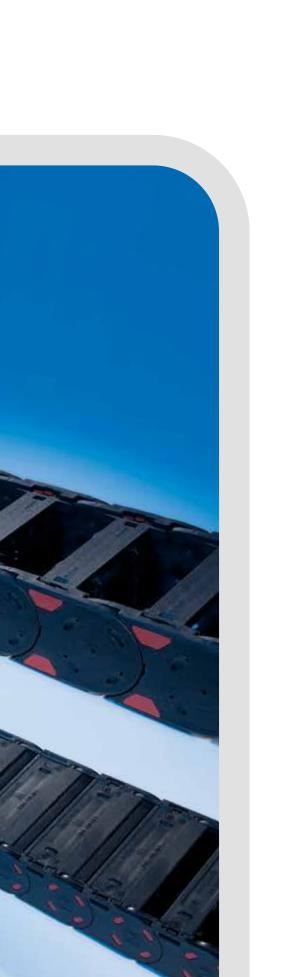


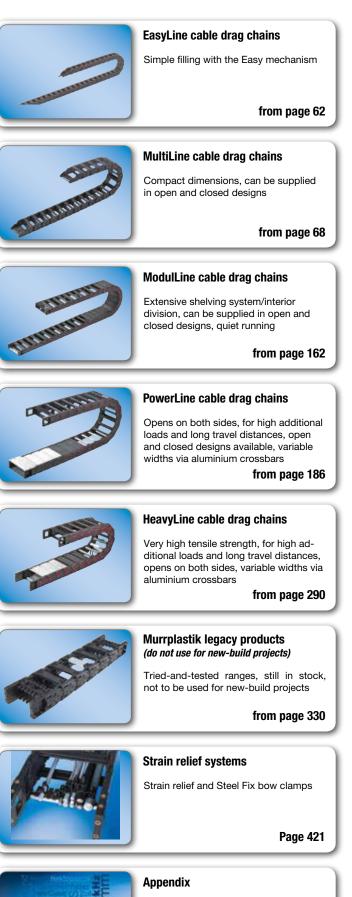
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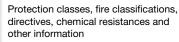












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MHz



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### **CABLE DRAG CHAIN SYSTEMS**

Product line	Туре	Variation	Inside width
EasyLine	MP 10.1	open	0.39 in (10 mm)) Page 62 – 67
MultiLine	MP 14	open	0.55 in (14 mm) Page 68 – 73
MultiLine	MP 15	open	0.55 in (14 mm) Page 74 – 79
MultiLine	MP 18.1/MP 18.2	open	0.71 in (18 mm) Page 80 – 85
MultiLine	MP 18.4	open	0.71 in (18 mm) Page 86 – 91
MultiLine	MP 20	open	0.79 in (20 mm) Page 92 – 97
MultiLine	MP 3000	open	1.02 in (26 mm) Page 98 – 105
MultiLine	MP 25G	open	0.98 in (25 mm) Page 106 – 113
MultiLine	MP 35.1/MP 35.2	open	1.38 in (35 mm) Page 114 – 125
MultiLine	MP 36G	open	1.42 in (36 mm) Page 126 – 133
MultiLine	MP 43G	open	1.50 in (38 mm) Page 134 – 141
MultiLine	MP 45.1/MP 45.2	open	1.77 in (45 mm) Page 142 – 153
MultiLine	MP 65G	open	2.36 in (60 mm) Page 154 – 161
ModulLine	MP 25.1/.2	open	0.98 in (25 mm) Page 162 – 173
ModulLine	MP 25.3/.4	closed	0.98 in (25 mm) Page 162 – 173
ModulLine	MP 30.1/.2	open	1.18 in (30 mm) Page 174 – 185
ModulLine	MP 30.3/.4	closed	1.18 in (30 mm) Page 174 – 185
PowerLine	MP 32.2	open	1.26 in (32 mm) Page 186 – 201
PowerLine	MP 32.3	closed	1.18 in (30 mm) Page 186 – 201
PowerLine	MP 41.2	open	1.65 in (42 mm) Page 202 – 217
PowerLine	MP 41.3	closed	1.50 in (38 mm) Page 202 – 217
PowerLine	MP 52.2	open	2.05 in (52 mm) Page 218 – 233
PowerLine	MP 52.3	closed	1.98 in (48 mm) Page 218 – 233
PowerLine	MP 52.2-D	open	2.05 in (52 mm) Page 234 – 249
PowerLine	MP 52.3-D	closed	1.98 in (48 mm) Page 234 – 249
PowerLine	MP 52.4	open	2.05 in (52 mm) Page 250 – 265
PowerLine	MP 52.5	closed	1.98 in (48 mm) Page 250 – 265

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PowerLine PowerLine	MP 52.6 MP 52.7	open closed	1.98 in (48 mm) Page 266	6 – 275 6 – 275
PowerLine	MP 62.4	open	2.44 in (62 mm) Page 276	6 – 289
HeavyLine HeavyLine HeavyLine HeavyLine HeavyLine	MP 62.2 MP 62.3 MP 82.2 MP 82.3 MP 102.2	open closed open closed open	2.44 in (62 mm)       .       .       .       .       .       .       Page       290         3.23 in (82 mm)       .       .       .       .       .       .       Page       304         2.91 in (74 mm)       .       .       .       .       .       .       .       Page       304         4.09 in (104 mm)       .       .       .       .       .       .       .       .       .       Page       318	0 - 303 0 - 303 4 - 317 4 - 317 8 - 329
	Murrplastik legacy	•		
Legacy Legacy Legacy Legacy Legacy Legacy Legacy STRAIN RELIE	MP 32 MP 35 MP 41 MP 44 MP 52.1 MP 62.1 MP 66 MP 72	open open open open open open open	1.34 in (34 mm)       .       .       .       .       .       Page       344         1.65 in (42 mm)       .       .       .       .       .       .       Page       352         1.57 in (40 mm)       .       .       .       .       .       .       Page       366         2.05 in (52 mm)       .       .       .       .       .       .       Page       374         2.44 in (62 mm)       .       .       .       .       .       .       Page       388         2.36 in (60 mm)       .       .       .       .       .       Page       400	0 - 343 4 - 351 2 - 365 6 - 373 4 - 387 8 - 399 0 - 407 8 - 419
Benefits Selection criteri Design / Structu Strain relief sys Strain relief sys	a / Guide to system designed ire tem type ZL-C set and ty tem type ZL / two-tier str		0	7 8 9
Fire classification Material charact Information abo	on according to UL 94, DI teristics ut materials	N 5510 		

# **SUCCESS DOESN'T HAPPEN OVERNIGHT**



### A SELECTION OF OUR INNOVATIONS FOR YOUR ADVANTAGE:

- **1984** First cable drag chain that can be opened
- **1987** Crossbars pivotable on both sides
- 1988 Bayonet stop system
- **1994** Integrated strain relief plate
- **1994** Guide channel system with releasable connecting glide rails
- **1996** Center piece for guide channel systems aligned in parallel
- **1997** Guide channel system with multiple grooves
- **1998** Crossbar connectors for greater stability with large chain widths
- 2001 PowerLine 2nd Generation Generation
- 2002 PowerLine shelving system for optimised chain compartment

- 2003 Magnet chain technology for non-contact gliding
- 2005 MultiLine series
- **2007** Brush supports for optimum cable positioning in the neutral strand
- 2008 ModulLine series
- **2011** Bracket bar for integration of large-diameter media conduits into an cable drag chain system
- **2013** Sliding blocks for higher service life of the chain
- 2015 PowerLine MP 52.6 for long travel distance
- 2016 PowerLine light series
- 2016 noiseLESS guide channel system
- 2016 MultiLine MP 45 with additional damper option
- 2017 Gliding plates for Power- and HeavyLine

# **OVER 30 YEARS OF PASSION FOR INNOVATION**



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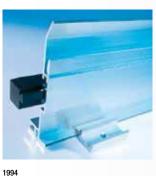


























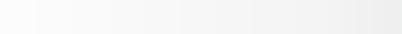












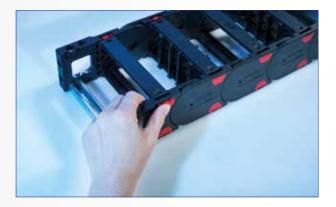
# CLICK LOCK CLICK – AND YOU'RE DONE



### **FAST AND EASY**

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

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



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

# **FLEXIBLE SHELVING SYSTEMS**



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### **EXTREMELY VERSATILE**

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

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

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



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

# VARIABLE CROSSBARS AND COVERS



### VARIABLE

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

### **FIXED**

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

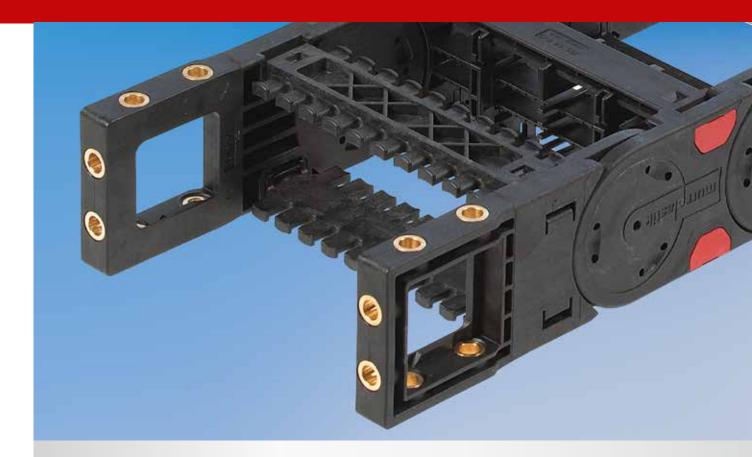


- Flexible adjustment due to closely spaced lock tabs
- Fixed with lock tabs
- Variable length
- Extremely stable

# **OPTIMAL CONNECTIONS**



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### 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 SAFE STRAIN RELIEF

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

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

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

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



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

# **BRACKET BAR**







### **INTEGRATION OF MEDIA CONDUITS**

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

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

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

MP 32.2 / MP 32.3 ALU MP 41.2 / MP 41.3 MP 52.2 / MP 52.3 / MP 52.4 / MP 52.5 MP 62.2 / MP 62.3 / Mp 62.4 / MP 62.5 ALU MP 82.2 / MP 82.3



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

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



### SLIDING BLOCKS -INNOVATION AGAINST WEAR AND TEAR

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

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

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





WITH SLIDING BLOCK

WITHOUT SLIDING BLOCK

Sliding blocks are available for the following cable drag chains: MP 32.2 / MP 32.3 ALU MP 41.2 / MP 41.3 MP 52.2 / MP 52.3 / MP 52.4 / MP 52.5 MP 62.2 / MP 62.3 / Mp 62.4 / MP 62.5 ALU MP 82.2 / MP 82.3

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

# GLIDING PLATES FOR HORIZONTAL SIDE-MOUNTED POSITION



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### GLIDING PLATES – CONTROLLED WEAR

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

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

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





GLP 5 SLIDE PLATE

GLP 8 SLIDE PLATE

Gliding plates are available for the following cable drag chains: MP 41.2 / MP 41.3

MP 52.2 / MP 52.3 / MP 52.4 / MP 52.5 MP 62.4 / MP 62.5 ALU MP 82.2 / MP 82.3 / MP 102.2

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

# **NOISE REDUCTION SYSTEM**



### **NOISE REDUCTION SYSTEM**

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

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

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

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



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

# **GUIDE CHANNELS VAW** WITH DAMPER



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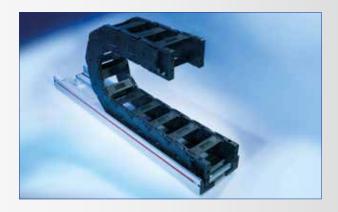


### **REDUCTION OF THE NOISE EMISSION**

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

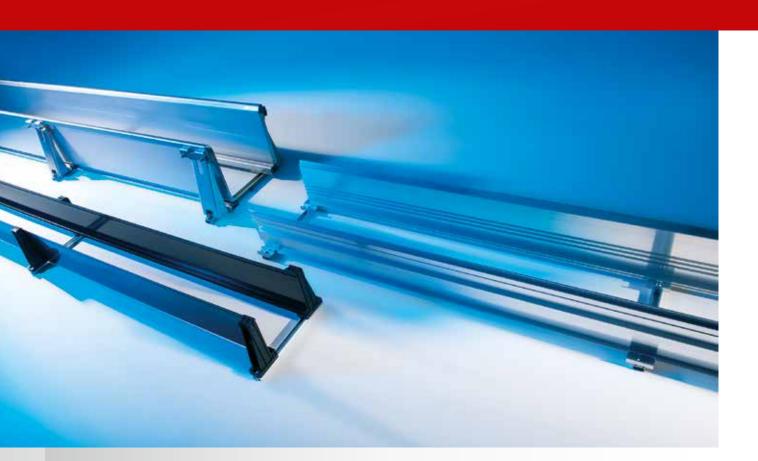
As a solution to reduce the noise emission Murrplastik offers variable guide channel systems with integrated damping elements. This reduces disturbing noise by up to 20 dB(A)

Available variants: VAW 146, noiseLESS NL30, noiseLESS NL35



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

# **VAW GUIDE CHANNELS**



### VAW GUIDE CHANNELS -FOR MAXIMUM SPEED ASSEMBLY

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

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

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

22



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

# **CONFECTIONING CONNECT 4 MOTION**



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### **EVERYTHING FROM ONE SOURCE**

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

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

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



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

# **ATEX CABLE DRAG CHAINS**

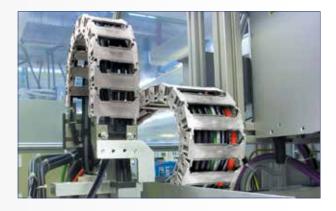


### **SAFETY ACCORDING TO ATEX EX II 2GD**

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

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

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



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

# **ELECTROSTATIC DISCHARGES**



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### **ELECTROSTATIC DISCHARGES**

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

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

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



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

# **CLEAN ROOM CABLE DRAG CHAINS**



### **APPLICATION IN SENSITIVE CLEAN ENVIRONMENTS**

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

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

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

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



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

# **VISUAL DIFFERENTIATION**



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# EXTREME AREAS OF APPLICATION REQUIRE DIFFERENT MATERIALS.

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

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



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

# **CORPORATE IDENTITY – INDIVIDUAL CABLE DRAG CHAIN IDENTIFICATION**



### **INDIVIDUAL CABLE DRAG CHAIN IDENTIFICATION**

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

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

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



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

# SELECTION CRITERIA FOR CABLE DRAG CHAINS



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

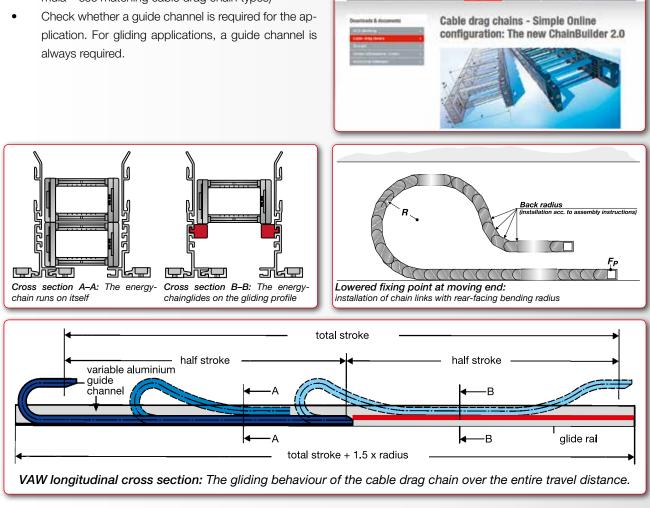
- Determine the number and outside diameter of the cables or conduits to be laid.
- For self-supporting applications, the diagram "selfsupporting length" can be used to identify the matching chain uing load and travel distance.
- Determine width of cable drag chain, design shelving system (separators,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

### 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 installtions, we recommend setting the chain bracket at the moving end lower, depending on the chain type and bending radius.

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



at k



### **SELECTION TABLE TECHNICAL DATA**

							INS	IDE WIDTH	BENDING RADIUS
	/	de redition min	Crainture			Contraction of the second seco		P R	
	msi	<u>36</u>	Chain.	/	-	/			
		Open	Closed	Crossbars in i PA I	inch from - to I ALU	Crossbars in i PA I	inch from - to I ALU	Bending radii in inch, from – to	
	10	MP 10.1		0.24 – 1.61		_	—	0.71 – 2.28	
	14	MP 14		0.63 – 1.57		_		0.98 – 2.95	
	14	MP 15		0.63 – 1.57	_	—	—	0.98 – 2.95	
	18	MP 18.1/.2		0.59 - 2.76		_	—	1.10 - 3.07	
	18	MP 18.4		0.71 – 1.97	_	_		1.57 – 3.15	
	20	MP 20.2		0.59 – 1.97	_	_	_	1.50 – 4.92	
	25	MP 25.1/.2	25.3/25.4	1.57 – 7.87		1.57 – 7.87	—	1.97 – 11.81/3.94 – 11.81*	
	25		MP 25 G			2.10 - 4.92	-	2.36 - 9.84	
	26	MP 3000		2.10 - 4.92			'	1.97 – 11.81	
	30	MP 30.1/.2	30.3/.4	1.57 – 7.87		1.57 – 7.87	-	2.36 - 11.81/3.94 - 11.81*	
SIES	32/30	MP 32.2	MP 32.3 ALU	1.77 – 21.50	2.64 - 23.62	1.77 – 21.50	1.69 - 23.62	3.15 - 9.84/3.15 - 4.72*	
SEF	35	MP 35.1/.2		1.97 – 6.89		_	· - '	2.48 - 4.72	
STIK	36		MP 36 G			2.44 - 4.92	-	3.15 – 7.87	
MURRPLASTIK SERIES	38		MP 43 G			2.44 – 7.17	_	4.92 – 15.75	
IURF	42/38	MP 41.2	MP 41.3	1.77 – 21.50	2.64 - 23.62	3.31 – 9.69	1.69 - 23.62	3.54 – 13.78/5.91 – 13.78*	
2	45	MP 45.1/.2		1.97 – 6.89			,,	2.95 – 11.81	
	52/48	MP 52.2	MP 52.3	1.77 – 21.50	2.64 - 23.62	3.78 - 13.62	1.69 - 23.62	3.94 – 13.78/5.91 – 13.78*	
	52/48	MP 52.2-D	MP 52.3-D						
		MP 52.4	MP 52.5					4.92 - 11.81/11.97 - 11.81*	
		MP 52.6	MP 52.7 ALU		1.97 – 23.62	_	1.65 - 23.62		
	60		MP 65 G			3.31 - 5.67		7.87 – 15.75	
		MP 62.2	MP 62.3	3.66 - 20.39	2.83 - 23.62	4.65 - 16.45	1.57 - 23.62	5.91 – 19.69/7.87 – 19.69*	
		MP 62.4	MP 62.5 ALU		2.64 - 23.62			5.31 - 11.81/11.97 - 11.81*	
		MP 82.2	MP 82.3		2.83 - 23.62	9.57		5.91 - 25.59/7.87 - 25.59*	
		MP 102.2			2.83 - 23.62			9.84 - 19.69	
	102			0.00 20.00	2.00 20.02			0.01 10.00	
S	32	MP 32		1.77 – 21.50	2.64 - 23.62		_	3.15 – 9.84	
ouct ects)		MP 35		2.44 - 5.91			/	2.76 - 11.81	
PROI		MP 44		2.44 - 3.91				3.54 - 15.75	
MURRPLASTIK LEGACY PRODUCTS (do not use for new-build projects)		MP 44		1.77 - 21.50	2.64 - 23.62				
LEG/ new-							;	3.54 - 13.78	
STIK se for		MP 52.1		1.77 - 21.50	2.64 - 23.62	3.15 – 23.62	—	3.94 - 13.78	
PLAS not us		MP 66		1.77 - 7.17	3.03 - 23.62		;	5.91 - 15.75	
(do r		MP 62.1			2.83 - 23.62	-	!	5.91 - 19.69	
Σ	72	MP 72		3.66 - 20.39	2.83 - 23.62	4.65 – 23.62	—	5.91 – 19.69	

\* Note: only for closed variants



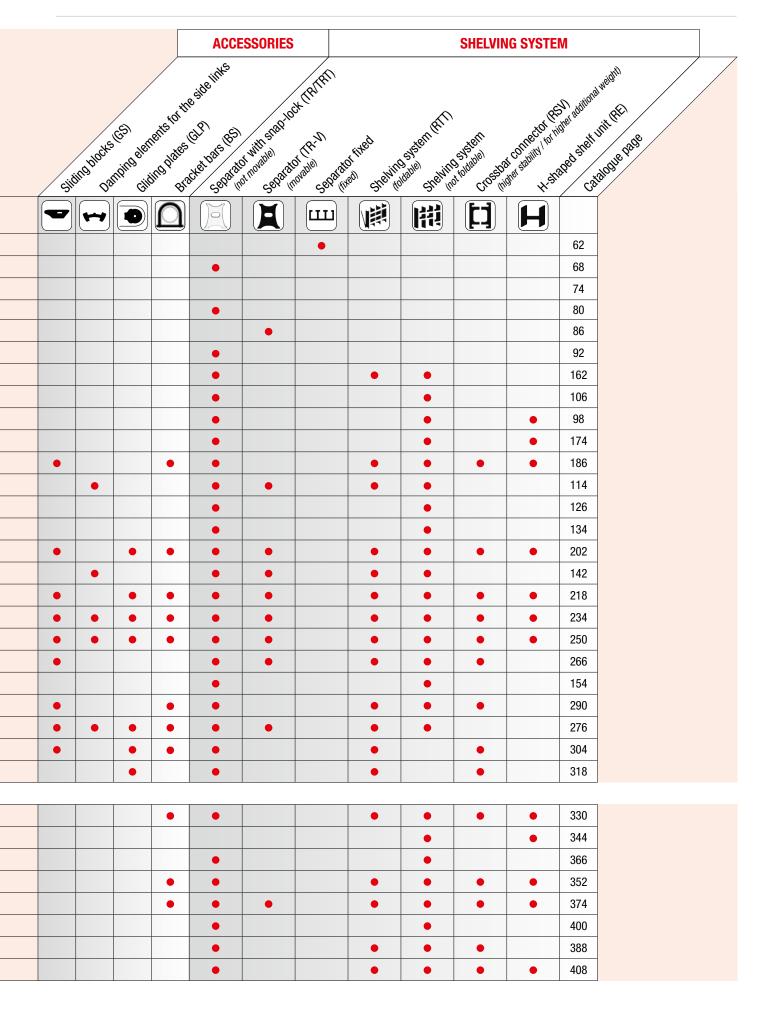
		TRAVEL DISTAN	ICE	SPEED		ACCELERATION		
		/		/				
						Catalogue page		
max. travel di self-supporting		Max. speed of self-supporting		max. acceler self-supporting				
3.28	32.81	13.12	6.56	6.56	6.56	62		
6.56	39.37	13.12	6.56	6.56	6.56	68		
6.56	39.37	13.12	6.56	6.56	6.56	74		
9.84	65.62	16.40	6.56	16.40	16.40	80		
9.84	65.62	16.40	6.56	16.40	16.40	86		
9.84	not recommended	32.81	-	32.81	-	92		
13.12	114.83	32.81	9.84	49.21	32.81	162		
13.12	131.23	19.69	9.84	49.21	32.81	106		
13.12	196.85	19.69	9.84	49.21	32.81	98		
14.76	131.23	32.81	9.84	49.21	32.81	174		
14.76	328.08	65.62	16.40	98.43	82.02	186		
19.68	262.46	65.62	16.40	164.04	49.21	114		
13.12	196.85	32.81	9.84	65.62	49.21	126		
16.40	164.04	49.21	16.40	65.62	49.21	134		
22.97	165.62	65.62	16.40	98.43	82.02	202		
22.97	262.46	32.81	16.40	65.62	49.21	142		
29.53	492.12	65.62	16.40	98.43	82.02	218		
29.53	492.12	65.62	16.40	98.43	82.02	234		
24.61	164.04	65.62	16.40	98.43	82.02	250		
-	492.12	-	19.69	-	32.81	266		
26.25	196.85	49.21	16.40	65.62	49.21	154		
32.81	492.12	65.62	16.40	131.23	82.02	290		
24.61	164.04	65.62	16.40	98.43	82.02	276		
32.81	492.12	65.62	16.40	131.23	82.02	304		
34.45	492.12	65.62	16.40	131.23	82.02	318		
16.40	328.08	65.62	16.40	98.43	82.02	330		
14.76	262.46	32.81	9.84	65.62	49.21	344		
16.40	164.04	49.21	16.40	65.62	49.21	366		
22.97	165.62	65.62	16.40	98.43	82.02	352		
29.53	492.12	65.62	16.40	98.43	82.02	374		
26.25	196.85	49.21	16.40	65.62	49.21	400		
32.81	492.12	65.62	16.40	131.23	82.02	388		
32.81	492.12	65.62	16.40	131.23	82.02	408		



### **SELECTION TABLE CONFIGURATION**

								(	CHAIN	BRACK	ET		STRAIN RELIEF
												/	the chain bracket
	hŝ	as neight in min	Chainture	Ur	athasti	ant seen	Xible An	<sup>ye</sup> 40	.19 <sup>8</sup> int <sup>8</sup>	Jarated inte	ofated Rec	anted bo	astern numane [1]
		Open	Closed			H	H						
	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			•				•	•		
IES	32/30	MP 32.2	MP 32.3 ALU			•				•	•		
SEP	35	MP 35.1/.2				•				•	•		
STIK	36		MP 36 G		•			•				•	
MURRPLASTIK SERIES	38		MP 43 G				•					•	
IURR	42/38	MP 41.2	MP 41.3			•	•			•	•		
Z		MP 45.1/.2				•				•	•		
		MP 52.2	MP 52.3			•	•			•	•		
		MP 52.2-D				•	•			•	•		
		MP 52.4	MP 52.5			•				•	•		
		MP 52.6	MP 52.7 ALU			•					•		
	60		MP 65 G		•		•	•					
	-	MP 62.2	MP 62.3		-	•	•			•	•		
	-	MP 62.4	MP 62.5 ALU			•				•	•		
		MP 82.2	MP 82.3			•				•	•		
		MP 102.2					•			•	•		
	102						-			-	-		
IS	32	MP 32				•				•	•		
<b>DUC</b> ects)		MP 35			•	-	•			-	-	•	
PRO d proj		MP 44			•		•					•	
ACY -build		MP 41			-	•	•			•	•	-	
r new		MP 52.1				•	•			•	•		
MURRPLASTIK LEGACY PRODUCTS (do not use for new-build projects)		MP 66			•	-	•	•		-			
<b>3PLA</b> not u		MP 62.1			-	•		-		•	•		
AUR <sup>(do</sup>		MP 72				•	•			•	•		
2	12					-				-	-		







### **SELECTION TABLE OPENING VARIANTS**

										OPE	NING V			
	<u> </u>	de reight in min	Craintype		opening	e <sup>b</sup>	debendfr	Jobable on C	ne side Ioldabe	integide bend	otheides of the original states of the other	both side	intestu iste bend iste and out	ange page page page page page page page pa
	115					н <sup>г</sup> И <sup>5</sup>	N <sup>1</sup> 010	115 M2		he Mê	ne ne	n Hi	60	
		Open	Closed	0	2	8	4	6	6	0	8	9		
	10	MP 10.1			•								62	
	14	MP 14					•						68	
	14	MP 15		•									74	
		MP 18.1/.2				•	•						80	
		MP 18.4		•									86	
	20	MP 20.2				•							92	
	25	MP 25.1/.2	25.3/25.4					•	•				162	
	25		MP 25 G				•						106	
	26	MP 3000						•					98	3
	30	MP 30.1/.2	30.3/.4					•	•				174	
RIES	32/30	MP 32.2	MP 32.3 ALU									•	186	
( SE	35	MP 35.1/.2						•	•				114	
STII	36		MP 36 G			•							126	
MURRPLASTIK SERIES	38		MP 43 G								•		134	
INI	42/38	MP 41.2	MP 41.3									•	202	
2	45	MP 45.1/.2						•	•				142	
	52/48	MP 52.2	MP 52.3									•	218	
	52/48	MP 52.2-D	MP 52.3-D									•	234	
	52/48	MP 52.4	MP 52.5									•	250	
	52/48	MP 52.6	MP 52.7 ALU									•	266	
	60		MP 65 G								•		154	
	62/62	MP 62.2	MP 62.3									•	290	
	62	MP 62.4	MP 62.5 ALU									•	276	
		MP 82.2	MP 82.3									•	304	
		MP 102.2										•	318	
													1	"[╨━━━╨]
IIS	32	MP 32									•		330	
<b>DUC</b> jects)	34	MP 35								•			344	
PRO d pro		MP 44									•		366	🕇 😣 🏓
ACY /-buil		MP 41									•		352	
MURRPLASTIK LEGACY PRODUCTS (do not use for new-build projects)		MP 52.1									•		374	
<b>STIK</b> Ise fo		MP 66									•		400	
RPLA not u		MP 62.1									•		388	9 -
MUR <sup>)</sup>		MP 72									•		408	
2	12										-		+00	

\* Note: not recommended for gliding applications

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

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### SELECTION TABLE AVAILABLE MATERIAL / RECOMMENDED GUIDE CHANNELS

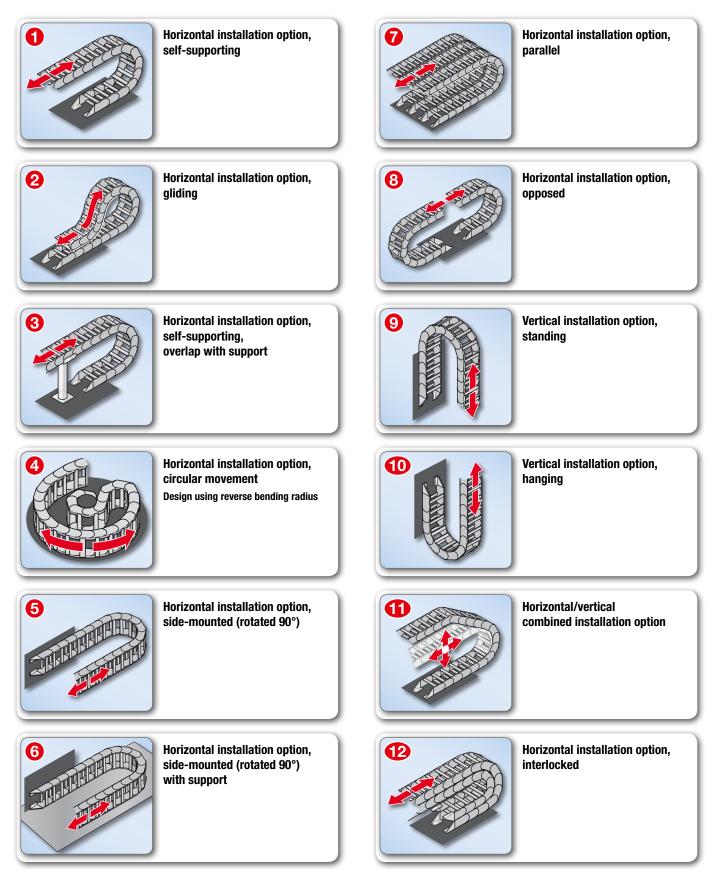


								MATERIAL			GUIDE	<b>GUIDE CHANNEL</b>	
		- MA			/	PI	Ablack	A gray pr	Ared pp b	US CTATES	ide channel	Stantes stante	
		de height in min	æ			ALCIR	an' u	94.NO Denironner Denironner	IL INTITUTION	109 of thium apple	ainessi	19 an less suitation	
	is a	dener	Chaintype	~*2	indard ES	JATE	and tes of	Denning	allensund	alter of old into	Start, SUI	or gliding stalogu	
				<u> </u>	~~								
		Open	Closed					VAN	VAN	VAW-E	VAW-E		
		MP 10.1		•	•	•		25	80			62	
		MP 14		•				25	80			68	
		MP 15		•	•	•		25	80	-		74	
		MP 18.1/.2		•	•	•	•	35	80	-		80	
		MP 18.4		•				35	80	-		86	
	20	MP 20.2		•				35	80			92	
	25	MP 25.1/.2	25.3/25.4	•				80	86	120	120	162	
	25		MP 25 G	•	•			80	86	120	120	106	
	26	MP 3000		•	•	•	•	80	86	120	120	98	
	30	MP 30.1/.2	30.3/.4	•				80	86	120	120	174	
MURRPLASTIK SERIES	32/30	MP 32.2	MP 32.3 ALU	•	•		•	86	106	120	120	186	
( SEI	35	MP 35.1/.2		•				80	86	120	120	114	
STI	36		MP 36 G	•				80	86	120	120	126	
PLA	38		MP 43 G	•				86	106	120	120	134	
Ë	42/38	MP 41.2	MP 41.3	•	•		•	86	122	120	120	202	
2	45	MP 45.1/.2		•				86	106	120	120	142	
	52/48	MP 52.2	MP 52.3	•	•		•	86	146	120	170	218	
		MP 52.2-D	MP 52.3-D	•	•		•	86	146	120	170	234	
		MP 52.4	MP 52.5	•				86	146	120	170	250	
		MP 52.6	MP 52.7 ALU	•					146	_	170	266	
	60		MP 65 G	•				86	146	120	170	154	
		MP 62.2	MP 62.3	•	•		•	106	177	120	170	290	
		MP 62.4	MP 62.5 ALU	•	-			106	146	120	170	276	
		MP 82.2	MP 82.3	•	•		•	146	248	170	220	304	
		MP 102.2		•	-			146	240	170	220	318	
	102	102.2		-				140	240	170		510	
0	32	MP 32		•				86	106	120	120	330	
ects)		MP 35						80	86	120	120	344	
proje		MP 44		•				86	106	120	120	366	
-build				•									
new-		MP 41		•				86	106	120	120	352	
e for		MP 52.1		•				86	146	120	170	374	
MURRPLASTIK LEGACY PRUDUCTS (do not use for new-build projects)		MP 66		•				86	146	120	170	400	
n ob)		MP 62.1		•				106	177	120	170	388	
Ξ	72	MP 72		•				122	177	120	170	408	

### \* Note: also available in steel



### Installation options for cable drag chains



### **CDC SYSTEM PLANNING FORM**



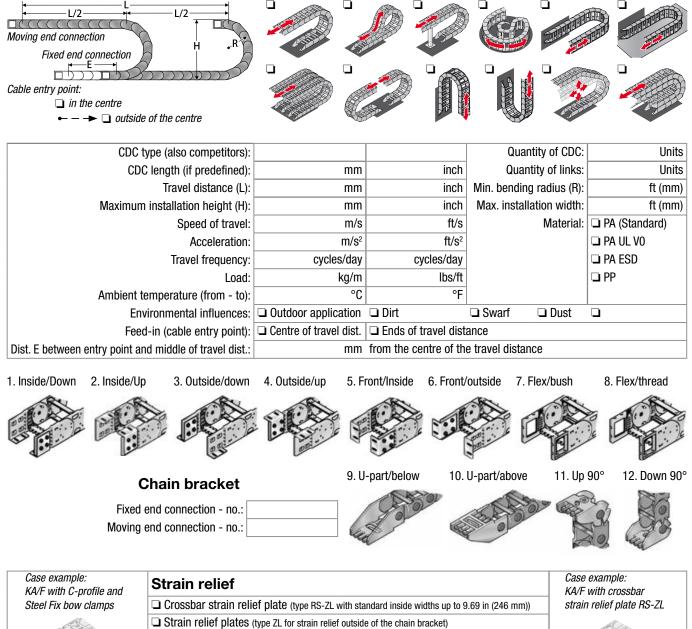
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### □ Quotation □ Order Date:

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

### **Application parameters:**

### Please select type of installation:





6	on both sides		
MurrplastikSystemtechnikGmbH •	Dieselstraße10 • 715700ppenweiler • Germa	ny ● ☎ +4971914820 ● 🖾 +497191482-92280 ● v	vww.mp.de • info@murrplastik.de

Type:

C-profile including strain relief plate (type ZL-C Set)

C-profile

Steel Fix bow clamps

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

Cut out and fax/copy



Project implementation in week/year:

### Project designation:

Opening variant cable drag chain	inside bend	outside bend
(loading side)	on both sides	

### Variable guide channel system

Murrplastik quotation requested	Material:	Plastic	🗅 Aluminium	Stainless steel	□ Steel (zinc-plated)
Guide channel existing / dimensions	Additional	foreign compone	nts:		
Internal width of the guide channel:	ft (mm)				
Internal height of the guide channel:	ft (mm)				
Distance of bearing profiles:	ft (mm)				

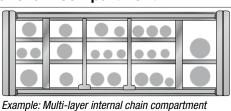
### Partitioning the energy carriers (cables, tubes) into the internal chain compartment

Chain compartment is supposed to be designed by Murrplastik

Assignment according to Murrplastik cable request form

D Murrplastik is supposed to be supply cables, details in MP cable request form

- Chain compartment according to customer request (see sketch below)
- Cables provided by customer (remark outside diameters below)



### Sketches, notes, specific features:

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### **CDC CABLE REQUEST FORM**



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### Quotation Order Date:

Project designation:						Proj	ect impl	ementat	tion in w	eek/yea	r:	
Customer No.: Customer			informatio	on:								
Company:												
Department:												
Contact person:												
Address/PO Box:												
	Address	/PO Box:										
	Phone and exten	sion no.:										
	Fax and exten	sion no.:										
	E-mail	address:										
Env	vironmental cond	itions	of the c	able dr	ag chain	application	<b>1</b> – requ	ired for t	he choic	e of cable	e types	
	Bending radius:		inch	mm 🖵 Oil-resistant								
	Travel distance:		inch		mm	UV resistant/	outdoor a	applicatio	n			
	minimum temperature:		°F		°C	UL/CSA autho	orisation	requeste	d (opera	tion in th	e US/Ca	nada)*
	maximum temperature:		°F		°C	* low stock, low (	options, lon	g delivery ti	imes and m	ninimum ord	er quantity	applicable
	Speed of travel:		ft/s		m/s	🗅 correspondin	g drawin	g/data f	or wire c	onnectio	n attach	ed
	Other:					🗅 customisatio	n: see M	P wire co	nnectior	form		
СD	C assignment			** cables without customisation are cut to to								
	-			per cable one wire connection form is to b								
Pos.	Cables/Conduits	iroo oroo	a agationa	External Shielding		Customisation Total- requested?** length			Overlap at fixed point		Overlap at moving point	
No.	Description, number of w reference type, item No		is sections,	ø in mm	requested?	requested?** (separate form)	in ft			/ in m		/ in m
		010.			🖵 yes	u yes						/
					u yes	u yes						
					□ yes	□ yes						
					□ yes	□ yes						
					U yes	u yes						
					U yes	U yes						
					U yes	□ yes						
					U yes	U yes						
					□ yes	□ yes						
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					u yes	u yes						
					u yes	u yes						
					u yes	u yes						
					🖵 yes	🖵 yes						

**Cables with green-yellow protective conductor (PE) are standard (exception: bus and data cables up to 0.75mm<sup>2</sup>).** Cables with PE are often also marked with G, e.g. 3G1.5 means two normal conductors and 1 PE with a cross section of 1.5mm<sup>2</sup> each. Please identify cables without protective/ground conductor (PE)!

 $Murrplastik System technik GmbH \bullet Dieselstraße 10 \bullet 715700 ppenweiler \bullet Germany \bullet \varpi + 4971914820 \bullet = +497191482 - 92280 \bullet www.mp.de \bullet info@murrplastik.de = +497191482 - 92880 \bullet www.mp.de \bullet info@murrplastik.de = +4971914820 \bullet www.mp.de \bullet www.mp.de \bullet wwww.mp.de \bullet wwww.mp.de \bullet wwww.mp.de$ 



Project designation:							
Position within CDC cable re	equest form no.:	Features:					
Cable reference type:		🗅 No shielding					
Conduit construction/design:		shielded (see below: <i>Shield processing</i> )					
Contact person:		Cable without protective conductor PE					
	Cables with green-yellow protective conductor (PE) are standard (exception: bus and data cables up to 0.75 mm <sup>2</sup> 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						

	Customisatio	n of cable endings				
FP aspect (fixed po	int connection)	MP aspect (moving	MP aspect (moving point connection)			
Ending not processed – cable cut	to total length only	Ending not processed – cable cut to total length only				
alternati	vely:	alternat	alternatively:			
Ending with connector		Ending with connector				
Item No. of connector		Item No. of connector				
Description, supplier:		Description, supplier:				
Connections (quantity of contacts	):	Connections (quantity of contacts):				
Male connector		Male connector				
Female connector		Generation Female connector				
Item No. of contact:		Item No. of contact:				
Housing for connector:		Housing for connector:				
Item No. / design:		Item No. / design:				
Cable outlet on housing:	🕽 straight 🛛 🗅 sideways	Cable outlet on housing:	🗅 straight 🛛 🗅 sidew	ays		
Cable compression gland (type):		Cable compression gland (type):				
Wiring specifications						
Pin assignment: see enclosed plan	or chart					

Standard wiring as extension cord (pin 1 to 1, 2 to 2 etc.)

