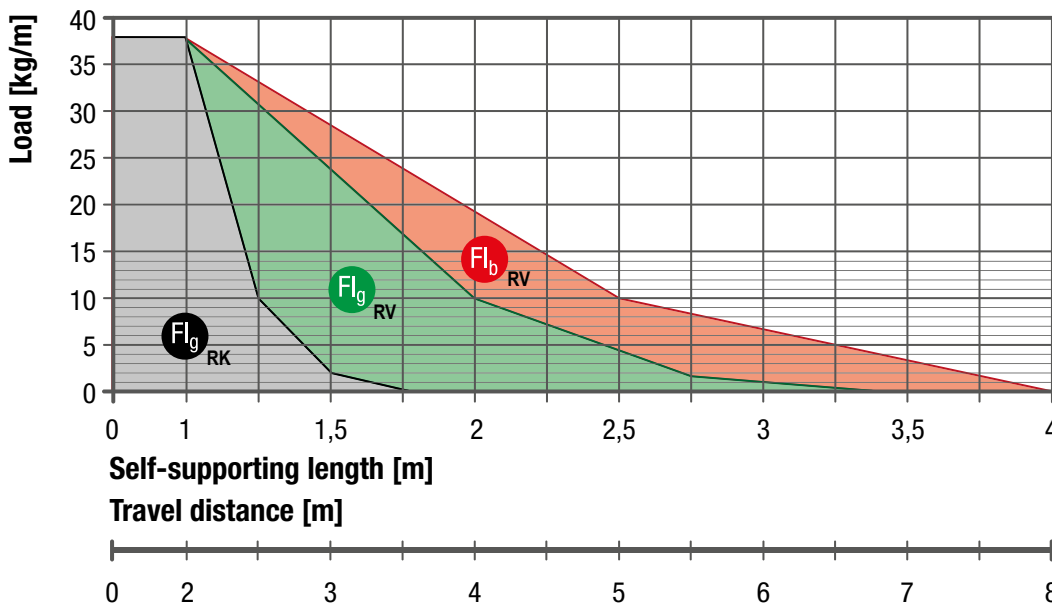
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS

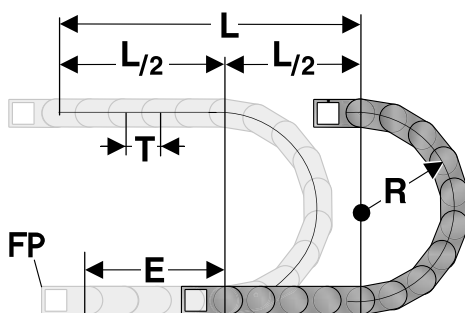


FL_g Self-supporting length, upper run straight
In the FL_g range, the chain upper run still has a bias, is straight or has a maximum sag of 70.0 mm.

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 still less than the maximum sag of 140.0 mm.

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

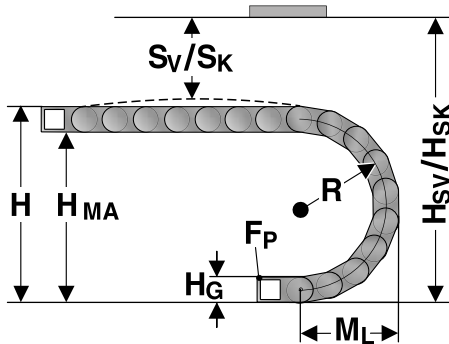


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
1 m chain = 15 links, 67.0 mm each

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

INSTALLATION DIMENSIONS



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

For high acceleration values, we recommend the use of a one-sided pivotable moving end bracket.

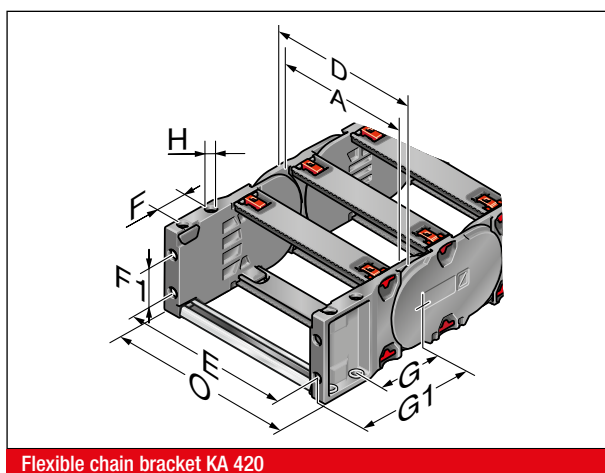
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

For chain links without bias, the “installed height without bias H_{SK} ” 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 | 75 | 100 | 115 | 125 | 150 | 160 | 175 | 200 | 250 | 300 | 350 |
|------------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Outside height of chain link (H_e) | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Height (H) for KA pendular | 215 | 265 | 295 | 315 | 365 | 385 | 415 | 465 | 565 | 665 | 765 |
| Height (H) for KA pivotable on one side | 265 | 315 | 345 | 365 | 415 | 435 | 465 | 515 | 615 | 715 | 815 |
| Height of moving end bracket (H_{MA}) for KA pendular | 150 | 200 | 230 | 250 | 300 | 320 | 350 | 400 | 500 | 600 | 700 |
| Height of moving end bracket (H_{MA}) for KA pivotable on one side | 200 | 250 | 280 | 300 | 350 | 370 | 400 | 450 | 550 | 650 | 750 |
| Safety margin with bias (S_v) | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Installation height with bias (H_{sv}) without damper | 295 | 345 | 375 | 395 | 445 | 465 | 495 | 545 | 645 | 745 | 845 |
| Installation height with bias (H_{sv}) with damper | 320 | 370 | 400 | 420 | 470 | 490 | 520 | 570 | 670 | 770 | 870 |
| Safety margin without bias (S_k) | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Installation height without bias (H_{sk}) without damper | 235 | 285 | 315 | 335 | 385 | 405 | 435 | 485 | 585 | 685 | 785 |
| Installation height without bias (H_{sk}) with damper | 260 | 310 | 340 | 360 | 410 | 430 | 460 | 510 | 610 | 710 | 810 |
| Arc projection (M_L) | 175 | 200 | 215 | 225 | 250 | 260 | 275 | 300 | 350 | 400 | 450 |

KA 420 FLEXIBLE CHAIN BRACKET



Flexible chain bracket KA 420

This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the energy chain. This allows the chain to move right up to the bracket.

If the number of chain links is even, each energy chain requires one male and one female bracket. If the number of chain links is uneven, each energy chain requires two female brackets. At the moving end there is always a female bracket.

M6 bolts are used to secure the brackets in place. Press-in metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent and high-strength transmission of even extreme forces onto the energy chain.

Optionally the chain bracket can be equipped with C-rail and strain relief ZL-C or with bow clamps type STF MP.

| Type | Order No. | Material | Inside width A mm | D mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA outside width O mm |
|--------------------------------------|-----------|----------|-------------------|--------|--------|------|-------|------|-------|------|--------|-----------------------|
| KA 420-FB female, complete | 042000050 | Plastic | 50.0-400.0 | A+28.0 | A+16.0 | 22.5 | 22.0 | 59.5 | 97.0 | 6.5 | | A+32.0 |
| KA 420-FB female, pendular, complete | 042000056 | Plastic | 50.0-400.0 | A+28.0 | A+16.0 | 22.5 | 22.0 | 59.5 | 97.0 | 6.5 | | A+32.0 |
| KA 420-FB male, complete | 042000051 | Plastic | 50.0-400.0 | A+28.0 | A+16.0 | 22.5 | 22.0 | 59.5 | 97.0 | 6.5 | | A+32.0 |
| KA 420-FG female, complete | 042000053 | Plastic | 50.0-400.0 | A+28.0 | A+16.0 | 22.5 | 22.0 | 59.5 | 97.0 | M6 | | A+32.0 |
| KA 420-FG female, pendular, complete | 042000055 | Plastic | 50.0-400.0 | A+28.0 | A+16.0 | 22.5 | 22.0 | 59.5 | 97.0 | M6 | | A+32.0 |
| KA 420-FG male, complete | 042000054 | Plastic | 50.0-400.0 | A+28.0 | A+16.0 | 22.5 | 22.0 | 59.5 | 97.0 | M6 | | A+32.0 |

PLASTIC CROSSBAR EVOLINE



Crossbar

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

| Type | Order No. | Description | Inside width mm |
|-----------|--------------|-------------|-----------------|
| RS 050-40 | 040000005000 | Crossbar | 50.0 |
| RS 068-40 | 040000006800 | Crossbar | 68.0 |
| RS 075-40 | 040000007500 | Crossbar | 75.0 |
| RS 087-40 | 040000008700 | Crossbar | 87.0 |
| RS 097-40 | 040000009700 | Crossbar | 97.0 |
| RS 100-40 | 040000010000 | Crossbar | 100.0 |
| RS 108-40 | 040000010800 | Crossbar | 108.0 |
| RS 112-40 | 040000011200 | Crossbar | 112.0 |
| RS 125-40 | 040000012500 | Crossbar | 125.0 |
| RS 137-40 | 040000013700 | Crossbar | 137.0 |
| RS 150-40 | 040000015000 | Crossbar | 150.0 |
| RS 162-40 | 040000016200 | Crossbar | 162.0 |
| RS 168-40 | 040000016800 | Crossbar | 168.0 |
| RS 175-40 | 040000017500 | Crossbar | 175.0 |
| RS 187-40 | 040000018700 | Crossbar | 187.0 |
| RS 200-40 | 040000020000 | Crossbar | 200.0 |
| RS 212-40 | 040000021200 | Crossbar | 212.0 |
| RS 225-40 | 040000022500 | Crossbar | 225.0 |
| RS 237-40 | 040000023700 | Crossbar | 237.0 |
| RS 250-40 | 040000025000 | Crossbar | 250.0 |
| RS 262-40 | 040000026200 | Crossbar | 262.0 |
| RS 275-40 | 040000027500 | Crossbar | 275.0 |
| RS 287-40 | 040000028700 | Crossbar | 287.0 |
| RS 300-40 | 040000030000 | Crossbar | 300.0 |
| RS 312-40 | 040000031200 | Crossbar | 312.0 |
| RS 325-40 | 040000032500 | Crossbar | 325.0 |
| RS 337-40 | 040000033700 | Crossbar | 337.0 |
| RS 350-40 | 040000035000 | Crossbar | 350.0 |
| RS 362-40 | 040000036200 | Crossbar | 362.0 |
| RS 375-40 | 040000037500 | Crossbar | 375.0 |
| RS 387-40 | 040000038700 | Crossbar | 387.0 |
| RS 400-40 | 040000040000 | Crossbar | 400.0 |

EVOLOCK® CROSSBAR LOCK RS 420



Crossbar lock

The EVOLOCK® crossbar lock allows an extremely easy and quick locking of the crossbars due to the innovative locking slide.

The standard colour is red, RAL 3020. Further colours on request.

| Type | Order No. | Colour |
|--------------------|--------------|----------|
| RS-420 lock, red | 042000004270 | RAL 3020 |
| RS-420 lock, blue | 042000004271 | RAL 5015 |
| RS-420 lock, black | 042000004272 | RAL 9005 |

EVOCONTROL® GLIDING SHOE GS 420



Gliding shoe in inside bend

Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run).

The gliding shoes are set onto the side links on the inside bend (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes. Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes.

The gliding shoes can be optionally equipped with the EVOCONTROL® wear indicator. This indicates the on-time replacement of the gliding shoes.

| Type | Order No. | Description | Installation site | Min. radius mm | Gliding shoe height mm |
|--------------------------------|--------------|------------------------------------------|-------------------|----------------|------------------------|
| GS 420 gliding shoe | 042090400300 | Gliding shoe | Inside bend | 125.0 | 4.5 |
| GS 420 Gliding shoe EVOCONTROL | 0420400350 | Gliding shoe with wear control indicator | Inside bend | 125.0 | 4.5 |

EVOSILENCE® DAMPING ELEMENT IN SIDE LINK



Damping element in side link

Extremely durable noise damping system in the chain link with a specially developed elastomer (optional).

Due to the large area and almost wear-free damping element in the chain link, the energy chains roll up to 10 dB(A) quieter.

| Type | Order No. | Description |
|------------------------|--------------|-----------------|
| Damping element MP 420 | 800099131275 | Damping element |

EVOSHOX® DAMPING SHOE DS 420



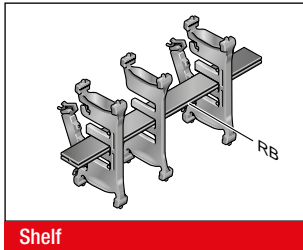
Damping shoe in outside bend

The EVOSHOX® damping shoes significantly reduce the noise emission when the energy chain is rolling.

When using the damping elements in the chain link in connection with the EVOSHOX® damping shoes, the noise emission is reduced by up to 25 dB (A).

| Type | Order No. | Description | Installation site | Min. radius mm | Damping shoe height mm |
|---------------------|------------|--------------|-------------------|----------------|------------------------|
| DS 420 damping shoe | 0420400450 | Damping shoe | Outside bend | 75 | 5.0 |

RB-K SHELF



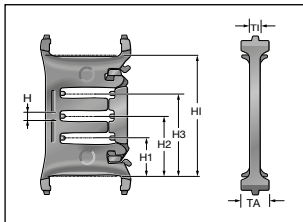
In combination with at least two shelf supports that can be opened on both sides, the shelf provides the innovative EVORACK® shelf support system.

The additional levels prevent cables from twisting and minimise the friction between them.

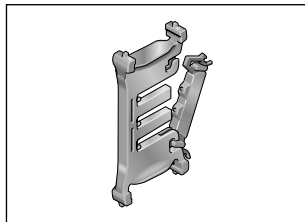
| Type | Order No. | Description | Width mm | Type | Order No. | Description | Width mm | Type | Order No. | Description | Width mm |
|-----------|-------------|-------------|----------|----------|--------------|-------------|----------|----------|--------------|-------------|----------|
| RB 23-K * | 10000002300 | Shelf | 23 | RB 116-K | 1000011604 | Shelf | 116 | RB 206-K | 1000020604 | Shelf | 206.4 |
| RB 28-K | 1000002804 | Shelf | 28 | RB 118-K | 1000011804 | Shelf | 118.5 | RB 208-K | 1000020804 | Shelf | 208.9 |
| RB 31-K | 1000003104 | Shelf | 30.5 | RB 121-K | 1000012104 | Shelf | 121 | RB 211-K | 1000021104 | Shelf | 211.4 |
| RB 33-K * | 10000003300 | Shelf | 33.1 | RB 123-K | 100000012300 | Shelf | 123.5 | RB 213-K | 1000021304 | Shelf | 213.9 |
| RB 36-K | 1000003604 | Shelf | 35.6 | RB 126-K | 1000012604 | Shelf | 126.1 | RB 216-K | 1000021604 | Shelf | 216.4 |
| RB 38-K | 1000003804 | Shelf | 38.1 | RB 128-K | 1000012804 | Shelf | 128.6 | RB 218-K | 1000021804 | Shelf | 218.9 |
| RB 41-K | 1000004104 | Shelf | 40.6 | RB 131-K | 1000013104 | Shelf | 131.1 | RB 221-K | 1000022104 | Shelf | 221.4 |
| RB 43-K | 1000004304 | Shelf | 43.1 | RB 133-K | 1000013304 | Shelf | 133.6 | RB 223-K | 1000022304 | Shelf | 223.9 |
| RB 46-K | 1000004604 | Shelf | 45.6 | RB 136-K | 1000013604 | Shelf | 136.1 | RB 226-K | 1000022604 | Shelf | 224.4 |
| RB 48-K | 1000004804 | Shelf | 48.1 | RB 138-K | 1000013804 | Shelf | 138.6 | RB 228-K | 1000022804 | Shelf | 229 |
| RB 51-K | 1000005104 | Shelf | 50.7 | RB 141-K | 1000014104 | Shelf | 141.1 | RB 231-K | 1000023104 | Shelf | 231.5 |
| RB 53-K | 1000005304 | Shelf | 53.2 | RB 143-K | 1000014304 | Shelf | 143.6 | RB 233-K | 1000023304 | Shelf | 234 |
| RB 56-K | 1000005604 | Shelf | 55.7 | RB 146-K | 1000014604 | Shelf | 146.2 | RB 236-K | 1000023604 | Shelf | 235.5 |
| RB 58-K | 1000005804 | Shelf | 58.2 | RB 148-K | 1000014804 | Shelf | 148.7 | RB 238-K | 1000023804 | Shelf | 239 |
| RB 61-K | 1000006104 | Shelf | 60.7 | RB 151-K | 1000015104 | Shelf | 151.2 | RB 241-K | 1000024104 | Shelf | 241.5 |
| RB 63-K | 1000006304 | Shelf | 63.2 | RB 153-K | 1000015304 | Shelf | 153.7 | RB 243-K | 1000024304 | Shelf | 244 |
| RB 66-K | 1000006604 | Shelf | 65.7 | RB 156-K | 1000015604 | Shelf | 156.2 | RB 246-K | 1000024604 | Shelf | 246.5 |
| RB 68-K | 1000006804 | Shelf | 68.2 | RB 158-K | 1000015804 | Shelf | 158.7 | RB 248-K | 100000024800 | Shelf | 249.2 |
| RB 71-K | 1000007104 | Shelf | 70.7 | RB 161-K | 1000016104 | Shelf | 161.3 | | | | |
| RB 73-K | 1000007304 | Shelf | 73.3 | RB 163-K | 1000016304 | Shelf | 163.8 | | | | |
| RB 76-K | 1000007604 | Shelf | 75.8 | RB 166-K | 1000016604 | Shelf | 166.3 | | | | |
| RB 78-K | 1000007804 | Shelf | 78.3 | RB 168-K | 1000016804 | Shelf | 168.8 | | | | |
| RB 81-K | 1000008104 | Shelf | 80.8 | RB 171-K | 1000017104 | Shelf | 171.3 | | | | |
| RB 83-K | 1000008304 | Shelf | 83.3 | RB 173-K | 1000017304 | Shelf | 173.8 | | | | |
| RB 86-K | 1000008604 | Shelf | 85.8 | RB 176-K | 1000017604 | Shelf | 176.3 | | | | |
| RB 88-K | 1000008804 | Shelf | 88.3 | RB 178-K | 1000017804 | Shelf | 178.8 | | | | |
| RB 91-K | 1000009104 | Shelf | 90.9 | RB 181-K | 1000018104 | Shelf | 181.3 | | | | |
| RB 93-K | 1000009304 | Shelf | 93.4 | RB 183-K | 1000018304 | Shelf | 183.8 | | | | |
| RB 96-K | 1000009604 | Shelf | 95.9 | RB 186-K | 1000018604 | Shelf | 186.3 | | | | |
| RB 98-K | 1000098804 | Shelf | 98.4 | RB 188-K | 1000018804 | Shelf | 188.8 | | | | |
| RB 101-K | 1000010104 | Shelf | 100.9 | RB 191-K | 1000019104 | Shelf | 191.3 | | | | |
| RB 103-K | 1000010304 | Shelf | 103.5 | RB 193-K | 1000019304 | Shelf | 193.9 | | | | |
| RB 106-K | 1000010604 | Shelf | 106 | RB 196-K | 1000019604 | Shelf | 196.4 | | | | |
| RB 108-K | 1000010804 | Shelf | 108.5 | RB 198-K | 1000019804 | Shelf | 198.9 | | | | |
| RB 111-K | 1000011104 | Shelf | 111 | RB 201-K | 1000020104 | Shelf | 201.4 | | | | |
| RB 113-K | 1000011304 | Shelf | 113.5 | RB 203-K | 1000020304 | Shelf | 203.9 | | | | |

* grid = 2 mm

EVORACK® SHELF SUPPORT WITH FLAP RTT 420



Shelf support

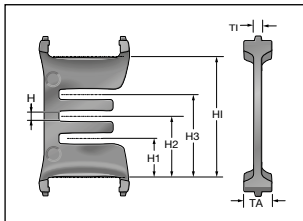


Shelf support

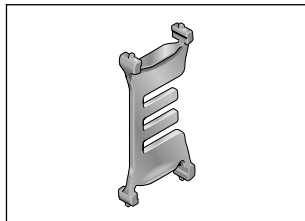
Two shelf supports that can be opened on both sides (RTT) in combination with at least one shelf (RB) provide an easy to fill EVORACK® shelf support system. The additional levels prevent the cables from twisting and minimise the friction between them.

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm |
|----------------------------------|--------------|---------------|----------|----------|----------|---------|----------|----------|----------|----------|
| RTT 420 shelf support, with flap | 042000004000 | Shelf support | lockable | 5.0 | 10.0 | 3.8 | 13.6 | 21.2 | 28.8 | 42.4 |

TR 420.1 SEPARATOR



Separator

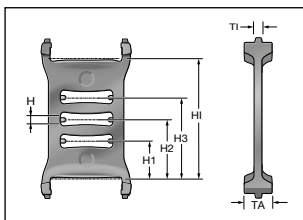


Separator

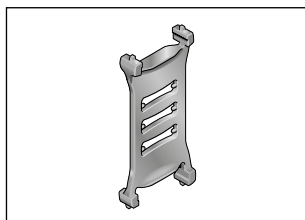
The lockable separator TR 420.1 is required, when a shelving system with separable shelf supports and shelves is used.

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm |
|--------------------------|--------------|-------------|----------|----------|----------|---------|----------|----------|----------|----------|
| TR 420.1, open, lockable | 042000004100 | Separator | lockable | 3.0 | 10.0 | 3.8 | 13.6 | 21.2 | 28.8 | 42.4 |

TR 420.3 SEPARATOR



Separator

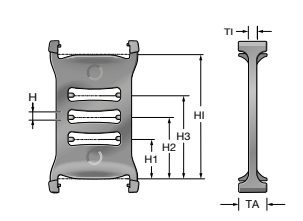


Separator

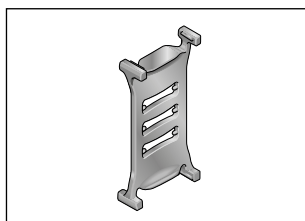
The lockable separator TR 420.3 is particularly required for gliding applications if only vertical partitions with grids are used.

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm |
|-------------------|--------------|-------------|----------|----------|----------|---------|----------|----------|----------|----------|
| TR 420.3 lockable | 042000004300 | Separator | lockable | 3.0 | 10.0 | 3.8 | 13.6 | 21.2 | 28.8 | 42.4 |

TR 420.5-V SEPARATOR



Separator

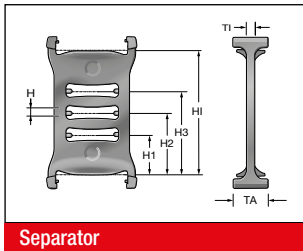


Separator

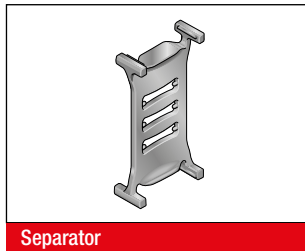
With the movable separators TR 420.5, TR 420.6 and TR 420.7 different chamber widths can be created using the width of the foot contour (dimension TA).

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm |
|-------------------|--------------|-------------|---------|----------|----------|---------|----------|----------|----------|----------|
| TR 420.5, movable | 042000004500 | Separator | movable | 3.0 | 10.0 | 3.8 | 13.6 | 21.2 | 28.8 | 42.4 |

TR 420.6-V SEPARATOR



Separator

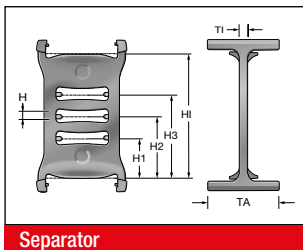


Separator

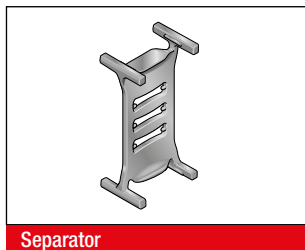
With the movable separators TR 420.5, TR 420.6 and TR 420.7 different chamber widths can be created using the width of the foot contour (dimension TA).

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm |
|-------------------|--------------|-------------|---------|----------|----------|---------|----------|----------|----------|----------|
| TR 420.6, movable | 042000004600 | Separator | movable | 3.0 | 14.0 | 3.8 | 13.6 | 21.2 | 28.8 | 42.4 |

TR 420.7-V SEPARATOR



Separator

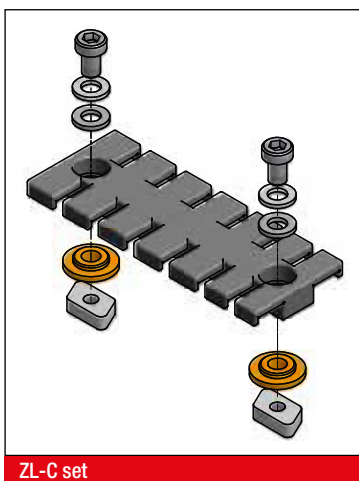


Separator

With the movable separators TR 420.5, TR 420.6 and TR 420.7 different chamber widths can be created using the width of the foot contour (dimension TA).

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm |
|-------------------|--------------|-------------|---------|----------|----------|---------|----------|----------|----------|----------|
| TR 420.7, movable | 042000004700 | Separator | movable | 3.0 | 27.0 | 3.8 | 13.6 | 21.2 | 28.8 | 42.4 |

STRAIN RELIEF WITH C-RAIL AND STRAIN RELIEF PLATE ZL-C



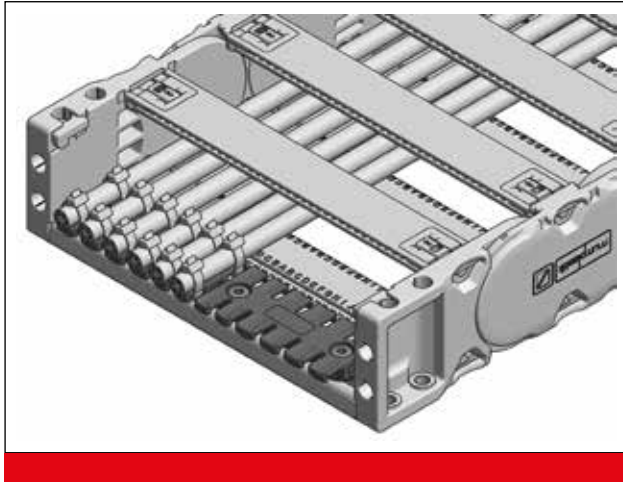
ZL-C set

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.

Suitable combinations of C-rails and ZL-Sets for all inside widths: See table on next page.

| Type | Order No. | Version | Quantity teeth |
|--------------|-----------|---------------|-------------------|
| ZL-C 39 Set | 87702810 | Metric thread | 3 |
| ZL-C 60 Set | 87702812 | Metric thread | 4 |
| ZL-C 80 Set | 87702814 | Metric thread | 6 |
| ZL-C 87 Set | 87702816 | Metric thread | 6 |
| ZL-C 103 Set | 87702818 | Metric thread | 7 |
| ZL-C 121 Set | 87702820 | Metric thread | 8 |
| ZL-C 140 Set | 87702822 | Metric thread | 9 |

STRAIN RELIEF WITH C-RAIL AND STRAIN RELIEF PLATE ZL

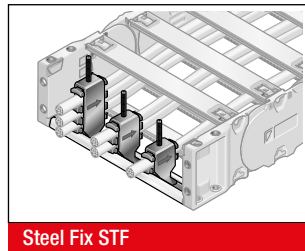
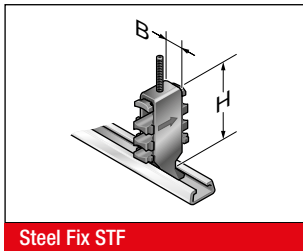


For the strain relief with C-rail and strain relief plate ZL-C the C-rail for the suitable inside width must be chosen. One C-rail per chain bracket side is required.

The combination of the ZL-C for each inner width is shown in the table below. The corresponding order numbers can be found on the previous page.

| Type C-rail | Order No. | Inside width mm | Length C-rail mm | Recommended ZL combinations | Quantity teeth |
|-------------------|------------|-----------------|------------------|--------------------------------|----------------|
| C-rail KA 420 050 | 0420050090 | 50.0 | 53.0 | ZL-C 39 | 3 |
| C-rail KA 420 068 | 0420068090 | 68.0 | 71.0 | ZL-C 39 | 3 |
| C-rail KA 420 075 | 0420075090 | 75.0 | 78.0 | ZL-C 60 | 4 |
| C-rail KA 420 087 | 0420087090 | 87.0 | 90.0 | ZL-C 60 | 4 |
| C-rail KA 420 097 | 0420097090 | 97.0 | 100.0 | ZL-C 80 | 6 |
| C-rail KA 420 100 | 0420100090 | 100.0 | 103.0 | ZL-C 87 | 6 |
| C-rail KA 420 108 | 0420108090 | 108.0 | 111.0 | ZL-C 87 | 6 |
| C-rail KA 420 112 | 0420112090 | 112.0 | 115.0 | ZL-C 87 | 6 |
| C-rail KA 420 125 | 0420125090 | 125.0 | 128.0 | ZL-C 103 | 7 |
| C-rail KA 420 137 | 0420137090 | 137.0 | 140.0 | ZL-C 121 | 8 |
| C-rail KA 420 150 | 0420150090 | 150.0 | 153.0 | ZL-C 121 | 8 |
| C-rail KA 420 162 | 0420162090 | 162.0 | 165.0 | ZL-C 140 | 9 |
| C-rail KA 420 168 | 0420168090 | 168.0 | 171.0 | ZL-C 140 | 9 |
| C-rail KA 420 175 | 0420175090 | 175.0 | 178.0 | ZL-C 140 | 9 |
| C-rail KA 420 187 | 0420187090 | 187.0 | 190.0 | ZL-C 80 + ZL-C 80 | 12 |
| C-rail KA 420 200 | 0420200090 | 200.0 | 203.0 | ZL-C 87 + ZL-C 87 | 12 |
| C-rail KA 420 212 | 0420212090 | 212.0 | 215.0 | ZL-C 103 + ZL-C 87 | 13 |
| C-rail KA 420 225 | 0420225090 | 225.0 | 228.0 | ZL-C 103 + ZL-C 103 | 14 |
| C-rail KA 420 237 | 0420237090 | 237.0 | 240.0 | ZL-C 121 + ZL-C 87 | 14 |
| C-rail KA 420 250 | 0420250090 | 250.0 | 253.0 | ZL-C 140 + ZL-C 87 | 15 |
| C-rail KA 420 262 | 0420262090 | 262.0 | 265.0 | ZL-C 121 + ZL-C 121 | 16 |
| C-rail KA 420 275 | 0420275090 | 275.0 | 278.0 | ZL-C 121 + ZL-C 121 | 16 |
| C-rail KA 420 287 | 0420287090 | 287.0 | 290.0 | ZL-C 140 + ZL-C 121 | 17 |
| C-rail KA 420 300 | 0420300090 | 300.0 | 303.0 | ZL-C 140 + ZL-C 140 | 18 |
| C-rail KA 420 312 | 0420312090 | 312.0 | 315.0 | ZL-C 121 + ZL-C 80 + ZL-C 80 | 20 |
| C-rail KA 420 325 | 0420325090 | 325.0 | 328.0 | ZL-C 121 + ZL-C 87 + ZL-C 87 | 20 |
| C-rail KA 420 337 | 0420337090 | 337.0 | 340.0 | ZL-C 103 + ZL-C 103 + ZL-C 103 | 21 |
| C-rail KA 420 350 | 0420350090 | 350.0 | 353.0 | ZL-C 121 + ZL-C 121 + ZL-C 80 | 22 |
| C-rail KA 420 362 | 0420362090 | 362.0 | 365.0 | ZL-C 121 + ZL-C 121 + ZL-C 87 | 22 |
| C-rail KA 420 375 | 0420375090 | 375.0 | 378.0 | ZL-C 121 + ZL-C 121 + ZL-C 103 | 23 |
| C-rail KA 420 387 | 0420387090 | 387.0 | 390.0 | ZL-C 121 + ZL-C 121 + ZL-C 121 | 24 |
| C-rail KA 420 400 | 0420400090 | 400.0 | 403.0 | ZL-C 140 + ZL-C 140 + ZL-C 87 | 24 |

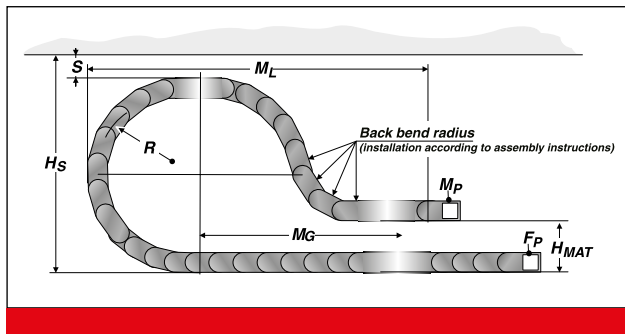
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 420 LOWERED FIXING POINT



Sometimes it is required to lower the height of the moving end bracket for longer travel distances. In this case, modifications to the chain layout should be considered (e.g. extension of the chain). Rearward chain links are mounted directly following the chain bracket. Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MAT}) mm | Safety margin (S) mm | Installation height incl. safety (H _s) mm | Projection (M _l) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|-----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 175 | 180 | 50 | 465 | 590 | 11 | 2 |
| 200 | 210 | 50 | 515 | 660 | 13 | 2 |
| 250 | 240 | 50 | 615 | 790 | 17 | 2 |
| 300 | 270 | 50 | 715 | 910 | 18 | 2 |
| 350 | 300 | 50 | 815 | 1060 | 22 | 2 |

GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



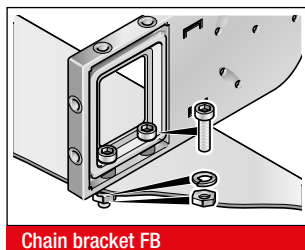
VAW steel galvanised / stainless steel



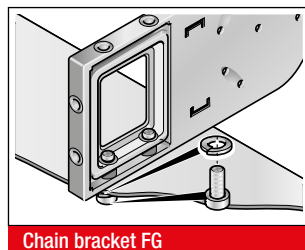
VAW aluminium

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



Chain bracket FB



Chain bracket FG

Metal bushings guarantee long-lasting fastening without cold flow in the plastic.

Type KA-FB:

Integrated through-hole is fastened using screw and nut.

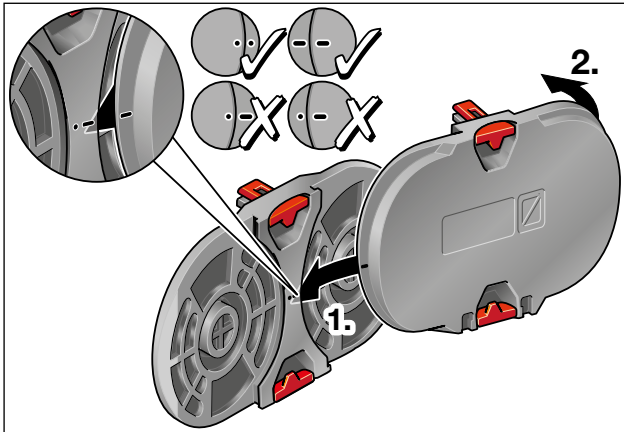
Type KA-FG:

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

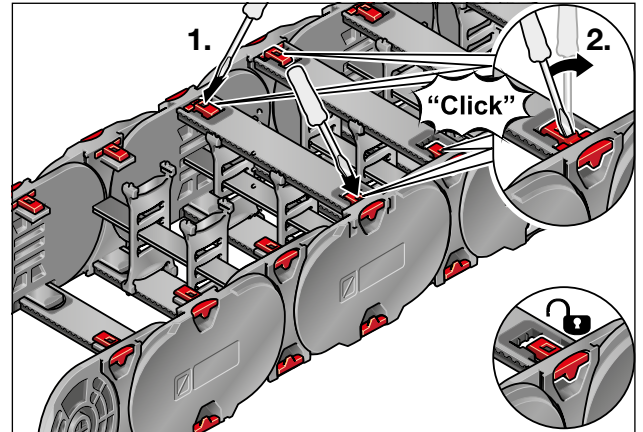
ASSEMBLY

DISASSEMBLY

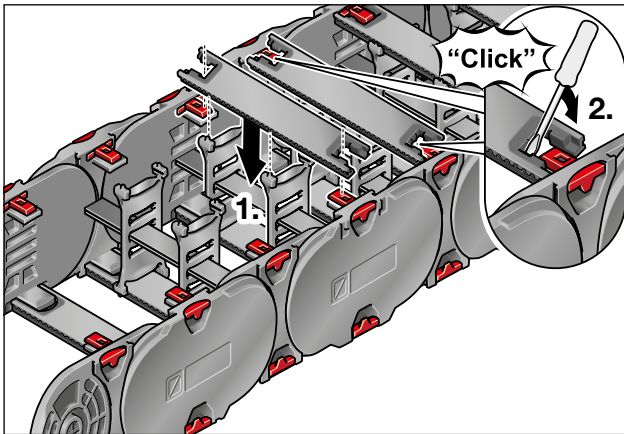
EFK



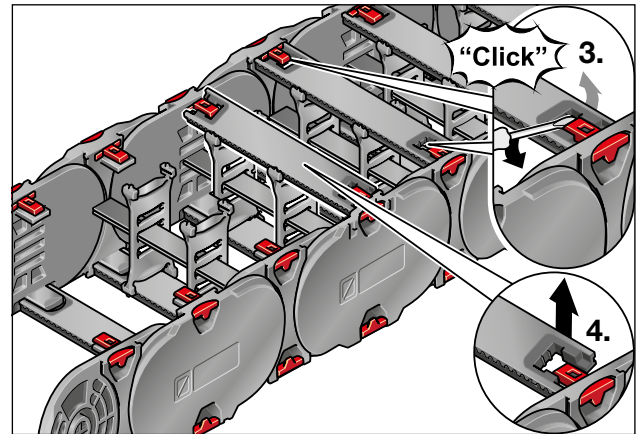
Step 1



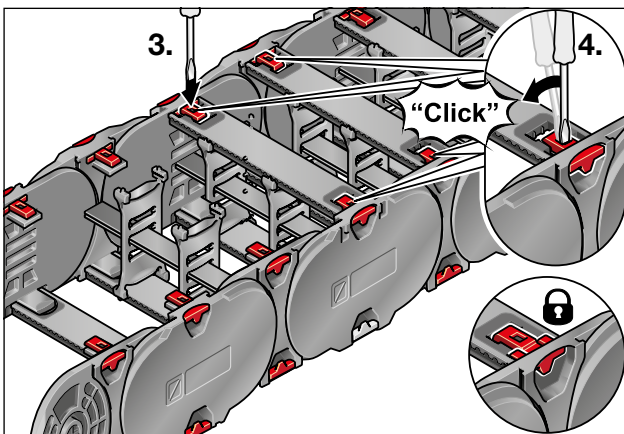
Step 1



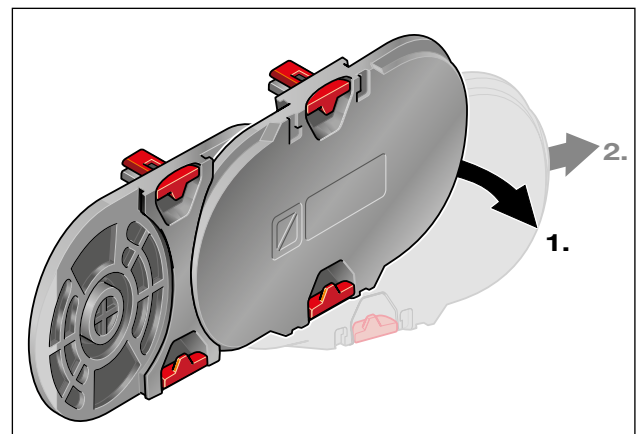
Step 2



Step 2



Step 3



Step 3

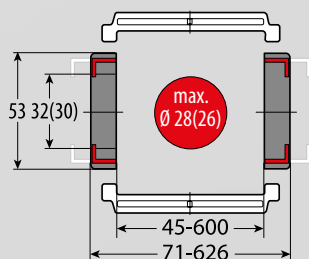
MP 32.2
OPEN



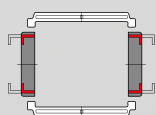
MP 32.3
CLOSED



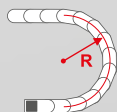
- GLIDING SHOES FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- FLEXIBLE CHAIN BRACKET
- PLASTIC OR ALUMINIUM VERSION



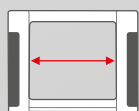
TECHNICAL DATA



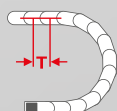
Loading side
Inside and outside bend



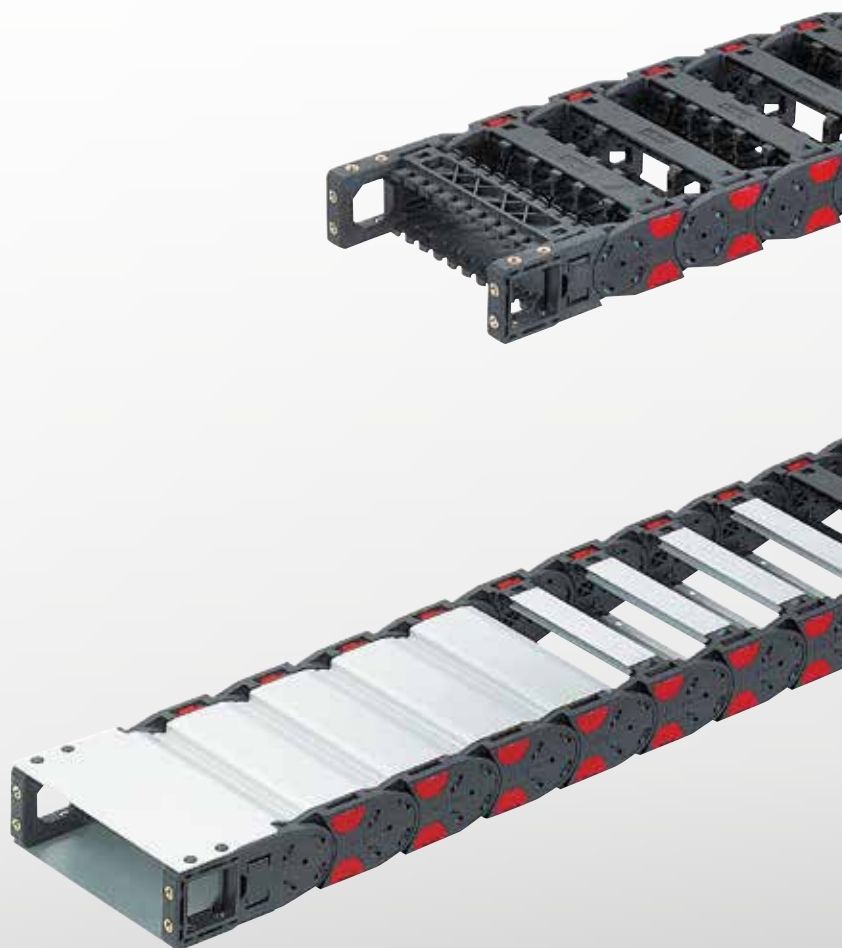
Available radii
80.0 – 250.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 100.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 211 |
| Travel distance vertical hanging L_{vh} max. | 40.0 m |
| Travel distance vertical upright L_{vs} max. | 5.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de



MATERIAL CHARACTERISTICS

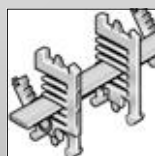
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

SHELVING SYSTEM



Separator TR



RS shelving system

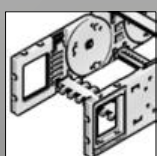


Crossbar connector RSV



H-shaped shelf unit (RE)

CHAIN BRACKET



Chain bracket flexible

ACCESSORIES



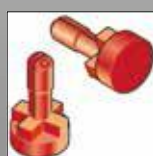
Gliding shoe



Bracket bar



Cover

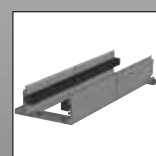


Lock button

GUIDE CHANNELS

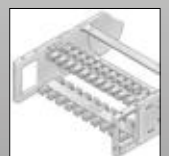


VAW galvanised steel / stainless steel



VAW aluminium

STRAIN RELIEF



RS-ZL crossbar

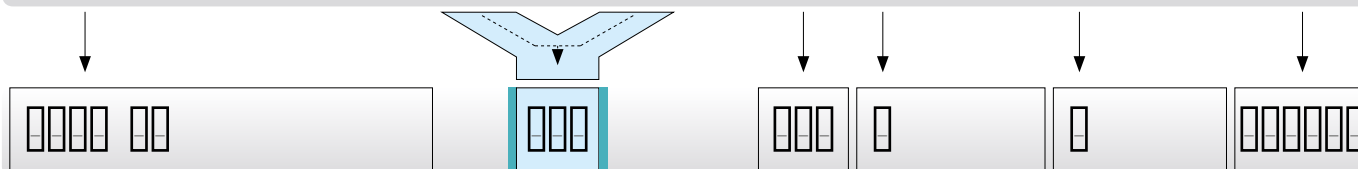


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|-----------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------|----------------|----------------|-----------------------------|-----------------------------------|---------------------------------|--------------|
| 0322 30 | MP 32.2 open Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 045 ¹⁾ [1.77] | 071 [2.80] | 233 [9.17] | 259 [10.20] | 080 ¹⁾ [3.15] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 057 ¹⁾ [2.24] | 083 [3.27] | 246 [9.69] | 272 [10.71] | | | | |
| 0323 44 ²⁾ | MP 32.3 closed Cover on outside bend Cover on inside bend To be opened from inside and outside bend | 062 [2.44] | 088 [3.46] | 252 [9.92] | 278 [10.94] | 100 ¹⁾ [3.94] | 2 Plastic half-ridged with bias | 5 Polypropylene (PP/blue) | |
| | | 071 [2.80] | 097 [3.82] | 258 [10.16] | 284 [11.18] | | | | |
| | | 084 [3.31] | 110 [4.33] | 296 [11.65] | 322 [12.68] | 120 [4.72] | 4 Aluminium full-ridged with bias | 7 ESD (PA/light grey) | |
| | | 093 [3.66] | 119 [4.69] | 346 [13.62] | 372 [14.65] | | | | |
| | | 096 [3.78] | 122 [4.80] | 350 [13.78] | 376 [14.80] | 150 [5.91] | 6 Aluminium half-ridged with bias | 9 Special version (on request) | |
| | | 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] | 9 Special version (on request) | | |
| | | 121 [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] | | | |
| | | 144 [5.67] | 170 [6.69] | 446 [17.56] | 472 [18.58] | | | | |
| | | 146 [5.75] | 172 [6.77] | 496 [19.53] | 522 [20.55] | | | | |
| | | 158 [6.22] | 184 [7.24] | 546 [21.50] | 572 [22.52] | | | | |
| | | 164 [6.46] | 190 [7.48] | | | | | | |
| | | 171 [6.73] | 197 [7.76] | | | | | | |
| | | 182 [7.17] | 208 [8.19] | | | | | | |
| | | 196 [7.72] | 222 [8.74] | | | | | | |
| | | 208 [8.19] | 234 [9.21] | | | | | | |
| | | 220 [8.66] | 246 [9.69] | | | | | | |



ORDERING EXAMPLE: 0322 30 045 080 0 0 1290

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

¹⁾ only for variant 30
²⁾ reduced inner height, reduced max. cable diameter, see chain window drawing page 208

NOTE ON CONFIGURATION

Aluminium crossbars:

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

Aluminium covers:

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

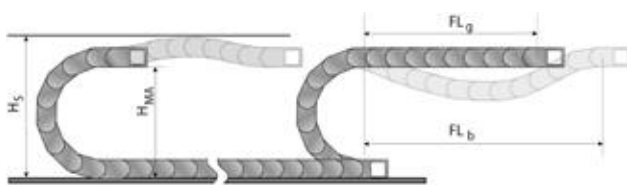
Crossbar connector and crossbar strain relief plate:

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.

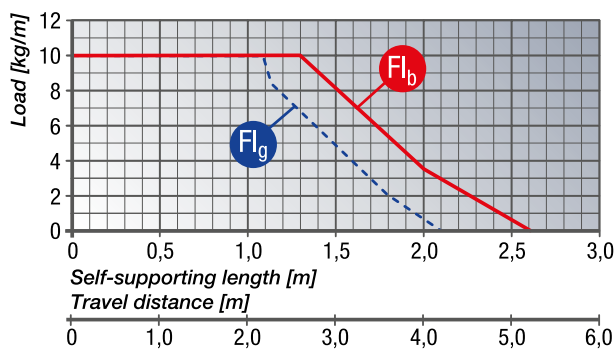
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



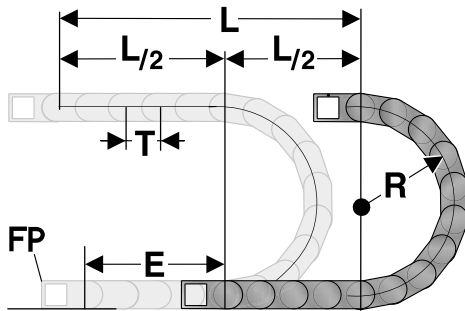
FL_g Self-supporting length, upper run straight

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

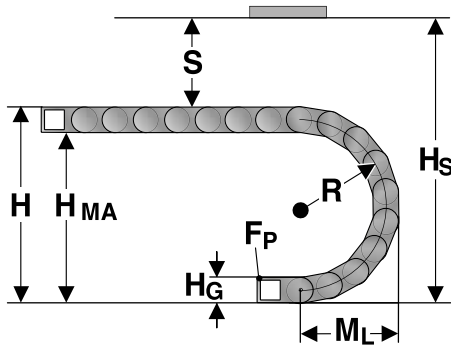


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 16 links, 64.5 mm each

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

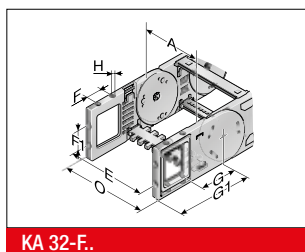
INSTALLATION DIMENSIONS



The moving end chain bracket 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 _e) | 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 |

KA 32 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 energy 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 | |
|----------|------------|----------|-------------|--------------|--------|------|-------|------|-------|------|---------------|---------|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm |
| KA 32-FB | 0321000054 | Plastic | with socket | 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 | |

PLASTIC CROSSBAR POWERLINE

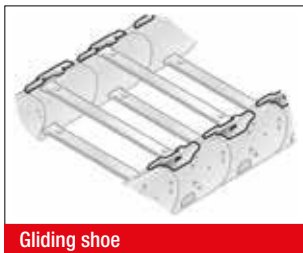


Crossbar

The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

GS 32.2 GLIDING SHOE

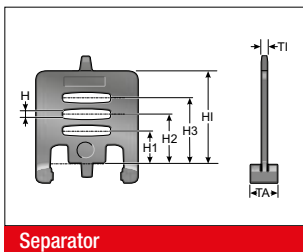


Gliding shoe

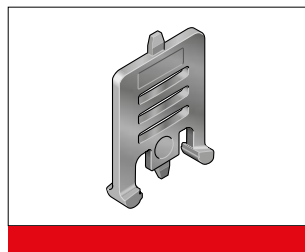
Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run). The gliding shoes are placed onto the side links instead of the usual crossbar locks (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes. Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes. Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Min. radius mm | Gliding shoe height mm |
|---------|--------------|-------------------|---------------------------|
| GS 32.2 | 032290400300 | 120.0 | 4.0 |

TR 32 SEPARATOR



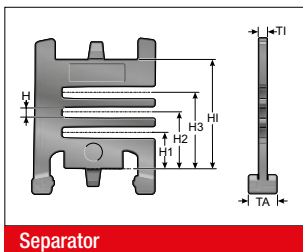
Separator



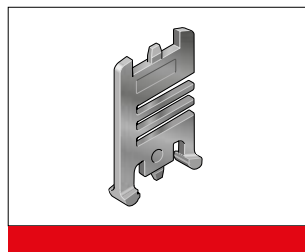
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

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

TR 32.1 SEPARATOR



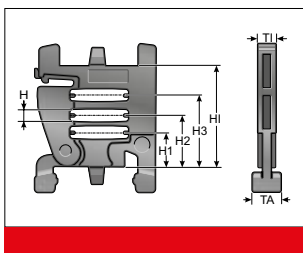
Separator



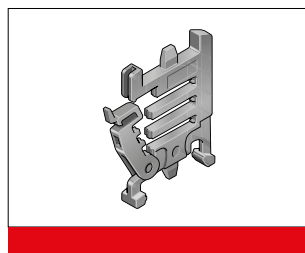
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | 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



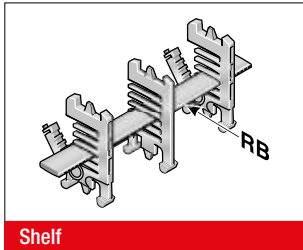
Separator



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



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

| Type | Order No. | Description | Width mm | for inner 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |

RB-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|-------------|-------------|----------|--------------------|
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 10000029100 | Shelf | 291.2 | 346.0 |

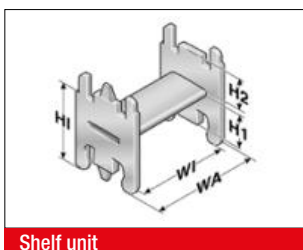
RSV 32 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| Type | Order No. | Description | Tl 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 |

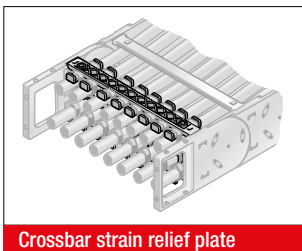
BS-5 BRACKET BAR



Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain. The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar. The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

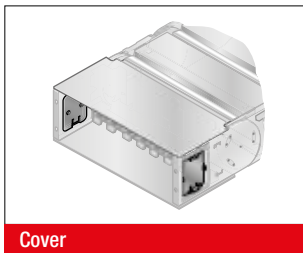
RS-ZL-5 CROSSBAR STRAIN RELIEF



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

| Type | Order No. | Description | for inner 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 |

COVER D3 CHAIN BRACKET

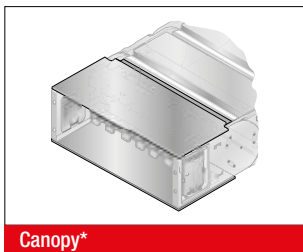


Cover

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*

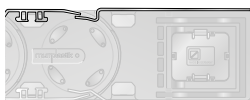
Constructed from aluminium, the covers for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

Canopy for chain bracket, fixed point outside bend: Type and Order No. 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 No. configurator



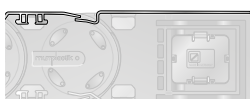
| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 32.1 FB/FG IB | Inside width | 2-2 |
| Order no.: | 0321 | Inside width | 058 |

Canopy for chain bracket moving end outside bend: Type and Order No. 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 No. configurator



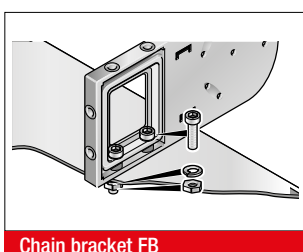
| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 32.1 FB/FG IB | Inside width | 1-2 |
| Order no.: | 0321 | Inside width | 057 |

Ordering example:

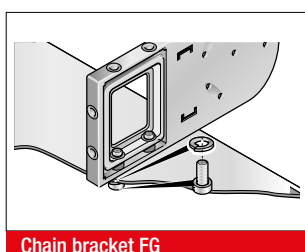
0321096058 KA 32.1 FB/FG IB 096 2-2

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

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



Chain bracket FB



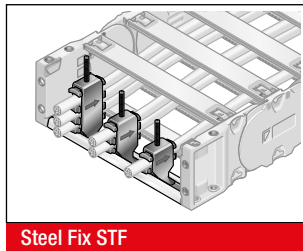
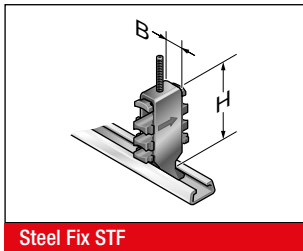
Chain bracket FG

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

Type KA-FB:
Integrated through-hole is fastened using screw and nut.

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

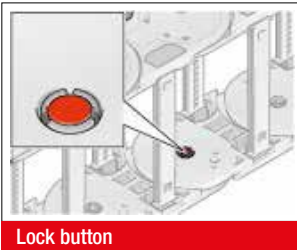
STRAIN RELIEF MP STEEL FIX



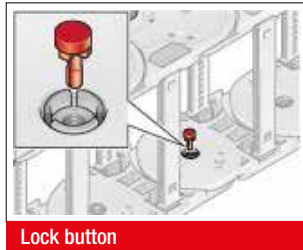
C-rails (galvanised) can be permanently integrated to hold the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

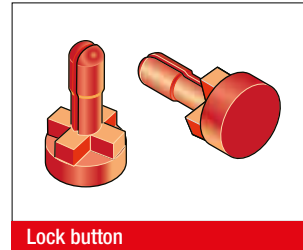
MP 32/41 LOCK BUTTON



Lock button



Lock button



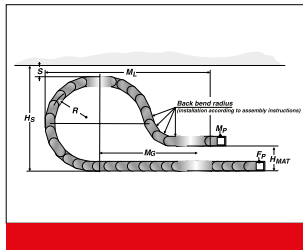
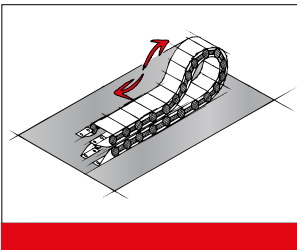
Lock button

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 | 04100008000 |

MP 32 LOWERED FIXING POINT



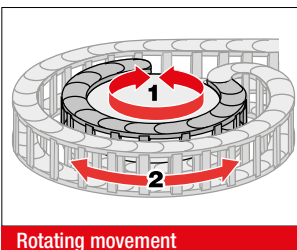
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _s) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



Rotating movement

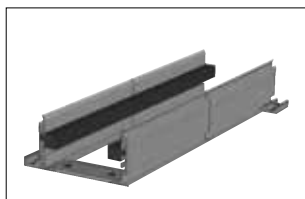
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

| Type | Order No. | 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

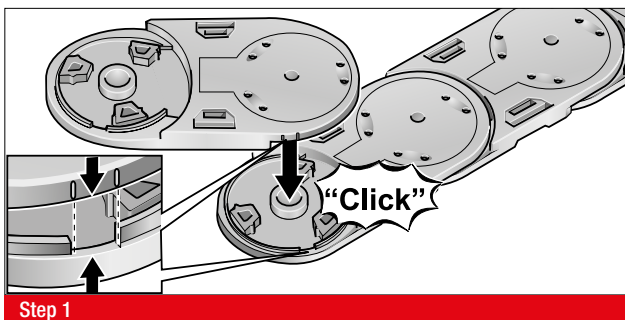


VAW aluminium

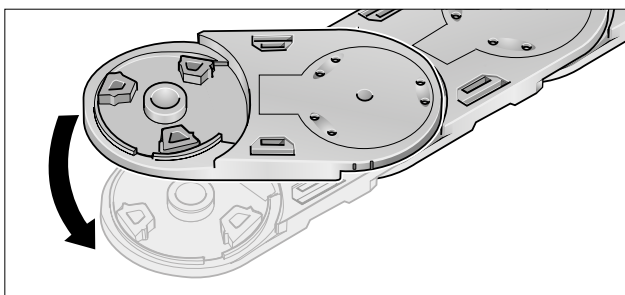
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

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

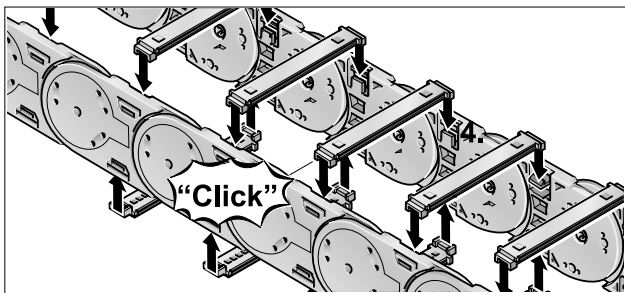
ASSEMBLY



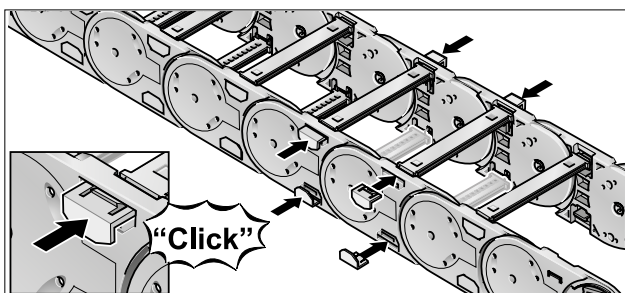
Step 1



Step 2

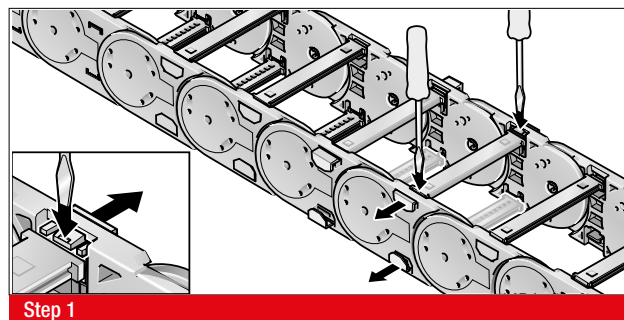


Step 3

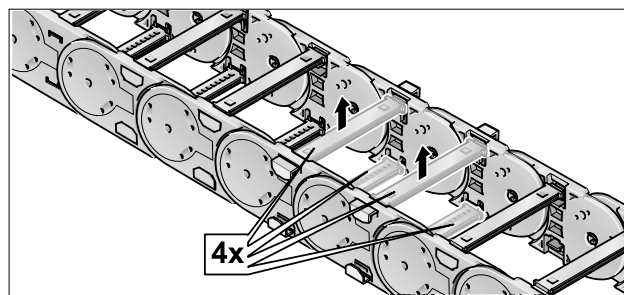


Step 4

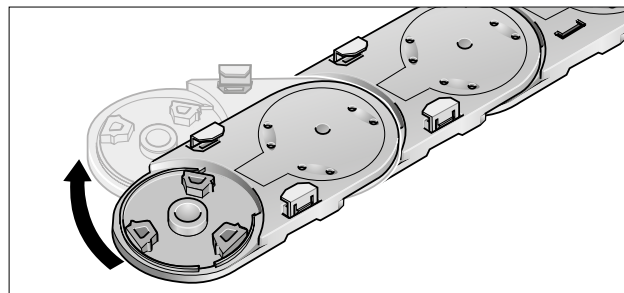
DISASSEMBLY



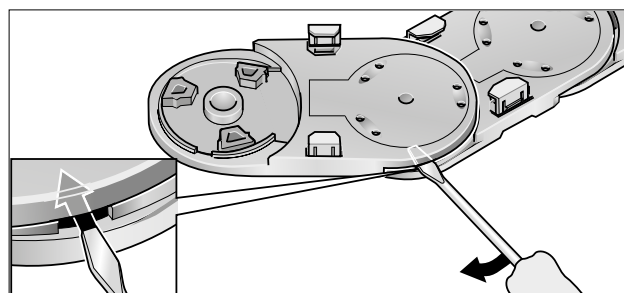
Step 1



Step 2



Step 3

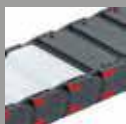


Step 4

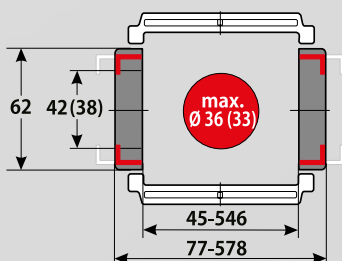
MP 41.2
OPEN



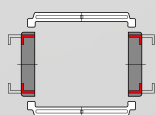
MP 41.3
CLOSED



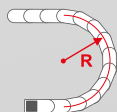
- GLIDING SHOES FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- FLEXIBLE CHAIN BRACKET
- PLASTIC OR ALUMINIUM VERSION



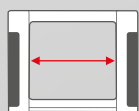
TECHNICAL DATA



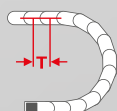
Loading side
Inside and outside bend



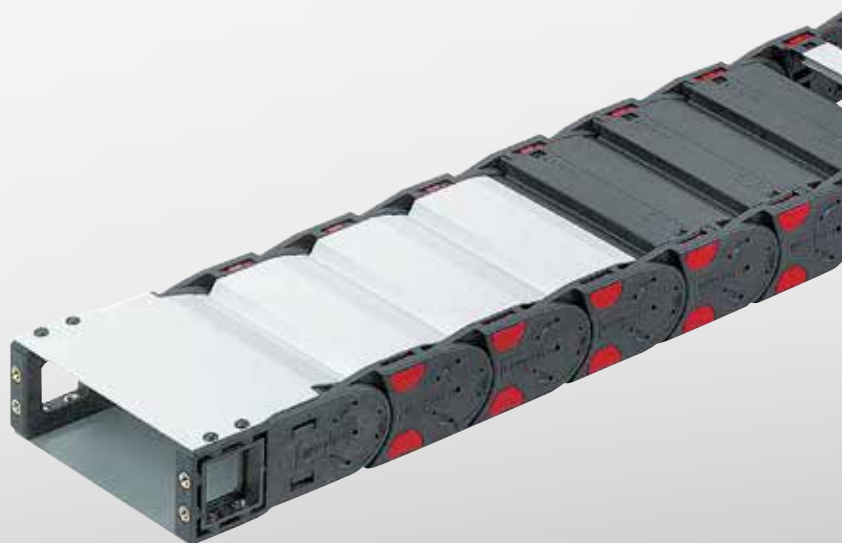
Available radii
90.0 – 350.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 120.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 225 |
| Travel distance vertical hanging L_{vh} max. | 50.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

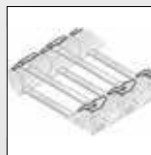
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

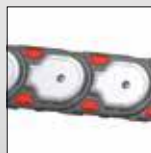
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

ACCESSORIES



Gliding shoe



Gliding plate

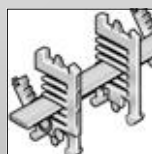


Bracket bar

SHELVING SYSTEM

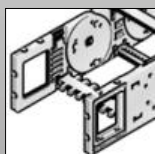


Separator TR

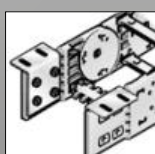


RS shelving system

CHAIN BRACKET



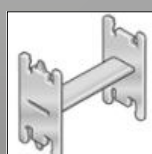
Chain bracket flexible



Chain bracket angle



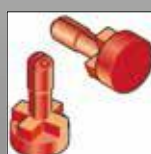
Crossbar connector RSV



H-shaped shelf unit (RE)



Cover

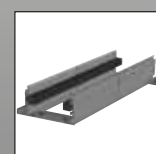


Lock button

GUIDE CHANNELS

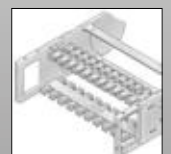


VAW galvanised steel / stainless steel

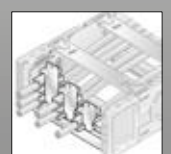


VAW aluminium

STRAIN RELIEF



RS-ZL crossbar



Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

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



ORDERING EXAMPLE: 0412 30 045 090 0 0 1386

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

¹⁾ only for variant 30
²⁾ also available with plastic cover
³⁾ reduced inner height, reduced max. cable diameter, see chain window drawing page 222

NOTE ON CONFIGURATION

Aluminium crossbars:

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

Aluminium covers:

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

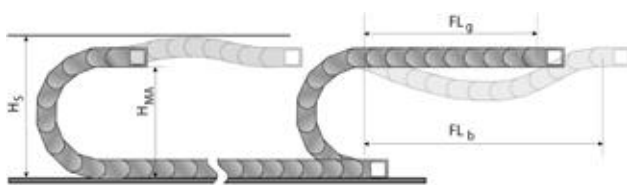
Crossbar connector and crossbar strain relief plate:

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.

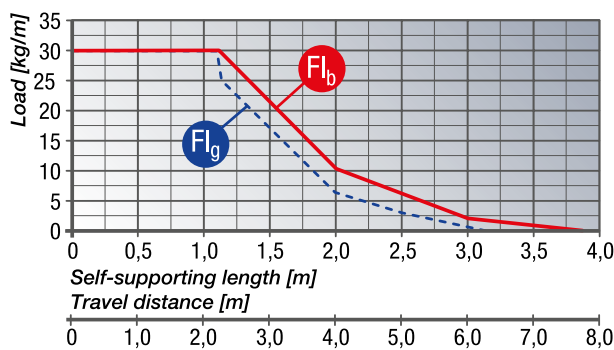
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



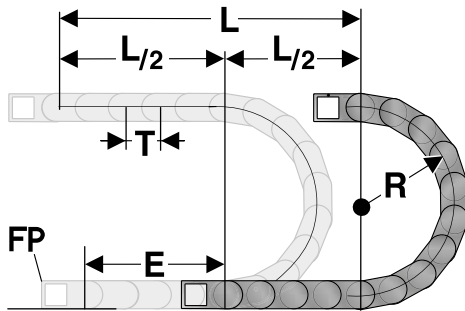
FL_g Self-supporting length, upper run straight

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

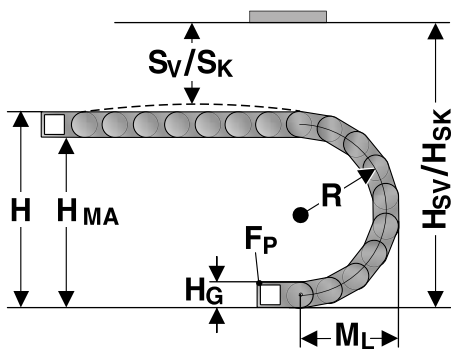


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 13 links, 77.0 mm each

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

INSTALLATION DIMENSIONS



The moving end chain bracket 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} " 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 | 120 | 150 | 175 | 200 | 250 | 300 | 350 |
|-----------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Outside height of chain link (H_o) | 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_{MA}) | 190 | 250 | 310 | 360 | 410 | 510 | 610 | 710 |
| Safety margin with bias (S_v) | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Installation height with bias (H_{sv}) | 282 | 342 | 402 | 452 | 502 | 602 | 702 | 802 |
| Safety margin without bias (S_k) | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Installation height without bias (H_{sk}) | 267 | 327 | 387 | 437 | 487 | 587 | 687 | 787 |
| Arc projection (M_L) | 203 | 233 | 263 | 288 | 313 | 363 | 413 | 463 |

PLASTIC CROSSBAR POWERLINE



The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

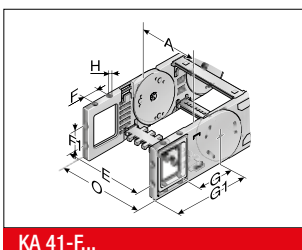
MP 41.3 PLASTIC COVER



The covers connect the two side runs of the energy chain. The cover length is equivalent to 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 |

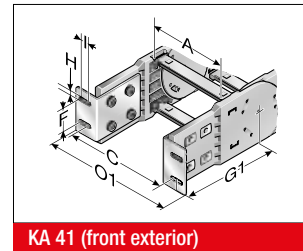
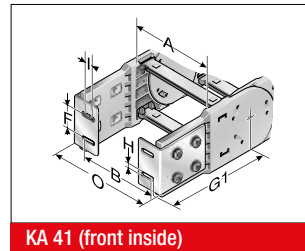
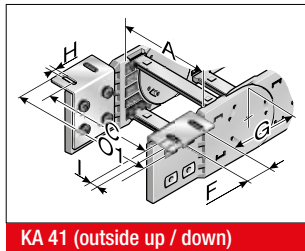
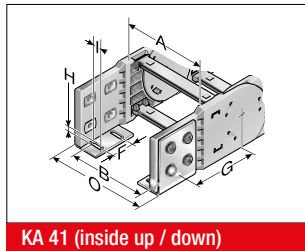
KA 41 FLEXIBLE CHAIN BRACKET



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 energy 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 | |
|------------|------------|----------|-------------|--------------|--------|------|-------|------|-------|------|---------------|---------|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA O mm |
| KA 41.1-FB | 0411000054 | Plastic | with socket | 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

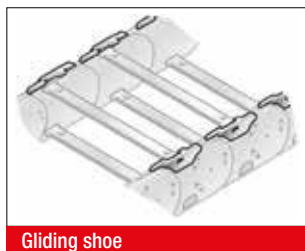


There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. However, any other combination can be supplied upon request. The chain bracket

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 | |
|-------|------------|-------------|--------------|-------|--------|------|------|-------|-------|-----|------|---------------|--------|
| | | | A | B | C | F | G | G1 | G2 | Ø H | I | KA 0 | KA 01 |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| KA 41 | 0410000051 | Sheet steel | 45.0 – 546.0 | A-2.5 | A+34.5 | 32.0 | 79.0 | 120.0 | 125.7 | 6.5 | 14.0 | A+32.0 | A+71.0 |

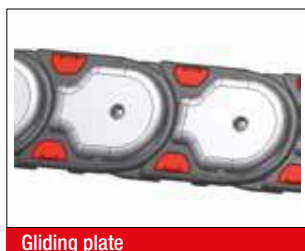
GS 41.2 GLIDING SHOE



Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run). The gliding shoes are placed onto the side links instead of the usual crossbar locks (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes. Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes. Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Min. radius | Gliding shoe height |
|---------|--------------|-------------|---------------------|
| | | mm | mm |
| GS 41.2 | 041290400300 | 120.0 | 4.0 |

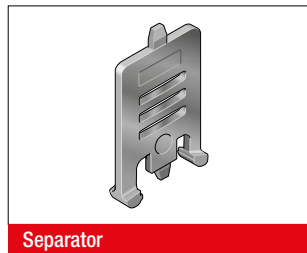
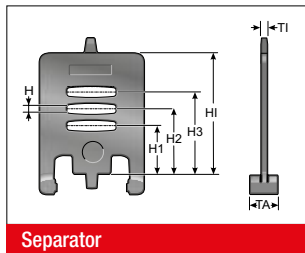
GLP 4 (41.2) GLIDING PLATE



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 | Gliding plate height |
|----------------------------------|--------------|------------------------------------|------------|----------------------|
| | | | mm | 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 |

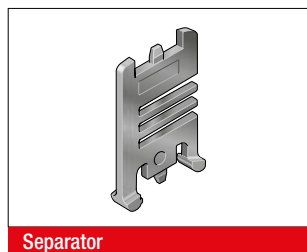
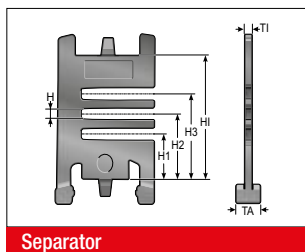
TR 41 SEPARATOR



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 |

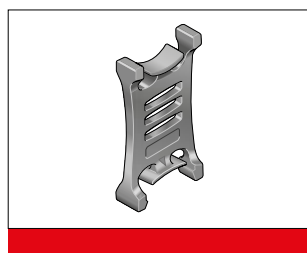
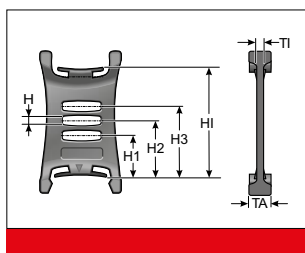
TR 41.1 SEPARATOR



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 |

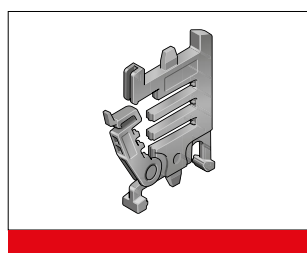
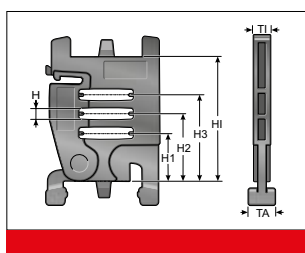
TR 41-V SEPARATOR



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 | movable | 3.5 | 12.0 | 4.0 | 16.1 | 22.9 | 28.9 | 42.0 |

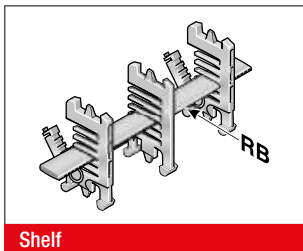
RTT 41 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



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

| Type | Order No. | Description | Width mm | for inner 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 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |

RB-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|-------------|-------------|----------|--------------------|
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 10000029100 | Shelf | 291.2 | 346.0 |

RSV 41 CROSSBAR CONNECTOR

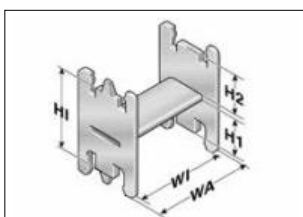


Crossbar connector

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| 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



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 |

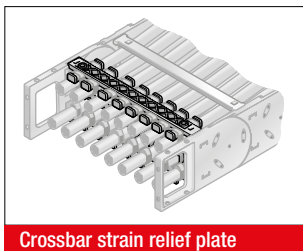
BS-5 BRACKET BAR



Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain. The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar. The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

RS-ZL-5 CROSSBAR STRAIN RELIEF



Crossbar strain relief plate

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

| Type | Order No. | Description | for inner 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 |

D4 COVER 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 |

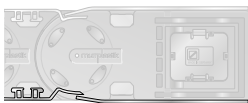
MP 41.3 CHAIN BRACKET CANOPY



Canopy*

Constructed from aluminium, the covers 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 No. 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 No. 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 No. 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 No. configurator



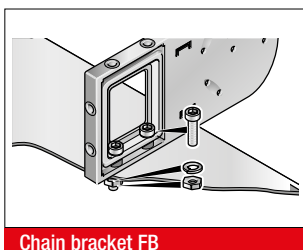
| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 41.1 FB/FG IB | Inside width | 1-2 |
| Order no.: | 0411 | Inside width | 057 |

Sampleorder:

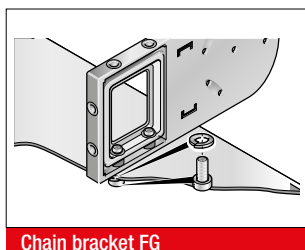
0411096058 KA 41.1 FB/FG IB 096 2-2

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

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



Chain bracket FB



Chain bracket FG

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

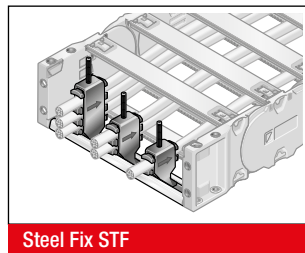
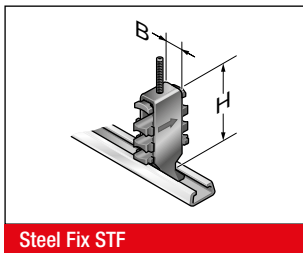
Type KA-FB:

Integrated through-hole is fastened using screw and nut.

Type KA-FG:

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

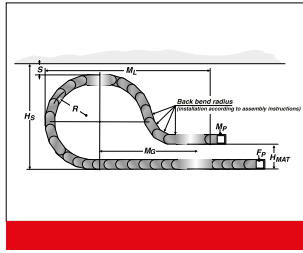
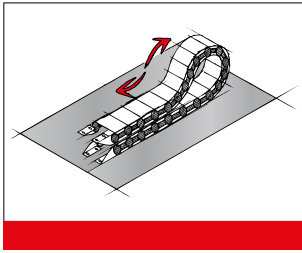
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 41 LOWERED FIXING POINT



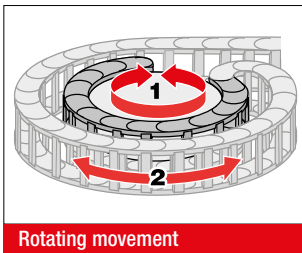
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M _L) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|----------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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 |

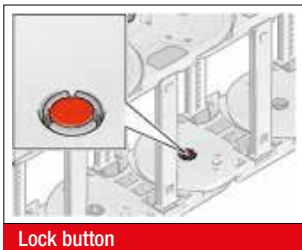
MP 41.2 REARWARD RADII



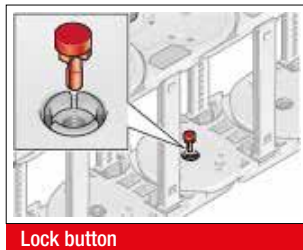
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

| 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 |

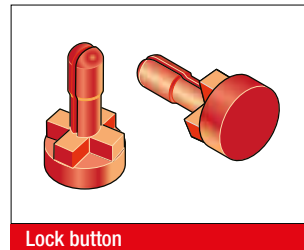
MP 32/41 LOCK BUTTON



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

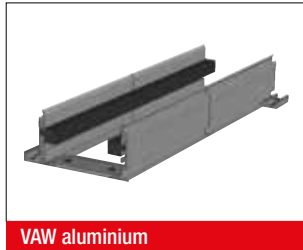
“laying on the side (turned 90°) without support”.

| Type | Order No. |
|---------------------|--------------|
| MP32/41 lock button | 041000008000 |

GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



VAW steel galvanised / stainless steel



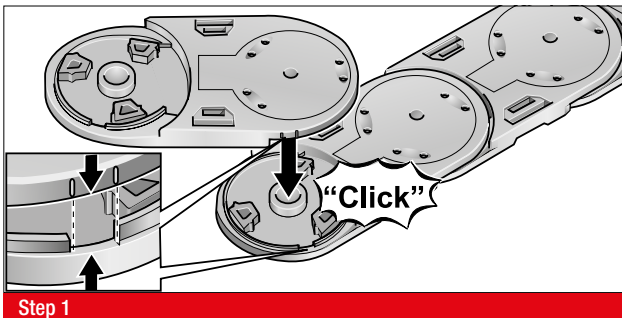
VAW aluminium

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

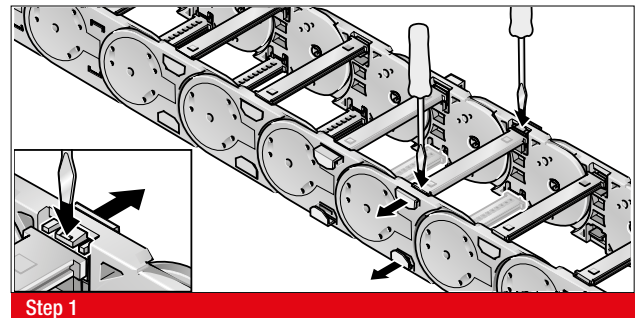
The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

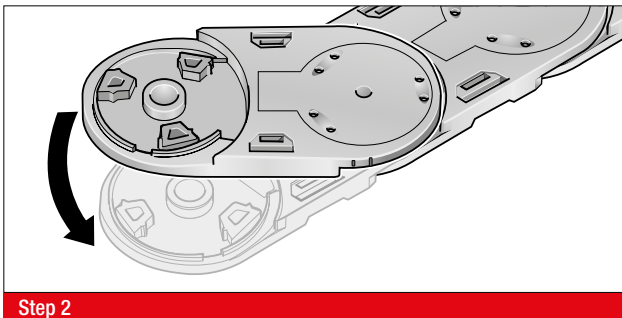
DISASSEMBLY



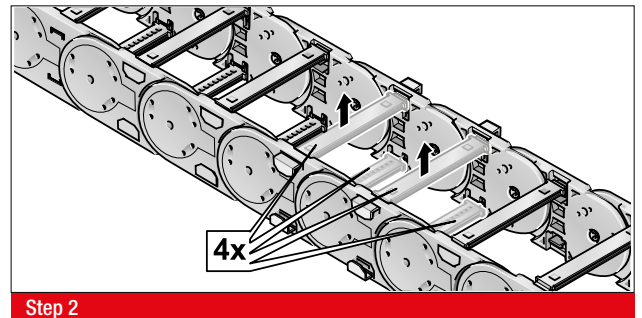
Step 1



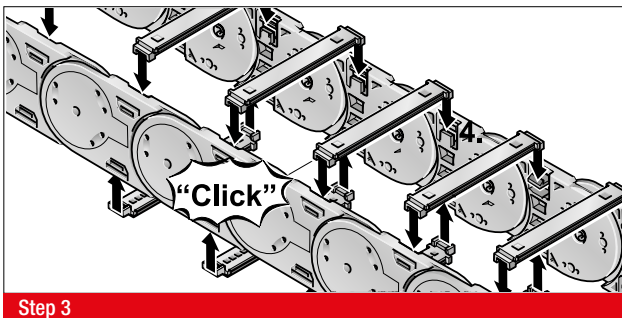
Step 1



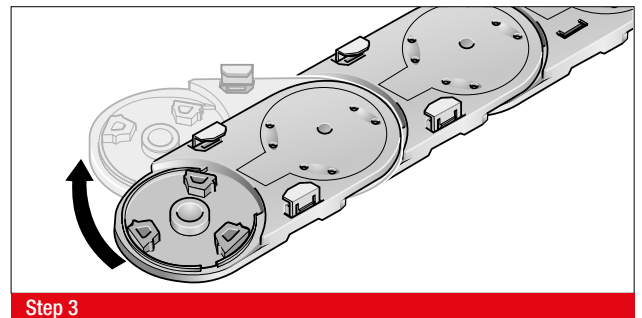
Step 2



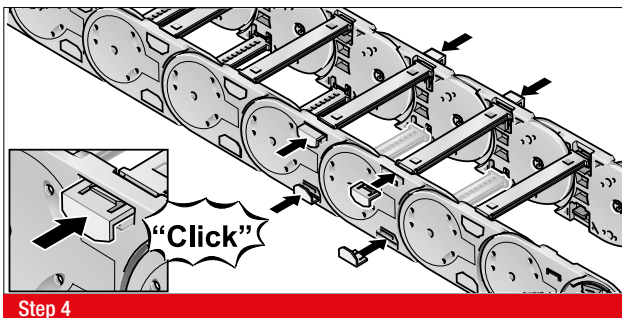
Step 2



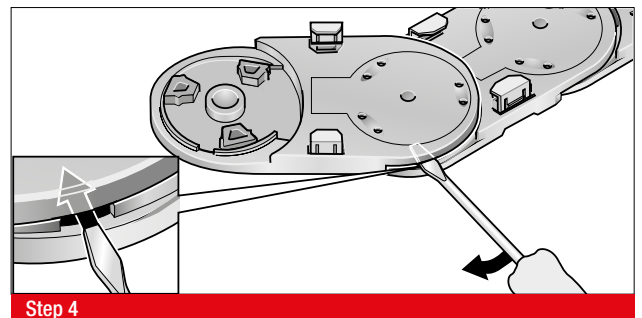
Step 3



Step 3



Step 4



Step 4

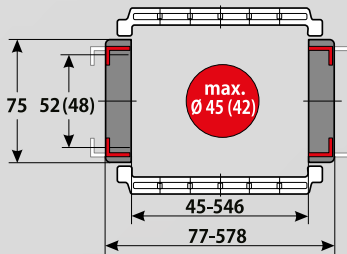
MP 52.2
OPEN



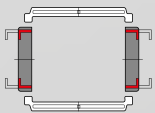
MP 52.3
CLOSED



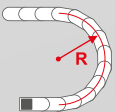
- GLIDING SHOES FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- FLEXIBLE CHAIN BRACKET
- PLASTIC OR ALUMINIUM VERSION



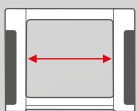
TECHNICAL DATA



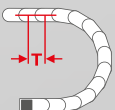
Loading side
Inside and outside bend



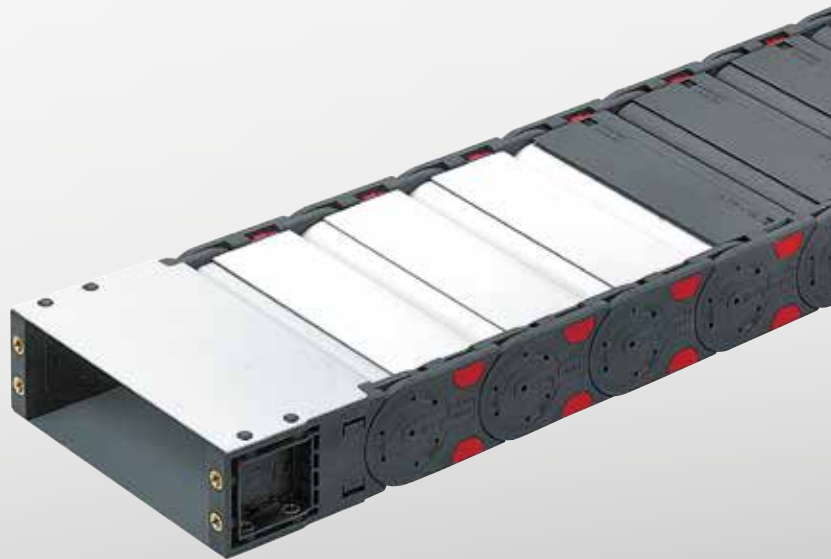
Available radii
100.0 – 350.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 150.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 241 |
| Travel distance vertical hanging L_{vh} max. | 60.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

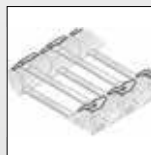
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

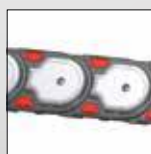
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

ACCESSORIES



Gliding shoe



Gliding plate

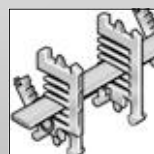


Bracket bar

SHELVING SYSTEM

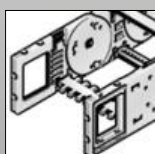


Separator TR

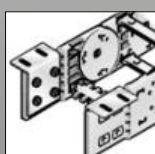


RS shelving system

CHAIN BRACKET



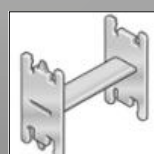
Chain bracket flexible



Chain bracket angle



Crossbar connector RSV

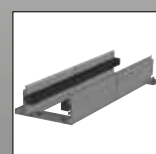


H-shaped shelf unit (RE)

GUIDE CHANNELS

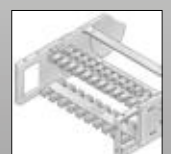


VAW galvanised steel / stainless steel

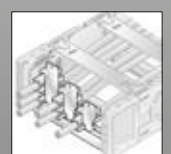


VAW aluminium

STRAIN RELIEF



RS-ZL crossbar

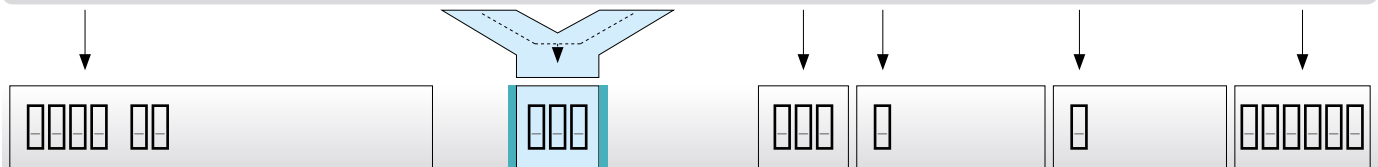


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | 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 To be opened from inside and outside bend | 045 ¹⁾ [1.77] | 077 [3.03] | 233 [9.17] | 265 [10.43] | 100 ¹⁾ [3.94] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 057 ¹⁾ [2.24] | 089 [3.50] | 246 ²⁾ [9.69] | 278 ²⁾ [10.94] | | | | |
| 0523 44 ³⁾ | MP 52.3 closed Cover on outside bend Cover on inside bend To be opened from inside and outside bend | 062 ¹⁾ [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 ²⁾ [11.65] | 328 ²⁾ [12.91] | 175 [6.89] | 2 Plastic half-ridged with bias | 7 ESD (PA/light grey) | |
| | | 093 [3.66] | 125 [4.92] | 346 ²⁾ [13.62] | 378 ²⁾ [14.88] | | | | |
| | | 096 ²⁾ [3.78] | 128 ²⁾ [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 ²⁾ [4.76] | 153 ²⁾ [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 ²⁾ [5.75] | 178 ²⁾ [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 ²⁾ [7.17] | 214 ²⁾ [8.43] | | | | 9 Special version (on request) | | |
| | | 196 ²⁾ [7.72] | 228 ²⁾ [8.98] | | | | | | |
| | | 208 [8.19] | 240 [9.45] | | | | | | |
| | | 220 ²⁾ [8.66] | 252 ²⁾ [9.92] | | | | | | |



ORDERING EXAMPLE: 0522 30 220 100 0 0 1365

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 220 mm, Radius 100 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1365 mm (15 links)

¹⁾ only for variant 30
²⁾ also available with plastic cover
³⁾ reduced inner height, reduced max. cable diameter, see chain window drawing page 238

NOTE ON CONFIGURATION

Aluminium crossbars:

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

Aluminium covers:

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

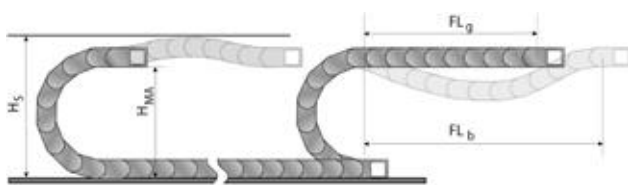
Crossbar connector and crossbar strain relief plate:

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.

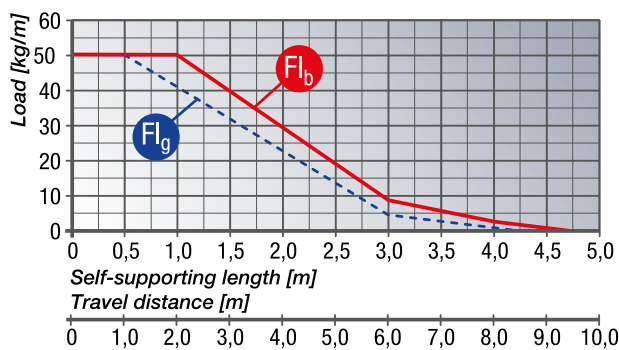
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



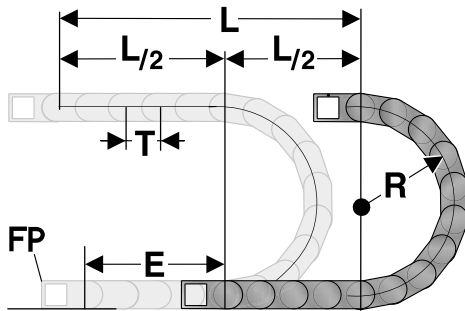
FL_g Self-supporting length, upper run straight

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

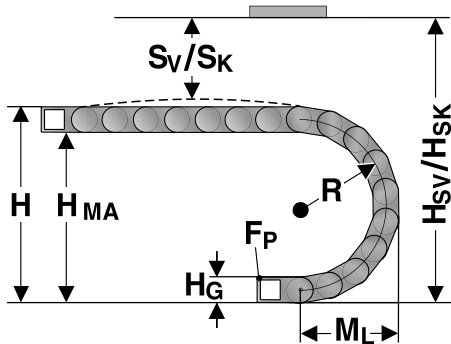


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 11 links, 91.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 91.0 mm

INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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_o) | 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_{sk}) | 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 |

PLASTIC CROSSBAR POWERLINE



Crossbar

The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

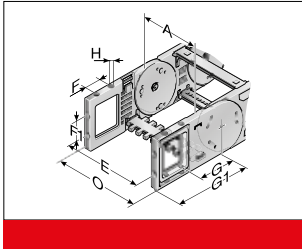
MP 52.3 / MP 52.5 PLASTIC COVER



The covers connect the two side runs of the energy chain. The cover length is equivalent to 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 |

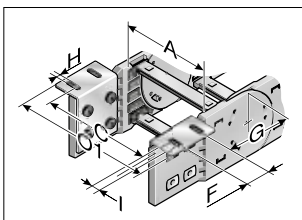
KA 52.1 FLEXIBLE CHAIN BRACKET



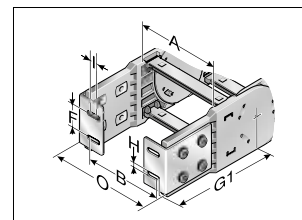
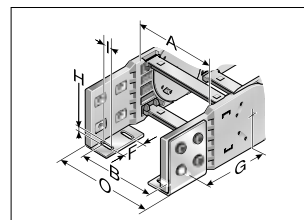
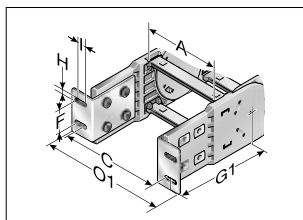
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. M8 bolts are used to secure the brackets in place. 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 | |
|-----------------------|------------|----------|-------------|--------------|--------|------|-------|------|-------|-------|--------|---------------|--|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm | |
| KA 52.1-FB Female end | 0521000056 | Plastic | with socket | 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 socket | 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



KA 52.1 (outside up)

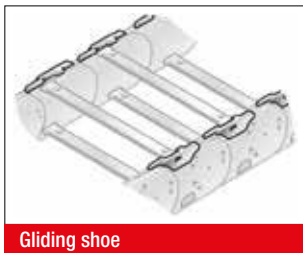


There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. However, any other combination can be supplied upon request. The chain

bracket is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. The brackets should be fastened with M6 screws.

| Type | Order No. | Material | Inside width | | | | | | | | Outside width | | Outside width |
|--------------------|------------|-------------|--------------|-------|--------|------|------|-------|-------|--------|---------------|---------|---------------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | G2 mm | Ø H mm | I mm | KA 0 mm | 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 | 143.0 | 149.0 | 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 | 143.0 | 149.0 | 6.5 | 14.0 | A+32.0 | A+71.0 |

GS 52.2 GLIDING SHOE



Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run). The gliding shoes are placed onto the side links instead of the usual crossbar locks (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes.

Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes. Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Installation site | Min. radius mm | Gliding shoe 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 |

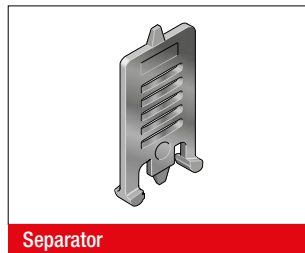
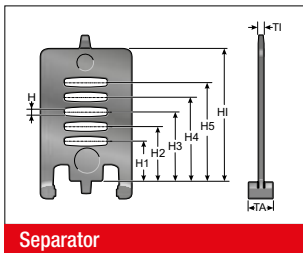
GLP 5 (52.2) GLIDING PLATE



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 |

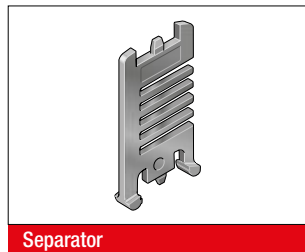
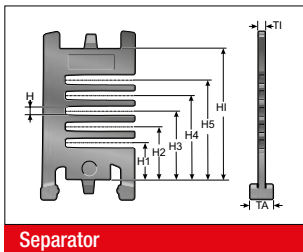
TR 52 SEPARATOR



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 |

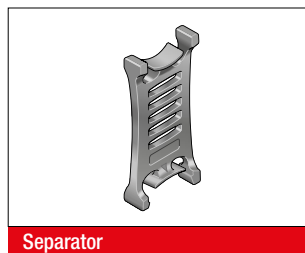
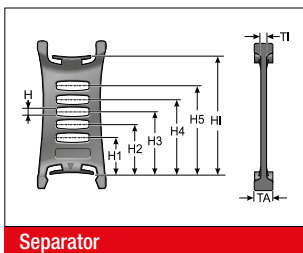
TR 52.1 SEPARATOR



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 |

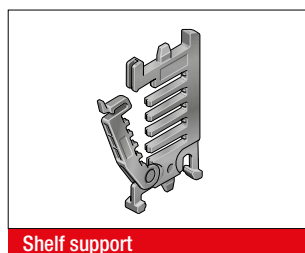
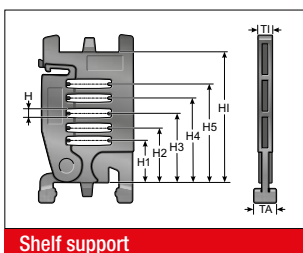
TR 52-V SEPARATOR



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 | H1 mm |
|---------|--------------|-------------------|---------|----------|----------|---------|----------|----------|----------|----------|----------|----------|
| TR 52-V | 052000009300 | TR 52-V Separator | movable | 3.5 | 13.0 | 4.0 | 16.3 | 22.3 | 28.2 | 33.8 | 39.8 | 52.0 |

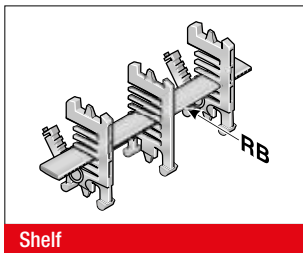
RTT 52 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



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

| Type | Order No. | Description | Width mm | for inner 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |

RB-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|-------------|-------------|----------|--------------------|
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 10000029100 | Shelf | 291.2 | 346.0 |

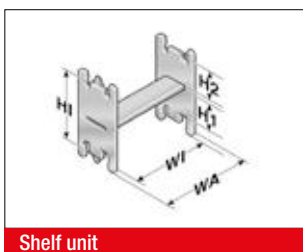
RSV 52 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| Type | Order No. | Description | T1 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



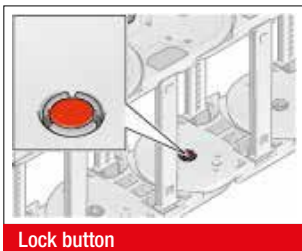
Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain.

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

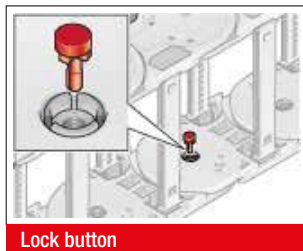
The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is required for each bar.

| 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

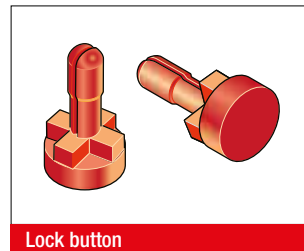
MP 52/62/72 LOCK BUTTON



Lock button



Lock button



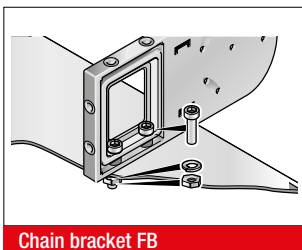
Lock button

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

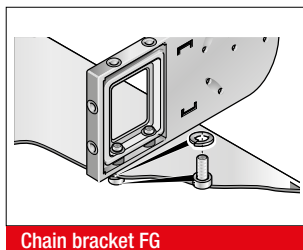
"laying on the side (turned 90°) without support".

| Type | Order No. |
|------------------------|------------|
| MP52/62/72 lock button | 0520000080 |

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



Chain bracket FB



Chain bracket FG

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

Type KA-FB:

Integrated through-hole is fastened using screw and nut.

Type KA-FG:

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

D5 COVER CHAIN BRACKET



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

Cover

| Type | Order No. |
|----------|------------|
| D5 Cover | 0523888002 |

MP 52.3 CHAIN BRACKET CANOPY



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

Canopy*

Canopy for chain bracket, fixed point outside bend: Type and Order No. 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 No. 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 No. 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 No. configurator



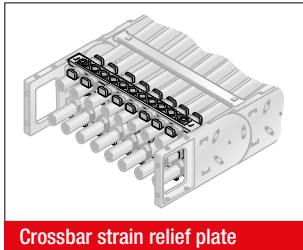
| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 52.1 FB/FG IB | Inside width | 1-2 |
| Order no.: | 0521 | Inside width | 057 |

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.

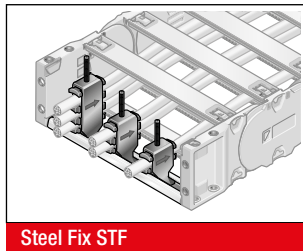
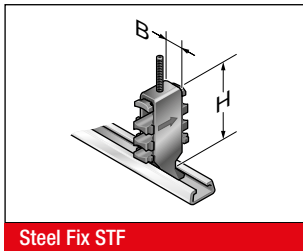
RS-ZL-5 CROSSBAR STRAIN RELIEF



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

| Type | Order No. | Description | for inner 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 |

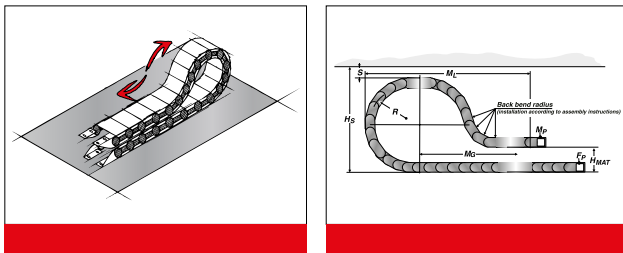
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 52 LOWERED FIXING POINT



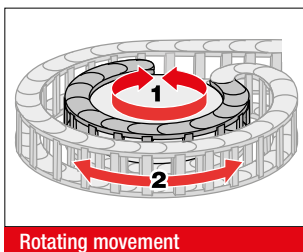
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M _L) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



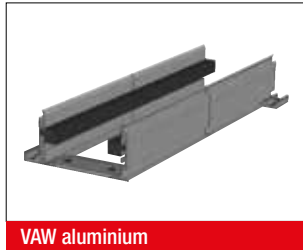
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

| 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



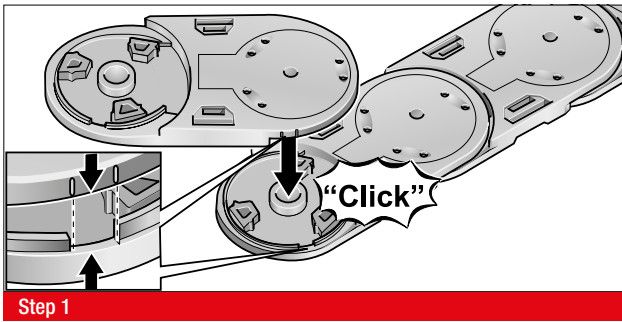
VAW aluminium

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

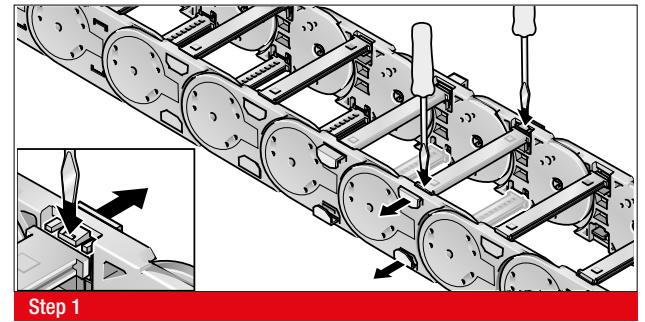
The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

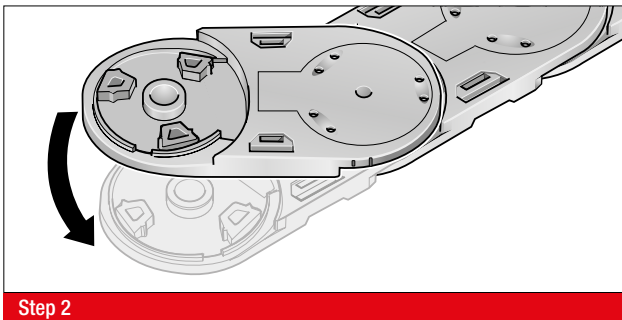
DISASSEMBLY



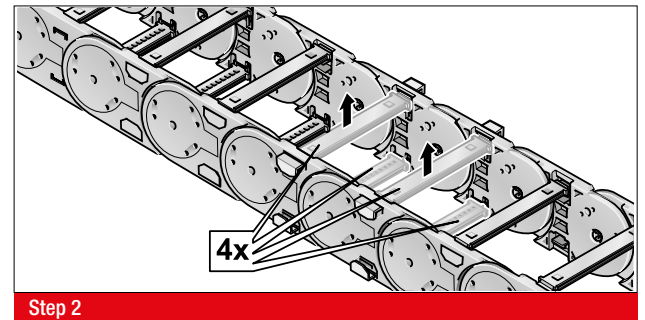
Step 1



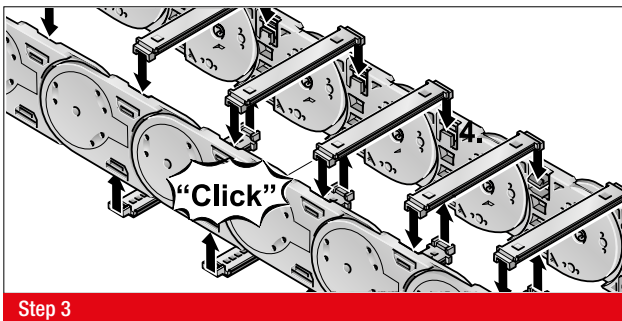
Step 1



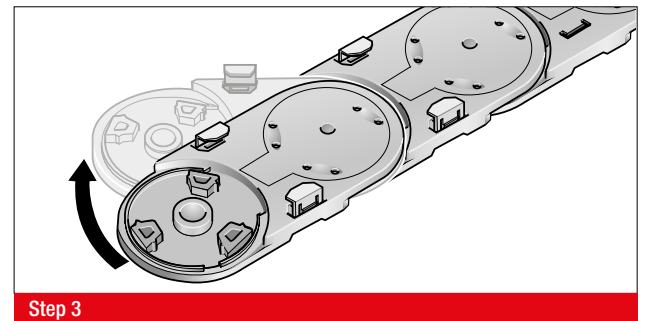
Step 2



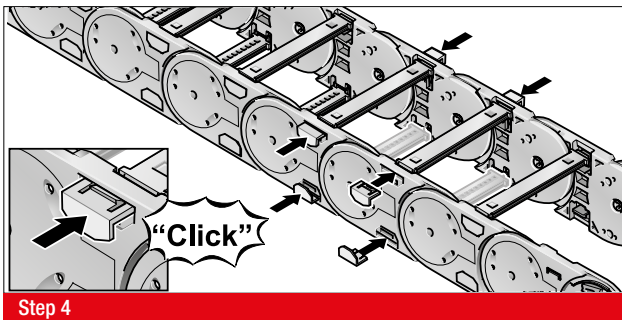
Step 2



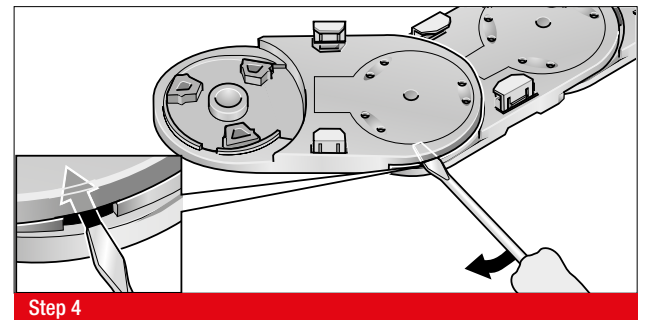
Step 3



Step 3



Step 4

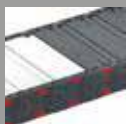


Step 4

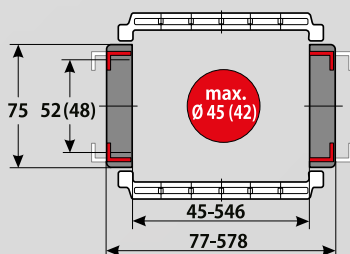
MP 52.2-D OPEN



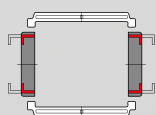
MP 52.3-D CLOSED



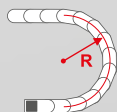
- SOFT-STOP SYSTEM
- GLIDING SHOES FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- FLEXIBLE CHAIN BRACKET
- PLASTIC OR ALUMINIUM VERSION



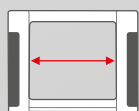
TECHNICAL DATA



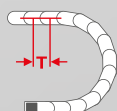
Loading side
Inside and outside bend



Available radii
200.0 mm



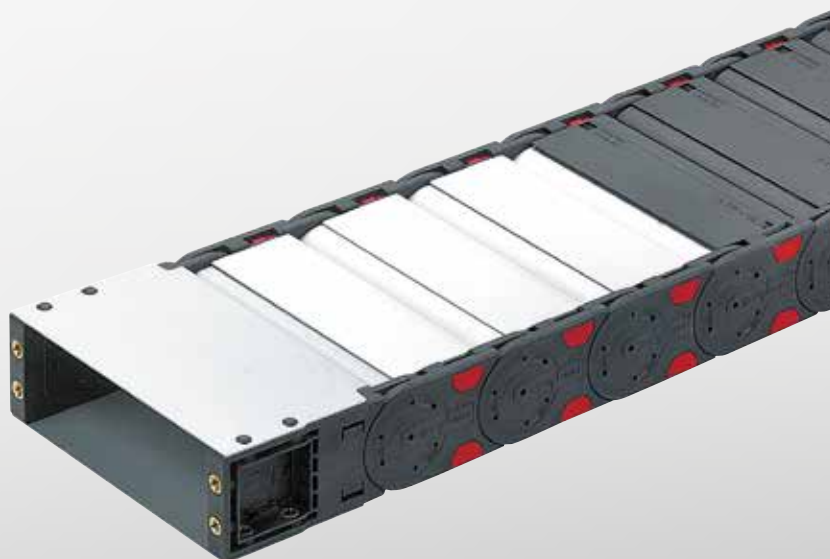
Available interior widths
With plastic crossbar
45.0 – 546.0 mm
With alu crossbar / with alu cover
67.0 – 600.0 mm / 43.0 – 600.0 mm

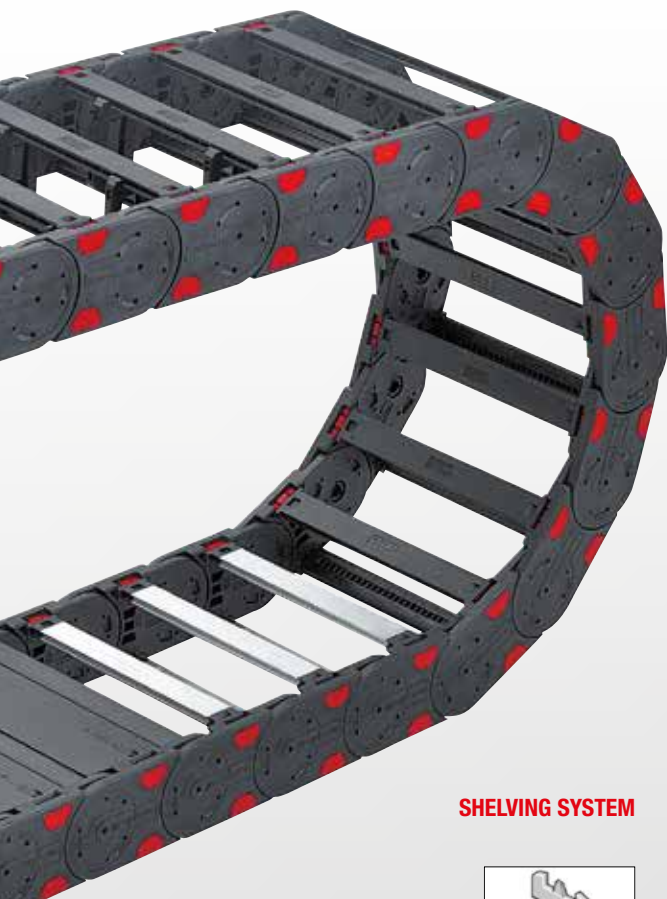


Pitch
T = 91.0 mm



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





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 150.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 259 |
| Travel distance vertical hanging L_{vh} max. | 60.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

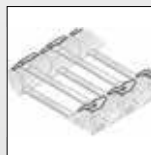
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

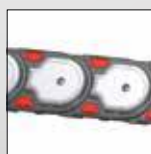
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

ACCESSORIES



Gliding shoe



Gliding plate

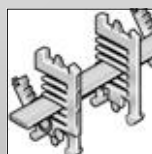


Bracket bar

SHELVING SYSTEM

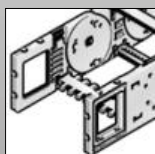


Separator TR

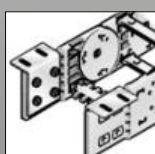


RS shelving system

CHAIN BRACKET



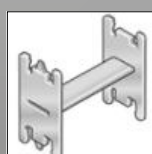
Chain bracket flexible



Chain bracket angle



Crossbar connector RSV

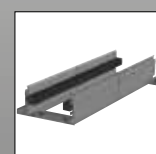


H-shaped shelf unit (RE)

GUIDE CHANNELS

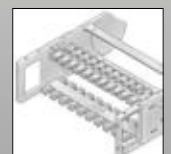


VAW galvanised steel / stainless steel

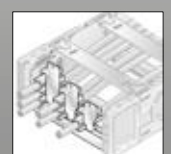


VAW aluminium

STRAIN RELIEF



RS-ZL crossbar

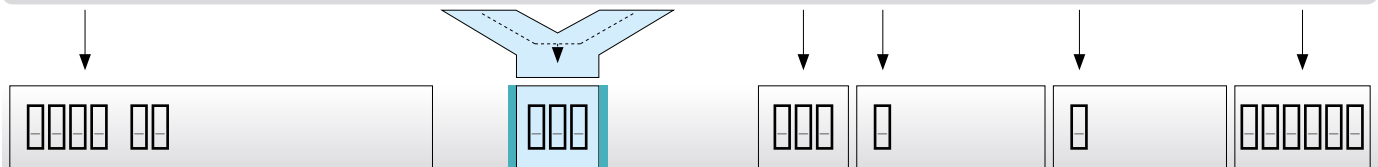


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|-----------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|---------------|--------------------------------------|----------------------------------------|--------------|
| 0522 30 | MP 52.2-D open Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 045 ¹⁾ [1.77] | 077 [3.03] | 233 [9.17] | 265 [10.43] | 200 [7.87] | 0 Plastic full-ridged with bias | 3 Polyamide with attenuator (PA/black) | |
| | | 057 ¹⁾ [2.24] | 089 [3.50] | 246 ²⁾ [9.69] | 278 ²⁾ [10.94] | | | | |
| 0523 44 ³⁾ | MP 52.3-D closed Cover on outside bend Cover on inside bend To be opened from inside and outside bend | 062 ¹⁾ [2.44] | 094 [3.70] | 252 [9.92] | 284 [11.18] | | 1 Plastic full-ridged without bias | 7 ESD (PA/light grey) | |
| | | 071 [2.80] | 103 [4.06] | 258 [10.16] | 290 [11.42] | | | | |
| | | 084 [3.31] | 116 [4.57] | 296 ²⁾ [11.65] | 328 ²⁾ [12.91] | | 2 Plastic half-ridged with bias | 9 Special version (on request) | |
| | | 093 [3.66] | 125 [4.92] | 346 ²⁾ [13.62] | 378 ²⁾ [14.88] | | | | |
| | | 096 ²⁾ [3.78] | 128 ²⁾ [5.04] | 350 [13.78] | 382 [15.04] | | 3 Plastic half-ridged without bias | | |
| | | 104 [4.09] | 136 [5.35] | 358 [14.09] | 390 [15.35] | | | | |
| | | 107 [4.21] | 139 [5.47] | 371 [14.61] | 403 [15.87] | | 4 Aluminium full-ridged with bias | | |
| | | 121 ²⁾ [4.76] | 153 ²⁾ [6.02] | 396 [15.59] | 428 [16.85] | | | | |
| | | 133 [5.24] | 165 [6.50] | 421 [16.57] | 453 [17.83] | | 5 Aluminium full-ridged without bias | | |
| | | 144 [5.67] | 176 [6.93] | 446 [17.56] | 478 [18.82] | | | | |
| | | 146 ²⁾ [5.75] | 178 ²⁾ [7.01] | 496 [19.53] | 528 [20.79] | | 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 ²⁾ [7.17] | 214 ²⁾ [8.43] | | | | 9 Special version (on request) | | |
| | | 196 ²⁾ [7.72] | 228 ²⁾ [8.98] | | | | | | |
| | | 208 [8.19] | 240 [9.45] | | | | | | |
| | | 220 ²⁾ [8.66] | 252 ²⁾ [9.92] | | | | | | |



ORDERING EXAMPLE: 0522 30 220 200 1 3 9555

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 220 mm, Radius 200 mm
 Plastic bridge, full-ridged without bias, material is black-coloured polyamide with damper
 Chain length 9555 mm (105 links)

¹⁾ only for variant 30
²⁾ also available with plastic cover
³⁾ reduced inner height, reduced max. cable diameter, see chain window drawing page 256

NOTE ON CONFIGURATION

Aluminium crossbars:

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

Aluminium covers:

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

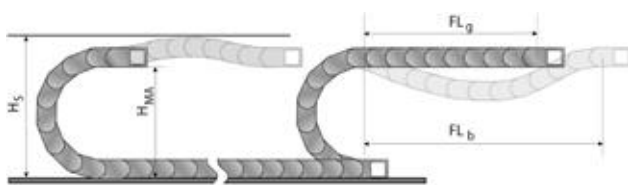
Crossbar connector and crossbar strain relief plate:

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.