When used as an extension the connectors are wired from pin 1. If there are not enough wires, the high contact pins will be unconnected.

alternatively:

alternatively:

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

Shield processing	Entire shield	if nec. pair(s) of wire(s)	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:		ft mm	extended with wire/length:		ft mm
shield bent back on jacket:			shield bent back on jacket:		

Labelling	Short text:		Labelling	Short text:				
label cable jacket (sticker, ESL):			label cable jacket (sticker, ESL):					
label single wire(s) (e.g. KDE):			Iabel single wire(s) (e.g. KDE):					
Distance from jacket/cable end:	ft	mm	Distance from jacket/cable end:		ft	mm		
Additional text for labelling: see attached circuit diagram:								

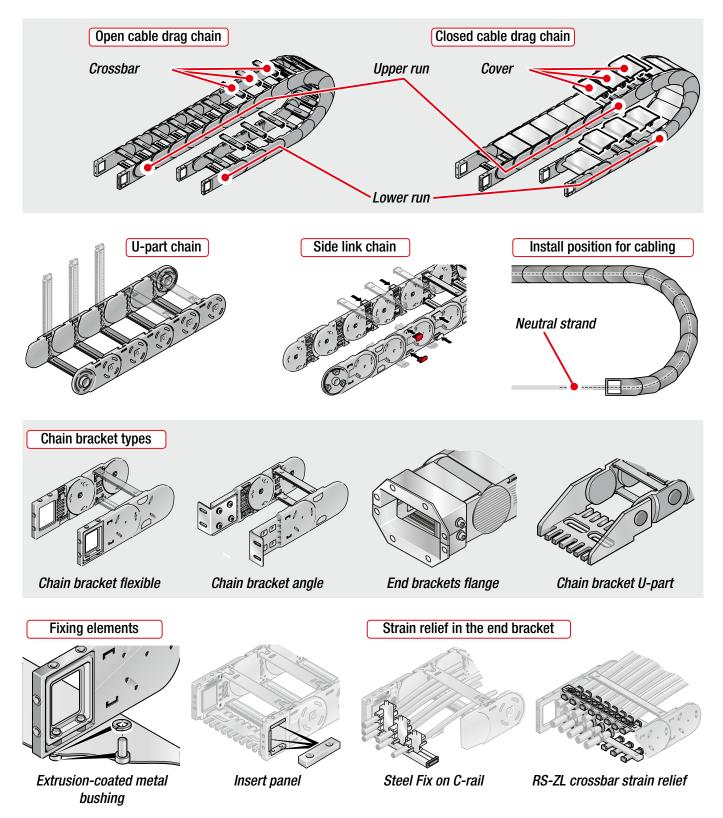
Notes (attachments etc.):

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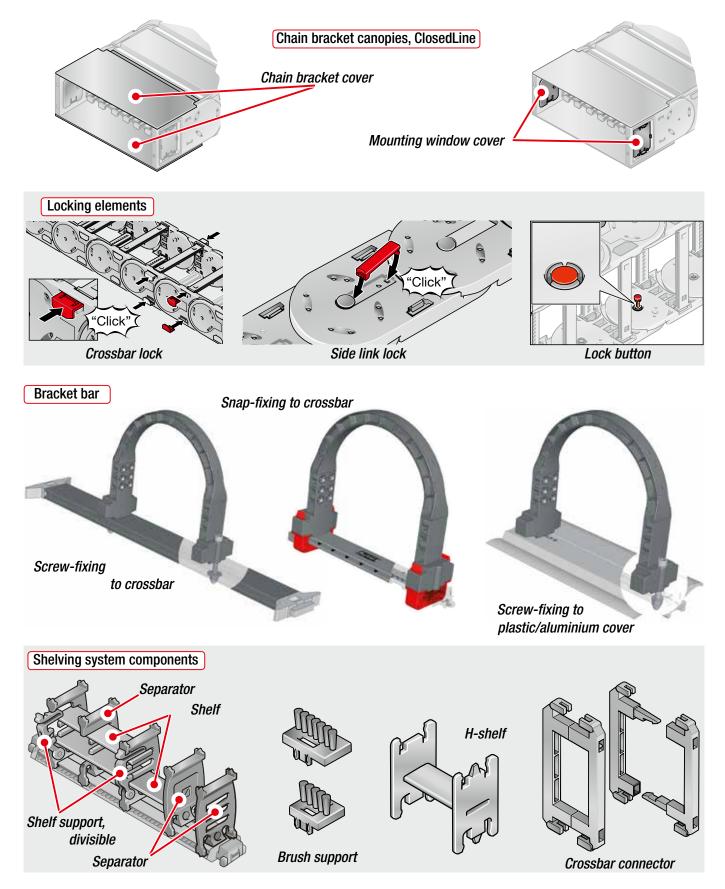
### Murrplastik Glossary - So that you know what we are talking about

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.





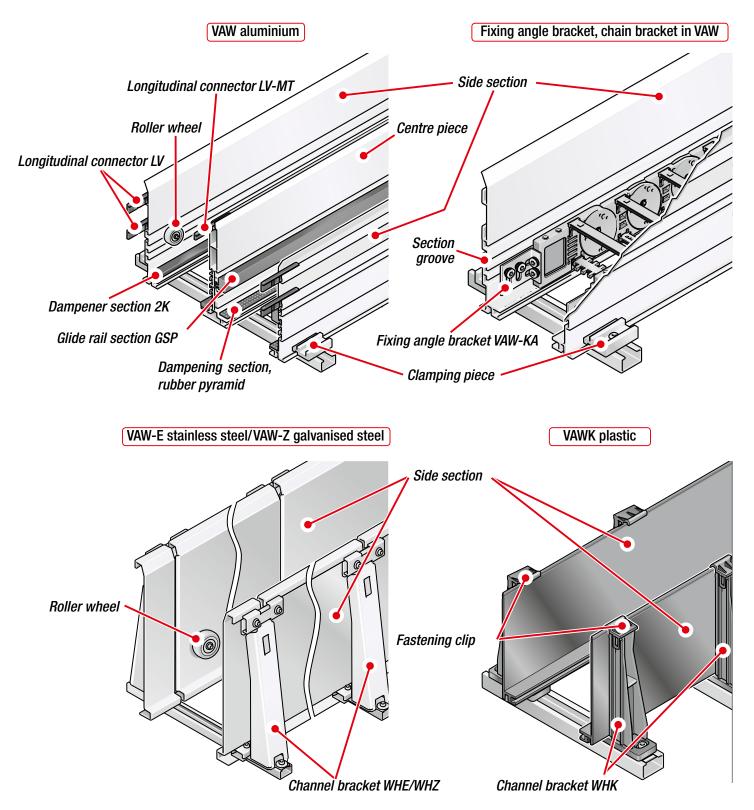
## Murrplastik Glossary – So that you know what we are talking about



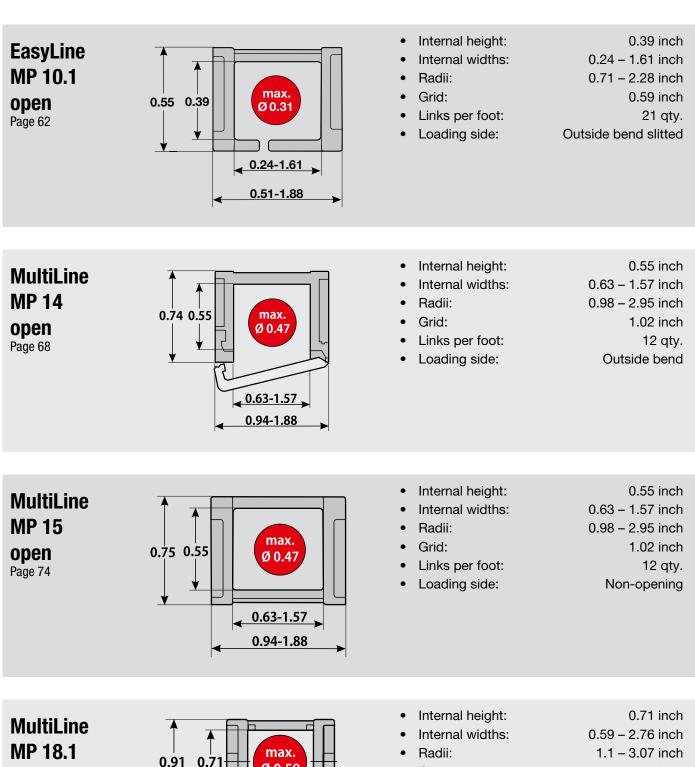
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## Murrplastik Glossary - So that you know what we are talking about

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.







- Grid: •
- Links per foot: .
- Loading side:
- - 1.30 inch
  - 10 qty.
- Inside or outside bend

MP 18.2

open

open

Page 80

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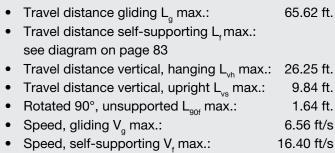
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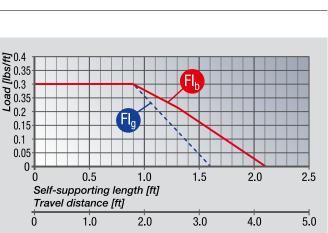
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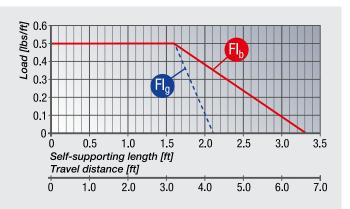


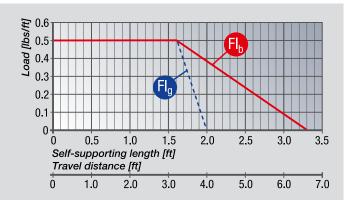
- Travel distance gliding L<sub>g</sub> max.: 32.81 ft.
- Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 65
- Travel distance vertical, hanging L<sub>vh</sub> max.: 6.56 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 3.28 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: not recommended
- Speed, gliding V<sub>g</sub> max.:
   6.56 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 13.12 ft/s
- Acceleration, gliding a<sub>g</sub> max.:
   6.56 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 6.56 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 39.37 ft.
- Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 71
- Travel distance vertical, hanging L<sub>vh</sub> max.: 9.84 ft.
- Travel distance vertical, upright  $L_{vs}$  max.: 6.56 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: not recommended
- Speed, gliding V<sub>a</sub> max.: 6.56 ft/s
- Speed, self-supporting V, max.: 13.12 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 6.56 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 6.56 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 39.37 ft.
   Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 77
- Travel distance vertical, hanging L<sub>vh</sub> max.: 9.84 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 6.56 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: not recommended
- Speed, gliding V<sub>g</sub> max.:
   6.56 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 13.12 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 6.56 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 6.56 ft/s<sup>2</sup>

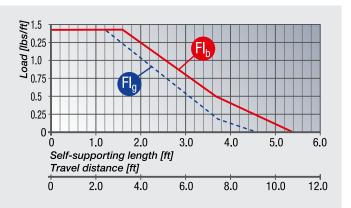


Acceleration, gliding a<sub>g</sub> max.: 16.40 ft/s<sup>2</sup>
Acceleration, self-supporting a<sub>r</sub> max.: 16.40 ft/s<sup>2</sup>

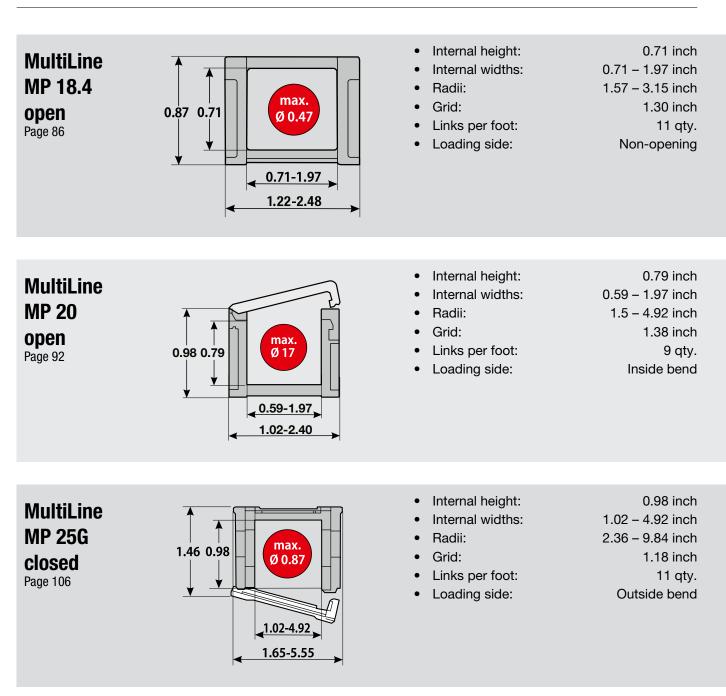


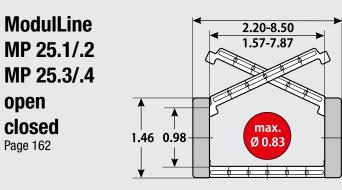










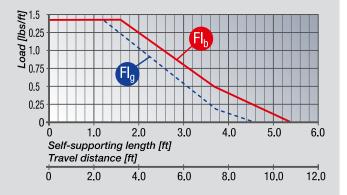


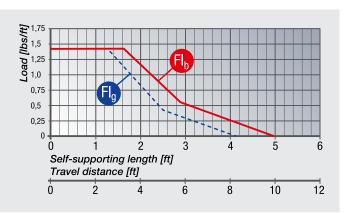
٠	Internal height:	0.98 inch
•	Internal widths:	1.57 – 7.87 inch
•	Radii:	1.97 – 11.81 inch
•	Grid:	1.77 inch
•	Links per foot:	7 qty.
•	Loading side:	Inside or outside bend

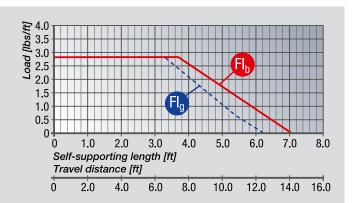
- 65.62 ft. Travel distance gliding L<sub>a</sub> max.: • Travel distance self-supporting L, max.:
- see diagram on page 89 26.25 ft. Travel distance vertical, hanging L<sub>vh</sub> max.: •
- 9.84 ft. • Travel distance vertical, upright L<sub>vs</sub> max.:
- Rotated 90°, unsupported L<sub>90f</sub> max.: 1.64 ft.
- Speed, gliding V<sub>a</sub> max.: • 6.56 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 16.40 ft/s •
- Acceleration, gliding a max.: 16.40 ft/s<sup>2</sup> .
- Acceleration, self-supporting a, max.: 16.40 ft/s<sup>2</sup>
- ٠ Travel distance gliding L<sub>a</sub> max.: not recommended
- Travel distance self-supporting L, max.: see diagram on page 95
- Travel distance vertical, hanging  $L_{vh}$  max.: 26.25 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 9.84 ft.
- Rotated 90°, unsupported L<sub>gof</sub> max.: 1.64 ft.
- Speed, self-supporting V, max.: 32.81 ft/s .
- Acceleration, self-supporting a, max.: 32.81 ft/s<sup>2</sup>

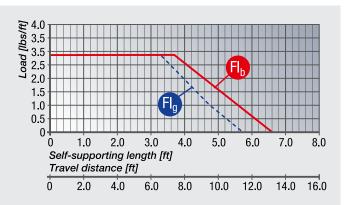
131.23 ft. Travel distance gliding L<sub>a</sub> max.: Travel distance self-supporting L, max.: see diagram on page 109 Travel distance vertical, hanging  $L_{vh}$  max.: 82.02 ft. Travel distance vertical, upright L<sub>vs</sub> max.: 9.84 ft. • • Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft. 9.84 ft/s •

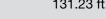
- Speed, gliding V<sub>a</sub> max.: Speed, self-supporting V<sub>f</sub> max.: 19.69 ft/s •
- Acceleration, gliding a max.: 32.81 ft/s<sup>2</sup> .
- Acceleration, self-supporting a, max.: 49.21 ft/s<sup>2</sup>
- Travel distance gliding L<sub>a</sub> max.: 114.83 ft. Travel distance self-supporting L, max.: see diagram on page 165 82.02 ft. Travel distance vertical, hanging L<sub>vh</sub> max.: 9.84 ft. • Travel distance vertical, upright L<sub>vs</sub> max.: Rotated 90°, unsupported L<sub>90f</sub> max.: 2.30 ft. Speed, gliding V<sub>a</sub> max.: 9.84 ft/s •
- Speed, self-supporting V<sub>f</sub> max.: 32.81 ft/s • • Acceleration, gliding a<sub>a</sub> max.: 32.81 ft/s<sup>2</sup> Acceleration, self-supporting a, max.: 49.21 ft/s<sup>2</sup>



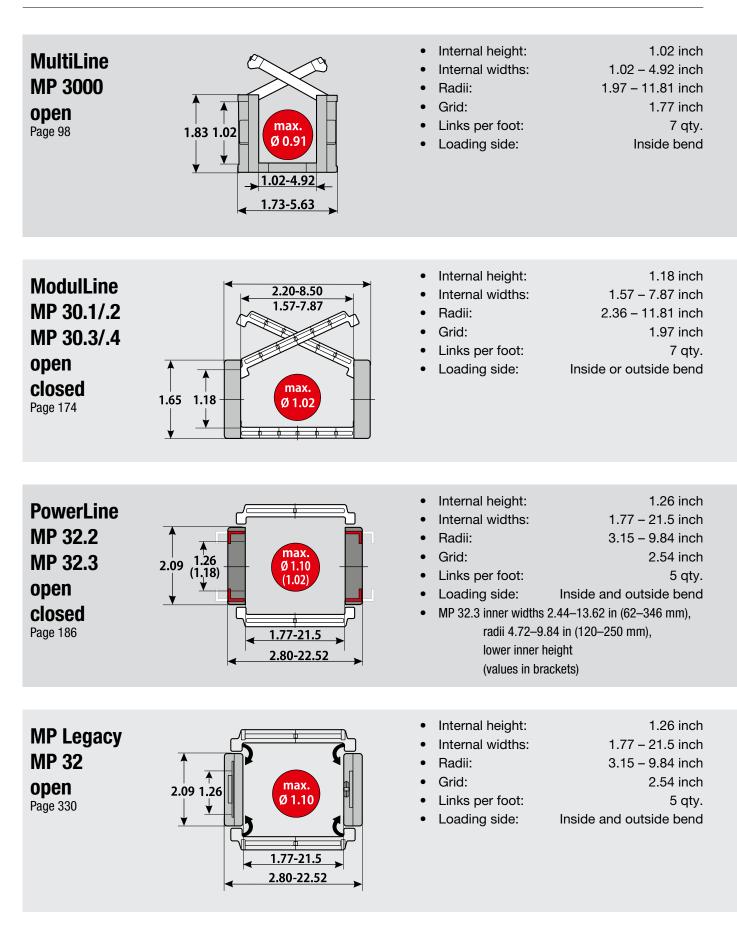






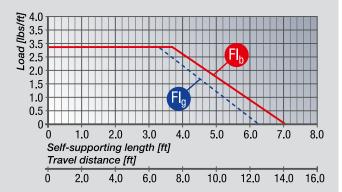




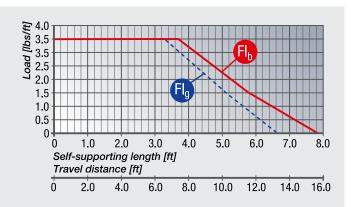


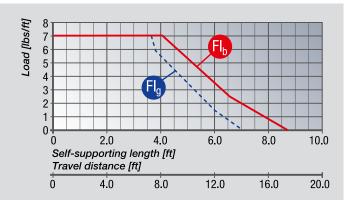
328.08 ft.

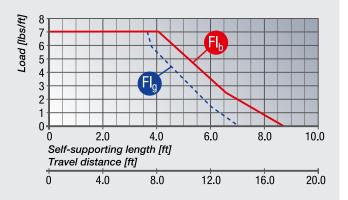
- Travel distance gliding L<sub>a</sub> max.: 196.85 ft. • Travel distance self-supporting L<sub>r</sub>max.: see diagram on page 101
- Travel distance vertical, hanging L<sub>vh</sub> max.: 131.23 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 9.84 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 2.30 ft.
- Speed, gliding V<sub>a</sub> max.: • 9.84 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 19.69 ft/s •
- Acceleration, gliding a max.: 32.81 ft/s<sup>2</sup> Acceleration, self-supporting a, max.: 49.21 ft/s<sup>2</sup>
- ٠ Travel distance gliding L<sub>a</sub> max.: 131.23 ft. Travel distance self-supporting L, max.: see diagram on page 177
- Travel distance vertical, hanging L<sub>vh</sub> max.: 98.43 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 9.84 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 2.30 ft.
- Speed, gliding V<sub>a</sub> max.: 9.84 ft/s .
- Speed, self-supporting V, max.: 32.81 ft/s
- Acceleration, gliding a max.: 32.81 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 49.21 ft/s<sup>2</sup>
- 328.08 ft. Travel distance gliding L<sub>a</sub> max.: Travel distance self-supporting L, max.: see diagram on page 189 Travel distance vertical, hanging  $L_{vh}$  max.: 131.23 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 16.40 ft. •
- Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s •
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s • .
- Acceleration, gliding a max.: 82.02 ft/s<sup>2</sup> • Acceleration, self-supporting a, max.: 98.43 ft/s<sup>2</sup>
- Travel distance gliding L<sub>a</sub> max.: Travel distance self-supporting L, max.: see diagram on page 333
- Travel distance vertical, hanging L<sub>vh</sub> max.: 131.23 ft.
- 16.40 ft. • Travel distance vertical, upright L<sub>vs</sub> max.:
- Rotated 90°, unsupported L<sub>90f</sub> max.: 6.56 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s •
- Acceleration, gliding a<sub>a</sub> max.: 82.02 ft/s<sup>2</sup> Acceleration, self-supporting a, max.: 98.43 ft/s<sup>2</sup>



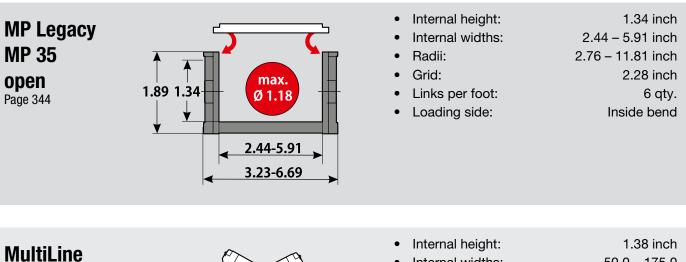
murrplastik



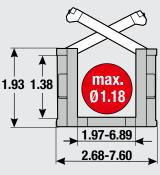








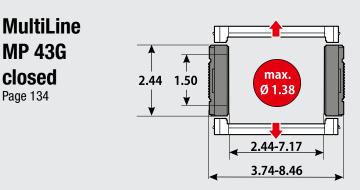
MP 35.1 MP 35.2 open open Page 114



•	Internal height:	1.38 inch
•	Internal widths:	50.0 – 175.0
•	Radii:	63.0 – 250.0
•	Grid:	2.20 inch
•	Links per foot:	6 qty.
•	Loading side:	Inside or outside bend

MultiLine MP 36G closed Page 126		max. Ø 1.26
		2.44-4.92
	•	3.07-5.55

<ul> <li>Internal height:</li> </ul>	1.42 inch
<ul> <li>Internal widths:</li> </ul>	2.44 – 4.92 inch
Radii:	3.15 – 7.87 inch
• Grid:	1.57 inch
<ul> <li>Links per foot:</li> </ul>	8 qty.
<ul> <li>Loading side:</li> </ul>	Inside bend

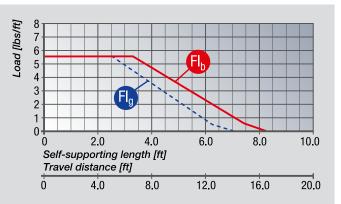


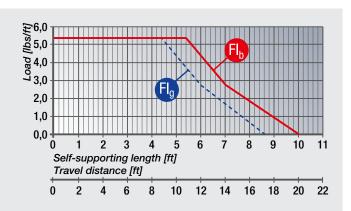
•	Internal height:	1.50 inch
•	Internal widths:	2.44 – 7.17 inch
•	Radii:	4.92 – 15.75 inch
•	Grid:	2.97 inch
•	Links per foot:	4 qty.
•	Loading side:	Inside and outside bend

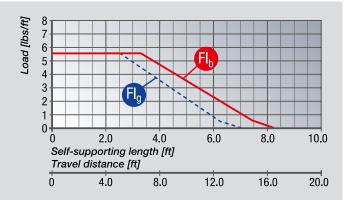
 Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 347

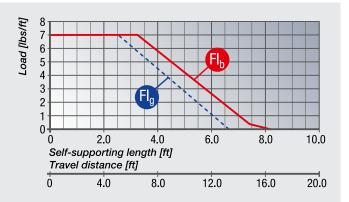
•

- Travel distance vertical, hanging L<sub>vh</sub> max.: 131.23 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 9.84 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft.
- Speed, gliding V<sub>g</sub> max.: 9.84 ft/s
   Speed self-supporting V max : 32.81 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 32.81 ft/s
  Acceleration, gliding a max.: 49.21 ft/s<sup>2</sup>
- Acceleration, gliding a<sub>g</sub> max.: 49.21 ft/s<sup>2</sup>
   Acceleration, self-supporting a<sub>r</sub> max.: 65.62 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 262.47 ft.
   Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 117
- Travel distance vertical, hanging L<sub>vh</sub> max.: 164.04 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 9.84 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s
- Speed, self-supporting V, max.: 65.62 ft/s
- Acceleration, gliding a<sub>a</sub> max.: 49.21 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 164.04 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 196.85 ft.
  Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 129
  Travel distance vertical, hanging L<sub>vh</sub> max.: 98.43 ft.
  Travel distance vertical, upright L<sub>vs</sub> max.: 9.84 ft.
  Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft.
- Speed, gliding V<sub>a</sub> max.: 9.84 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 32.81 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 49.21 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 65.62 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 164.04 ft.
   Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 137
   Travel distance vertical, hanging L<sub>vh</sub> max.: 131.23 ft.
- Travel distance vertical, upright  $L_{vs}$  max.: 9.84 ft.
- Rotated 90°, unsupported L<sub>anf</sub> max.: 3.28 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s
- Speed, self-supporting V, max.: 49.21 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 49.21 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 65.62 ft/s<sup>2</sup>



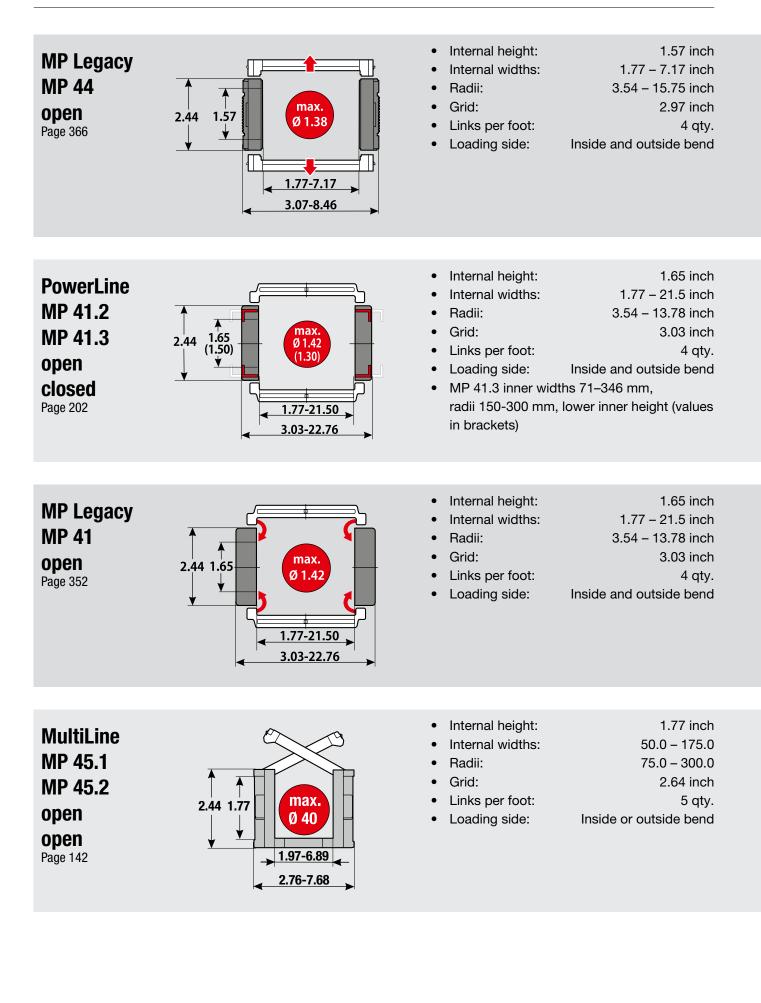








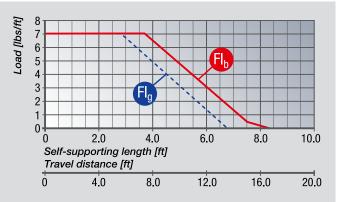




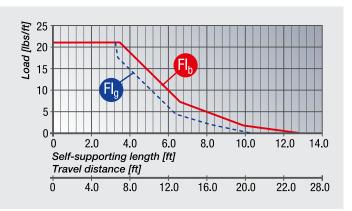
- Travel distance gliding L<sub>g</sub> max.: 164.04 ft.
   Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 369
- Travel distance vertical, hanging L<sub>vh</sub> max.: 131.23 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 9.84 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft.
- Speed, gliding V<sub>g</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 49.21 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 49.21 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>r</sub> max.: 65.62 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.:
   Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 205
- Travel distance vertical, hanging L<sub>vh</sub> max.: 164.04 ft.

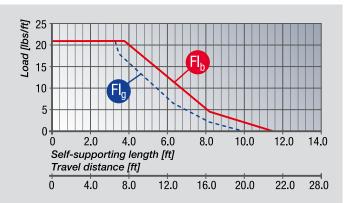
393.70 ft.

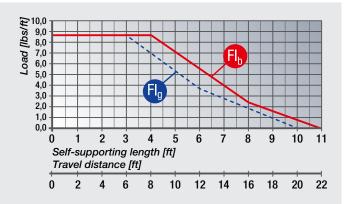
- Travel distance vertical, upright L<sub>vs</sub> max.: 19.69 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s
- Acceleration, gliding a<sub>a</sub> max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 98.43 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 393.70 ft.
  Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 355
  Travel distance vertical, hanging L<sub>vh</sub> max.: 164.04 ft.
  Travel distance vertical, upright L<sub>vs</sub> max.: 19.69 ft.
  Rotated 90°, unsupported L<sub>90f</sub> max.: 6.56 ft.
- Speed, gliding V<sub>a</sub> max.:
   16.40 ft/s
- Speed, self-supporting V, max.: 65.62 ft/s
- Acceleration, gliding a max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 98.43 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 262.47 ft.
   Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 145
   Travel distance vertical, hanging L<sub>vh</sub> max.: 196.85 ft.
   Travel distance vertical, upright L<sub>vs</sub> max.: 13.12 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 13.12 ft.
   Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.:
   65.62 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 49.21 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 164.04 ft/s<sup>2</sup>



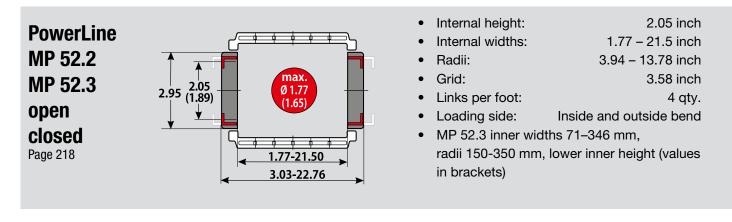
murrplastik

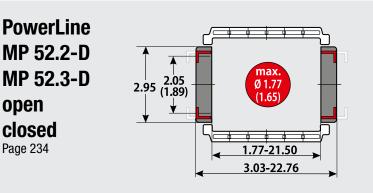












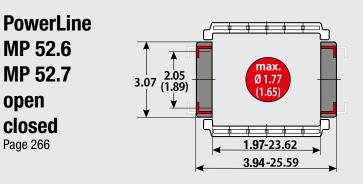
open

closed Page 234

•	Internal height:	2.05 inch
•	Internal widths:	45.0 - 546.0
•	Radii:	200.0
•	Grid:	3.58 inch
٠	Links per foot:	4 qty.
•	Loading side:	Inside and outside bend

PowerLine MP 52.4 MP 52.5 open closed Page 250
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Internal height:	2.05 inch
<ul> <li>Internal widths:</li> </ul>	45.0 - 546.0
Radii:	125.0 – 300.0
• Grid:	3.58 inch
<ul> <li>Links per foot:</li> </ul>	4 qty.
Loading side:	Inside and outside bend

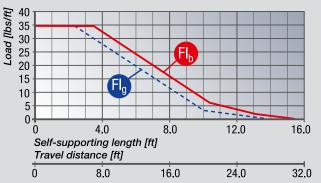


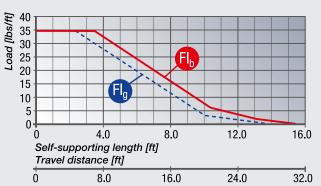
Internal height:	2.05 inch
Internal widths:	50.0 – 23.62 inch
Radii:	150.0 – 11.81 inch
Grid:	3.58 inch
Links per foot:	4 qty.
Loading side:	Inside and outside bend

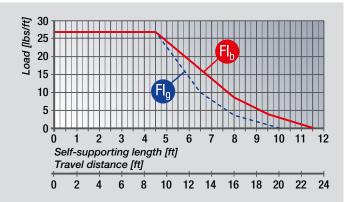
 Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 221

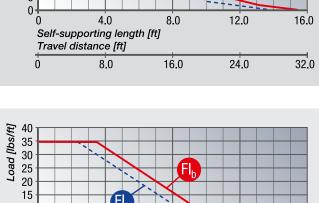
•

- Travel distance vertical, hanging L<sub>vh</sub> max.: 196.85 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 19.69 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 6.56 ft.
- Speed, gliding V<sub>g</sub> max.: 16.40 ft/s
- Speed, self-supporting  $V_f$  max.: 65.62 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 82.02 ft/s<sup>2</sup>
   Acceleration, self-supporting a<sub>r</sub> max.: 98.43 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 492.13 ft.
- Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 237
- Travel distance vertical, hanging  $L_{vh}$  max.: 196.85 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 19.69 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 6.56 ft.
- Speed, gliding V<sub>g</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 98.43 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 164.04 ft.
   Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 255
   Travel distance vertical, hanging L<sub>vh</sub> max.: 164.04 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 13.12 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 3.28 ft.
- Speed, gliding V<sub>g</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 98.43 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 492.13 ft.
- Travel distance vertical, hanging  $L_{vh}$  max.: 262.47 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 19.69 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 4.92 ft.
- Speed, gliding V<sub>g</sub> max.: 19.69 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 32.81 ft/s<sup>2</sup>



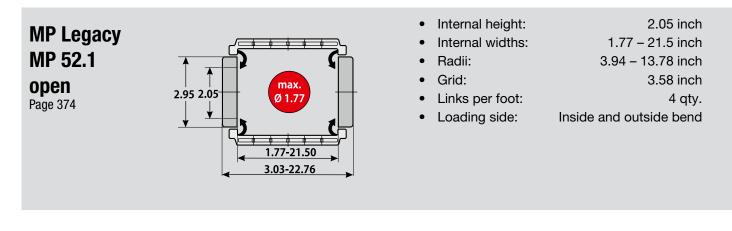






murrplastik 🖊





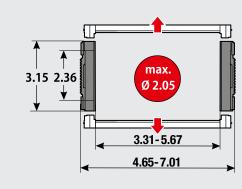
MultiLine MP 65G closed Page 154

**MP Legacy** 

**MP 66** 

open

Page 400



3.11-8.50

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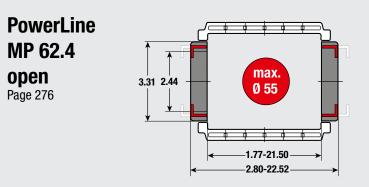
3.15 2.36

¥

<ul> <li>Internal height:</li> </ul>	2.36 inch
<ul> <li>Internal widths:</li> </ul>	3.31 – 5.67 inch
Radii:	7.87 – 15.75 inch
Grid:	3.60 inch
<ul> <li>Links per foot:</li> </ul>	4 qty.
<ul> <li>Loading side:</li> </ul>	Inside and outside bend

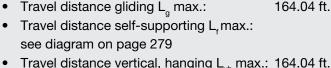
Internal height:
Internal widths:
Radii:
Grid:
Links per foot:
Loading side:

•	Internal height:	2.36 inch
•	Internal widths:	1.77 – 7.17 inch
•	Radii:	5.91 – 15.75 inch
•	Grid:	3.60 inch
•	Links per foot:	4 qty.
•	Loading side:	Inside and outside bend



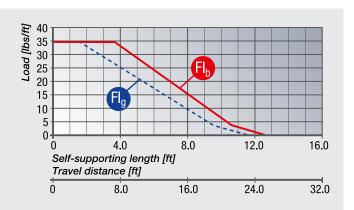
•	Internal height:	2.44 inch
•	Internal widths:	45.0 - 546.0
•	Radii:	135.0 – 300.0
•	Grid:	3.58 inch
•	Links per foot:	4 qty.
•	Loading side:	Inside and outside bend

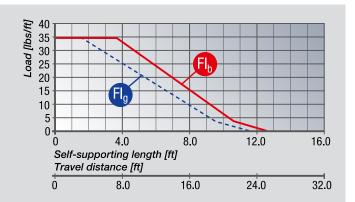
- Travel distance gliding L<sub>g</sub> max.: 492.13 ft.
   Travel distance self-supporting L<sub>e</sub> max.:
- see diagram on page 377
- Travel distance vertical, hanging L<sub>vh</sub> max.: 196.85 ft.
- Travel distance vertical, upright  $L_{vs}$  max.: 19.69 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 9.84 ft.
   Speed gliding V max : 16.40 ft/s
- Speed, gliding V<sub>g</sub> max.: 16.40 ft/s
   Speed self-supporting V max : 65.62 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s
   Acceleration, gliding a<sub>n</sub> max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 98.43 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 196.85 ft.
  Travel distance self-supporting L<sub>f</sub> max.:
- see diagram on page 157
  Travel distance vertical, hanging L<sub>vh</sub> max.: 164.04 ft.
- Travel distance vertical, upright  $L_{vs}$  max.: 16.40 ft.
- Rotated 90°, unsupported  $L_{90f}$  max.: 6.56 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s
- Speed, self-supporting V, max.: 49.21 ft/s
- Acceleration, gliding a max.: 49.21 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 65.62 ft/s<sup>2</sup>
- Travel distance gliding L<sub>g</sub> max.: 196.85 ft.
  Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 403
  Travel distance vertical, hanging L<sub>vh</sub> max.: 164.04 ft.
  Travel distance vertical, upright L<sub>vs</sub> max.: 16.40 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 6.56 ft.
- Speed, gliding V<sub>g</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 49.21 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 49.21 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 65.62 ft/s<sup>2</sup>

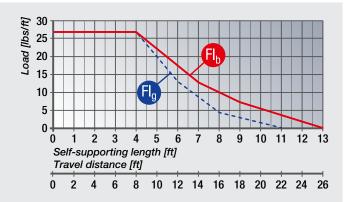


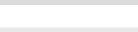
- Travel distance vertical, hanging L<sub>vh</sub> max.: 164.04 ft.
  Travel distance vertical, upright L<sub>u</sub> max.: 13.12 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 13.12 ft.
   Rotated 90°, unsupported L<sub>anf</sub> max.: 3.28 ft.
- Speed, gliding V<sub>a</sub> max.: 3.28 ft.
   Speed, gliding V<sub>a</sub> max.: 16.40 ft/s
- Speed, self-supporting  $V_{g}$  max.: 65.62 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 98.43 ft/s<sup>2</sup>

40 35 30 25 20 Flh 20 15 10 5 0 4.0 8.0 12.0 16.0 Self-supporting length [ft] Travel distance [ft] 32.0 Ó 8.0 16.0 24.0









MP 62.1

open

Page 388

( Ρ



2.44 inch

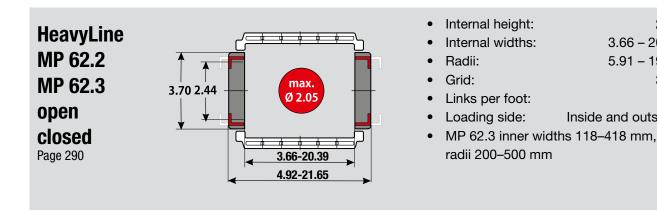
3.94 inch

3 qty.