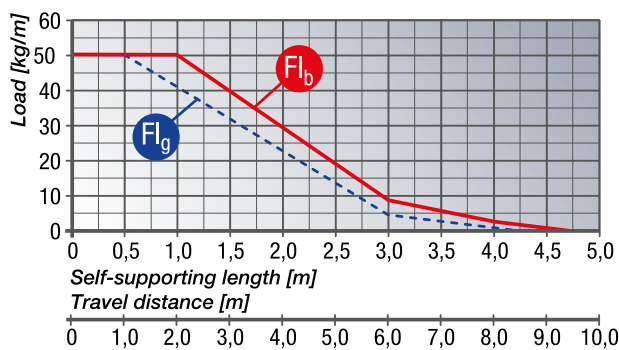
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



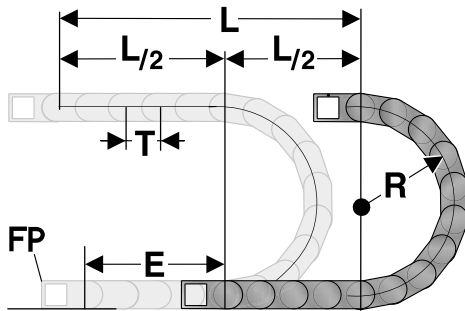
FL_g Self-supporting length, upper run straight

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

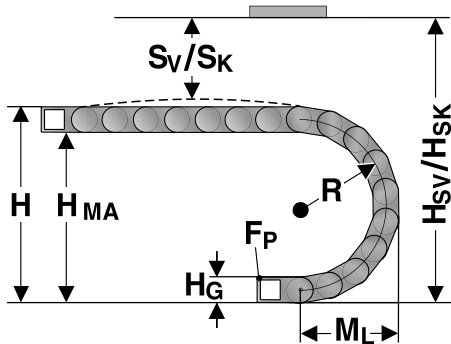


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 11 links, 91.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 91.0 mm

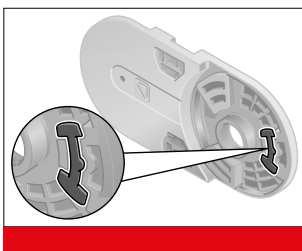
INSTALLATION DIMENSIONS



The moving end chain bracket 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 “Installation height with bias H_{sv} without damper” or “Installation height without bias H_{sk} without damper” must be observed. If the chain links are equipped with damping elements, the value “Installation height with bias H_{sv} with damper” or “Installation height without bias H_{sk} with damper” must be observed.

| | |
|-----------------------------------------------------------|------------|
| Radius R | 200 |
| Outside height of chain link (H_e) | 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 ELEMENT IN SIDE LINK



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.

PLASTIC CROSSBAR POWERLINE



The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

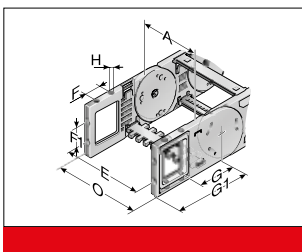
MP 52.3 / MP 52.5 PLASTIC COVER



The covers connect the two side runs of the energy chain. The cover length is equivalent to 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 |

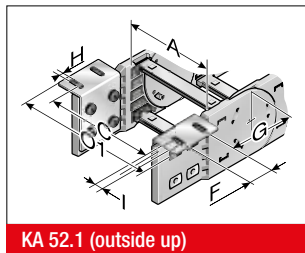
KA 52.1 FLEXIBLE CHAIN BRACKET



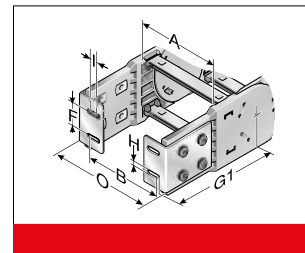
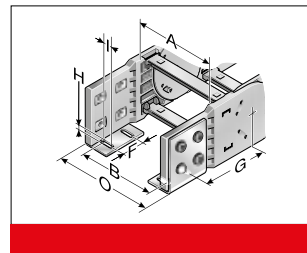
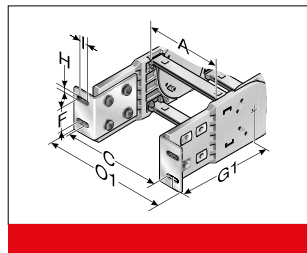
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. M8 bolts are used to secure the brackets in place. 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 | |
|-----------------------|------------|----------|-------------|--------------|--------|------|-------|------|-------|------|---------------|---------|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm |
| KA 52.1-FB Female end | 0521000056 | Plastic | with socket | 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 socket | 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



KA 52.1 (outside up)

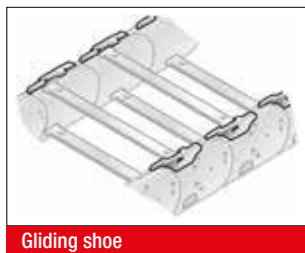


There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. However, any other combination can be supplied upon request. The chain

bracket is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each energy 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 | G2 mm | Ø H mm | I mm | KA 0 mm | 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 | 143.0 | 149.0 | 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 | 143.0 | 149.0 | 6.5 | 14.0 | A+32.0 | A+71.0 |

GS 52.2 GLIDING SHOE

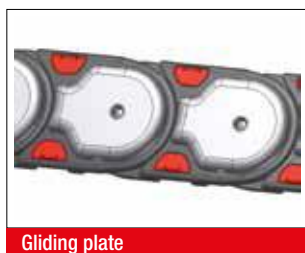


Gliding shoe

Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run). The gliding shoes are placed onto the side links instead of the usual crossbar locks (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes. Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes. Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Installation site | Min. radius mm | Gliding shoe 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

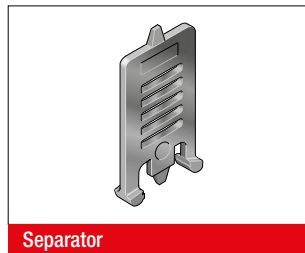
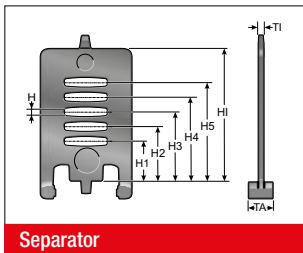


Gliding plate

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 |

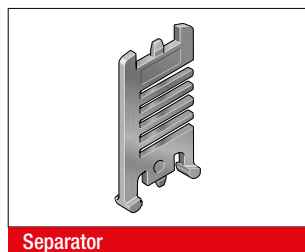
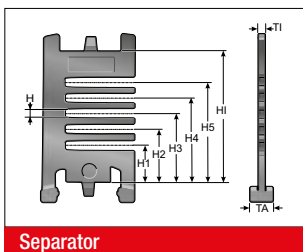
TR 52 SEPARATOR



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 |

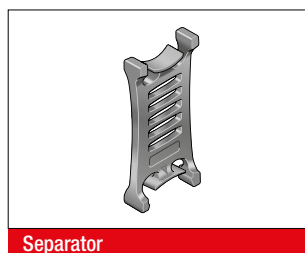
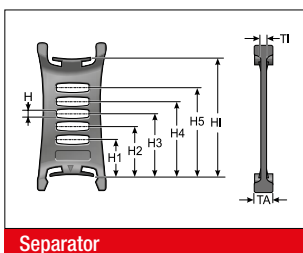
TR 52.1 SEPARATOR



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 |

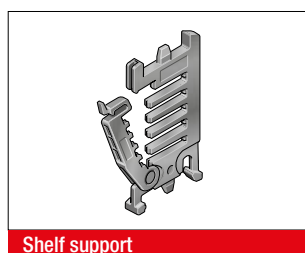
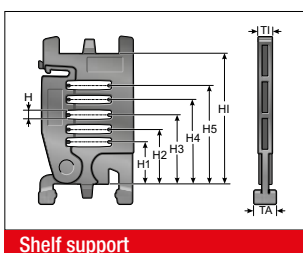
TR 52-V SEPARATOR



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 | movable | 3.5 | 13.0 | 4.0 | 16.3 | 22.3 | 28.2 | 33.8 | 39.8 | 52.0 |

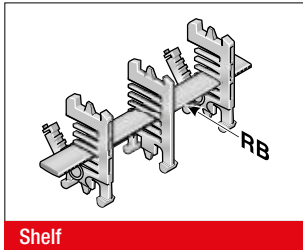
RTT 52 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



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

| Type | Order No. | Description | Width mm | for inner 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |

RB-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|----------|--------------------|
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 100000029100 | Shelf | 291.2 | 346.0 |

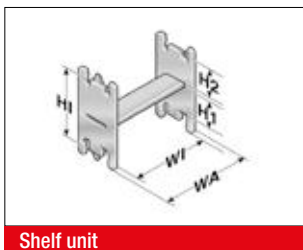
RSV 52 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| 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 | Hl 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). The bracket bar can be installed on the inside or outside bend of the energy chain.

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

The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

D5 COVER CHAIN BRACKET



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

Cover

| Type | Order No. |
|----------|------------|
| D5 Cover | 0523888002 |

MP 52.3 CHAIN BRACKET CANOPY



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

Canopy

Canopy for chain bracket, fixed point outside bend: Type and Order No. 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 No. 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 No. 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 No. configurator



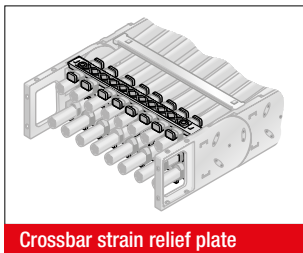
| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 52.1 FB/FG IB | Inside width | 1-2 |
| Order no.: | 0521 | Inside width | 057 |

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.

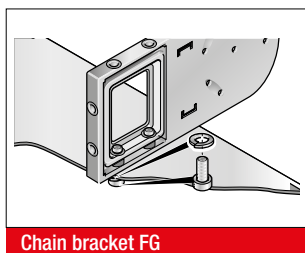
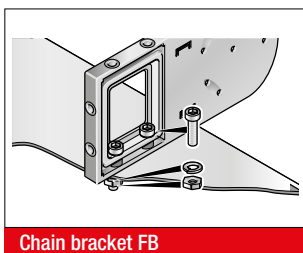
RS-ZL-5 CROSSBAR STRAIN RELIEF



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

| Type | Order No. | Description | for inner 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 |

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG

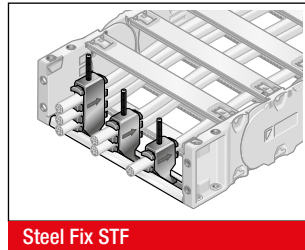
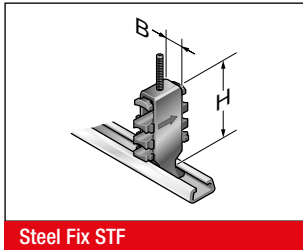


Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

Type KA-FB:
Integrated through-hole is fastened using screw and nut.

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

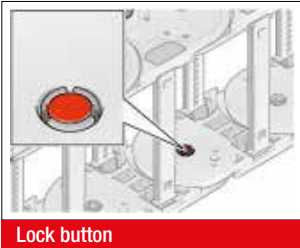
STRAIN RELIEF MP STEEL FIX



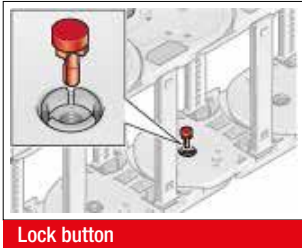
C-rails (galvanised) can be permanently integrated to hold the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

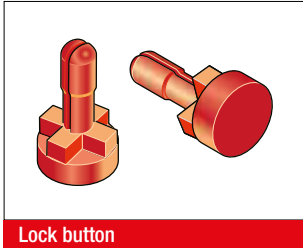
MP 52/62/72 LOCK BUTTON



Lock button



Lock button



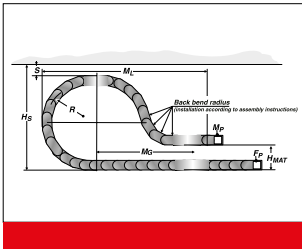
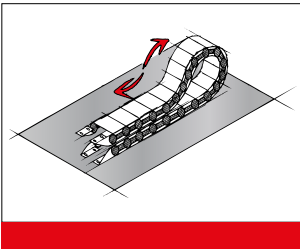
Lock button

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 | 052000080 |

MP 52-D LOWERED FIXING POINT



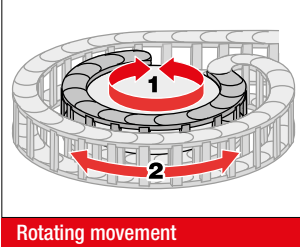
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _s) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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) left | 200.0 | 200.0 |
| SR 52.2 (RÜ200/R200) right | SR 52.2-D (RÜ200/R200) right | 200.0 | 200.0 |

GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



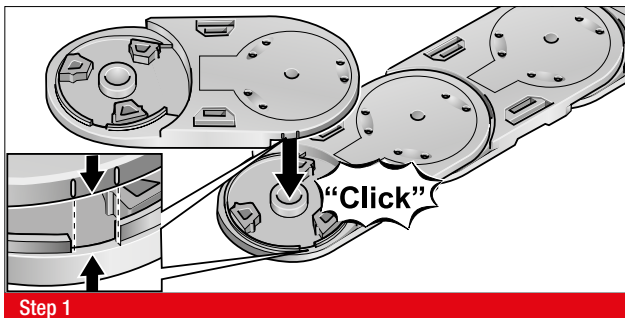
VAW steel galvanised / stainless steel



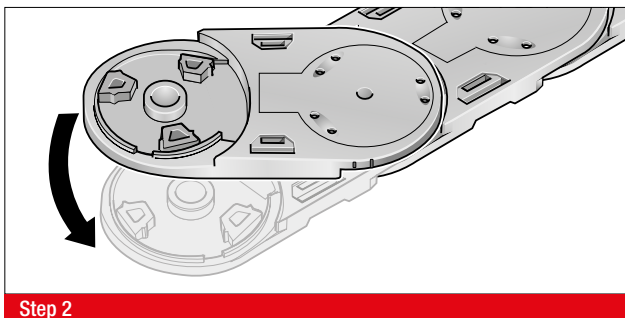
VAW aluminium

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.

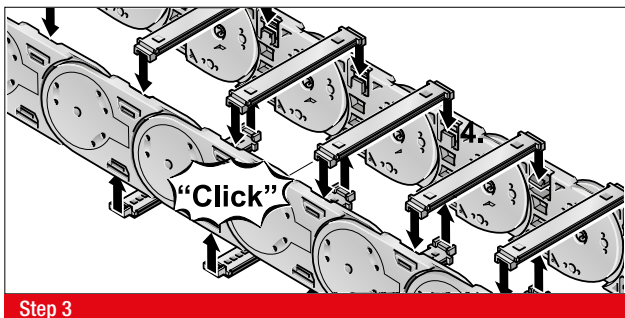
ASSEMBLY



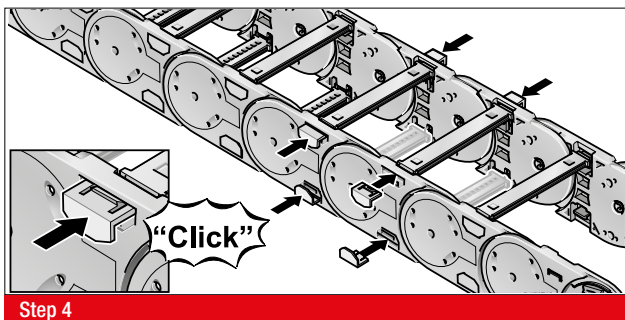
Step 1



Step 2

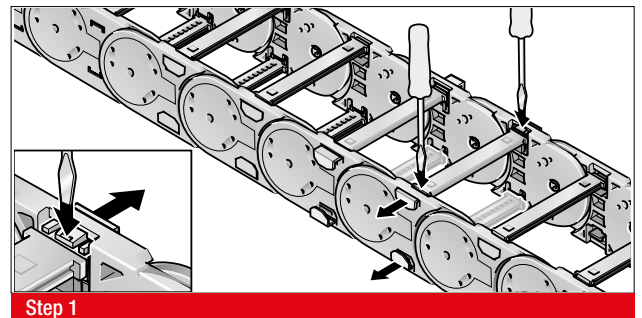


Step 3

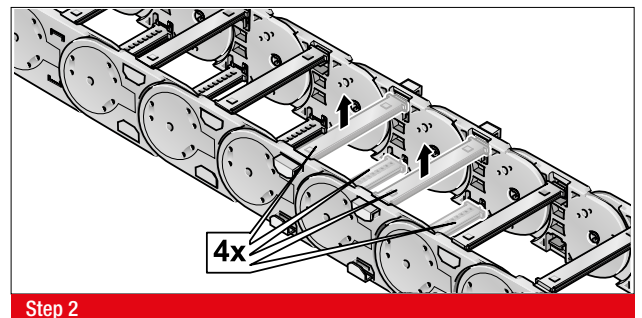


Step 4

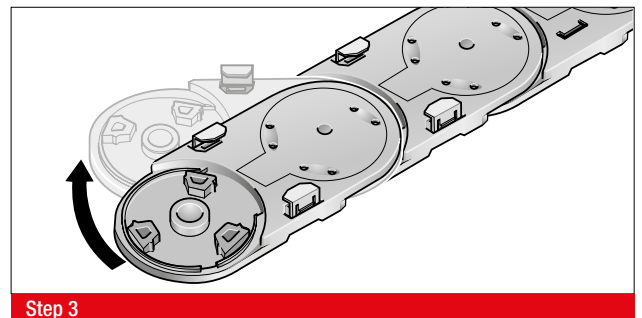
DISASSEMBLY



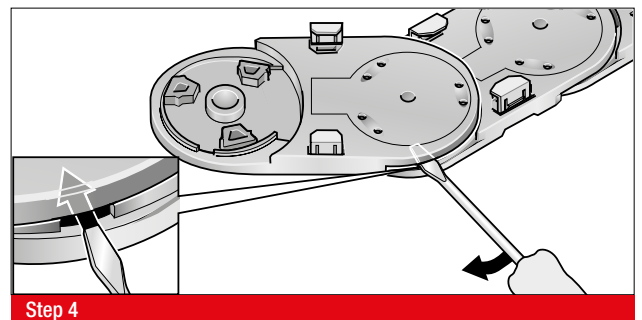
Step 1



Step 2



Step 3



Step 4

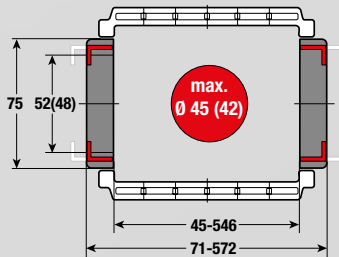
MP 52.4 OPEN



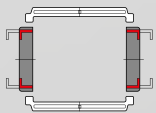
MP 52.5 CLOSED



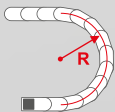
- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- FLEXIBLE CHAIN BRACKET
- BROAD INTERIOR LAYOUT
- PLASTIC OR ALUMINIUM VERSION



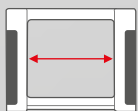
TECHNICAL DATA



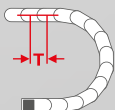
Loading side
Inside and outside bend



Available radii
125.0 – 300.0 mm



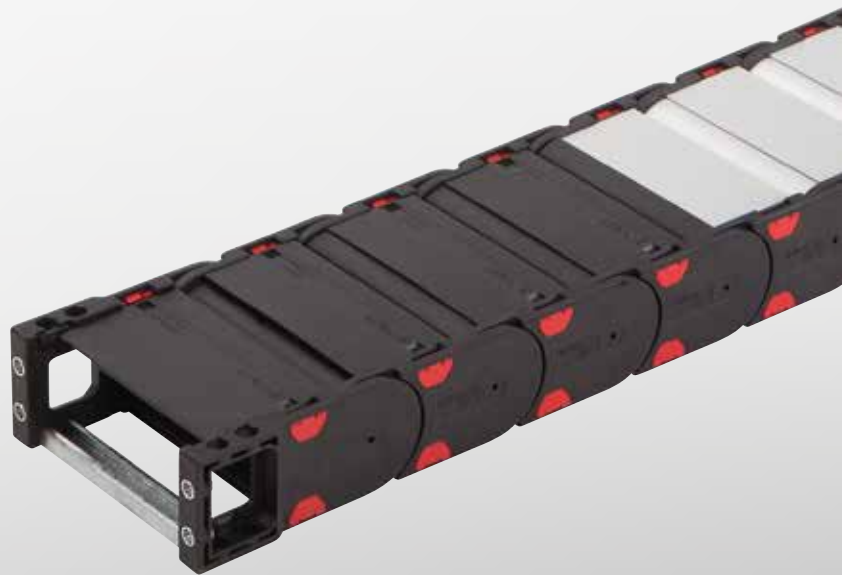
Available interior widths
With plastic crossbar
45.0 – 546.0 mm
With alu crossbar / with alu cover
67.0 – 600.0 mm / 43.0 – 600.0 mm



Pitch
T = 91.0 mm



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





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 50.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 275 |
| Travel distance vertical hanging L_{vh} max. | 50.0 m |
| Travel distance vertical upright L_{vs} max. | 4.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

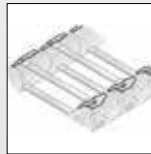
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 characteristics on request.

ACCESSORIES

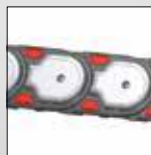


Gliding shoe

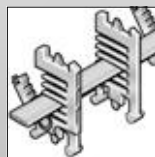
SHELVING SYSTEM



Separator TR



Gliding plate



RS shelving system



Bracket bar

CHAIN BRACKET



Crossbar connector RSV



Cover

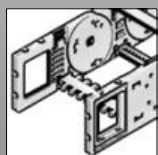
GUIDE CHANNELS



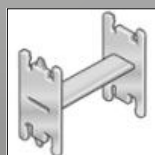
VAW galvanised steel / stainless steel



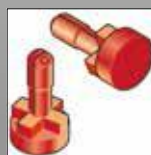
RS-ZL crossbar



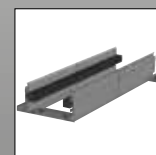
Chain bracket flexible



H-shaped shelf unit (RE)



Lock button



VAW aluminium

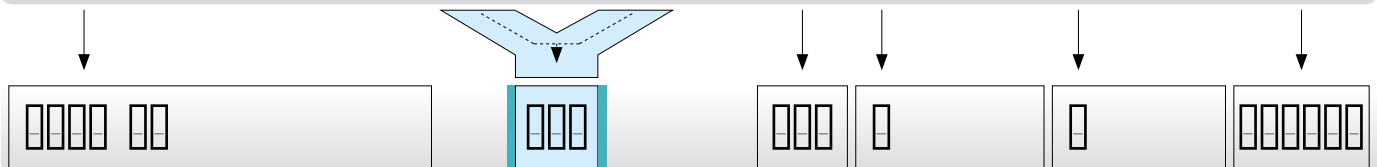


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | 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 To be opened from inside and outside bend | 045 ¹⁾ [1.77] | 071 [2.80] | 233 [9.17] | 259 [10.20] | 125 ¹⁾ [4.92] | 0 Plastic full-ridged with bias | 2 Polyamide without attenuator (PA/black) | |
| | | 057 ¹⁾ [2.24] | 083 [3.27] | 246 ²⁾ [9.69] | 272 [10.71] | | | | |
| 0525 44 ³⁾ | MP 52.5 closed Cover on outside bend Cover on inside bend To be opened from inside and outside bend | 062 ¹⁾ [2.44] | 088 [3.46] | 252 [9.92] | 278 [10.94] | 135 ¹⁾ [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 ²⁾ [11.65] | 322 [12.68] | 150 [5.91] | 2 Plastic half-ridged with bias | 7 ESD (PA/light grey) | |
| | | 093 [3.66] | 119 [4.69] | 346 ²⁾ [13.62] | 372 [14.65] | | | | |
| | | 096 ²⁾ [3.78] | 122 [4.80] | 350 [13.78] | 376 [14.80] | 175 [6.89] | 3 Plastic half-ridged without bias | 9 Special version (on request) | |
| | | 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 ²⁾ [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 ²⁾ [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 ²⁾ [7.17] | 208 [8.19] | | | | 9 Special version (on request) | | |
| | | 196 ²⁾ [7.72] | 222 [8.74] | | | | | | |
| | | 208 [8.19] | 234 [9.21] | | | | | | |
| | | 220 ²⁾ [8.66] | 246 [9.69] | | | | | | |



ORDERING EXAMPLE: 0524 30 220 150 0 3 2548

Crossbar on outside bend, crossbar on inside bend, to 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 2548 mm (28 links)

¹⁾ only for variant MP 52.4
²⁾ MP 52.5 also available with plastic cover
³⁾ reduced inner height, reduced max. cable diameter, see chain window drawing page 272

NOTE ON CONFIGURATION

Aluminium crossbars:

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

Aluminium covers:

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

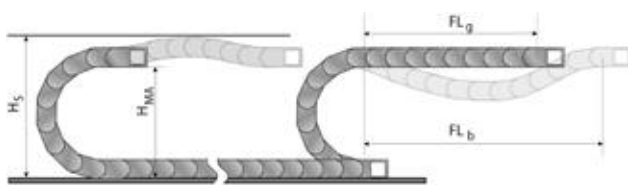
Crossbar connector and crossbar strain relief plate:

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.

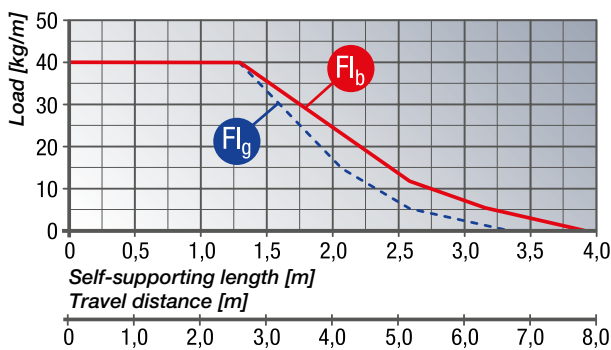
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



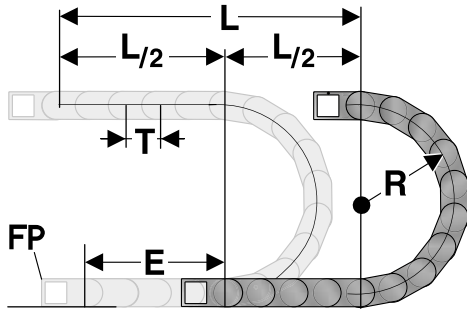
FL_g Self-supporting length, upper run straight

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

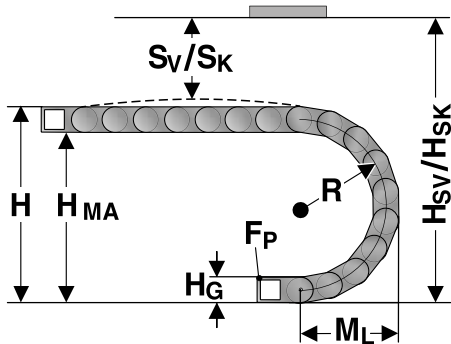


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 11 links, 91.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 91.0 mm

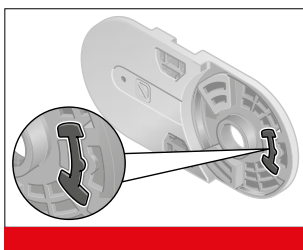
INSTALLATION DIMENSIONS



The moving end chain bracket 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 "Installation height with bias H_{sv} without damper" or "Installation height without bias H_{sk} without damper" must be observed. If the chain links are equipped with damping elements, the value "Installation height with bias H_{sv} with damper" or "Installation height without bias H_{sk} with damper" must be observed.

| Radius R | 125 | 135 | 150 | 175 | 200 | 250 | 300 |
|--------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|
| Outside height of chain link (H_o) | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Height of bend (H) | 325 | 345 | 375 | 425 | 475 | 575 | 675 |
| Height of moving end bracket (H_{MA}) | 250 | 270 | 300 | 350 | 400 | 500 | 600 |
| Safety margin with bias (S_v) | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Installation height with bias (H_{sv}) without damper | 405 | 425 | 455 | 505 | 555 | 655 | 755 |
| Installation height with bias (H_{sv}) with damper | 435 | 455 | 485 | 535 | 585 | 685 | 785 |
| Safety margin without bias (S_k) | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Installation height without bias (H_{sk}) without damper | 345 | 365 | 395 | 445 | 495 | 595 | 695 |
| Installation height without bias (H_{sk}) with damper | 375 | 395 | 425 | 475 | 525 | 625 | 725 |
| Arc projection (M_L) | 254 | 264 | 279 | 304 | 329 | 379 | 429 |

DAMPING ELEMENT IN SIDE LINK



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.

PLASTIC CROSSBAR POWERLINE



Crossbar

The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

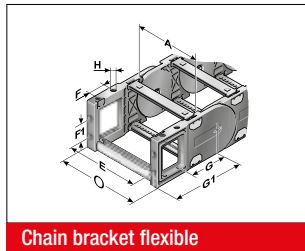
MP 52.3 / MP 52.5 PLASTIC COVER



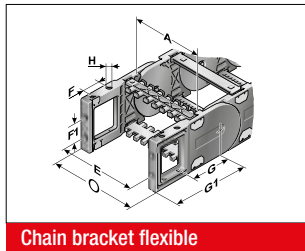
The covers connect the two side runs of the energy chain. The cover length is equivalent to the inside width of the energy chain.

| 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 FLEXIBLE CHAIN BRACKET



Chain bracket flexible

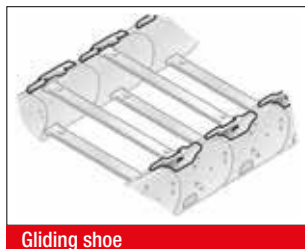


Chain bracket flexible

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 and insert panels are used to secure the brackets in place. This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link.

| Type | Order No. | Material | Version | Inside width | | | | | | | | Outside width | |
|---------------------------------|------------|----------|-------------|--------------|---------|---------|----------|---------|----------|---------|----------|---------------|--|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | ØH mm | KA O mm | |
| KA 52.4-FB Female end | 0524000050 | Plastic | with socket | 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 socket | 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 socket | 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 | | |

GS 52.4 GLIDING SHOE



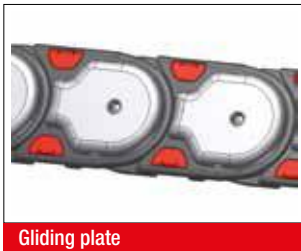
Gliding shoe

Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run). The gliding shoes are placed onto the side links instead of the usual crossbar locks (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes.

Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes. Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Installation site | Min. radius mm | Gliding shoe 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 |

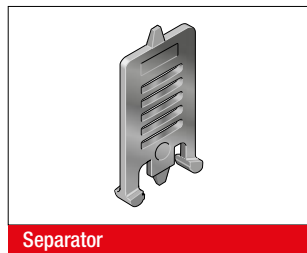
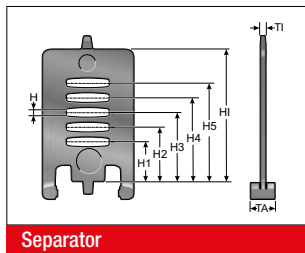
GLP 5 (52.4) GLIDING PLATE



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 |

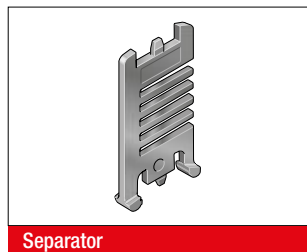
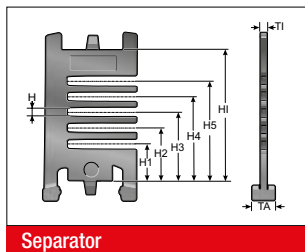
TR 52 SEPARATOR



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 | HI 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 |

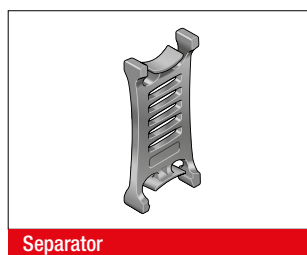
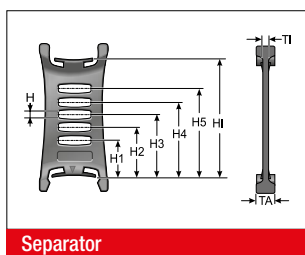
TR 52.1 SEPARATOR



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 | HI 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 |

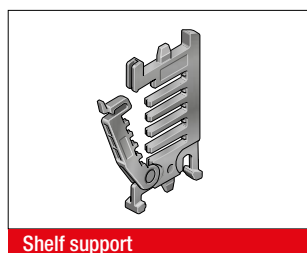
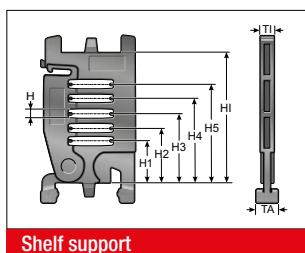
TR 52-V SEPARATOR



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

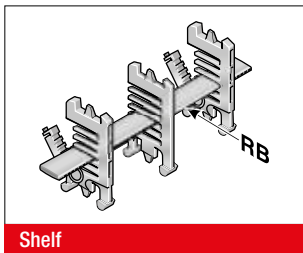
| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm | H5 mm | HI mm |
|---------|--------------|-------------------|---------|----------|----------|---------|----------|----------|----------|----------|----------|----------|
| TR 52-V | 052000009300 | TR 52-V Separator | movable | 3.5 | 13.0 | 4.0 | 16.3 | 22.3 | 28.2 | 33.8 | 39.8 | 52.0 |

RTT 52 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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

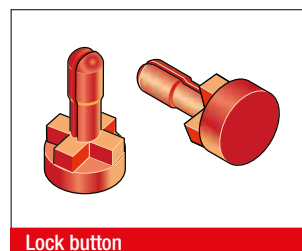
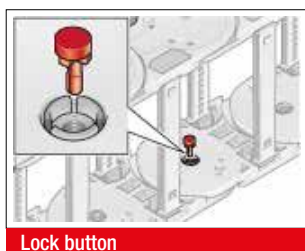
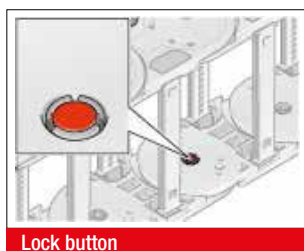
The shelf RBD creates a horizontal division over the entire inner width of the chain link. When used together with the TRT separator, an additional vertical division can be realised.

| Type | Order No. | Description | Width mm | for inner 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |

RB-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|-------------|-------------|----------|--------------------|
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 10000029100 | Shelf | 291.2 | 346.0 |

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 |

RSV 52 CROSSBAR CONNECTOR

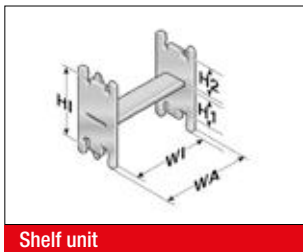


Crossbar connector

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| 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



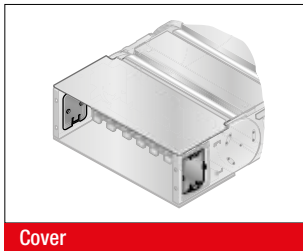
Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain.

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

The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

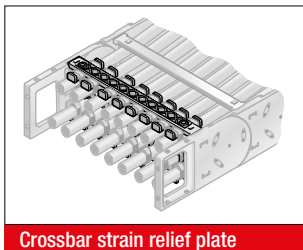
D4 COVER CHAIN BRACKET



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

| Type | Order No. |
|----------|------------|
| D4 Cover | 0413888002 |

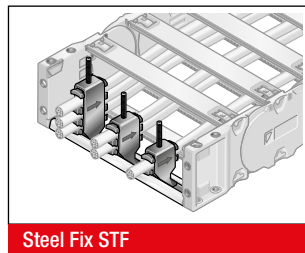
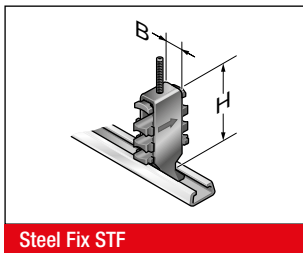
RS-ZL-5 CROSSBAR STRAIN RELIEF



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

| Type | Order No. | Description | for inner 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 |

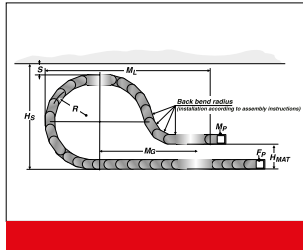
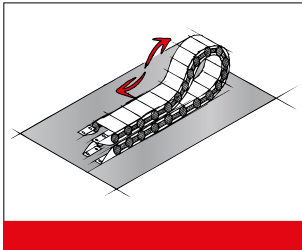
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 52.4 LOWERED FIXING POINT



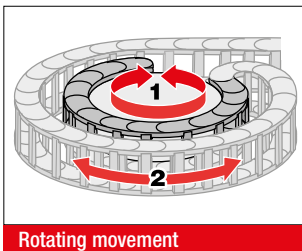
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M _L) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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 |

GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



VAW steel galvanised / stainless steel

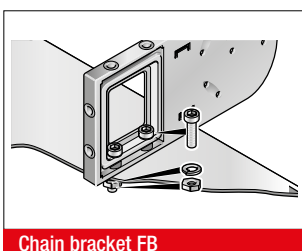


VAW aluminium

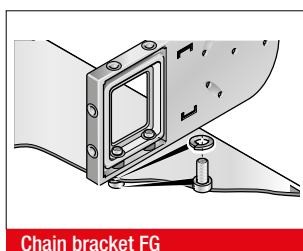
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

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

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



Chain bracket FB



Chain bracket FG

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

Type KA-FB:

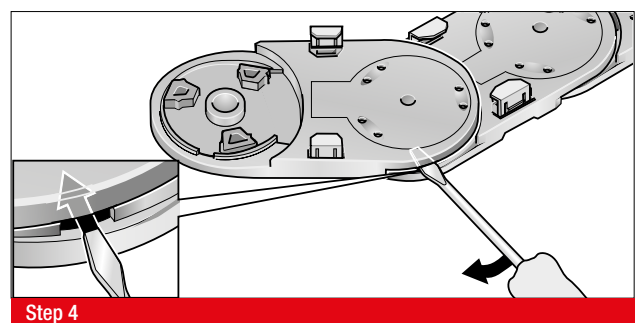
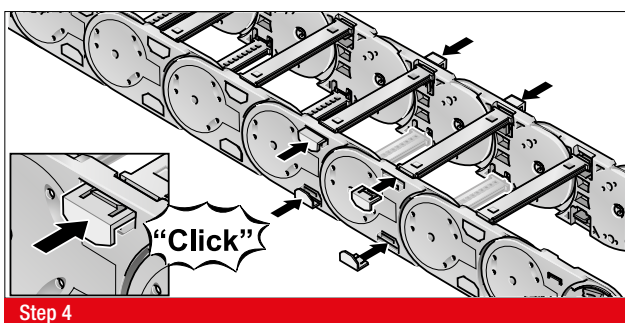
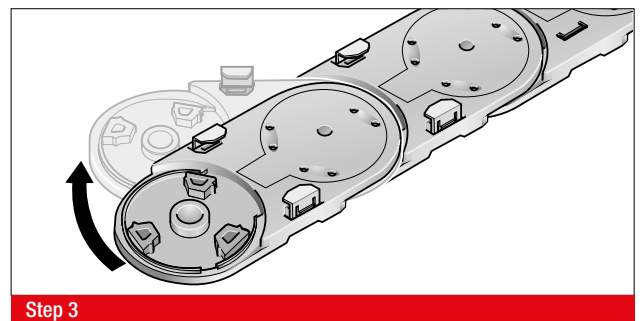
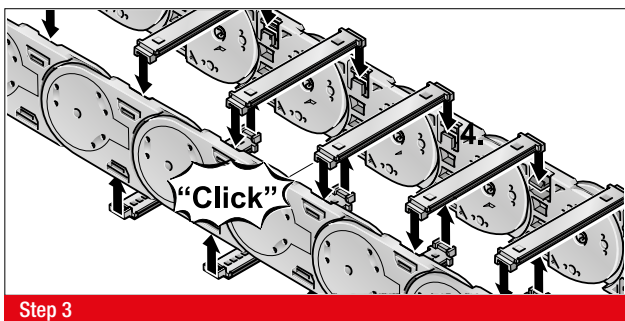
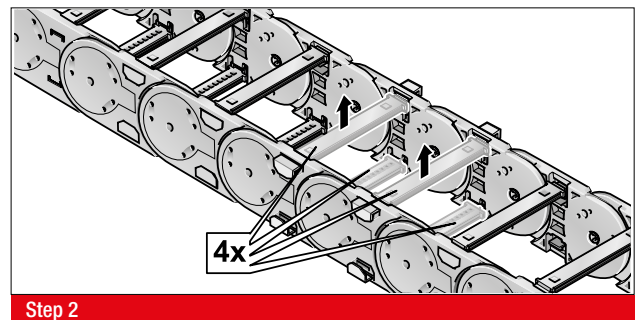
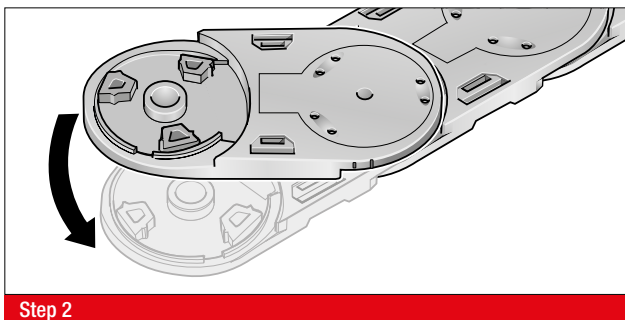
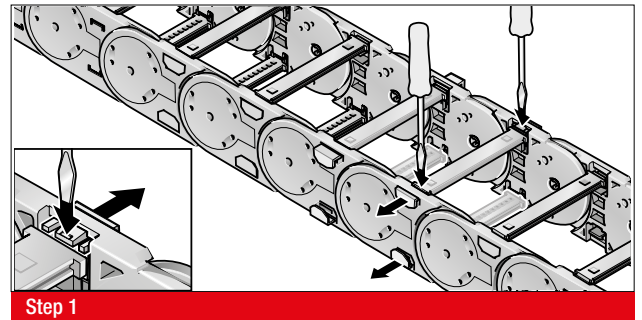
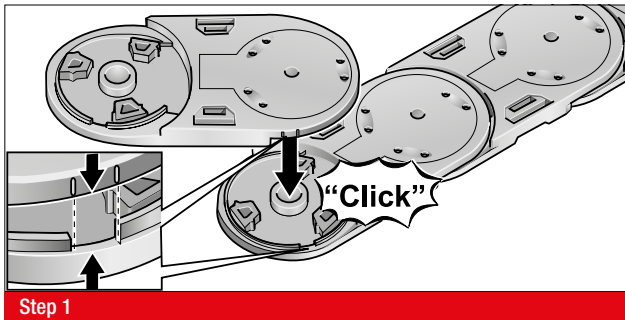
Integrated through-hole is fastened using screw and nut.

Type 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



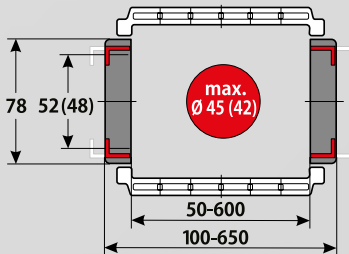
MP 52.6
OPEN



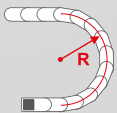
MP 52.7
CLOSED



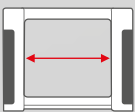
- FOR PARTICULARLY HIGH LOADING QUANTITIES
- FOR VERY LONG, SLIDING APPLICATIONS
- GLIDING SHOES FOR LONGER SERVICE LIFE
- FLEXIBLE CHAIN BRACKET



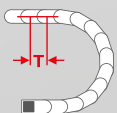
TECHNICAL DATA



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 SPECIFICATION

| | |
|------------------------------------------------|-----------------------|
| 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_{90} max. | 1.5 m |
| Speed gliding V_g max. | 6.0 m/s |
| Acceleration, gliding a_g max. | 10.0 m/s ² |

MATERIAL CHARACTERISTICS

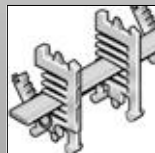
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

SHELVING SYSTEM

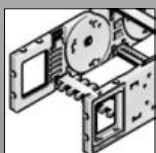


Separator TR



RS shelving system

CHAIN BRACKET

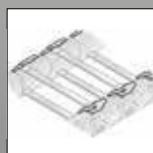


Chain bracket flexible



Crossbar connector RSV

ACCESSORIES

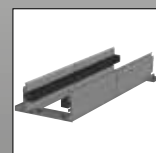


Gliding shoe

GUIDE CHANNELS



VAW galvanised steel / stainless steel



VAW aluminium

STRAIN RELIEF



Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|-----------------------------|------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------------------------|----------------------------------------|--------------|
| 0526 30 | MP 52.6 open Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 050 [1.97] | 100 [3.94] | 252 [9.92] | 302 [11.89] | 150 [5.91] | 5 Aluminium full-ridged without bias | 0 Polyamide standard (PA/black) | |
| | | 071 [2.80] | 121 [4.76] | 258 [10.16] | 308 [12.13] | | | | |
| 0527 44¹⁾ | MP 52.7 closed Cover on outside bend Cover on inside bend To be opened from inside and outside bend | 084 [3.31] | 134 [5.28] | 296 [11.65] | 346 [13.62] | 200 [7.87] | 7 Aluminium half-ridged without bias | | |
| | | 093 [3.66] | 143 [5.63] | 346 [13.62] | 396 [15.59] | | | | |
| | | 096 [3.78] | 146 [5.75] | 350 [13.78] | 400 [15.75] | 250 [9.84] | | | |
| | | 104 [4.09] | 154 [6.06] | 358 [14.09] | 408 [16.06] | | | | |
| | | 107 [4.21] | 157 [6.18] | 371 [14.61] | 421 [16.57] | 300 [11.81] | | | |
| | | 121 [4.76] | 171 [6.73] | 396 [15.59] | 446 [17.56] | | | | |
| | | 133 [5.24] | 183 [7.20] | 421 [16.57] | 471 [18.54] | | | | |
| | | 144 [5.67] | 194 [7.64] | 446 [17.56] | 496 [19.53] | | | | |
| | | 146 [5.75] | 196 [7.72] | 496 [19.53] | 546 [21.50] | | | | |
| | | 158 [6.22] | 208 [8.19] | 546 [21.50] | 596 [23.46] | | | | |
| | | 164 [6.46] | 214 [8.43] | 600 [23.62] | 650 [25.59] | | | | |
| | | 171 [6.73] | 221 [8.70] | | | | | | |
| | | 182 [7.17] | 232 [9.13] | | | | | | |
| | | 196 [7.72] | 246 [9.69] | | | | | | |
| | | 208 [8.19] | 258 [10.16] | | | | | | |
| | | 220 [8.66] | 270 [10.63] | | | | | | |
| | | 233 [9.17] | 283 [11.14] | | | | | | |
| | | 246 [9.69] | 296 [11.65] | | | | | | |



ORDERING EXAMPLE: 0526 30 220 250 5 0 25025

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 220 mm, Radius 250 mm
 Aluminium bridge, full-ridged without bias, material black-coloured polyamide
 Chain length 25025 mm (275 links)

¹⁾ reduced inner height, reduced max. cable diameter, see chain window drawing page 290

NOTE ON CONFIGURATION

Crossbars and cover from aluminium:

This energy chain is suitable for aluminium crossbars and covers only.

Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 50.0 mm – 600.0.

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:

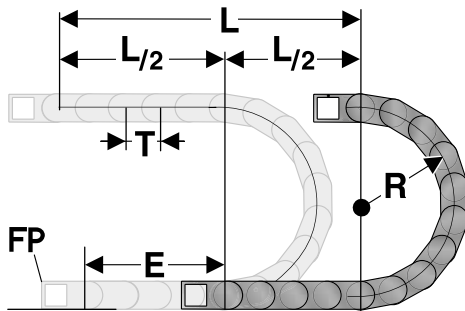
Once inside widths exceed 246 mm, we recommend the deployment of crossbar connectors (RSV).

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

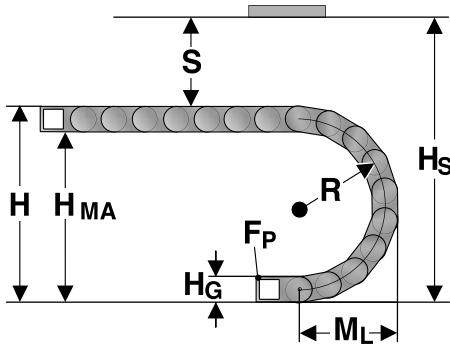


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 11 links, 91.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 91.0 mm

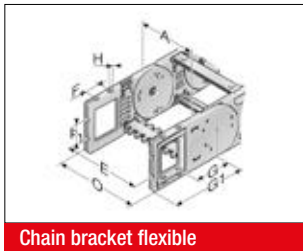
INSTALLATION DIMENSIONS



The moving end chain bracket 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 |
|-------------------------------------------|-----|-----|-----|-----|
| Outside height of chain link (H_o) | 78 | 78 | 78 | 78 |
| Height of bend (H) | 378 | 478 | 578 | 678 |
| Height of moving end bracket (H_{MA}) | 300 | 400 | 500 | 600 |
| Safety margin (S) | 12 | 12 | 12 | 12 |
| Installation height (H_s) | 390 | 490 | 590 | 690 |
| Arc projection (M_L) | 280 | 330 | 380 | 430 |

KA 52.6 FLEXIBLE CHAIN BRACKET

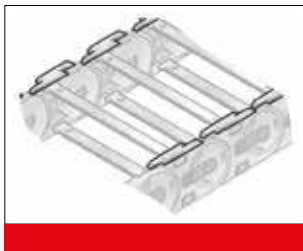


Chain bracket flexible

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 energy chain requires one male and one female bracket. M8 bolts 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 | |
|--------------------------------|------------|----------|-------------|--------------|---------|---------|----------|---------|----------|-----------|---------------|--|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | Ø H mm | KA 0 mm | |
| KA 52.6-F Hole, completely | 0526000050 | Plastic | with socket | 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 socket | 50.0 – 600.0 | A+25.0 | 35.0 | 30.0 | 72.5 | 131.0 | 8.5 | A+50.0 | |

GS 52.6 GLIDING SHOE



In the case of energy chains, gliding shoes are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side).

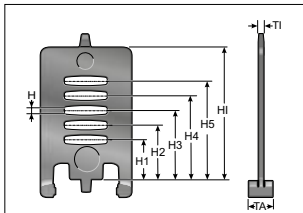
The gliding shoes are set onto the side links on the inside bend (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes.

Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes.

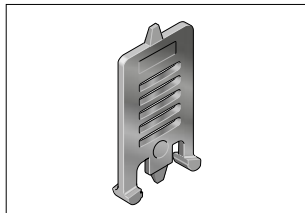
Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Installation site | Min. radius mm | Gliding shoe 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

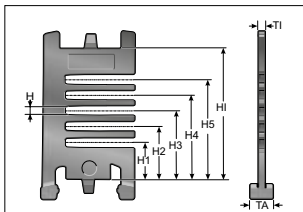


Separator

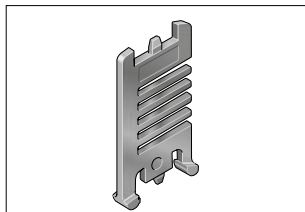
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. The closed separator is used when no shelves are used. This is the recommended design for travel paths of 30 metres or greater.

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm | H5 mm | 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



Separator

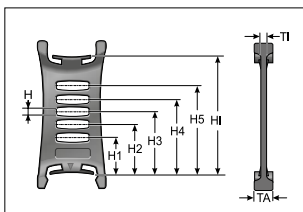


Separator

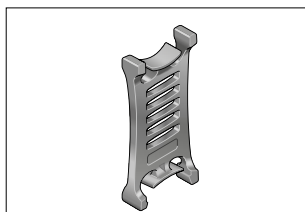
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm | H5 mm | 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



Separator

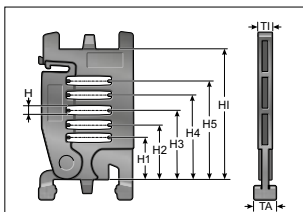


Separator

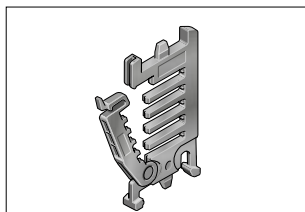
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

| Type | Order No. | Description | Version | TI mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm | H5 mm | Hl mm |
|---------|--------------|-------------------|---------|----------|----------|---------|----------|----------|----------|----------|----------|----------|
| TR 52-V | 052000009300 | TR 52-V Separator | movable | 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

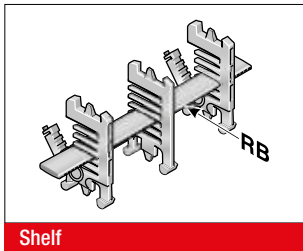


Shelf support

Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



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

| Type | Order No. | Description | Width mm | for inner 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |

RB-5 SHELF

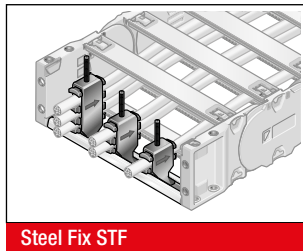
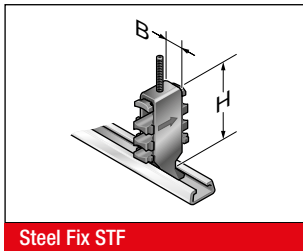
| Type | Order No. | Description | Width mm | for inner width mm |
|----------|-------------|-------------|----------|--------------------|
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 10000029100 | Shelf | 291.2 | 346.0 |

RSV 52 CROSSBAR CONNECTOR

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| Type | Order No. | Description | TI mm |
|------------|--------------|--------------------------------------------|-------|
| RSV 52 Alu | 052000009800 | Crossbar connector for aluminium crossbars | 7.5 |

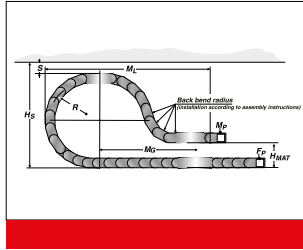
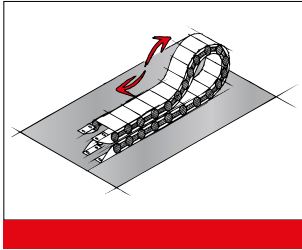
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 52.6 LOWERED FIXING POINT



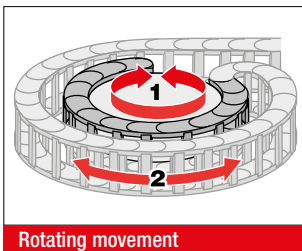
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _s) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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

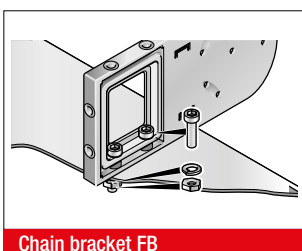


VAW aluminium

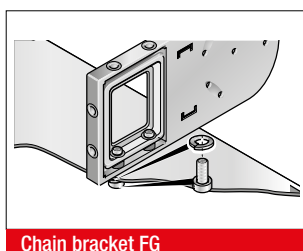
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

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

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



Chain bracket FB



Chain bracket FG

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

Type KA-FB:

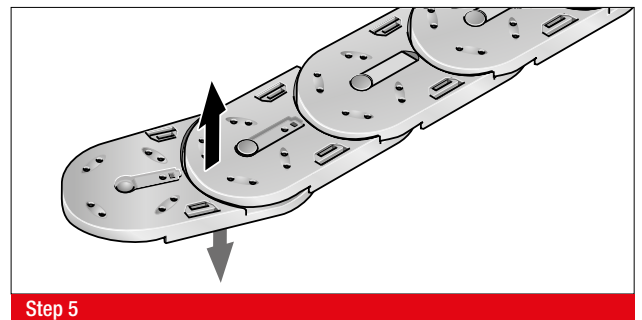
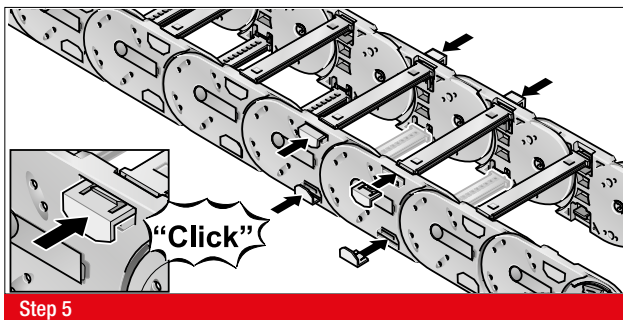
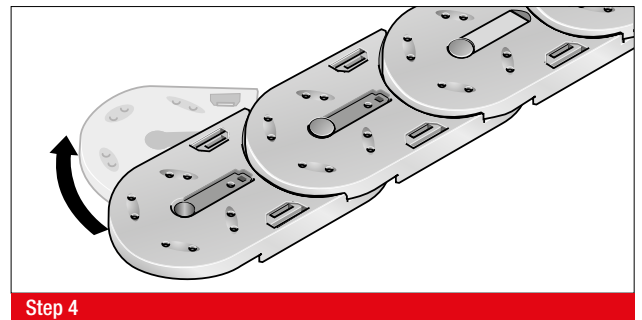
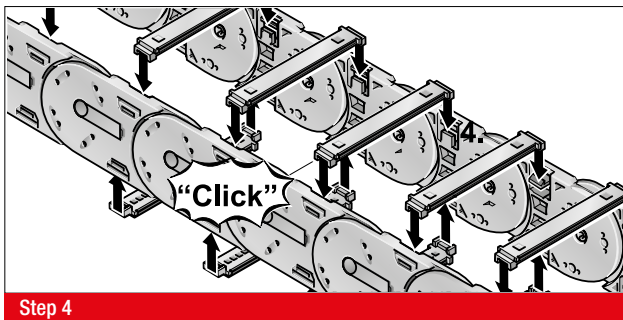
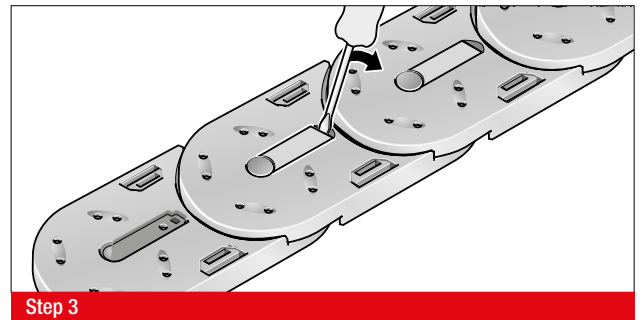
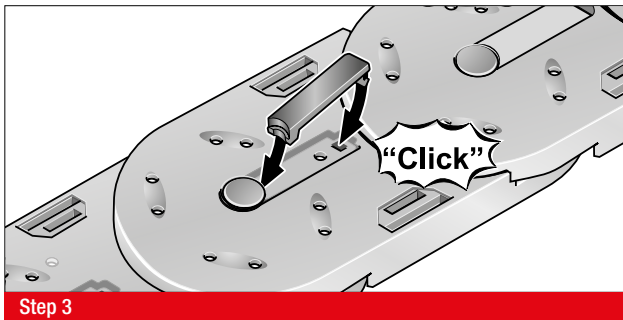
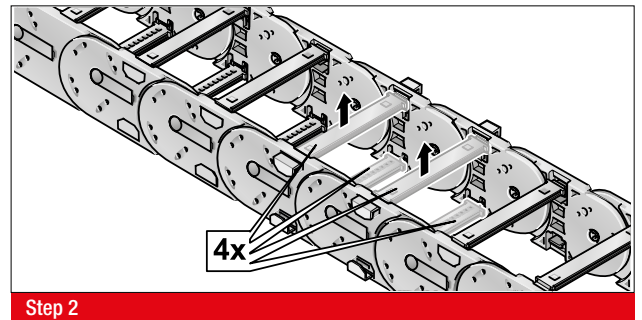
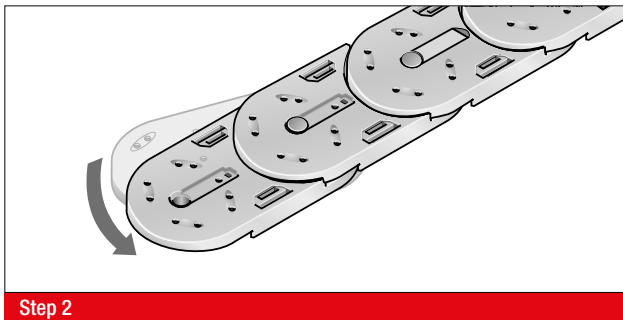
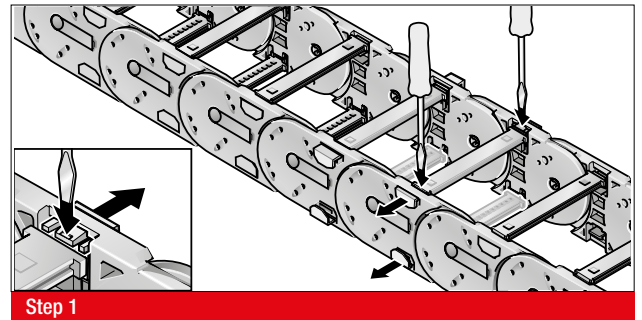
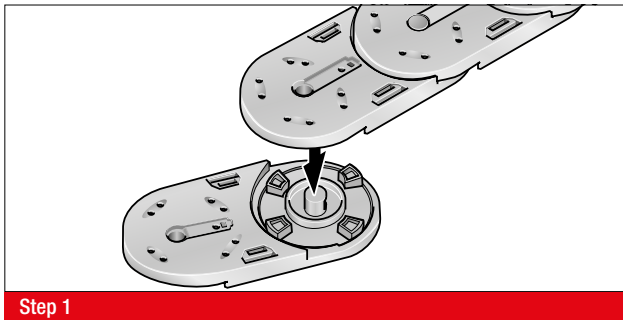
Integrated through-hole is fastened using screw and nut.

Type KA-FG:

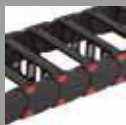
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

ASSEMBLY

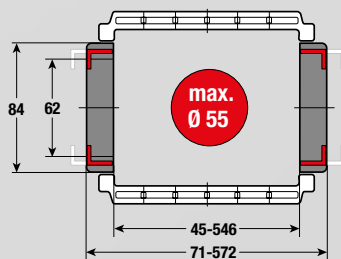
DISASSEMBLY



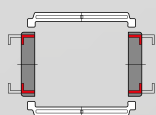
MP 62.4 OPEN



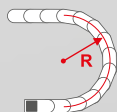
- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- FLEXIBLE CHAIN BRACKET
- BROAD INTERIOR LAYOUT
- PLASTIC OR ALUMINIUM VERSION



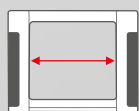
TECHNICAL DATA



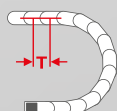
Loading side
Inside and outside bend



Available radii
135.0 – 300.0 mm



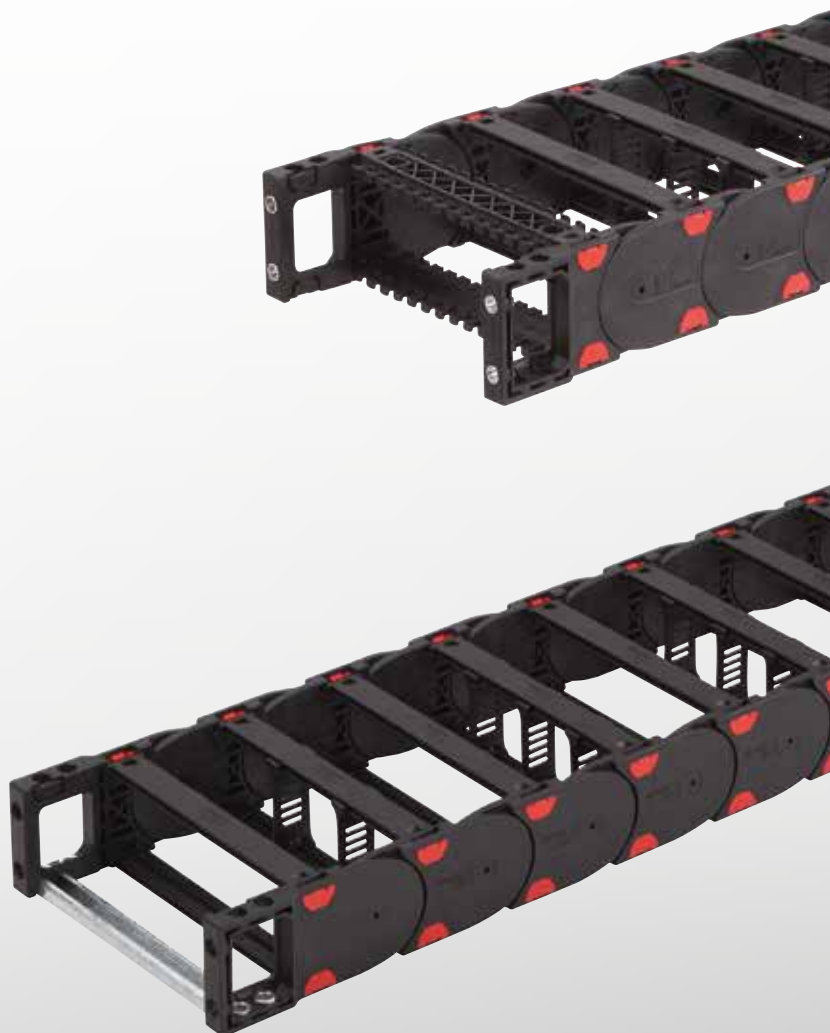
Available interior widths
With plastic crossbar
45.0 – 546.0 mm
With alu crossbar / with alu cover
67.0 – 600.0 mm



Pitch
T = 91.0 mm



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





TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 50.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 305 |
| Travel distance vertical hanging L_{vh} max. | 50.0 m |
| Travel distance vertical upright L_{vs} max. | 4.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

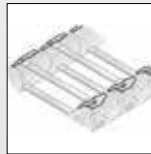
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

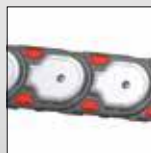
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

ACCESSORIES



Gliding shoe



Gliding plate

SHELVING SYSTEM



Separator TR



Bracket bar



RS shelving system

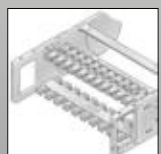


Cover

GUIDE CHANNELS

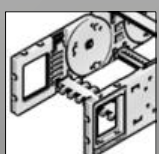


VAW galvanised steel / stainless steel



RS-ZL crossbar

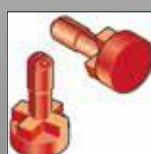
CHAIN BRACKET



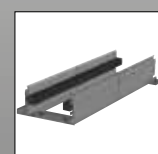
Chain bracket flexible



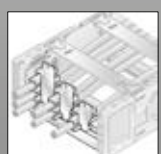
Crossbar connector RSV



Lock button



VAW aluminium

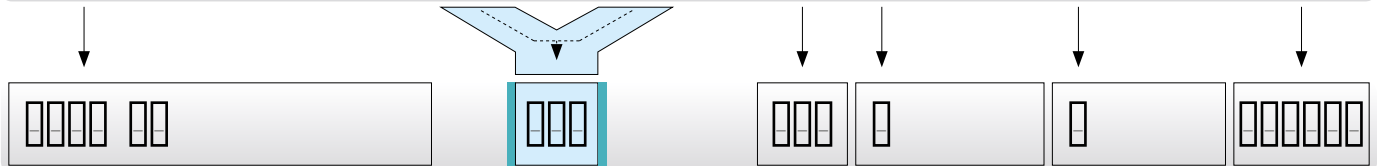


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------------------------------------|-----------------------------------|----------------------|-----------------------|-----------------------|-----------------------|---------------------------------------------|----------------------------------------------|--------------|
| 0624 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 045¹⁾ [1.77] | 071 [2.80] | 233 [9.17] | 259 [10.20] | 135 [5.31] | 0 Plastic full-ridged with bias | 2 Polyamide without damper (PA/black) | |
| | | 057¹⁾ [2.24] | 083 [3.27] | 246 [9.69] | 272 [10.71] | | | | |
| | | 062¹⁾ [2.44] | 088 [3.46] | 252 [9.92] | 278 [10.94] | 150 [5.91] | 1 Plastic full-ridged without bias | 3 Polyamide with damper (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 | 7 ESD (PA/light grey) | |
| | | 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 | 9 Special version (on request) | |
| | | 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 3003

Crossbar on outside bend, crossbar on inside bend, to 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 3003 mm (33 links)

¹⁾ only for variant 30

NOTE ON CONFIGURATION

Aluminium crossbars:

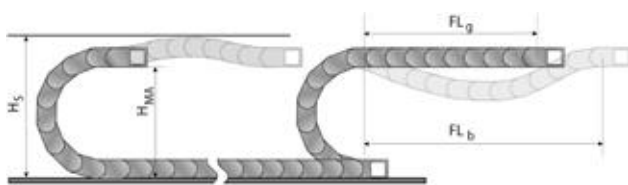
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 67.0 mm – 600.0.

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.

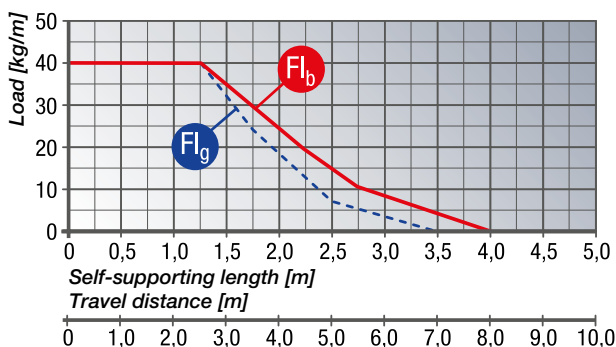
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



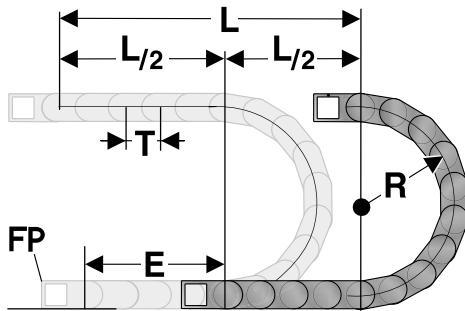
FL_g Self-supporting length, upper run straight

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

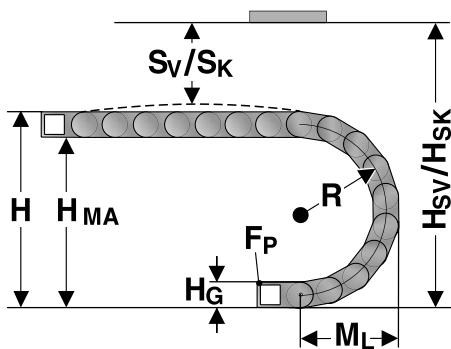


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 11 links, 91.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 91.0 mm

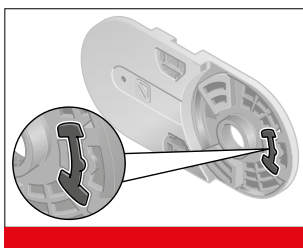
INSTALLATION DIMENSIONS



The moving end chain bracket 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 "Installation height with bias H_{sv} without damper" or "Installation height without bias H_{sk} without damper" must be observed. If the chain links are equipped with damping elements, the value "Installation height with bias H_{sv} with damper" or "Installation height without bias H_{sk} with damper" must be observed.

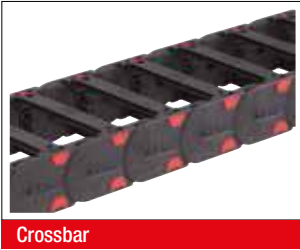
| Radius R | 135 | 150 | 175 | 200 | 250 | 300 |
|--------------------------------------------------------------|-----|-----|-----|-----|-----|-----|
| Outside height of chain link (H_o) | 84 | 84 | 84 | 84 | 84 | 84 |
| Height of bend (H) | 354 | 384 | 434 | 484 | 584 | 684 |
| Height of moving end 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 ELEMENT IN SIDE LINK



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.

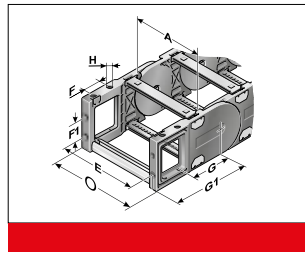
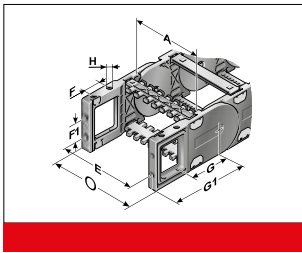
PLASTIC CROSSBAR POWERLINE



The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

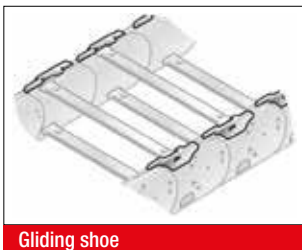
KA 62.4 FLEXIBLE CHAIN BRACKET



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. M8 screws and insert panels are used to secure the brackets in place. This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link.

| Type | Order No. | Material | Version | Inside width | | | | | | | Outside width | |
|---------------------------------|------------|----------|-------------|--------------|---------|---------|----------|---------|----------|---------|---------------|-------------|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | ØH mm | KA 01 mm |
| KA 62.4-FB Female end | 0624000050 | Plastic | with socket | 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 socket | 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 socket | 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 GLIDING SHOE

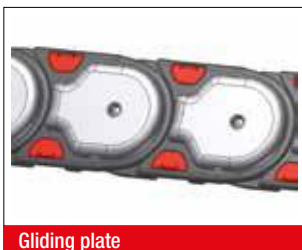


Gliding shoe

Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run). The gliding shoes are placed onto the side links instead of the usual crossbar locks (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes. Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes. Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Installation site | Min. radius mm | Gliding shoe 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



Gliding plate

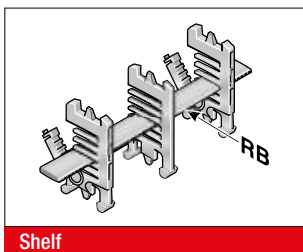
The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 2.5 mm. We recommend replacing the energy chain when this limit has been reached. Depending on 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 |

GLP 5 (62.4) GLIDING PLATE

| Type | Order No. | Installation site | For radius mm | Gliding plate height mm |
|--------------------------------------------|--------------|------------------------------------------|---------------|-------------------------|
| 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 |

RB-5 SHELF



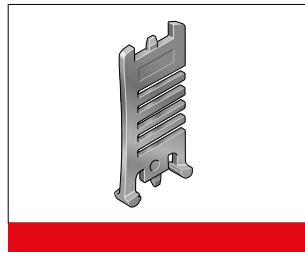
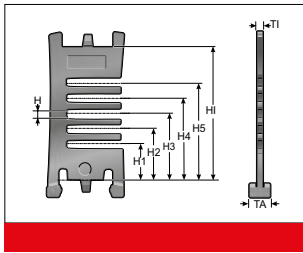
The shelf RBD creates a horizontal division over the entire inner width of the chain link. When used together with the TRT separator, an additional vertical division can be realised.

| Type | Order No. | Description | Width mm | for inner 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 | 100000005601 | 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 | 100000008400 | 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-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|----------|--------------------|
| 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 100000029100 | Shelf | 291.2 | 346.0 |

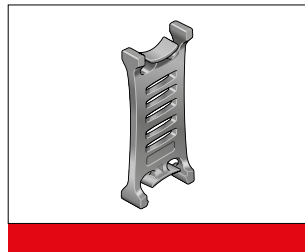
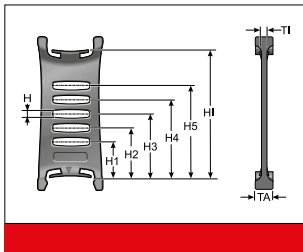
TR 62.4 SEPARATOR



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 |

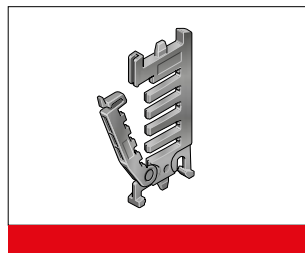
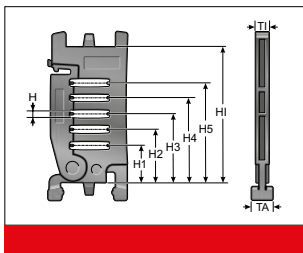
TR 62.4-V SEPARATOR



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 | movable | 3.5 | 13.0 | 4.0 | 17.0 | 24.0 | 31.0 | 38.0 | 45.0 | 62.0 |

RTT 62.4 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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. Their use prevents the crossbar from separating due to the extra load in the chain.

| Type | Order No. | Description | TI mm |
|--------------|--------------|--------------------------------------------|-------|
| RSV 62.4 | 062400009700 | Crossbar connector | 6.0 |
| RSV 62.4 Alu | 062400009800 | Crossbar connector for aluminium crossbars | 6.0 |

BS-5 BRACKET BAR



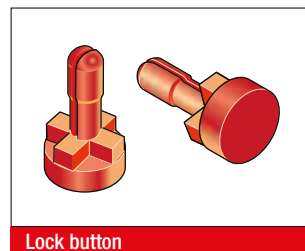
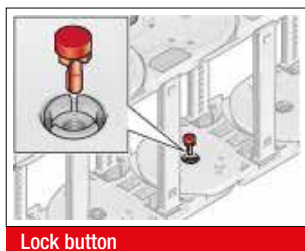
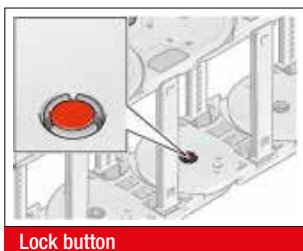
Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain.

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

The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

MP 52/62/72 LOCK BUTTON

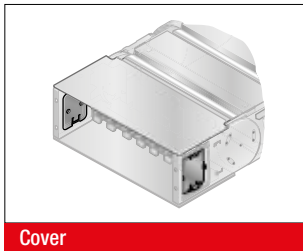


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

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

| Type | Order No. |
|------------------------|------------|
| MP52/62/72 lock button | 0520000080 |

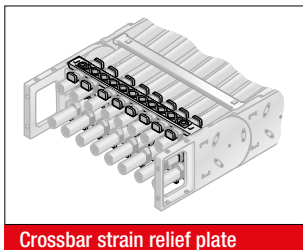
D5 COVER CHAIN BRACKET



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

| Type | Order No. |
|----------|------------|
| D5 Cover | 0523888002 |

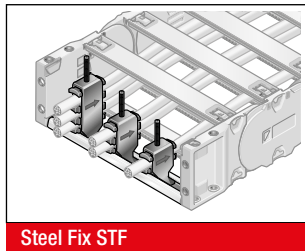
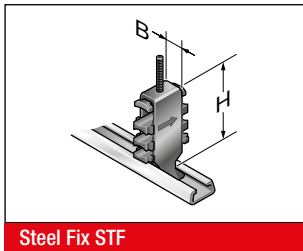
RS-ZL-5 CROSSBAR STRAIN RELIEF



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

| Type | Order No. | Description | for inner 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 |

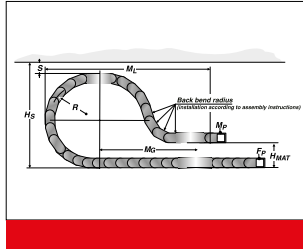
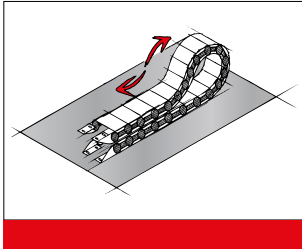
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 62.4 LOWERED FIXING POINT



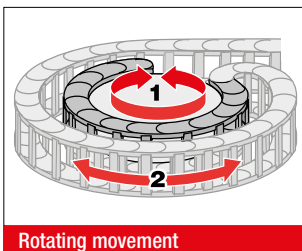
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _s) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



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 62.4 (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



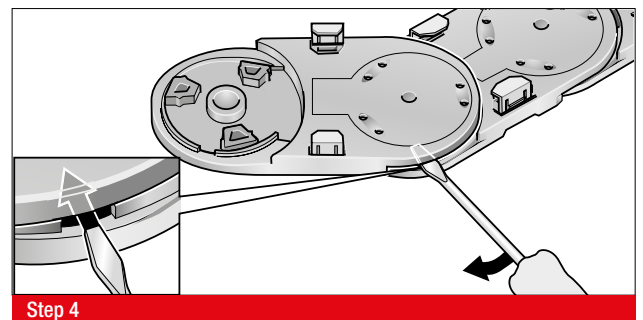
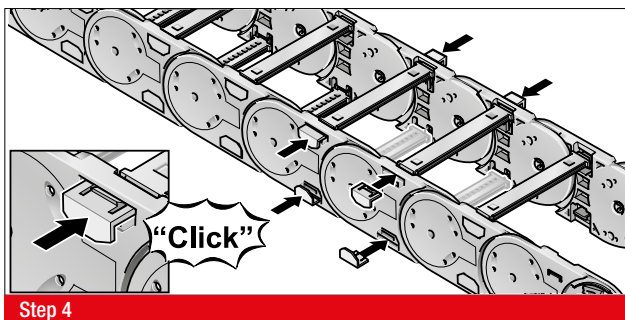
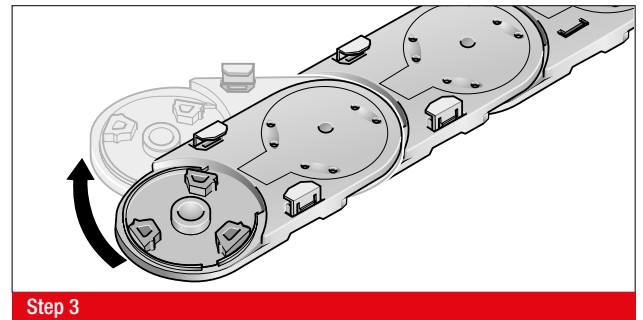
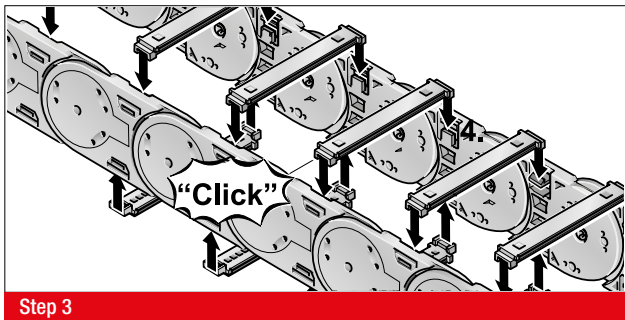
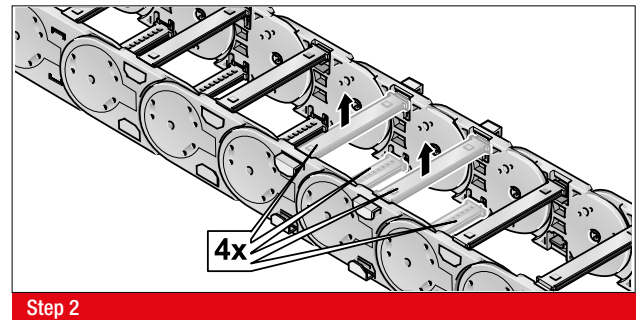
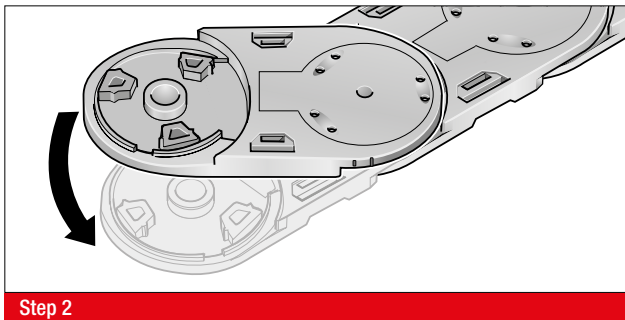
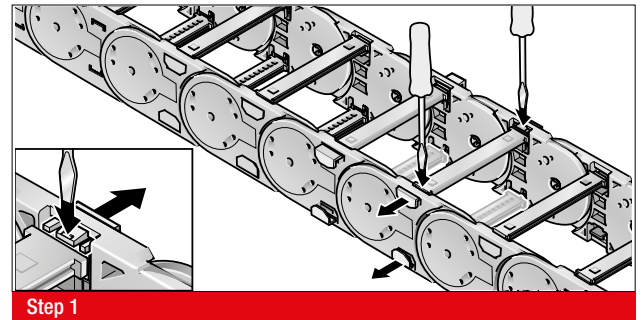
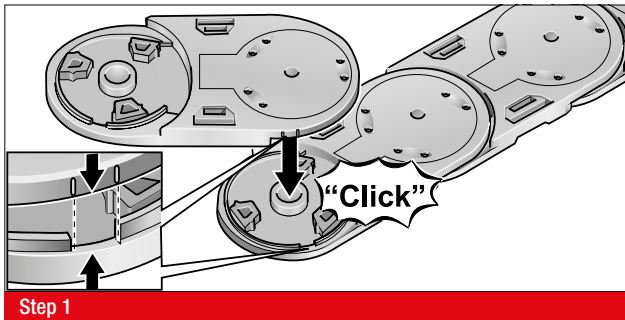
VAW aluminium

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



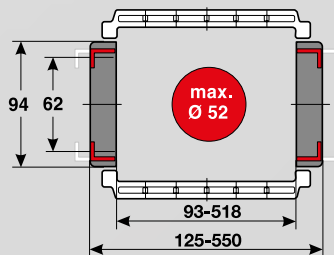
MP 62.2
OPEN



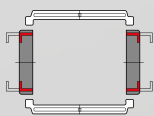
MP 62.3
CLOSED



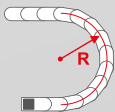
- GLIDING SHOES FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- FLEXIBLE CHAIN BRACKET
- PLASTIC OR ALUMINIUM VERSION



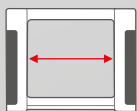
TECHNICAL DATA



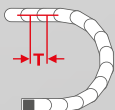
Loading side
Inside and outside bend



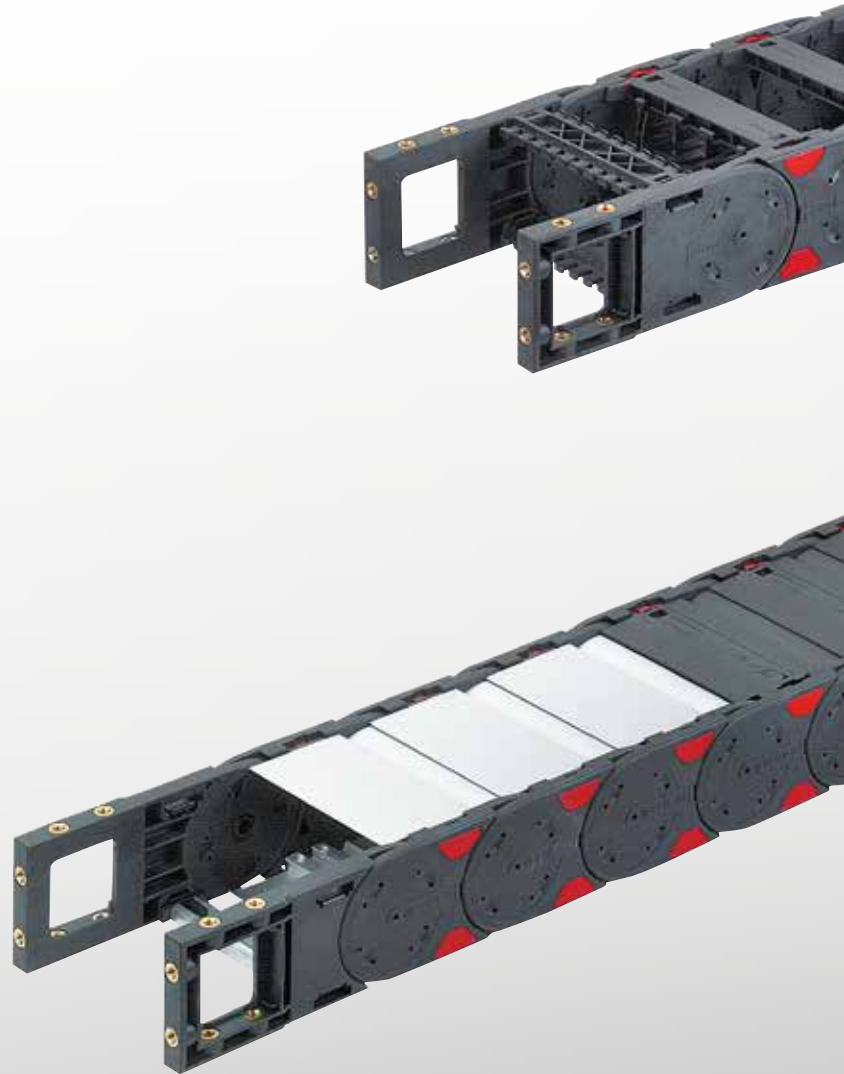
Available radii
150.0 – 500.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| 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. | 65.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 40.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 characteristics on request.

ACCESSORIES



Gliding shoe

SHELVING SYSTEM

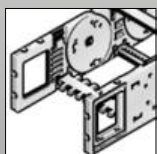


Separator TR

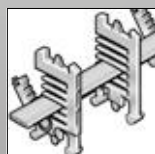


Bracket bar

CHAIN BRACKET



Chain bracket flexible



RS shelving system

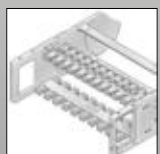


Cover

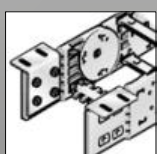
GUIDE CHANNELS



VAW galvanised steel / stainless steel



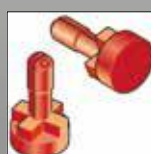
RS-ZL crossbar



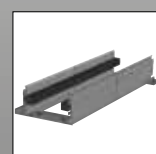
Chain bracket angle



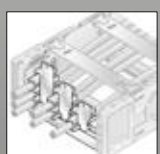
Crossbar connector RSV



Lock button



VAW aluminium



Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------------------|---------------------------------------------|----------------------------------------|--------------|
| 0622 30 | MP 62.2 open Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 093 [3.66] | 125 [4.92] | 468 [18.43] | 500 [19.69] | 150¹⁾ [5.91] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 106 [4.17] | 138 [5.43] | 518 [20.39] | 550 [21.65] | | | | |
| 0623 44 | MP 62.3 closed Cover on outside bend Cover on inside bend To be opened from inside and outside bend | 118²⁾ [4.65] | 150 [5.91] | | | 200 [7.87] | 1 Plastic full-ridged without bias | 5 Polypropylene (PP/blue) | |
| | | 131 [5.16] | 163 [6.42] | | | | | | |
| | | 143²⁾ [5.63] | 175 [6.89] | | | 250 [9.84] | 2 Plastic half-ridged with bias | 7 ESD (PA/light grey) | |
| | | 156 [6.14] | 188 [7.40] | | | | | | |
| | | 168 [6.61] | 200 [7.87] | | | 300 [11.81] | 3 Plastic half-ridged without bias | 9 Special version (on request) | |
| | | 181 [7.13] | 213 [8.39] | | | | | | |
| | | 193²⁾ [7.60] | 225 [8.86] | | | 350 [13.78] | 4 Aluminium full-ridged with bias | | |
| | | 206 [8.11] | 238 [9.37] | | | | | | |
| | | 218 [8.58] | 250 [9.84] | | | 400 [15.75] | 5 Aluminium full-ridged without bias | | |
| | | 231 [9.09] | 263 [10.35] | | | | | | |
| | | 243²⁾ [9.57] | 275 [10.83] | | | 500 [19.69] | 6 Aluminium half-ridged with bias | | |
| | | 256 [10.08] | 288 [11.34] | | | | | | |
| | | 268 [10.55] | 300 [11.81] | | | | 7 Aluminium half-ridged without bias | | |
| | | 293²⁾ [11.54] | 325 [12.80] | | | | | | |
| | | 318 [12.52] | 350 [13.78] | | | | 9 Special version (on request) | | |
| | | 343²⁾ [13.50] | 375 [14.76] | | | | | | |
| | | 368 [14.49] | 400 [15.75] | | | | | | |
| | | 418²⁾ [16.46] | 450 [17.72] | | | | | | |



ORDERING EXAMPLE: 0622 30 118 150 0 0 1600

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 118 mm; radius 150 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1600 mm (16 links)

¹⁾ only for variant 30
²⁾ 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.

Aluminium covers:

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 40.0 mm – 600.0 mm.

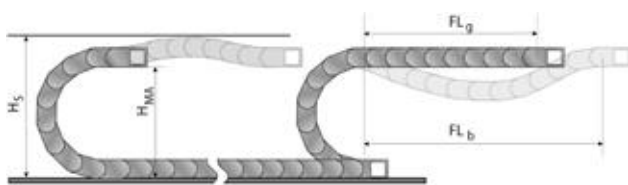
Crossbar connector and crossbar strain relief plate:

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.

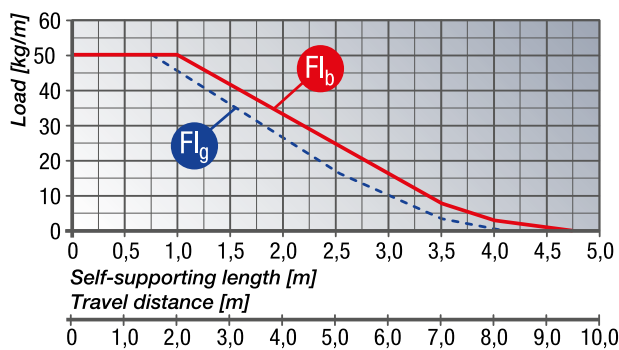
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



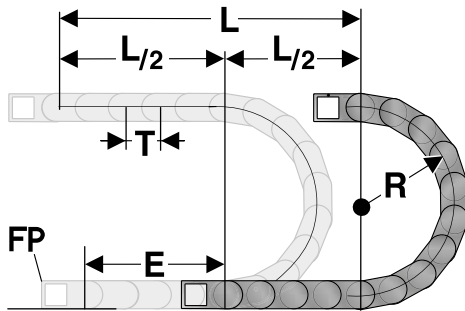
FL_g Self-supporting length, upper run straight

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

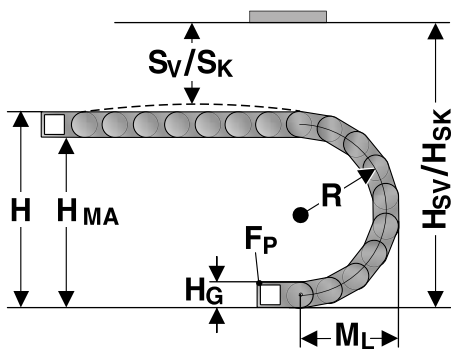


The fixed point of the energy chain should be placed in the middle of the travel distance.
 This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 10 links, 100.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 100.0 mm

INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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_o) | 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_{sk}) | 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



The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

BS-5 BRACKET BAR



Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain. The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar. The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

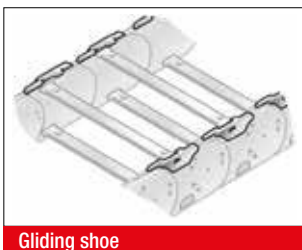
MP 62.3 PLASTIC COVER



The covers connect the two side runs of the energy chain. The cover length is equivalent to 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 |

GS 62.2 GLIDING SHOE

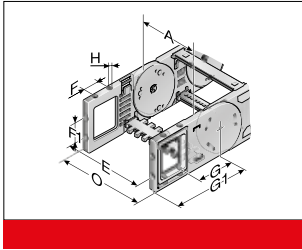


Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run). The gliding shoes are placed onto the side links instead of the usual crossbar locks (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes.

Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes. Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Installation site | Min. radius mm | Gliding shoe 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 |

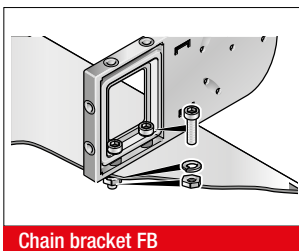
KA 62.1 FLEXIBLE CHAIN BRACKET



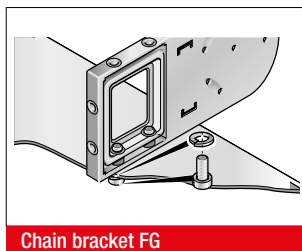
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. M8 bolts are used to secure the brackets in place. 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 | |
|---------------------|------------|----------|-------------|--------------|--------|------|-------|-------|-------|------|--------|---------------|--|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm | |
| KA 62-FB Female end | 0620000056 | Plastic | with socket | 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 socket | 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 | |

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



Chain bracket FB



Chain bracket FG

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

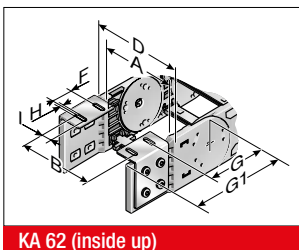
Type KA-FB:

Integrated through-hole is fastened using screw and nut.

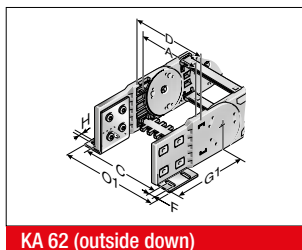
Type KA-FG:

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

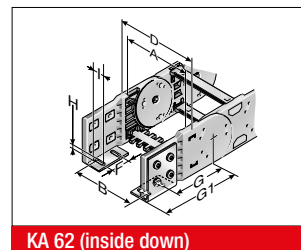
KA 62.1 CHAIN BRACKET ANGLE



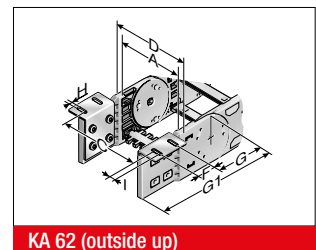
KA 62 (inside up)



KA 62 (outside down)



KA 62 (inside down)



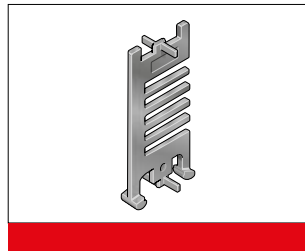
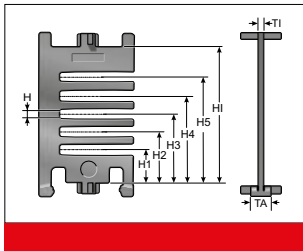
KA 62 (outside up)

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 energy chain requires one male and one female bracket.

M8 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 | Inside width | | | | | | | | Outside width | | |
|------------------|------------|-------------|--------------|--------|--------|------|-------|-------|-------|--------|---------------|---------|----------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | G2 mm | Ø H mm | I mm | KA 0 mm | KA 01 mm |
| KA 62 Female end | 0620000050 | Sheet steel | 93.0 – 518.0 | A-12.0 | A+44.0 | 45.0 | 102.0 | 158.0 | 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 | 158.0 | 171.5 | 9.0 | 15.0 | A+32.0 | A+90.0 |

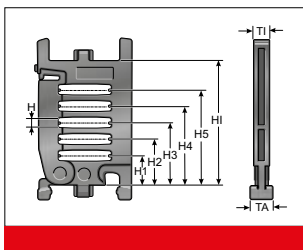
TR 62 SEPARATOR



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 | HI mm |
|-------|--------------|-------------|----------|----------|----------|---------|----------|----------|----------|----------|----------|----------|
| TR 62 | 062000009200 | Separator | lockable | 3.5 | 13.0 | 5.5 | 14.8 | 23.1 | 31.4 | 39.7 | 48.0 | 62.0 |

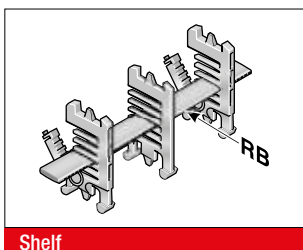
RTT 62 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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 | 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



Shelf

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

| Type | Order No. | Description | Width mm | for inner 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 | 10000010600 | Shelf | 106.0 | 106.0 |
| RB 111-7 | 1000011107 | Shelf | 111.0 | 118.0 |

RB-7 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|----------|--------------------|
| 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 |

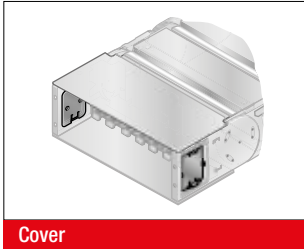
RSV 62 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| Type | Order No. | Description | TI mm |
|------------|--------------|--------------------------------------------|-------|
| RSV 62 | 062000009600 | Crossbar connector | 8.0 |
| RSV 62 Alu | 062000009800 | Crossbar connector for aluminium crossbars | 8.0 |

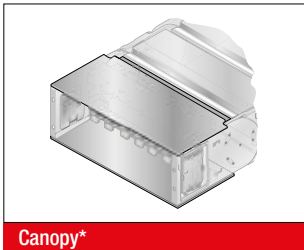
D6 COVER CHAIN BRACKET



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



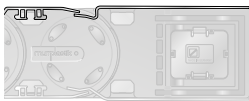
Constructed from aluminium, the covers for the flexible chain bracket (KA-FB/FG) ensure a continuously closed system for chains with covers.

Canopy for chain bracket, fixed point outside bend: Type and Order No. 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 No. 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 No. 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 No. configurator

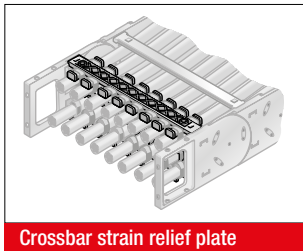


| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 62.1 FB/FG IB | Inside width | 1-2 |
| Order no.: | 0621 | Inside width | 057 |

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.

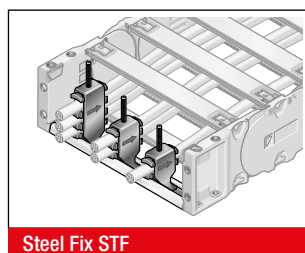
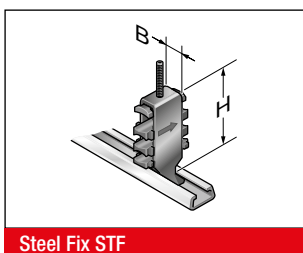
RS-ZL-7 CROSSBAR STRAIN RELIEF



Fixed integrated crossbar strain relief plates in the chain brackets. Accommodated to all widths of the crossbars, up to 256 mm in size. Can be assembled on the inside and outside bends at both chain ends.

| Type | Order No. | Description | for inner 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 MP STEEL FIX



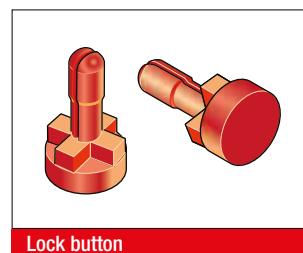
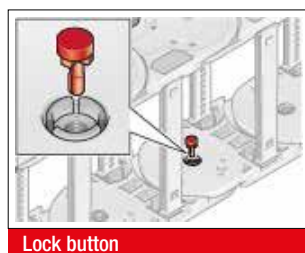
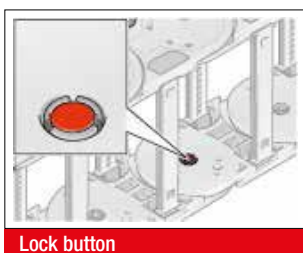
C-rails (galvanised) can be permanently integrated to hold the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|-------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |

STRAIN RELIEF WITH STEEL FIX

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 52/62/72 LOCK BUTTON

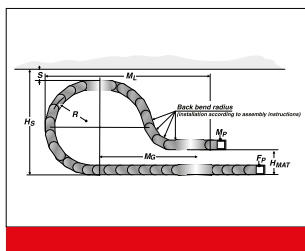
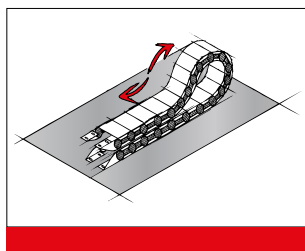


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

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

| Type | Order No. |
|------------------------|------------|
| MP52/62/72 lock button | 0520000080 |

MP 62 LOWERED FIXING POINT



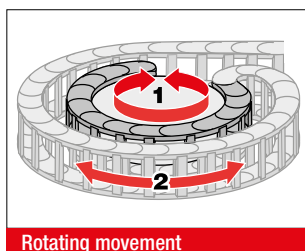
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



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 62.2 (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)



VAW steel galvanised / stainless steel

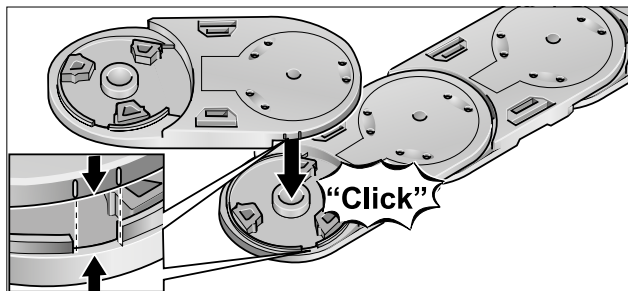


VAW aluminium

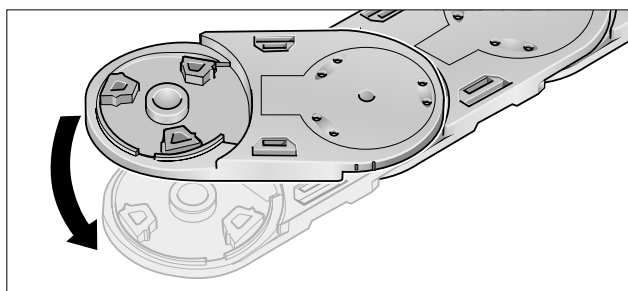
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

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

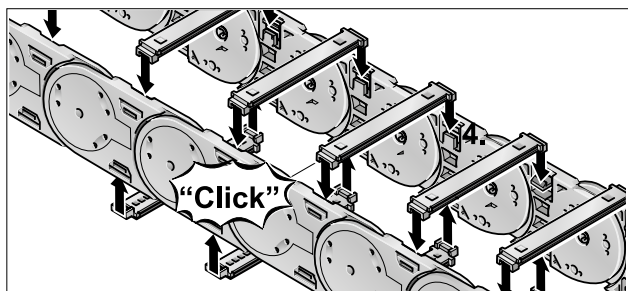
ASSEMBLY



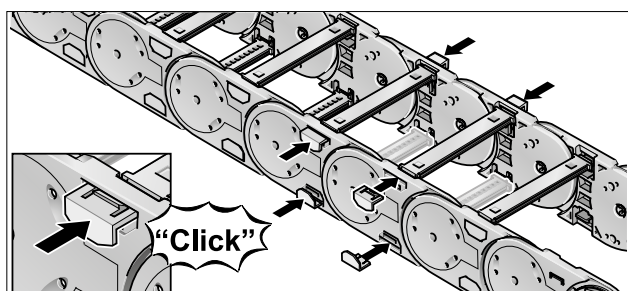
Step 1



Step 2

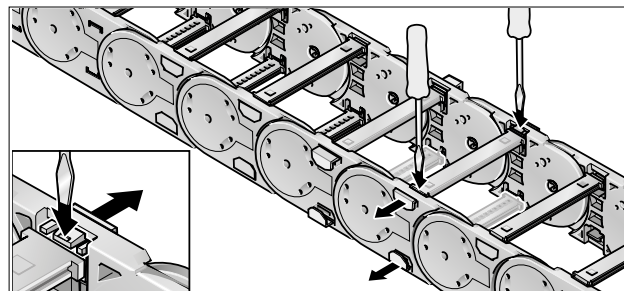


Step 3

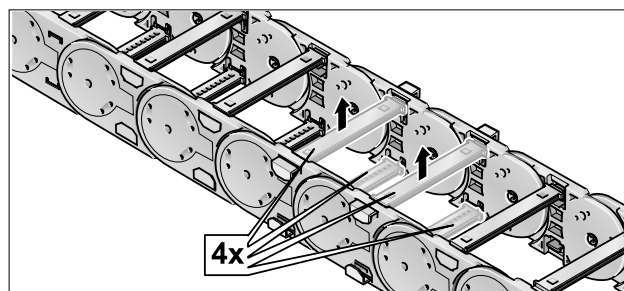


Step 4

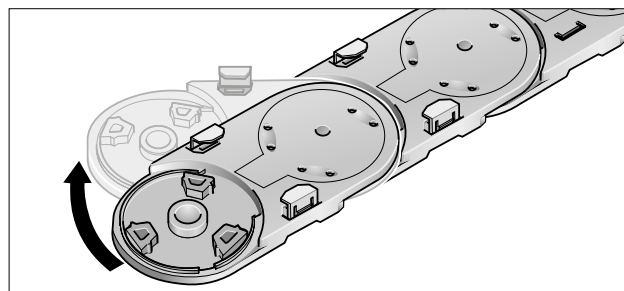
DISASSEMBLY



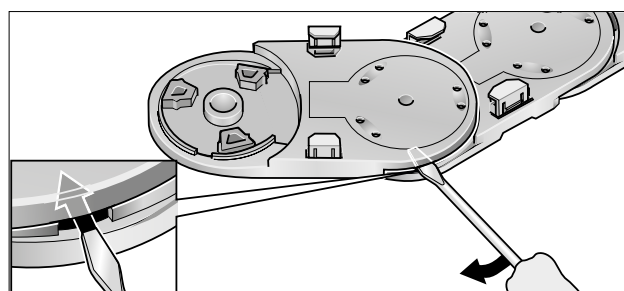
Step 1



Step 2



Step 3

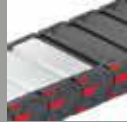


Step 4

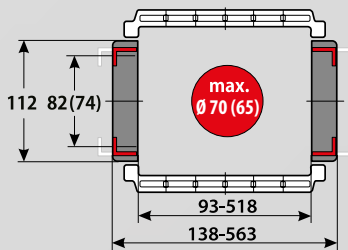
MP 82.2 OPEN



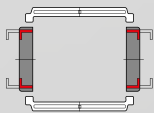
MP 82.3 CLOSED



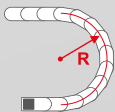
- GLIDING SHOES FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- FLEXIBLE CHAIN BRACKET
- PLASTIC OR ALUMINIUM VERSION
- SIDE LINK LOCK



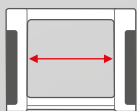
TECHNICAL DATA



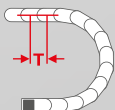
Loading side
Inside and outside bend



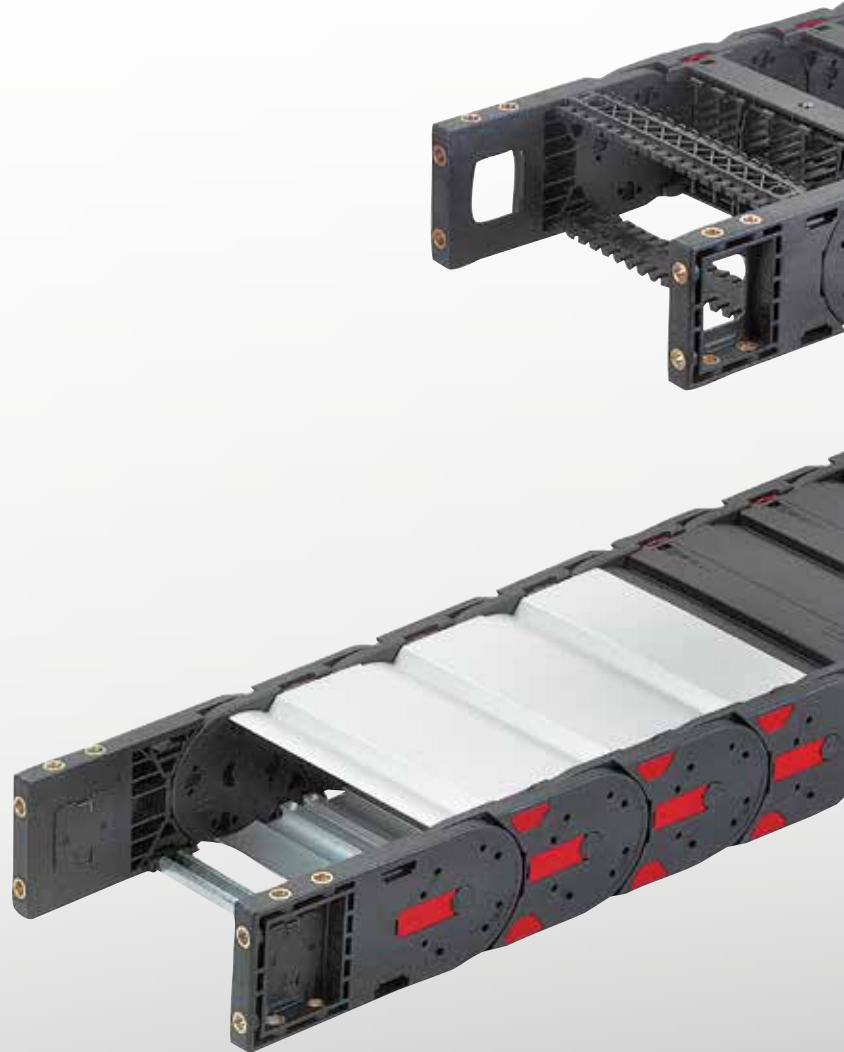
Available radii
150.0 – 650.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 150.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 337 |
| Travel distance vertical hanging L_{vh} max. | 80.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 40.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 characteristics on request.