3.66 - 20.39 inch

5.91 - 19.69 inch

Inside and outside bend

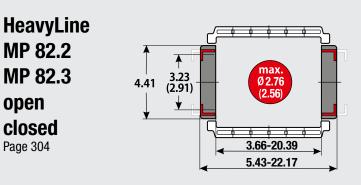


**MP Legacy** max. 3.70 2.44 Ø 2.05 3.66-20.39 4.92-21.65

<ul> <li>Internal height:</li> </ul>	2.44 inch
<ul> <li>Internal widths:</li> </ul>	3.66 – 20.39 inch
Radii:	5.91 – 19.69 inch
• Grid:	3.94 inch
<ul> <li>Links per foot:</li> </ul>	3 qty.
<ul> <li>Loading side:</li> </ul>	Inside and outside bend

3 66-20 30	
<ul> <li><a>3.66-20.39</a></li> <li><a>4.92-21.65</a></li> </ul>	<b>→</b>

Internal height:	2.83 inch
<ul> <li>Internal widths:</li> </ul>	3.66 – 20.39 inch
Radii:	5.91 – 19.69 inch
• Grid:	3.94 inch
<ul> <li>Links per foot:</li> </ul>	3 qty.
Loading side:	Inside and outside bend

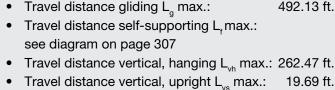


<ul> <li>Internal height:</li> </ul>	3.23 inch				
<ul> <li>Internal widths:</li> </ul>	3.66 – 20.39 inch				
Radii:	5.91 – 25.59 inch				
Grid:	• Grid: 4.65 inch				
• Links per foot: 3 qty.					
• Loading side: Inside and outside bend					
• MP 82.3 inner widths 118-418 mm,					
radii 200-650 mm, lower inner height (values					

in brackets)

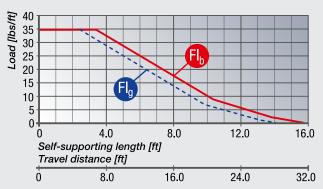
murrplastik

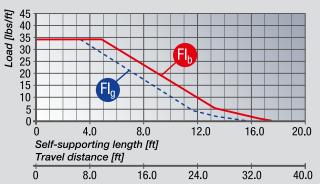
- Travel distance gliding L<sub>a</sub> max.: 492.13 ft. • Travel distance self-supporting L<sub>r</sub>max.:
- see diagram on page 293 Travel distance vertical, hanging L<sub>vh</sub> max.: 213.25 ft.
- 19.69 ft. • Travel distance vertical, upright L<sub>vs</sub> max.:
- Rotated 90°, unsupported L<sub>90f</sub> max.: 13.12 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s •
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s •
- Acceleration, gliding a max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 131.23 ft/s<sup>2</sup>
- Travel distance gliding L<sub>a</sub> max.: 492.13 ft.
- Travel distance self-supporting L, max.: see diagram on page 391
- Travel distance vertical, hanging L<sub>vh</sub> max.: 213.25 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 19.69 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 13.12 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s .
- Speed, self-supporting V<sub>f</sub> max.: • 65.62 ft/s
- Acceleration, gliding a max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 131.23 ft/s<sup>2</sup>
- 492.13 ft. Travel distance gliding L<sub>a</sub> max.: Travel distance self-supporting L, max.: see diagram on page 411
- Travel distance vertical, hanging L<sub>vh</sub> max.: 262.47 ft.
- Travel distance vertical, upright L<sub>vs</sub> max.: 19.69 ft. •
- Rotated 90°, unsupported L<sub>90f</sub> max.: 19.69 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s •
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s •
- Acceleration, gliding a max.: 82.02 ft/s<sup>2</sup> .
- Acceleration, self-supporting a, max.: 131.23 ft/s<sup>2</sup>

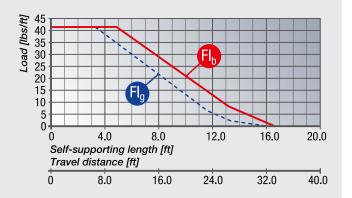


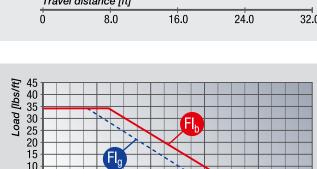
- Rotated 90°, unsupported L<sub>gof</sub> max.: 9.84 ft.
- Speed, gliding V<sub>a</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s •
- Acceleration, gliding a<sub>a</sub> max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a, max.: 131.23 ft/s<sup>2</sup>

40 35 30 25 20 Fl 20 15 10 5 0 12.0 4.0 8.0 16.0 Self-supporting length [ft] Travel distance [ft] 32.0 Ò 8.0 16.0 24.0

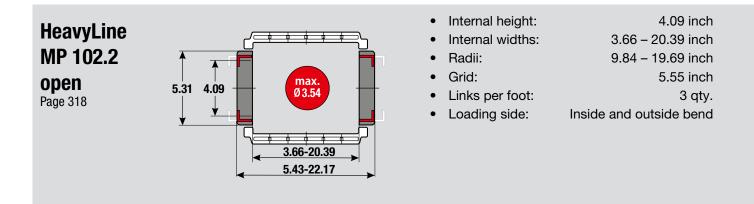














- Travel distance gliding L<sub>g</sub> max.: 492.13 ft.
- Travel distance self-supporting L<sub>f</sub> max.: see diagram on page 321
- Travel distance vertical, hanging L<sub>vh</sub> max.: 262.47 ft.
- Travel distance vertical, upright  $L_{vs}$  max.: 26.25 ft.
- Rotated 90°, unsupported L<sub>90f</sub> max.: 26.25 ft.
- Speed, gliding V<sub>g</sub> max.: 16.40 ft/s
- Speed, self-supporting V<sub>f</sub> max.: 65.62 ft/s
- Acceleration, gliding a<sub>g</sub> max.: 82.02 ft/s<sup>2</sup>
- Acceleration, self-supporting a<sub>f</sub> max.: 131.23 ft/s<sup>2</sup>

45 40 35 20 15 10 Flh 10 5 0+ 0 4.0 12.0 16.0 20.0 8.0 Self-supporting length [ft] Travel distance [ft] 40.0 Ö 24.0 32.0 8.0 16.0

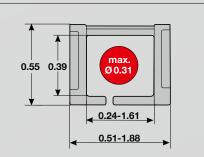
# EASYLINE



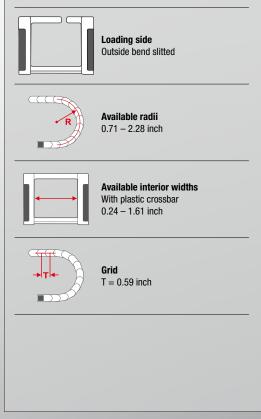
# MP 10.1



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



#### **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

32.81 ft.				
see diagram on page 65				
6.56 ft.				
3.28 ft.				
not recommended				
6.56 ft/s				
13.12 ft/s				
6.56 ft/s <sup>2</sup>				
6.56 ft/s <sup>2</sup>				

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

### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**



Chain bracket U-part



#### **MP 10.1 OPEN**

### **ORDERING KEY**

Type code Variat	tion Inside width		Inside width	Outside width	Radius	Rail variant	Material	Chain length
Crossbar on outside bend Crossbar on inside bend Slotted on outside bend	006 <sup>1)</sup> [0.24]	[0.51]			<b>018</b> [0.71]	0 Plastic, full-ridged with bias	Polyamide (PA): <b>0</b> standard (PA/black)	
	<b>009</b> [0.35]	016 [0.63]						
	015 [0.59]	<b>022</b> [0.87]			028		1 UL94 / V0	
	<b>021</b> [0.83]	<b>028</b> [1.10]			[1.10]		(PA/oxide red)	
	<b>031</b> [1.22]	<b>038</b> [1.50]			038		- ESD	
	<b>041</b> [1.61]	<b>048</b> [1.89]			[1.50]		7 (PA/light gray)	
	_				<b>048</b> [1.89]		9 Special version (on request)	
					<b>058</b> [2.28]			
	_							
	_							
↓ ↓					Left left left left left left left left l	↓ ↓	↓ ↓	
8888 88						8		
						0 000041		
		Inside	width 0.2	4 in.; radiu	s 0.71 in.			

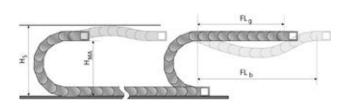
Plastic crossbar, full-ridged with bias, material black-colored polyamide Chain length 41 in. (70 links)

<sup>1)</sup> max. line diameter 0.20 in. (5 mm)



Dimensions in mm [US inch]

#### **SELF-SUPPORTING LENGTH**

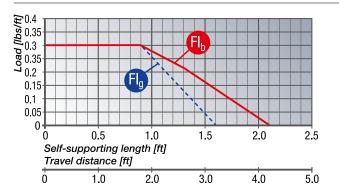


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

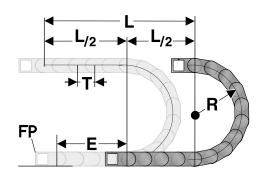
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### **DETERMINING THE CHAIN LENGTH**



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 1.18 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 1.18 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E \approx 1$  ft chain = 21 qty. x 0.59 inch.

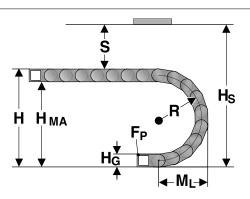
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 0.59 inch

#### **INSTALLATION DIMENSIONS**

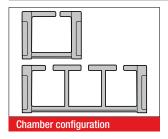


The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has

to be taken into account.

Radius R	0.71	1.10	1.50	1.89	2.28
Outside height of chain link ( $H_{\rm g}$ )	0.55	0.55	0.55	0.55	0.55
Height of bend (H)	1.97	2.75	3.55	4.33	5.11
Height of moving end connection (H <sub>MA</sub> )	1.42	2.20	3.00	3.78	4.56
Safety margin (S)	0.39	0.39	0.39	0.39	0.39
Installation height (H <sub>s</sub> )	2.36	3.14	3.94	4.72	5.50
Arc projection (M <sub>L</sub> )	1.58	1.97	2.36	2.76	3.14

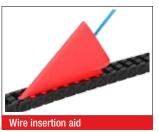
#### **MP 10.1 CHAMBER SIZE**



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.

Туре	Number of chambers qty.	Chamber width inch
10.1 006	1	0.26
10.1 009	1	0.37
10.1 015	1	0.61
10.1 021	2	0.37
10.1 031	3	0.37
10.1 041	4	0.35

#### WIRE INSERTION AID



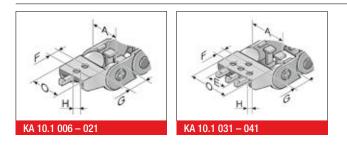
The wire insertion tool allows for quick and simple installation of cables and conduits into the cable drag chain.

Order No. Туре KE 83729010

66

Learn more at www.murrplastik.de Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

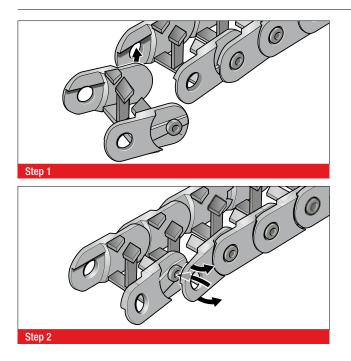
#### **KA 10.1 CHAIN BRACKET U-PART**



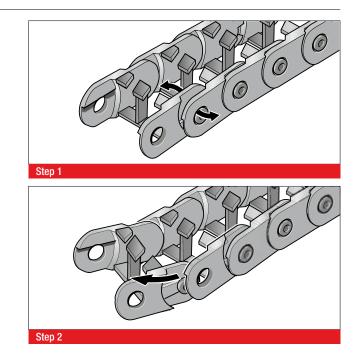
The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M3 screws. The cables or conduits may be fastened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

Туре	Order No.	Material	Inside width A inch	E inch	F inch	G inch	HØ inch	Outside width of KA O inch
KA 10.1 006 Female end	010100005000	Plastic	0.24		0.31	0.43	0.13	A+0.28
KA 10.1 006 Male end	010100005100	Plastic	0.24		0.31	0.43	0.13	A+0.28
KA 10.1 009 Female end	010100005200	Plastic	0.35		0.31	0.43	0.13	A+0.28
KA 10.1 009 Male end	010100005300	Plastic	0.35		0.31	0.43	0.13	A+0.28
KA 10.1 015 Female end	010100005400	Plastic	0.59		0.31	0.43	0.13	A+0.28
KA 10.1 015 Male end	010100005500	Plastic	0.59		0.31	0.43	0.13	A+0.28
KA 10.1 021 Female end	010100005600	Plastic	0.83		0.31	0.43	0.13	A+0.28
KA 10.1 021 Male end	010100005700	Plastic	0.83		0.31	0.43	0.13	A+0.28
KA 10.1 031 Female end	010100005800	Plastic	1.22	A-0.35	0.31	0.43	0.13	A+0.28
KA 10.1 031 Male end	010100005900	Plastic	1.22	A-0.35	0.31	0.43	0.13	A+0.28
KA 10.1 041 Female end	010100006000	Plastic	1.61	A-0.35	0.31	0.43	0.13	A+0.28
KA 10.1 041 Male end	010100006100	Plastic	1.61	A-0.35	0.31	0.43	0.13	A+0.28

#### **ASSEMBLY**



### DISASSEMBLY



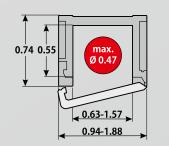
# MULTILINE



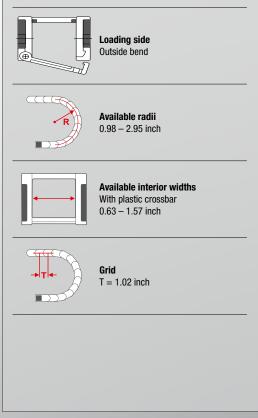
# MP 14

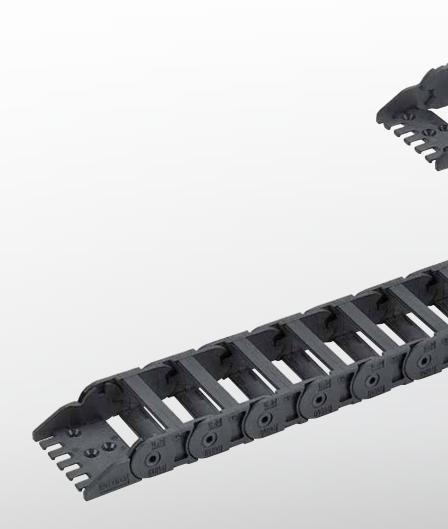


- LOW-COST VARIANT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED



### **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

39.37 ft.
see diagram on page 71
9.84 ft.
6.56 ft.
not recommended
6.56 ft/s
13.12 ft/s
6.56 ft/s <sup>2</sup>
6.56 ft/s <sup>2</sup>

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

### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**



**SHELVING SYSTEM** 

Separator TR

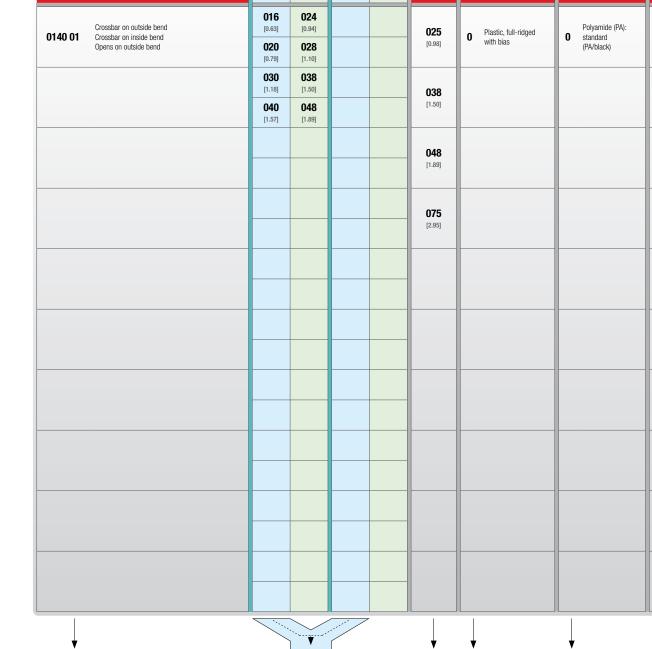
#### **GUIDE CHANNELS**



VAW aluminum



ORDERING EXAMPLE: 0140 01 020 048 0 0 988 Crossbar in inside and outside bend; can be opened in outside bend Inside width 0.79 in. (20.00 mm); 1.89 in. (48.00 mm) Full-ridged with bias, material black-colored polyamide Chain length 38.9 in. (988.00 mm) (38 links)



\_ \_

Inside

width

Outside

width

Inside

width

Outside

width

Radius

Rail variant

**ORDERING KEY** 

Type code

Variation



Dimensions in mm [US inch]

Chain length

Material

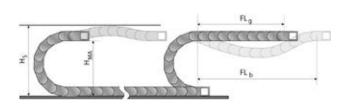
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MP 14 OPEN

#### **SELF-SUPPORTING LENGTH**

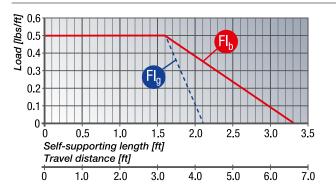


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

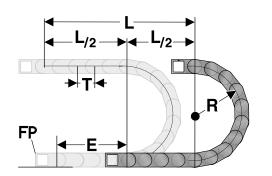
The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{q}$  = Self-supporting length, upper run straight
- $FL_{b}^{"}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### **DETERMINING THE CHAIN LENGTH**



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 1.18 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 1.18 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E \approx 1$  ft chain = 12 qty. x 1.02 inch.

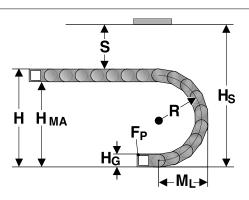
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 1.02 inch

#### **INSTALLATION DIMENSIONS**

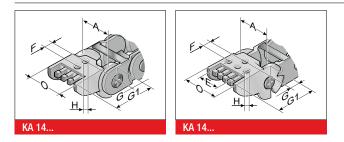


The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to

be taken into account.

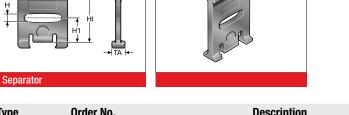
Radius R	0.98	1.50	1.89	2.95
Outside height of chain link $(H_{\rm g})$	0.75	0.75	0.75	0.75
Height of bend (H)	2.71	3.75	4.53	6.65
Height of moving end connection (H <sub>MA</sub> )	1.96	3.00	3.78	5.90
Safety margin (S)	0.79	0.79	0.79	0.79
Installation height (H <sub>s</sub> )	3.50	4.54	5.32	7.44
Arc projection (M <sub>L</sub> )	2.38	2.90	3.28	4.35

#### **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.

Туре	Order No.	Material	Inside width A inch	E inch	F inch	G inch	G1 inch	HØ inch	Outside width of KA O inch
KA 14016 Female end	014000005000	Plastic	0.63		0.31	0.43	1.20	0.13	A+0.31
KA 14016 Male end	014000005100	Plastic	0.63		0.31	0.30	1.20	0.13	A+0.31
KA 14020 Female end	014000005200	Plastic	0.79		0.31	0.43	1.20	0.13	A+0.31
KA 14020 Male end	014000005300	Plastic	0.79		0.31	0.30	1.20	0.13	A+0.31
KA 14030 Female end	014000005400	Plastic	1.18	A-0.31	0.31	0.43	1.20	0.13	A+0.31
KA 14030 Male end	014000005500	Plastic	1.18	A-0.31	0.31	0.30	1.20	0.13	A+0.31
KA 14040 Female end	014000005600	Plastic	1.57	A-0.31	0.31	0.43	1.20	0.13	A+0.31
KA 14040 Male end	014000005700	Plastic	1.57	A-0.31	0.31	0.30	1.20	0.13	A+0.31



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

Туре	Order No.	Description	Version	TI	TA	HI
				inch	inch	inch
TR 14	014000009200	Separator	movable	0.06	0.24	0.55

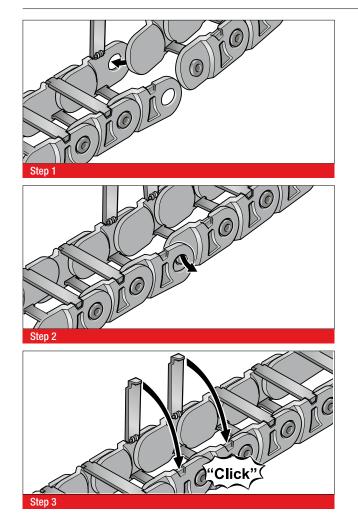
#### **VAW GUIDE CHANNEL (ALUMINUM)**

l**∉**\_TI

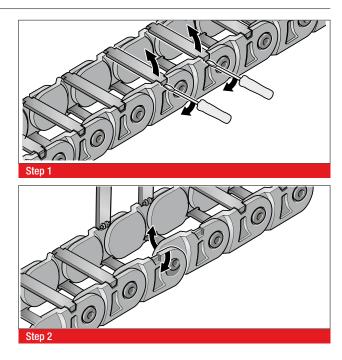


A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

#### ASSEMBLY



#### DISASSEMBLY



73



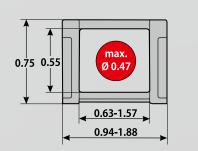
# MULTILINE



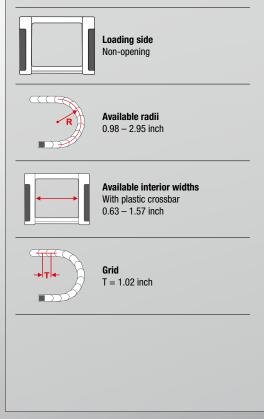
# MP 15

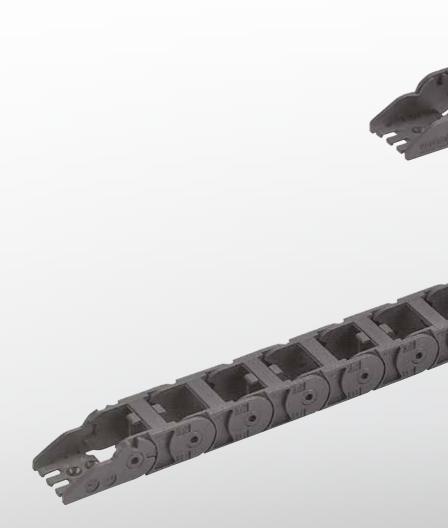


- LOW-COST VARIANT
- COMPACT DESIGN (NON-OPENING)
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- CAN BE EASILY SHORTENED AND LENGTHENED
- NON-OPENING



#### **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

39.37 ft.
see diagram on page 77
9.84 ft.
6.56 ft.
not recommended
6.56 ft/s
13.12 ft/s
6.56 ft/s <sup>2</sup>
6.56 ft/s <sup>2</sup>

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

### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**

#### **GUIDE CHANNELS**





VAW aluminum



Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
Crossbar on outside bend	sbar on outside bend	016 [0.63]	<b>024</b> [0.94]			025	Plastic, full-ridged	Polyamide (PA):	
	sbar on inside bend opening	020 [0.79]	<b>028</b> [1.10]			[0.98]	0 Plastic, full-ridged with bias	0 standard (PA/black)	
		<b>030</b> [1.18]	<b>038</b> [1.50]			038		UL94 / V0	
		<b>040</b> [1.57]	<b>048</b> [1.89]			[1.50]		1 (PA/oxide red)	
						<b>048</b> [1.89]		7 ESD (PA/light gray)	
						<b>075</b> [2.95]		9 Special version (on request)	
									-
↓ ▼			V		-	<b>V</b>	↓ ▼	↓ ▼	↓ ▼
			outside be	end, crossl		e bend, canr	0 000042		

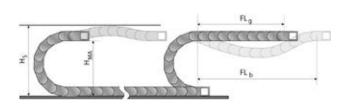
Inside width 0.63 in.; radius 0.98 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide Chain length 42 in. (42 links)

**ORDERING KEY** 



Dimensions in mm [US inch]

#### **SELF-SUPPORTING LENGTH**

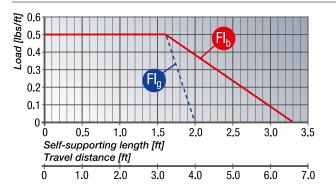


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

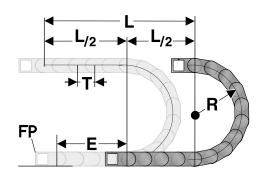
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### **DETERMINING THE CHAIN LENGTH**



#### FL, Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 1.18 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 1.18 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E \approx 1$  ft chain = 12 qty. x 1.02 inch.

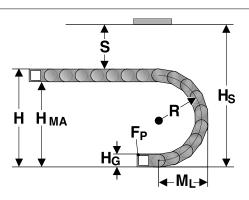
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 1.02 inch

#### **INSTALLATION DIMENSIONS**

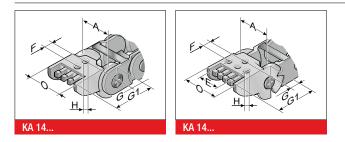


The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to

be taken into account.

Radius R	0.98	1.50	1.89	2.95
Outside height of chain link $(H_{\rm g})$	0.75	0.75	0.75	0.75
Height of bend (H)	2.71	3.75	4.53	6.65
Height of moving end connection (H <sub>MA</sub> )	1.96	3.00	3.78	5.90
Safety margin (S)	0.79	0.79	0.79	0.79
Installation height (H <sub>s</sub> )	3.50	4.54	5.32	7.44
Arc projection (M <sub>L</sub> )	2.38	2.90	3.28	4.35

#### 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.

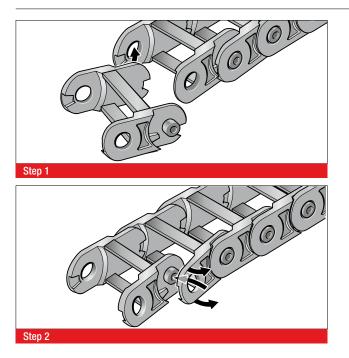
Туре	Order No.	Material	Inside width A inch	E inch	F inch	G inch	G1 inch	HØ inch	Outside width of KA O inch
KA 14016 Female end	014000005000	Plastic	0.63		0.31	0.43	1.20	0.13	A+0.31
KA 14016 Male end	014000005100	Plastic	0.63		0.31	0.30	1.20	0.13	A+0.31
KA 14020 Female end	014000005200	Plastic	0.79		0.31	0.43	1.20	0.13	A+0.31
KA 14020 Male end	014000005300	Plastic	0.79		0.31	0.30	1.20	0.13	A+0.31
KA 14030 Female end	014000005400	Plastic	1.18	A-0.31	0.31	0.43	1.20	0.13	A+0.31
KA 14030 Male end	014000005500	Plastic	1.18	A-0.31	0.31	0.30	1.20	0.13	A+0.31
KA 14040 Female end	014000005600	Plastic	1.57	A-0.31	0.31	0.43	1.20	0.13	A+0.31
KA 14040 Male end	014000005700	Plastic	1.57	A-0.31	0.31	0.30	1.20	0.13	A+0.31

#### **VAW GUIDE CHANNEL**

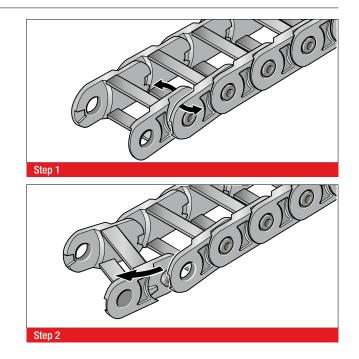


A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

#### ASSEMBLY



#### DISASSEMBLY



## MULTILINE





#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	65.62 ft.
Travel distance self-supporting L, max.	see diagram on page 83
Travel distance vertical, hanging L <sub>vh</sub> max.	26.25 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>aof</sub> max.	1.64 ft.
Speed, gliding V <sub>a</sub> max.	6.56 ft/s
Speed, self-supporting V <sub>f</sub> max.	16.40 ft/s
Acceleration, gliding a max.	16.40 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	16.40 ft/s <sup>2</sup>

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

#### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**



**SHELVING SYSTEM** 

Separator TR

#### **GUIDE CHANNELS**



VAW aluminum



#### MP 18.1 OPEN / MP 18.2 OPEN

#### **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
0181 01 <sup>1)</sup>	MP 18.1 open Crossbar on outside bend	015 <sup>3)</sup> [0.59]	<b>028</b> [1.10]			028	0 Plastic, full-ridged with bias	Polyamide (PA): <b>0</b> standard	
	Crossbar on inside bend Opens on outside bend	<b>018</b> [0.71]	<b>031</b> [1.22]			[1.10]	- with bias	(PA/black)	
0182 02 <sup>2)</sup>	MP 18.2 open Crossbar on outside bend	025 [0.98]	<b>038</b> [1.50]			038		1 UL94 / V0	
0102 02	Crossbar on inside bend Opens on inside of bend	<b>037</b> [1.46]	<b>050</b> [1.97]			[1.50]		(PA/oxide red)	
		<b>050</b> [1.97]	<b>063</b> [2.48]			048		5 Polypropylene	
		<b>070</b> [2.76]	<b>083</b> [3.27]			[1.89]		5 (PP/blue)	
						<b>078</b> [3.07]		7 ESD (PA/light gray)	
								9 Special version (on request)	
								_	
									_
								_	
Ļ			V		]	↓ ↓		, ↓	↓ ▼

#### ORDERING EXAMPLE: 0181 015 028 0 0 000044

Crossbar on outside bend, crossbar on inside bend, can be opened from outside bend

Inside width 0.59 in.; radius 1.10 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 44 in. (34 links)

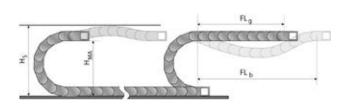
<sup>1)</sup> for Type 0181 only

<sup>2)</sup> for Type 0182 only
 <sup>3)</sup> max. line diameter 0.51 in. (13.00 mm)



#### Dimensions in mm [US inch]

#### **SELF-SUPPORTING LENGTH**

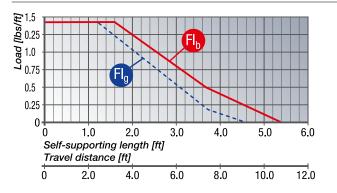


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

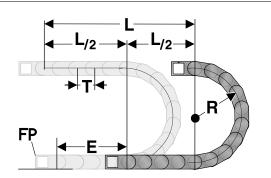
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



### DETERMINING THE CHAIN LENGTH



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 1.57 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 1.57 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E \approx 1$  ft chain = 10 qty. x 1.30 inch.

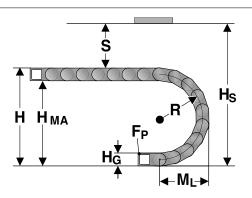
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 1.30 inch

#### **INSTALLATION DIMENSIONS**

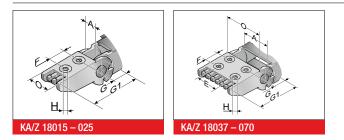


The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to

be taken into account.

Radius R	1.10	1.50	1.89	3.07
Outside height of chain link $(H_g)$	0.91	0.91	0.91	0.91
Height of bend (H)	3.11	3.91	4.69	7.05
Height of moving end connection (H <sub>MA</sub> )	2.20	3.00	3.78	6.14
Safety margin (S)	1.18	1.18	1.18	1.18
Installation height (H <sub>s</sub> )	4.29	5.09	5.87	8.23
Arc projection (M <sub>L</sub> )	2.86	3.26	3.64	4.83

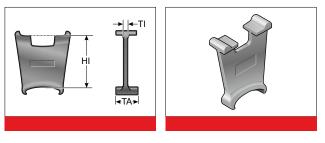
#### KA 18.1 / 18.2 CHAIN BRACKET U-PART



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.

Туре	Order No.	Material	Inside width A inch	E inch	F inch	G inch	G1 inch	HØ inch	Outside width of KA O inch
KA/Z 18015 Female end	018100004800	Plastic	0.61		0.75	0.41	2.09	0.22	A+0.51
KA/Z 18015 male end	018100004900	Plastic	0.61		0.75	0.33	2.09	0.22	A+0.51
KA/Z 18018 Female end	018100005000	Plastic	0.72		0.75	0.41	2.09	0.22	A+0.51
KA/Z 18018 male end	018100005100	Plastic	0.72		0.75	0.33	2.09	0.22	A+0.51
KA/Z 18025 Female end	018100005200	Plastic	1.00		0.75	0.41	2.09	0.22	A+0.51
KA/Z 18025 male end	018100005300	Plastic	1.00		0.75	0.33	2.09	0.22	A+0.51
KA/Z 18037 Female end	018100005400	Plastic	1.47	A-0.69	0.75	0.41	2.09	0.22	A+0.51
KA/Z 18037 male end	018100005500	Plastic	1.47	A-0.69	0.75	0.33	2.09	0.22	A+0.51
KA/Z 18050 Female end	018100005600	Plastic	1.98	A-0.65	0.75	0.41	2.09	0.22	A+0.51
KA/Z 18050 male end	018100005700	Plastic	1.98	A-0.65	0.75	0.33	2.09	0.22	A+0.51
KA/Z 18070 Female end	018100005800	Plastic	2.77	A-0.88	0.75	0.41	2.09	0.22	A+0.51
KA/Z 18070 male end	018100005900	Plastic	2.77	A-0.88	0.75	0.33	2.09	0.22	A+0.51

#### TR 18.1/2 SEPARATOR



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

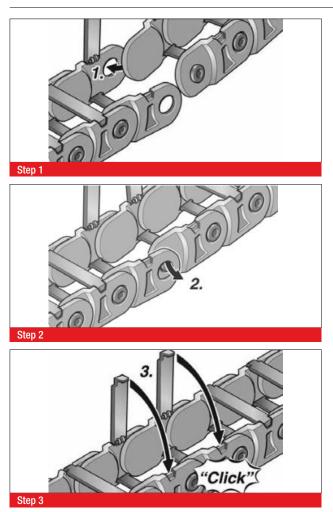
Туре	Order No.	Description	TI inch	HI inch
TR 14/18	018200009000	Separator	0.06	0.71

#### **VAW GUIDE CHANNEL**

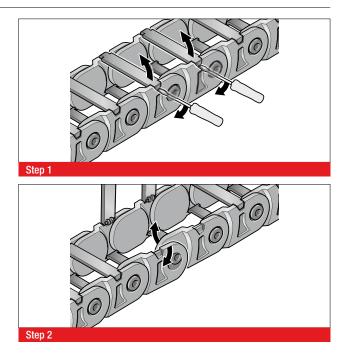


A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

#### ASSEMBLY



#### DISASSEMBLY



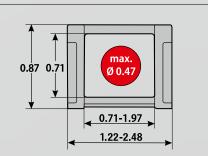
## MULTILINE



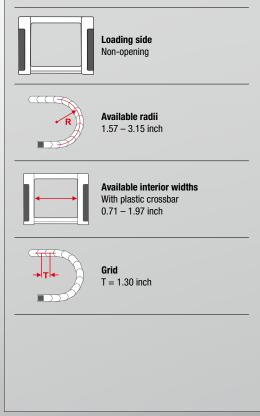
## MP 18.4



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



#### **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_a$ max.	65.62 ft.
Travel distance self-supporting L, max.	see diagram on page 89
Travel distance vertical, hanging L <sub>vh</sub> max.	26.25 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>gor</sub> max.	1.64 ft.
Speed, gliding V <sub>a</sub> max.	6.56 ft/s
Speed, self-supporting V <sub>r</sub> max.	16.40 ft/s
Acceleration, gliding a max.	16.40 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	16.40 ft/s <sup>2</sup>

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

#### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**



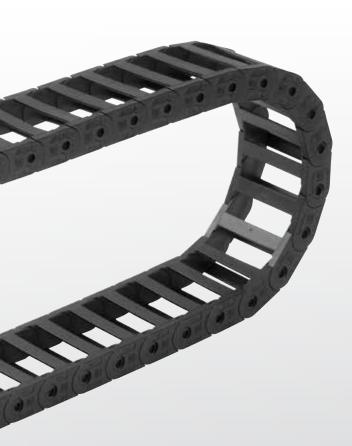
**SHELVING SYSTEM** 

Separator TR

#### GUIDE CHANNELS



VAW aluminum



#### **MP 18.4 OPEN**

Type code Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
Crossbar on outside bend 0184 34 Crossbar on inside bend non-opening	018 [0.71] 025	031 [1.22] 038			<b>040</b> <sup>1)</sup> [1.57]	0 Plastic, full-ridged with bias	Polyamide (PA): <b>0</b> standard (PA/black)	
	[0.98] 037	[1.50] 050						
	[1.46] 050	[1.97] 063			<b>050<sup>2)</sup></b> [1.97]			
	[1.97]	[2.48]						
					<b>080<sup>3)</sup></b> [3.15]			
	-							
↓		V			<b></b>		<b>↓</b>	
	Crossbar or Inside v lastic cross	outside be vidth 0,98 bar, full-ric	end, crossł in. (25,00 lged with t	bar on insio mm); radiu bias, mater	le bend, cann Is 1,97 in. (50	red polyamide		

 $^{\rm 1)}\,$  only for inner width of 0.71, 0.98, 1.47 in. (18, 25, 37 mm)

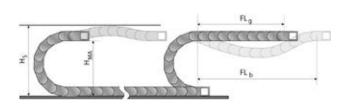
<sup>2)</sup> only for inner width of 0.71 in. (18 mm)
 <sup>3)</sup> only for inner width of 0.98, 1.97 in. (25, 50 mm)

**ORDERING KEY** 



#### Dimensions in mm [US inch]

#### **SELF-SUPPORTING LENGTH**

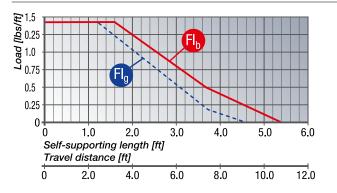


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



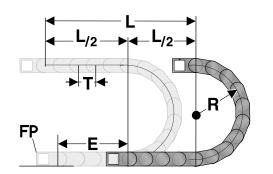
## In the FL<sub>g</sub> range, the chain upper run still has a bias, is straight or has a maximum sag of 1.57 inch.

FL<sub>a</sub> Self-supporting length, upper run straight

#### FL, Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 1.57 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

#### **DETERMINING THE CHAIN LENGTH**



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E \approx 1$  ft chain = 11 qty. x 1.30 inch.

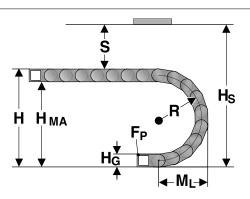
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 1.30 inch

#### **INSTALLATION DIMENSIONS**

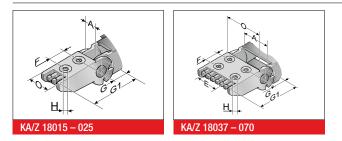


The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to

be taken into account.

Radius R	1.57	1.97	3.15
Outside height of chain link $(H_{\rm g})$	0.91	0.91	0.91
Height of bend (H)	4.05	4.85	7.21
Height of moving end connection (H <sub>MA</sub> )	3.14	3.94	6.30
Safety margin (S)	1.18	1.18	1.18
Installation height (H <sub>s</sub> )	5.23	6.03	8.39
Arc projection (M <sub>L</sub> )	3.33	3.72	4.91

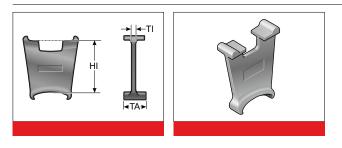
#### **KA 18.4 CHAIN BRACKET U-PART**



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.