ACCESSORIES

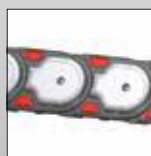


Gliding shoe

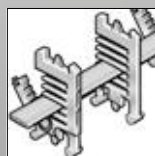
SHELVING SYSTEM



Separator TR



Gliding plate



RS shelving system

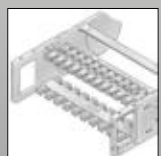


Bracket bar

GUIDE CHANNELS

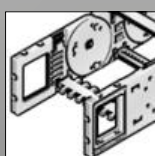


VAW galvanised steel / stainless steel



RS-ZL crossbar

CHAIN BRACKET



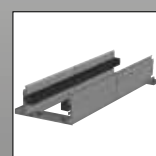
Chain bracket flexible



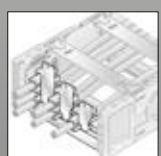
Crossbar connector RSV



Cover



VAW aluminium

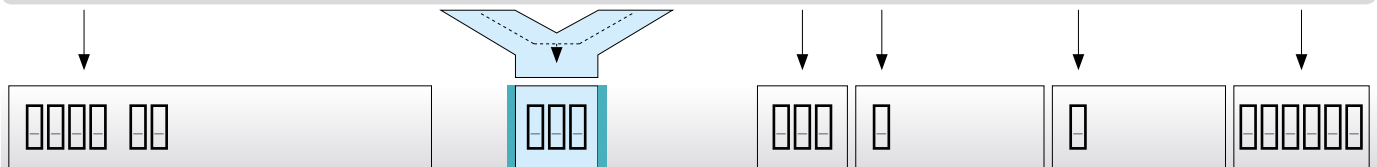


Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|-----------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------------------|---------------------------------------------|----------------------------------------|--------------|
| 0822 30 | MP 82.2 open Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 093 [3.66] | 138 [5.43] | 468 [18.43] | 513 [20.20] | 150¹⁾ [5.91] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 106 [4.17] | 151 [5.94] | 518 [20.39] | 563 [22.17] | | | | |
| 0823 44²⁾ | MP 82.3 closed Cover on outside bend Cover on inside bend To be opened from inside and outside bend | 118 [4.65] | 163 [6.42] | | | 200 [7.87] | 1 Plastic full-ridged without bias | 5 Polypropylene (PP/blue) | |
| | | 131 [5.16] | 176 [6.93] | | | | | | |
| | | 143 [5.63] | 188 [7.40] | | | 250 [9.84] | 2 Plastic half-ridged with bias | 7 ESD (PA/light grey) | |
| | | 156 [6.14] | 201 [7.91] | | | | | | |
| | | 168 [6.61] | 213 [8.39] | | | 300 [11.81] | 3 Plastic half-ridged without bias | 9 Special version (on request) | |
| | | 181 [7.13] | 226 [8.90] | | | | | | |
| | | 193 [7.60] | 238 [9.37] | | | 350 [13.78] | 4 Aluminium full-ridged with bias | | |
| | | 206 [8.11] | 251 [9.88] | | | | | | |
| | | 218 [8.58] | 263 [10.35] | | | 400 [15.75] | 5 Aluminium full-ridged without bias | | |
| | | 231 [9.09] | 276 [10.87] | | | | | | |
| | | 243³⁾ [9.57] | 288 [11.34] | | | 500 [19.69] | 6 Aluminium half-ridged with bias | | |
| | | 256 [10.08] | 301 [11.85] | | | | | | |
| | | 268 [10.55] | 313 [12.32] | | | 650 [25.59] | 7 Aluminium half-ridged without bias | | |
| | | 293 [11.54] | 338 [13.31] | | | | | | |
| | | 318 [12.52] | 363 [14.29] | | | | 9 Special version (on request) | | |
| | | 343 [13.50] | 388 [15.28] | | | | | | |
| | | 368 [14.49] | 413 [16.26] | | | | | | |
| | | 418 [16.46] | 463 [18.23] | | | | | | |



ORDERING EXAMPLE: 0822 30 118 150 0 0 1534

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 118 mm; radius 150 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1534 mm (13 links)

¹⁾ only for variant 30
²⁾ reduced inner height, reduced max. cable diameter, see chain window drawing page 334
³⁾ 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.

Aluminium covers:

Aluminium covers can be supplied in 1 mm width sizes for inner widths from 40.0 mm – 600.0 mm.

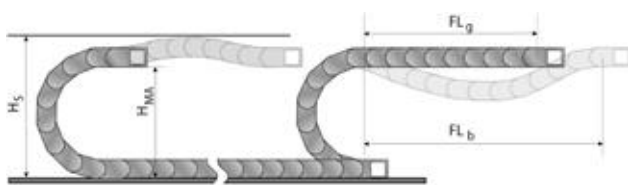
Crossbar connector and crossbar strain relief plate:

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.

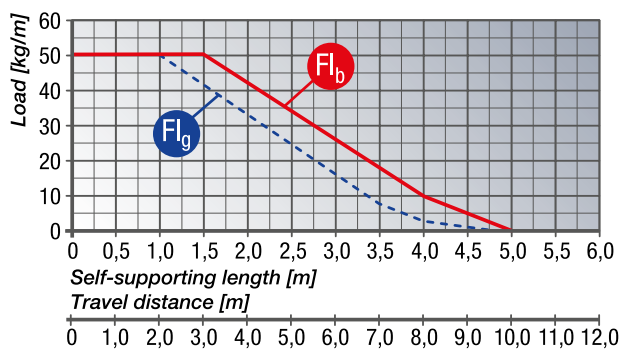
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



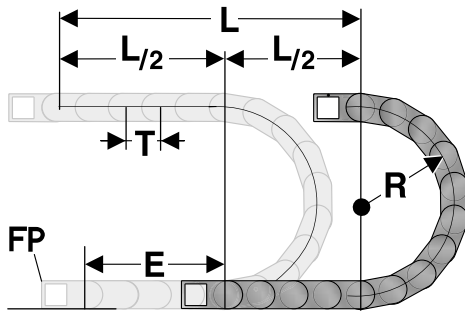
FL_g Self-supporting length, upper run straight

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

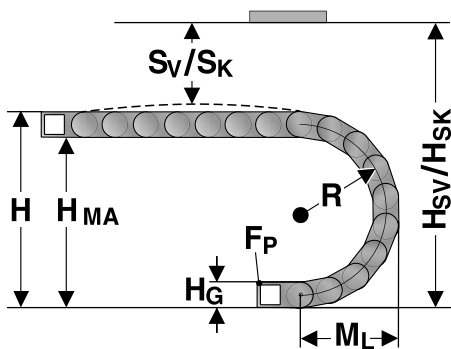


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 9 links, 118.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 118.0 mm

INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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_{sk}) | 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 equivalent to 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 |

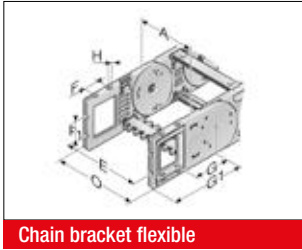
MP 82.3 PLASTIC COVER



The covers connect the two side runs of the energy chain. The cover length is equivalent to 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 |

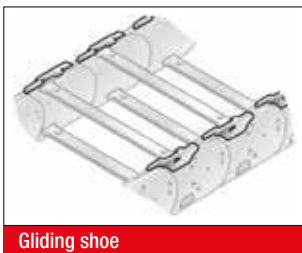
KA 82.2 FLEXIBLE CHAIN BRACKET



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 energy chain requires one male and one female bracket. M8 bolts 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 | |
|---------------------|------------|----------|-------------|--------------|---------|---------|----------|---------|----------|---------|---------------|------------|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm |
| KA 82-FB Female end | 0820000056 | Plastic | with socket | 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 socket | 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 |

GS 82.2 GLIDING SHOE

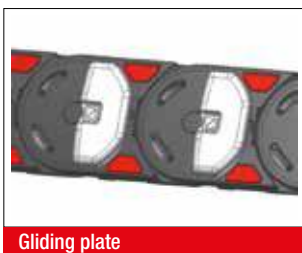


Gliding shoes are used in a horizontally gliding installation (the upper run of the chain glides on the lower run). The gliding shoes are placed onto the side links instead of the usual crossbar locks (no tools necessary). Therefore, the chain does not glide on the side links of the chain but only on the gliding shoes.

Depending on the application, the service life of the energy chain may be extended five-fold, by using gliding shoes. Information about the minimum bending radius of the energy chain at the gliding shoe insert is listed in the following table.

| Type | Order No. | Installation site | Min. radius mm | Gliding shoe 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 |

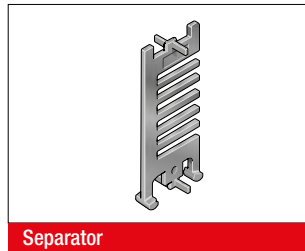
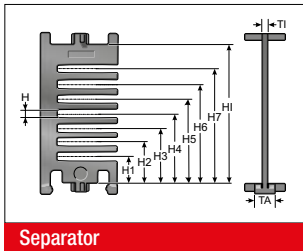
GLP 8 (82.2) GLIDING PLATE



In order to minimize the lateral abrasion, the gliding plates are placed in a lateral support. The gliding plates are used instead of locking the side elements on the side joints (no tools required). The wear limit is 2.5 mm. When this limit is reached, we recommend replacing the cable chain. Depending on the application, the service life of the cable chain is twice as high when using the plates. The cable chain can also be opened in the lateral position.

| Type | Order No. | Installation site | Gliding plate height mm |
|-------|--------------|-------------------------------------------|----------------------------|
| GLP 8 | 082290400301 | GLP8 gliding plate for the MP82.2, MP82.3 | 7.0 |

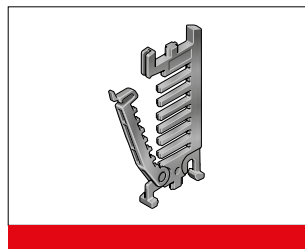
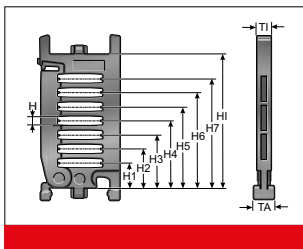
TR 82 SEPARATOR



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 | | | | | 82.0 |
| 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 |

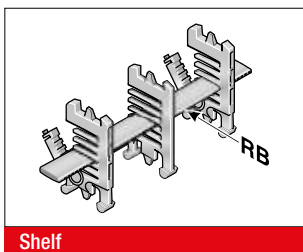
RTT 82 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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 |

RB-7 SHELF



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

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|-------------|-----------------------|
| RB 056-7 | 100000005600 | Shelf | 56.0 | 93.0 |
| RB 061-7 | 10000006107 | Shelf | 61.0 | 93.0 |
| RB 066-7 | 100000006600 | Shelf | 66.0 | 93.0 |
| RB 071-7 | 10000007107 | Shelf | 71.0 | 93.0 |
| RB 076-7 | 10000007607 | Shelf | 76.0 | 93.0 |
| RB 081-7 | 100000008100 | Shelf | 81.0 | 93.0 |
| RB 086-7 | 10000008607 | Shelf | 86.0 | 93.0 |
| RB 091-7 | 10000009107 | Shelf | 91.0 | 106.0 |
| RB 096-7 | 10000009607 | Shelf | 96.0 | 106.0 |
| RB 101-7 | 1000010107 | Shelf | 101.0 | 106.0 |
| RB 106-7 | 100000010600 | Shelf | 106.0 | 106.0 |

RB-7 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|----------|--------------------|
| 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 |

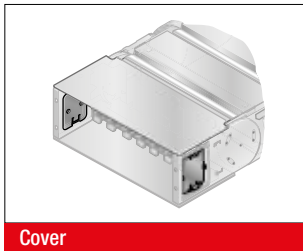
RSV 82.2 CROSSBAR CONNECTOR

Crossbar connector

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| Type | Order No. | Description | TI mm |
|------------|--------------|--------------------------------------------|-------|
| RSV 82 | 082000009600 | Crossbar connector | 8.0 |
| RSV 82 Alu | 082000009800 | Crossbar connector for aluminium crossbars | 8.0 |

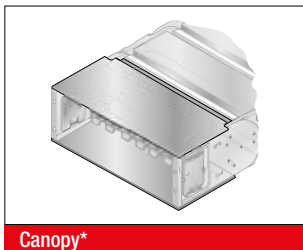
D8 COVER CHAIN BRACKET



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 covers 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 No. configurator



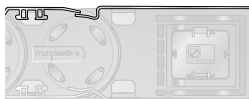
| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 82.1 FB/FG AB | Inside width | 2-2 |
| Order no.: | 0821 | Inside width | 060 |

Canopy for: chain bracket, fixed point inside bend: Type and Order No. configurator



| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 82.1 FB/FG IB | Inside width | 2-2 |
| Order no.: | 0821 | Inside width | 058 |

Canopy for: chain bracket, moving end outside bend: Type and Order No. configurator



| | | | |
|------------|------------------|--------------|-----|
| Type: | KA 82.1 FB/FG AB | Inside width | 1-2 |
| Order no.: | 0821 | Inside width | 059 |

Canopy for: chain bracket, moving end inside bend: Type and Order No. 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.

BS-5 BRACKET BAR



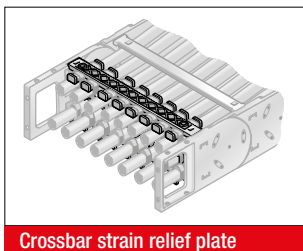
Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain.

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

The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

RS-ZL-7 CROSSBAR STRAIN RELIEF

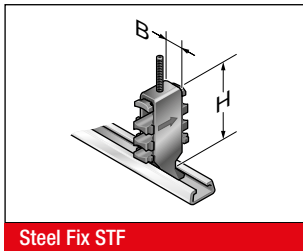


Crossbar strain relief plate

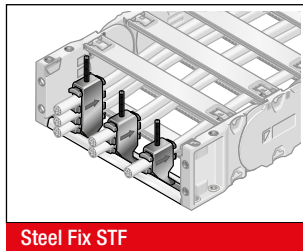
Fixed integrated crossbar strain relief plates in the chain brackets. Accommodated to all widths of the crossbars, up to 256 mm in size. Can be assembled on the inside and outside bends at both chain ends.

| Type | Order No. | Description | for inner 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 MP STEEL FIX



Steel Fix STF

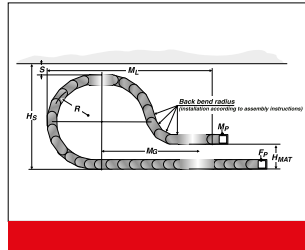
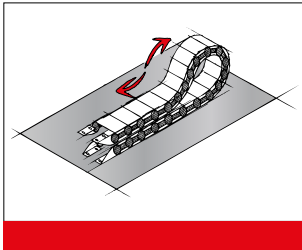


Steel Fix STF

C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 82.2 LOWERED FIXING POINT



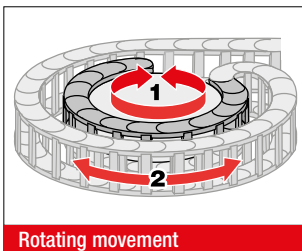
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M _L) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|----------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



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.

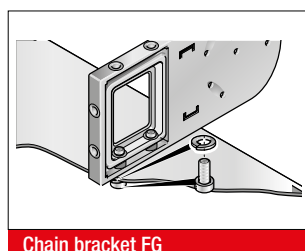
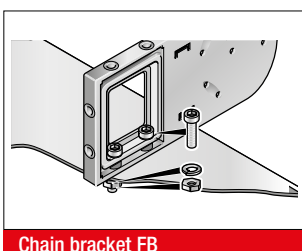
| Type | Order No. | Radius mm | Rearward radius mm |
|----------------------------|--------------|--------------|-----------------------|
| SR 82.2 (RÜ300/R300) left | 082200030060 | 300.0 | 300.0 |
| SR 82.2 (RÜ300/R300) right | 082200030062 | 300.0 | 300.0 |

GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



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

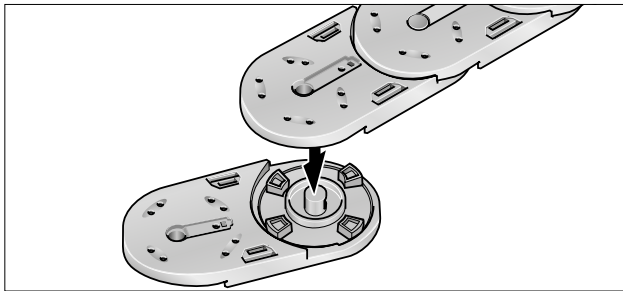


Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

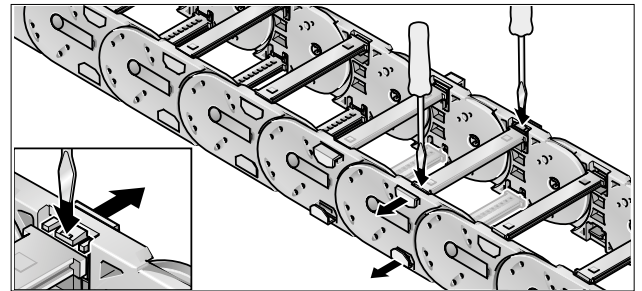
Type KA-FB:
Integrated through-hole is fastened using screw and nut.
Type KA-FG:
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

ASSEMBLY

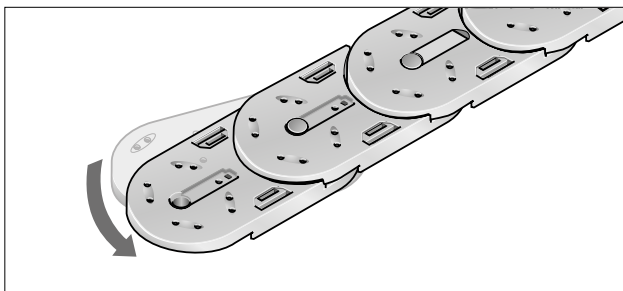
DISASSEMBLY



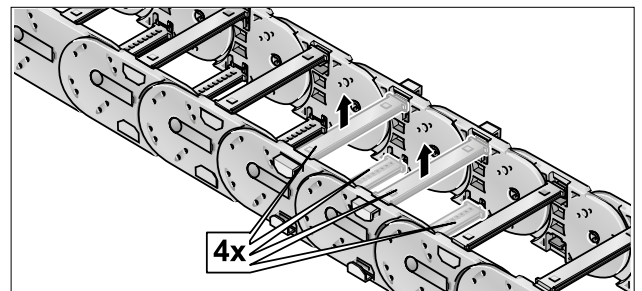
Step 1



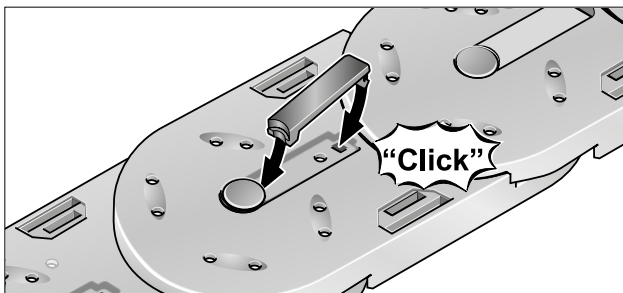
Step 1



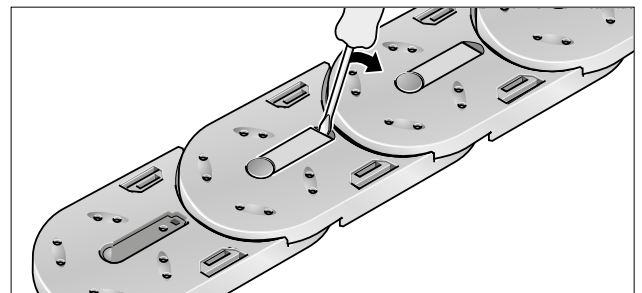
Step 2



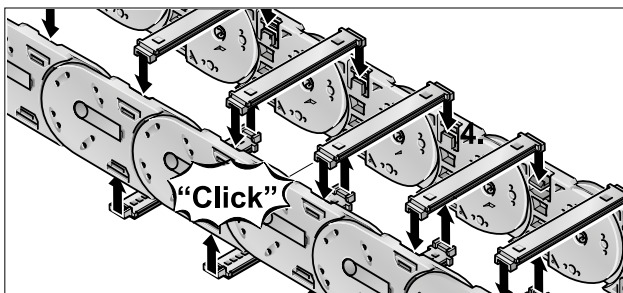
Step 2



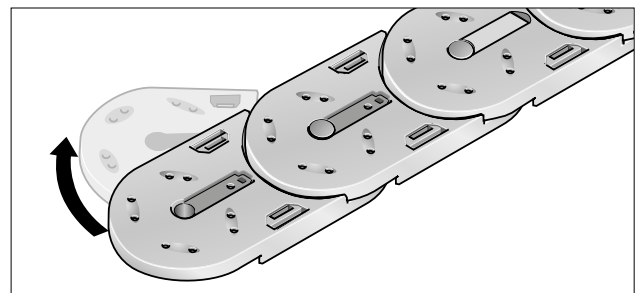
Step 3



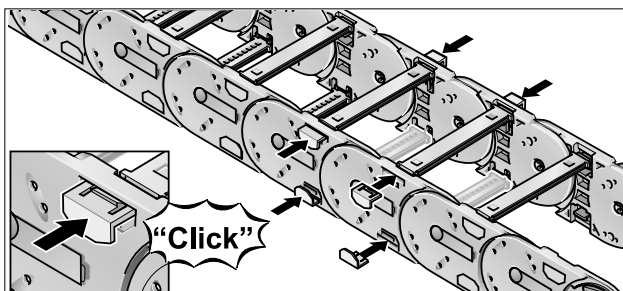
Step 3



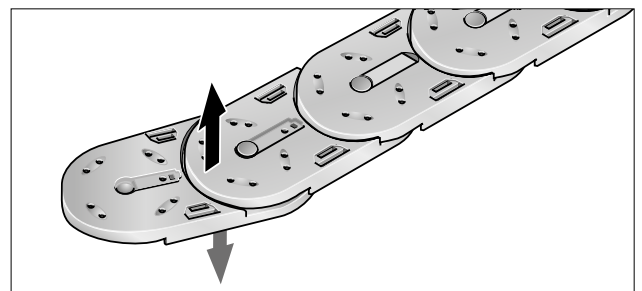
Step 4



Step 4



Step 5

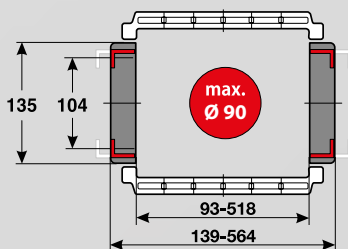


Step 5

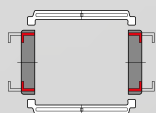
MP 102.2 OPEN



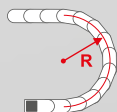
- BROAD INTERIOR LAYOUT
- STEEL ANGLE CHAIN BRACKET
- PLASTIC OR ALUMINIUM VERSION
- SIDE LINK LOCK



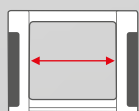
TECHNICAL DATA



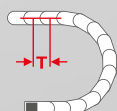
Loading side
Inside and outside bend



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 150.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 351 |
| Travel distance vertical hanging L_{vh} max. | 80.0 m |
| Travel distance vertical upright L_{vs} max. | 8.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 40.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

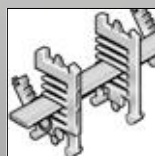
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

SHELVING SYSTEM

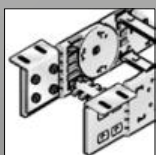


Separator TR



RS shelving system

CHAIN BRACKET

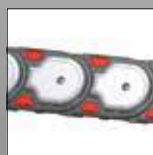


Chain bracket angle



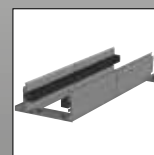
Crossbar connector RSV

ACCESSORIES



Gliding plate

GUIDE CHANNELS



VAW aluminium

STRAIN RELIEF



RS-ZL crossbar



Steel Fix STF

ORDERING KEY

Dimensions in mm [US inch]

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------------------|----------------------------------------|--------------|
| 1022 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 093 [3.66] | 139 [5.47] | 468 [18.43] | 514 [20.24] | 250 [9.84] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 106 [4.17] | 152 [5.98] | 518 [20.39] | 564 [22.20] | | | | |
| | | 118 [4.65] | 164 [6.46] | | | 300 [11.81] | 2 Plastic half-ridged with bias | 9 Special version (on request) | |
| | | 131 [5.16] | 177 [6.97] | | | | | | |
| | | 143 [5.63] | 189 [7.44] | | | 400 [15.75] | 4 Aluminium full-ridged with bias | | |
| | | 156 [6.14] | 202 [7.95] | | | | | | |
| | | 168 [6.61] | 214 [8.43] | | | 500 [19.69] | 6 Aluminium half-ridged with bias | | |
| | | 181 [7.13] | 227 [8.94] | | | | | | |
| | | 193 [7.60] | 239 [9.41] | | | | 9 Special version (on request) | | |
| | | 206 [8.11] | 252 [9.92] | | | | | | |
| | | 218 [8.58] | 264 [10.39] | | | | | | |
| | | 231 [9.09] | 277 [10.91] | | | | | | |
| | | 243 [9.57] | 289 [11.38] | | | | | | |
| | | 256 [10.08] | 302 [11.89] | | | | | | |
| | | 268 [10.55] | 314 [12.36] | | | | | | |
| | | 293 [11.54] | 339 [13.35] | | | | | | |
| | | 318 [12.52] | 364 [14.33] | | | | | | |
| | | 343 [13.50] | 389 [15.31] | | | | | | |
| | | 368 [14.49] | 414 [16.30] | | | | | | |
| | | 418 [16.46] | 464 [18.27] | | | | | | |



ORDERING EXAMPLE: 1022 30 118 250 0 0 1974

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 118 mm; radius 250 mm
 Plastic bridge, 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 72.0 mm – 600.0.

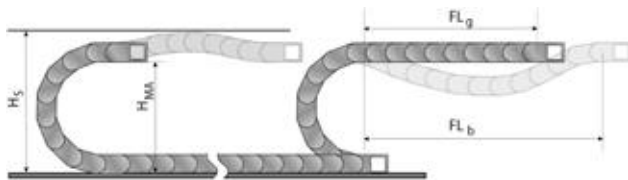
Crossbar connector and crossbar strain relief plate:

Once inside widths exceed 243 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.

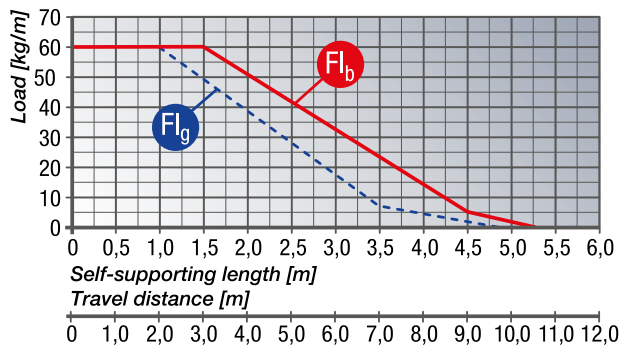
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



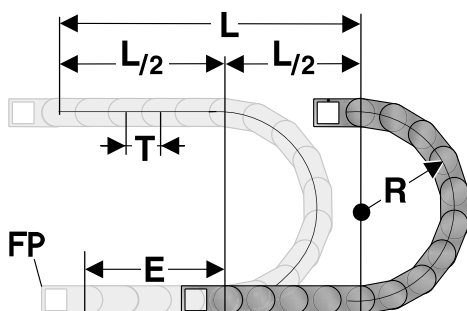
FL_g Self-supporting length, upper run straight

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



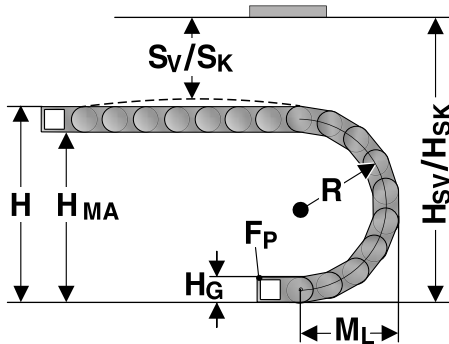
The fixed point of the energy chain should be placed in the middle of the travel distance.

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 = $L/2 + \pi * R + E$
 1 m chain = 7 links, 141.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 141.0 mm

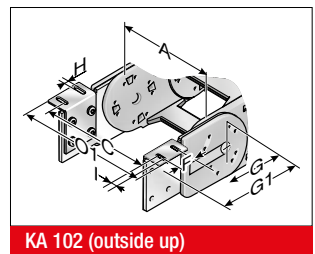
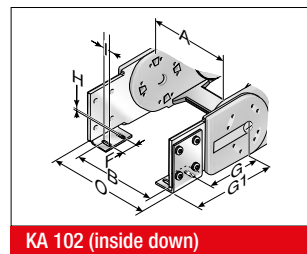
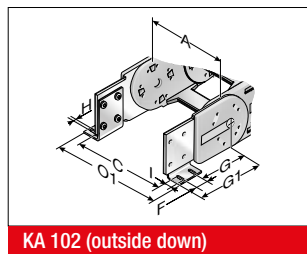
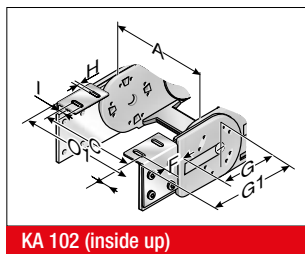
INSTALLATION DIMENSIONS



The moving end chain bracket 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_c) | 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_s) | 705 | 805 | 1005 | 1205 |
| Safety margin without bias (S_r) | 50 | 50 | 50 | 50 |
| Installation height without bias (H_{SK}) | 705 | 805 | 1005 | 1205 |
| Arc projection (M_L) | 469 | 519 | 619 | 719 |

KA 102 CHAIN BRACKET ANGLE



There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. 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 energy chain requires one male and one female bracket. The brackets should be fastened with M12 screws.

| Type | Order No. | Material | Inside width | | | | | | | | | Outside width KA 0 | Outside width KA 01 |
|-------------------|------------|-------------|--------------|-------|--------|------|-------|-------|-------|--------|------|--------------------|---------------------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | G2 mm | Ø H mm | I mm | | |
| KA 102 Female end | 1020000050 | Sheet steel | 93.0 – 518.0 | A+2.0 | A+38.0 | 50.0 | 236.0 | 301.0 | 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 | 301.0 | 328.5 | 13.0 | 25.0 | A+28.0 | A+107.0 |

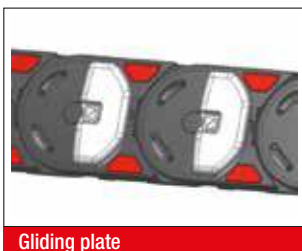
HEAVYLINE PLASTIC CROSSBAR



The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

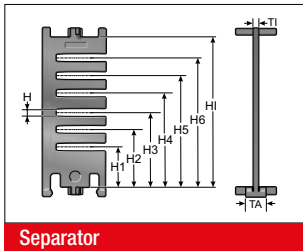
GLP 10 (102.2) GLIDING PLATE



In order to minimize the lateral abrasion, the gliding plates are placed in a lateral support. The gliding plates are used instead of locking the side elements on the side joints (no tools required). The wear limit is 2.5 mm. When this limit is reached, we recommend replacing the cable chain. Depending on the application, the service life of the cable chain is twice as high when using the plates. The cable chain can also be opened in the lateral position.

| Type | Order No. | Installation site | Gliding plate height mm |
|-------|--------------|-------------------------------------|-------------------------|
| GLP10 | 102290400301 | GLP10 gliding plate for the MP102.2 | 7.0 |

TR 102 SEPARATOR

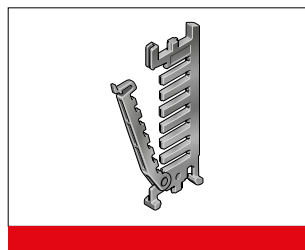
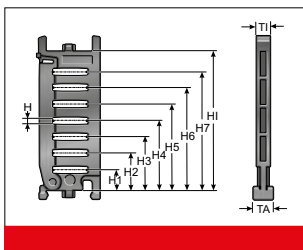


Separator

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 | 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 |

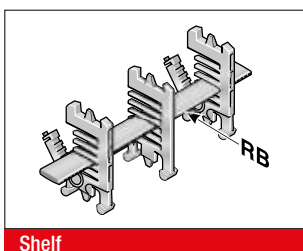
RTT 102 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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 | H1 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



Shelf

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

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|-------------|-----------------------|
| RB 056-7 | 100000005600 | Shelf | 56.0 | 93.0 |
| RB 061-7 | 10000006107 | Shelf | 61.0 | 93.0 |
| RB 066-7 | 100000006600 | Shelf | 66.0 | 93.0 |
| RB 071-7 | 10000007107 | Shelf | 71.0 | 93.0 |
| RB 076-7 | 10000007607 | Shelf | 76.0 | 93.0 |
| RB 081-7 | 100000008100 | Shelf | 81.0 | 93.0 |
| RB 086-7 | 10000008607 | Shelf | 86.0 | 93.0 |
| RB 091-7 | 10000009107 | Shelf | 91.0 | 106.0 |
| RB 096-7 | 10000009607 | 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-7 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|----------|--------------------|
| 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 |

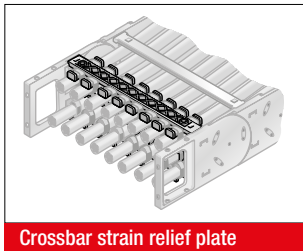
RSV 102 CROSSBAR CONNECTOR



Crossbar connector

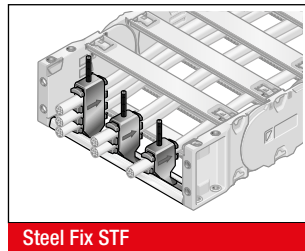
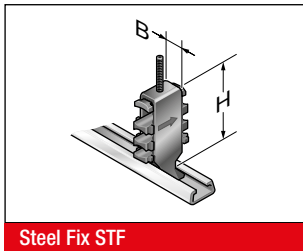
For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| 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


| Type | Order No. | Description | for inner 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 |

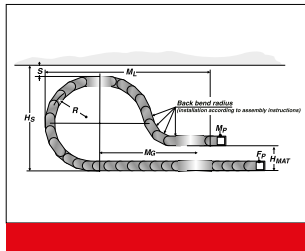
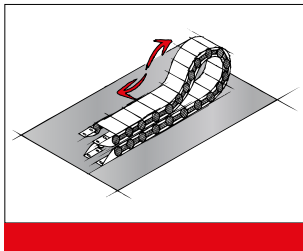
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 102.2 LOWERED FIXING POINT



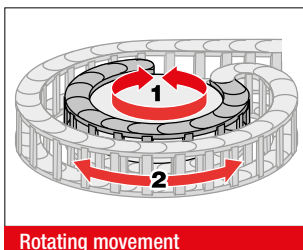
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _s) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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

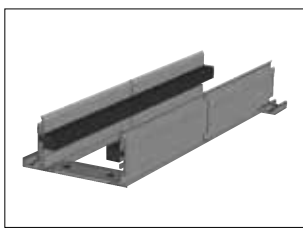


Rotating movement

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)



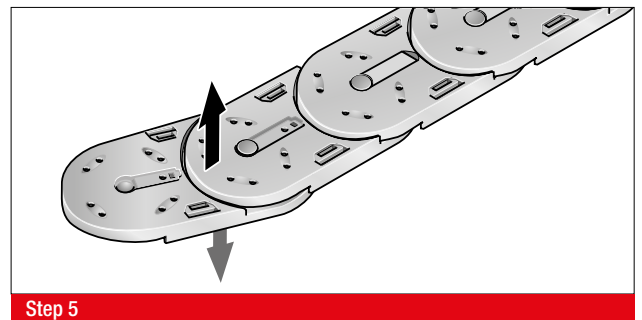
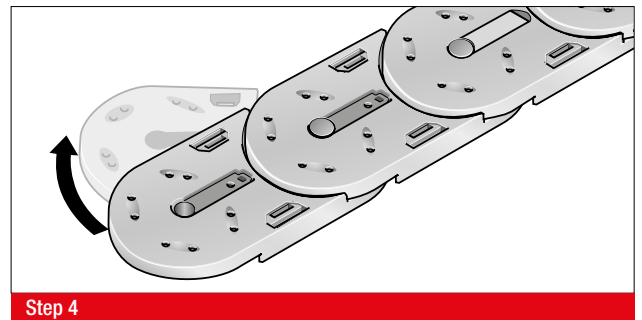
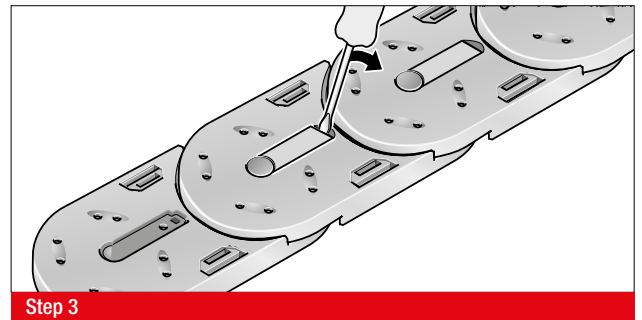
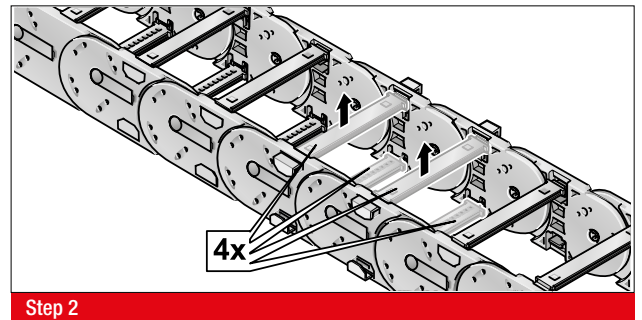
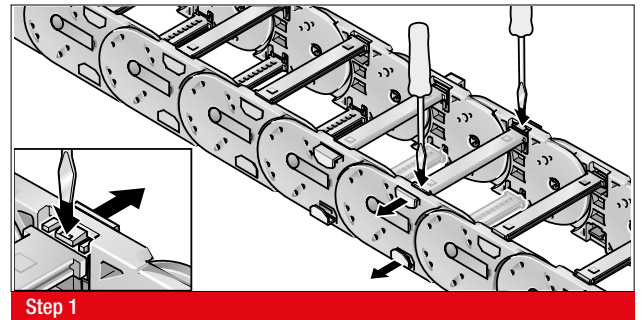
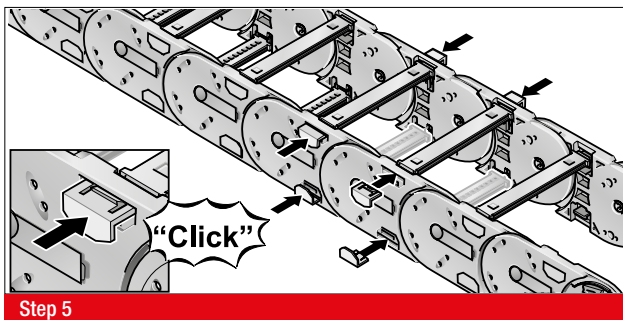
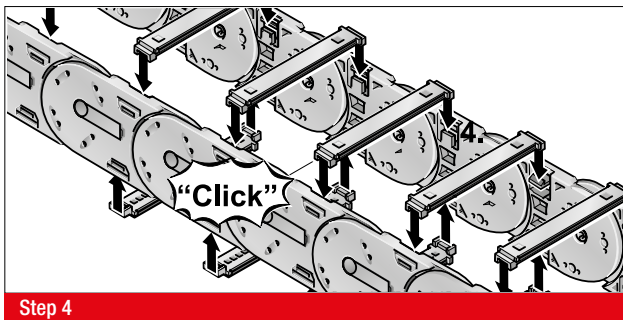
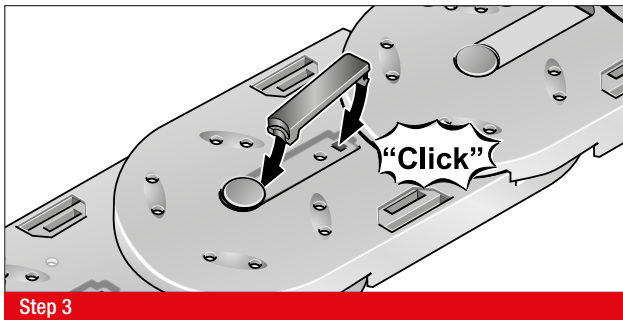
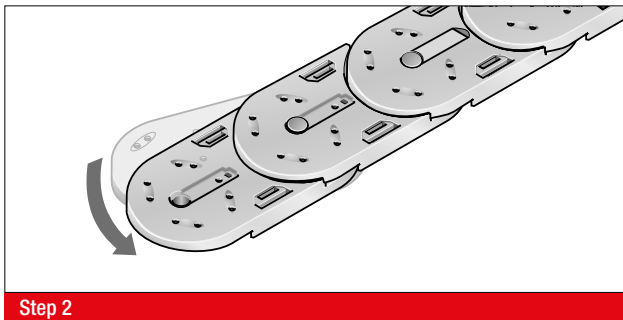
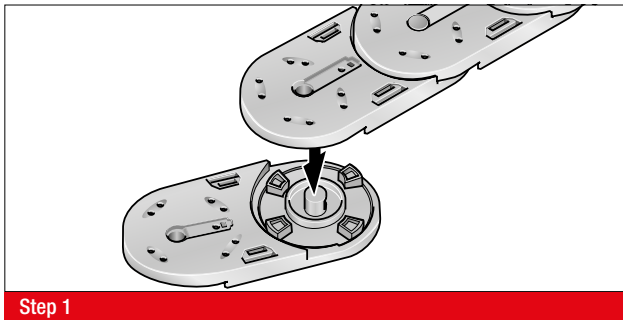
VAW aluminium

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

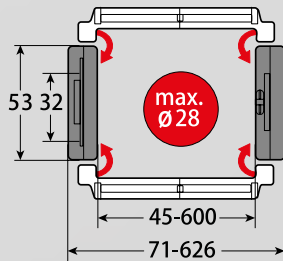
DISASSEMBLY



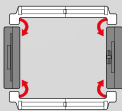
MP 32 OPEN



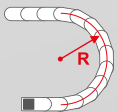
- PLASTIC OR ALUMINIUM VERSION
- FLEXIBLE CHAIN BRACKET
- BROAD INTERIOR LAYOUT



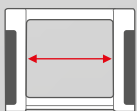
TECHNICAL DATA



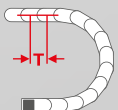
Loading side
Inside and outside bend



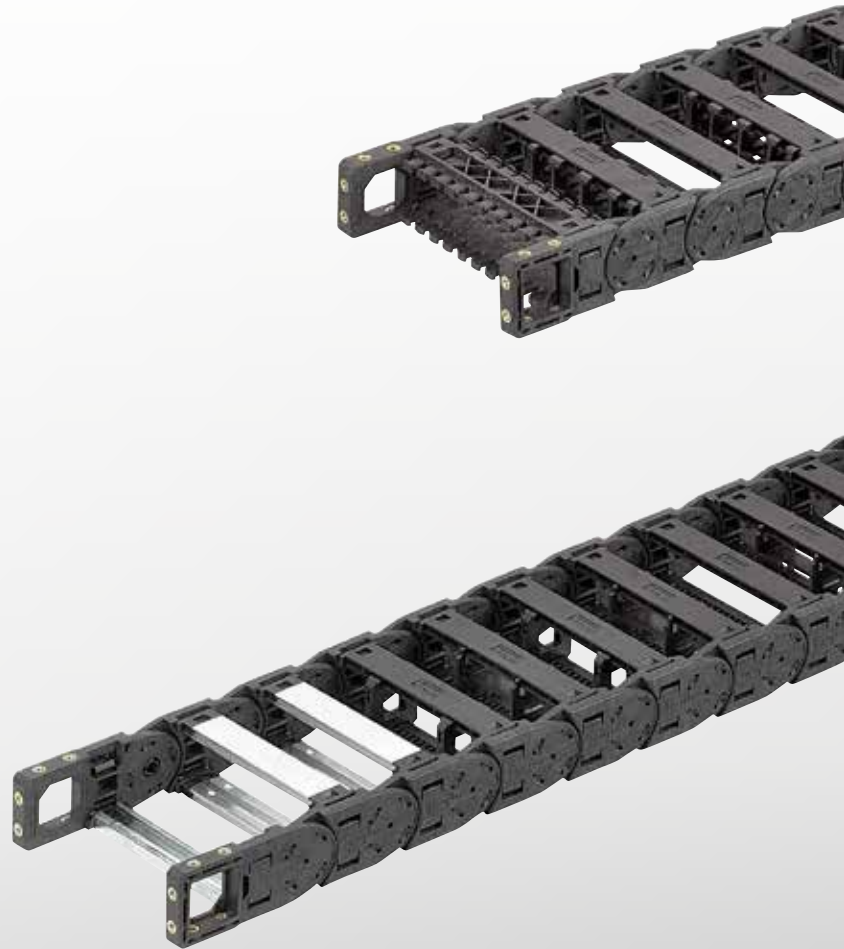
Available radii
80.0 – 250.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 100.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 363 |
| Travel distance vertical hanging L_{vh} max. | 40.0 m |
| Travel distance vertical upright L_{vs} max. | 5.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 characteristics on request.

SHELVING SYSTEM



Separator TR

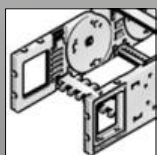


RS shelving system

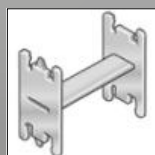


Crossbar connector RSV

CHAIN BRACKET



Chain bracket flexible

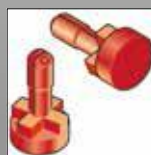


H-shaped shelf unit (RE)

ACCESSORIES



Bracket bar

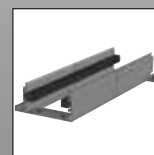


Lock button

GUIDE CHANNELS

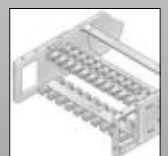


VAW galvanised steel / stainless steel



VAW aluminium

STRAIN RELIEF



RS-ZL crossbar



Steel Fix STF

ORDERING KEY

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------------------------------------|----------------------|----------------------|-----------------------|-----------------------|----------------------|------------------------------------------|----------------------------------------|--------------|
| 0320 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 045 [1.77] | 071 [2.80] | 233 [9.17] | 259 [10.20] | 080 [3.15] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 057 [2.24] | 083 [3.27] | 246 [9.69] | 272 [10.71] | | | | |
| | | 062 [2.44] | 088 [3.46] | 252 [9.92] | 278 [10.94] | 100 [3.94] | 2 Plastic half-ridged with bias | 9 Special version (on request) | |
| | | 071 [2.80] | 097 [3.82] | 258 [10.16] | 284 [11.18] | | | | |
| | | 084 [3.31] | 110 [4.33] | 296 [11.65] | 322 [12.68] | 120 [4.72] | 4 Aluminium full-ridged with bias | | |
| | | 093 [3.66] | 119 [4.69] | 346 [13.62] | 372 [14.65] | | | | |
| | | 096 [3.78] | 122 [4.80] | 350 [13.78] | 376 [14.80] | 150 [5.91] | 6 Aluminium half-ridged with 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] | 9 Special version (on request) | | |
| | | 121 [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] | | | |
| | | 144 [5.67] | 170 [6.69] | 446 [17.56] | 472 [18.58] | | | | |
| | | 146 [5.75] | 172 [6.77] | 496 [19.53] | 522 [20.55] | | | | |
| | | 158 [6.22] | 184 [7.24] | 546 [21.50] | 572 [22.52] | | | | |
| | | 164 [6.46] | 190 [7.48] | | | | | | |
| | | 171 [6.73] | 197 [7.76] | | | | | | |
| | | 182 [7.17] | 208 [8.19] | | | | | | |
| | | 196 [7.72] | 222 [8.74] | | | | | | |
| | | 208 [8.19] | 234 [9.21] | | | | | | |
| | | 220 [8.66] | 246 [9.69] | | | | | | |



ORDERING EXAMPLE: 0320 30 045 080 0 0 1290

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 45 mm; radius 80 mm
 Plastic bridge, 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.

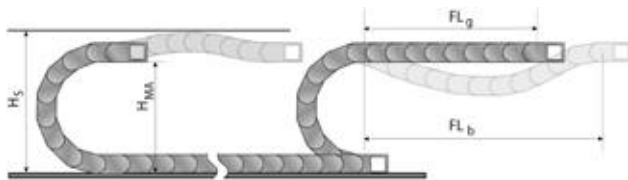
Crossbar connector and crossbar strain relief plate:

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 arc. 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.

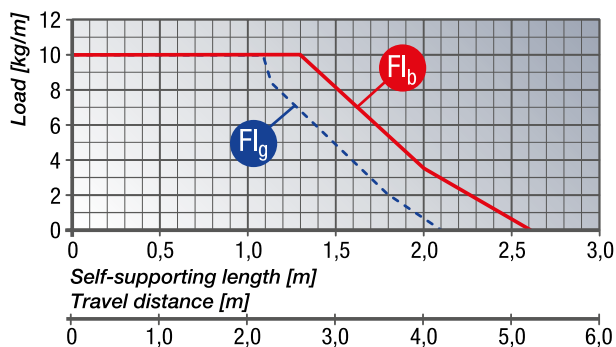
H_s = Installation height plus safety

H_{MA} = Height of moving end bracket

FL_g = Self-supporting length, upper run straight

FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



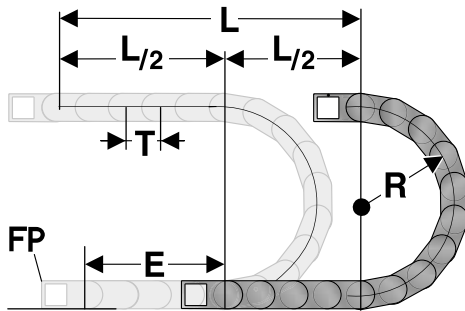
FL_g Self-supporting length, upper run straight

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

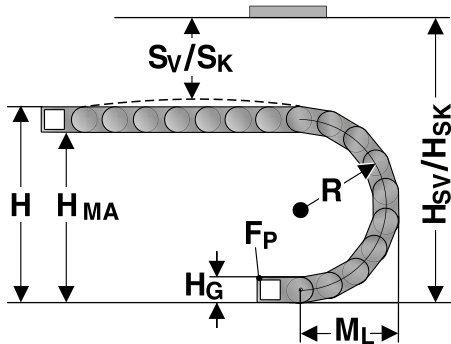


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 16 links, 64.5 mm each

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

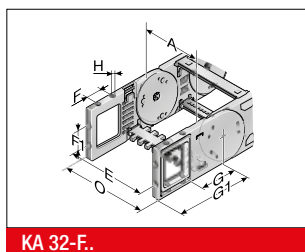
INSTALLATION DIMENSIONS



The moving end chain bracket 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 |

KA 32 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 energy 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 | |
|----------|------------|----------|-------------|--------------|--------|------|-------|------|-------|------|---------------|---------|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm |
| KA 32-FB | 0321000054 | Plastic | with socket | 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 | |

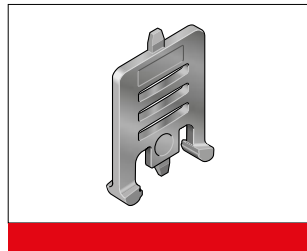
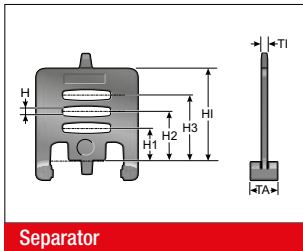
PLASTIC CROSSBAR POWERLINE



The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

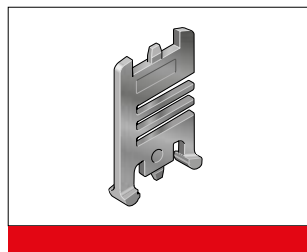
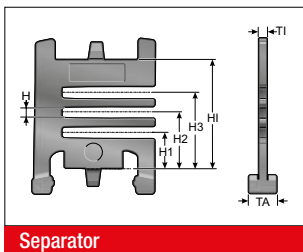
TR 32 SEPARATOR



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 | HI mm |
|-------|--------------|-------------|----------|----------|----------|---------|----------|----------|----------|----------|
| TR 32 | 032000009200 | Separator | lockable | 3.0 | 10.0 | 4.2 | 10.4 | 16.2 | 22.0 | 32.0 |

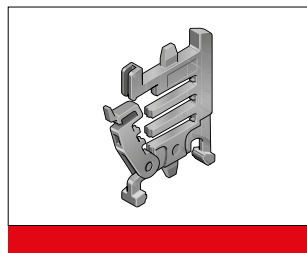
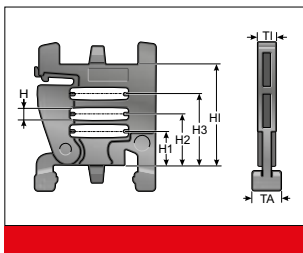
TR 32.1 SEPARATOR



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 | HI mm |
|---------|--------------|-------------|----------|----------|----------|---------|----------|----------|----------|----------|
| TR 32.1 | 032200009200 | Separator | lockable | 3.5 | 8.0 | 4.0 | 10.5 | 16.5 | 22.5 | 32.0 |

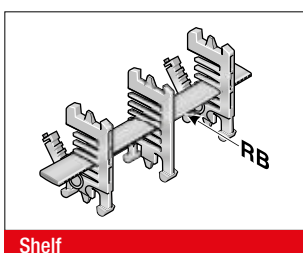
RTT 32 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



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

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|-------------|-----------------------|
| RB 028-5 | 100000002800 | Shelf | 28.0 | 45.0 |
| RB 034-5 | 1000003405 | Shelf | 33.6 | 45.0 |

RB-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|--------------|-------------|----------|--------------------|
| 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 100000029100 | Shelf | 291.2 | 346.0 |

RSV 32 CROSSBAR CONNECTOR

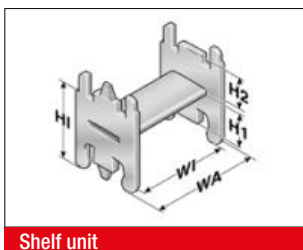


Crossbar connector

For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| 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



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 | H1 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



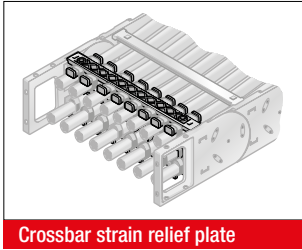
Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain.

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

The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

RS-ZL-5 CROSSBAR STRAIN RELIEF

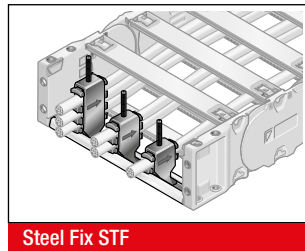
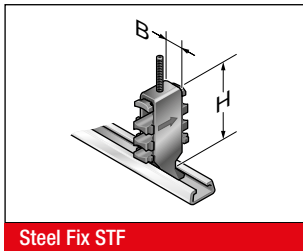


Crossbar strain relief plate

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

| Type | Order No. | Description | for inner 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 |

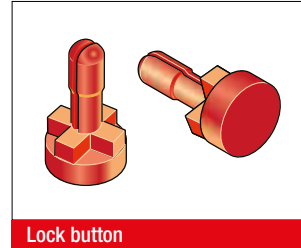
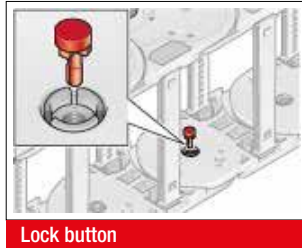
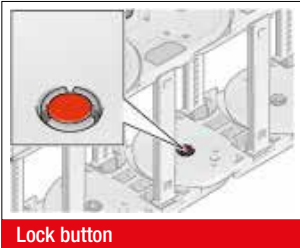
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 32/41 LOCK BUTTON

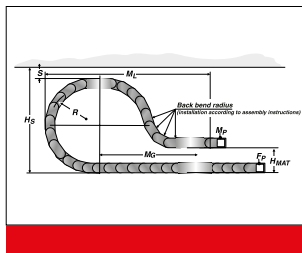
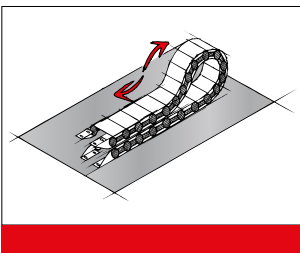


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

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

| Type | Order No. |
|---------------------|--------------|
| MP32/41 lock button | 041000008000 |

MP 32 LOWERED FIXING POINT



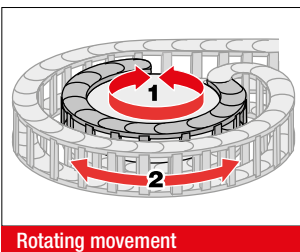
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M _L) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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



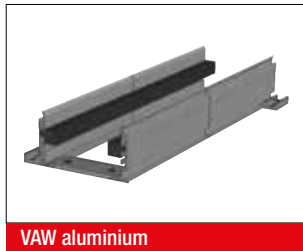
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

| 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)



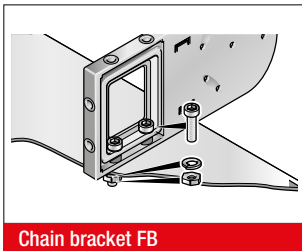
VAW steel galvanised / stainless steel



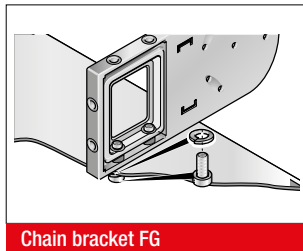
VAW aluminium

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



Chain bracket FB



Chain bracket FG

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

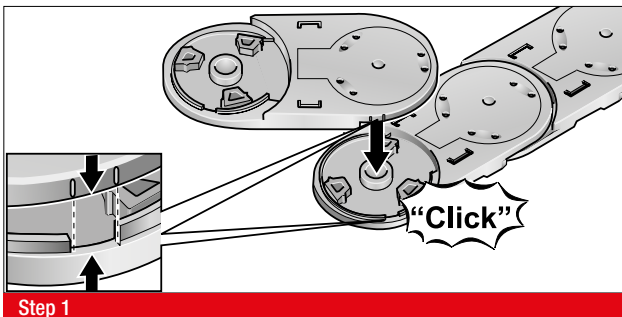
Type KA-FB:

Integrated through-hole is fastened using screw and nut.