Туре	Order No.	Material	Inside width A inch	E inch	F inch	G inch	G1 inch	HØ inch	Outside width of KA O inch
KA/Z 18.4 018 Female end	018400005000	Plastic	0.71		0.75	0.91	2.24	0.22	A+0.51
KA/Z 18.4 018 Male end	018400005100	Plastic	0.71		0.75	0.91	2.24	0.22	A+0.51
KA/Z 18.4 025 Female end	018400005200	Plastic	0.98		0.75	0.91	2.24	0.22	A+0.51
KA/Z 18.4 025 Male end	018400005300	Plastic	0.98		0.75	0.98	2.32	0.22	A+0.51
KA/Z 18.4 037 Female end	018400005400	Plastic	1.46	A-0.67	0.75	0.91	2.24	0.22	A+0.51
KA/Z 18.4 037 Male end	018400005500	Plastic	1.46	A-0.67	0.75	0.98	2.32	0.22	A+0.51
KA/Z 18.4 050 Female end	018400005600	Plastic	1.97	A-0.63	0.75	0.91	2.24	0.22	A+0.51
KA/Z 18.4 050 Male end	018400005700	Plastic	1.97	A-0.63	0.75	0.98	2.32	0.22	A+0.51

#### TR 18.1/2 SEPARATOR



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

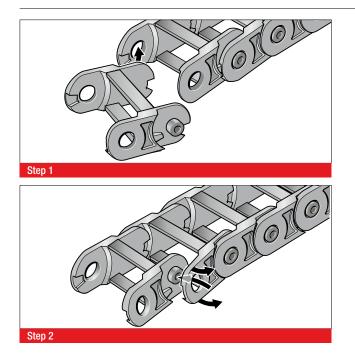
Туре	Order No.	Description	TI inch	HI inch
TR 14/18	018200009000	Separator	0.06	0.71

#### **VAW GUIDE CHANNEL**

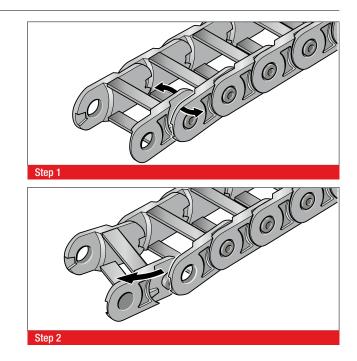


A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

#### ASSEMBLY



#### DISASSEMBLY



91

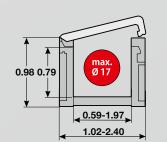
## MULTILINE



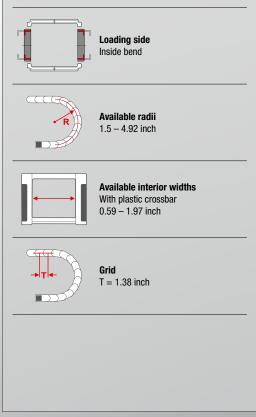
## MP 20



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



#### **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	not recommended
Travel distance self-supporting L, max.	see diagram on page 95
Travel distance vertical, hanging L <sub>vh</sub> max.	26.25 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>got</sub> max.	1.64 ft.
Speed, self-supporting V <sub>f</sub> max.	32.81 ft/s
Acceleration, self-supporting a, max.	32.81 ft/s <sup>2</sup>

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



Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**



**SHELVING SYSTEM** 

Separator TR

#### **GUIDE CHANNELS**



VAW aluminum



#### MP 20 OPEN

**ORDERING KEY** 

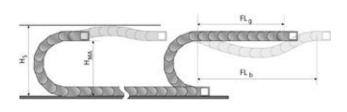
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
	Crossbar on outside bend	015 <sup>1)</sup> [0.59]	<b>026</b> [1.02]					Polyamide (PA):	
0202 02	Crossbar on inside bend Opens on inside of bend	025	036			<b>038</b> [1.50]	0 Plastic, full-ridged with bias	0 standard (PA/black)	
		[0.98] 038	[1.42] 049						
		[1.50]	[1.93]			<b>048</b> [1.89]			
		<b>050</b> [1.97]	<b>061</b> [2.40]			[1100]			
						<b>075</b> [2.95]			
						<b>100</b> [3.94]			
						<b>125</b> [4.92]			
								-	
			V			<b></b>	<b>↓</b>	↓ 	↓
		Crossbar ir Insio	n inside and de width 0.9	d outside b 98 in. (25	bend; can t mm); radiu	<b>2 025 048</b> be opened in o is 1.89 in. (48 -colored polys	3 mm)		

#### Dimensions in mm [US inch]

Full-ridged with bias, material black-colored polyamide Chain length 30.31 in. (770 mm) (22 links)

<sup>1)</sup> max. line diameter 0.51 in. (13.00 mm)

#### **SELF-SUPPORTING LENGTH**

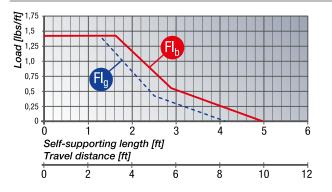


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

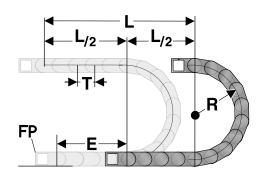
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### **DETERMINING THE CHAIN LENGTH**



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 1.57 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 1.57 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation = L/2 +  $\pi$  \* R + 2 \* T + E  $\approx$  1 ft chain = 9 qty. x 1.38 inch.

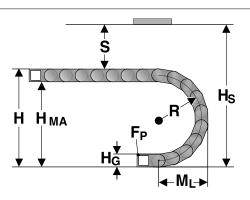
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 1.38 inch

#### **INSTALLATION DIMENSIONS**

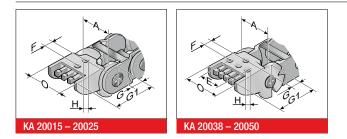


The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_s$  " value has

to be taken into account.

Radius R	1.50	1.89	2.95	3.94	4.92
	1.50	1.03	2.33	J.34	4.32
Outside height of chain link $(H_g)$	0.98	0.98	0.98	0.98	0.98
Height of bend (H)	3.98	4.76	6.88	8.86	10.82
Height of moving end connection (H <sub>MA</sub> )	3.00	3.78	5.90	7.88	9.84
Safety margin (S)	0.79	0.79	0.79	0.79	0.79
Installation height (H <sub>s</sub> )	4.77	5.55	7.67	9.65	11.61
Arc projection (M <sub>L</sub> )	3.37	3.76	4.82	5.81	6.79

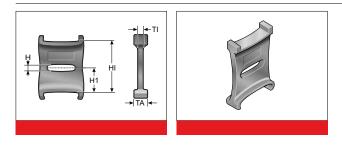
#### **KA 20 CHAIN BRACKET U-PART**



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

Туре	Order No.	Material	Inside width A inch	E inch	F inch	G inch	G1 inch	HØ inch	Outside width of KA O inch
KA 20015 Female end	020200005000	Plastic	0.59		0.75	0.65	1.65	0.22	A+0.43
KA 20015 Male end	020200005100	Plastic	0.59		0.75	0.65	1.65	0.22	A+0.43
KA 20025 Female end	020200005200	Plastic	0.98		0.75	0.65	1.65	0.22	A+0.43
KA 20025 Male end	020200005300	Plastic	0.98		0.75	0.65	1.65	0.22	A+0.43
KA 20038 Female end	020200005400	Plastic	1.50	A-0.71	0.75	0.65	1.65	0.22	A+0.43
KA 20038 Male end	020200005500	Plastic	1.50	A-0.71	0.75	0.65	1.65	0.22	A+0.43
KA 20050 Female end	020200005600	Plastic	1.97	A-0.63	0.75	0.65	1.65	0.22	A+0.43
KA 20050 Male end	020200005700	Plastic	1.97	A-0.63	0.75	0.65	1.65	0.22	A+0.43

#### **TR 20 SEPARATOR**



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

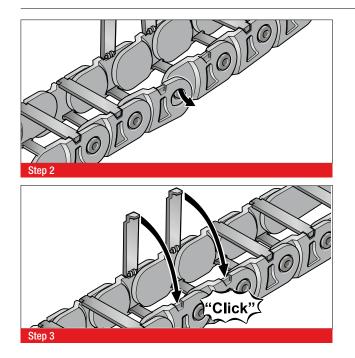
Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch
TR 20	02000009000	Separator	movable	0.06	0.31	0.10	0.39	0.39

#### **VAW GUIDE CHANNEL**

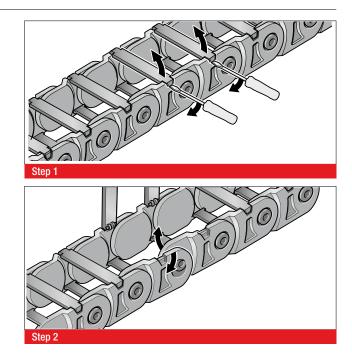


A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

#### ASSEMBLY



#### DISASSEMBLY



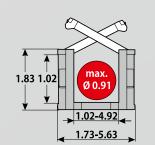
### MULTILINE



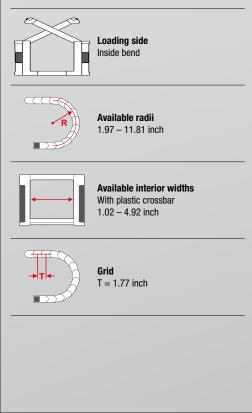
# MP 3000

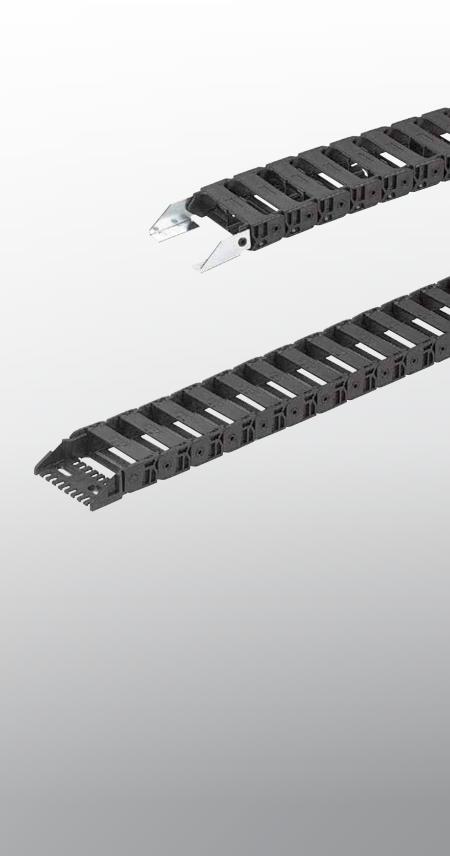


- LOW-COST VARIANT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF



#### **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	196.85 ft.
Travel distance self-supporting L, max.	see diagram on page 101
Travel distance vertical, hanging L <sub>vh</sub> max.	131.23 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>sot</sub> max.	2.30 ft.
Speed, gliding V <sub>a</sub> max.	9.84 ft/s
Speed, self-supporting V <sub>f</sub> max.	19.69 ft/s
Acceleration, gliding a max.	32.81 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	49.21 ft/s <sup>2</sup>

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

#### **MATERIAL PROPERTIES**

Polyamide (PA) black
-22.00 – 248.00 °F
0.30
0.45
UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**



Separator TR







H-shaped shelf unit RE





VAW steel galvanized / stainless steel



VAW aluminum



**CHAIN BRACKET** 

Chain bracket angle

Chain bracket U-part

#### **MP 3000 OPEN**

#### **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
	Crossbar on outside bend	<b>026</b> [1.02]	<b>044</b> [1.73]			050	Plastic, full-ridged	Polyamide (PA):	
0300 02	Crossbar on inside bend Opens on inside of bend	<b>037</b> [1.46]	<b>055</b> [2.17]			[1.97]	• Plastic, full-ridged with bias	0 standard (PA/black)	
		<b>056</b> [2.20]	<b>074</b> [2.91]			070	Plastic, full-ridged	■ UL94 / V0	
		<b>062</b> [2.44]	<b>080</b> [3.15]			[2.76]	1 without bias	1 (PA/oxide red)	
		<b>076</b> [2.99]	<b>094</b> [3.70]			005	-	Dalumanulana	
		<b>087</b> [3.43]	<b>105</b> [4.13]			<b>095</b> [3.74]		5 Polypropylene (PP/blue)	
		<b>101</b> [3.98]	<b>119</b> [4.69]			100		500	
		<b>125</b> [4.92]	143 [5.63]			120 [4.72]		7 ESD (PA/light gray)	
						150			
						150 [5.91]		9 Special version (on request)	
						000			
						<b>200</b> [7.87]			
						300	-		
						[11.81]			
							-		
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+		]	<u>\</u>			+	▼	¥	<b>\</b>
	(	ORDERI	NG EXA	MPLE:	0300 02	26 050 0	0 000047		
	Crossba	ar on outsic			nside bend		ned from inside bend		

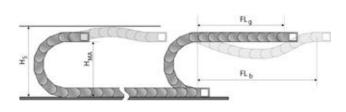
Inside width 1.02 in.; radius 1.97 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 47 in. (27 links)



Dimensions in mm [US inch]

#### **SELF-SUPPORTING LENGTH**

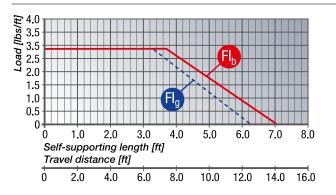


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



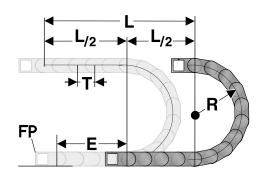
#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.36 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

#### **DETERMINING THE CHAIN LENGTH**



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E \approx 1$  ft chain = 7 qty. x 1.77 inch.

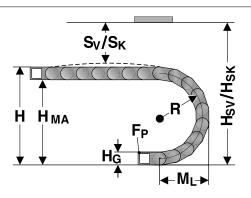
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 1.77 inch

#### **INSTALLATION DIMENSIONS**



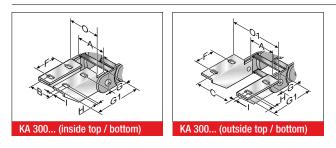
The moving end chain connection is to be screw fixed at height  ${\rm H}_{\rm \tiny MA}$  for the respective radius.

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  $H_{s\kappa}$ " value has to be taken into account.

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

1.97	2.76	3.74	4.72	5.91	7.87	11.81
1.38	1.38	1.38	1.38	1.38	1.38	1.38
5.32	6.90	8.86	10.82	13.20	17.12	25.00
3.94	5.52	7.48	9.44	11.82	15.74	23.62
1.77	1.77	1.77	1.77	1.77	1.77	1.77
7.09	8.67	10.63	12.59	14.97	18.89	26.77
0.39	0.39	0.39	0.39	0.39	0.39	0.39
5.71	7.29	9.25	11.21	13.59	17.51	25.39
4.43	5.22	6.20	7.18	8.37	10.33	14.27
	1.38 5.32 3.94 1.77 7.09 0.39 5.71	1.38         1.38           5.32         6.90           3.94         5.52           1.77         1.77           7.09         8.67           0.39         0.39           5.71         7.29	1.38         1.38         1.38           5.32         6.90         8.86           3.94         5.52         7.48           1.77         1.77         1.77           7.09         8.67         10.63           0.39         0.39         0.39           5.71         7.29         9.25	1.381.381.381.385.326.908.8610.823.945.527.489.441.771.771.771.777.098.6710.6312.590.390.390.390.395.717.299.2511.21	1.381.381.381.381.381.381.381.381.381.3205.326.908.8610.8213.203.945.527.489.4411.821.771.771.771.771.777.098.6710.6312.5914.970.390.390.390.390.395.717.299.2511.2113.59	1.381.381.381.381.381.381.381.381.381.385.326.908.8610.8213.2017.123.945.527.489.4411.8215.741.771.771.771.771.777.098.6710.6312.5914.9718.890.390.390.390.390.390.395.717.299.2511.2113.5917.51

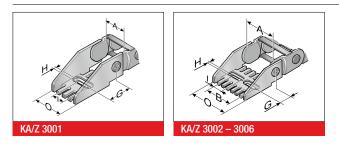
#### **KA 3000 CHAIN BRACKET ANGLE**



The chain bracket can be supplied either in galvanized sheet steel or stainless steel. To secure one cable drag chain, you will need two angle brackets (left and right) with a drilled hole and two angle brackets (left and right) with a bolt. The Order No.s given below each comprise a left and right angle bracket.

Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	G1 inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 3008 Female end	030000052	Sheet steel	1.02 - 4.92	A-0.33	A+0.89	0.98	0.83	2.28	0.26	0.18	A+0.71	A+1.57
KA 3008 Male end	030000053	Sheet steel	1.02 – 4.92	A-0.14	A+1.22	0.98	0.83	2.24	0.26	0.18	A+0.35	A+1.57
KA 3009 Female end	030000054	Stainless steel 1.4301	1.02 – 4.92	A-0.33	A+0.89	0.98	0.83	2.28	0.26	0.18	A+0.71	A+1.57
KA 3009 Male end	030000055	Stainless steel 1.4301	1.02 - 4.92	A-0.14	A+1.22	0.98	0.83	2.24	0.26	0.18	A+0.35	A+1.57

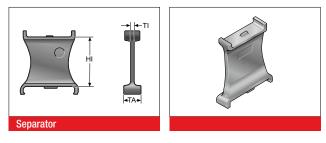
#### KA 3000 CHAIN BRACKET U-PART



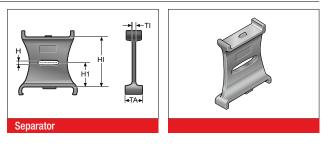
The type KA/Z 3001 – 3006 chain bracket is a plastic part with an extrusion-coated metal insert. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened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

Туре	Order No.	Material	Inside width A inch	B inch	G inch	HØ inch	l inch	Outside width of KA O inch
KA/Z 3001 Female end	03000008000	Relief plate with metal inserts	1.02		1.24	0.26	0.73	A+0.71
KA/Z 3001 male end	03000008100	Relief plate with metal inserts	1.02		1.24	0.26	0.73	A+0.71
KA/Z 3002 Female end	03000008200	Relief plate with metal inserts	1.46	A-0.28	1.24	0.26	0.30	A+0.71
KA/Z 3002 male end	03000008300	Relief plate with metal inserts	1.46	A-0.28	1.24	0.26	0.30	A+0.71
KA/Z 3002.5 Female end	03000007600	Relief plate with metal inserts	2.20	A-0.31	1.24	0.26	0.30	A+0.71
KA/Z 3002.5 male end	03000007700	Relief plate with metal inserts	2.20	A-0.31	1.24	0.26	0.30	A+0.71
KA/Z 3003 Female end	03000008400	Relief plate with metal inserts	2.44	A-0.28	1.24	0.26	0.73	A+0.71
KA/Z 3003 male end	03000008500	Relief plate with metal inserts	2.44	A-0.28	1.24	0.26	0.73	A+0.71
KA/Z 3003.5 Female end	03000007800	Relief plate with metal inserts	2.99	A-0.31	1.24	0.26	0.73	A+0.71
KA/Z 3003.5 male end	03000007900	Relief plate with metal inserts	2.99	A-0.31	1.24	0.26	0.73	A+0.71
KA/Z 3004 Female end	03000008600	Relief plate with metal inserts	3.43	A-0.28	1.24	0.26	0.73	A+0.71
KA/Z 3004 male end	03000008700	Relief plate with metal inserts	3.43	A-0.28	1.24	0.26	0.73	A+0.71
KA/Z 3005 Female end	03000008800	Relief plate with metal inserts	3.98	A-0.28	1.24	0.26	0.73	A+0.71
KA/Z 3005 male end	03000008900	Relief plate with metal inserts	3.98	A-0.28	1.24	0.26	0.73	A+0.71
KA/Z 3006 Female end	03000009300	Relief plate with metal inserts	4.92	A-0.26	1.24	0.26	0.73	A+0.71
KA/Z 3006 male end	03000009400	Relief plate with metal inserts	4.92	A-0.26	1.24	0.26	0.73	A+0.71

#### **MP 3000 SEPARATOR**



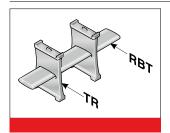
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. For



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

Туре	Order No.	Description	Version	TI	TA	Н	H1	H2	HI
				inch	inch	inch	inch	inch	inch
TR 3000	03000009000	Separator	movable	0.06	0.51	0.10	0.51	0.51	1.02
TR 3001	03000009200	Separator	lockable	0.06	0.51	0.10	0.51	0.51	1.02
TR 3002	03000009500	Separator, closed	lockable	0.06	0.51				1.02

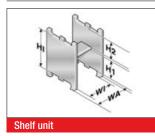
#### **MP 3000 SHELVING SYSTEM**



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

Туре	Order No.	Description	Width inch	Lock grid spacing inch
RBT 037	10000003700	Shelf	1.46	0.12
RBT 062	10000006200	Shelf	2.44	0.12
RBT 086	10000008600	Shelf	3.39	0.12
RBT 101	100000010100	Shelf	3.98	0.12
RBT 125	100000012500	Shelf	4.92	0.12

#### **RE 26 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 26/15	100000261510	H-shaped shelf unit	0.69	0.49	0.54	0.38	1.02
RE 26/27	100000262710	H-shaped shelf unit	1.16	0.96	0.54	0.38	1.02
RE 26/32	100000263210	H-shaped shelf unit	1.36	1.16	0.54	0.38	1.02
RE 26/51	100000265110	H-shaped shelf unit	2.11	1.91	0.54	0.38	1.02

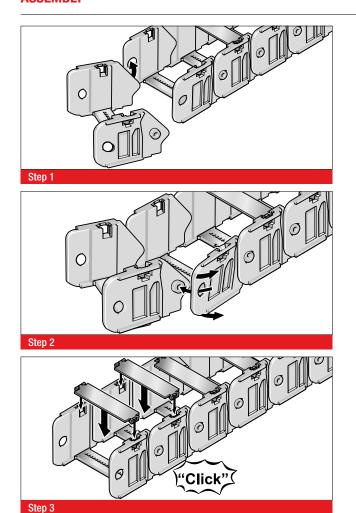
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#### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



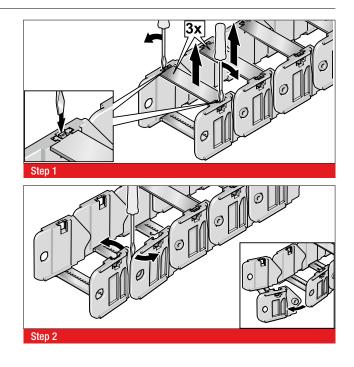
### ASSEMBLY



A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

#### DISASSEMBLY



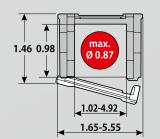
## MULTILINE



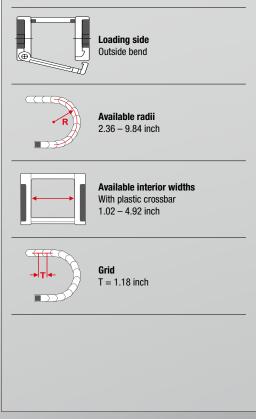
MP 25G

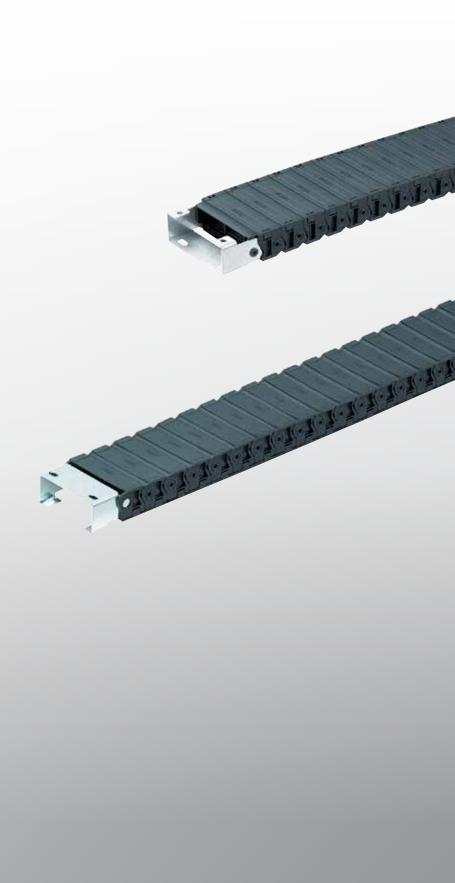


- CLOSED VARIANTS, STARTING WITH R60
- COMPACT DESIGN



#### **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

131.23 ft.
see diagram on page 109
82.02 ft.
9.84 ft.
3.28 ft.
9.84 ft/s
19.69 ft/s
32.81 ft/s <sup>2</sup>
49.21 ft/s <sup>2</sup>

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

#### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**



Separator TR



RS shelving system





VAW steel galvanized / stainless steel

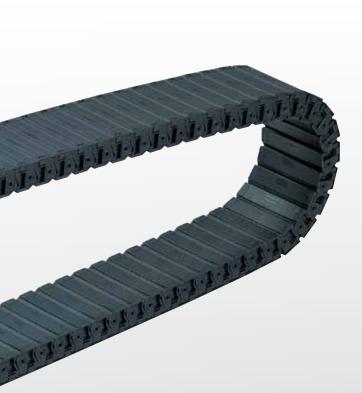


VAW aluminum

CHAIN BRACKET



Chain bracket U-part



#### MP 25G CLOSED

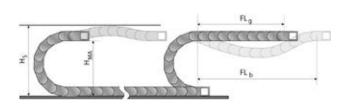
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Type code Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
Cover on outside of bend Cover on inside of bend Opens on outside bend	026 [1.02] 037 [1.46]	042 [1.65] 053 [2.09]			<b>060</b> [2.36]	0 Plastic, full-ridged with bias	Polyamide (PA): <b>0</b> standard (PA/black)	
	062 [2.44] 087 [3.43]	078 [3.07] 103 [4.06]			<b>075</b> [2.95]		7 ESD (PA/light gray)	
	101 [3.98] 125 [4.92]	117 [4.61] 141 [5.55]			<b>100</b> [3.94]		9 Special version (on request)	
	["]	[0.00]			<b>125</b> [4.92]			
					<b>150</b> [5.91]			
					<b>200</b> [7.87]			
					<b>250</b> [9.84]			
					↓ ↓	↓ ↓	•	↓ ↓
8888 88								
		e bend, cov	er in inside		n be opened f	0 000048		

Inside width 1.02 in.; radius 2.36 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide Chain length 48 in. (41 links) murrplastik 🗾

#### Dimensions in mm [US inch]

#### **SELF-SUPPORTING LENGTH**

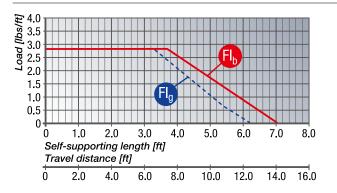


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



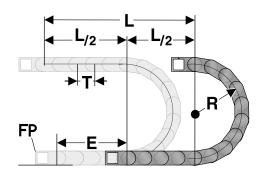
#### $FL_a$ Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.36 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

#### **DETERMINING THE CHAIN LENGTH**



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

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Chain length calculation =  $L/2 + \pi * R + 2 * T + E \approx 1$  ft chain = 11 qty. x 1.18 inch.

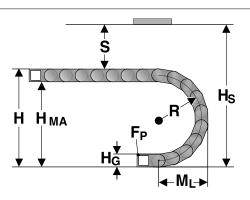
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 1.18 inch

#### **INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to

be taken into account.

Radius R	2.36	2.95	3.94	4.92	5.91	7.87	9.84
Outside height of chain link $(H_g)$	1.46	1.46	1.46	1.46	1.46	1.46	1.46
Height of bend (H)	6.18	7.36	9.34	11.30	13.28	17.20	21.14
Height of moving end connection (H <sub>MA</sub> )	4.72	5.90	7.88	9.84	11.82	15.74	19.68
Safety margin (S)	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Installation height (H <sub>s</sub> )	7.48	8.66	10.64	12.60	14.58	18.50	22.44
Arc projection $(M_L)$	4.27	4.86	5.85	6.83	7.82	9.78	11.75

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



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

Туре	Order No.	Material	Inside width A inch	E inch	G inch	H1 inch	H2 inch	l inch	K inch	Outside width of KA O inch
KA 25026 C Female end	025000001000	Sheet steel	1.02	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25026 C Male end	025000001100	Sheet steel	1.02	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25037 C Female end	025000001200	Sheet steel	1.46	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25037 C Male end	025000001300	Sheet steel	1.46	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25062 C Female end	025000001400	Sheet steel	2.44	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25062 C Male end	025000001500	Sheet steel	2.44	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25087 C Female end	025000001600	Sheet steel	3.43	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25087 C Male end	025000001700	Sheet steel	3.43	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25101 C Female end	025000001800	Sheet steel	3.98	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25101 C Male end	025000001900	Sheet steel	3.98	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25125 C Female end	025000002000	Sheet steel	4.92	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25125 C Male end	025000002100	Sheet steel	4.92	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25026 C Female end	025000003000	Stainless steel 1.4301	1.02	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25026 C Male end	025000003100	Stainless steel 1.4301	1.02	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25037 C Female end	025000003200	Stainless steel 1.4301	1.46	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43

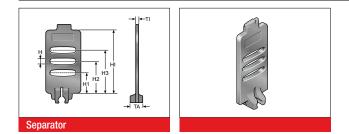
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#### **KA 25 G CHAIN BRACKET U-PART**

Туре	Order No.	Material	Inside width A inch	E inch	G inch	H1 inch	H2 inch	l inch	K inch	Outside width of KA O inch
KA 25037 C Male end	025000003300	Stainless steel 1.4301	1.46	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25062 C Female end	025000003400	Stainless steel 1.4301	2.44	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25062 C Male end	025000003500	Stainless steel 1.4301	2.44	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25087 C Female end	025000003600	Stainless steel 1.4301	3.43	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25087 C Male end	025000003700	Stainless steel 1.4301	3.43	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25101 C Female end	025000003800	Stainless steel 1.4301	3.98	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25101 C Male end	025000003900	Stainless steel 1.4301	3.98	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31
KA 25125 C Female end	025000004000	Stainless steel 1.4301	4.92	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.43
KA 25125 C Male end	025000004100	Stainless steel 1.4301	4.92	A-0.39	1.65	0.26	0.26	0.26	1.42	A+0.31

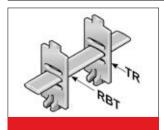
#### **TR 25G SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 25G	025000009200	Separator	lockable	0.08	0.31	0.10	0.33	0.50	0.68	0.98

#### **MP 25G SHELVING SYSTEM**



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

Туре	Order No.	Description	Width inch	Lock grid spacing inch
RBT 037	10000003700	Shelf	1.46	0.10
RBT 062	10000006200	Shelf	2.44	0.10
RBT 086	10000008600	Shelf	3.39	0.10
RBT 101	10000010100	Shelf	3.98	0.10
RBT 125	10000012500	Shelf	4.92	0.10

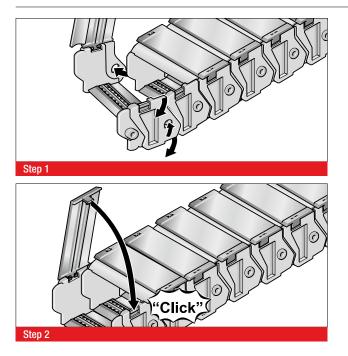
#### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



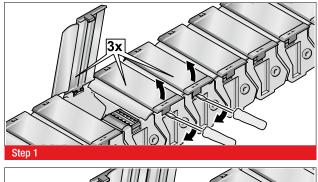
A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

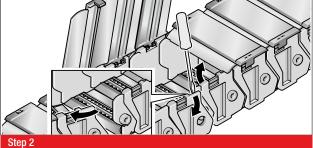
The variable guide channel ensures that the cable drag chain is supported and guided securely.

#### ASSEMBLY



#### DISASSEMBLY

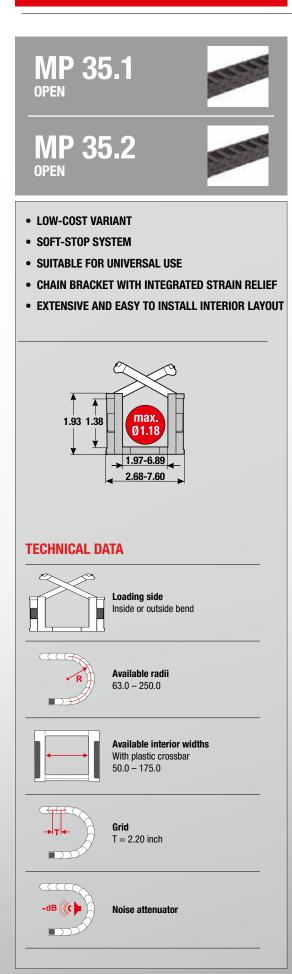


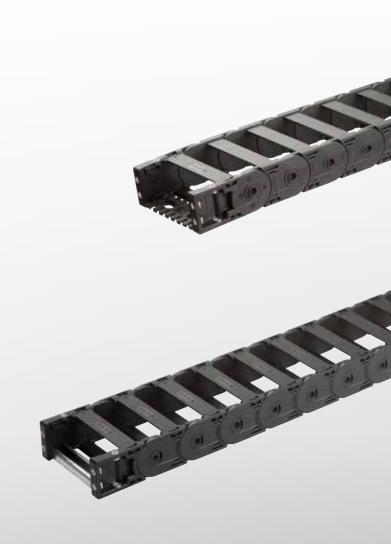




# MULTILINE







### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{\alpha}$ max.	262.47 ft.
Travel distance self-supporting L, max.	see diagram on page 117
Travel distance vertical, hanging L <sub>vb</sub> max.	164.04 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	3.28 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V, max.	65.62 ft/s
Acceleration, gliding a max.	49.21 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	164.04 ft/s <sup>2</sup>

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

### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**



**CHAIN BRACKET** 

Chain bracket flexible

Separator TR



RS shelving system

#### **GUIDE CHANNELS**



VAW steel galvanized / stainless steel



VAW aluminum

### STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix

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### MP 35.1 OPEN / MP 35.2 OPEN

### **ORDERING KEY**

ORDERIN	G KEY							Dimensions	in mm (US inch)
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
0351 01	MP 35.1 open Crossbar on outside bend	<b>050</b> [1.97]	<b>068</b> [2.68]			063	0 Plastic, full-ridged	Polyamide without 2 attenuator	
0301 01	Crossbar on inside bend Opens on outside bend	065 <sup>1)</sup> [2.56]	<b>083</b> <sup>1)</sup> [3.27]			[2.48]	• with bias	(PA/black)	
	MP 35.2 open	<b>075</b> [2.95]	<b>093</b> [3.66]			075		Polyamide with	
0352 02	Crossbar on outside bend Crossbar on inside bend Opens on inside of bend	<b>090</b> <sup>1)</sup> [3.54]	<b>108</b> <sup>1)</sup> [4.25]			075 [2.95]	1 Plastic, full-ridged without bias	3 attenuator (PA/black)	
		<b>100</b> [3.94]	118 [4.65]						
		[3.34] <b>125</b> [4.92]	143 [5.63]			<b>100</b> [3.94]		9 Special version (on request)	
		150	168					_	-
		[5.91] <b>175</b>	[6.61] <b>193</b>			125 [4.92]			
		[6.89]	[7.60]					-	
						<b>150</b> [5.91]			
		-						-	-
						<b>175</b> [6.89]			
								-	-
		⊢				<b>200</b> [7.87]			
						250		-	
						[9.84]			
									-
Ļ					-	↓ ↓	↓	↓ ↓	↓
							0 3 2000		
	Crossb	ar on outsic Insid	le bend, cro e width 2.9	ossbar on i 5 in. (075	inside bend mm), radiu	l, can be ope is 3.94 in. (10	ned from inside bend 00 mm)		

Inside width 2.95 in. (075 mm), radius 3.94 in. (100 mm) Plastic, full-ridged with bias, material polyamide with damper (PA/black)

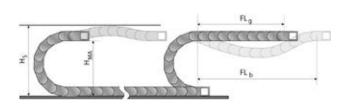
Chain length 2000 mm (36 links)

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





### **SELF-SUPPORTING LENGTH**

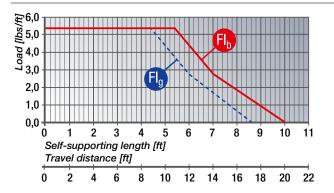


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

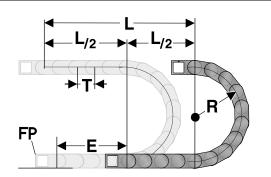
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



### **DETERMINING THE CHAIN LENGTH**



FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL, Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.36 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 6 qty. x 2.20 inch.

E = Distance between entry point and middle of travel distance

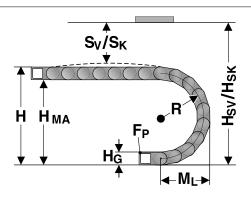
L = Travel distance

R = Radius

P = Grid 2.20 inch



### **INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  ${\rm H}_{\rm \tiny MA}$  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  $H_{s\kappa}$ " value has to be taken into account.

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

63	75	100	125	150	175	200	250
1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
127.93	151.93	201.93	251.93	301.93	351.93	401.93	501.93
126.00	150.00	200.00	250.00	300.00	350.00	400.00	500.00
0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
130.69	154.69	204.69	254.69	304.69	354.69	404.69	504.69
131.48	155.48	205.48	255.48	305.48	355.48	405.48	505.48
0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
128.72	152.72	202.72	252.72	302.72	352.72	402.72	502.72
129.51	153.51	203.51	253.51	303.51	353.51	403.51	503.51
66.17	78.17	103.17	128.17	153.17	178.17	203.17	253.17
	1.93 127.93 126.00 0.79 130.69 131.48 0.79 128.72 129.51	1.93         1.93           127.93         151.93           126.00         150.00           0.79         0.79           130.69         154.69           131.48         155.48           0.79         0.79           128.72         152.72           129.51         153.51	1.931.931.93127.93151.93201.93126.00150.00200.000.790.790.79130.69154.69204.69131.48155.48205.480.790.790.79128.72152.72202.72129.51153.51203.51	1.931.931.931.93127.93151.93201.93251.93126.00150.00200.00250.000.790.790.790.79130.69154.69204.69254.69131.48155.48205.48255.480.790.790.790.79128.72152.72202.72252.72129.51153.51203.51253.51	1.931.931.931.931.93127.93151.93201.93251.93301.93126.00150.00200.00250.00300.000.790.790.790.790.79130.69154.69204.69254.69304.69131.48155.48205.48255.48305.480.790.790.790.790.79128.72152.72202.72252.72302.72129.51153.51203.51253.51303.51	1.931.931.931.931.931.93127.93151.93201.93251.93301.93351.93126.00150.00200.00250.00300.00350.000.790.790.790.790.790.79130.69154.69204.69254.69304.69354.69131.48155.48205.48255.48305.48355.480.790.790.790.790.790.79128.72152.72202.72252.72302.72352.72129.51153.51203.51253.51303.51353.51	1.931.931.931.931.931.931.93127.93151.93201.93251.93301.93351.93401.93126.00150.00200.00250.00300.00350.00400.000.790.790.790.790.790.790.79130.69154.69204.69254.69304.69354.69404.69131.48155.48205.48255.48305.48355.48405.480.790.790.790.790.790.790.79128.72152.72202.72252.72302.72352.72402.72129.51153.51203.51253.51303.51353.51403.51

### DAMPING ELEMENT FOR THE CHAIN LINKS

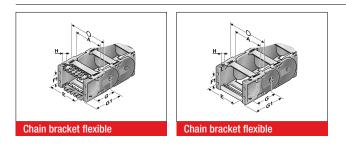


The dampening elements in the stops make for a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

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



### **CHAIN BRACKET KA 35**

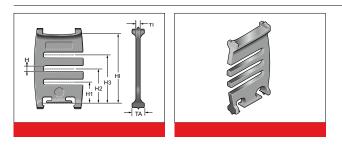


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the cable drag chain like a side link. This allows the chain to move right up to the bracket. Each cable drag chain requires one male and one female bracket. M5 screws are used to secure the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

Туре	Order No.	Material	Inside width A inch	E inch	F1 inch	G inch	G1 inch	Н	HØ inch	Outside width of KA O inch
KA 35-FB Female end, 050, complete	0350005050	Plastic	1.97	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 050, pendular, complete	0350005052	Plastic	1.97	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 050, complete	0350005051	Plastic	1.97	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 050, pendular, complete	0350005053	Plastic	1.97	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 065, complete	0350006550	Plastic	2.56	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 065, pendular, complete	0350006552	Plastic	2.56	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 065, complete	0350006551	Plastic	2.56	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 065, pendular, complete	0350006553	Plastic	2.56	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 075, complete	0350007550	Plastic	2.95	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 075, pendular, complete	0350007552	Plastic	2.95	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 075, complete	0350007551	Plastic	2.95	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 075, pendular, complete	0350007553	Plastic	2.95	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 090, complete	0350009050	Plastic	3.54	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 090, pendular, complete	0350009052	Plastic	3.54	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 090, complete	0350009051	Plastic	3.54	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 090, pendular, complete	0350009053	Plastic	3.54	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 100, complete	0350010050	Plastic	3.94	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 100, pendular, complete	0350010052	Plastic	3.94	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 100, complete	0350010051	Plastic	3.94	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 100, pendular, complete	0350010053	Plastic	3.94	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 125, complete	0350012550	Plastic	4.92	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 125, pendular, complete	0350012552	Plastic	4.92	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 125, complete	0350012551	Plastic	4.92	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 125, pendular, complete	0350012553	Plastic	4.92	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 150, complete	0350015050	Plastic	5.91	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 150, pendular, complete	0350015052	Plastic	5.91	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 150, complete	0350015051	Plastic	5.91	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 150, pendular, complete	0350015053	Plastic	5.91	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 175, complete	0350017550	Plastic	6.89	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Female end, 175, pendular, complete	0350017552	Plastic	6.89	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 175, complete	0350017551	Plastic	6.89	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75
KA 35-FB Male end, 175, pendular, complete	0350017553	Plastic	6.89	A+0.31	0.75	1.93	3.06	M5	0.22	A+0.75

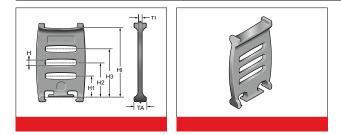
### **TRT 35 DIVISIBLE SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TRT 35	035000009400	TRT 35, separator, divisible	lockable	0.12	0.31	0.13	0.41	0.69	0.96	1.38

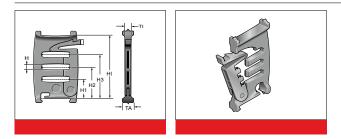
#### **TR 35-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 35-V	035000009300	TR 35-V Separator	movable	0.12	0.31	0.13	0.41	0.69	0.96	1.38

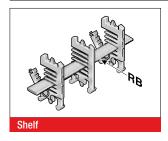
### **RTT 35 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
RTT 35	100090350000	Shelf support, divisible	lockable	0.20	0.31	0.13	0.41	0.69	0.96	1.38

### **RB-3 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 039-3	030100003900	Shelf	1.52	1.57
RB 041-3	1000004103	Shelf	1.62	1.97
RB 044-3	1000004403	Shelf	1.72	1.97
RB 046-3	1000004603	Shelf	1.81	1.97
RB 049-3	030100004900	Shelf	1.91	1.97
RB 051-3	1000005103	Shelf	2.01	2.36
RB 054-3	1000005403	Shelf	2.11	2.36
RB 056-3	1000005603	Shelf	2.21	2.36
RB 059-3	030100005900	Shelf	2.31	2.36
RB 061-3	1000006103	Shelf	2.41	2.95
RB 064-3	1000006403	Shelf	2.50	2.95
RB 066-3	1000006603	Shelf	2.60	2.95
RB 069-3	1000006903	Shelf	2.70	2.95
RB 071-3	1000007103	Shelf	2.80	2.95
RB 074-3	030100007400	Shelf	2.90	2.95
RB 076-3	1000007603	Shelf	3.00	3.35
RB 079-3	1000007903	Shelf	3.09	3.35
RB 081-3	1000008103	Shelf	3.19	3.35
RB 084-3	030100008400	Shelf	3.29	3.35
RB 086-3	1000008603	Shelf	3.39	3.94
RB 089-3	1000008903	Shelf	3.49	3.94
RB 091-3	1000009103	Shelf	3.59	3.94
RB 094-3	1000009403	Shelf	3.69	3.94
RB 096-3	1000009603	Shelf	3.78	3.94
RB 099-3	030100009900	Shelf	3.88	3.94
RB 101-3	1000010103	Shelf	3.98	4.53
RB 104-3	1000010403	Shelf	4.08	4.53
RB 106-3	1000010603	Shelf	4.18	4.53
RB 109-3	1000010903	Shelf	4.28	4.53
RB 111-3	1000011103	Shelf	4.37	4.53
RB 114-3	030100011400	Shelf	4.47	4.53
RB 116-3	1000011603	Shelf	4.57	4.92
RB 119-3	1000011903	Shelf	4.67	4.92
RB 121-3	1000012103	Shelf	4.77	4.92
RB 124-3	030100012400	Shelf	4.87	4.92
RB 126-3	1000012603	Shelf	4.96	5.91

### **RB-3 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 129-3	1000012903	Shelf	5.06	5.91
RB 131-3	1000013103	Shelf	5.16	5.91
RB 134-3	1000013403	Shelf	5.26	5.91
RB 136-3	1000013603	Shelf	5.36	5.91
RB 139-3	1000013903	Shelf	5.46	5.91
RB 141-3	1000014103	Shelf	5.56	5.91
RB 144-3	1000014403	Shelf	5.65	5.91
RB 146-3	1000014603	Shelf	5.75	5.91
RB 149-3	030100014900	Shelf	5.85	5.91
RB 151-3	1000015103	Shelf	5.95	6.89
RB 154-3	1000015403	Shelf	6.05	6.89
RB 156-3	1000015603	Shelf	6.15	6.89
RB 159-3	1000015903	Shelf	6.24	6.89
RB 161-3	1000016103	Shelf	6.34	6.89
RB 164-3	1000016403	Shelf	6.44	6.89
RB 166-3	1000016603	Shelf	6.54	6.89
RB 169-3	1000016903	Shelf	6.64	6.89
RB 174-3	030100017400	Shelf	6.83	6.89

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

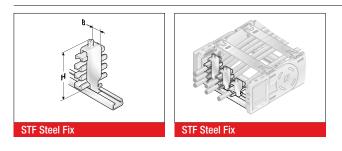


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbars widths up to 6.89 inch (175 mm). May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 050-3 ZLA MP 35	0351050010	Crossbar strain relief plate	1.97
RS-ZL 075-3 ZLA MP 35	0351075010	Crossbar strain relief plate	2.95
RS-ZL 100-3 ZLA MP 35	0351100010	Crossbar strain relief plate	3.94
RS-ZL 125-3 ZLA MP 35	0351125010	Crossbar strain relief plate	4.92
RS-ZL 150-3 ZLA MP 35	0351150010	Crossbar strain relief plate	5.91
RS-ZL 175-3 ZLA MP 35	0351175010	Crossbar strain relief plate	6.89



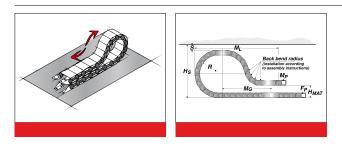
### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one o	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 – 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

### LOWERED FIXING POINT MP 35



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

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
5.91	7.09	1.97	15.71	23.23	12	4
6.89	7.09	1.97	17.68	26.77	15	4
7.87	7.09	1.97	19.65	30.71	18	5
9.84	7.09	1.97	23.58	38.58	24	5

### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**

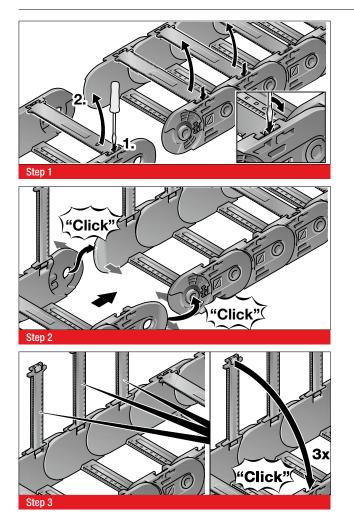


A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

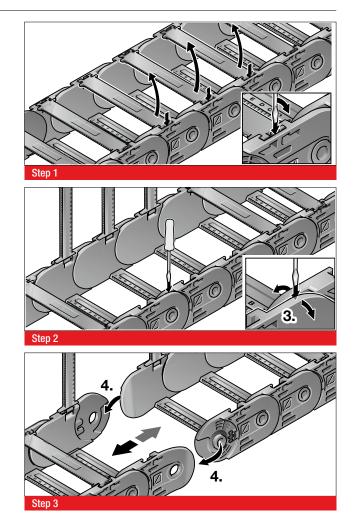
The variable guide channel ensures that the cable drag chain is supported and guided securely.



### ASSEMBLY



### DISASSEMBLY



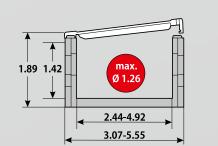
# MULTILINE



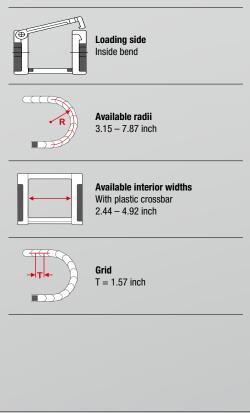
MP 36G



- CLOSED VARIANTS, STARTING WITH R80
- METAL CHAIN BRACKET



### **TECHNICAL DATA**





### **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	196.85 ft.
Travel distance self-supporting L, max.	see diagram on page 129
Travel distance vertical, hanging L <sub>vh</sub> max.	98.43 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>sof</sub> max.	3.28 ft.
Speed, gliding V <sub>a</sub> max.	9.84 ft/s
Speed, self-supporting V <sub>f</sub> max.	32.81 ft/s
Acceleration, gliding a max.	49.21 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	65.62 ft/s <sup>2</sup>

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

### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**



Chain bracket U-part



Chain bracket flange

#### SHELVING SYSTEM



Separator TR



RS shelving system

### **GUIDE CHANNELS**



VAW steel galvanized / stainless steel



VAW aluminum



# **MP 36G CLOSED**

### **ORDERING KEY**

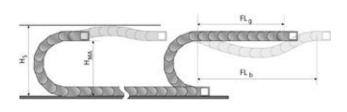
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
0360 04	Cover on outside of bend Cover on inside of bend Opens on inside of bend	062 [2.44] 086 [3.39]	078 [3.07] 102 [4.02]			<b>080</b> [3.15]	0 Plastic, full-ridged with bias	Polyamide (PA): <b>0</b> standard (PA/black)	
		<b>102</b> [4.02]	<b>118</b> [4.65]			100		G Special version (on	
		<b>125</b> [4.92]	<b>141</b> [5.55]			[3.94]		9 Special version (on request)	
						<b>125</b> [4.92]			
						<b>150</b> [5.91]			
						<b>200</b> [7.87]			
•								<b>↓</b>	
							-		
	C	over in out	side bend, Inside	cover in in width 2.4	side bend, 4 in.; radiu	openable fro s 3.15 in.	0 000050		

Plastic crossbar, full-ridged with bias, material black-colored polyamide Chain length 50 in. (32 links)



### Dimensions in mm [US inch]

### **SELF-SUPPORTING LENGTH**

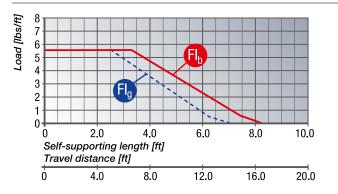


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

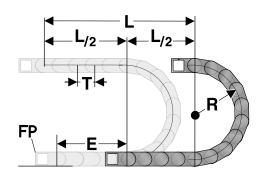
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



### **DETERMINING THE CHAIN LENGTH**



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.36 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation = L/2 +  $\pi$  \* R + 2 \* T + E  $\approx$  1 ft chain = 8 qty. x 1.57 inch.

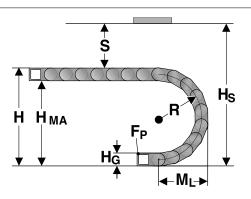
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 1.57 inch

### **INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to

be taken into account.

Radius R	3.15	3.94	4.92	5.91	7.87
Outside height of chain link $(H_g)$	1.89	1.89	1.89	1.89	1.89
Height of bend (H)	8.19	9.77	11.73	13.71	17.63
Height of moving end connection $(H_{MA})$	6.30	7.88	9.84	11.82	15.74
Safety margin (S)	1.26	1.26	1.26	1.26	1.26
Installation height (H <sub>s</sub> )	9.45	11.03	12.99	14.97	18.89
Arc projection $(M_L)$	5.67	6.46	7.44	8.43	10.39

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



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

Туре	Order No.	Material	Inside width A inch	E inch	G inch	H1 inch	H2 inch	l inch	K inch	Outside width of KA O inch
KA 36062 C Female end	036000001000	Sheet steel	2.44	A-0.30	1.65	0.26	0.26	0.24	1.92	A+0.47
KA 36062 C Male end	036000001100	Sheet steel	2.44	A-0.30	1.65	0.26	0.26	0.24	1.92	A+0.31
KA 36086 C Female end	036000001200	Sheet steel	3.39	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.47
KA 36086 C Male end	036000001300	Sheet steel	3.39	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.31
KA 36102 C Female end	036000001400	Sheet steel	4.02	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.47
KA 36102 C Male end	036000001500	Sheet steel	4.02	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.31
KA 36125 C Female end	036000001600	Sheet steel	4.92	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.47
KA 36125 C Male end	036000001700	Sheet steel	4.92	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.31
KA 36062 C Female end	03600002000	Stainless steel 1.4301	2.44	A-0.30	1.65	0.26	0.26	0.24	1.92	A+0.47
KA 36062 C Male end	036000002100	Stainless steel 1.4301	2.44	A-0.30	1.65	0.26	0.26	0.24	1.92	A+0.31
KA 36086 C Female end	036000002200	Stainless steel 1.4301	3.39	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.47
KA 36086 C Male end	036000002300	Stainless steel 1.4301	3.39	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.31
KA 36102 C Female end	036000002400	Stainless steel 1.4301	4.02	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.47
KA 36102 C Male end	036000002500	Stainless steel 1.4301	4.02	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.31
KA 36125 C Female end	036000002600	Stainless steel 1.4301	4.92	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.47
KA 36125 C Male end	036000002700	Stainless steel 1.4301	4.92	A-0.30	1.65	0.26	0.26	0.61	1.92	A+0.31

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Learn more at www.murrplastik.de Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

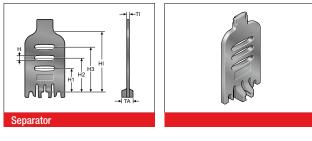
### **KA 36 CHAIN BRACKET FLANGE**



A cable drag 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.

Туре	Order No.	Material	Inside width A inch	HØ inch	K inch	L inch	M inch	N inch
FL 36062	0360062054	Sheet steel	2.44	0.28	1.57	3.85	0.71	2.70
FL 36086	0360086054	Sheet steel	3.39	0.28	2.52	4.80	0.71	2.70
FL 36102	0360102054	Sheet steel	4.02	0.28	3.15	5.43	0.71	2.70
FL 36125	0360125054	Sheet steel	4.92	0.28	4.06	6.33	0.71	2.70
FL 36062	0360062056	Stainless steel 1.4301	2.44	0.28	1.57	3.85	0.71	2.70
FL 36086	0360086056	Stainless steel 1.4301	3.39	0.28	2.52	4.80	0.71	2.70
FL 36102	0360102056	Stainless steel 1.4301	4.02	0.28	3.15	5.43	0.71	2.70
FL 36125	0360125056	Stainless steel 1.4301	4.92	0.28	4.06	6.33	0.71	2.70

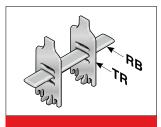
### **TR 36G SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 36G	036000009200	Separator	lockable	0.10	0.41	0.10	0.53	0.77	1.00	1.44

### **MP 36G SHELVING SYSTEM**



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

Туре	Order No.	Description	Width inch	Lock grid spacing inch
RBT 062	10000006200	Shelf	2.44	0.10
RBT 086	10000008600	Shelf	3.39	0.10
RBT 101	10000010100	Shelf	3.98	0.10
RBT 125	10000012500	Shelf	4.92	0.10

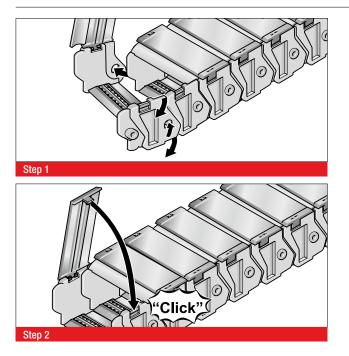
### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



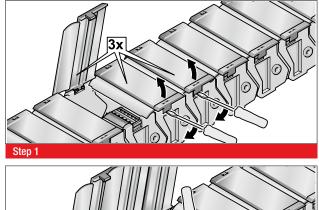
A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

### ASSEMBLY



### DISASSEMBLY





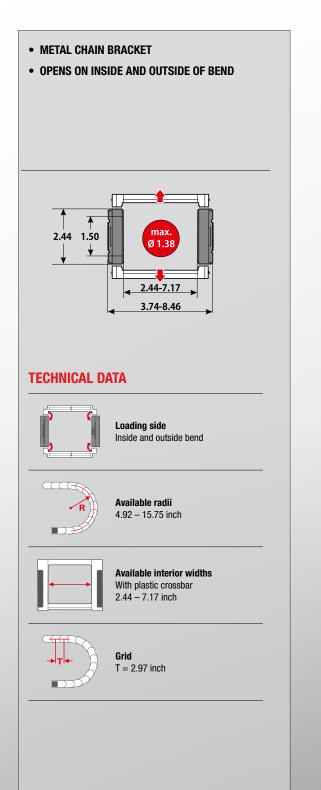


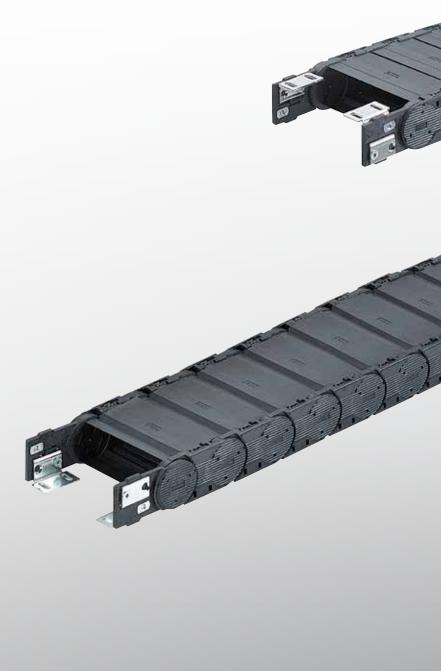
# MULTILINE



MP 43G







### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	164.04 ft.
Travel distance self-supporting $L_i$ max.	see diagram on page 137
Travel distance vertical, hanging L <sub>a</sub> max.	131.23 ft.
Travel distance vertical, upright L max.	9.84 ft.
Rotated 90°, unsupported L <sub>anf</sub> max.	3.28 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V <sub>r</sub> max.	49.21 ft/s
Acceleration, gliding a max.	49.21 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	65.62 ft/s <sup>2</sup>

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

### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### SHELVING SYSTEM



RS shelving system

GUIDE CHANNELS

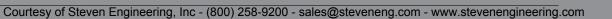


VAW aluminum

### CHAIN BRACKET



Chain bracket angle



### **MP 43G CLOSED**

### **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
0430 44	Cover on outside of bend Cover on inside of bend	<b>062</b> [2.44]	<b>095</b> [3.74]			125	0	Plastic, full-ridged	Polyamide (PA): <b>0</b> standard	
	Opens on inside and outside of bend	<b>084</b> [3.31]	<b>117</b> [4.61]			[4.92]	Ľ	with bias	(PA/black)	
		<b>105</b> [4.13]	<b>138</b> [5.43]			150	1	Plastic, full-ridged without bias	9 Special version (on request)	
		144 [5.67]	<b>177</b> [6.97]			[5.91]				
		<b>182</b> [7.17]	<b>215</b> [8.46]			<b>200</b> [7.87]	9	Special version (on request)		
						<b>250</b> [9.84]				
						<b>300</b> [11.81]				
						<b>400</b> [15.75]				
Ļ			V			Ļ	Ļ		↓ ▼	Ļ
			end, cover	in inside b				00056		

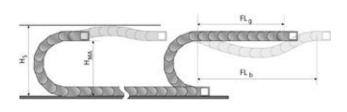
Inside width 2.44 in.; radius 4.92 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 56 in. (19 links)

Dimensions in mm [US inch]

murrplast

### **SELF-SUPPORTING LENGTH**

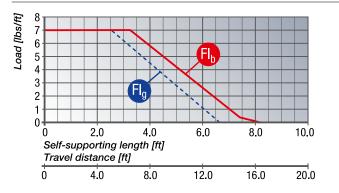


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

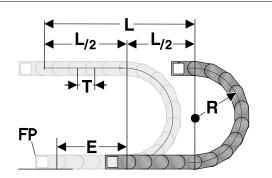
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



### DETERMINING THE CHAIN LENGTH



#### FL, Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.36 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 4 qty. x 2.97 inch.

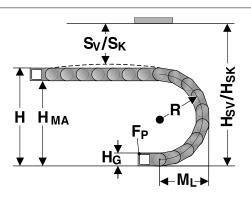
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 2.97 inch

### **INSTALLATION DIMENSIONS**



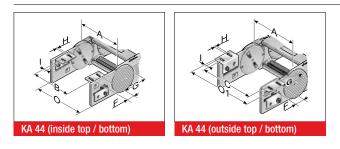
The moving end chain connection is to be screw fixed at height  ${\rm H}_{\rm \tiny MA}$  for the respective radius.

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  $H_{s\kappa}$ " value has to be taken into account.

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

4.92	5.91	7.87	9.84	11.81	15.75
2.44	2.44	2.44	2.44	2.44	2.44
12.28	14.26	18.18	22.12	26.06	33.94
9.84	11.82	15.74	19.68	23.62	31.50
1.50	1.50	1.50	1.50	1.50	1.50
13.78	15.76	19.68	23.62	27.56	35.44
0.51	0.51	0.51	0.51	0.51	0.51
12.79	14.77	18.69	22.63	26.57	34.45
9.11	10.10	12.06	14.03	16.00	19.94
	2.44 12.28 9.84 1.50 13.78 0.51 12.79	2.44         2.44           12.28         14.26           9.84         11.82           1.50         1.50           13.78         15.76           0.51         0.51           12.79         14.77	2.44         2.44         2.44           12.28         14.26         18.18           9.84         11.82         15.74           1.50         1.50         1.50           13.78         15.76         19.68           0.51         0.51         0.51           12.79         14.77         18.69	2.442.442.4412.2814.2618.1822.129.8411.8215.7419.681.501.501.501.5013.7815.7619.6823.620.510.510.510.5112.7914.7718.6922.63	2.442.442.442.4412.2814.2618.1822.1226.069.8411.8215.7419.6823.621.501.501.501.501.5013.7815.7619.6823.6227.560.510.510.510.510.5112.7914.7718.6922.6326.57

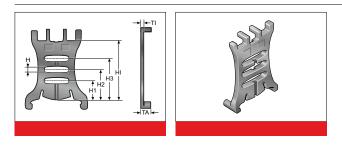
### **KA 44 CHAIN BRACKET ANGLE**



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

Туре	Order No.	Material	Inside width A inch	B inch	C inch	E inch	F inch				l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 44	0440000050	Sheet steel	2.44 - 7.17	A-0.57	A+1.52	A+1.26	1.26	1.70	3.39	0.26	0.49	A+1.30	A+2.52
KA 44	0440000052	Stainless steel 1.4301	2.44 – 7.17	A-0.57	A+1.52	A+1.26	1.26	1.70	3.39	0.26	0.49	A+1.30	A+2.52

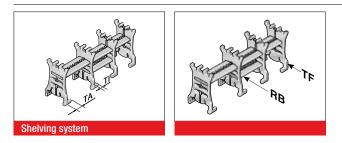
### **TR 43G SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TF 43	0430000090	Separator	movable	0.16	0.35	0.17	0.48	0.77	1.04	1.50

#### **MP 43G SHELVING SYSTEM**



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

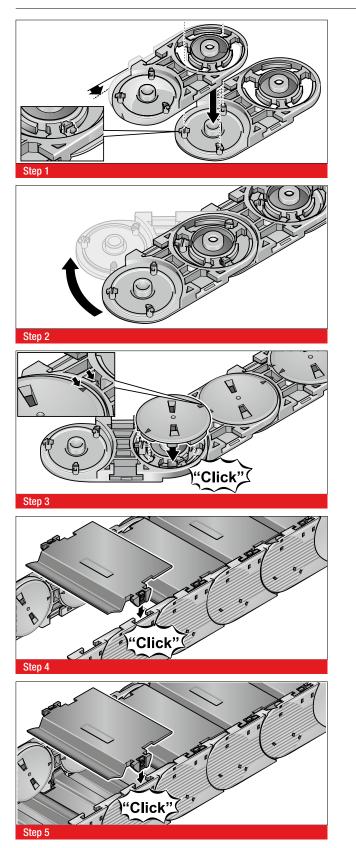
Туре	Order No.	Description	Width inch	Clearance width inch	Lock grid spacing inch
RB 031	10000003100	Shelf	1.65	1.22	0.06
RB 048	10000004800	Shelf	2.32	1.89	0.06
RB 070	10000007000	Shelf	3.19	2.76	0.06
RB 092	10000009200	Shelf	4.06	3.62	0.06
RB 128	10000012800	Shelf	5.47	5.04	0.06
RB 167	10000016700	Shelf	7.01	6.57	0.06

#### **VAW GUIDE CHANNEL**

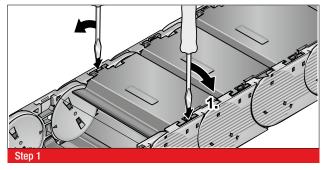


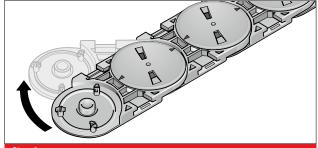
A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

### ASSEMBLY

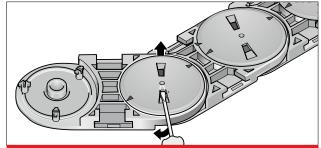


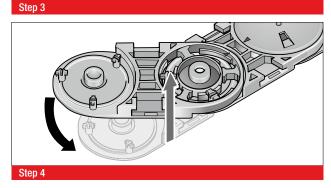
### DISASSEMBLY





Step 2

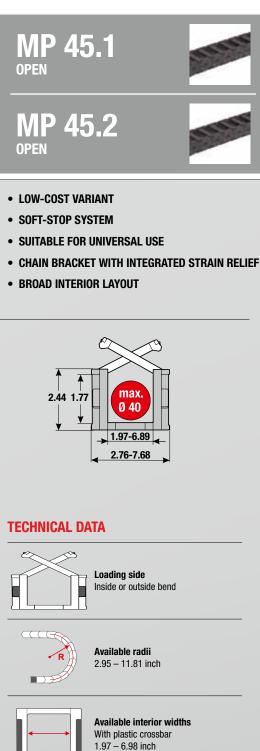


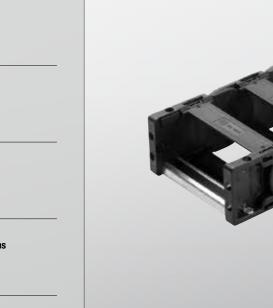




# MULTILINE







Noise attenuator

**Grid** T = 2.64 inch

-dB (((

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

### **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	262.47 ft.
Travel distance self-supporting L, max.	see diagram on page 145
Travel distance vertical, hanging L <sub>vb</sub> max.	196.85 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	13.12 ft.
Rotated 90°, unsupported L <sub>sof</sub> max.	3.28 ft.
Speed, gliding V max.	16.40 ft/s
Speed, self-supporting V, max.	65.62 ft/s
Acceleration, gliding a max.	49.21 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	164.04 ft/s <sup>2</sup>
• · · · · · · · · · · · · · · ·	

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

### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**

## \_\_\_\_



Separator TR



RS shelving system

**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

### **STRAIN RELIEF**



RS-ZL crossbar strain relief



STF Steel Fix



**CHAIN BRACKET** 

Chain bracket flexible

### MP 45.1 OPEN / MP 45.2 OPEN

### **ORDERING KEY**

0451 01 Current or indicational current or indicatione current or indicational current or indicational curren	Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
$ \frac{1}{10000} = 0  and the bard of $	0451 01	Crossbar on outside bend						Plastic, full-ridged	Polyamide without <b>2</b> attenuator	
0452 02       Display of index bad game of index of bad       1 as 1 as 1 as 1 as 1 as 1 as 1 as 1 as							[2.95]	with bias		
Light of the decimant of the de	0452 02	Crossbar on outside bend						1 Plastic, full-ridged	Polyamide with	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $							[3.94]	without bias	(PA/black)	
$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 &$			[4.92]	[5.71]					9 Special version (on	
(Mag)       (Fag)       (150)       (151)       (150)       (150)         (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)         (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)         (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)         (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag)       (Mag) <t< td=""><td></td><td></td><td>[5.91]</td><td>[6.69]</td><td></td><td></td><td>[4.92]</td><td></td><td>request)</td><td></td></t<>			[5.91]	[6.69]			[4.92]		request)	
							[3.91]			
							250			
										-
									-	-
	Ļ			V			Ļ	↓ ▼	↓ ↓	↓ ▼
ORDERING EXAMPLE: 0452 02 075 100 0 3 2000										
Crossbar on outside bend, crossbar on inside bend, can be opened from inside bend										

Inside width 2.95 in. (075 mm), radius 3.94 in. (100 mm) Plastic, full-ridged with bias, material polyamide with damper (PA/black)

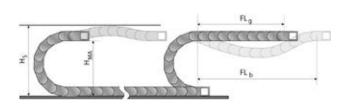
Chain length 78.74 in. (2000 mm) (30 links)

murrplast

### Dimensions in mm [US inch]



### **SELF-SUPPORTING LENGTH**

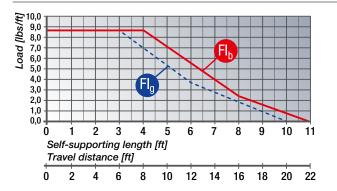


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

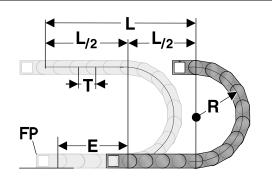
The maximum travel parameters (speed and acceleration) can be applied for this variant.

- $H_s$  = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{g}$  = Self-supporting length, upper run straight
- $FL_{b}^{"}$  = Self-supporting length, upper run bent

### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



### **DETERMINING THE CHAIN LENGTH**



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 1.97 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 1.97 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 5 qty. x 2.64 inch.

E = Distance between entry point and middle of travel distance

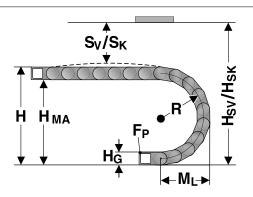
L = Travel distance

R = Radius

P = Grid 2.64 inch



### **INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  ${\rm H}_{\rm \tiny MA}$  for the respective radius.

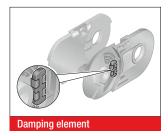
Concerning the installation dimensions take into consideration, whether the chain links are equipped with damping elements or not.

For chain links without damping elements, the value "Installed height with bias  $\rm H_{_{SV}}$  without damper" or "Installed height without bias  $\rm H_{_{SK}}$  without damper" must be taken into account.

If the chain links are equipped with a damping element, the value "Installed height with bias  $H_{sv}$  with damper" or "Installed height without bias  $H_{sk}$  with damper" is to be taken into account.

Radius R	75	100	125	150	200	250	300
Outside height of chain link $(H_g)$	2.44	2.44	2.44	2.44	2.44	2.44	2.44
Height of bend (H)	152.44	202.44	252.44	302.44	402.44	502.44	602.44
Height of moving end connection $(H_{MA})$	150.00	200.00	250.00	300.00	400.00	500.00	600.00
Safety margin with bias (S $_{\!\!\nu}\!)$	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Installation height with bias $(H_{sv})$ without damper	156.77	206.77	256.77	306.77	406.77	506.77	606.77
Installation height with bias $(H_{sv})$ with damper	157.56	207.56	257.56	307.56	407.56	507.56	607.56
Safety margin without bias ( $S_{\kappa}$ )	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Installation height without bias $(H_{sk})$ without damper	153.23	203.23	253.23	303.23	403.23	503.23	603.23
Installation height without bias $({\rm H}_{\rm sk})$ with damper	154.02	204.02	254.02	304.02	404.02	504.02	604.02
Arc projection (M <sub>L</sub> )	78.86	103.86	128.86	153.86	203.86	253.86	303.86

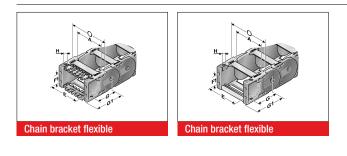
### DAMPING ELEMENT FOR THE CHAIN LINKS



The dampening elements in the stops make for a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

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

### **KA 45 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the cable drag chain like a side link. This allows the chain to move right up to the bracket. Each cable drag 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 cable drag 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.

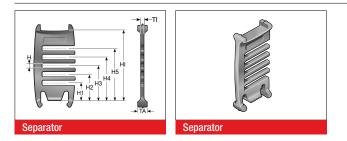
Туре	Order No.	Material	Inside width A inch	E inch	F1 inch	G inch	G1 inch	HØ inch	Outside width of KA O inch
KA 45-FB Female end, 050, complete	0450005050	Plastic	1.97	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 050, pendular, complete	0450005052	Plastic	1.97	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 050, complete	0450005051	Plastic	1.97	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 050, pendular, complete	0450005053	Plastic	1.97	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 075, complete	0450007550	Plastic	2.95	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 075, pendular, complete	0450007552	Plastic	2.95	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 075, complete	0450007551	Plastic	2.95	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 075, pendular, complete	0450007553	Plastic	2.95	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 100, complete	0450010050	Plastic	3.94	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 100, pendular, complete	0450010052	Plastic	3.94	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 100, complete	0450010051	Plastic	3.94	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 100, pendular, complete	0450010053	Plastic	3.94	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 115, complete	0450011550	Plastic	4.53	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 115, pendular, complete	0450011552	Plastic	4.53	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 115, complete	0450011551	Plastic	4.53	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 115, pendular, complete	0450011553	Plastic	4.53	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 125, complete	0450012550	Plastic	4.92	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 125, pendular, complete	0450012552	Plastic	4.92	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 125, complete	0450012551	Plastic	4.92	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 125, pendular, complete	0450012553	Plastic	4.92	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 150, complete	0450015050	Plastic	5.91	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 150, pendular, complete	0450015052	Plastic	5.91	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 150, complete	0450015051	Plastic	5.91	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 150, pendular, complete	0450015053	Plastic	5.91	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 175, complete	0450017550	Plastic	6.89	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Female end, 175, pendular, complete	0450017552	Plastic	6.89	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 175, complete	0450017551	Plastic	6.89	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FB Male end, 175, pendular, complete	0450017553	Plastic	6.89	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 050, complete	0450005054	Plastic	1.97	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 050, pendular, complete	0450005056	Plastic	1.97	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 050, complete	0450005055	Plastic	1.97	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 050, pendular, complete	0450005057	Plastic	1.97	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 075, complete	0450007554	Plastic	2.95	A+0.51	0.87	2.36	3.23	0.22	A+0.94

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### **KA 45 CHAIN BRACKET FLEXIBLE**

Туре	Order No.	Material	Inside width						Outside width
.160		Material	A	Е	F1	G	G1	HØ	of KA 0
			inch	inch	inch	inch	inch	inch	inch
KA 45-FG Female end, 075, pendular, complete	0450007556	Plastic	2.95	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 075, complete	0450007555	Plastic	2.95	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 075, pendular, complete	0450007557	Plastic	2.95	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 100, complete	0450010054	Plastic	3.94	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 100, pendular, complete	0450010056	Plastic	3.94	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 100, complete	0450010055	Plastic	3.94	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 100, pendular, complete	0450010057	Plastic	3.94	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 115, complete	0450011554	Plastic	4.53	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 115, pendular, complete	0450011556	Plastic	4.53	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 115, complete	0450011555	Plastic	4.53	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 115, pendular, complete	0450011557	Plastic	4.53	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 125, complete	0450012554	Plastic	4.92	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 125, pendular, complete	0450012556	Plastic	4.92	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 125, complete	0450012555	Plastic	4.92	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 125, pendular, complete	0450012557	Plastic	4.92	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 150, complete	0450015054	Plastic	5.91	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 150, pendular, complete	0450015056	Plastic	5.91	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 150, complete	0450015055	Plastic	5.91	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 150, pendular, complete	0450015057	Plastic	5.91	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 175, complete	0450017554	Plastic	6.89	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Female end, 175, pendular, complete	0450017556	Plastic	6.89	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 175, complete	0450017555	Plastic	6.89	A+0.51	0.87	2.36	3.23	0.22	A+0.94
KA 45-FG Male end, 175, pendular, complete	0450017557	Plastic	6.89	A+0.51	0.87	2.36	3.23	0.22	A+0.94

### **TRT 45 DIVISIBLE SEPARATOR**

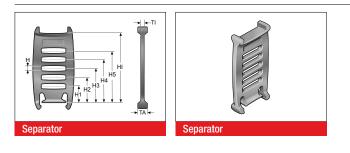


We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TRT 45	045000009200	TRT 45, separator, divisible	lockable	0.12	0.31	0.13	0.44	0.67	0.89	1.11	1.33	1.77



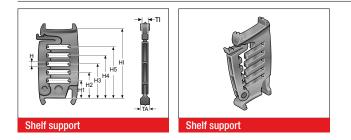
#### **TR 45-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 45-V	045000009300	TR 45-V Separator	movable	0.12	0.31	0.13	0.44	0.67	0.89	1.11	1.33	1.77

#### **RTT 45 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 45	100090450000	Shelf support, divisible	lockable	0.20	0.31	0.13	0.44	0.67	0.89	1.11	1.33	1.77

#### **RB-3 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 039-3	030100003900	Shelf	1.52	1.57
RB 041-3	1000004103	Shelf	1.62	1.97
RB 044-3	1000004403	Shelf	1.72	1.97

#### **RB-3 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 046-3	1000004603	Shelf	1.81	1.97
RB 049-3	030100004900	Shelf	1.91	1.97
RB 051-3	1000005103	Shelf	2.01	2.36
RB 054-3	1000005403	Shelf	2.11	2.36
RB 056-3	1000005603	Shelf	2.21	2.36
RB 059-3	030100005900	Shelf	2.31	2.36
RB 061-3	1000006103	Shelf	2.41	2.95
RB 064-3	1000006403	Shelf	2.50	2.95
RB 066-3	1000006603	Shelf	2.60	2.95
RB 069-3	1000006903	Shelf	2.70	2.95
RB 071-3	1000007103	Shelf	2.80	2.95
RB 074-3	030100007400	Shelf	2.90	2.95
RB 076-3	1000007603	Shelf	3.00	3.35
RB 079-3	1000007903	Shelf	3.09	3.35
RB 081-3	1000008103	Shelf	3.19	3.35
RB 084-3	030100008400	Shelf	3.29	3.35
RB 086-3	1000008603	Shelf	3.39	3.94
RB 089-3	1000008903	Shelf	3.49	3.94
RB 091-3	1000009103	Shelf	3.59	3.94
RB 094-3	1000009403	Shelf	3.69	3.94
RB 096-3	1000009603	Shelf	3.78	3.94
RB 099-3	030100009900	Shelf	3.88	3.94
RB 101-3	1000010103	Shelf	3.98	4.53
RB 104-3	1000010403	Shelf	4.08	4.53
RB 106-3	1000010603	Shelf	4.18	4.53
RB 109-3	1000010903	Shelf	4.28	4.53
RB 111-3	1000011103	Shelf	4.37	4.53
RB 114-3	030100011400	Shelf	4.47	4.53
RB 116-3	1000011603	Shelf	4.57	4.92
RB 119-3	1000011903	Shelf	4.67	4.92
RB 121-3	1000012103	Shelf	4.77	4.92
RB 124-3	030100012400	Shelf	4.87	4.92
RB 126-3	1000012603	Shelf	4.96	5.91
RB 129-3	1000012903	Shelf	5.06	5.91
RB 131-3	1000013103	Shelf	5.16	5.91
RB 134-3	1000013403	Shelf	5.26	5.91
RB 136-3	1000013603	Shelf	5.36	5.91
RB 139-3	1000013903	Shelf	5.46	5.91
RB 141-3	1000014103	Shelf	5.56	5.91
RB 144-3	1000014403	Shelf	5.65	5.91
RB 146-3	1000014603	Shelf	5.75	5.91
RB 149-3	030100014900	Shelf	5.85	5.91
RB 151-3	1000015103	Shelf	5.95	6.89
RB 154-3	1000015403	Shelf	6.05	6.89

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#### **RB-3 SHELF**

Turne	Order No	Description	W: J11	lucide width
Туре	Order No.	Description	Width inch	Inside width inch
RB 156-3	1000015603	Shelf	6.15	6.89
RB 159-3	1000015903	Shelf	6.24	6.89
RB 161-3	1000016103	Shelf	6.34	6.89
RB 164-3	1000016403	Shelf	6.44	6.89
RB 166-3	1000016603	Shelf	6.54	6.89
RB 169-3	1000016903	Shelf	6.64	6.89
RB 174-3	030100017400	Shelf	6.83	6.89
RB 176-3	1000017603	Shelf	6.93	7.87
RB 179-3	1000017903	Shelf	7.03	7.87
RB 181-3	1000018103	Shelf	7.13	7.87
RB 184-3	1000018403	Shelf	7.23	7.87
RB 186-3	1000018603	Shelf	7.33	7.87
RB 189-3	1000018903	Shelf	7.43	7.87
RB 191-3	1000019103	Shelf	7.52	7.87
RB 194-3	1000019403	Shelf	7.62	7.87
RB 196-3	1000019603	Shelf	7.72	7.87
RB 199-3	030100019900	Shelf	7.82	7.87

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

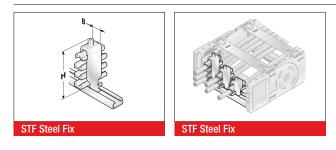


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbars widths up to 6.89 inch (175 mm). May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 050-3 ZLA MP 45	0451050010	Crossbar strain relief plate	1.97
RS-ZL 075-3 ZLA MP 45	0451075010	Crossbar strain relief plate	2.95
RS-ZL 100-3 ZLA MP 45	0451100010	Crossbar strain relief plate	3.94
RS-ZL 115-3 ZLA MP 45	0451115010	Crossbar strain relief plate	4.53
RS-ZL 125-3 ZLA MP 45	0451125010	Crossbar strain relief plate	4.92
RS-ZL 150-3 ZLA MP 45	0451150010	Crossbar strain relief plate	5.91
RS-ZL 175-3 ZLA MP 45	0451175010	Crossbar strain relief plate	6.89



#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 - 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 - 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 – 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 - 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 - 0.87	1.02	5.12

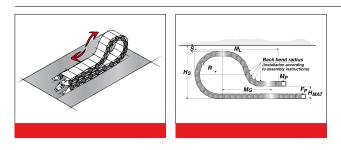
# **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

# LOWERED FIXING POINT MP 45



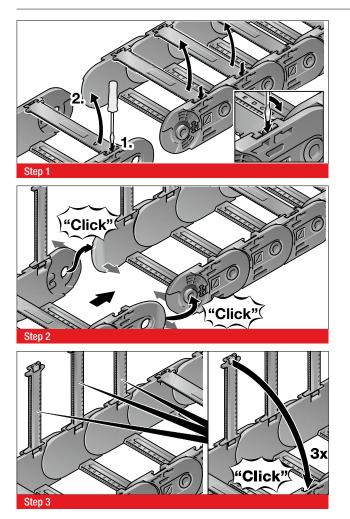
It is sometimes necessary to lower the height of the moving attachment point.