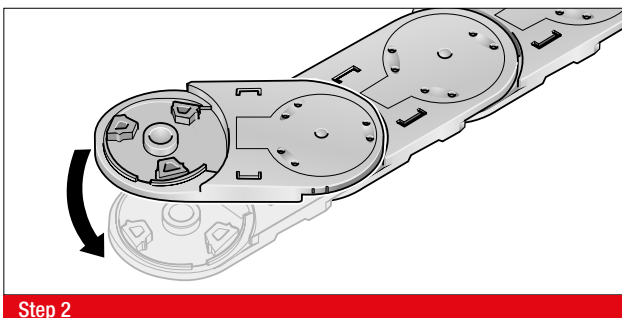
Type KA-FG:

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

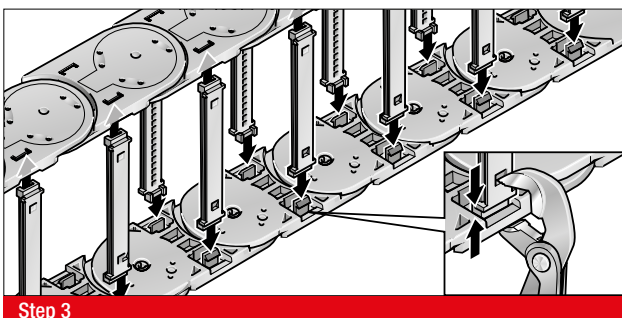
ASSEMBLY



Step 1

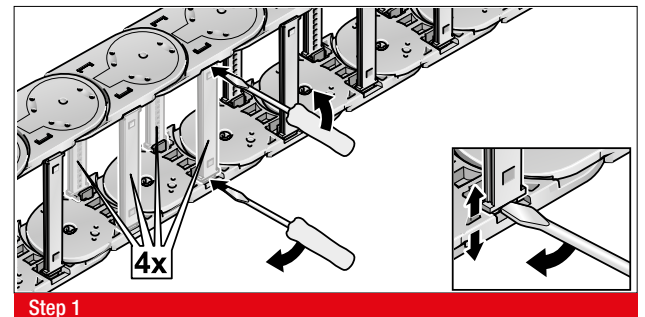


Step 2

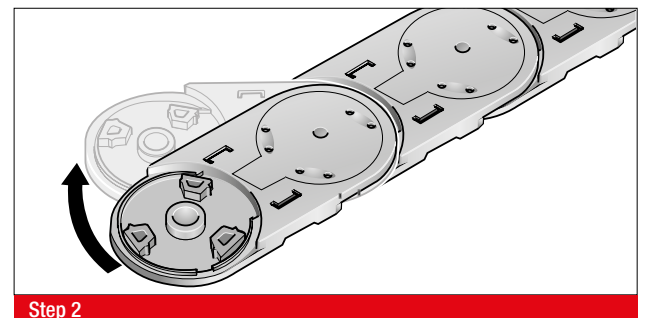


Step 3

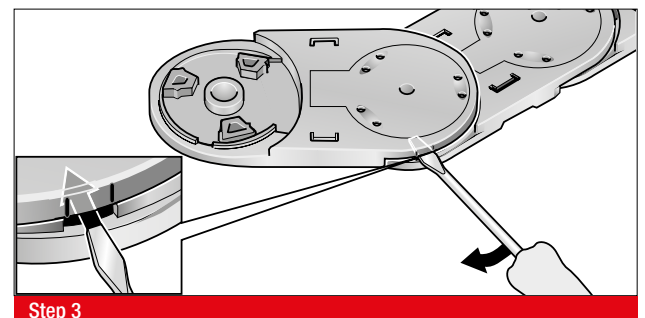
DISASSEMBLY



Step 1



Step 2

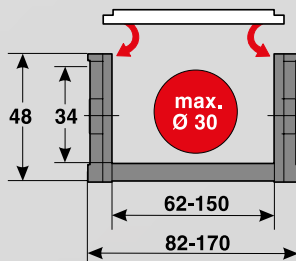


Step 3

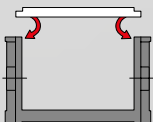
MP 35 OPEN



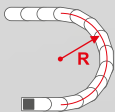
- METAL CHAIN BRACKET
- LOW-COST VARIANT



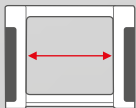
TECHNICAL DATA



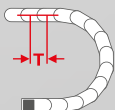
Loading side
Inside bend



Available radii
70.0 – 300.0 mm



Available interior widths
With plastic crossbar
62.0 – 150.0 mm



Pitch
T = 58.0 mm



TECHNICAL SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 80.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 377 |
| Travel distance vertical hanging L_{vh} max. | 40.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 20.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de



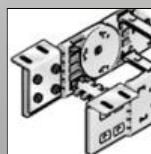
MATERIAL CHARACTERISTICS

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

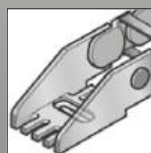
Other material characteristics on request.

SHELVING SYSTEM

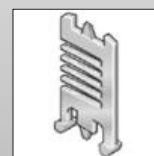
CHAIN BRACKET



Chain bracket angle



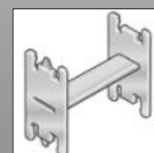
Chain bracket U-part



Separator TR



RS shelving system



H-shaped shelf unit (RE)

GUIDE CHANNELS



VAW galvanised steel / stainless steel



VAW aluminium

ORDERING KEY

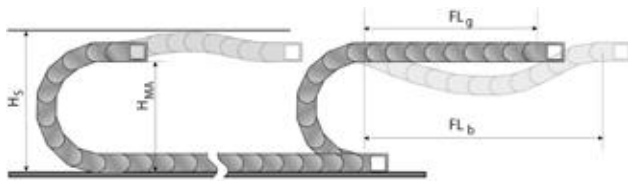
| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|-----------------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|-----------------------|-------------------------------------------|----------------------------------------|--------------|
| 0350 02 | Crossbar on outside bend Crossbar on inside bend Opens on inside bend | 062 [2.44] | 082 [3.23] | | | 070 [2.76] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 086 [3.39] | 106 [4.17] | | | | | | |
| | | 102 [4.02] | 122 [4.80] | | | | | | |
| | | 125 [4.92] | 145 [5.71] | | | 100 [3.94] | 1 Plastic full-ridged without bias | 9 Special version (on request) | |
| | | 150 [5.91] | 170 [6.69] | | | 150 [5.91] | | | |
| | | | | | | 200 [7.87] | | | |
| | | | | | | 300 [11.81] | | | |



ORDERING EXAMPLE: 0350 02 062 070 0 0 1276

Crossbar in outside bend, crossbar in inside bend, can be opened from inside bend
 Inside width 62 mm; radius 70 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1276 mm (22 links)

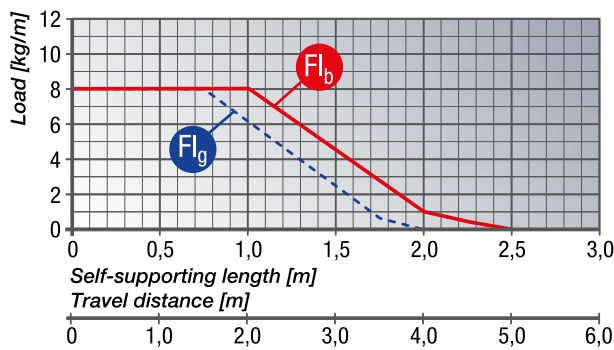
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

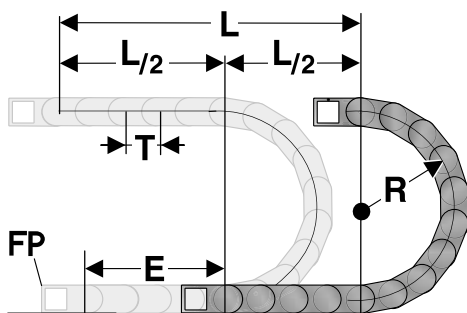
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

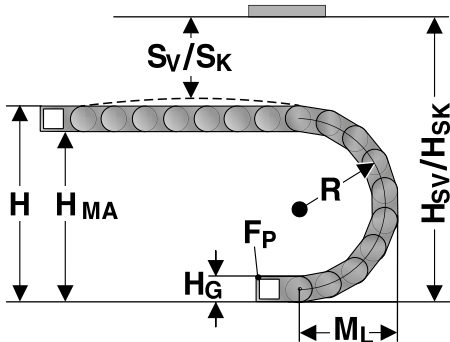


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + 2 * T + E$
 1 m chain = 17 links, 58.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 58.0 mm

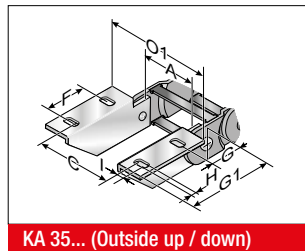
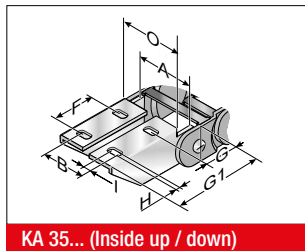
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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 |

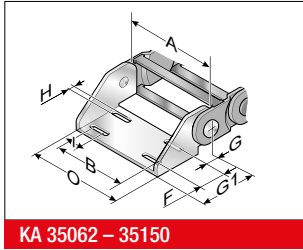
KA 35 CHAIN BRACKET ANGLE



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 | Outside width |
|--------------------|------------|------------------------|--------------|--------|--------|------|------|------|-----|-----|---------------|---------------|
| | | | A | B | C | F | G | G2 | Ø H | I | KA 0 | KA 01 |
| | | | mm | mm | mm | mm | mm | mm | mm | mm | mm | mm |
| KA 3508 Female end | 0350000054 | Sheet steel | 62.0 – 150.0 | A-7.0 | A+28.0 | 25.0 | 20.0 | 55.0 | 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 | 55.0 | 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 | 55.0 | 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 | 55.0 | 7.0 | 8.0 | A+10.0 | A+52.0 |

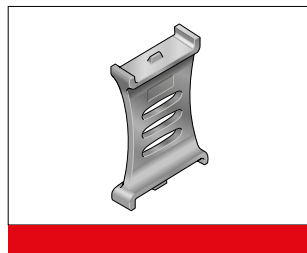
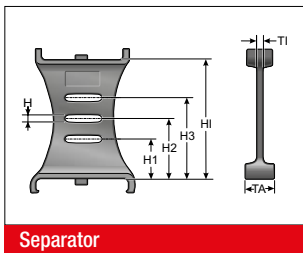
KA 35 CHAIN BRACKET U-PART



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 | | | | | | | Outside width | |
|---------------------|-------------|------------------------|--------------|---------|---------|---------|----------|-----------|---------|---------------|--|
| | | | A mm | B mm | F mm | G mm | G1 mm | Ø H mm | I mm | KA 0 mm | |
| KA 35062 Female end | 03500007000 | Sheet steel | 62.0 | A-7.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35062 Male end | 03500007100 | Sheet steel | 62.0 | A-12.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35086 Female end | 03500007200 | Sheet steel | 86.0 | A-7.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35086 Male end | 03500007300 | Sheet steel | 86.0 | A-12.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35102 Female end | 03500007400 | Sheet steel | 102.0 | A-7.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35102 Male end | 03500007500 | Sheet steel | 102.0 | A-12.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35125 Female end | 03500007600 | Sheet steel | 125.0 | A-7.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35125 Male end | 03500007700 | Sheet steel | 125.0 | A-12.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35150 Female end | 03500007800 | Sheet steel | 150.0 | A-7.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35150 Male end | 03500007900 | Sheet steel | 150.0 | A-12.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |
| KA 35062 Female end | 03500008000 | 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 | 03500008100 | 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 | 03500008200 | 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 | 03500008300 | 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 | 03500008400 | 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 | 03500008500 | 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 | 03500008600 | 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 | 03500008700 | 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 | 03500008800 | 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 | 03500008900 | Stainless steel 1.4301 | 150.0 | A-12.0 | 25.0 | 20.0 | 55.0 | 7.0 | 15.0 | A+20.0 | |

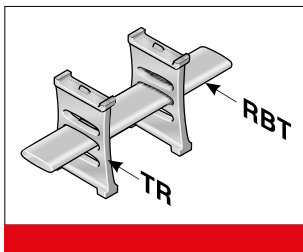
TR 35 SEPARATOR



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

| Type | Order No. | Description | Version | TI 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 |

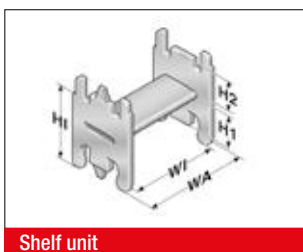
MP 35 SHELVING SYSTEM



In connection with at least two separators the shelf becomes a shelving system. The additional levels prevent the cables from twisting 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



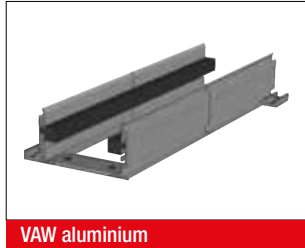
One-piece shelving system, the shelf cannot be varied in height.

| 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)



VAW steel galvanised / stainless steel

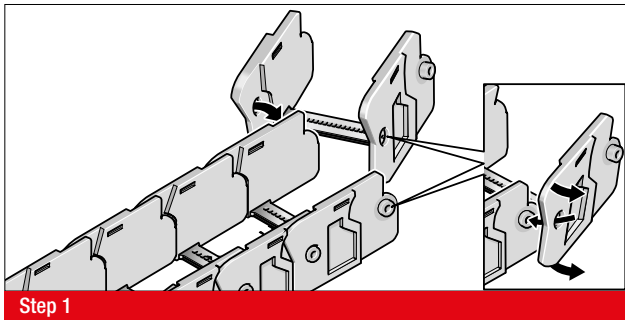


VAW aluminium

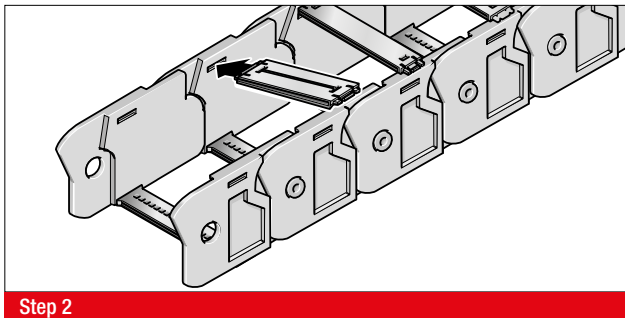
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

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

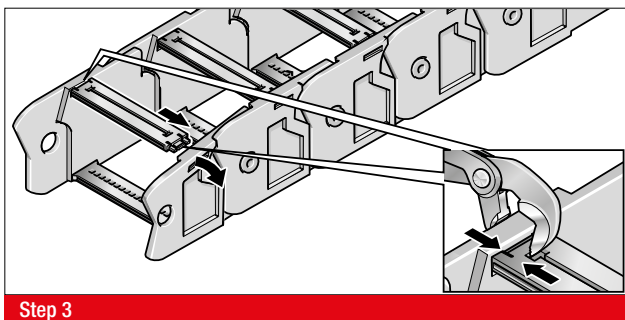
ASSEMBLY



Step 1

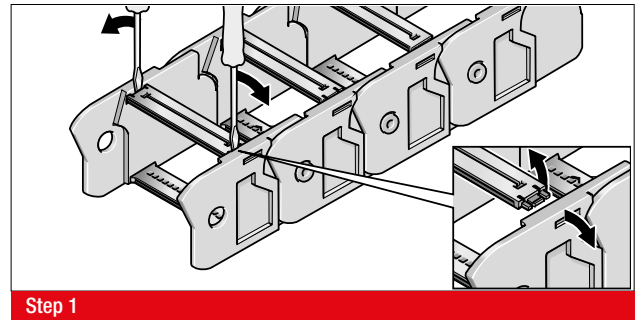


Step 2

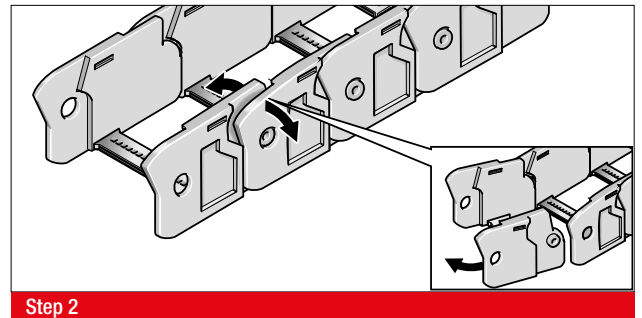


Step 3

DISASSEMBLY



Step 1

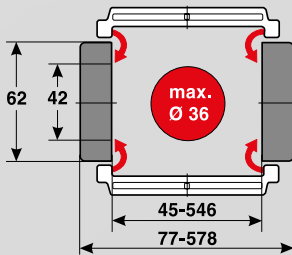


Step 2

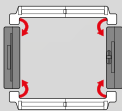
MP 41 OPEN



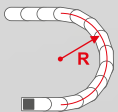
- PLASTIC OR ALUMINIUM VERSION
- FLEXIBLE CHAIN BRACKET



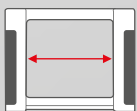
TECHNICAL DATA



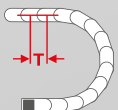
Loading side
Inside and outside bend



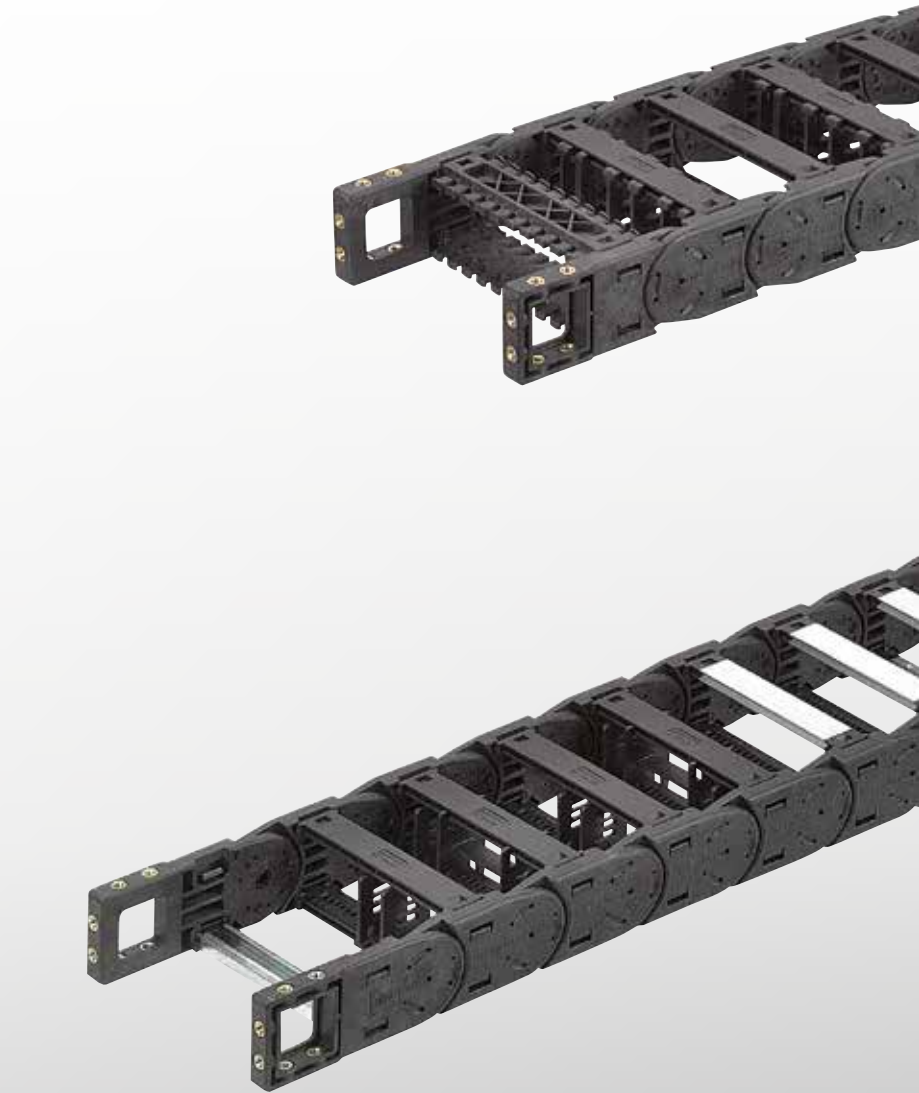
Available radii
90.0 – 350.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 120.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 385 |
| Travel distance vertical hanging L_{vh} max. | 50.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 characteristics on request.

SHELVING SYSTEM

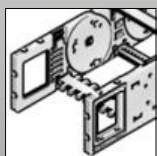


Separator TR

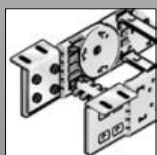


RS shelving system

CHAIN BRACKET



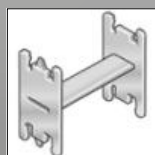
Chain bracket flexible



Chain bracket angle



Crossbar connector RSV

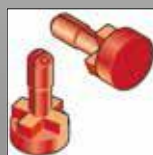


H-shaped shelf unit (RE)

ACCESSORIES



Bracket bar

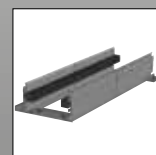


Lock button

GUIDE CHANNELS

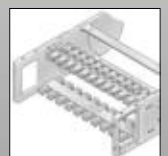


VAW galvanised steel / stainless steel



VAW aluminium

STRAIN RELIEF



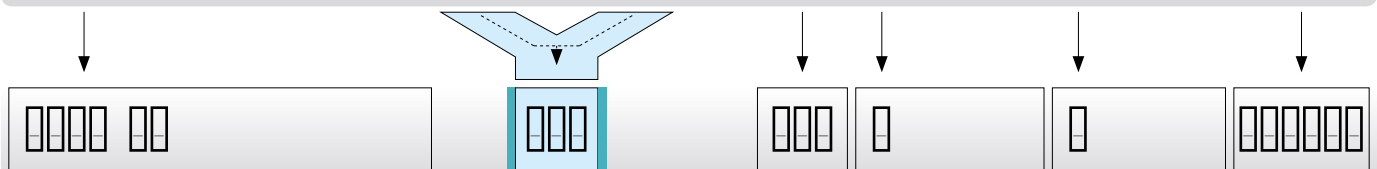
RS-ZL crossbar



Steel Fix STF

ORDERING KEY

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------|--------------------------------------------------------------------------------------------------|---------------|---------------|----------------|----------------|----------------|-----------------------------------|---------------------------------|--------------|--|--|---------------|---------------|----------------|----------------|----------------|-----------------------------------|--------------------------------|--|---------------|---------------|----------------|----------------|--|--|---------------|---------------|----------------|----------------|----------------|-----------------------------------|--|--|---------------|---------------|----------------|----------------|--|--|---------------|---------------|----------------|----------------|----------------|-----------------------------------|--|--|---------------|---------------|----------------|----------------|--|--|---------------|---------------|----------------|----------------|----------------|--------------------------------|--|--|---------------|---------------|----------------|----------------|--|--|---------------|---------------|----------------|----------------|----------------|--|--|--|---------------|---------------|----------------|----------------|--|--|---------------|---------------|----------------|----------------|----------------|--|--|--|---------------|---------------|----------------|----------------|--|--|---------------|---------------|--|--|--|--|--|--|---------------|---------------|--|--|--|--|---------------|---------------|--|--|--|--|--|--|---------------|---------------|--|--|--|--|---------------|---------------|--|--|--|--|
| 0410 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 045 [1.77] | 077 [3.03] | 233 [9.17] | 265 [10.43] | 090 [3.54] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 057 [2.24] | 089 [3.50] | 246 [9.69] | 278 [10.94] | | | | | | | 062 [2.44] | 094 [3.70] | 252 [9.92] | 284 [11.18] | 120 [4.72] | 2 Plastic half-ridged with bias | 9 Special version (on request) | | 071 [2.80] | 103 [4.06] | 258 [10.16] | 290 [11.42] | | | 084 [3.31] | 116 [4.57] | 296 [11.65] | 328 [12.91] | 150 [5.91] | 4 Aluminium full-ridged with bias | | | 093 [3.66] | 125 [4.92] | 346 [13.62] | 378 [14.88] | | | 096 [3.78] | 128 [5.04] | 350 [13.78] | 382 [15.04] | 200 [7.87] | 6 Aluminium half-ridged with bias | | | 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] | 9 Special version (on request) | | | 121 [4.76] | 153 [6.02] | 396 [15.59] | 428 [16.85] | | | 133 [5.24] | 165 [6.50] | 421 [16.57] | 453 [17.83] | 300 [11.81] | | | | 144 [5.67] | 176 [6.93] | 446 [17.56] | 478 [18.82] | | | 146 [5.75] | 178 [7.01] | 496 [19.53] | 528 [20.79] | 350 [13.78] | | | | 158 [6.22] | 190 [7.48] | 546 [21.50] | 578 [22.76] | | | 164 [6.46] | 196 [7.72] | | | | | | | 171 [6.73] | 203 [7.99] | | | | | 182 [7.17] | 214 [8.43] | | | | | | | 196 [7.72] | 228 [8.98] | | | | | 208 [8.19] | 240 [9.45] | | | | |
| | | 062 [2.44] | 094 [3.70] | 252 [9.92] | 284 [11.18] | 120 [4.72] | 2 Plastic half-ridged with bias | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 071 [2.80] | 103 [4.06] | 258 [10.16] | 290 [11.42] | | | | | | | 084 [3.31] | 116 [4.57] | 296 [11.65] | 328 [12.91] | 150 [5.91] | 4 Aluminium full-ridged with bias | | | 093 [3.66] | 125 [4.92] | 346 [13.62] | 378 [14.88] | | | 096 [3.78] | 128 [5.04] | 350 [13.78] | 382 [15.04] | 200 [7.87] | 6 Aluminium half-ridged with bias | | | 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] | 9 Special version (on request) | | | 121 [4.76] | 153 [6.02] | 396 [15.59] | 428 [16.85] | | | 133 [5.24] | 165 [6.50] | 421 [16.57] | 453 [17.83] | 300 [11.81] | | | | 144 [5.67] | 176 [6.93] | 446 [17.56] | 478 [18.82] | | | 146 [5.75] | 178 [7.01] | 496 [19.53] | 528 [20.79] | 350 [13.78] | | | | 158 [6.22] | 190 [7.48] | 546 [21.50] | 578 [22.76] | | | 164 [6.46] | 196 [7.72] | | | | | | | 171 [6.73] | 203 [7.99] | | | | | 182 [7.17] | 214 [8.43] | | | | | | | 196 [7.72] | 228 [8.98] | | | | | 208 [8.19] | 240 [9.45] | | | | | | | 220 [8.66] | 252 [9.92] | | | | | | | | | | |
| | | 084 [3.31] | 116 [4.57] | 296 [11.65] | 328 [12.91] | 150 [5.91] | 4 Aluminium full-ridged with bias | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 093 [3.66] | 125 [4.92] | 346 [13.62] | 378 [14.88] | | | | | | | 096 [3.78] | 128 [5.04] | 350 [13.78] | 382 [15.04] | 200 [7.87] | 6 Aluminium half-ridged with bias | | | 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] | 9 Special version (on request) | | | 121 [4.76] | 153 [6.02] | 396 [15.59] | 428 [16.85] | | | 133 [5.24] | 165 [6.50] | 421 [16.57] | 453 [17.83] | 300 [11.81] | | | | 144 [5.67] | 176 [6.93] | 446 [17.56] | 478 [18.82] | | | 146 [5.75] | 178 [7.01] | 496 [19.53] | 528 [20.79] | 350 [13.78] | | | | 158 [6.22] | 190 [7.48] | 546 [21.50] | 578 [22.76] | | | 164 [6.46] | 196 [7.72] | | | | | | | 171 [6.73] | 203 [7.99] | | | | | 182 [7.17] | 214 [8.43] | | | | | | | 196 [7.72] | 228 [8.98] | | | | | 208 [8.19] | 240 [9.45] | | | | | | | 220 [8.66] | 252 [9.92] | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 096 [3.78] | 128 [5.04] | 350 [13.78] | 382 [15.04] | 200 [7.87] | 6 Aluminium half-ridged with bias | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 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] | 9 Special version (on request) | | | 121 [4.76] | 153 [6.02] | 396 [15.59] | 428 [16.85] | | | 133 [5.24] | 165 [6.50] | 421 [16.57] | 453 [17.83] | 300 [11.81] | | | | 144 [5.67] | 176 [6.93] | 446 [17.56] | 478 [18.82] | | | 146 [5.75] | 178 [7.01] | 496 [19.53] | 528 [20.79] | 350 [13.78] | | | | 158 [6.22] | 190 [7.48] | 546 [21.50] | 578 [22.76] | | | 164 [6.46] | 196 [7.72] | | | | | | | 171 [6.73] | 203 [7.99] | | | | | 182 [7.17] | 214 [8.43] | | | | | | | 196 [7.72] | 228 [8.98] | | | | | 208 [8.19] | 240 [9.45] | | | | | | | 220 [8.66] | 252 [9.92] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 107 [4.21] | 139 [5.47] | 371 [14.61] | 403 [15.87] | 250 [9.84] | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 121 [4.76] | 153 [6.02] | 396 [15.59] | 428 [16.85] | | | | | | | 133 [5.24] | 165 [6.50] | 421 [16.57] | 453 [17.83] | 300 [11.81] | | | | 144 [5.67] | 176 [6.93] | 446 [17.56] | 478 [18.82] | | | 146 [5.75] | 178 [7.01] | 496 [19.53] | 528 [20.79] | 350 [13.78] | | | | 158 [6.22] | 190 [7.48] | 546 [21.50] | 578 [22.76] | | | 164 [6.46] | 196 [7.72] | | | | | | | 171 [6.73] | 203 [7.99] | | | | | 182 [7.17] | 214 [8.43] | | | | | | | 196 [7.72] | 228 [8.98] | | | | | 208 [8.19] | 240 [9.45] | | | | | | | 220 [8.66] | 252 [9.92] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 133 [5.24] | 165 [6.50] | 421 [16.57] | 453 [17.83] | 300 [11.81] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 144 [5.67] | 176 [6.93] | 446 [17.56] | 478 [18.82] | | | | | | | 146 [5.75] | 178 [7.01] | 496 [19.53] | 528 [20.79] | 350 [13.78] | | | | 158 [6.22] | 190 [7.48] | 546 [21.50] | 578 [22.76] | | | 164 [6.46] | 196 [7.72] | | | | | | | 171 [6.73] | 203 [7.99] | | | | | 182 [7.17] | 214 [8.43] | | | | | | | 196 [7.72] | 228 [8.98] | | | | | 208 [8.19] | 240 [9.45] | | | | | | | 220 [8.66] | 252 [9.92] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 146 [5.75] | 178 [7.01] | 496 [19.53] | 528 [20.79] | 350 [13.78] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 158 [6.22] | 190 [7.48] | 546 [21.50] | 578 [22.76] | | | | | | | 164 [6.46] | 196 [7.72] | | | | | | | 171 [6.73] | 203 [7.99] | | | | | 182 [7.17] | 214 [8.43] | | | | | | | 196 [7.72] | 228 [8.98] | | | | | 208 [8.19] | 240 [9.45] | | | | | | | 220 [8.66] | 252 [9.92] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 164 [6.46] | 196 [7.72] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 171 [6.73] | 203 [7.99] | | | | | | | | | 182 [7.17] | 214 [8.43] | | | | | | | 196 [7.72] | 228 [8.98] | | | | | 208 [8.19] | 240 [9.45] | | | | | | | 220 [8.66] | 252 [9.92] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 182 [7.17] | 214 [8.43] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 196 [7.72] | 228 [8.98] | | | | | | | | | 208 [8.19] | 240 [9.45] | | | | | | | 220 [8.66] | 252 [9.92] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 208 [8.19] | 240 [9.45] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 220 [8.66] | 252 [9.92] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



ORDERING EXAMPLE: 0410 30 045 090 0 0 1386

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 45 mm; radius 90 mm
 Plastic bridge, 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.

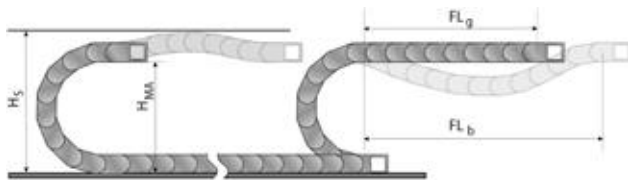
Crossbar connector and crossbar strain relief plate:

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.

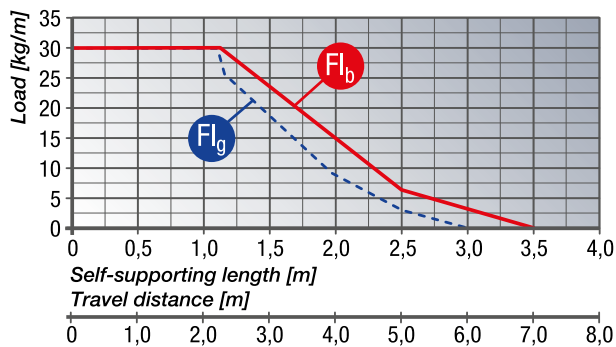
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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.

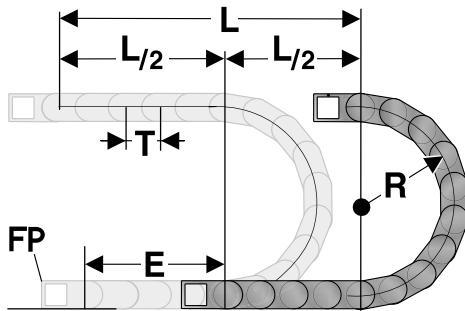
- H_s = Installation height plus safety
- H_{MA} = Height of moving end bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

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

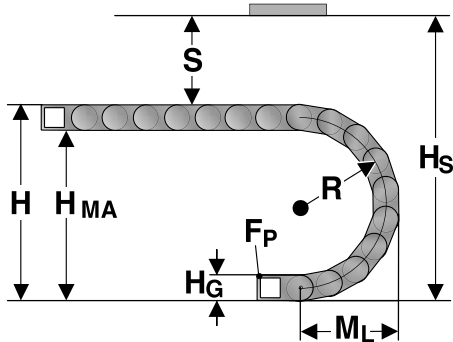


The fixed point of the energy chain should be placed in the middle of the travel distance.
 This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 13 links, 77.0 mm each

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

INSTALLATION DIMENSIONS



The moving end chain bracket 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 |

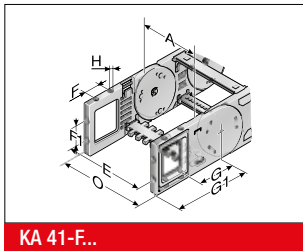
PLASTIC CROSSBAR POWERLINE



The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

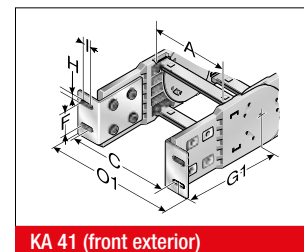
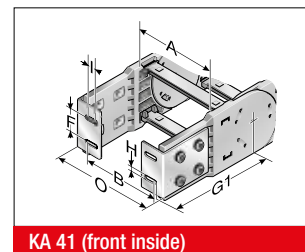
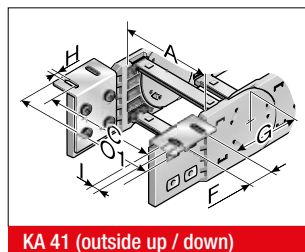
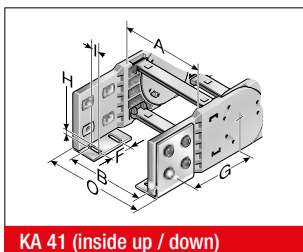
KA 41 FLEXIBLE CHAIN BRACKET



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 energy 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 | |
|------------|------------|----------|-------------|--------------|--------|------|-------|------|-------|------|--------|---------------|--|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm | |
| KA 41.1-FB | 0411000054 | Plastic | with socket | 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

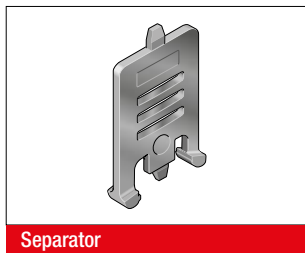
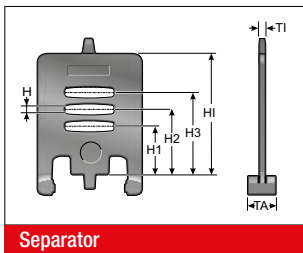


There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. However, any other combination can be supplied upon request. The chain bracket

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 KA 0 mm | Outside width KA 01 mm | |
|-------|------------|-------------|--------------|-------|--------|------|------|-------|-------|--------|-----------------------|------------------------|--------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | G2 mm | Ø H mm | | | I mm |
| KA 41 | 0410000051 | Sheet steel | 45.0 – 546.0 | A-2.5 | A+34.5 | 32.0 | 79.0 | 120.0 | 125.7 | 6.5 | 14.0 | A+32.0 | A+71.0 |

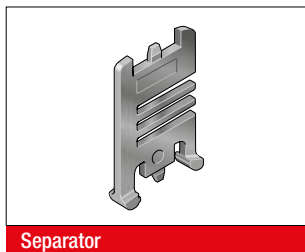
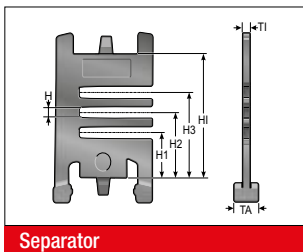
TR 41 SEPARATOR



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 | 04100009200 | Separator | lockable | 3.5 | 10.0 | 4.2 | 16.1 | 22.9 | 28.9 | 42.0 |

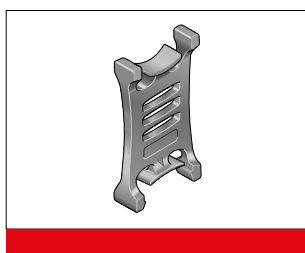
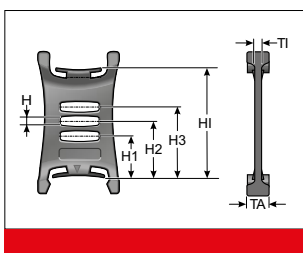
TR 41.1 SEPARATOR



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 |

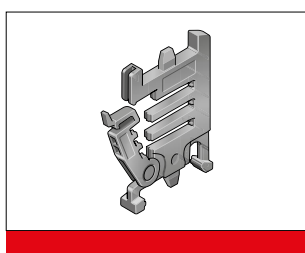
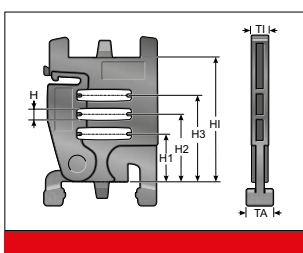
TR 41-V SEPARATOR



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 | 04100009300 | Separator | movable | 3.5 | 12.0 | 4.0 | 16.1 | 22.9 | 28.9 | 42.0 |

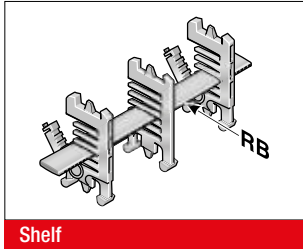
RTT 41 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



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

| Type | Order No. | Description | Width mm | for inner 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 | 100000008400 | 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |

RB-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|-------------|-------------|----------|--------------------|
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 10000029100 | Shelf | 291.2 | 346.0 |

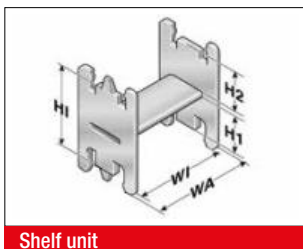
RSV 41 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| 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 | 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



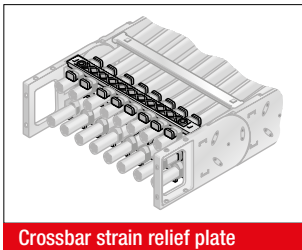
Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain.

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

The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

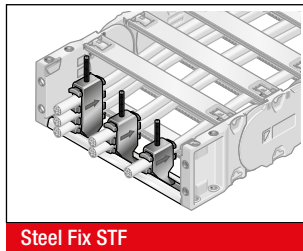
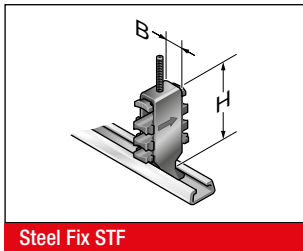
RS-ZL-5 CROSSBAR STRAIN RELIEF



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

| Type | Order No. | Description | for inner 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 |

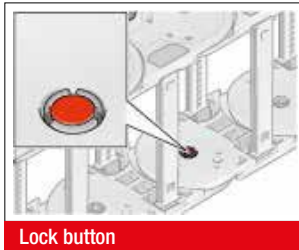
STRAIN RELIEF MP STEEL FIX



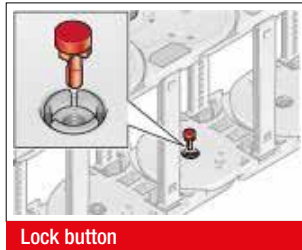
C-rails (galvanised) can be permanently integrated to hold the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

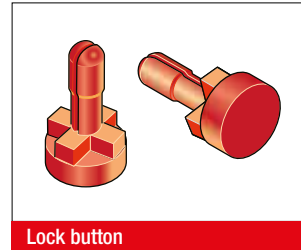
MP 32/41 LOCK BUTTON



Lock button



Lock button



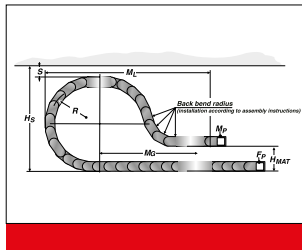
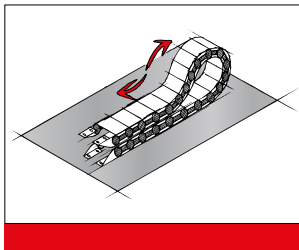
Lock button

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 |

MP 41 LOWERED FIXING POINT



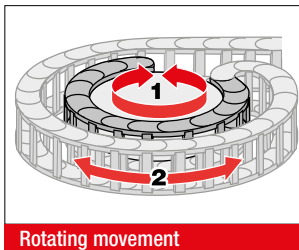
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H_{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H_s) mm | Projection (M_1) mm | Additional links pcs. | of which additional rear- ward chain links pcs. |
|----------------|----------------------------------------------------|----------------------------|-----------------------------------------------------|----------------------------|--------------------------|-------------------------------------------------------|
| 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



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. | Radius mm | Rearward radius mm |
|--------------------|--------------|--------------|-----------------------|
| SR 41 (RÜ200/R125) | 041000009060 | 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

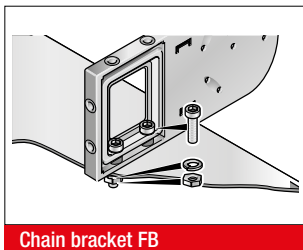


VAW aluminium

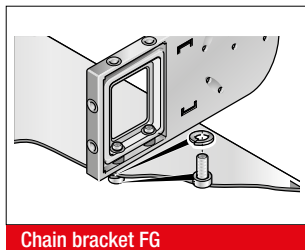
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

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

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



Chain bracket FB



Chain bracket FG

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

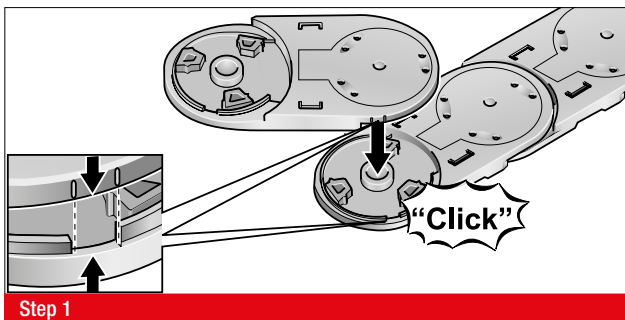
Type KA-FB:

Integrated through-hole is fastened using screw and nut.

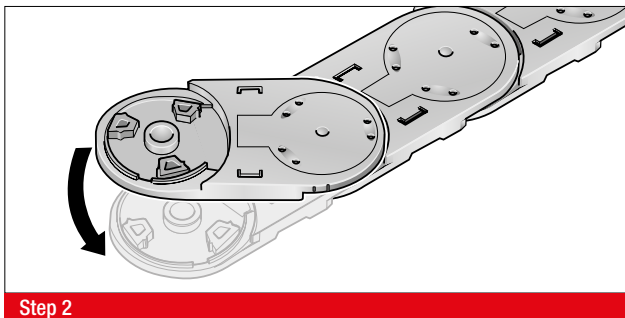
Type KA-FG:

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

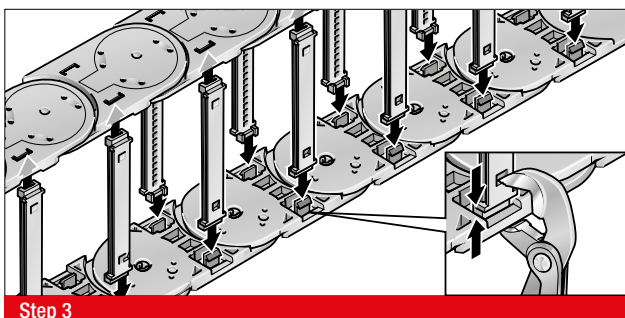
ASSEMBLY



Step 1

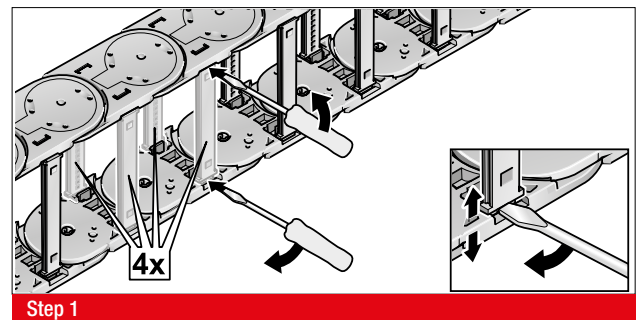


Step 2

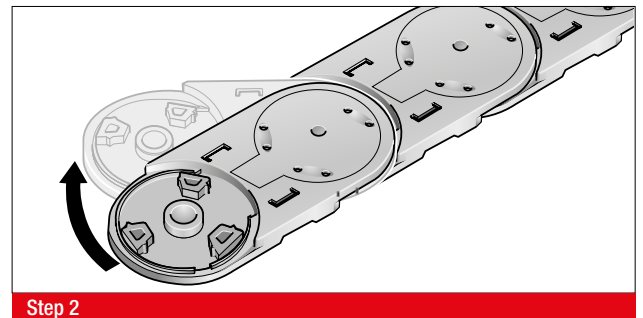


Step 3

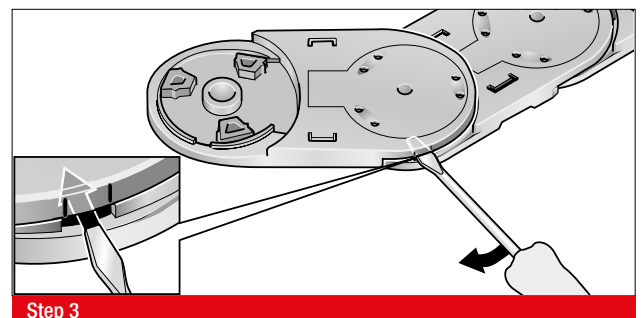
DISASSEMBLY



Step 1



Step 2

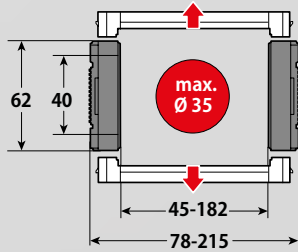


Step 3

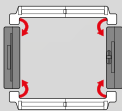
MP 44 OPEN



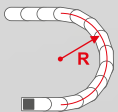
- PLASTIC OR ALUMINIUM VERSION
- METAL CHAIN BRACKET



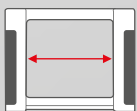
TECHNICAL DATA



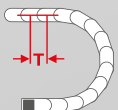
Loading side
Inside and outside bend



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 50.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 399 |
| Travel distance vertical hanging L_{vh} max. | 40.0 m |
| Travel distance vertical upright L_{vs} max. | 3.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 20.0 m/s ² |

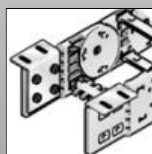
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

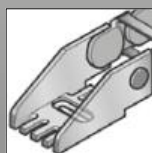
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | According to 94 HB |

Other material characteristics on request.

CHAIN BRACKET

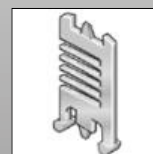


Chain bracket angle



Chain bracket U-part

SHELVING SYSTEM



Separator TR



RS shelving system

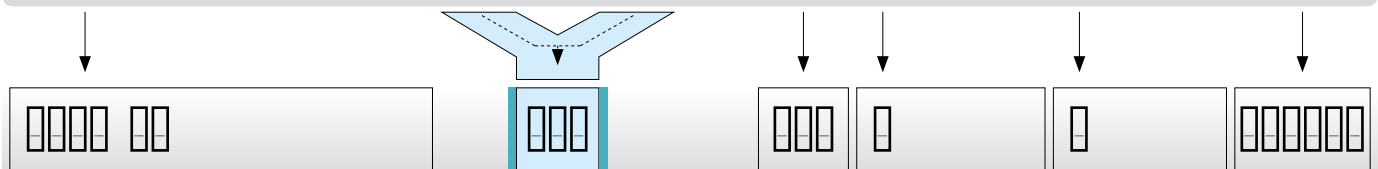
GUIDE CHANNELS



VAW aluminium

ORDERING KEY

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|-----------------------|---------------------------------------------|----------------------------------------|--------------|
| 0440 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 045 [1.77] | 078 [3.07] | | | 090 [3.54] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 062 [2.44] | 095 [3.74] | | | | | | |
| | | 084 [3.31] | 117 [4.61] | | | 125 [4.92] | 1 Plastic full-ridged without bias | 9 Special version (on request) | |
| | | 105 [4.13] | 138 [5.43] | | | | | | |
| | | 144 [5.67] | 177 [6.97] | | | 150 [5.91] | 2 Plastic half-ridged with bias | | |
| | | 182 [7.17] | 215 [8.46] | | | | | | |
| | | | | | | 200 [7.87] | 3 Plastic half-ridged without bias | | |
| | | | | | | | | | |
| | | | | | | 250 [9.84] | 4 Aluminium full-ridged with bias | | |
| | | | | | | | | | |
| | | | | | | 300 [11.81] | 5 Aluminium full-ridged without bias | | |
| | | | | | | | | | |
| | | | | | | 400 [15.75] | 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, to be opened from inside and outside bend
 Inside width 45 mm; radius 90 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1359 mm (18 links)

NOTE ON CONFIGURATION

Aluminium crossbars:

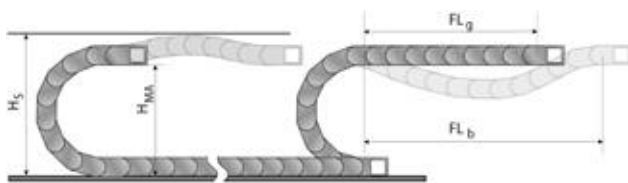
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 77.0 mm – 600.0.

Strain relief:

The end brackets utilise strain relief plates (ZL) for cable strain relief.

For detailed information, please consult the corresponding product documentation.

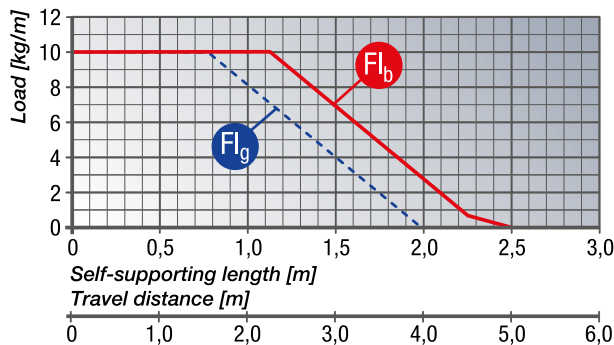
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



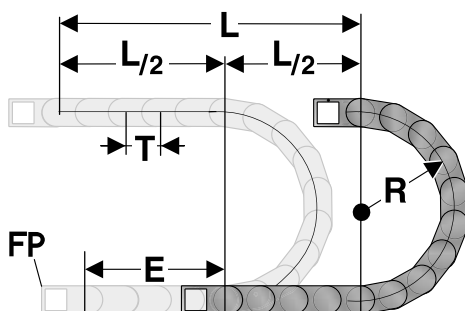
FL_g Self-supporting length, upper run straight

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



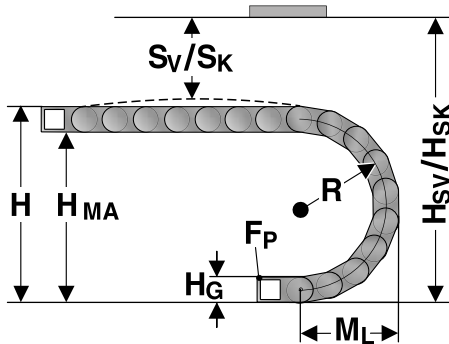
The fixed point of the energy chain should be placed in the middle of the travel distance.