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

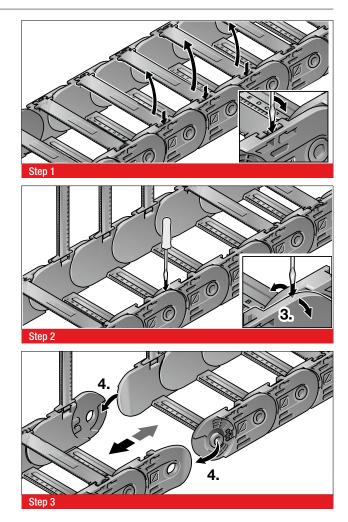
Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
5.91	7.87	1.97	16.22	24.80	12	3
7.87	7.87	1.97	20.16	29.92	13	3
9.84	7.87	1.97	24.09	36.61	18	4
11.81	7.87	1.97	28.03	42.52	20	4

# ASSEMBLY



# DISASSEMBLY



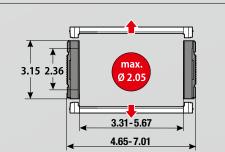
# MULTILINE



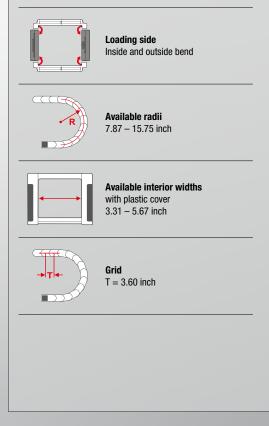
# MP 65G

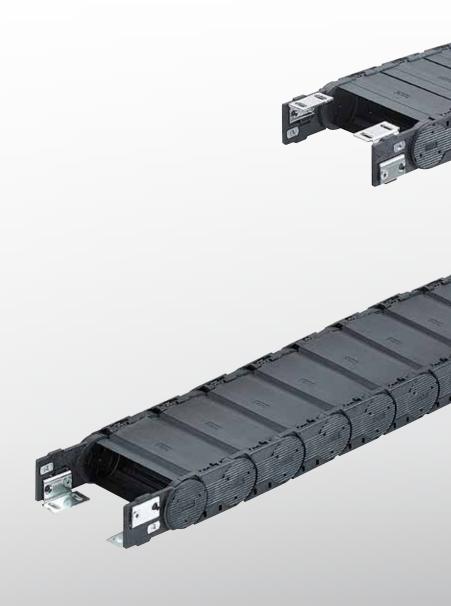


- PLASTIC VARIANT
- METAL CHAIN BRACKET
- OPENS ON INSIDE AND OUTSIDE OF BEND



# **TECHNICAL DATA**





# **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	196.85 ft.
Travel distance self-supporting L, max.	see diagram on page 157
Travel distance vertical, hanging L <sub>vh</sub> max.	164.04 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	16.40 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	6.56 ft.
Speed, gliding $V_a$ max.	16.40 ft/s
Speed, self-supporting V <sub>f</sub> max.	49.21 ft/s
Acceleration, gliding $a_{\alpha}$ max.	49.21 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	65.62 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**



Chain bracket angle

Chain bracket U-part



Chain bracket flange

**SHELVING SYSTEM** 



Separator TR



RS shelving system





VAW aluminum

# MP 65G CLOSED

### **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
0650 44	Cover on outside of bend Cover on inside of bend	<b>084</b> [3.31]	<b>118</b> [4.65]			200	0 Plastic, full-ridged	Polyamide (PA): <b>0</b> standard	
0050 44	Opens on inside and outside of bend	<b>105</b> [4.13]	<b>139</b> [5.47]			[7.87]	U with bias	(PA/black)	
		<b>144</b> [5.67]	<b>178</b> [7.01]			240	1 Plastic, full-ridged without bias	9 Special version (on request)	
						[9.45]	-		
						<b>280</b> [11.02]	9 Special version (on request)		
						<b>350</b> [13.78]			
						<b>400</b> [15.75]			
↓ ↓						↓ ↓	J		Ļ

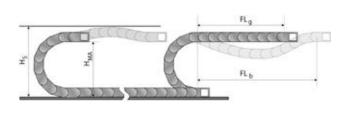
#### Ordering example: 0650 44 084 200 0 0 1556

Cover in outside bend, cover in inside bend, can be opened from inside and outside bend Inside width 3.31 in. (84 mm), radius 7.87 in. (200 mm) Plastic crossbar, full-ridged with bias, material black-colored polyamide Chain length 61.26 in. (1556 mm) (17 links)



Dimensions in mm [US inch]

# **SELF-SUPPORTING LENGTH**

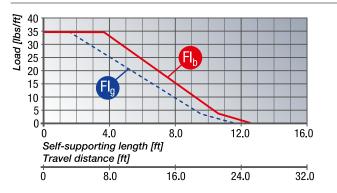


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

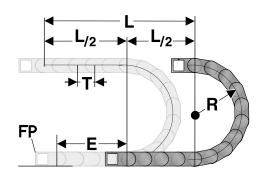
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

# LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



# **DETERMINING THE CHAIN LENGTH**



#### FL, Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.36 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 4 qty. x 3.60 inch.

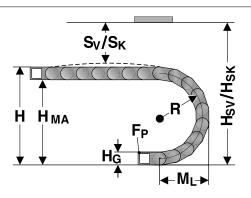
E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 3.60 inch

### INSTALLATION DIMENSIONS



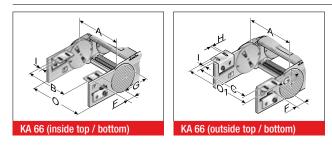
The moving end chain connection is to be screw fixed at height  $H_{MA}$  for the respective radius.

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the "Installed height without bias  $H_{sk}$ " value has to be taken into account.

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

7.87	9.45	11.02	13.78	15.75
3.15	3.15	3.15	3.15	3.15
18.89	22.05	25.19	30.71	34.65
15.74	18.90	22.04	27.56	31.50
1.97	1.97	1.97	1.97	1.97
20.86	24.02	27.16	32.68	36.62
0.59	0.59	0.59	0.59	0.59
19.48	22.64	25.78	31.30	35.24
13.05	14.62	16.20	18.95	20.93
	3.15 18.89 15.74 1.97 20.86 0.59 19.48	3.15         3.15           18.89         22.05           15.74         18.90           1.97         1.97           20.86         24.02           0.59         0.59           19.48         22.64	3.153.153.1518.8922.0525.1915.7418.9022.041.971.971.9720.8624.0227.160.590.590.5919.4822.6425.78	3.153.153.153.153.153.1518.8922.0525.1930.7115.7418.9022.0427.561.971.971.971.9720.8624.0227.1632.680.590.590.590.5919.4822.6425.7831.30

#### **KA 66 CHAIN BRACKET ANGLE**



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

Туре	Order No.	Material	Inside width A inch	B inch	C inch	-		G1 inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 66	0660000050	Sheet steel	2.44 - 7.17	A-0.67	A+2.01	1.77	1.99	3.39	0.35	0.39	A+1.34	A+2.52
KA 66	0660000060	Stainless steel 1.4301	2.44 – 7.17	A-0.67	A+2.01	1.77	1.99	3.39	0.35	0.39	A+1.34	A+2.52

#### **KA 66 CHAIN BRACKET U-PART**

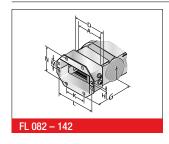
KA 66 U	The chain bracket is an all-plastic part. The bracket is precisely adjusted to the respective chain width and only needs to be snapped in at the chain link. Please order one male and one female end bracket for each chain. The brackets should be fastened with M5 screws. The cables or conduits may be fas- tened with cable ties on the integrated strain relief of the chain bracket.
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Туре	Order No.	Material	Inside width A inch	F inch	G inch	H1 inch	H2 inch	l inch	Outside width of KA O inch
KA 66 U	0660000054	Sheet steel	1.77	1.10	2.30	0.26	0.33	1.30	A+1.34

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Learn more at www.murrplastik.de Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

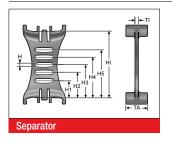
# **KA 65 CHAIN BRACKET FLANGE**



A cable drag 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.

Туре	Order No.	Material	Inside width A inch	G inch	HØ inch	K inch	L inch	M inch	N inch
FL 082	0650000070	Sheet steel	3.39	5.35	0.28	3.07	5.57	1.57	4.13
FL 107	0650000072	Sheet steel	4.02	5.35	0.28	3.94	6.44	1.57	4.13
FL 142	0650000074	Sheet steel	4.92	5.35	0.28	5.43	7.93	1.57	4.13
FL 082	0650000080	Stainless steel 1.4301	3.39	5.35	0.28	3.07	5.57	1.57	4.13
FL 107	0650000082	Stainless steel 1.4301	4.02	5.35	0.28	3.94	6.44	1.57	4.13
FL 142	0650000084	Stainless steel 1.4301	4.92	5.35	0.28	5.43	7.93	1.57	4.13

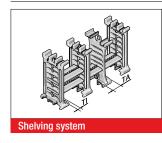
### **MP 66 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TV 66	066000009000	Separator	lockable	0.14	0.79	0.17	0.62	0.90	1.18	1.46	1.74	2.36

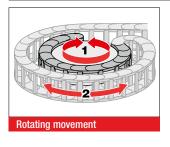
# **MP 66 SHELVING SYSTEM**



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

Туре	Order No.	Description	Width inch	Clearance width inch	Lock grid spacing inch	TI inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	H6 inch	H7 inch
RB 031	10000003100	Shelf	1.65	1.22	0.06								
RB 048	10000004800	Shelf	2.32	1.89	0.06								
RB 070	10000007000	Shelf	3.19	2.76	0.06								
RB 092	10000009200	Shelf	4.06	3.62	0.06								
RB 100	100000010000	Shelf	4.37	3.94	0.06								
RB 128	100000012800	Shelf	5.47	5.04	0.06								
RB 167	100000016700	Shelf	7.01	6.57	0.06								
RT 66	1000900100	Shelf support	0.17		0.06	0.26	0.34	0.62	0.90	1.18	1.46	1.74	2.02

#### **MP 66 REARWARD RADII**



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

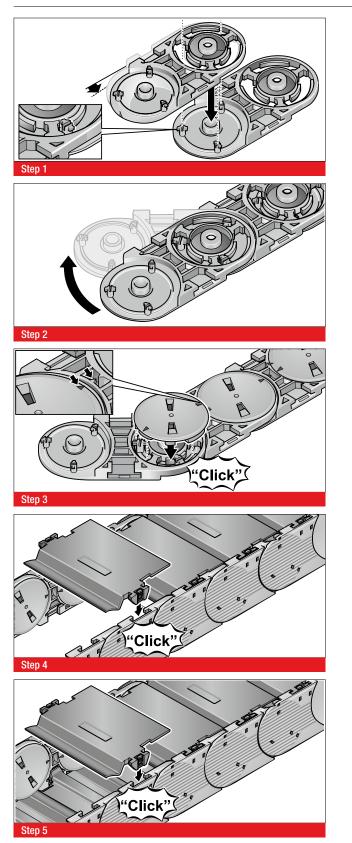
Туре	Order No.	Back radius inch	Version
SR 66 (RÜ240)	06600000060	9.45	Available for radii 5.91, 7.87, 9.45, 11.02 and 13.78 in

#### **VAW GUIDE CHANNEL**

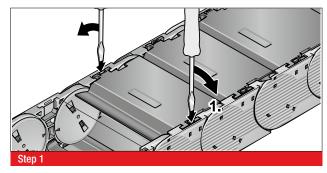


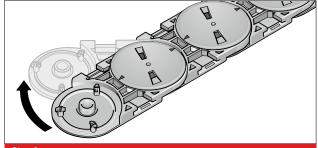
A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

# ASSEMBLY



# DISASSEMBLY





Step 2

Step 3

# MODULLINE



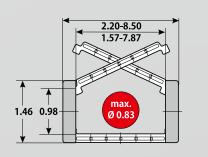
# MP 25.1/.2



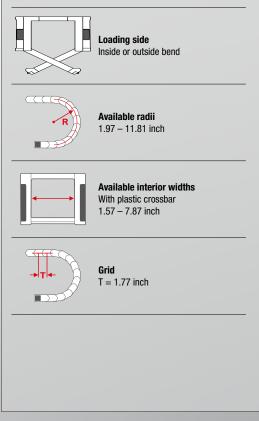
# MP 25.3/.4

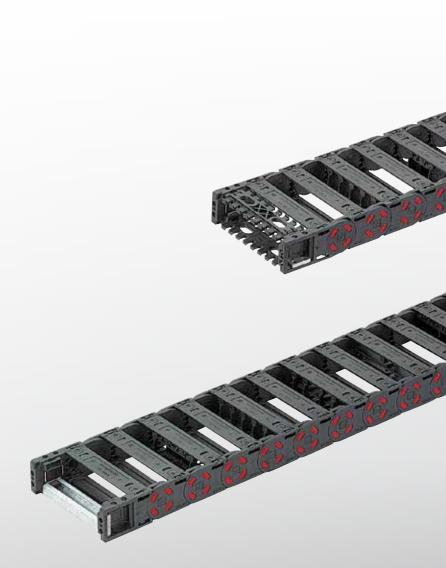


- BROAD INTERIOR LAYOUT
- BRUSH SUPPORT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- SUITABLE FOR UNIVERSAL USE



# **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	114.83 ft.
Travel distance self-supporting L, max.	see diagram on page 165
Travel distance vertical, hanging L <sub>vh</sub> max.	82.02 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	2.30 ft.
Speed, gliding V <sub>a</sub> max.	9.84 ft/s
Speed, self-supporting V <sub>f</sub> max.	32.81 ft/s
Acceleration, gliding a <sub>a</sub> max.	32.81 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	49.21 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**

# <u>Ellin</u>



Separator TR

**CHAIN BRACKET** 

Chain bracket flexible



RS shelving system

# **GUIDE CHANNELS**



VAW steel galvanized / stainless steel



VAW aluminum





RS-ZL crossbar strain relief



STF Steel Fix





# **ORDERING KEY**

ORDERIN	IG KEY							Dimension	s in mm (US inch)
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
0025 01	Crossbar on outside bend Crossbar on inside bend Opens on outside bend	040 [1.57] 050	056 [2.20] 066			<b>0501)</b> [1.97]	0 Plastic, full-ridged with bias	Polyamide (PA): <b>O</b> standard (PA/black)	
0025 02	Crossbar on outside bend Crossbar on inside bend Opens on inside of bend	[1.97] 060 [2.36] 075	[2.60] 076 [2.99] 091			<b>075<sup>1)</sup></b> [2.95]	1 Plastic, full-ridged without bias	7 ESD (PA/light gray)	
0025 03	Cover on outside of bend Cover on inside of bend	[2.95] 085 [3.35]	[3.58] <b>101</b> [3.98]			100		9 Special version (on request)	
	Opens on outside bend Cover on outside of bend	100 [3.94] 125 [4.92]	116 [4.57] 141 [5.55]			[3.94]			
0025 04	Cover on inside of bend Opens on inside of bend	150 [5.91] 200	166 [6.54] 216			125 [4.92]			
0025 05	Cover on outside of bend Crossbar on inside bend Opens on outside bend	[7.87]	[8.50]			150 [5.91]			
0025 06	Cover on outside of bend Crossbar on inside bend Opens on inside of bend					<b>200</b> [7.87]			
0025 07	Crossbar on outside bend Cover on inside of bend Opens on outside bend					<b>250</b> [9.84]			
0025 08	Crossbar on outside bend Cover on inside of bend Opens on inside of bend					<b>300</b> [11.81]			
$\downarrow$						<b>↓</b>		↓	↓
	Cross						0 0 0 1125		

Crossbar on outside bend, crossbar on inside bend, can be opened from outside bend

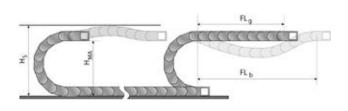
Inside width 1.57 in. (40 mm); radius 1.97 in. (50 mm) Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 1125 mm (25 links)

 $^{\scriptscriptstyle 1\!\!\!)}$  only for Version 01 and 02



#### **SELF-SUPPORTING LENGTH**

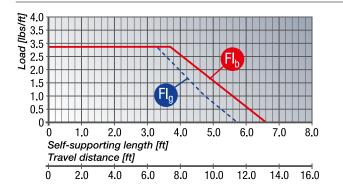


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### FL<sub>n</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

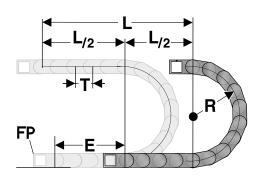
#### FL<sub>b</sub> Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 2.36 inch, 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 optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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 cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 7 qty. x 1.77 inch.

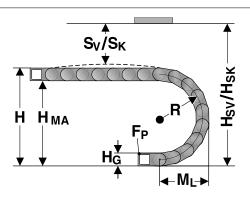
E = Distance between entry point and middle of travel distance

- L = Travel distance
- R = Radius

P = Grid 1.77 inch



#### **INSTALLATION DIMENSIONS**



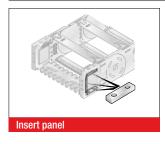
The moving end chain connection is to be screw fixed at height  ${\rm H}_{\rm \tiny MA}$  for the respective radius.

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the "Installed height without bias  $H_{sk}$ " value has to be taken into account.

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

Radius R	1.97	2.95	3.94	4.92	5.91	7.87	9.84	11.81
Outside height of chain link $(H_{\rm g})$	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
Height of bend (H)	6.18	8.14	10.12	12.08	14.06	17.98	21.92	25.86
Height of moving end connection (H <sub>MA</sub> )	4.72	6.68	8.66	10.62	12.60	16.52	20.46	24.40
Safety margin with bias $(S_v)$	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Installation height with bias $(H_{sv})$	7.68	9.64	11.62	13.58	15.56	19.48	23.42	27.36
Safety margin without bias ( $S_{\kappa}$ )	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Installation height without bias $(H_{s\kappa})$	6.89	8.85	10.83	12.79	14.77	18.69	22.63	26.57
Arc projection $(M_L)$	4.86	5.84	6.83	7.81	8.80	10.76	12.73	14.70

#### **EB 25/30 INSERT PANEL**



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

Туре	Order No.	Description	Holes inch	Thread
EB 25/30-FG V2A	030100005502	Insert panel with thread		M5x0,8
EB 25/30-FB V2A	030100005500	Insert panel with through-hole	0.22	

# KA 25 CHAIN BRACKET FLEXIBLE

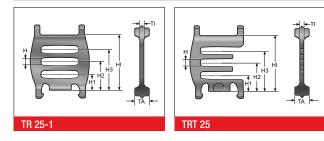
Chain	bracket			from the and the By The	nt) and is chain to d one fer bracket default, e chain b	s attach o move nale bra s in pla the cha oracket	ied to th right up acket. M ice. iin brac can the	ie ends o to the 15 scre ket is s n be op	of the brack ws an upplie otional	e chain lik ket. Each d d insert pa d with cro ly fitted w	options (top, bottom and e a side link. This allows chain requires one male anels are used to secure ossbars. <i>i</i> th crossbar strain relief nd type STF bow clamps.
Туре	Order No.	Material	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	н	HØ inch	Outside width of KA O inch
KA25	KA25ML	Plastic	1.57 – 7.87	A+0.35	0.47	0.47	1.67	2.76	M5	0.22	A+0.71
	ponfigurator chain bracketKA25 figurator for chain brackets: be KA Inside width Radius inch/mm inch/mm			RS-ZL No. pieces			C-Pro No piec	es	No. of EB** pieces		
	KA 25*	3.35/085	9.84/	250		2		0			2
Type Interna	ering exar I width = 3.35 in = 9.84 in. (250	- n. (085 mm)		= KA 25	5 = Chai	n brack	et flexit	ole for I	VIP 25		
Crossb C-rail	ar-strain relief (l banel (EB)	,	= 2 pieces = 0 pieces = 2 pieces								
* One s	set of chain brac	kets is needed per	chain, containing	, female ar	nd male	end					

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

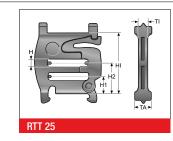
#### Note:

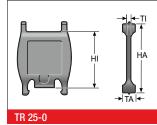
For an exact determination of the chain bracket, the inside width and radius are absolutely essential. Optionally, crossbar strain relief plates (RS-ZL), C-sections and insert panels (EB) can be chosen.

# **MP 25 SEPARATOR / SHELF SUPPORT**



We recommend that separators be used if multiple round cables

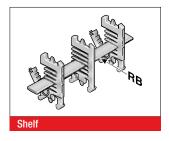




or conduits with differing diameters are to be installed.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 25-0	025100009300	Separator, closed	lockable	0.09	0.31					0.98
TR 25-1	025100009400	Separator, open	lockable	0.09	0.31	0.13	0.28	0.49	0.71	0.98
TRT 25	025100009200	Separator, divisible	lockable	0.09	0.31	0.13	0.28	0.49	0.71	0.98
RTT 25	025100006500	Shelf support, divisible	lockable	0.18	0.31	0.13	0.28	0.49		0.98

### **RB-3 SHELF**



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

Туре	Order No.	Description	Width	Inside width
			inch	inch
RB 039-3	030100003900	Shelf	1.52	1.57
RB 041-3	1000004103	Shelf	1.62	1.97
RB 044-3	1000004403	Shelf	1.72	1.97
RB 046-3	1000004603	Shelf	1.81	1.97
RB 049-3	030100004900	Shelf	1.91	1.97
RB 051-3	1000005103	Shelf	2.01	2.36
RB 054-3	1000005403	Shelf	2.11	2.36
RB 056-3	1000005603	Shelf	2.21	2.36
RB 059-3	030100005900	Shelf	2.31	2.36
RB 061-3	1000006103	Shelf	2.41	2.95
RB 064-3	1000006403	Shelf	2.50	2.95
RB 066-3	1000006603	Shelf	2.60	2.95
RB 069-3	1000006903	Shelf	2.70	2.95
RB 071-3	1000007103	Shelf	2.80	2.95
RB 074-3	030100007400	Shelf	2.90	2.95
RB 076-3	1000007603	Shelf	3.00	3.35
RB 079-3	1000007903	Shelf	3.09	3.35
RB 081-3	1000008103	Shelf	3.19	3.35
RB 084-3	030100008400	Shelf	3.29	3.35
RB 086-3	1000008603	Shelf	3.39	3.94
RB 089-3	1000008903	Shelf	3.49	3.94
RB 091-3	1000009103	Shelf	3.59	3.94
RB 094-3	1000009403	Shelf	3.69	3.94
RB 096-3	1000009603	Shelf	3.78	3.94
RB 099-3	030100009900	Shelf	3.88	3.94
RB 101-3	1000010103	Shelf	3.98	4.53
RB 104-3	1000010403	Shelf	4.08	4.53
RB 106-3	1000010603	Shelf	4.18	4.53
RB 109-3	1000010903	Shelf	4.28	4.53
RB 111-3	1000011103	Shelf	4.37	4.53
RB 114-3	030100011400	Shelf	4.47	4.53
RB 116-3	1000011603	Shelf	4.57	4.92
RB 119-3	1000011903	Shelf	4.67	4.92
RB 121-3	1000012103	Shelf	4.77	4.92
RB 124-3	030100012400	Shelf	4.87	4.92
RB 126-3	1000012603	Shelf	4.96	5.91
RB 129-3	1000012903	Shelf	5.06	5.91
RB 131-3	1000013103	Shelf	5.16	5.91
RB 134-3	1000013403	Shelf	5.26	5.91

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Learn more at www.murrplastik.de Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

#### **RB-3 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 136-3	1000013603	Shelf	5.36	5.91
RB 139-3	1000013903	Shelf	5.46	5.91
RB 141-3	1000014103	Shelf	5.56	5.91
RB 144-3	1000014403	Shelf	5.65	5.91
RB 146-3	1000014603	Shelf	5.75	5.91
RB 149-3	030100014900	Shelf	5.85	5.91
RB 151-3	1000015103	Shelf	5.95	6.89
RB 154-3	1000015403	Shelf	6.05	6.89
RB 156-3	1000015603	Shelf	6.15	6.89
RB 159-3	1000015903	Shelf	6.24	6.89
RB 161-3	1000016103	Shelf	6.34	6.89
RB 164-3	1000016403	Shelf	6.44	6.89
RB 166-3	1000016603	Shelf	6.54	6.89
RB 169-3	1000016903	Shelf	6.64	6.89
RB 174-3	030100017400	Shelf	6.83	6.89
RB 176-3	1000017603	Shelf	6.93	7.87
RB 179-3	1000017903	Shelf	7.03	7.87
RB 181-3	1000018103	Shelf	7.13	7.87
RB 184-3	1000018403	Shelf	7.23	7.87
RB 186-3	1000018603	Shelf	7.33	7.87
RB 189-3	1000018903	Shelf	7.43	7.87
RB 191-3	1000019103	Shelf	7.52	7.87
RB 194-3	1000019403	Shelf	7.62	7.87
RB 196-3	1000019603	Shelf	7.72	7.87
RB 199-3	030100019900	Shelf	7.82	7.87

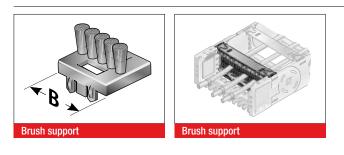
#### VV



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 realized.

Туре	Order No.	Description	Width inch	Inside width inch
RBD 040-3	030100004001	Shelf, end-to-end	1.57	1.57
RBD 050-3	030100005001	Shelf, end-to-end	1.97	1.97
RBD 060-3	030100006001	Shelf, end-to-end	2.36	2.36
RBD 075-3	030100007501	Shelf, end-to-end	2.95	2.95
RBD 085-3	030100008501	Shelf, end-to-end	3.35	3.35
RBD 100-3	030100010001	Shelf, end-to-end	3.94	3.94

### **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.

Туре	Order No.	Description	Version	Width inch
BT 20-25, completely	025100009702	Brush support	lockable	0.79
BT 25-25, completely	025100009802	Brush support	lockable	0.98

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

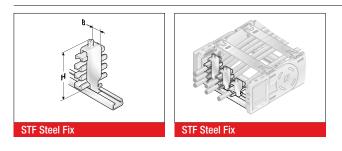


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 7.87 inch. May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 040-3	030104000010	Crossbar strain relief plate	1.57
RS-ZL 050-3	030105000010	Crossbar strain relief plate	1.97
RS-ZL 060-3	030106000010	Crossbar strain relief plate	2.36
RS-ZL 075-3	030107500010	Crossbar strain relief plate	2.95
RS-ZL 085-3	030108500010	Crossbar strain relief plate	3.35
RS-ZL 100-3	030110000010	Crossbar strain relief plate	3.94
RS-ZL 125-3	030112500010	Crossbar strain relief plate	4.92
RS-ZL 150-3	030115000010	Crossbar strain relief plate	5.91
RS-ZL 200-3	030120000010	Crossbar strain relief plate	7.87



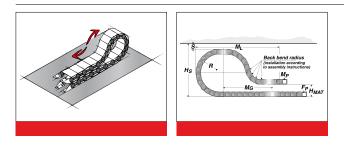
#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

STF 14-1 Steel Fix         81661802         Hooped clamp         1         0.4           STF 16-1 Steel Fix         81661803         Hooped clamp         1         0.5           STF 18-1 Steel Fix         81661804         Hooped clamp         1         0.6           STF 20-1 Steel Fix         81661805         Hooped clamp         1         0.7           STF 22-1 Steel Fix         81661806         Hooped clamp         1         0.7	7 - 0.55       0 $5 - 0.63$ 0 $3 - 0.71$ 0 $1 - 0.79$ 0 $9 - 0.87$ 1	0.71 0.79 0.87 0.94	2.17 2.05 2.13 2.20 2.32
STF 14-1 Steel Fix         81661802         Hooped clamp         1         0.4           STF 16-1 Steel Fix         81661803         Hooped clamp         1         0.5           STF 18-1 Steel Fix         81661804         Hooped clamp         1         0.6           STF 20-1 Steel Fix         81661805         Hooped clamp         1         0.7           STF 22-1 Steel Fix         81661806         Hooped clamp         1         0.7	7 - 0.55       0 $5 - 0.63$ 0 $3 - 0.71$ 0 $1 - 0.79$ 0 $9 - 0.87$ 1	0.71 0.79 0.87 0.94	2.05 2.13 2.20
STF 16-1 Steel Fix         81661803         Hooped clamp         1         0.5           STF 18-1 Steel Fix         81661804         Hooped clamp         1         0.6           STF 20-1 Steel Fix         81661805         Hooped clamp         1         0.7           STF 22-1 Steel Fix         81661806         Hooped clamp         1         0.7	5 - 0.63 ( 3 - 0.71 ( 1 - 0.79 ( 9 - 0.87 1	D.79 D.87 D.94	2.13 2.20
STF 18-1 Steel Fix         81661804         Hooped clamp         1         0.63           STF 20-1 Steel Fix         81661805         Hooped clamp         1         0.73           STF 22-1 Steel Fix         81661806         Hooped clamp         1         0.73	3 – 0.71 ( 1 – 0.79 ( 9 – 0.87 1	0.87 0.94	2.20
STF 20-1 Steel Fix         81661805         Hooped clamp         1         0.7           STF 22-1 Steel Fix         81661806         Hooped clamp         1         0.7	1 – 0.79 ( 9 – 0.87 1	0.94	-
STF 22-1 Steel Fix 81661806 Hooped clamp 1 0.7	9 – 0.87 1		2.32
		1.02	
	7 – 1.02 1		2.40
STF 26-1 Steel Fix 81661807 Hooped clamp 1 0.8		1.18	2.76
STF 30-1 Steel Fix 81661808 Hooped clamp 1 1.02	<b>2 – 1.18</b> 1	1.34	2.91
STF 34-1 Steel Fix 81661809 Hooped clamp 1 1.18	8 – 1.34 1	1.50	3.07
STF 38-1 Steel Fix 81661810 Hooped clamp 1 1.34	4 – 1.50 1	1.65	3.23
STF 42-1 Steel Fix         81661811         Hooped clamp         1         1.50	0 – 1.65 1	1.81	3.58
Double clamp (for two cables)			
STF 12-2 Steel Fix 81661821 Hooped clamp 2 0.24	4 – 0.47 (	0.63	2.87
STF 14-2 Steel Fix 81661822 Hooped clamp 2 0.4	7 – 0.55 (	0.71	2.91
STF 16-2 Steel Fix 81661823 Hooped clamp 2 0.5	5 – 0.63 (	0.79	3.23
STF 18-2 Steel Fix         81661824         Hooped clamp         2         0.63	3 – 0.71 (	0.87	3.39
STF 20-2 Steel Fix         81661825         Hooped clamp         2         0.7	1 – 0.79 (	0.94	3.58
STF 22-2 Steel Fix         81661826         Hooped clamp         2         0.75	9 – 0.87	1.02	3.74
STF 26-2 Steel Fix         81661827         Hooped clamp         2         0.8	7 – 1.02	1.18	4.25
STF 30-2 Steel Fix 81661828 Hooped clamp 2 1.0	2 – 1.18 1	1.34	4.76
STF 34-2 Steel Fix         81661829         Hooped clamp         2         1.16	8 – 1.34 1	1.50	5.08
Triple clamp (for three cables)			
STF 12-3 Steel Fix 81661841 Hooped clamp 3 0.24	4 – 0.47 (	0.63	3.86
STF 14-3 Steel Fix 81661842 Hooped clamp 3 0.4	7 – 0.55 (	0.71	3.86
STF 16-3 Steel Fix 81661843 Hooped clamp 3 0.5	5 – 0.63 (	0.79	4.13
STF 18-3 Steel Fix 81661844 Hooped clamp 3 0.6	3 – 0.71 (	0.87	4.37
STF 20-3 Steel Fix         81661845         Hooped clamp         3         0.7	1 – 0.79 (	0.94	4.65
STF 22-3 Steel Fix         81661846         Hooped clamp         3         0.75	9 – 0.87	1.02	5.12

### **MP 25 LOWERED FIXING POINT**



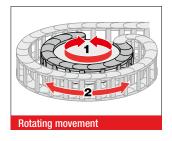
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
3.94	3.94	1.97	11.30	11.42	5	3
4.92	3.94	1.97	13.27	13.39	6	3
5.91	3.94	1.97	15.24	17.72	8	5
7.87	3.94	1.97	19.17	23.23	11	6
9.84	3.94	1.97	23.11	27.95	14	7
11.81	3.94	1.97	27.05	31.89	17	8

#### MP 25.1/.2 REARWARD RADII



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	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 (ALUMINUM / STAINLESS STEEL)**

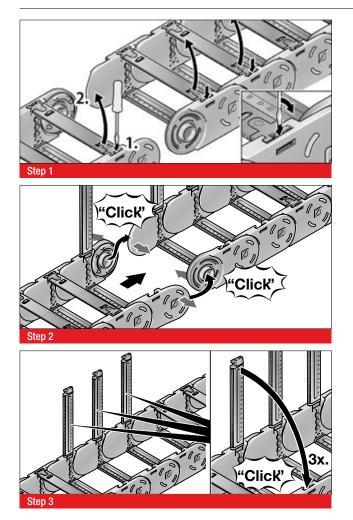


A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

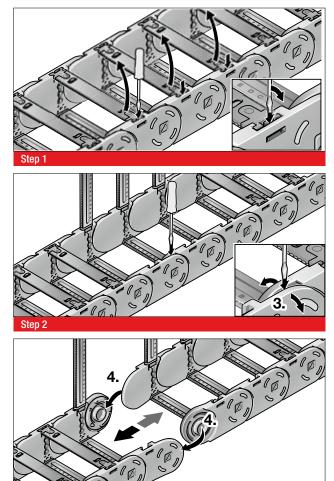
The variable guide channel ensures that the cable drag chain is supported and guided securely.



# ASSEMBLY



### DISASSEMBLY



Step 3

# MODULLINE



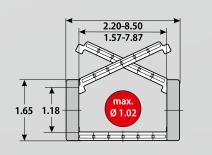
# MP 30.1/.2



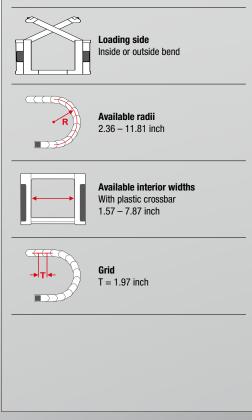
# MP 30.3/.4

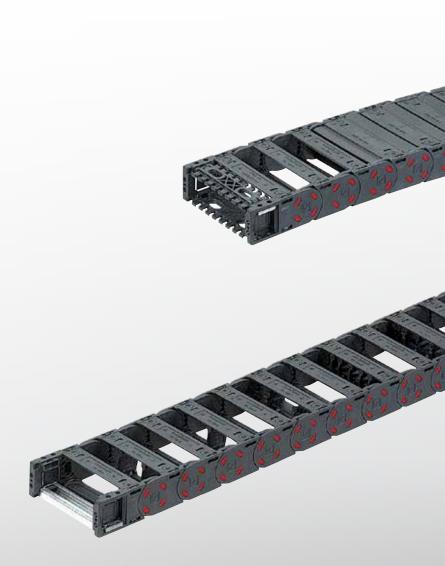


- BROAD INTERIOR LAYOUT
- BRUSH SUPPORT
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- SUITABLE FOR UNIVERSAL USE



# **TECHNICAL DATA**





#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_a$ max.	131.23 ft.
Travel distance self-supporting L, max.	see diagram on page 177
Travel distance vertical, hanging L <sub>vh</sub> max.	98.43 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>901</sub> max.	2.30 ft.
Speed, gliding $V_a$ max.	9.84 ft/s
Speed, self-supporting V <sub>f</sub> max.	32.81 ft/s
Acceleration, gliding $a_{\alpha}$ max.	32.81 ft/s <sup>2</sup>
Acceleration, self-supporting a <sub>t</sub> max.	49.21 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**



Separator TR





**CHAIN BRACKET** 

Chain bracket flexible



H-shaped shelf unit RE

**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

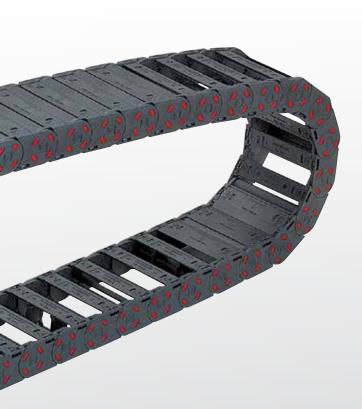
# STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix





Dimensions in mm [US inch]

# **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant		Material	Chain length
0030 01	Crossbar on outside bend Crossbar on inside bend Opens on outside bend	040 [1.57] 050	056 [2.20] 066			<b>060</b> <sup>1)</sup> [2.36]	0	Plastic, full-ridged with bias	0	Polyamide (PA): standard (PA/black)	
0030 02	Crossbar on outside bend Crossbar on inside bend	[1.97] 060 [2.36]	[2.60] 076 [2.99]			<b>075</b> <sup>1)</sup>	1	Plastic, full-ridged	7	ESD	
	Opens on inside of bend	075 [2.95]	091 [3.58]			[2.95]		without bias		(PA/light gray)	
0030 03	Cover on outside of bend Cover on inside of bend Opens on outside bend	085 [3.35] 100 [3.94]	101 [3.98] 116 [4.57]			<b>100</b> [3.94]			9	Special version (on request)	
0030 04	Cover on outside of bend Cover on inside of bend Opens on inside of bend	125 [4.92] 150	141 (5.55) 166			<b>125</b> [4.92]					
0030 05	Cover on outside of bend Crossbar on inside bend Opens on outside bend	[5.91] <b>200</b> [7.87]	[6.54] <b>216</b> [8.50]			<b>150</b> [5.91]					
0030 06	Cover on outside of bend Crossbar on inside bend Opens on inside of bend	·				<b>200</b> [7.87]					
0030 07	Crossbar on outside bend Cover on inside of bend Opens on outside bend					<b>250</b> [9.84]					
0030 08	Crossbar on outside bend Cover on inside of bend Opens on inside of bend					<b>300</b> [11.81]					
¥					J	↓ ↓	V		Ļ		
							_				
	(	ORDERI	NG EXA	MPLE: (	0030 04	0 060 0	0 0	00049			

Crossbar on outside bend, crossbar on inside bend, can be opened from outside bend

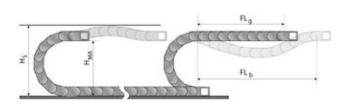
Inside width 1.57 in.; radius 2.36 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 49 in. (25 links)

 $^{\scriptscriptstyle 1\!\!\!)}$  only for Version 01 and 02



#### **SELF-SUPPORTING LENGTH**

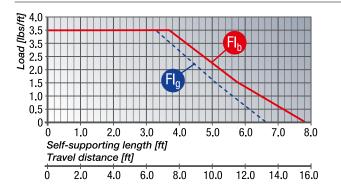


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

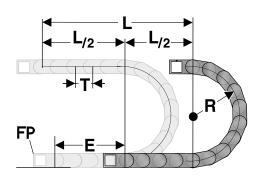
#### FL, Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 2.36 inch, 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 optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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 cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

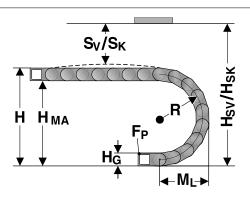
Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 7 qty. x 1.97 inch.