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 = $L/2 + \pi * R + E$
 1 m chain = 13 links, 75.5 mm each

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

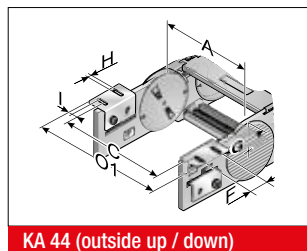
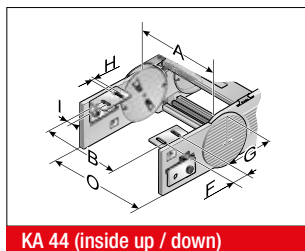
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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 |

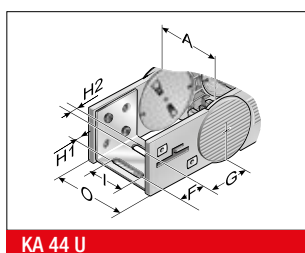
KA 44 CHAIN BRACKET ANGLE



There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. 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 KA 0 | Outside width KA 01 | |
|-------|------------|------------------------|--------------|--------|--------|--------|------|------|------|-----|--------------------|---------------------|--------|
| | | | A | B | C | E | F | G | G1 | Ø H | | | I |
| 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

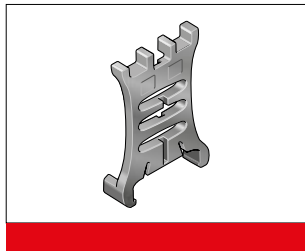
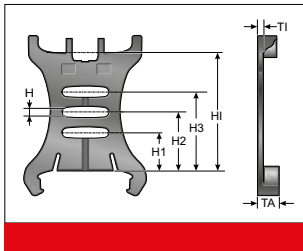


The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fastened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

| Type | Order No. | Material | Inside width | | | | | | Outside width KA 0 |
|---------|------------|------------------------|--------------|------|------|-----|-----|------|--------------------|
| | | | A | F | G | H1 | H2 | I | |
| KA 44 U | 0440000054 | Stainless steel 1.4301 | 45.0 | 28.0 | 45.0 | 6.5 | 8.5 | 33.0 | A+33.0 |

MP 44 OPEN

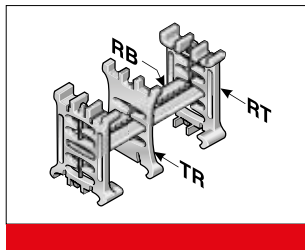
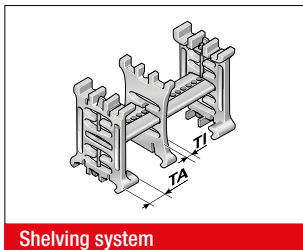
TR 44 SEPARATOR



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. For applications with aluminium crossbars or when movable separators are to be used, the TL 44 separator should be used.

| Type | Order No. | Description | TI 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 crossbars | 4.0 | 8.5 | 4.3 | 13.3 | 20.5 | 27.7 | 41.0 |

MP 44 SHELVING SYSTEM



In connection with at least two separators the shelf becomes a shelving system. The additional levels prevent the cables from twisting and minimise the friction between them. The shelving system may be pre-assembled 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 |
|--------|--------------|---------------|-------------|-----------------------|-------------|----------|----------|----------|----------|----------|----------|
| RB 031 | 100000003100 | Shelf | 42.0 | 31.0 | 5.6 | | | | | | |
| RB 048 | 100000004800 | Shelf | 59.0 | 48.0 | 5.6 | | | | | | |
| RB 070 | 100000007000 | Shelf | 81.0 | 70.0 | 5.6 | | | | | | |
| RB 092 | 100000009200 | Shelf | 103.0 | 92.0 | 5.6 | | | | | | |
| RB 100 | 100000010000 | Shelf | 111.0 | 100.0 | 5.6 | | | | | | |
| RB 128 | 100000012800 | Shelf | 139.0 | 128.0 | 5.6 | | | | | | |
| RB 167 | 100000016700 | Shelf | 178.0 | 167.0 | 5.6 | | | | | | |
| RT 44 | 1000902100 | Shelf support | 4.3 | | 5.6 | 6.5 | 6.4 | 13.3 | 20.5 | 27.7 | 34.8 |

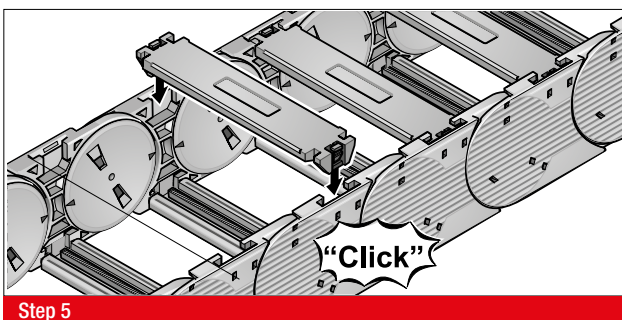
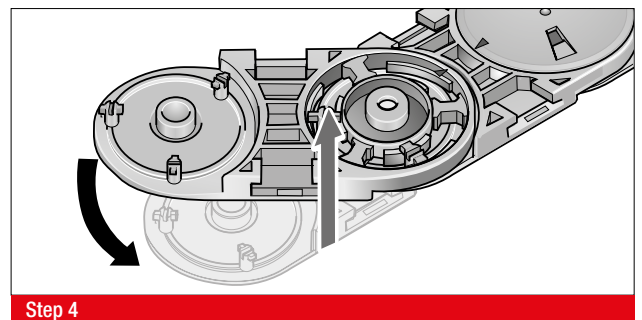
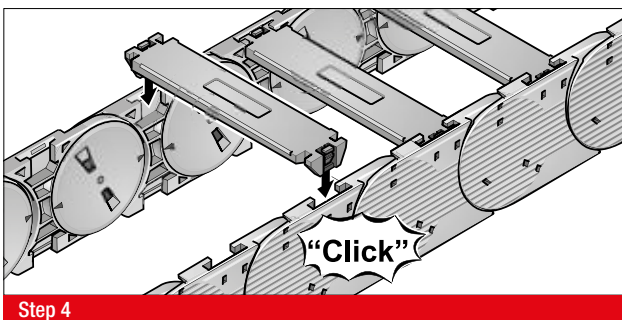
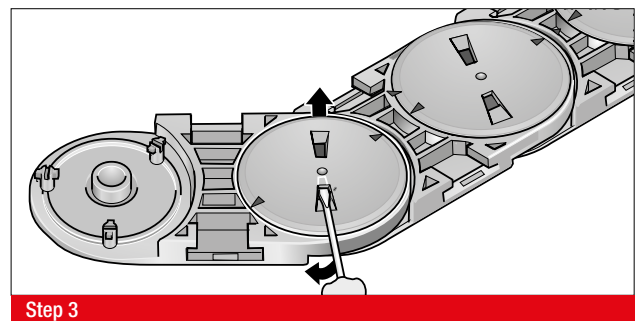
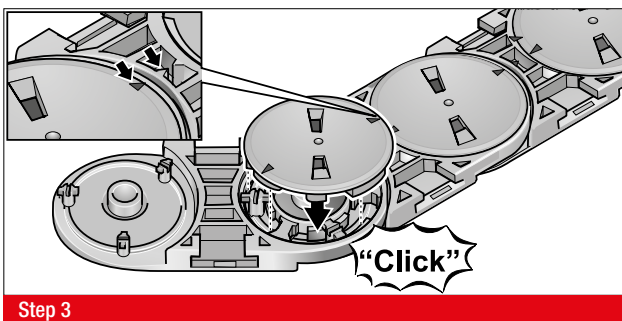
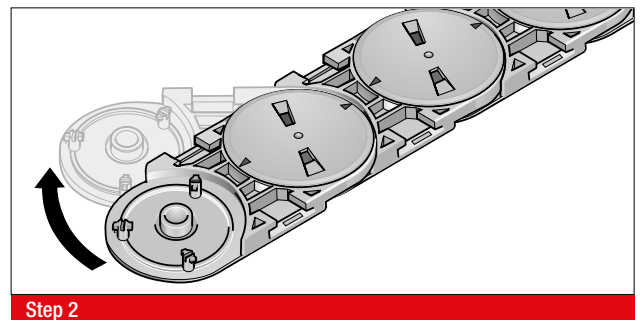
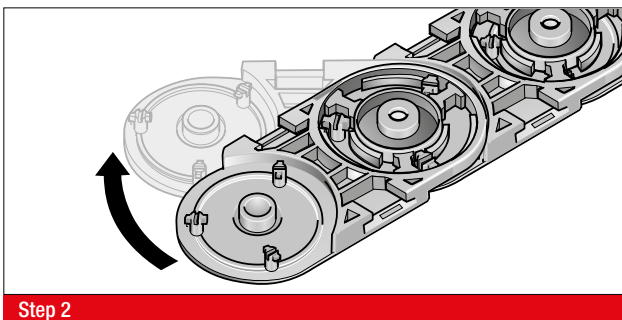
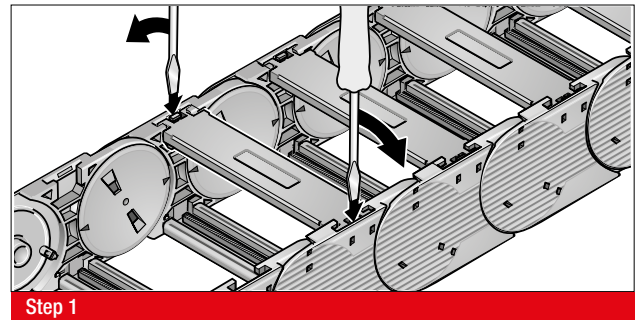
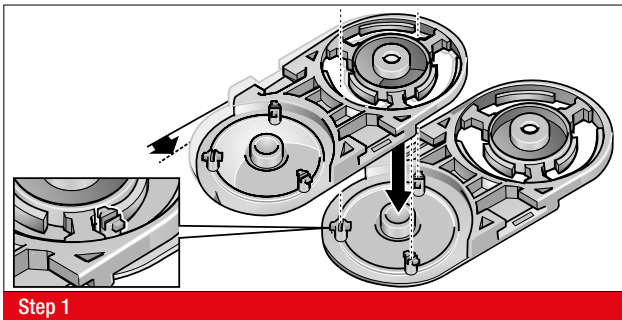
GUIDE CHANNEL VAW (ALUMINIUM)



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

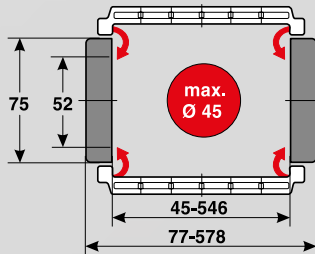
DISASSEMBLY



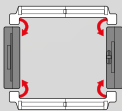
MP 52.1 OPEN



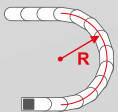
- PLASTIC OR ALUMINIUM VERSION
- FLEXIBLE CHAIN BRACKET



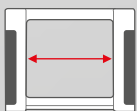
TECHNICAL DATA



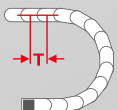
Loading side
Inside and outside bend



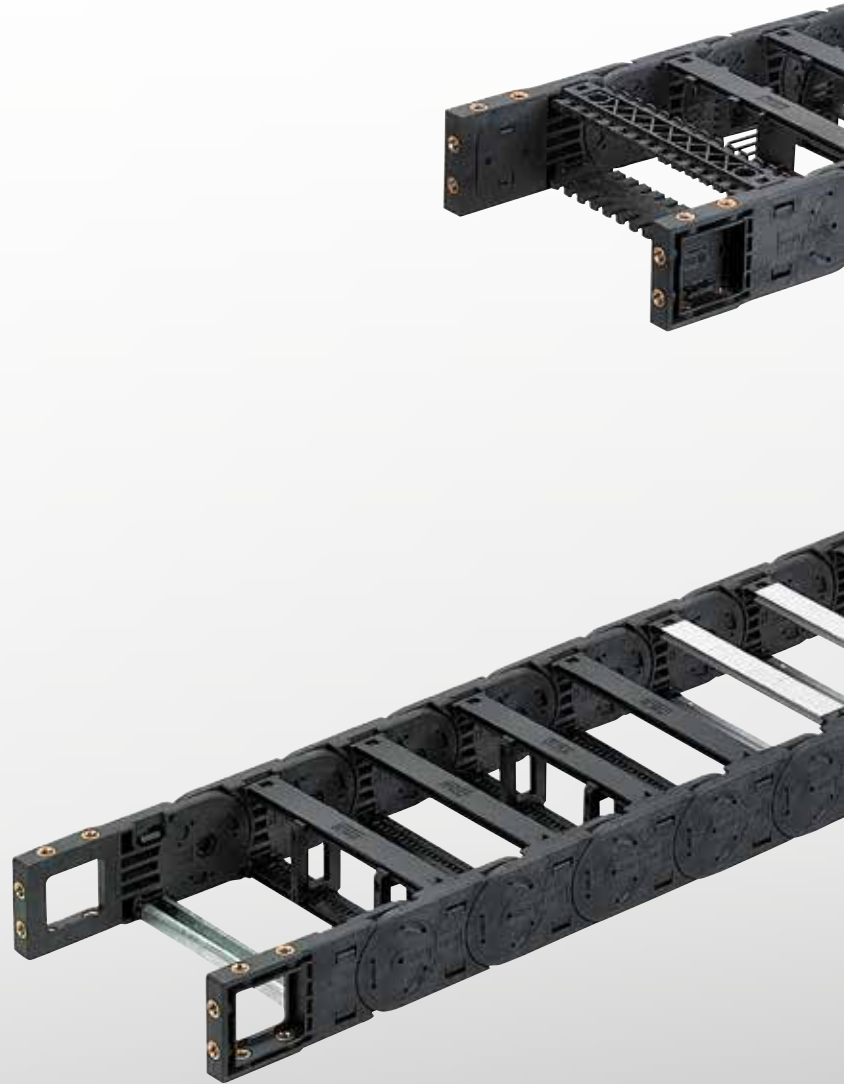
Available radii
100.0 – 350.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 150.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 407 |
| Travel distance vertical hanging L_{vh} max. | 60.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 30.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

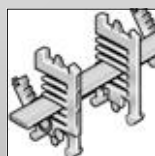
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

SHELVING SYSTEM

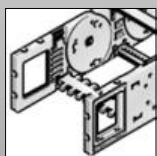


Separator TR

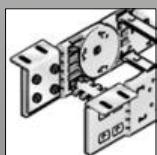


RS shelving system

CHAIN BRACKET



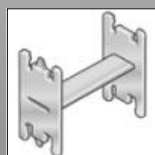
Chain bracket flexible



Chain bracket angle



Crossbar connector RSV

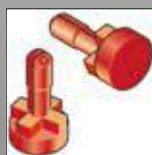


H-shaped shelf unit (RE)

ACCESSORIES



Bracket bar

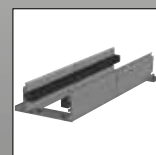


Lock button

GUIDE CHANNELS

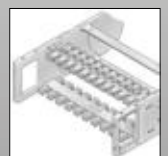


VAW galvanised steel / stainless steel



VAW aluminium

STRAIN RELIEF



RS-ZL crossbar



Steel Fix STF

ORDERING KEY

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------------------------------------|----------------------|----------------------|-----------------------|-----------------------|-----------------------|---------------------------------------------|----------------------------------------|--------------|
| 0521 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 045 [1.77] | 077 [3.03] | 233 [9.17] | 265 [10.43] | 100 [3.94] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 057 [2.24] | 089 [3.50] | 246 [9.69] | 278 [10.94] | | | | |
| | | 062 [2.44] | 094 [3.70] | 252 [9.92] | 284 [11.18] | 150 [5.91] | 1 Plastic full-ridged without bias | 9 Special version (on request) | |
| | | 071 [2.80] | 103 [4.06] | 258 [10.16] | 290 [11.42] | | | | |
| | | 084 [3.31] | 116 [4.57] | 296 [11.65] | 328 [12.91] | 200 [7.87] | 2 Plastic half-ridged with bias | | |
| | | 093 [3.66] | 125 [4.92] | 346 [13.62] | 378 [14.88] | | | | |
| | | 096 [3.78] | 128 [5.04] | 350 [13.78] | 382 [15.04] | 250 [9.84] | 3 Plastic half-ridged without bias | | |
| | | 104 [4.09] | 136 [5.35] | 358 [14.09] | 390 [15.35] | | | | |
| | | 107 [4.21] | 139 [5.47] | 371 [14.61] | 403 [15.87] | 300 [11.81] | 4 Aluminium full-ridged with bias | | |
| | | 121 [4.76] | 153 [6.02] | 396 [15.59] | 428 [16.85] | | | | |
| | | 133 [5.24] | 165 [6.50] | 421 [16.57] | 453 [17.83] | 350 [13.78] | 5 Aluminium full-ridged without bias | | |
| | | 144 [5.67] | 176 [6.93] | 446 [17.56] | 478 [18.82] | | | | |
| | | 146 [5.75] | 178 [7.01] | 496 [19.53] | 528 [20.79] | | 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 [7.17] | 214 [8.43] | | | | 9 Special version (on request) | | |
| | | 196 [7.72] | 228 [8.98] | | | | | | |
| | | 208 [8.19] | 240 [9.45] | | | | | | |
| | | 220 [8.66] | 252 [9.92] | | | | | | |



ORDERING EXAMPLE: 0521 30 045 100 0 0 1365

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 45 mm; radius 100 mm
 Plastic bridge, 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.

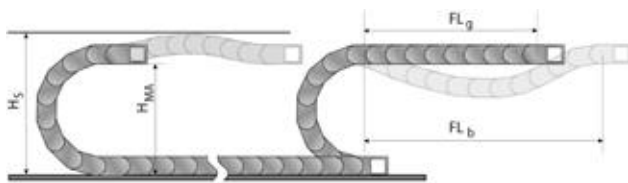
Crossbar connector and crossbar strain relief plate:

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

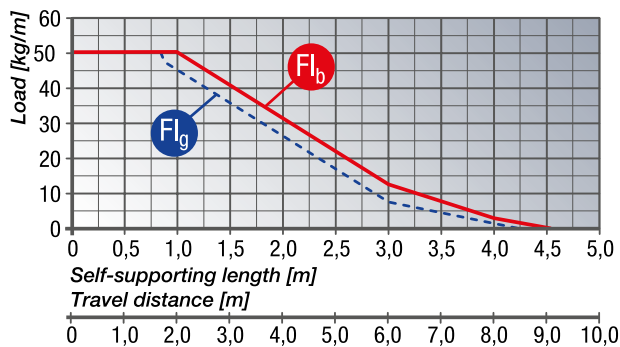


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. The installation variant FL_g offers the lowest load and wear for the energy chain.

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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



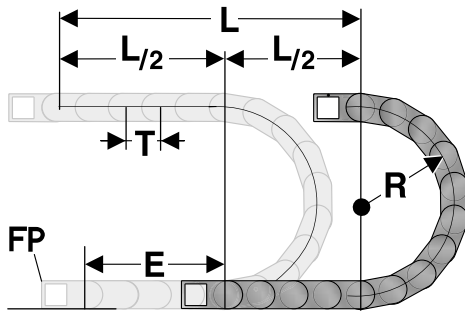
FL_g Self-supporting length, upper run straight

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

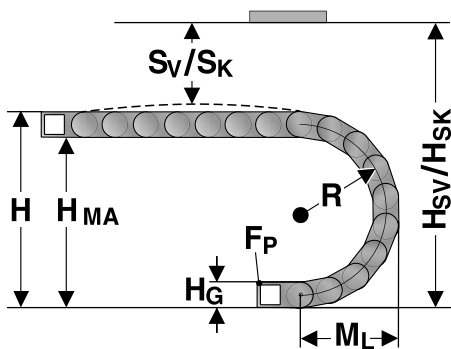


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 11 links, 91.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 91.0 mm

INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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_o) | 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 |

PLASTIC CROSSBAR POWERLINE

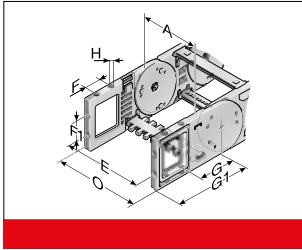


Crossbar

The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

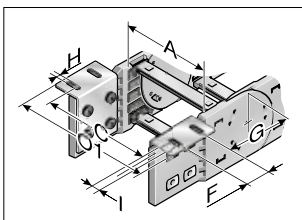
KA 52.1 FLEXIBLE CHAIN BRACKET



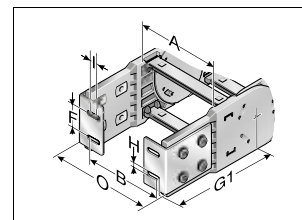
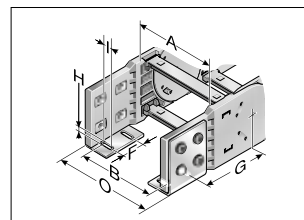
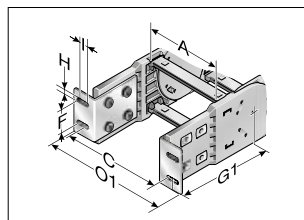
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. M8 bolts are used to secure the brackets in place. 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 | |
|-----------------------|------------|----------|-------------|--------------|--------|------|-------|------|-------|-------|--------|---------------|--|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm | |
| KA 52.1-FB Female end | 0521000056 | Plastic | with socket | 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 socket | 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



KA 52.1 (outside up)

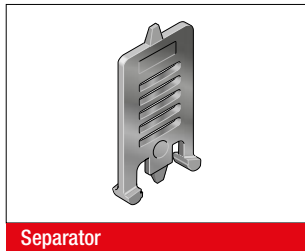
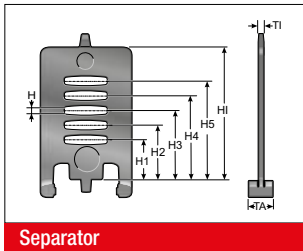


There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. However, any other combination can be supplied upon request. The chain

bracket is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. The brackets should be fastened with M6 screws.

| Type | Order No. | Material | Inside width | | | | | | | | Outside width | | Outside width |
|--------------------|------------|-------------|--------------|-------|--------|------|------|-------|-------|--------|---------------|---------|---------------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | G2 mm | Ø H mm | I mm | KA 0 mm | 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 | 143.0 | 149.0 | 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 | 143.0 | 149.0 | 6.5 | 14.0 | A+32.0 | A+71.0 |

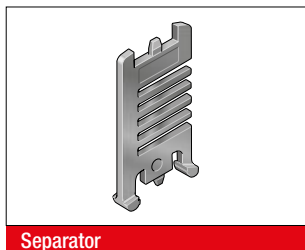
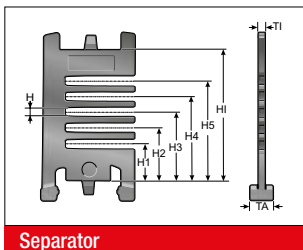
TR 52 SEPARATOR



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 | HI 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 |

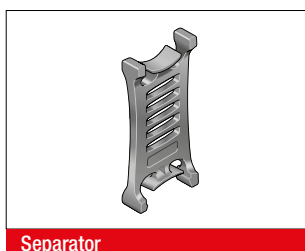
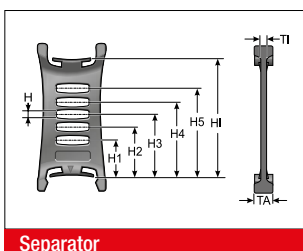
TR 52.1 SEPARATOR



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 | HI 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 |

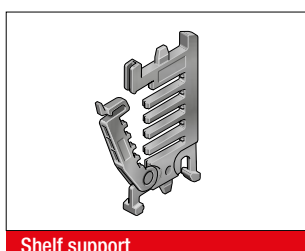
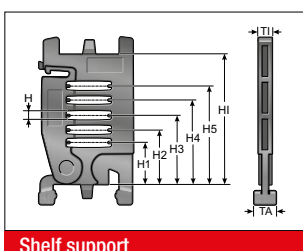
TR 52-V SEPARATOR



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 | movable | 3.5 | 13.0 | 4.0 | 16.3 | 22.3 | 28.2 | 33.8 | 39.8 | 52.0 |

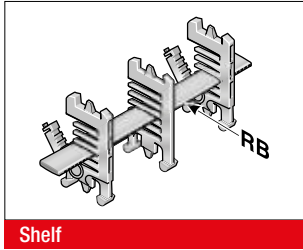
RTT 52 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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



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

| Type | Order No. | Description | Width mm | for inner 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 201-5 | 1000020105 | Shelf | 202.3 | 346.0 |
| RB 207-5 | 1000020705 | Shelf | 207.8 | 346.0 |
| RB 213-5 | 1000021305 | Shelf | 213.6 | 346.0 |
| RB 218-5 | 1000021805 | Shelf | 219.2 | 346.0 |
| RB 224-5 | 1000022405 | Shelf | 224.8 | 346.0 |
| RB 229-5 | 1000022905 | Shelf | 230.4 | 346.0 |

RB-5 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|-------------|-------------|----------|--------------------|
| RB 235-5 | 1000023505 | Shelf | 236.0 | 346.0 |
| RB 241-5 | 1000024105 | Shelf | 241.8 | 346.0 |
| RB 246-5 | 1000024605 | Shelf | 247.2 | 346.0 |
| RB 252-5 | 1000025205 | Shelf | 252.9 | 346.0 |
| RB 257-5 | 1000025705 | Shelf | 258.6 | 346.0 |
| RB 263-5 | 1000026305 | Shelf | 264.0 | 346.0 |
| RB 269-5 | 1000026905 | Shelf | 269.7 | 346.0 |
| RB 274-5 | 1000027405 | Shelf | 274.4 | 346.0 |
| RB 280-5 | 1000028005 | Shelf | 281.0 | 346.0 |
| RB 285-5 | 1000028505 | Shelf | 285.0 | 346.0 |
| RB 291-5 | 10000029100 | Shelf | 291.2 | 346.0 |

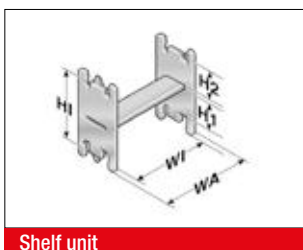
RSV 52 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| 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 | 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

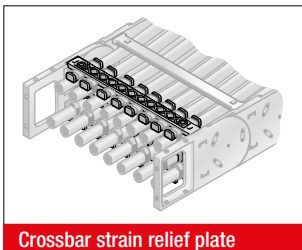


Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain. The bracket bar support (BSH) is used to attach the bars to PowerLine series crossbars. Two bracket bar supports are required for each bar.

The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

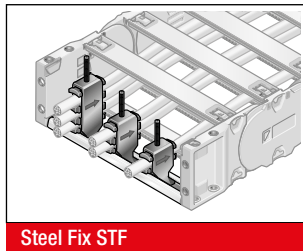
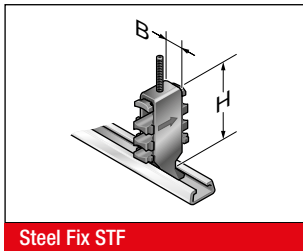
RS-ZL-5 CROSSBAR STRAIN RELIEF



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

| Type | Order No. | Description | for inner 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 |

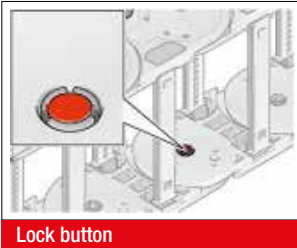
STRAIN RELIEF MP STEEL FIX



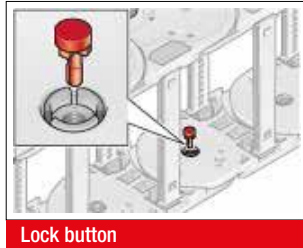
C-rails (galvanised) can be permanently integrated to hold the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

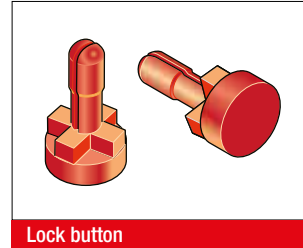
MP 52/62/72 LOCK BUTTON



Lock button



Lock button



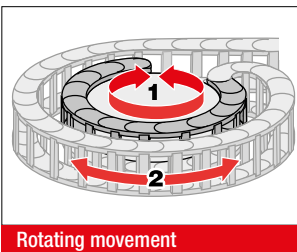
Lock button

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)



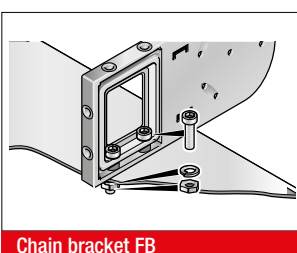
VAW steel galvanised / stainless steel



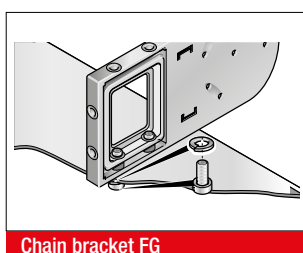
VAW aluminium

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



Chain bracket FB



Chain bracket FG

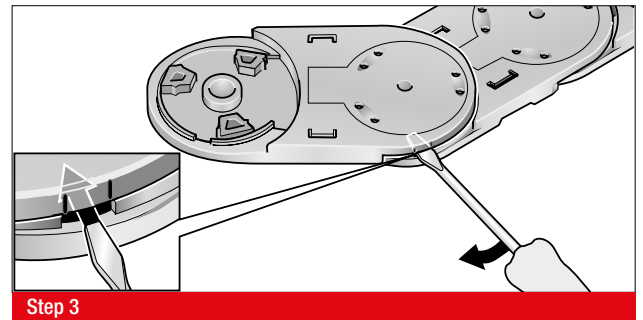
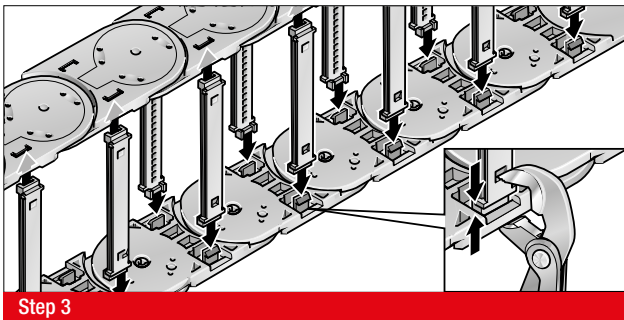
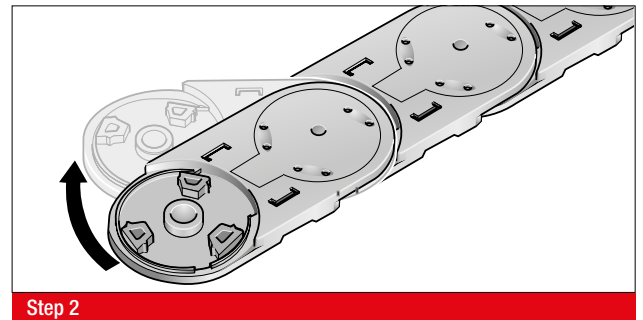
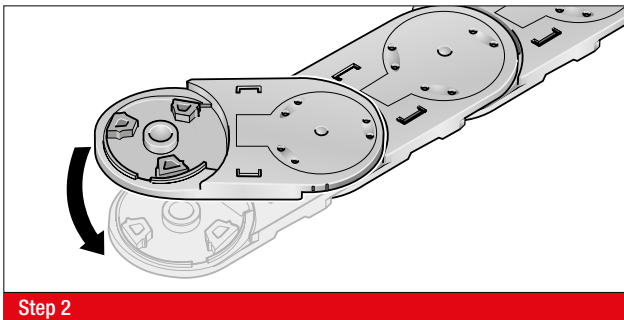
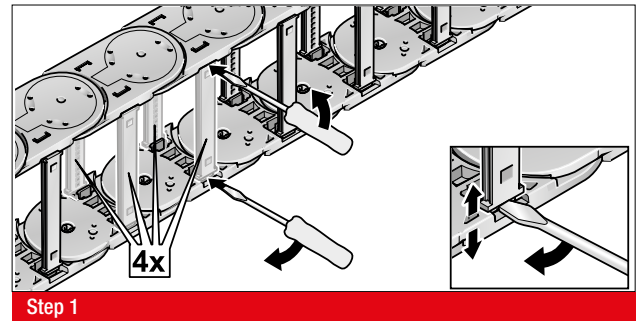
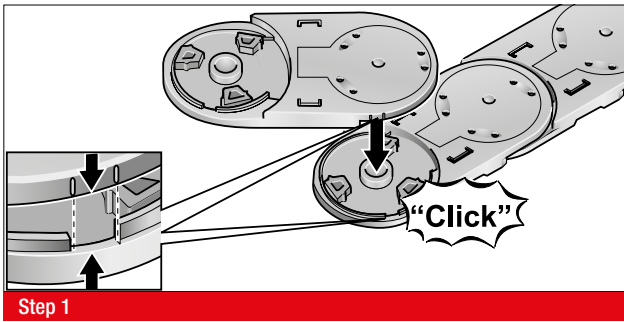
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

Type KA-FB:
Integrated through-hole is fastened using screw and nut.
Type 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

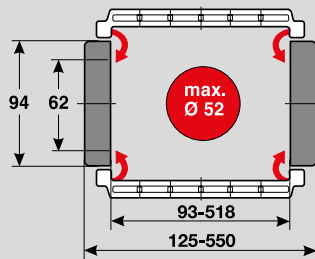
EFK



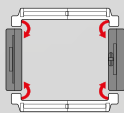
MP 62.1 OPEN



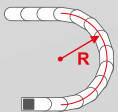
- PLASTIC OR ALUMINIUM VERSION
- FLEXIBLE CHAIN BRACKET



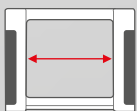
TECHNICAL DATA



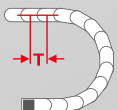
Loading side
Inside and outside bend



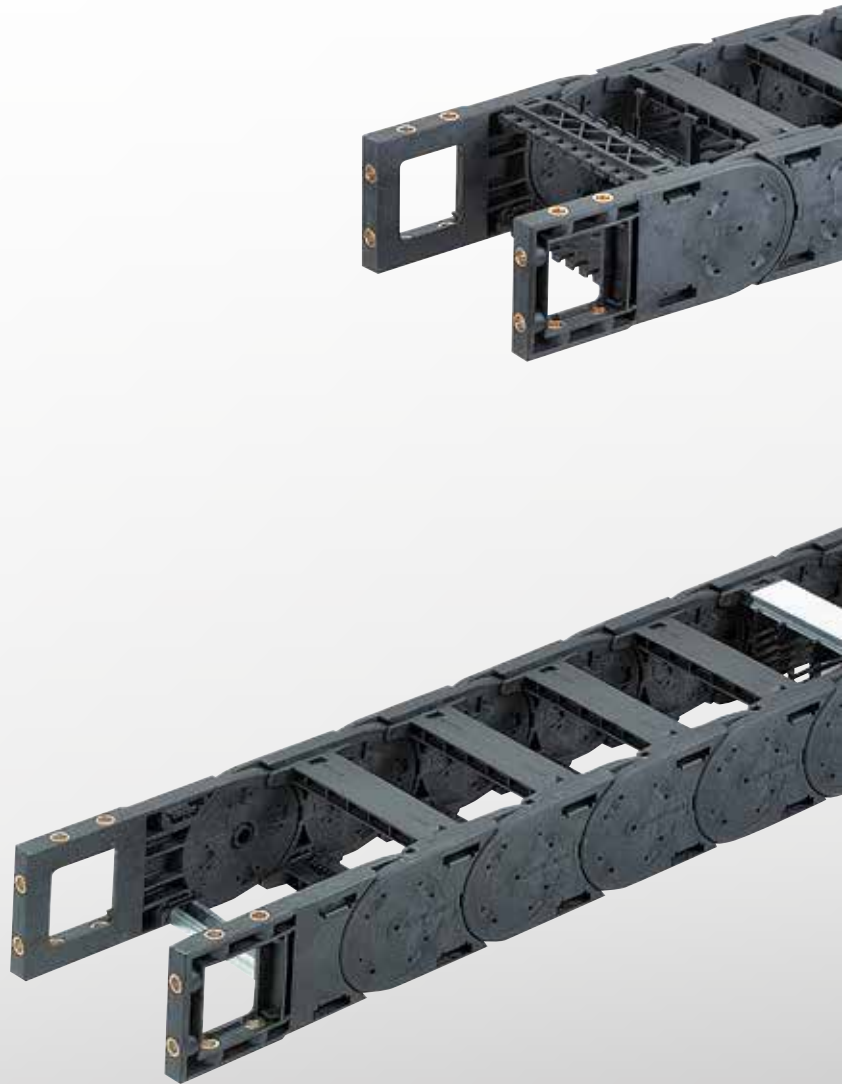
Available radii
150.0 – 500.0 mm



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 150.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 421 |
| Travel distance vertical hanging L_{vh} max. | 65.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 40.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

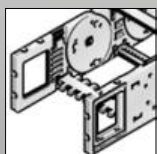
MATERIAL CHARACTERISTICS

| | |
|-------------------------|----------------------|
| 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 |

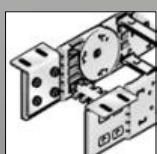
Other material characteristics on request.

SHELVING SYSTEM

CHAIN BRACKET



Chain bracket flexible



Chain bracket angle



Separator TR



RS shelving system

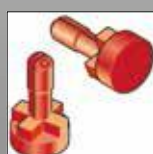


Crossbar connector RSV

ACCESSORIES



Bracket bar

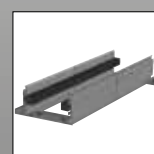


Lock button

GUIDE CHANNELS

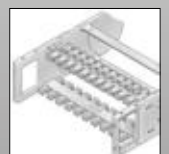


VAW galvanised steel / stainless steel

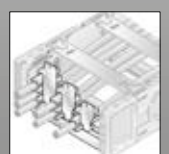


VAW aluminium

STRAIN RELIEF



RS-ZL crossbar



Steel Fix STF

ORDERING KEY

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------------|----------------------------------------|--------------|
| 0621 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 093 <small>[3.66]</small> | 125 <small>[4.92]</small> | 468 <small>[18.43]</small> | 500 <small>[19.69]</small> | 150 <small>[5.91]</small> | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 106 <small>[4.17]</small> | 138 <small>[5.43]</small> | 518 <small>[20.39]</small> | 550 <small>[21.65]</small> | | | | |
| | | 118 <small>[4.65]</small> | 150 <small>[5.91]</small> | | | 200 <small>[7.87]</small> | 1 Plastic full-ridged without bias | 9 Special version (on request) | |
| | | 131 <small>[5.16]</small> | 163 <small>[6.42]</small> | | | | | | |
| | | 143 <small>[5.63]</small> | 175 <small>[6.89]</small> | | | 250 <small>[9.84]</small> | 2 Plastic half-ridged with bias | | |
| | | 156 <small>[6.14]</small> | 188 <small>[7.40]</small> | | | | | | |
| | | 168 <small>[6.61]</small> | 200 <small>[7.87]</small> | | | 300 <small>[11.81]</small> | 3 Plastic half-ridged without bias | | |
| | | 181 <small>[7.13]</small> | 213 <small>[8.39]</small> | | | | | | |
| | | 193 <small>[7.60]</small> | 225 <small>[8.86]</small> | | | 400 <small>[15.75]</small> | 4 Aluminium full-ridged with bias | | |
| | | 206 <small>[8.11]</small> | 238 <small>[9.37]</small> | | | | | | |
| | | 218 <small>[8.58]</small> | 250 <small>[9.84]</small> | | | 500 <small>[19.69]</small> | 5 Aluminium full-ridged without bias | | |
| | | 231 <small>[9.09]</small> | 263 <small>[10.35]</small> | | | | | | |
| | | 243 <small>[9.57]</small> | 275 <small>[10.83]</small> | | | | 6 Aluminium half-ridged with bias | | |
| | | 256 <small>[10.08]</small> | 288 <small>[11.34]</small> | | | | | | |
| | | 268 <small>[10.55]</small> | 300 <small>[11.81]</small> | | | | 7 Aluminium half-ridged without bias | | |
| | | 293 <small>[11.54]</small> | 325 <small>[12.80]</small> | | | | | | |
| | | 318 <small>[12.52]</small> | 350 <small>[13.78]</small> | | | | 9 Special version (on request) | | |
| | | 343 <small>[13.50]</small> | 375 <small>[14.76]</small> | | | | | | |
| | | 368 <small>[14.49]</small> | 400 <small>[15.75]</small> | | | | | | |
| | | 418 <small>[16.46]</small> | 450 <small>[17.72]</small> | | | | | | |



ORDERING EXAMPLE: 0623 30 118 150 0 0 1600

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 118 mm; radius 150 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1600 mm (16 links)

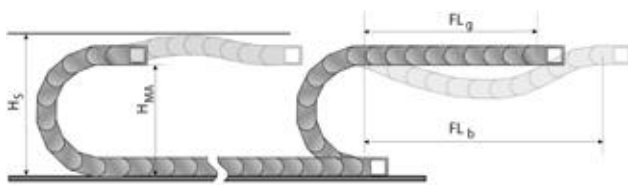
NOTE ON CONFIGURATION

Aluminium crossbars:
 Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 72.0 mm – 600.0.

Crossbar connector and crossbar strain relief plate:
 Once inside widths exceed 243 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.

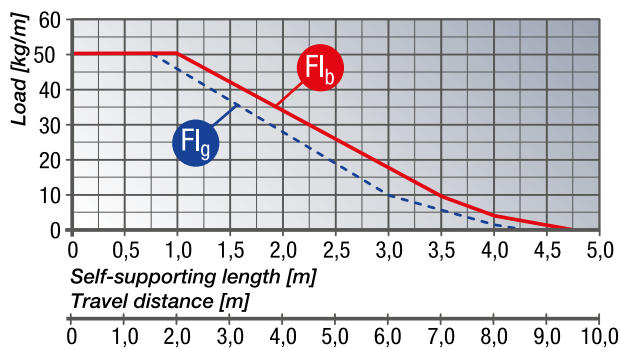
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc.
 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

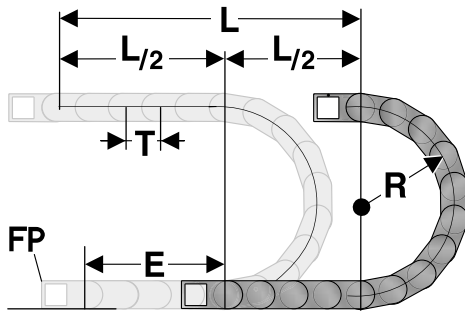
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

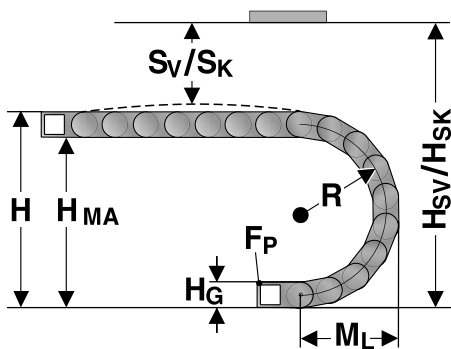


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
 1 m chain = 10 links, 100.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 100.0 mm

INSTALLATION DIMENSIONS



The moving end chain bracket 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} " 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_L) | 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 |

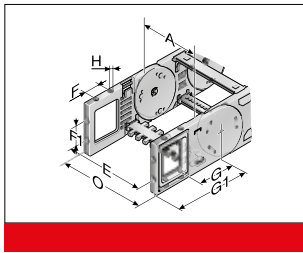
HEAVYLINE PLASTIC CROSSBAR



The crossbars connect the two side runs of the energy chain. The crossbar length is equivalent to 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 |

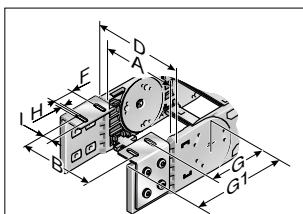
KA 62.1 FLEXIBLE CHAIN BRACKET



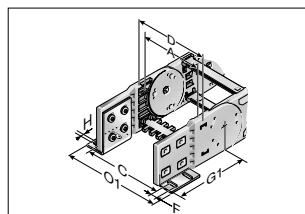
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. M8 bolts are used to secure the brackets in place. 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 | |
|---------------------|------------|----------|-------------|--------------|--------|------|-------|-------|-------|------|---------------|---------|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | H mm | Ø H mm | KA 0 mm |
| KA 62-FB Female end | 0620000056 | Plastic | with socket | 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 socket | 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 | |

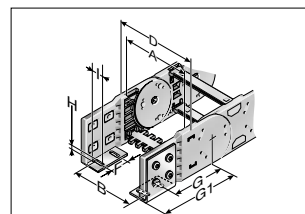
KA 62.1 CHAIN BRACKET ANGLE



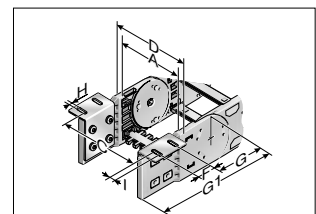
KA 62 (inside up)



KA 62 (outside down)



KA 62 (inside down)



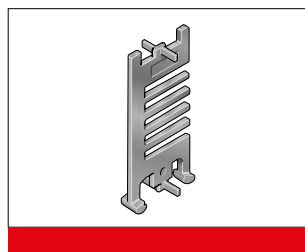
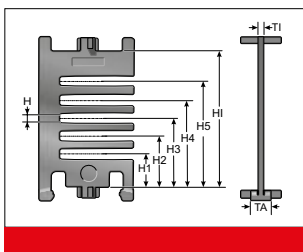
KA 62 (outside up)

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 energy chain requires one male and one female bracket. M8 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 | Inside width | | | | | | | | Outside width | | |
|------------------|------------|-------------|--------------|--------|--------|------|-------|-------|-------|--------|---------------|---------|----------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | G2 mm | Ø H mm | I mm | KA 0 mm | KA 01 mm |
| KA 62 Female end | 0620000050 | Sheet steel | 93.0 – 518.0 | A-12.0 | A+44.0 | 45.0 | 102.0 | 158.0 | 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 | 158.0 | 171.5 | 9.0 | 15.0 | A+32.0 | A+90.0 |

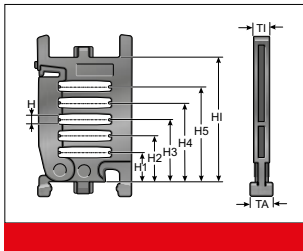
TR 62 SEPARATOR



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

| Type | Order No. | Description | Version | T1 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 |

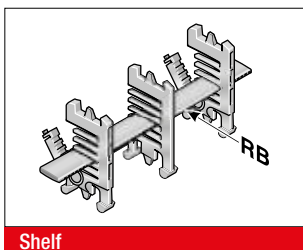
RTT 62 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting 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 | 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



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

| Type | Order No. | Description | Width mm | for inner 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-7 SHELF

| Type | Order No. | Description | Width mm | for inner width mm |
|----------|-------------|-------------|----------|--------------------|
| 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 | 10000021600 | Shelf | 216.0 | 218.0 |

RSV 62 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| 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



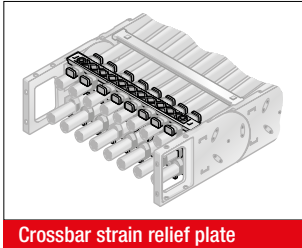
Large-diameter conduits are routed securely by using a bracket bar (BS). The bracket bar can be installed on the inside or outside bend of the energy chain.

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

The mounting on the aluminum or plastic lids or on the frame rails of the HeavyLine series is carried out with the help of the fastening set of the U-rail RS-5 / RS-7. A mounting set is 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 for bracket bar | 052400000001 | Assembly set for bracket bar | | | |

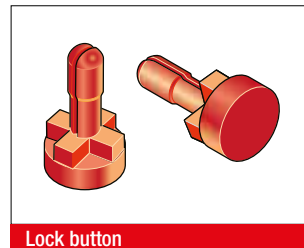
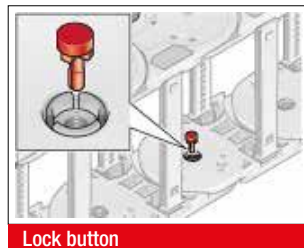
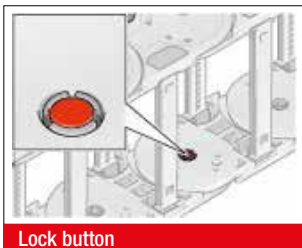
RS-ZL-7 CROSSBAR STRAIN RELIEF



Fixed integrated crossbar strain relief plates in the chain brackets. Accommodated to all widths of the crossbars, up to 256 mm in size. Can be assembled on the inside and outside bends at both chain ends.

| Type | Order No. | Description | for inner 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

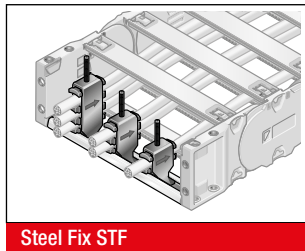
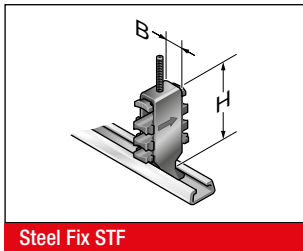


To increase the side stability, we recommend the use of lock buttons during strong lateral acceleration or when installed

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

| Type | Order No. |
|------------------------|------------|
| MP52/62/72 lock button | 0520000080 |

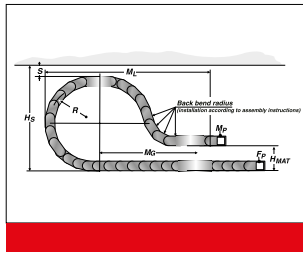
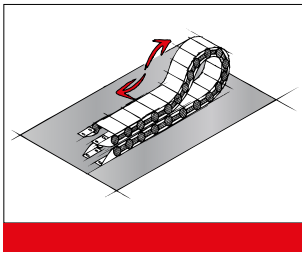
STRAIN RELIEF MP STEEL FIX



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

MP 62 LOWERED FIXING POINT



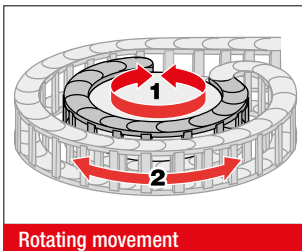
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _S) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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

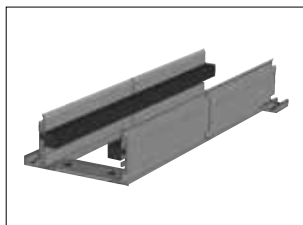
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

| 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

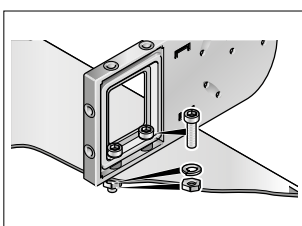


VAW aluminium

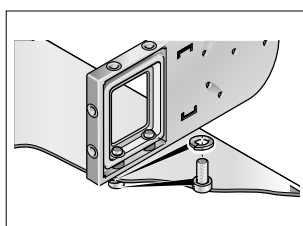
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain.

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

ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



Chain bracket FB



Chain bracket FG

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

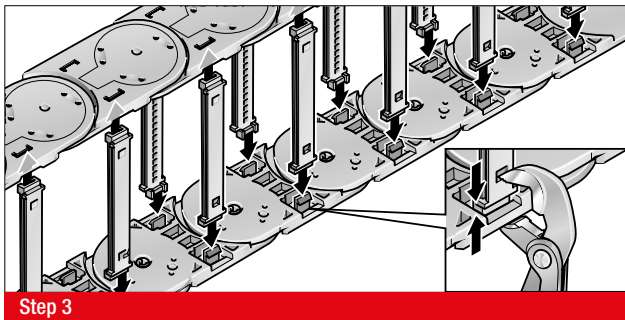
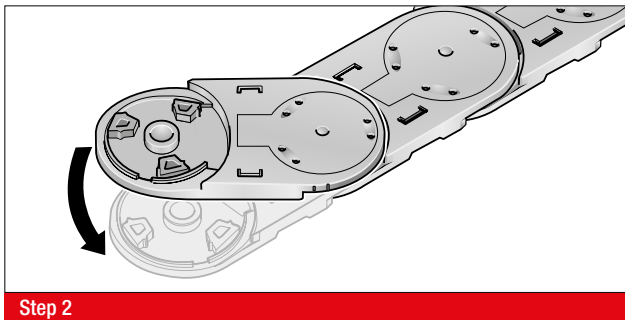
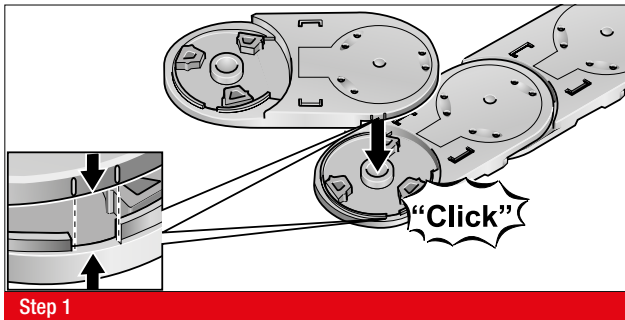
Type KA-FB:

Integrated through-hole is fastened using screw and nut.

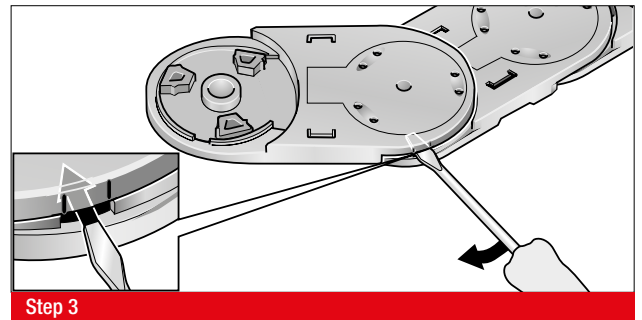
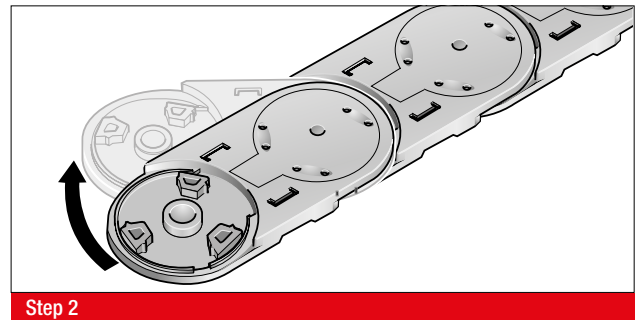
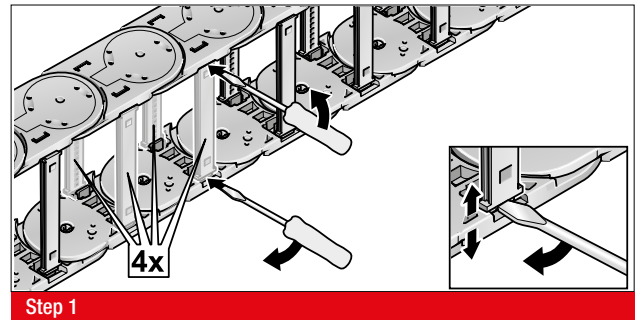
Type KA-FG:

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

ASSEMBLY



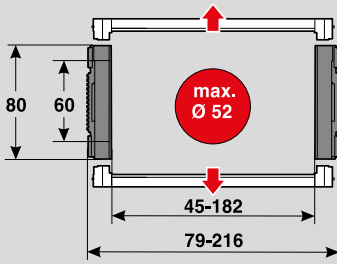
DISASSEMBLY



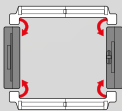
MP 66 OPEN



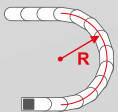
- PLASTIC OR ALUMINIUM VERSION
- METAL CHAIN BRACKET
- TO BE OPENED FROM INSIDE AND OUTSIDE BEND



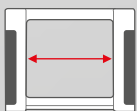
TECHNICAL DATA



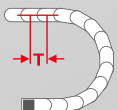
Loading side
Inside and outside bend



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 60.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 435 |
| 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 ² |
| Acceleration self-supporting a_f max. | 20.0 m/s ² |

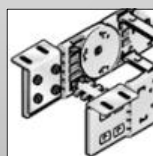
Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

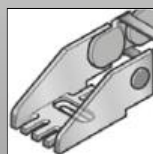
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | According to 94 HB |

Other material characteristics on request.

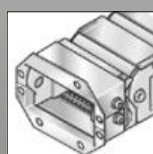
CHAIN BRACKET



Chain bracket angle

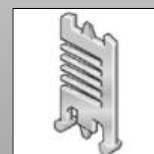


Chain bracket U-part

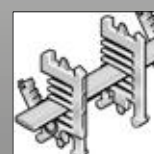


Chain bracket flange

SHELVING SYSTEM



Separator TR



RS shelving system

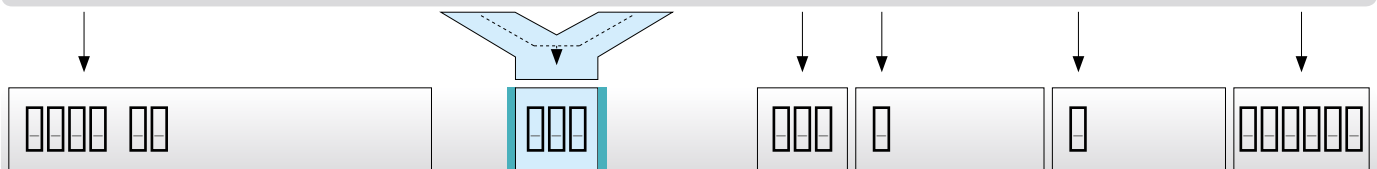
GUIDE CHANNELS



VAW aluminium

ORDERING KEY

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|--------------------------------------------------------------------------------------------------|----------------------|----------------------|--------------|---------------|-----------------------|---------------------------------------------|----------------------------------------|--------------|--|--|----------------------|----------------------|--|--|-----------------------|---------------------------------------------|---------------------------------------|--|--|--|----------------------|----------------------|--|--|--|--|----------------------|----------------------|--|--|-----------------------|---------------------------------------------|--|--|--|--|----------------------|----------------------|--|--|--|--|--|--|--|--|-----------------------|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------------|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------------|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------------------------------|--|--|
| 0660 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 045 [1.77] | 079 [3.11] | | | 150 [5.91] | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 062 [2.44] | 096 [3.78] | | | | | | | | | 084 [3.31] | 118 [4.65] | | | 200 [7.87] | 1 Plastic full-ridged without bias | 9 Special version (on request) | | | | 105 [4.13] | 139 [5.47] | | | | | 144 [5.67] | 178 [7.01] | | | 240 [9.45] | 2 Plastic half-ridged with bias | | | | | 182 [7.17] | 216 [8.50] | | | | | | | | | 280 [11.02] | 3 Plastic half-ridged without bias | | | | | | | | | | | | | | | 350 [13.78] | 4 Aluminium full-ridged with bias | | | | | | | | | | | | | | | 400 [15.75] | 5 Aluminium full-ridged without bias | | | | | | | | | | | | | | | | 6 Aluminium half-ridged with bias | | | | | | | | | | | | | | | | 7 Aluminium half-ridged without bias | | | | | | | | | | | | | | | | 9 Special version (on request) | | |
| | | 084 [3.31] | 118 [4.65] | | | 200 [7.87] | 1 Plastic full-ridged without bias | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 105 [4.13] | 139 [5.47] | | | | | | | | | 144 [5.67] | 178 [7.01] | | | 240 [9.45] | 2 Plastic half-ridged with bias | | | | | 182 [7.17] | 216 [8.50] | | | | | | | | | 280 [11.02] | 3 Plastic half-ridged without bias | | | | | | | | | | | | | | | 350 [13.78] | 4 Aluminium full-ridged with bias | | | | | | | | | | | | | | | 400 [15.75] | 5 Aluminium full-ridged without bias | | | | | | | | | | | | | | | | 6 Aluminium half-ridged with bias | | | | | | | | | | | | | | | | 7 Aluminium half-ridged without bias | | | | | | | | | | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | |
| | | 144 [5.67] | 178 [7.01] | | | 240 [9.45] | 2 Plastic half-ridged with bias | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 182 [7.17] | 216 [8.50] | | | | | | | | | | | | | 280 [11.02] | 3 Plastic half-ridged without bias | | | | | | | | | | | | | | | 350 [13.78] | 4 Aluminium full-ridged with bias | | | | | | | | | | | | | | | 400 [15.75] | 5 Aluminium full-ridged without bias | | | | | | | | | | | | | | | | 6 Aluminium half-ridged with bias | | | | | | | | | | | | | | | | 7 Aluminium half-ridged without bias | | | | | | | | | | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 280 [11.02] | 3 Plastic half-ridged without bias | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 350 [13.78] | 4 Aluminium full-ridged with bias | | | | | | | | | | | | | | | 400 [15.75] | 5 Aluminium full-ridged without bias | | | | | | | | | | | | | | | | 6 Aluminium half-ridged with bias | | | | | | | | | | | | | | | | 7 Aluminium half-ridged without bias | | | | | | | | | | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 350 [13.78] | 4 Aluminium full-ridged with bias | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 400 [15.75] | 5 Aluminium full-ridged without bias | | | | | | | | | | | | | | | | 6 Aluminium half-ridged with bias | | | | | | | | | | | | | | | | 7 Aluminium half-ridged without bias | | | | | | | | | | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | 400 [15.75] | 5 Aluminium full-ridged without bias | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 6 Aluminium half-ridged with bias | | | | | | | | | | | | | | | | 7 Aluminium half-ridged without bias | | | | | | | | | | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 6 Aluminium half-ridged with bias | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 7 Aluminium half-ridged without bias | | | | | | | | | | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 7 Aluminium half-ridged without bias | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 9 Special version (on request) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



ORDERING EXAMPLE: 0660 30 045 150 0 0 1556

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 45 mm; radius 150 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1556 mm (17 links)

NOTE ON CONFIGURATION

Aluminium crossbars:

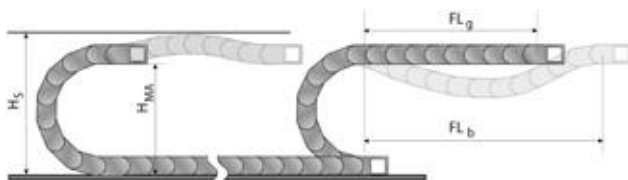
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 77.0 mm – 600.0.

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

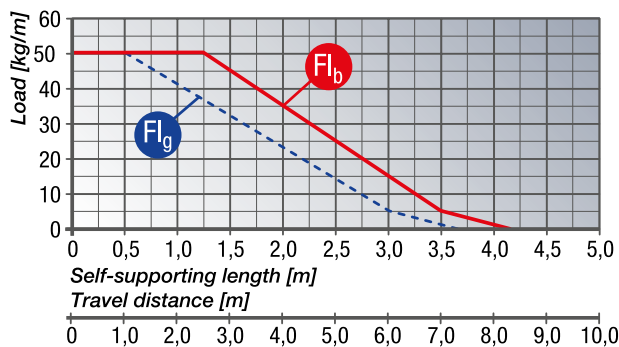


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. The installation variant FL_g offers the lowest load and wear for the energy chain.

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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



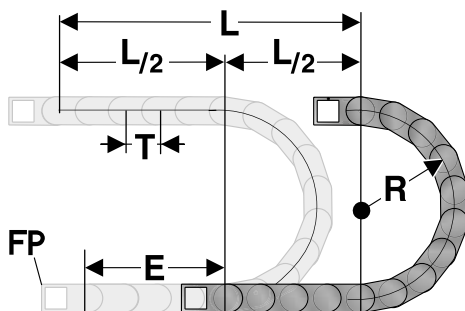
FL_g Self-supporting length, upper run straight

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



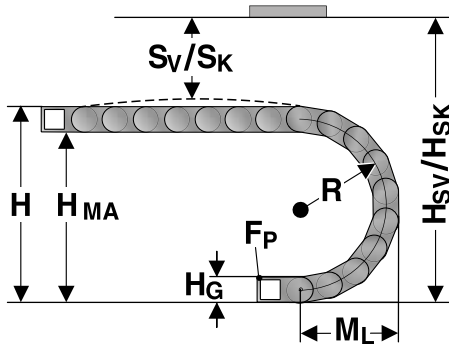
The fixed point of the energy chain should be placed in the middle of the travel distance.