E = Distance between entry point and middle of travel distance

- L = Travel distance
- R = Radius
- P = Grid 1.97 inch



### **INSTALLATION DIMENSIONS**



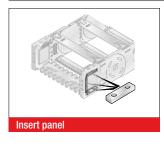
The moving end chain connection is to be screw fixed at height  ${\rm H}_{\rm \tiny MA}$  for the respective radius.

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the "Installed height without bias  $H_{sk}$ " value has to be taken into account.

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

Radius R	2.36	2.95	3.94	4.92	5.91	7.87	9.84	11.81
Outside height of chain link $(H_g)$	1.65	1.65	1.65	1.65	1.65	1.65	1.65	1.65
Height of bend (H)	7.15	8.33	10.31	12.27	14.25	18.17	22.11	26.05
Height of moving end connection $(H_{MA})$	5.50	6.68	8.66	10.62	12.60	16.52	20.46	24.40
Safety margin with bias $(S_v)$	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Installation height with bias $(H_{sv})$	8.65	9.83	11.81	13.77	15.75	19.67	23.61	27.55
Safety margin without bias $(S_{\kappa})$	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Installation height without bias $(H_{_{SK}})$	7.86	9.04	11.02	12.98	14.96	18.88	22.82	26.76
Arc projection $(M_L)$	5.55	6.14	7.13	8.11	9.10	11.06	13.03	15.00

#### **EB 25/30 INSERT PANEL**



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

Туре	Order No.	Description	Holes inch	Thread
EB 25/30-FG V2A	030100005502	Insert panel with thread		M5x0,8
EB 25/30-FB V2A	030100005500	Insert panel with through-hole	0.22	

# KA 30 CHAIN BRACKET FLEXIBLE

Chain b	Here and the second sec			front) the ch and or the br By def The cl	and is a nain to r ne fema ackets i fault, the hain bra	ittacheo nove rig ile brac n place e chain icket ca	d to the ght up ket. M5 bracke an then	ends of to the 5 screw t is sup be opt	of the brack s and plied ionally	chain like et. Each ch insert par with crossl y fitted wit	tions (top, bottom ar a side link. This allow hain requires one ma hels are used to secu bars. th crossbar strain reli type STF bow clamps
Туре	Order No.	Material	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	н	HØ inch	Outside width of KA O inch
KA30	KA30ML	Plastic	1.57 – 7.87	A+0.35	0.47	0.47	1.77	2.83	M5	0.22	A+0.71
	urator chain br	acket KA 30									
Configu	<b>urator chain br</b> Irator for chain l		Rad inch/		-	L numb pieces	er of	C-pro	ofile n piec	umber of es	No. of EB** pieces
<b>Configı</b> Configu	<b>urator chain br</b> Irator for chain l	orackets: Inside width		mm	-		er of	C-pro		es	
Configu Configu Type K Drderin Type nternal	urator chain br irator for chain l (A KA 30* ng example: width = 3.35 in	brackets: Inside width inch/mm 3.35/085	inch/	mm		pieces 2			piec 0	es	pieces
Configu Configu Type K Drderin Type Internal Radius	urator chain br Irator for chain l KA KA 30* Ing example:	n. (085 mm) mm)	inch/	mm /250	= Chair	pieces 2			piec 0	es	pieces
Configu Configu Type K Drderin Type Internal Radius	urator chain br         urator for chain br         urator for chain br         KA 30*         ng example:         width = 3.35 in         = 9.84 in. (250)	n. (085 mm) mm)	inch/	mm /250 = KA 30	= Chain	pieces 2			piec 0	es	pieces

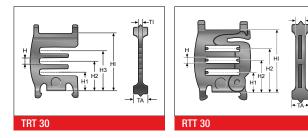
\* One set of chain brackets is needed per chain, containing female and male end

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

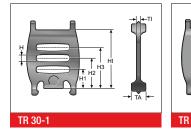
#### Note:

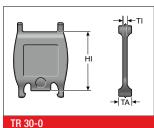
For an exact determination of the chain bracket, the inside width and radius are absolutely essential. Optionally, crossbar strain relief plates (RS-ZL), C-sections and insert panels (EB) can be chosen.

# **MP 30 SEPARATOR / SHELF SUPPORT**



We recommend that separators be used if multiple round cables

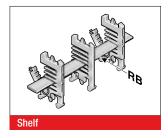




or conduits with differing diameters are to be installed.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 30-0	030100009300	Separator, closed	lockable	0.09	0.31					1.18
TR 30-1	030100009400	Separator, open	lockable	0.09	0.31	0.13	0.37	0.59	0.81	1.18
TRT 30	030100009200	Separator, divisible	lockable	0.09	0.31	0.13	0.37	0.59	0.81	1.18
RTT 30	030100006500	Shelf support, divisible	lockable	0.18	0.31	0.13	0.37	0.59	0.81	1.18

#### **RB-3 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 039-3	030100003900	Shelf	1.52	1.57
RB 041-3	1000004103	Shelf	1.62	1.97
RB 044-3	1000004403	Shelf	1.72	1.97
RB 046-3	1000004603	Shelf	1.81	1.97
RB 049-3	030100004900	Shelf	1.91	1.97
RB 051-3	1000005103	Shelf	2.01	2.36
RB 054-3	1000005403	Shelf	2.11	2.36
RB 056-3	1000005603	Shelf	2.21	2.36
RB 059-3	030100005900	Shelf	2.31	2.36
RB 061-3	1000006103	Shelf	2.41	2.95
RB 064-3	1000006403	Shelf	2.50	2.95
RB 066-3	1000006603	Shelf	2.60	2.95
RB 069-3	1000006903	Shelf	2.70	2.95
RB 071-3	1000007103	Shelf	2.80	2.95
RB 074-3	030100007400	Shelf	2.90	2.95
RB 076-3	100007603	Shelf	3.00	3.35
RB 079-3	1000007903	Shelf	3.09	3.35
RB 081-3	1000008103	Shelf	3.19	3.35
RB 084-3	030100008400	Shelf	3.29	3.35
RB 086-3	100008603	Shelf	3.39	3.94
RB 089-3	1000008903	Shelf	3.49	3.94
RB 091-3	1000009103	Shelf	3.59	3.94
RB 094-3	1000009403	Shelf	3.69	3.94
RB 096-3	1000009603	Shelf	3.78	3.94
RB 099-3	030100009900	Shelf	3.88	3.94
RB 101-3	1000010103	Shelf	3.98	4.53
RB 104-3	1000010403	Shelf	4.08	4.53
RB 106-3	1000010603	Shelf	4.18	4.53
RB 109-3	1000010903	Shelf	4.28	4.53
RB 111-3	1000011103	Shelf	4.37	4.53
RB 114-3	030100011400	Shelf	4.47	4.53
RB 116-3	1000011603	Shelf	4.57	4.92
RB 119-3	1000011903	Shelf	4.67	4.92
RB 121-3	1000012103	Shelf	4.77	4.92
RB 124-3	030100012400	Shelf	4.87	4.92
RB 126-3	1000012603	Shelf	4.96	5.91
RB 129-3	1000012903	Shelf	5.06	5.91

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#### **RB-3 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 131-3	1000013103	Shelf	5.16	5.91
RB 134-3	1000013403	Shelf	5.26	5.91
RB 136-3	1000013603	Shelf	5.36	5.91
RB 139-3	1000013903	Shelf	5.46	5.91
RB 141-3	1000014103	Shelf	5.56	5.91
RB 144-3	1000014403	Shelf	5.65	5.91
RB 146-3	1000014603	Shelf	5.75	5.91
RB 149-3	030100014900	Shelf	5.85	5.91
RB 151-3	1000015103	Shelf	5.95	6.89
RB 154-3	1000015403	Shelf	6.05	6.89
RB 156-3	1000015603	Shelf	6.15	6.89
RB 159-3	1000015903	Shelf	6.24	6.89
RB 161-3	1000016103	Shelf	6.34	6.89
RB 164-3	1000016403	Shelf	6.44	6.89
RB 166-3	1000016603	Shelf	6.54	6.89
RB 169-3	1000016903	Shelf	6.64	6.89
RB 174-3	030100017400	Shelf	6.83	6.89
RB 176-3	1000017603	Shelf	6.93	7.87
RB 179-3	1000017903	Shelf	7.03	7.87
RB 181-3	1000018103	Shelf	7.13	7.87
RB 184-3	1000018403	Shelf	7.23	7.87
RB 186-3	1000018603	Shelf	7.33	7.87
RB 189-3	1000018903	Shelf	7.43	7.87
RB 191-3	1000019103	Shelf	7.52	7.87
RB 194-3	1000019403	Shelf	7.62	7.87
RB 196-3	1000019603	Shelf	7.72	7.87
RB 199-3	030100019900	Shelf	7.82	7.87

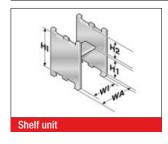
# **RBD-3 SOLID SHELF FLOOR**



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

Туре	Order No.	Description	Width inch	Inside width inch
RBD 040-3	030100004001	Shelf, end-to-end	1.57	1.57
RBD 050-3	030100005001	Shelf, end-to-end	1.97	1.97
RBD 060-3	030100006001	Shelf, end-to-end	2.36	2.36
RBD 075-3	030100007501	Shelf, end-to-end	2.95	2.95
RBD 085-3	030100008501	Shelf, end-to-end	3.35	3.35
RBD 100-3	030100010001	Shelf, end-to-end	3.94	3.94

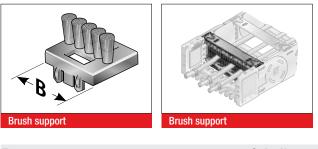
#### **RE 30 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 30/15	100000301510	H-shaped shelf unit	0.79	0.59	0.62	0.46	1.17
RE 30/32 K5	100000303210	H-shaped shelf unit	1.47	1.28	0.62	0.46	1.17

#### **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.

Туре	Order No.	Description	Width inch
BT 20-30, completely	030100009702	Brush support	0.79
BT 25-30, completely	030100009802	Brush support	0.98

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



Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 7.87 inch. May be assembled on the inside and outside bends at both chain endings.

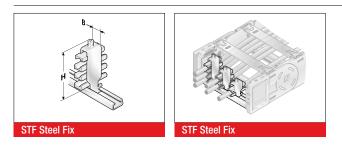
Туре	Order No.	Description	Inside width inch
RS-ZL 040-3	030104000010	Crossbar strain relief plate	1.57
RS-ZL 050-3	030105000010	Crossbar strain relief plate	1.97
RS-ZL 060-3	030106000010	Crossbar strain relief plate	2.36
RS-ZL 075-3	030107500010	Crossbar strain relief plate	2.95
RS-ZL 085-3	030108500010	Crossbar strain relief plate	3.35
RS-ZL 100-3	030110000010	Crossbar strain relief plate	3.94
RS-ZL 125-3	030112500010	Crossbar strain relief plate	4.92
RS-ZL 150-3	030115000010	Crossbar strain relief plate	5.91
RS-ZL 200-3	030120000010	Crossbar strain relief plate	7.87

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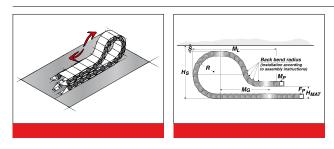
#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 - 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 - 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 - 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 - 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

# **LOWERED FIXING POINT MP 30**



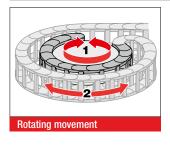
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

3.94	3.94	1.97	11.50	11.81	4	3
4.92	3.94	1.97	13.46	13.58	5	3
5.91	3.94	1.97	15.43	18.50	8	5
7.87	3.94	1.97	19.37	23.82	10	6
9.84	3.94	1.97	23.31	26.77	12	7
11.81	3.94	1.97	27.24	31.69	15	7

### MP 30.1/.2 REARWARD RADII



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	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 (ALUMINUM / STAINLESS STEEL)**

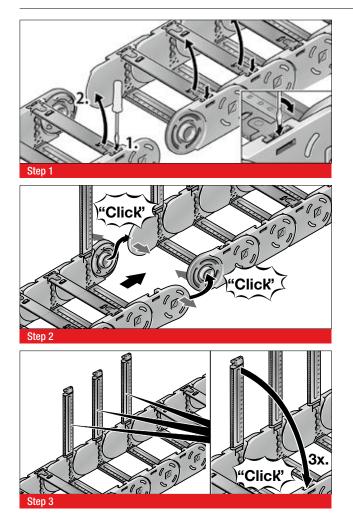


A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

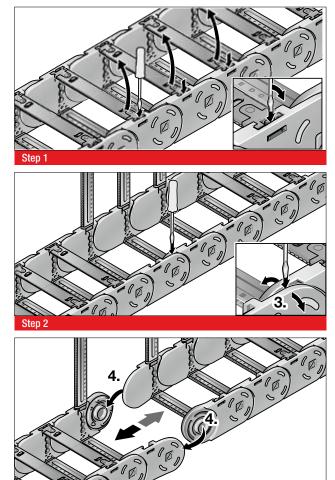
The variable guide channel ensures that the cable drag chain is supported and guided securely.



# ASSEMBLY



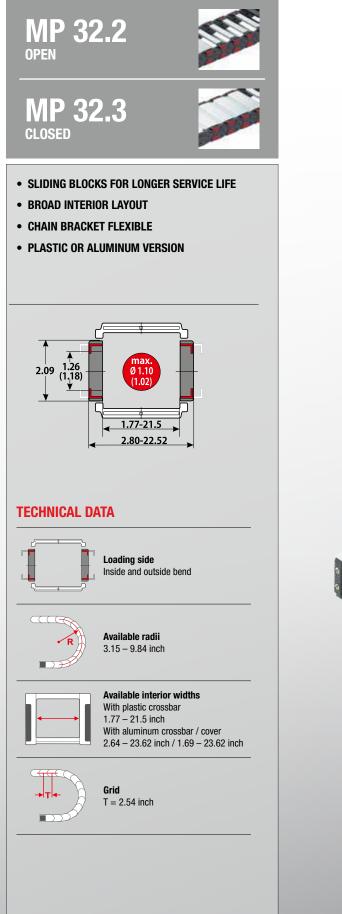
## DISASSEMBLY



Step 3

# POWERLINE







### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_a$ max.	328.08 ft.		
Travel distance self-supporting L, max.	see diagram on page 189		
Travel distance vertical, hanging L <sub>vh</sub> max.	131.23 ft.		
Travel distance vertical, upright L <sub>vs</sub> max.	16.40 ft.		
Rotated 90°, unsupported L <sub>90f</sub> max.	3.28 ft.		
Speed, gliding $V_a$ max.	16.40 ft/s		
Speed, self-supporting V <sub>r</sub> max.	65.62 ft/s		
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>		
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>		

 $\label{eq:contact} \mbox{ Contact our engineering department to meet any higher requirements: efk@murrplastik.de \\$ 

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**

Separator TR

RS shelving system

Crossbar connector RSV

H-shaped shelf unit RE

## ACCESSORIES







Bracket bar





Lock button

**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

# STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix



**CHAIN BRACKET** 

Chain bracket flexible



Dimensions in mm [US inch]

## **ORDERING KEY**

									Dimensions	•
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
	MP 32.2 open	<b>045</b> <sup>1)</sup> [1.77]	<b>071</b> [2.80]	<b>233</b> [9.17]	<b>259</b> [10.20]	0001)			Polyamide (PA):	
0322 30	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside of bend	<b>057</b> <sup>1)</sup> [2.24]	083 [3.27]	246 [9.69]	<b>272</b> [10.71]	<b>080<sup>1)</sup></b> [3.15]	0	Plastic, full-ridged with bias	0 standard (PA/black)	
	MP 32.3 closed	062	088	<b>252</b> [9.92]	278					
<b>0323 44</b> <sup>2)</sup>	Cover on outside of bend Cover on inside of bend Opens on inside and outside of bend	[2.44] 071	[3.46] 097	258	[10.94] <b>284</b>	<b>100</b> <sup>1)</sup> [3.94]	2	Plastic, half-ridged with bias	5 Polypropylene (PP/blue)	
		[2.80] 084	[3.82] 110	[10.16] <b>296</b>	[11.18] <b>322</b>					
		[3.31] 093	[4.33] <b>119</b>	[11.65] <b>346</b>	[12.68] <b>372</b>	<b>120</b> [4.72]	4	Aluminum full-ridged with bias	7 ESD (PA/light gray)	
		[3.66] 096	[4.69] <b>122</b>	[13.62] <b>350</b>	[14.65] <b>376</b>					
		[3.78] <b>104</b>	[4.80] <b>130</b>	[13.78] <b>358</b>	[14.80] <b>384</b>	150 [5.91]	6	Aluminum half-ridged with bias	9 Special version (on request)	
		[4.09] <b>107</b>	[5.12] <b>133</b>	[14.09] <b>371</b>	[15.12] <b>397</b>		$\vdash$			
		[4.21] <b>121</b>	[5.24] <b>147</b>	[14.61] <b>396</b>	[15.63] <b>422</b>	<b>200</b> [7.87]	9	Special version (on request)		
		[4.76] 133	[5.79] <b>159</b>	[15.59] <b>421</b>	[16.61] <b>447</b>					
		[5.24] 144	[6.26] <b>170</b>	[16.57] <b>446</b>	[17.60] <b>472</b>	<b>250</b> [9.84]				
		[5.67] <b>146</b>	[6.69] 172	[17.56] <b>496</b>	[18.58] 522					
		[5.75]	[6.77]	[19.53]	[20.55]					
		158 [6.22]	184 [7.24]	546 [21.50]	572 [22.52]					
		<b>164</b> [6.46]	<b>190</b> [7.48]							
		<b>171</b> [6.73]	<b>197</b> [7.76]							
		<b>182</b> [7.17]	<b>208</b> [8.19]							
		<b>196</b> [7.72]	<b>222</b> [8.74]							
		<b>208</b> [8.19]	<b>234</b> [9.21]							
		<b>220</b> [8.66]	<b>246</b> [9.69]							
↓ ▼			V			Ļ	↓ ▼		↓	↓ ↓

#### ORDERING EXAMPLE: 0322 045 080 0 0 000050

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 1.77 in.; radius 3.15 in.

Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 50 in. (20 links)

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

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

#### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.64 inch – 23.62 inch are available for delivery.

#### **Aluminum covers:**

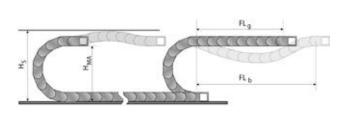
Aluminum covers in 0.04 in (1 mm) width sizes for inner widths from 1.69 inch - 23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inch, we recommend the deployment of crossbar connectors (RSV).

Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminum.

#### **SELF-SUPPORTING LENGTH**



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

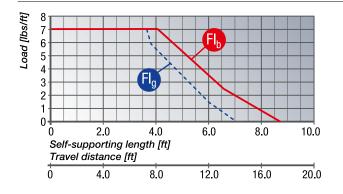
For detailed information, please consult the corresponding product documentation.

The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{g}$  = Self-supporting length, upper run straight
- $FL_{b}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the  $FL_{g}$  range, the chain upper run still has a bias, is straight or has a maximum sag of 2.76 inch.

#### FL, Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 2.76 inch, but this is still less than the maximum sag.

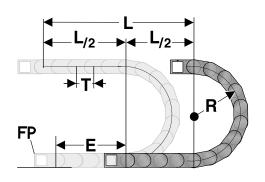
Where the sag is greater than that permitted in the  $FL_{b}$  range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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 lbs/ft (kg/m)), you must add 1.00 lbs/ft (1.5 kg/m), to account for the higher weight of closed-cover chains.





## **DETERMINING THE CHAIN LENGTH**



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

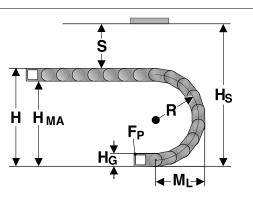
This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

 $\begin{array}{l} \mbox{Chain length calculation} = L/2 + \pi * R + E \\ \approx 1 \mbox{ ft chain} = 5 \mbox{ qty. x } 2.54 \mbox{ inch.} \end{array}$ 

E = Distance between entry point and middle of travel distance

- L = Travel distance
- R = Radius
- P = Grid 2.54 inch

#### **INSTALLATION DIMENSIONS**



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

For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to be taken into account.

Radius R	3.15	3.94	4.72	5.91	7.87	9.84
Outside height of chain link $(H_g)$	2.09	2.09	2.09	2.09	2.09	2.09
Height of bend (H)	9.17	10.75	12.31	14.69	18.61	22.55
Height of moving end connection $(H_{MA})$	7.08	8.66	10.22	12.60	16.52	20.46
Safety margin (S)	1.18	1.18	1.18	1.18	1.18	1.18
Installation height (H <sub>s</sub> )	10.35	11.93	13.49	15.87	19.79	23.73
Arc projection $(M_L)$	7.13	7.92	8.70	9.89	11.85	13.82

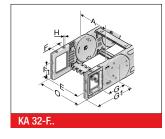
# **POWERLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

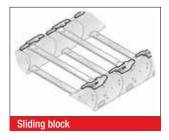
# **KA 32 CHAIN BRACKET**



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

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	H	HØ inch	Outside width of KA O inch
KA 32-FB	0321000054	Plastic	with bush	1.77 – 21.50	A+0.55	0.89	0.87	2.28	3.76		0.22	A+1.10
KA 32-FG	0321000055	Plastic	with thread	1.77 – 21.50	A+0.55	0.89	0.87	2.28	3.76	M5		A+1.10

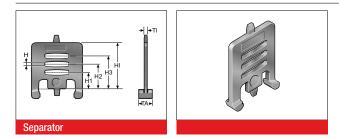
#### **GS 32.2 SLIDING BLOCK**



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

Туре	Order No.	Min. radius inch	Sliding block height inch
GS 32.2	032290400300	4.72	0.16

#### **MP 32 SEPARATOR**

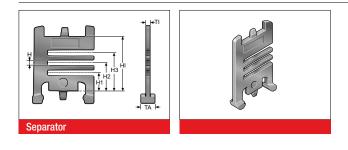


We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 32	032000009200	Separator	lockable	0.12	0.39	0.17	0.41	0.64	0.87	1.26



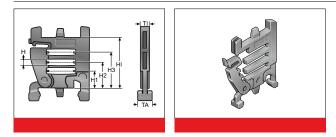
#### **MP 32.1 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 32.1	032200009200	Separator	lockable	0.14	0.31	0.16	0.41	0.65	0.89	1.26

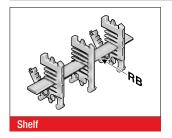
#### **RTT 32 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
RTT 32	100090322000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.41	0.65	0.89	1.26

## **RB-5 SHELF**



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

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Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44



#### **RB-5 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	100000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

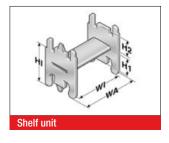
# **RSV 32 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 32	032000009600	Crossbar connector	0.30
RSV 32 Alu	032000009800	Crossbar connector for aluminum crossbars	0.30

#### **RE 32 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 32/35	100000322010	H-shaped shelf unit	1.70	1.39	0.56	0.56	1.28
RE 32/52	100000323510	H-shaped shelf unit	2.36	2.05	0.56	0.56	1.28
RE 32/75	100000327510	H-shaped shelf unit	3.24	2.93	0.65	0.47	1.28

## **BS-5 BRACKET BAR**

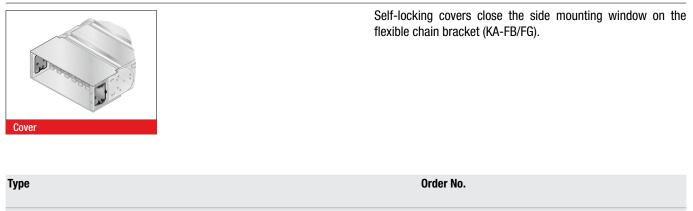


Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

#### **D3 CHAIN BRACKET COVER**



Cover D3 KA 32.1-FB/FG

0323888002

## **MP 32.3 CHAIN BRACKET CANOPY**



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

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

	Type:	KA 32.1 FB/FG AB	Inside width	2-2
	Order No.:	0321	Inside width	060
Canopy for chain bracket, fixed p	oint inside bend: Typ	e and Order No. configura	tor	
IL -	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: T	ype and Order No. configu	ırator	
	Type:	KA 32.1 FB/FG AB	Inside width	1-2
	Order No.:	0321	Inside width	059
Canopy for chain bracket, moving	end outside bend: T	ype and Order No. configu	ırator	
2112 Z	Туре:	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 3.78 in. (96 mm).

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



Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78

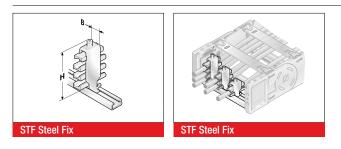
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Learn more at www.murrplastik.de Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

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

Туре	Order No.	Description	Inside width inch
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69

#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

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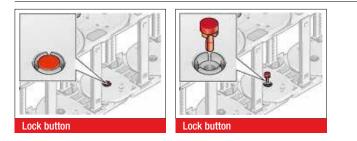
Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one o	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58

# MP 32.2 OPEN / MP 32.3 CLOSED

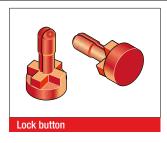


Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 – 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 - 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 - 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

# MP 32/41 LOCK BUTTON



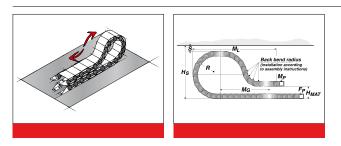
To increase the side stability we recommend the use of lock buttons during strong lateral acceleration or when installed "laying



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

Туре	Order No.
MP32/41 lock button	04100008000

## **MP 32 LOWERED FIXING POINT**



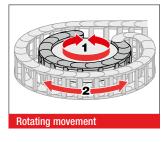
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
7.87	8.27	1.97	20.59	28.35	14	3
9.84	9.06	1.97	24.53	34.65	17	3

#### **MP 32.2 REARWARD RADII**



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

Туре	Order No.	Radius inch	Back radius inch
SR 32.2 RK080 (RÜ200/R120)	032200008060	4.72	7.87
SR 32.2 RK100 (RÜ200/R135)	032200010060	5.31	7.87
SR 32.2 RK120 (RÜ200/R150)	032200012060	5.91	7.87
SR 32.2 RK150 (RÜ200/R170)	032200015060	6.69	7.87
SR 32.2 RK200 (RÜ200/R200)	032200020060	7.87	7.87
SR 32.2 RK250 (RÜ200/R250)	032200025060	9.84	7.87

#### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**

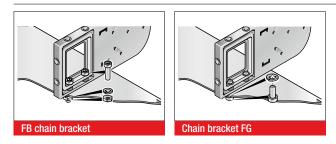




A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

# ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



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

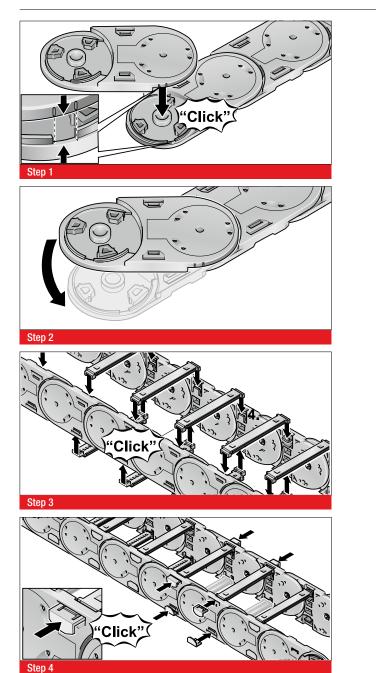
#### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

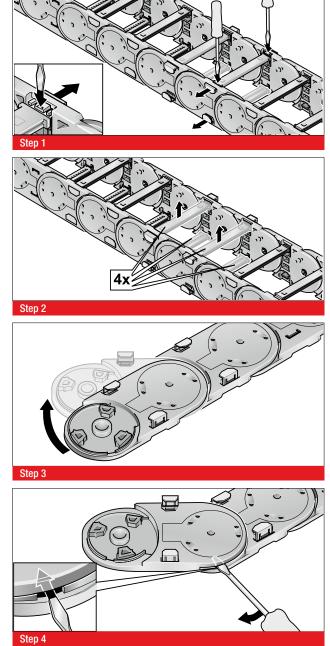
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.



# ASSEMBLY



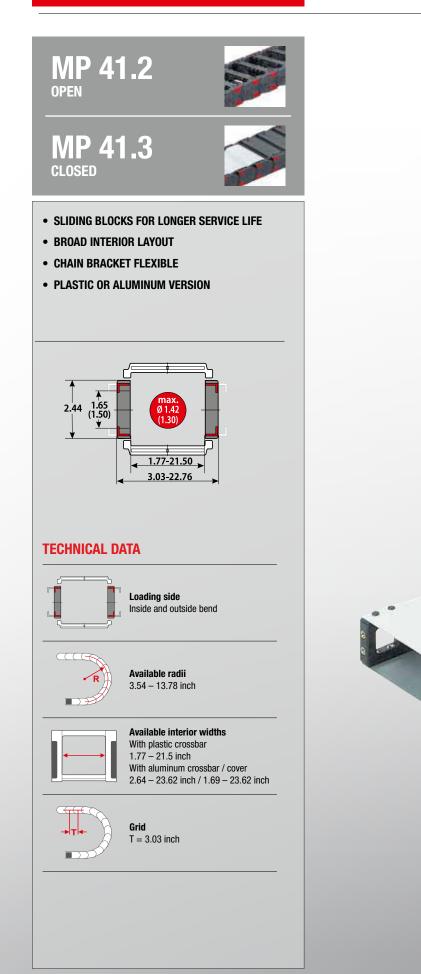
DISASSEMBLY





# POWERLINE





### **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	393.70 ft.
Travel distance self-supporting L, max.	see diagram on page 205
Travel distance vertical, hanging L <sub>vh</sub> max.	164.04 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.
Rotated 90°, unsupported L <sub>gof</sub> max.	3.28 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V, max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **ACCESSORIES**



Sliding block







**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

# **STRAIN RELIEF**





203



**SHELVING SYSTEM** 







**CHAIN BRACKET** 



Chain bracket flexible



Chain bracket angle



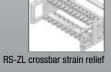


H-shaped shelf unit RE





Lock button







## **ORDERING KEY**

ORDERIN									Dimensions	in mm [US inch
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
0410.00	MP 41.2 open Crossbar on outside bend	<b>045<sup>1)</sup></b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	<b>090</b> <sup>1)</sup>		Plastic, full-ridged	Polyamide (PA):	
0412 30	Crossbar on inside bend Opens on inside and outside of bend	<b>057</b> <sup>1)</sup> [2.24]	<b>089</b> [3.50]	<b>246</b> <sup>2)</sup> [9.69]	<b>278</b> <sup>2)</sup> [10.94]	[3.54]	0	with bias	0 standard (PA/black)	
	MP 41.3 closed Cover on outside of bend	<b>062<sup>1)</sup></b> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]	120 <sup>1)</sup>		Plastic, full-ridged	6 Polypropylene	
0413 44 <sup>3)</sup>	Cover on inside of bend Opens on inside and outside of bend	<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]	[4.72]	1	without bias	5 (PP/blue)	
		<b>084<sup>2)</sup></b> [3.31]	<b>116<sup>2)</sup></b> [4.57]	<b>296<sup>2)</sup></b> [11.65]	<b>328<sup>2)</sup></b> [12.91]	150		Plastic, half-ridged	- ESD	
		<b>093</b> [3.66]	125 [4.92]	<b>346</b> [13.62]	<b>378</b> [14.88]	[5.91]	2	with bias	7 (PA/light gray)	
		<b>096<sup>2)</sup></b> [3.78]	<b>128<sup>2)</sup></b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]	175		Plastic, half-ridged	Special version (on	
		<b>104</b> [4.09]	136 [5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]	[6.89]	3	without bias	9 Special Version (on request)	
		<b>107</b> [4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	<b>403</b> [15.87]	200		Aluminum full-ridged		
		<b>121<sup>2)</sup></b> [4.76]	<b>153<sup>2)</sup></b> [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]	[7.87]	4	with bias		
		<b>133</b> [5.24]	165 [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]	250	_	Aluminum full-ridged		
		<b>144</b> [5.67]	176 [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]	[9.84]	5	without bias		
		<b>146<sup>2)</sup></b> [5.75]	<b>178<sup>2)</sup></b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]	300		Aluminum half-ridged		
		158 [6.22]	<b>190</b> [7.48]	<b>546</b> [21.50]	<b>578</b> [22.76]	[11.81]	6	with bias		
		<b>164</b> [6.46]	<b>196</b> [7.72]			350	_	Aluminum half-ridged		
		<b>171<sup>2)</sup></b> [6.73]	<b>203<sup>2)</sup></b> [7.99]			[13.78]	7	without bias		
		<b>182<sup>2)</sup></b> [7.17]	<b>214<sup>2)</sup></b> [8.43]					Special version (on		
		<b>196<sup>2)</sup></b> [7.72]	<b>228<sup>2)</sup></b> [8.98]				9	request)		
		<b>208</b> [8.19]	<b>240</b> [9.45]							
		<b>220</b> [8.66]	<b>252</b> [9.92]							
↓ ↓			V			↓	Ļ			↓ ↓

#### ORDERING EXAMPLE: 0412 045 090 0 0 000054

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 1.77 in.; radius 3.54 in.

Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 54 in. (18 links)

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

<sup>2)</sup> also available with plastic cover
 <sup>3)</sup> reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

#### NOTE ON CONFIGURATION

#### Aluminum crossbars:

Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.64 inch – 23.62 inch are available for delivery.

#### **Aluminum covers:**

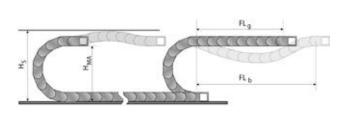
Aluminum covers in 0.04 in (1 mm) width sizes for inner widths from 1.69 inch -23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inch, we recommend the deployment of crossbar connectors (RSV).

Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminum.

#### **SELF-SUPPORTING LENGTH**



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

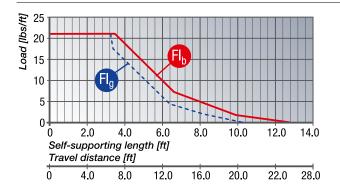
For detailed information, please consult the corresponding product documentation.

The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{g}$  = Self-supporting length, upper run straight
- $FL_{b}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



# FL, 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 2.76 inch.

#### FL, Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 2.76 inch, but this is still less than the maximum sag.

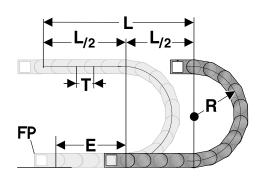
Where the sag is greater than that permitted in the  $FL_{b}$  range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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 lbs/ft (kg/m)), you must add 1.00 lbs/ft (1.5 kg/m), to account for the higher weight of closed-cover chains.





## **DETERMINING THE CHAIN LENGTH**



## **INSTALLATION DIMENSIONS**

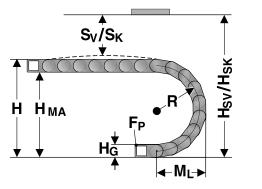
The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 4 qty. x 3.03 inch.

E = Distance between entry point and middle of travel distance

- L = Travel distance
- R = Radius
- P = Grid 3.03 inch



The moving end chain connection is to be screw fixed at height  ${\rm H}_{\rm \tiny MA}$  for the respective radius.

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the "Installed height without bias  $H_{sk}$ " value has to be taken into account.

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

Radius R	3.54	4.72	5.91	6.89	7.87	9.84	11.81	13.78
Outside height of chain link $(H_g)$	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44
Height of bend (H)	9.92	12.28	14.66	16.62	18.58	22.52	26.46	30.40
Height of moving end connection $(H_{MA})$	7.48	9.84	12.22	14.18	16.14	20.08	24.02	27.96
Safety margin with bias (S $_{\!\!\nu}\!)$	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18
Installation height with bias (H <sub>sv</sub> )	11.10	13.46	15.84	17.80	19.76	23.70	27.64	31.58
Safety margin without bias ( $S_{\kappa}$ )	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59
Installation height without bias $(H_{sk})$	10.51	12.87	15.25	17.21	19.17	23.11	27.05	30.99
Arc projection (M,)	7.99	9.17	10.36	11.34	12.32	14.29	16.26	18.23

# **POWERLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

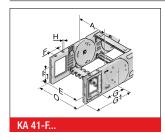
#### **MP 41.3 PLASTIC COVER**



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

Туре	Order No.	Description	Installation site	Inside width inch
A-413084, outside	041308410000	Cover	Outside bend	3.31
I-413084, inside	041308420000	Cover	Inside bend	3.31
A-413096, outside	041309610000	Cover	Outside bend	3.78
I-413096, inside	041309620000	Cover	Inside bend	3.78
A-413121, outside	041312110000	Cover	Outside bend	4.76
I-413121, inside	041312120000	Cover	Inside bend	4.76
A-413146, outside	041314610000	Cover	Outside bend	5.75
I-413146, inside	041314620000	Cover	Inside bend	5.75
A-413171, outside	041317110000	Cover	Outside bend	6.73
I-413171, inside	041317120000	Cover	Inside bend	6.73
A-413182, outside	041318210000	Cover	Outside bend	7.17
I-413182, inside	041318220000	Cover	Inside bend	7.17
A-413196, outside	041319610000	Cover	Outside bend	7.72
I-413196, inside	041319620000	Cover	Inside bend	7.72
A-413246, outside	041324610000	Cover	Outside bend	9.69
I-413246, inside	041324620000	Cover	Inside bend	9.69
A-413296, outside	041329610000	Cover	Outside bend	11.65
I-413296, inside	041329620000	Cover	Inside bend	11.65

#### **KA 41 CHAIN BRACKET FLEXIBLE**

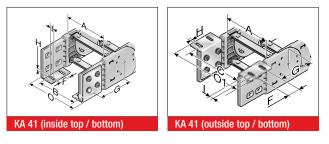


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M6 screws are used to secure the brackets in place. Extrusion-coated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

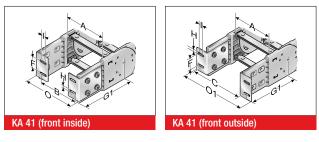
Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	H	HØ inch	Outside width of KA O inch
KA 41.1-FB	0411000054	Plastic	with bush	1.77 – 21.50	A+0.79	0.89	0.87	3.11	4.72		0.26	A+1.34
KA 41.1-FG	0411000055	Plastic	with thread	1.77 – 21.50	A+0.79	0.89	0.87	3.11	4.72	M6		A+1.34



## **KA 41 0 CHAIN BRACKET ANGLE**



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



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

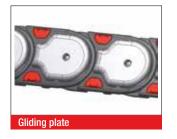
Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	G1 inch	HØ inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 41	0410000051	Sheet steel	1.77 – 21.50	A-0.10	A+1.36	1.26	3.11	4.95	0.26	A+1.26	A+2.80

## **GS 41.2 SLIDING BLOCK**

Sliding block		In the case of cable drag chains, sliding blocks mode (the tight side of the chain slides on the s side links on the interior bend instead of the usu forces the chain to slide on the sliding blocks ins Depending on the application, the service life of fold, by using slide blocks. Information about the minimum bending radius insert is listed in the following table.	lack side). The sliding blocks are set onto the al crossbar interlocks; (no tools needed). This stead on the side links of the chain. If the cable drag chain may be extended five-
Туре	Order No.	Min. radius	Sliding block height

Туре	Order No.	Min. radius inch	Sliding block height inch
GS 41.2	041290400300	4.72	0.16

# GLP 4 (41.2) GLIDING PLATE

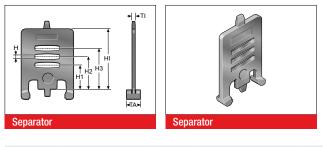


The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 0.1 in (2.5 mm). We recommend replacing the cable drag chain when this limit has been reached. Depending on the application, the service life of the cable drag chain may be extended two-fold, by using gliding plates. The cable drag chain must be placed on its side before opening.