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 = $L/2 + \pi * R + E$
 1 m chain = 11 links, 91.5 mm each

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

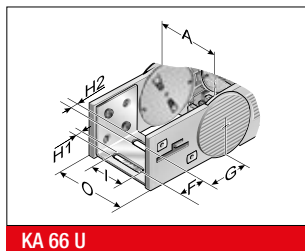
INSTALLATION DIMENSIONS



The moving end chain bracket 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} ” 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 | 240 | 280 | 350 | 400 |
|-----------------------------------------------|-----|-----|-----|-----|-----|-----|
| Outside height of chain link (H_c) | 80 | 80 | 80 | 80 | 80 | 80 |
| Height of bend (H) | 380 | 480 | 560 | 640 | 780 | 880 |
| Height of moving end bracket (H_{MA}) | 300 | 400 | 480 | 560 | 700 | 800 |
| Safety margin with bias (S_v) | 50 | 50 | 50 | 50 | 50 | 50 |
| Installation height with bias (H_{SV}) | 430 | 530 | 610 | 690 | 830 | 930 |
| Safety margin without bias (S_k) | 15 | 15 | 15 | 15 | 15 | 15 |
| Installation height without bias (H_{SK}) | 395 | 495 | 575 | 655 | 795 | 895 |
| Arc projection (M_L) | 282 | 332 | 372 | 412 | 482 | 532 |

CHAIN BRACKET U-PART KA 66

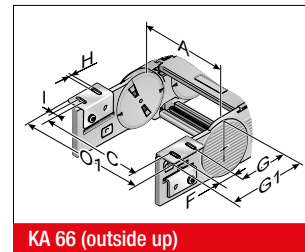
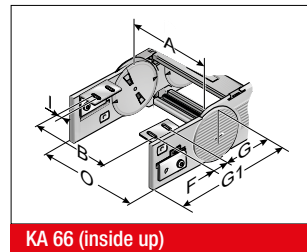
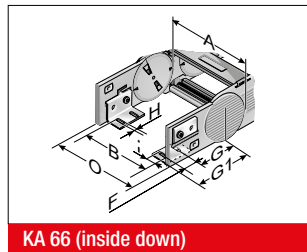
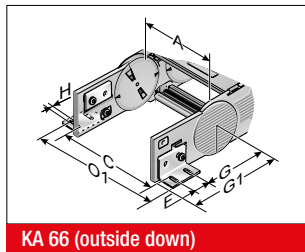


The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fastened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

KA 66 U

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

KA 66 CHAIN BRACKET ANGLE

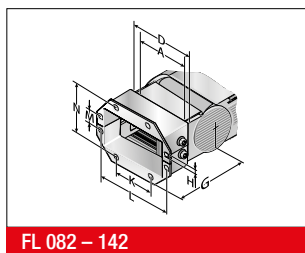


There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. However, any other combination can be supplied upon request. The chain bracket

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 | |
|-------|------------|------------------------|--------------|--------|--------|------|------|-------|--------|------|---------------|----------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | Ø H mm | I mm | KA 0 mm | KA 01 mm |
| KA 66 | 0660000050 | Sheet steel | 62.0 – 182.0 | A-17.0 | A+51.0 | 45.0 | 50.5 | 105.5 | 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 | 105.5 | 9.0 | 10.0 | A+34.0 | A+64.0 |

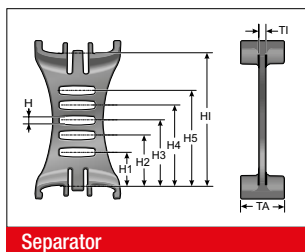
KA 65 G END BRACKETS FLANGE



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.

| Type | Order No. | Material | Inside width | | | | | | |
|--------|------------|------------------------|--------------|-------|--------|-------|-------|------|-------|
| | | | A mm | G mm | Ø H 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 |

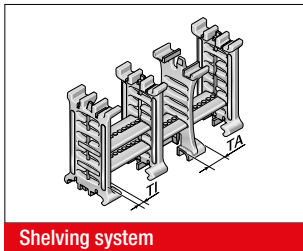
TR 66 SEPARATOR



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 |
|-------|--------------|-------------|----------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| 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

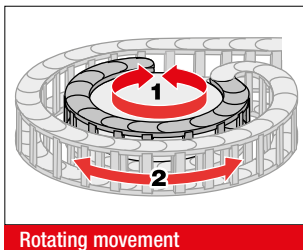


Shelving system

In connection with at least two shelf supports the shelf becomes a shelving system. The additional friction levels prevent the cables from twisting and minimise the friction between them. The shelving system may be pre-assembled 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



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)

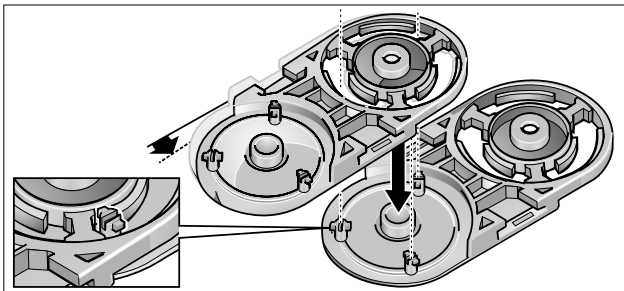


VAW aluminium

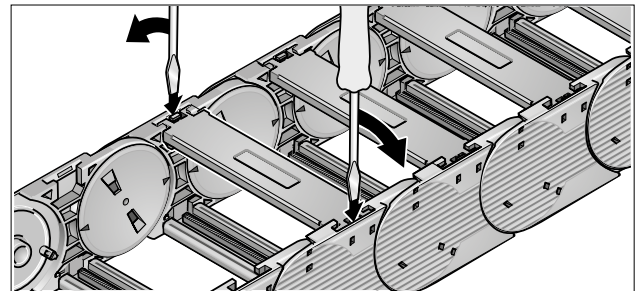
A variable guide channel system, constructed from aluminium sections, is available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely.

ASSEMBLY

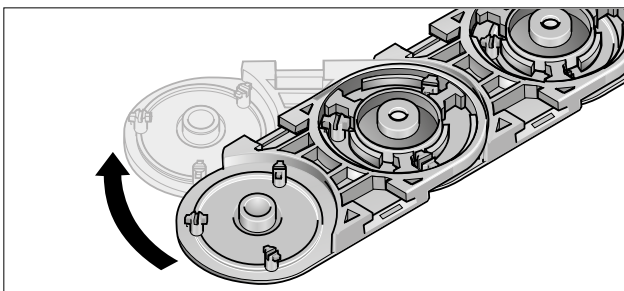
DISASSEMBLY



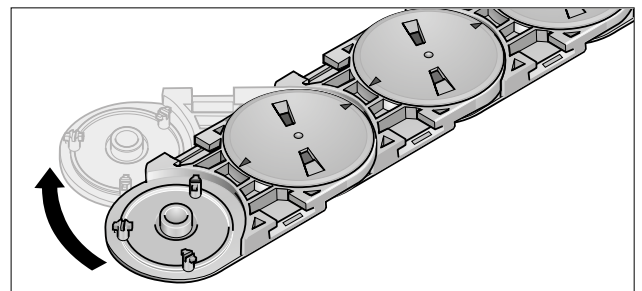
Step 1



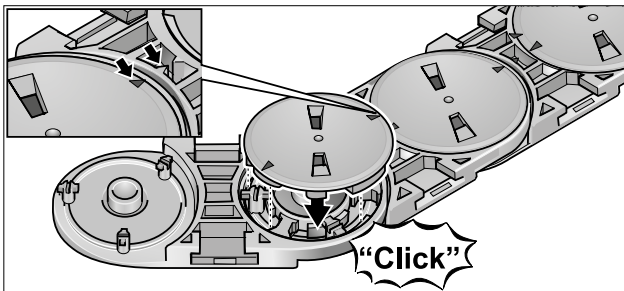
Step 1



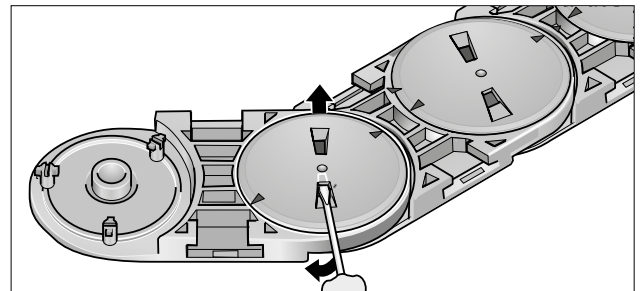
Step 2



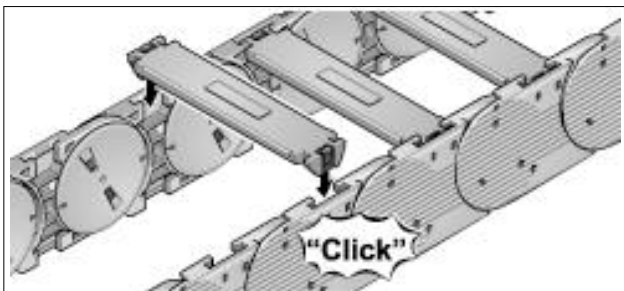
Step 2



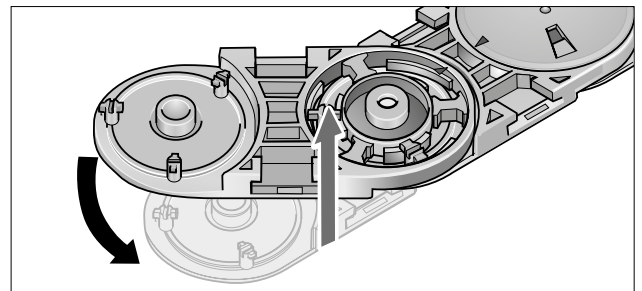
Step 3



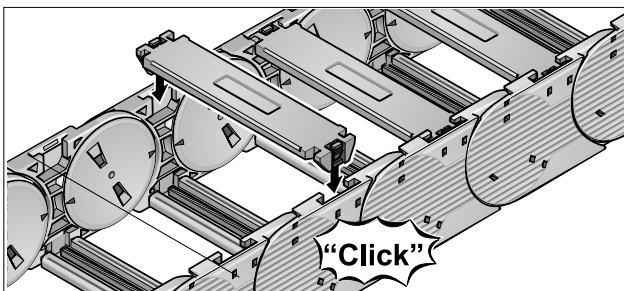
Step 3



Step 4



Step 4

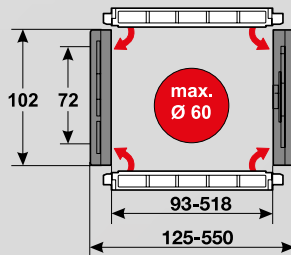


Step 5

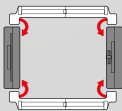
MP 72 OPEN



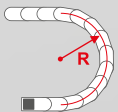
- PLASTIC OR ALUMINIUM VERSION
- FLEXIBLE CHAIN BRACKET



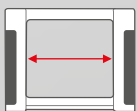
TECHNICAL DATA



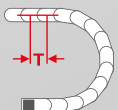
Loading side
Inside and outside bend



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 SPECIFICATION

| | |
|------------------------------------------------|-------------------------|
| Travel distance gliding L_g max. | 150.0 m |
| Travel distance self-supporting L_f max. | see diagram on page 443 |
| Travel distance vertical hanging L_{vh} max. | 80.0 m |
| Travel distance vertical upright L_{vs} max. | 6.0 m |
| Rotated 90°, unsupported: L_{90} 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 ² |
| Acceleration self-supporting a_f max. | 40.0 m/s ² |

Contact our engineering department to meet any higher requirements: efk@murrplastik.de

MATERIAL CHARACTERISTICS

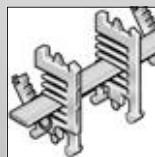
| | |
|-------------------------|----------------------|
| Standard material | Polyamide (PA) black |
| Service temperature | -30.0 – 120.0 °C |
| Gliding friction factor | 0.3 |
| Static friction factor | 0.45 |
| Fire classification | UL 94 HB |

Other material characteristics on request.

SHELVING SYSTEM

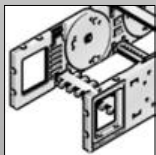


Separator TR



RS shelving system

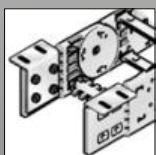
CHAIN BRACKET



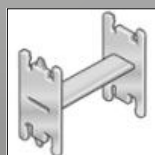
Chain bracket flexible



Crossbar connector RSV

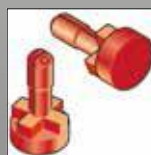


Chain bracket angle



H-shaped shelf unit (RE)

ACCESSORIES

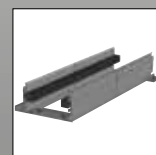


Lock button

GUIDE CHANNELS

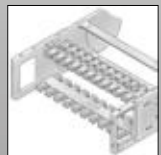


VAW galvanised steel / stainless steel

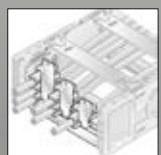


VAW aluminium

STRAIN RELIEF



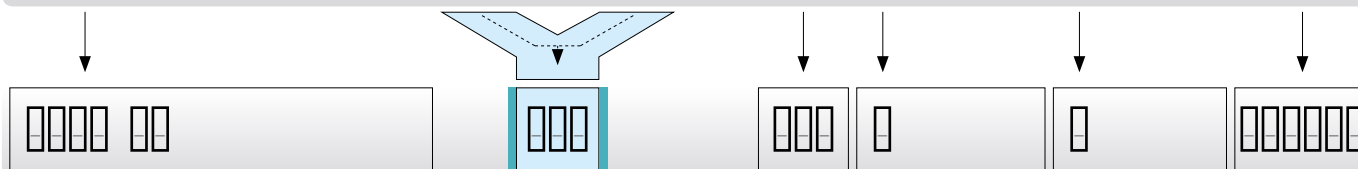
RS-ZL crossbar



Steel Fix STF

ORDERING KEY

| Type code | Variant | Inside width | Outside width | Inside width | Outside width | Radius | Crossbar variant | Material | Chain length |
|----------------|--------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|------------------------------------------|----------------------------------------|--------------|
| 0720 30 | Crossbar on outside bend Crossbar on inside bend To be opened from inside and outside bend | 093 <small>[3.66]</small> | 125 <small>[4.92]</small> | 468 <small>[18.43]</small> | 500 <small>[19.69]</small> | 150 <small>[5.91]</small> | 0 Plastic full-ridged with bias | 0 Polyamide standard (PA/black) | |
| | | 106 <small>[4.17]</small> | 138 <small>[5.43]</small> | 518 <small>[20.39]</small> | 550 <small>[21.65]</small> | | | | |
| | | 118 <small>[4.65]</small> | 150 <small>[5.91]</small> | | | 200 <small>[7.87]</small> | 2 Plastic half-ridged with bias | 9 Special version (on request) | |
| | | 131 <small>[5.16]</small> | 163 <small>[6.42]</small> | | | | | | |
| | | 143 <small>[5.63]</small> | 175 <small>[6.89]</small> | | | 250 <small>[9.84]</small> | 4 Aluminium full-ridged with bias | | |
| | | 156 <small>[6.14]</small> | 188 <small>[7.40]</small> | | | | | | |
| | | 168 <small>[6.61]</small> | 200 <small>[7.87]</small> | | | 300 <small>[11.81]</small> | 6 Aluminium half-ridged with bias | | |
| | | 181 <small>[7.13]</small> | 213 <small>[8.39]</small> | | | | | | |
| | | 193 <small>[7.60]</small> | 225 <small>[8.86]</small> | | | 400 <small>[15.75]</small> | 9 Special version (on request) | | |
| | | 206 <small>[8.11]</small> | 238 <small>[9.37]</small> | | | | | | |
| | | 218 <small>[8.58]</small> | 250 <small>[9.84]</small> | | | 500 <small>[19.69]</small> | | | |
| | | 231 <small>[9.09]</small> | 263 <small>[10.35]</small> | | | | | | |
| | | 243 <small>[9.57]</small> | 275 <small>[10.83]</small> | | | | | | |
| | | 256 <small>[10.08]</small> | 288 <small>[11.34]</small> | | | | | | |
| | | 268 <small>[10.55]</small> | 300 <small>[11.81]</small> | | | | | | |
| | | 293 <small>[11.54]</small> | 325 <small>[12.80]</small> | | | | | | |
| | | 318 <small>[12.52]</small> | 350 <small>[13.78]</small> | | | | | | |
| | | 343 <small>[13.50]</small> | 375 <small>[14.76]</small> | | | | | | |
| | | 368 <small>[14.49]</small> | 400 <small>[15.75]</small> | | | | | | |
| | | 418 <small>[16.46]</small> | 450 <small>[17.72]</small> | | | | | | |



ORDERING EXAMPLE: 0720 30 118 150 0 0 1600

Crossbar on outside bend, crossbar on inside bend, to be opened from inside and outside bend
 Inside width 118 mm; radius 150 mm
 Plastic bridge, full-ridged with bias, material black-coloured polyamide
 Chain length 1600 mm (16 links)

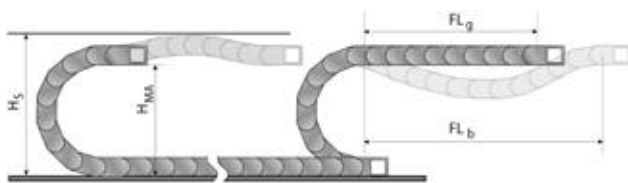
NOTE ON CONFIGURATION

Aluminium crossbars:
Aluminium crossbars can be supplied in 1 mm width sizes for inner widths from 72.0 mm – 600.0.

Crossbar connector and crossbar strain relief plate:
Once inside widths exceed 243 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.

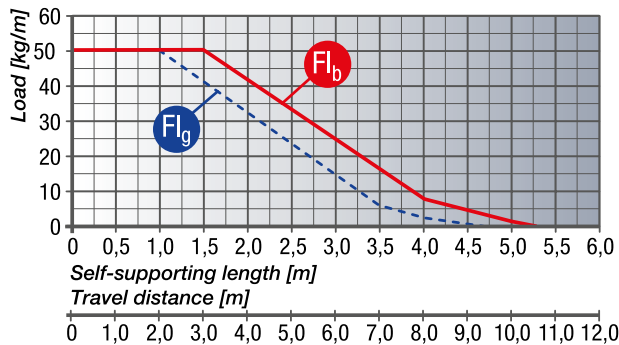
SELF-SUPPORTING LENGTH



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arc. 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 bracket
- FL_g = Self-supporting length, upper run straight
- FL_b = Self-supporting length, upper run bent

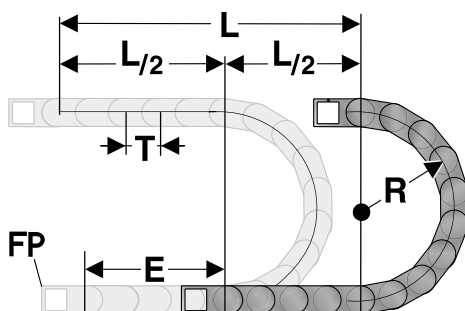
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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_g 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

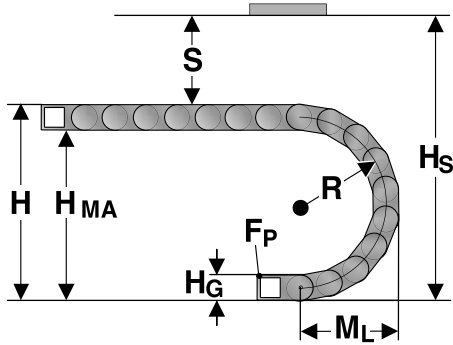


The fixed point of the energy chain should be placed in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

Chain length calculation = $L/2 + \pi * R + E$
1 m chain = 10 links, 100.0 mm each

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- T = Pitch 100.0 mm

INSTALLATION DIMENSIONS



The moving end chain bracket 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 |

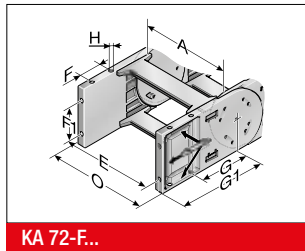
HEAVYLINE PLASTIC CROSSBAR



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

| Type | Order No. | Description | Internal 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 |

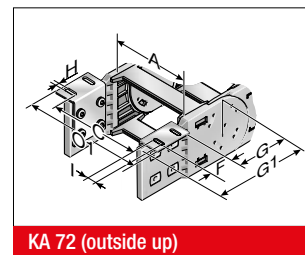
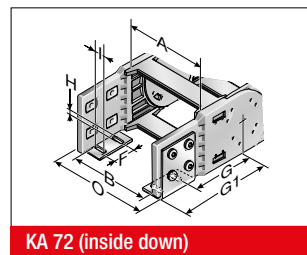
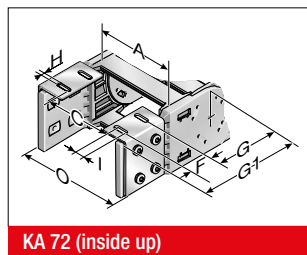
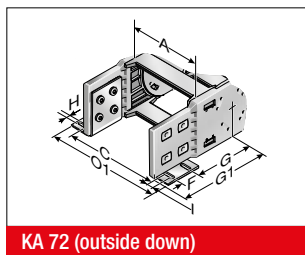
KA 72 FLEXIBLE CHAIN BRACKET



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 energy 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 | |
|--------------------|------------|----------|-------------|--------------|--------|------|-------|-------|-------|--------|---------------|--|
| | | | | A mm | E mm | F mm | F1 mm | G mm | G1 mm | Ø H mm | KA 0 mm | |
| KA 72-F Female end | 0720000054 | Plastic | with socket | 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 socket | 93.0 – 518.0 | A+11.0 | 35.0 | 45.0 | 107.0 | 171.5 | 11.0 | A+32.0 | |

KA 72 CHAIN BRACKET ANGLE

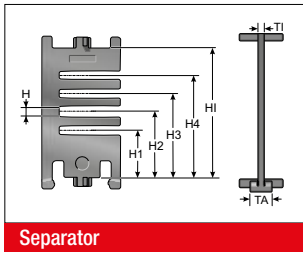


There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) are included in the standard supply. However, any other combination can be supplied upon request. The chain

bracket is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each energy chain requires one male and one female bracket. The brackets should be fastened with M8 screws.

| Type | Order No. | Material | Inside width | | | | | | | | Outside width | | |
|------------------|------------|-------------|--------------|--------|--------|------|-------|-------|-------|--------|---------------|---------|----------|
| | | | A mm | B mm | C mm | F mm | G mm | G1 mm | G2 mm | Ø H mm | I mm | KA 0 mm | KA 01 mm |
| KA 72 Female end | 0720000050 | Sheet steel | 93.0 – 518.0 | A-16.0 | A+48.0 | 45.0 | 106.0 | 166.0 | 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 | 166.0 | 179.5 | 9.0 | 32.0 | A+32.0 | A+126.0 |

TR 72 SEPARATOR

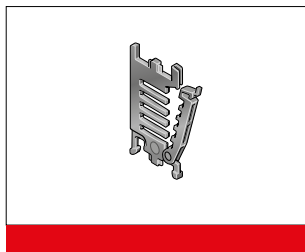
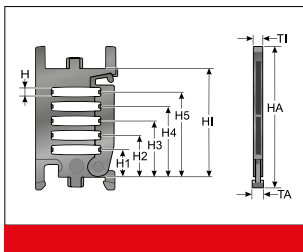


Separator

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 | H1 mm |
|-------|--------------|-------------|----------|----------|----------|---------|----------|----------|----------|----------|----------|
| TR 72 | 072000009200 | Separator | lockable | 3.5 | 13.0 | 5.5 | 25.5 | 36.0 | 46.5 | 57.0 | 72.0 |

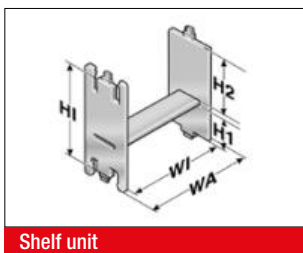
RTT 72 SHELF SUPPORT, DIVISIBLE



Two separable shelf supports (RTT) in combination with at least one shelf (RB) provide an easy to fill shelving system. The additional levels prevent the cables from twisting and minimise the friction between them.

| Type | Order No. | Description | Version | T1 mm | TA mm | H mm | H1 mm | H2 mm | H3 mm | H4 mm | H5 mm | H1 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 |

RE 72 H-SHAPED SHELF UNIT

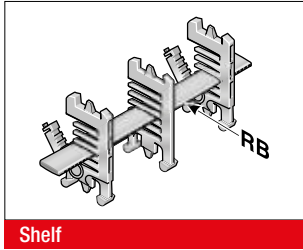


Shelf unit

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

| Type | Order No. | Description | WA mm | WI mm | H1 mm | H2 mm | H1 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 |

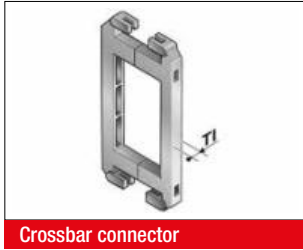
RB-7 SHELF



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

| Type | Order No. | Description | Width mm | for inner 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 |

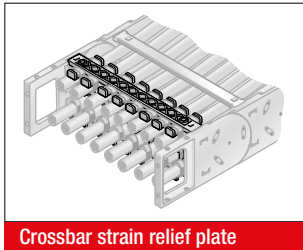
RSV 72 CROSSBAR CONNECTOR



For crossbars wider than 246 mm, we recommend the use of crossbar connectors. Their use prevents the crossbar from separating due to the extra load in the chain.

| Type | Order No. | Description | Tl mm |
|------------|--------------|--------------------------------------------|----------|
| RSV 72 | 072000009600 | Crossbar connector | 8.0 |
| RSV 72 Alu | 072000009800 | Crossbar connector for aluminium crossbars | 8.0 |

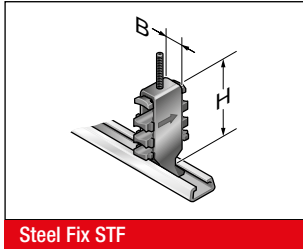
RS-ZL-7 CROSSBAR STRAIN RELIEF



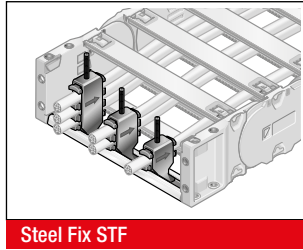
Fixed integrated crossbar strain relief plates in the chain brackets. Accommodated to all widths of the crossbars, up to 256 mm in size. Can be assembled on the inside and outside bends at both chain ends.

| Type | Order No. | Description | for inner 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 MP STEEL FIX



Steel Fix STF

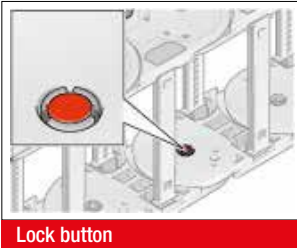


Steel Fix STF

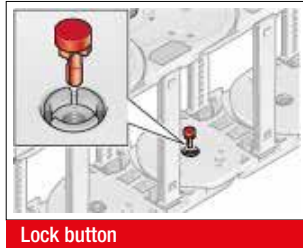
C-rails (galvanised) can be permanently integrated to hold the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 11 mm. Due to the design of the channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends. The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.

| Type | Order No. | Description | Holders pcs. | Cable Ø mm | Width (B) mm | Total height (H) mm |
|----------------------------------------|-----------|-------------|--------------|-------------|--------------|---------------------|
| Single clamp (for one cable) | | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | Bow clamp | 1 | 6.0 – 12.0 | 16.0 | 53.0 |
| STF MP 14-1 Steel Fix | 80661802 | Bow clamp | 1 | 12.0 – 14.0 | 18.0 | 52.0 |
| STF MP 16-1 Steel Fix | 80661803 | Bow clamp | 1 | 14.0 – 16.0 | 20.0 | 54.0 |
| STF MP 18-1 Steel Fix | 80661804 | Bow clamp | 1 | 16.0 – 18.0 | 22.0 | 56.0 |
| STF MP 20-1 Steel Fix | 80661805 | Bow clamp | 1 | 18.0 – 20.0 | 24.0 | 59.0 |
| STF MP 22-1 Steel Fix | 80661806 | Bow clamp | 1 | 20.0 – 22.0 | 26.0 | 61.0 |
| STF MP 26-1 Steel Fix | 80661807 | Bow clamp | 1 | 22.0 – 26.0 | 30.0 | 70.0 |
| STF MP 30-1 Steel Fix | 80661808 | Bow clamp | 1 | 26.0 – 30.0 | 34.0 | 74.0 |
| STF MP 34-1 Steel Fix | 80661809 | Bow clamp | 1 | 30.0 – 34.0 | 38.0 | 78.0 |
| STF MP 38-1 Steel Fix | 80661810 | Bow clamp | 1 | 34.0 – 38.0 | 42.0 | 82.0 |
| STF MP 42-1 Steel Fix | 80661811 | Bow clamp | 1 | 38.0 – 42.0 | 46.0 | 87.0 |
| Double clamp (for two cables) | | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | Bow clamp | 2 | 6.0 – 12.0 | 16.0 | 73.0 |
| STF MP 14-2 Steel Fix | 80661822 | Bow clamp | 2 | 12.0 – 14.0 | 18.0 | 74.0 |
| STF MP 16-2 Steel Fix | 80661823 | Bow clamp | 2 | 14.0 – 16.0 | 20.0 | 81.0 |
| STF MP 18-2 Steel Fix | 80661824 | Bow clamp | 2 | 16.0 – 18.0 | 22.0 | 85.0 |
| STF MP 20-2 Steel Fix | 80661825 | Bow clamp | 2 | 18.0 – 20.0 | 24.0 | 89.0 |
| STF MP 22-2 Steel Fix | 80661826 | Bow clamp | 2 | 20.0 – 22.0 | 26.0 | 93.0 |
| STF MP 26-2 Steel Fix | 80661827 | Bow clamp | 2 | 22.0 – 26.0 | 30.0 | 108.0 |
| STF MP 30-2 Steel Fix | 80661828 | Bow clamp | 2 | 26.0 – 30.0 | 34.0 | 119.0 |
| STF MP 34-2 Steel Fix | 80661829 | Bow clamp | 2 | 30.0 – 34.0 | 38.0 | 127.0 |
| Triple clamp (for three cables) | | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | Bow clamp | 3 | 6.0 – 12.0 | 16.0 | 97.0 |
| STF MP 14-3 Steel Fix | 80661842 | Bow clamp | 3 | 12.0 – 14.0 | 18.0 | 98.0 |
| STF MP 16-3 Steel Fix | 80661843 | Bow clamp | 3 | 14.0 – 16.0 | 20.0 | 104.0 |
| STF MP 18-3 Steel Fix | 80661844 | Bow clamp | 3 | 16.0 – 18.0 | 22.0 | 111.0 |
| STF MP 20-3 Steel Fix | 80661845 | Bow clamp | 3 | 18.0 – 20.0 | 24.0 | 118.0 |
| STF MP 22-3 Steel Fix | 80661846 | Bow clamp | 3 | 20.0 – 22.0 | 26.0 | 124.0 |

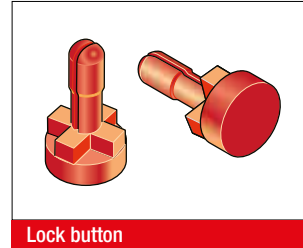
MP 52/62/72 LOCK BUTTON



Lock button



Lock button



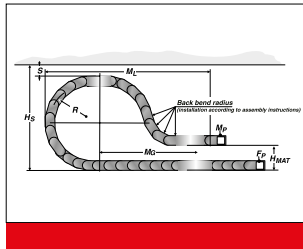
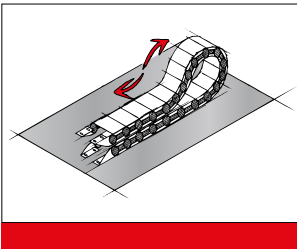
Lock button

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



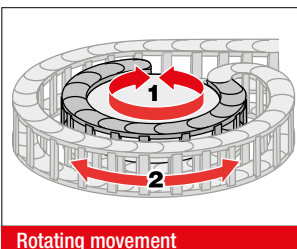
Sometimes it is required to lower the height of the moving end bracket for longer travel distances.

In this case, modifications to the chain layout should be considered (e.g. extension of the chain).

Please contact our application engineers.

| Radius R mm | Height of moving end bracket (H _{MA}) mm | Safety margin (S) mm | Installation height incl. safety (H _s) mm | Projection (M ₁) mm | Additional links pcs. | of which additional rearward chain links pcs. |
|----------------|----------------------------------------------------------|-------------------------|-------------------------------------------------------------|------------------------------------|--------------------------|-----------------------------------------------------|
| 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.

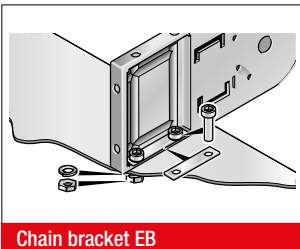
| Type | Order No. | Radius mm | Rearward radius mm |
|--------------------------|--------------|--------------|-----------------------|
| SR 72 (RÜ300/R300) left | 072000030060 | 300.0 | 300.0 |
| SR 72 (RÜ300/R300) right | 072000030062 | 300.0 | 300.0 |

GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



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.

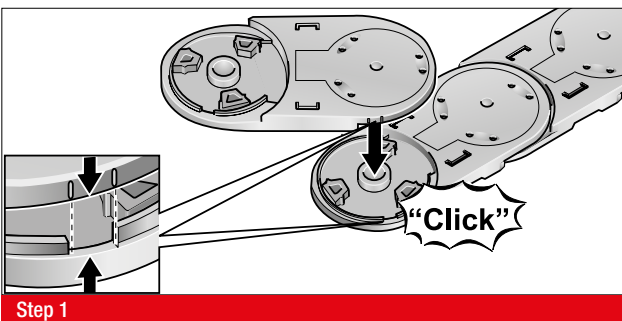
ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET EB



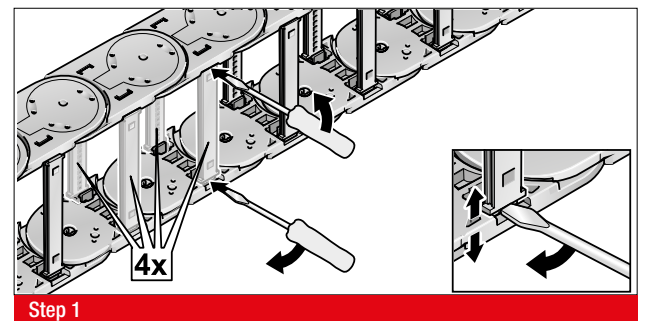
The flexible chain bracket is delivered with insert panels to reduce the plastic's cold flow properties.

ASSEMBLY

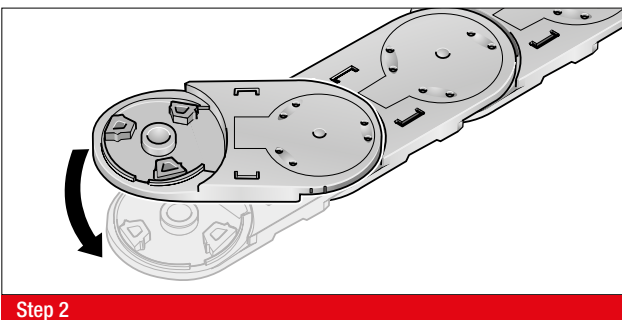
DISASSEMBLY



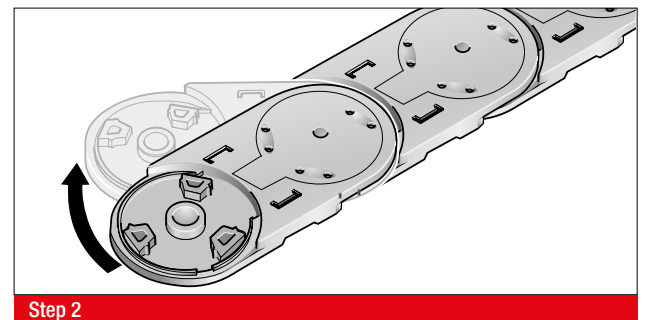
Step 1



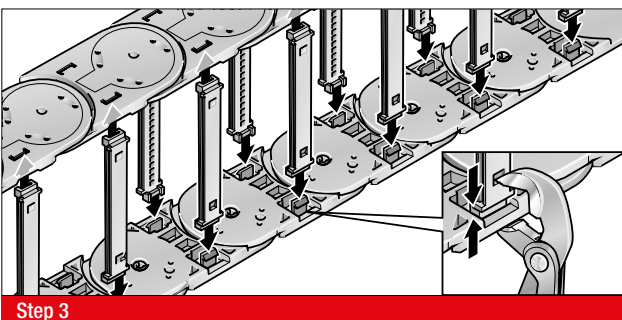
Step 1



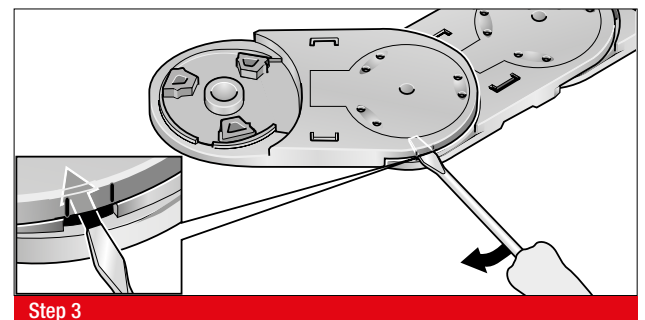
Step 2



Step 2



Step 3

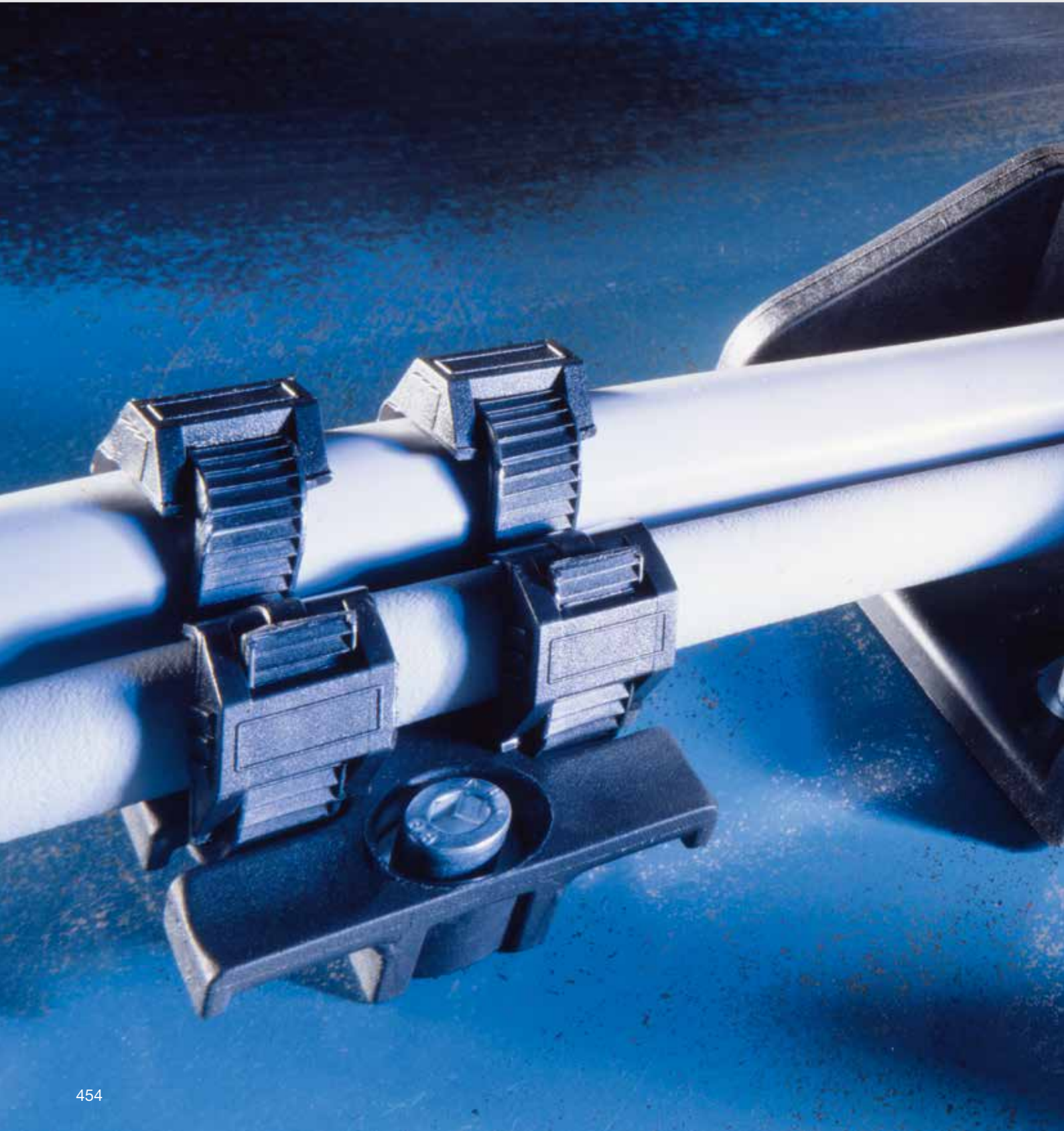


Step 3

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

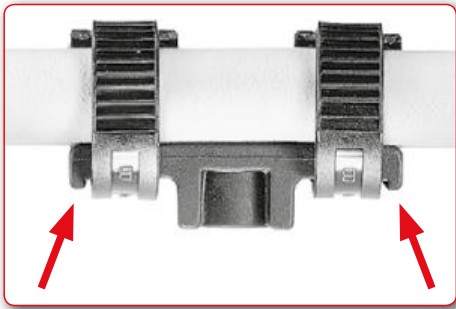
A C-rail (slot width 11 mm), integrated into the chain bracket, serves to secure the Steel Fix bow clamps.

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.



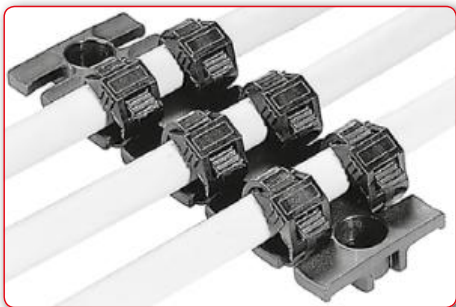
Strain relief plate (ZL) mounted in a cable drag chain's chain bracket.

Benefits



Secure hold

The undercut on the underside of the plate prevents the cable tie from slipping off - even with very large cable diameters.



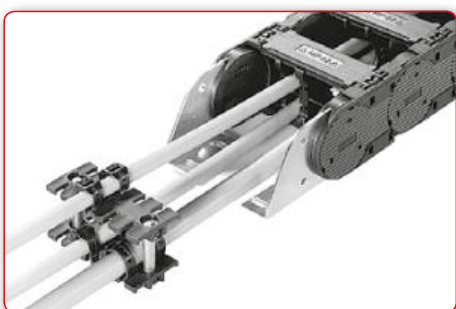
Longer life

Each cable is secured by 2 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.



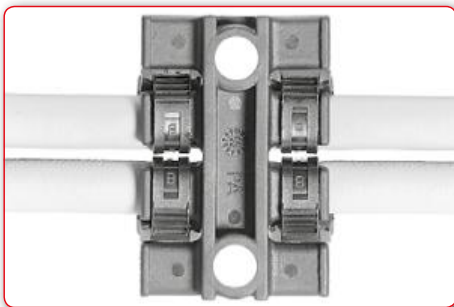
Compatible fixing holes

The dimensions of the holes on the plates system match those on the chain brackets. Please consider the dimension of the holes of the strain relief when it is mounted inside 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.)



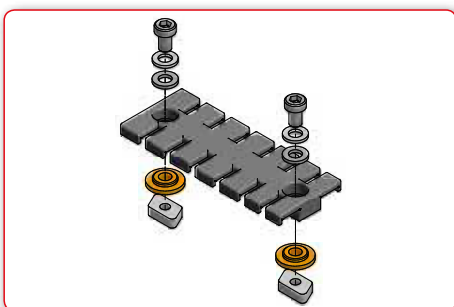
Easy assembly

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.



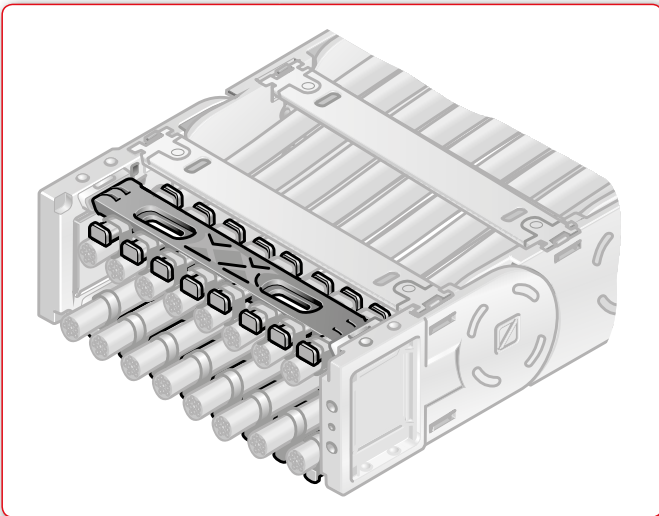
Steel Fix bow clamps

- 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

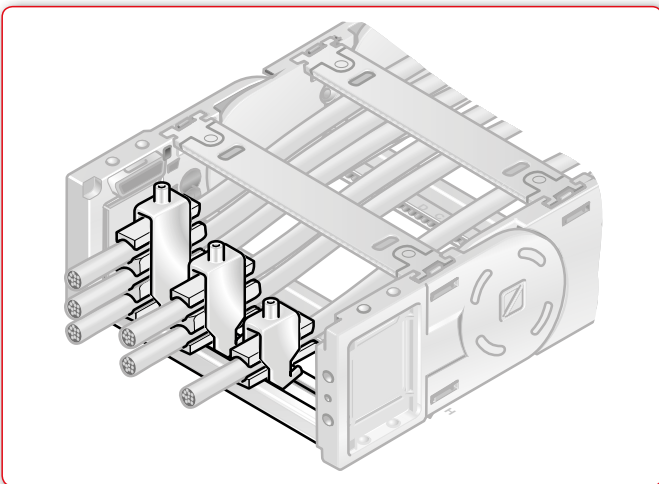
Where is the strain relief made?

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.

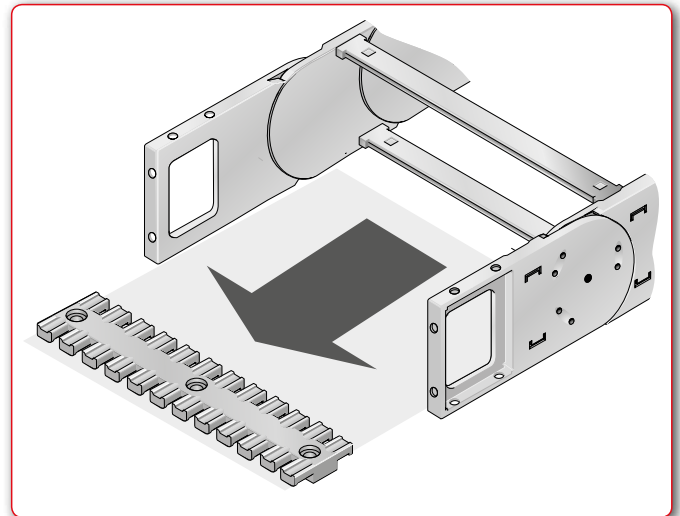
We offer two separate strain relief systems for this specific application:

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



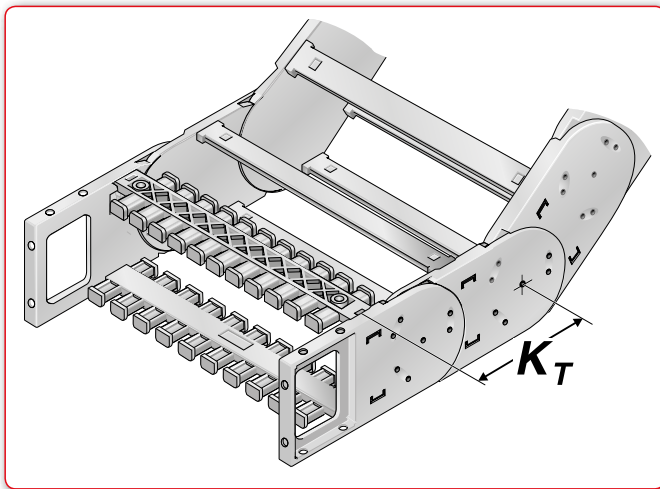
To increase the distance from the strain relief to the first movable point, the strain relief can be moved to a position outside the chain bracket. To do so, you can utilise our Steel Fix bow clamps and ZL-C strain relief plates, which are mounted on C-rails. The ZL strain relief plates can also be secured 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 traction forces.

Design / structure

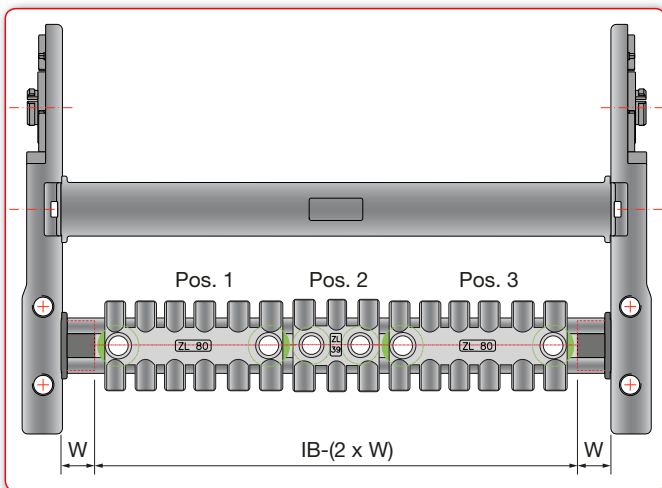
2. Lengthening the chain

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 used 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:

| Inside width in mm | | | Recommended ZL combinations | | | |
|--------------------|------|-----------|-----------------------------|--------|--------|--------|
| Nominal | -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.

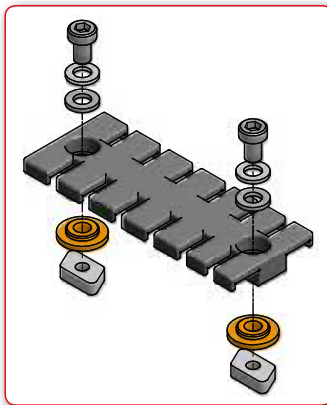
All electric cables must be relieved of strain at both the moving and fixed end. For longer travel distances (and gliding applications), strain relief on one side at the moving end is recommended. Care must be taken to ensure pressure on the power cabling is applied broadly across its outer jacket.

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.



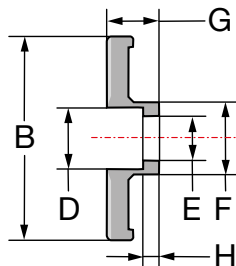
ZL-C set

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.

Legend for dimensions (in mm)

| |
|--------------------------------|
| 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 |

Cross-section



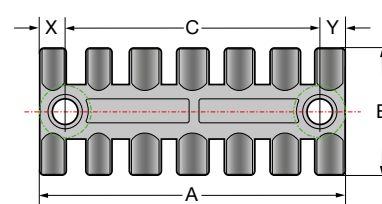
| Type | ZL-C 39 set | Type | ZL 39 |
|-----------|-------------|-----------|----------|
| Order No. | 87702810 | Order No. | 87701014 |
| A | 38.5 mm | X | 9.0 mm |
| B | 40.0 mm | Y | 9.0 mm |
| C | 19.5 mm | | |
| D | 12.0 mm | G | 10.0 mm |
| E | 9.0 mm | H | 3.1 mm |
| F | 14 mm | | |

| 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 |
| B | 40.0 mm | Y | 9.5 mm |
| C | 19.5 mm | D | 12.0 mm |
| | | E | 9.0 mm |
| | | F | 14 mm |
| | | G | 10.0 mm |
| | | H | 3.1 mm |



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 | |

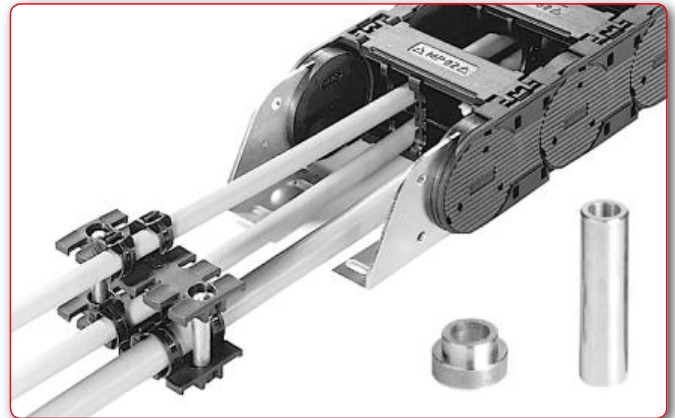
| Type | ZL-C 140 set | Type | ZL 140 |
|--------------|--------------|-------------|-------------|
| Order No. | 87702822 | Order No. | 87701024 |
| A = 139.5 mm | X = 9.0 mm | D = 12.0 mm | G = 10.0 mm |
| B = 40.0 mm | Y = 9.5 mm | E = 9.0 mm | H = 3.1 mm |
| C = 121.5 mm | | F = 14 mm | |

| 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 install two 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 | |

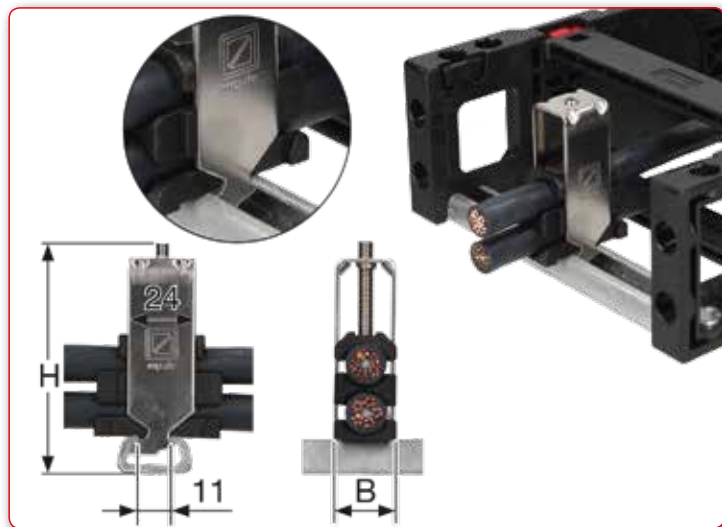
Dimensions in mm

| 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



C-rails (galvanised) can be permanently integrated to hold 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 channel elements, a cable-friendly cable guidance is ensured. Can be assembled on the inside and outside bends at both chain ends.

A stainless steel model is also available.

The total height stated is a guideline only. The actual height depends, among other things, on the cable diameter and cable type. A safety distance of 10 mm at the fixed point above the strain relief must be kept for gliding applications.





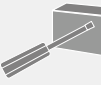










| Type | Order No. | Cable Ø | Width (B) | Height (H)* | Pitch (T) |
|----------------------------------------|-----------|---------|-----------|-------------|-----------|
| Single bow clamp (for 1 cable) | | | | | |
| STF MP 12-1 Steel Fix | 80661801 | 6 – 12 | 16 | 53 | 24 |
| STF MP 14-1 Steel Fix | 80661802 | 12 – 14 | 18 | 52 | 24 |
| STF MP 16-1 Steel Fix | 80661803 | 14 – 16 | 20 | 54 | 24 |
| STF MP 18-1 Steel Fix | 80661804 | 16 – 18 | 22 | 56 | 24 |
| STF MP 20-1 Steel Fix | 80661805 | 18 – 20 | 24 | 59 | 24 |
| STF MP 22-1 Steel Fix | 80661806 | 20 – 22 | 26 | 61 | 24 |
| STF MP 26-1 Steel Fix | 80661807 | 22 – 26 | 30 | 70 | 24 |
| STF MP 30-1 Steel Fix | 80661808 | 26 – 30 | 34 | 74 | 24 |
| STF MP 34-1 Steel Fix | 80661809 | 30 – 34 | 38 | 78 | 24 |
| STF MP 38-1 Steel Fix | 80661810 | 34 – 38 | 42 | 82 | 24 |
| STF MP 42-1 Steel Fix | 80661811 | 38 – 42 | 46 | 87 | 24 |
| Double bow clamp (for 2 cables) | | | | | |
| STF MP 12-2 Steel Fix | 80661821 | 6 – 12 | 16 | 73 | 24 |
| STF MP 14-2 Steel Fix | 80661822 | 12 – 14 | 18 | 74 | 24 |
| STF MP 16-2 Steel Fix | 80661823 | 14 – 16 | 20 | 81 | 24 |
| STF MP 18-2 Steel Fix | 80661824 | 16 – 18 | 22 | 85 | 24 |
| STF MP 20-2 Steel Fix | 80661825 | 18 – 20 | 24 | 89 | 24 |
| STF MP 22-2 Steel Fix | 80661826 | 20 – 22 | 26 | 93 | 24 |
| STF MP 26-2 Steel Fix | 80661827 | 22 – 26 | 30 | 108 | 24 |
| STF MP 30-2 Steel Fix | 80661828 | 26 – 30 | 34 | 119 | 24 |
| STF MP 34-2 Steel Fix | 80661829 | 30 – 34 | 38 | 127 | 24 |
| Triple bow clamp (for 3 cables) | | | | | |
| STF MP 12-3 Steel Fix | 80661841 | 6 – 12 | 16 | 97 | 24 |
| STF MP 14-3 Steel Fix | 80661842 | 12 – 14 | 18 | 98 | 24 |
| STF MP 16-3 Steel Fix | 80661843 | 14 – 16 | 20 | 104 | 24 |
| STF MP 18-3 Steel Fix | 80661844 | 16 – 18 | 22 | 111 | 24 |
| STF MP 20-3 Steel Fix | 80661845 | 18 – 20 | 24 | 118 | 24 |
| STF MP 22-3 Steel Fix | 80661846 | 20 – 22 | 26 | 124 | 24 |

* Total height with max. cable diameter, including C-rail

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 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 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 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 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: ≤ 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"

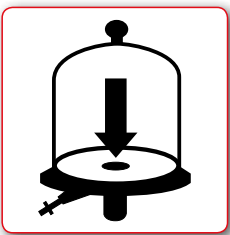
Classification: Materials class B 2

In case of more stringent applications please contact us.



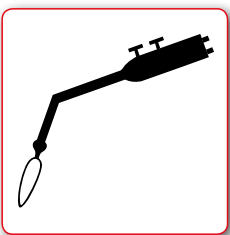
Radiation resistance

Murrplastik cable drag chains are very resistant to high-energy radiation. In the range of 8×10^6 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.



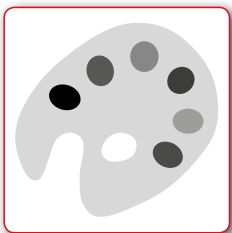
Weatherproof

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 ² |
| | | humidity | 120 | N/mm ² |
| Crack resistance (DIN 53 455) | | dry | 4 | % |
| | | humidity | 6 | % |
| Elasticity module | Tensile test | dry | 7000 | N/mm ² |
| | | humidity | 10000 | N/mm ² |
| Impact resistance (DIN 53 455) | 23 °C | dry | 60 | kJ/m ² |
| | 23 °C | humidity | 75 | kJ/m ² |
| | -40 °C | dry | 50 | kJ/m ² |
| Creep module E | 23 ... 50 °C | humidity | 5400 | N/mm ² |
| | 120 °C | dry | 2100 | N/mm ² |
| 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 ¹⁵ | Ω x cm |
| | | humidity | 10 ¹² | Ω x cm |
| Impact resistance | Thickness 0.6 ... 0.8 mm | | 80 | kV/mm |
| Surface resistance ROA | | dry | 10 ¹² | Ω |
| | | humidity | 10 ¹⁰ | Ω |
| Moisture absorption | 23 ... 25 °C | | 1.8±0.2 | % |
| Temperature limits | | | | |
| permissible temperature | -30 ... 100 °C | | | |
| 5000 hours | up to 135 °C | | | |
| several hours | up to 170 °C | | | |
| Other properties | | | | |
| Density | dry | | 1.4 g/cm ² | |
| 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