Туре	Order No.	Installation site	for radius inch	Gliding plate height inch
SG 41.2 RK090 with GLP4, mounted	041200009064	Chain link including gliding plate	3.54	0.28
SG 41.2 RK120 with GLP4, mounted	041200012064	Chain link including gliding plate	4.72	0.28
SG 41.2 RK150 with GLP4, mounted	041200015064	Chain link including gliding plate	5.91	0.28
SG 41.2 RK175 with GLP4, mounted	041200017564	Chain link including gliding plate	6.89	0.28
SG 41.2 RK200 with GLP4, mounted	041200020064	Chain link including gliding plate	7.87	0.28
SG 41.2 RK250 with GLP4, mounted	041200025064	Chain link including gliding plate	9.84	0.28
SG 41.2 RK300 with GLP4, mounted	041200030064	Chain link including gliding plate	11.81	0.28
SG 41.2 RK350 with GLP4, mounted	041200035064	Chain link including gliding plate	13.78	0.28



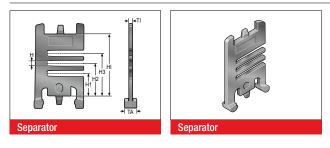
#### **MP 41 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 41	041000009200	Separator	lockable	0.14	0.39	0.17	0.63	0.90	1.14	1.65

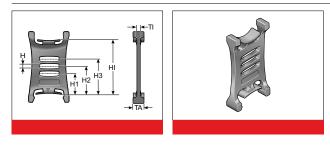
# **MP 41.1 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 41.1	041200009200	Separator	lockable	0.14	0.31	0.16	0.63	0.90	1.14	1.65

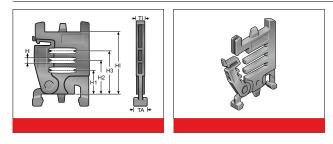
#### **TR 41-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 41-V	041000009300	Separator	movable	0.14	0.47	0.16	0.63	0.90	1.14	1.65

#### **RTT 41 SHELF SUPPORT, DIVISIBLE**



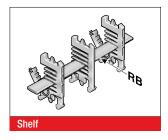
In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimize the friction between them.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
RTT 41	100090412000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.63	0.90	1.14	1.65

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## **RB-5 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	100000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

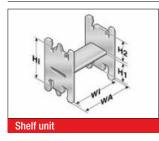
## **MP 41 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 41	041000009600	Crossbar connector	0.30
RSV 41 Alu	041000009800	Crossbar connector for aluminum crossbars	0.30

#### **MP 41 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 36/11	100000361112	H-shaped shelf unit	1.67	1.44	1.03	0.45	1.65
RE 59/18	100000591812	H-shaped shelf unit	2.56	2.32	0.74	0.74	1.65
RE 81/11	100000811112	H-shaped shelf unit	3.44	3.21	1.03	0.45	1.65

#### **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

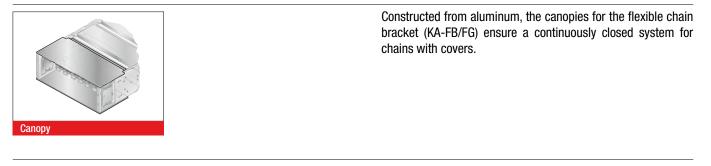
Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

## **D4 CHAIN BRACKET COVER**



Туре	Order No.
D4 Cover	0413888002

#### **MP 41.3 CHAIN BRACKET CANOPY**



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

	Туре:	KA 41.1 FB/FG AB	Inside width	2-2		
	Order No.:	0411	Inside width	060		
Canopy for chain bracket, fixed p	oint inside bend: Type	e and Order No. configura	tor			
21E	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: Ty	/pe and Order No. configu	ırator			
	Туре:	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						
	Туре:	KA 41.1 FB/FG IB	Inside width	1-2		
	Order No.:	0411	Inside width	057		

# Ordering example:

0411096058 KA 41.1 FB/FG IB 096 2-2

Chain bracket canopy at fixing point in inside bend, for inside width of 3.78 in. (96 mm).

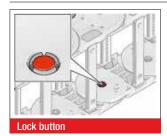
## **RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**

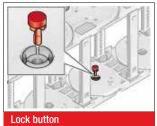


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69

## 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".

Order No.

Туре

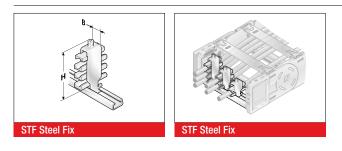
MP32/41 lock button

041000008000

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#### **STRAIN RELIEF WITH STEEL FIX**

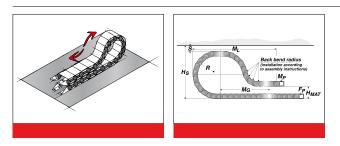


C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 - 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 - 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 - 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 - 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12



## **LOWERED FIXING POINT MP 41**



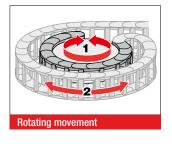
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
6.89	6.30	1.97	18.58	25.20	6	2
7.87	7.48	1.97	20.55	30.31	13	2
9.84	8.66	1.97	24.49	35.83	15	2
11.81	11.02	1.97	28.43	46.46	19	2
13.78	12.60	1.97	32.36	44.88	19	3

#### **MP 41.2 REARWARD RADII**



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

Туре	Order No.	Radius inch	Back radius inch
SR 41.2 (RÜ200/R125)	041200009060	4.92	7.87
SR 41.2 (RÜ200/R160)	041200012060	6.30	7.87
SR 41.2 (RÜ200/R175)	041200015060	6.89	7.87
SR 41.2 (RÜ200/R200)	041200020060	7.87	7.87
SR 41.2 (RÜ200/R250)	041200025060	9.84	7.87
SR 41.2 (RÜ200/R300)	041200030060	11.81	7.87
SR 41.2 (RÜ200/R350)	041200035060	13.78	7.87

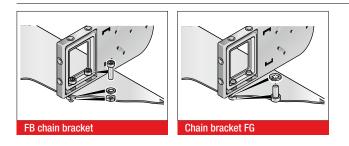
## **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



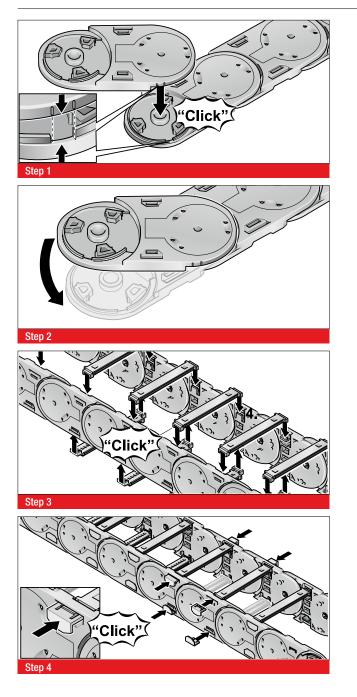
A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

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



## ASSEMBLY



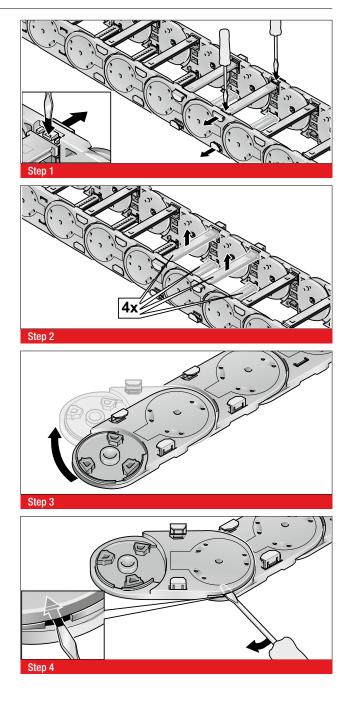
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

#### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

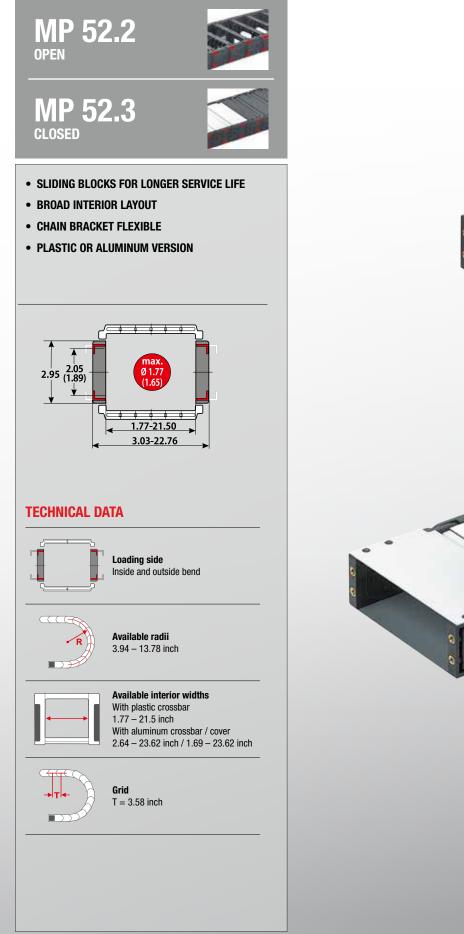
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

#### DISASSEMBLY



# POWERLINE





## **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	492.13 ft.				
Travel distance self-supporting L, max.	see diagram on page 221				
Travel distance vertical, hanging L <sub>vh</sub> max.	196.85 ft.				
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.				
Rotated 90°, unsupported L <sub>90f</sub> max.	6.56 ft.				
Speed, gliding V <sub>a</sub> max.	16.40 ft/s				
Speed, self-supporting V <sub>r</sub> max.	65.62 ft/s				
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>				
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>				
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 $\label{eq:contact} \mbox{ Contact our engineering department to meet any higher requirements: efk@murrplastik.de \\$ 

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black			
Service temperature	-22.00 – 248.00 °F			
Gliding friction factor	0.30			
Static friction factor	0.45			
Fire classification	UL 94 HB			

Other material properties on request

#### **ACCESSORIES**



Sliding block







**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

# STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix



**CHAIN BRACKET** 

Chain bracket flexible



Chain bracket angle



**SHELVING SYSTEM** 

Separator TR





H-shaped shelf unit RE













## **ORDERING KEY**

ORDERIN									_	Dimensions	in mm (US inch		
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant		Material	Chain length		
0522 30	MP 52.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside of bend	<b>045<sup>1)</sup></b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	100 <sup>1)</sup> [3.94] 0	0	<b>0</b> Plastic, full-ridged with bias	0	Polyamide (PA): standard (PA/black)			
		<b>057</b> <sup>1)</sup> [2.24]	<b>089</b> [3.50]	<b>246<sup>2)</sup></b> [9.69]	<b>278<sup>2)</sup></b> [10.94]								
0523 44 <sup>3)</sup>	MP 52.3 closed Cover on outside of be nd Cover on inside of bend Opens on inside and outside of bend	<b>062</b> <sup>1)</sup> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]	<b>150</b> [5.91]	1	Plastic, full-ridged without bias	5	Polypropylene (PP/blue)			
		<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]								
		<b>084</b> [3.31]	<b>116</b> [4.57]	<b>296<sup>2)</sup></b> [11.65]	<b>328<sup>2)</sup></b> [12.91]	175			Plastic, half-ridged	_	• ESD		
		<b>093</b> [3.66]	125 [4.92]	<b>346<sup>2)</sup></b> [13.62]	<b>378<sup>2)</sup></b> [14.88]	[6.89]	2	with bias	7	(PA/light gray)			
		<b>096<sup>2)</sup></b> [3.78]	<b>128<sup>2)</sup></b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]	200				Plastic, half-ridged		Special version (on	
		<b>104</b> [4.09]	136 [5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]	[7.87]	3	without bias	9	request)			
		<b>107</b> [4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	<b>403</b> [15.87]	250	4		Aluminum full-ridged				
		<b>121<sup>2)</sup></b> [4.76]	153 <sup>2)</sup> [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]	[9.84]		with bias					
		<b>133</b> [5.24]	165 [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]	250		Aluminum full-ridged					
		<b>144</b> [5.67]	176 [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]		5	without bias					
		<b>146<sup>2)</sup></b> [5.75]	<b>178<sup>2)</sup></b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]		6	6 Aluminum half-ridged with bias					
		<b>158</b> [6.22]	<b>190</b> [7.48]	546 [21.50]	<b>578</b> [22.76]	[13.78]							
		<b>164</b> [6.46]	<b>196</b> [7.72]					Aluminum half-ridged					
		<b>171</b> [6.73]	<b>203</b> [7.99]				7	without bias					
		<b>182<sup>2)</sup></b> [7.17]	<b>214<sup>2)</sup></b> [8.43]	<b>)</b>			Special version (on						
		<b>196<sup>2)</sup></b> [7.72]	<b>228<sup>2)</sup></b> [8.98]				9	request)					
		<b>208</b> [8.19]	<b>240</b> [9.45]										
		<b>220<sup>2)</sup></b> [8.66]	<b>252<sup>2)</sup></b> [9.92]										
Ļ					-	↓	L L				↓ ↓		
							_						

## ORDERING EXAMPLE: 0522 30 220 100 0 0 1365

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 8.66 in. (220 mm), radius 3.94 in. (100 mm)

Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 53.74 in. (1365 mm) (15 links)

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

<sup>2)</sup> also available with plastic cover
 <sup>3)</sup> reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

#### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.64 inch – 23.62 inch are available for delivery.

#### **Aluminum covers:**

Aluminum covers in 0.04 in (1 mm) width sizes for inner widths from 1.69 inch - 23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inch, we recommend the deployment of crossbar connectors (RSV).

#### SELF-SUPPORTING LENGTH

Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminum.

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.

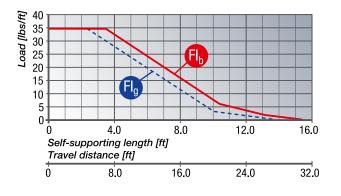
The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

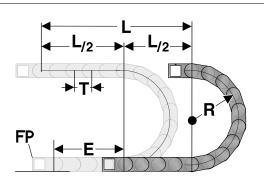
- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- FL<sub>a</sub> = Self-supporting length, upper run straight
- $FL_{h}$  = Self-supporting length, upper run bent

## LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS

FL,



#### **DETERMINING THE CHAIN LENGTH**



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the  $FL_{g}$  range, the chain upper run still has a bias, is straight or has a maximum sag of 2.76 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.76 inch, 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 optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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 lbs/ft (kg/m)), you must add 1.00 lbs/ft (1.5 kg/m), to account for the higher weight of closed-cover chains.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

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 $\begin{array}{l} \mbox{Chain length calculation} = L/2 + \pi * R + E \\ \approx 1 \mbox{ ft chain} = 4 \mbox{ qty. x } 3.58 \mbox{ inch.} \end{array}$ 

E = Distance between entry point and middle of travel distance

R = Radius

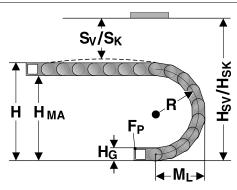
P = Grid 3.58 inch



L = Travel distance



#### **INSTALLATION DIMENSIONS**



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

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the "Installed height without bias  $H_{sk}$ " value has to be taken into account.

If the chain links are equipped with a bias, the value "Installed height with bias  $\rm H_{sv}$ " has to be taken into account.

Radius R	3.94	5.91	6.89	7.87	9.84	11.81	13.78
Outside height of chain link $(H_g)$	2.95	2.95	2.95	2.95	2.95	2.95	2.95
Height of bend (H)	12.01	15.95	17.91	19.87	23.81	27.75	31.69
Height of moving end connection (H <sub>MA</sub> )	9.06	13.00	14.96	16.92	20.86	24.80	28.74
Safety margin with bias ( $S_v$ )	1.81	1.81	1.81	1.81	1.81	1.81	1.81
Installation height with bias (H <sub>sv</sub> )	13.82	17.76	19.72	21.68	25.62	29.56	33.50
Safety margin without bias ( $S_{\kappa}$ )	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Installation height without bias $(H_{_{SK}})$	12.64	16.58	18.54	20.50	24.44	28.38	32.32
Arc projection (M <sub>L</sub> )	9.59	11.56	12.54	13.52	15.49	17.45	19.42

## **POWERLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72

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## **POWERLINE PLASTIC CROSSBAR**

Туре	Order No.	Description	Inside width inch
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

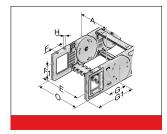
## MP 52.3 / MP 52.5 PLASTIC COVER



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

Туре	Order No.	Description	Installation site	Inside width inch
A-523062, outside	052306210000	Cover	Outside bend	2.44
I-523062, inside	052306220000	Cover	Inside bend	2.44
A-523096, outside	052309610000	Cover	Outside bend	3.78
I-523096, inside	052309620000	Cover	Inside bend	3.78
A-523121, outside	052312110000	Cover	Outside bend	4.76
I-523121, inside	052312120000	Cover	Inside bend	4.76
A-523146, outside	052314610000	Cover	Outside bend	5.75
I-523146, inside	052314620000	Cover	Inside bend	5.75
A-523182, outside	052318210000	Cover	Outside bend	7.17
I-523182, inside	052318220000	Cover	Inside bend	7.17
A-523196, outside	052319610000	Cover	Outside bend	7.72
I-523196, inside	052319620000	Cover	Inside bend	7.72
A-523220, outside	052322010000	Cover	Outside bend	8.66
I-523220, inside	052322020000	Cover	Inside bend	8.66
A-523246, outside	052324610000	Cover	Outside bend	9.69
I-523246, inside	052324620000	Cover	Inside bend	9.69
A-523296, outside	052329610000	Cover	Outside bend	11.65
I-523296, inside	052329620000	Cover	Inside bend	11.65
A-523346, outside	052334610000	Cover	Outside bend	13.62
I-523346, inside	052334620000	Cover	Inside bend	13.62

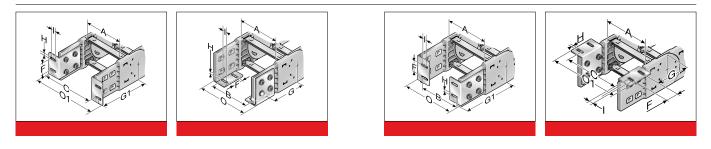
## KA 52.1 CHAIN BRACKET FLEXIBLE



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	H	HØ inch	Outside width of KA O inch
KA 52.1-FB Female end	0521000056	Plastic	with bush	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75		0.33	A+1.42
KA 52.1-FB male end	0521000057	Plastic	with bush	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75		0.33	A+1.42
KA 52.1-FG female end	0521000058	Plastic	with thread	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75	M8		A+1.42
KA 52.1-FG male end	0521000059	Plastic	with thread	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75	M8		A+1.42

#### **KA 52.1 CHAIN BRACKET ANGLE**



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

Туре	Order No.	Material	Inside width A inch	B inch	C inch	-	G inch	G1 inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 52.1 Female end	0521000050	Sheet steel	1.77 – 21.50	A-0.10	A+1.36	1.26	3.76	5.67	0.26	0.55	A+1.26	A+2.80
KA 52.1 Male end	0521000051	Sheet steel	1.77 – 21.50	A-0.10	A+1.36	1.26	3.76	5.67	0.26	0.55	A+1.26	A+2.80



#### **GS 52.2 SLIDING BLOCK**



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

Туре	Order No.	Installation site	Min. radius inch	Sliding block height inch
GS 52.2.1 right	052290400302	For right side link	5.91	0.16
GS 52.2.2 left	052290400300	For left side link	5.91	0.16

## **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. v We recommend replacing the cable drag chain when this limit has been reached. Depending on the application, the service life of the cable drag chain may be extended two-fold, by using gliding plates. The cable drag chain must be placed on its side before opening.

Туре	Order No.	Installation site	for radius inch	Gliding plate height inch
SG 52.2 RK100.1 right with GLP5, mounted	052200010066	Right chain link including gliding plate	3.94	0.28
SG 52.2 RK100.2 left with GLP5, mounted	052200010064	Left chain link including gliding plate	3.94	0.28
SG 52.2 RK150.1 right with GLP5, mounted	052200015066	Right chain link including gliding plate	5.91	0.28
SG 52.2 RK150.2 left with GLP5, mounted	052200015064	Left chain link including gliding plate	5.91	0.28
SG 52.2 RK175.1 right with GLP5, mounted	052200017566	Right chain link including gliding plate	6.89	0.28
SG 52.2 RK175.2 left with GLP5, mounted	052200017564	Left chain link including gliding plate	6.89	0.28
SG 52.2 RK200.1 right with GLP5, mounted	052200020066	Right chain link including gliding plate	7.87	0.28
SG 52.2 RK200.2 left with GLP5, mounted	052200020064	Left chain link including gliding plate	7.87	0.28
SG 52.2 RK250.1 right with GLP5, mounted	052200025066	Right chain link including gliding plate	9.84	0.28
SG 52.2 RK250.2 left with GLP5, mounted	052200025064	Left chain link including gliding plate	9.84	0.28
SG 52.2 RK300.1 right with GLP5, mounted	052200030066	Right chain link including gliding plate	11.81	0.28
SG 52.2 RK300.2 left with GLP5, mounted	052200030064	Left chain link including gliding plate	11.81	0.28
SG 52.2 RK350.1 right with GLP5, mounted	052200035066	Right chain link including gliding plate	13.78	0.28
SG 52.2 RK350.2 left with GLP5, mounted	052200035064	Left chain link including gliding plate	13.78	0.28

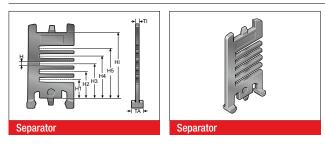
## **TR 52 SEPARATOR**

Separator	Separator	
Type Order No	Description	Version

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 98.42 ft (30 m) or greater.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52	052000009200	TR 52 Separator	lockable	0.14	0.39	0.17	0.64	0.88	1.11	1.33	1.57	2.05

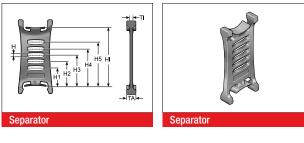
## **TR 52.1 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52.1	052100009200	TR 52.1 Separator	lockable	0.14	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

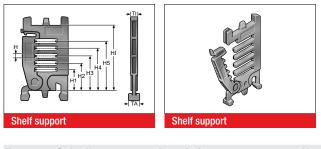
#### **TR 52-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52-V	052000009300	TR 52-V Separator	movable	0.14	0.51	0.16	0.64	0.88	1.11	1.33	1.57	2.05

## **RTT 52 SHELF SUPPORT, DIVISIBLE**



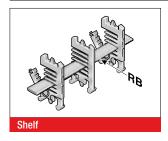
In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimize the friction between them.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 52	100090522000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

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## **RB-5 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	10000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

## **RSV 52 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 52	052000009600	Crossbar connector	0.30
RSV 52 Alu	052000009800	Crossbar connector for aluminum crossbars	0.30

#### **RE 52 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 36/17	100000361714	H-shaped shelf unit	1.67	1.44	1.22	0.69	2.05
RE 59/24	100000592414	H-shaped shelf unit	2.56	2.32	0.95	0.95	2.05
RE 81/12	100000811214	H-shaped shelf unit	3.44	3.21	1.42	0.49	2.05

#### **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

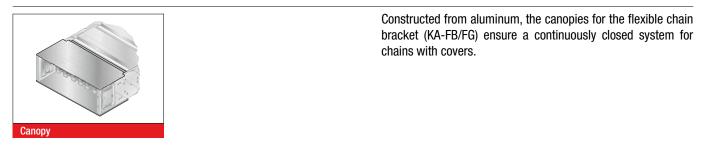
Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

## **D5 CHAIN BRACKET COVER**

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

туре	Urder no.
D5 Cover	0523888002

#### **MP 52.3 CHAIN BRACKET CANOPY**



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

	Туре:	KA 52.1 FB/FG AB	Inside width	2-2			
	Order No.:	0521	Inside width	060			
Canopy for chain bracket, fixed	point inside bend: Typ	e and Order No. configura	tor				
	Туре:	KA 52.1 FB/FG IB	Inside width	2-2			
	Order No.:	0521	Inside width	058			
Canopy for chain bracket, movi	ng end outside bend: T	Type and Order No. configu	urator				
	Туре:	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							
	Туре:	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 3.78 in (96 mm).

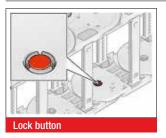
## **RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**

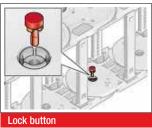


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

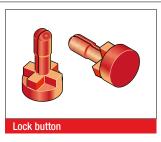
Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69

#### **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".

#### Туре

MP52/62/72 lock button

052000080

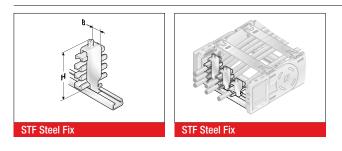
Order No.

230

Learn more at www.murrplastik.de Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com



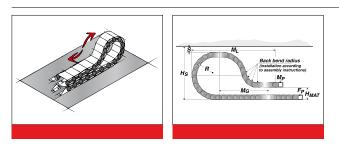
#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 - 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 - 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 - 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 - 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

## **LOWERED FIXING POINT MP 52**



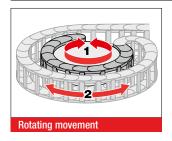
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>#</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
6.89	7.09	1.97	20.28	24.41	6	3
7.87	8.27	1.97	22.24	32.68	10	3
9.84	9.84	1.97	26.18	38.98	13	3
11.81	11.81	1.97	30.12	35.43	14	3
13.78	12.99	1.97	34.06	46.46	16	3

#### **MP 52.2 REARWARD RADII**



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Order No.	Radius inch	Back radius inch
SR 52.2 (RÜ200/R135) left	052200010060	5.31	7.87
SR 52.2 (RÜ200/R135) right	052200010062	5.31	7.87
SR 52.2 (RÜ200/R170) left	052200015060	6.69	7.87
SR 52.2 (RÜ200/R170) right	052200015062	6.69	7.87
SR 52.2 (RÜ200/R200) left	052200020060	7.87	7.87
SR 52.2 (RÜ200/R200) right	052200020062	7.87	7.87
SR 52.2 (RÜ200/R250) left	052200025060	9.84	7.87
SR 52.2 (RÜ200/R250) right	052200025062	9.84	7.87
SR 52.2 (RÜ200/R300) right	052200030062	11.81	7.87
SR 52.2 (RÜ200/R350) left	052200035060	13.78	7.87
SR 52.2 (RÜ200/R350) right	052200035062	13.78	7.87

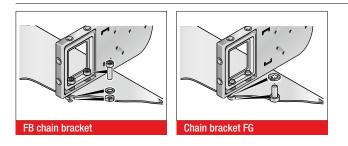
#### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



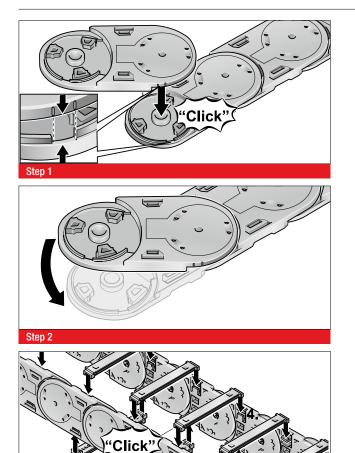
A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

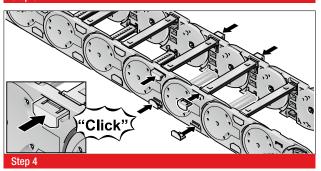
## **ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG**



## ASSEMBLY



Step 3



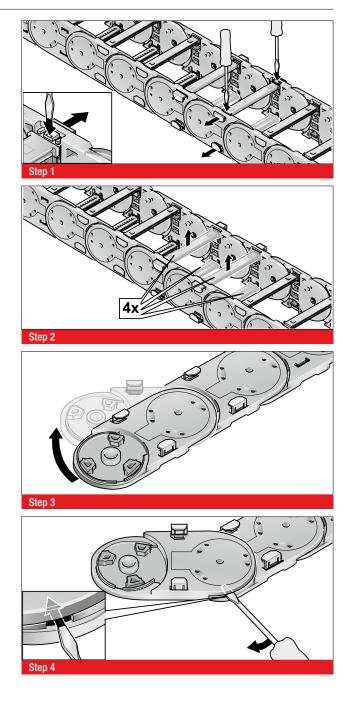
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

#### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

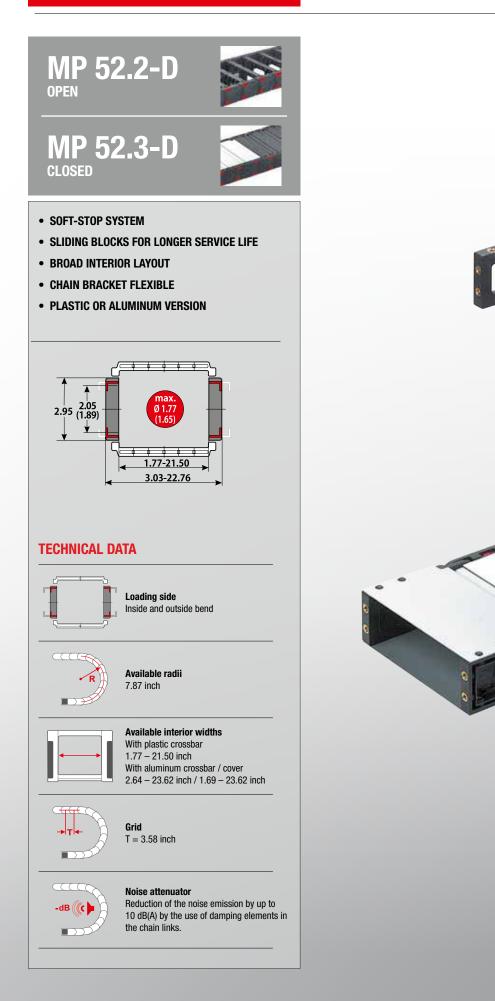
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

## DISASSEMBLY



# POWERLINE





## **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	492.13 ft.
Travel distance self-supporting L, max.	see diagram on page 237
Travel distance vertical, hanging L <sub>vh</sub> max.	196.85 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.
Rotated 90°, unsupported L <sub>anf</sub> max.	6.56 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V <sub>r</sub> max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>

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

## **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB
	·

Other material properties on request

#### **ACCESSORIES**



Sliding block







**GUIDE CHANNELS** 



stainless steel



VAW aluminum

## **STRAIN RELIEF**



RS-ZL crossbar strain relief



STF Steel Fix

235



**CHAIN BRACKET** 

Chain bracket flexible



Chain bracket angle



**SHELVING SYSTEM** 

Separator TR

Crossbar connector RSV



H-shaped shelf unit RE







VAW steel galvanized /





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# murrplast

Dimensions in mm [US inch]

## **ORDERING KEY**

Variation MP 52.2-D open Crossbar on outside bend	Inside width	Outside width	Inside width	Outside	Radius				
Crossbar on outside bend			width	width	naulus		Rail variant	Material	Chain length
	<b>045<sup>1)</sup></b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	200		Plastic, full-ridged	Polyamide with	
Crossbar on inside bend Opens on inside and outside of bend	<b>057</b> <sup>1)</sup> [2.24]	<b>089</b> [3.50]	<b>246<sup>2)</sup></b> [9.69]	<b>278<sup>2)</sup></b> [10.94]	[7.87]	0	with bias	3 attenuator (PA/black)	
MP 52.3-D closed	<b>062<sup>1)</sup></b> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]			Plactic full-ridged	- Special version (on	
Cover on inside of bend Opens on inside and outside of bend	<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]		1	without bias	9 request)	
	<b>084</b> [3.31]	<b>116</b> [4.57]	<b>296<sup>2)</sup></b> [11.65]	<b>328<sup>2)</sup></b> [12.91]			Plastic, half-ridged		
	<b>093</b> [3.66]	<b>125</b> [4.92]	<b>346<sup>2)</sup></b> [13.62]	<b>378<sup>2)</sup></b> [14.88]		2	with bias		
	<b>096<sup>2)</sup></b> [3.78]	<b>128<sup>2)</sup></b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]			Plastic half-ridged		
	<b>104</b> [4.09]	<b>136</b> [5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]		3	without bias		
	<b>107</b> [4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	<b>403</b> [15.87]			Aluminum full-ridaed		
	<b>121</b> <sup>2)</sup> [4.76]	<b>153<sup>2)</sup></b> [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]		4	with bias		
	<b>133</b> [5.24]	165 [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]		_	Aluminum full-ridged		
	<b>144</b> [5.67]	<b>176</b> [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]		5	without bias		
	<b>146<sup>2)</sup></b> [5.75]	<b>178<sup>2)</sup></b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]			Aluminum half-ridged		
	158 [6.22]	<b>190</b> [7.48]	<b>546</b> [21.50]	<b>578</b> [22.76]		O	with bias		
	<b>164</b> [6.46]	<b>196</b> [7.72]				_	Aluminum half-ridged		
	<b>171</b> [6.73]	<b>203</b> [7.99]				<b>(</b>	without bias		
	<b>182<sup>2)</sup></b> [7.17]	<b>214<sup>2)</sup></b> [8.43]					Special version (on		
	<b>196<sup>2)</sup></b> [7.72]	<b>228<sup>2)</sup></b> [8.98]				9	request)		
	<b>208</b> [8.19]	<b>240</b> [9.45]							
	<b>220<sup>2)</sup></b> [8.66]	<b>252<sup>2)</sup></b> [9.92]							
		V		-	↓	Ļ		•	↓
	Cover on outside of bend Cover on inside of bend Opens on inside and outside of bend	M* 32.3-3 Crosed Cover on inside of bend       [2.44]         Opens on inside and outside of bend       071         [2.80]       093         [3.66]       [3.78]         [0.962)       [3.78]         [104]       [4.09]         [104]       [4.09]         [104]       [4.09]         [112]       [3.78]         [124]       [1212]         [121]       [1212]         [4.76]       [3.78]         [5.76]       [5.75]         [5.75]       [5.75]         [5.73]       [5.73]         [5.74]       [6.46]         [7.77]       [5.75]         [5.73]       [5.74]         [6.46]       [7.17]         [6.47]       [7.77]         [7.72]       [208]         [8.19]       [2029]         [8.6]       [8.19]         [2029]       [8.6]	Image: Solution of bend Cover on inside of bend Cover on inside and outside of bend         Image: Solution of Bend Cover on inside and outside of bend         Image: Solution of Bend Cover on inside and outside of bend         Image: Solution of Bend Cover on inside and outside of bend Cover on inside and outside of bend         Image: Solution of Bend Cover on inside and outside of bend Cover on inside and cover on inside and cover on inside and cover on inside and outside of bend Cover on inside and cov	Image: Second	Mr 9.3-9 Lossed Cover on uiside of bend Cover on uiside of bend         [2.49]         [8.70]         [9.22]         [11.18]           Opens on inside of bend Cover on uiside of bend         071 [2.80]         103 [4.60]         258 [11.63]         290 [11.63]           Opens on inside of bend Cover on uiside of bend         084 [3.31]         116 [4.62]         296 <sup>3</sup> [11.63]         328 <sup>2</sup> [12.82]           Opens on inside and outside of bend         096 <sup>7</sup> [2.83]         128 <sup>3</sup> [4.62]         346 <sup>2</sup> [12.82]         378 <sup>2</sup> [14.83]           Opens on inside and outside of bend         096 <sup>7</sup> [2.83]         128 <sup>3</sup> [4.63]         358 [15.83]         390 [15.83]           Intermode of bend         104 [4.01]         136 [5.83]         358 [15.93]         382 [15.83]         390 [15.83]           Intermode of bend         107 [4.21]         136 [5.83]         358 [15.93]         371 [14.61]         403 [15.83]           Intermode of bend         107 [4.71]         138 [5.84]         166.50]         171.83 [15.93]         403 [15.93]         16.83 [16.80]         16.83 [16.80]         16.83 [16.80]         16.83 [16.80]         16.83 [16.80]         16.83 [16.80]         16.83 [16.80]         16.83 [16.80]         16.83 [17.93]         16.83 [17.93]         16.83 [17.93]         16.83 [17.93]         16.83 [17.93]         16.83 [17.93]         16.83 [17.93] <t< td=""><td>MP 22.3 U Good Core on disside of bend Core on disside of the disside of the disside of bend Core on disside of the disside disside disside disside disside disside disside diteration diteration diteration disside disside disside disside di</td><td><math display="block"> \begin{array}{                                    </math></td><td><math display="block"> \begin{array}{                                    </math></td><td><math display="block"> \begin{array}{c}   2.4 \\   0.7 \\   0.7 \\   0.6 </math></td></t<>	MP 22.3 U Good Core on disside of bend Core on disside of the disside of the disside of bend Core on disside of the disside disside disside disside disside disside disside diteration diteration diteration disside disside disside disside di	$ \begin{array}{                                    $	$ \begin{array}{                                    $	$ \begin{array}{c}   2.4 \\   0.7 \\   0.7 \\   0.6 $

#### ORDERING EXAMPLE: 0522 30 220 200 1 3 9555

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 8.66 in. (220 mm), radius 7.87 in. (200 mm)

Plastic crossbar, full-ridged without bias, material is black-colored polyamide with damper

Chain length 376.18 in. (9555 mm) (105 links)

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

<sup>2)</sup> also available with plastic cover
 <sup>3)</sup> reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

#### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.64 inch – 23.62 inch are available for delivery.

#### **Aluminum covers:**

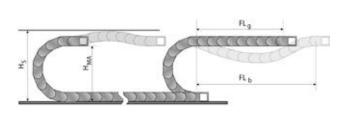
Aluminum covers in 0.04 in (1 mm) width sizes for inner widths from 1.69 inch -23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inch, we recommend the deployment of crossbar connectors (RSV).

Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminum.

#### **SELF-SUPPORTING LENGTH**



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

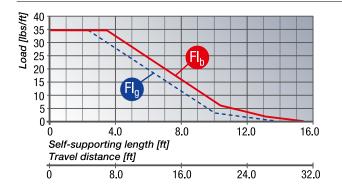
For detailed information, please consult the corresponding product documentation.

The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{q}$  = Self-supporting length, upper run straight
- $FL_{b}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the  $FL_{g}$  range, the chain upper run still has a bias, is straight or has a maximum sag of 2.76 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 2.76 inch, but this is still less than the maximum sag.

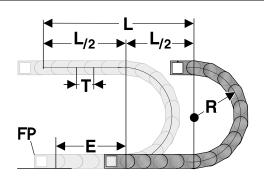
Where the sag is greater than that permitted in the  $FL_{b}$  range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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 lbs/ft (kg/m)), you must add 1.00 lbs/ft (1.5 kg/m), to account for the higher weight of closed-cover chains.





#### **DETERMINING THE CHAIN LENGTH**



## **INSTALLATION DIMENSIONS**

S<sub>V</sub>/S<sub>K</sub> Н Нма Ŵ Mн The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$  $\approx$  1 ft chain = 4 qty. x 3.58 inch.

E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 3.58 inch

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

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

For chain links without damping elements, the value "Installed

height with bias  $H_{sv}$  without damper" or "Installed height with-out bias  $H_{sk}$  without damper" must be taken into account. If the chain links are equipped with a damping element, the value "Installed height with bias  $H_{sv}$  with damper" or "Installed height without bias  $H_{sk}$  with damper" is to be taken into account.

Radius R	200
Outside height of chain link $(H_g)$	2.95
Height of bend (H)	404.13
Height of moving end connection $(H_{MA})$	401.18
Safety margin with bias (S $_{v}$ )	0.79
Installation height with bias $(H_{sv})$ with damper	407.28
Safety margin without bias ( $S_{\kappa}$ )	0.79
Installation height without bias $(H_{sk})$ with damper	406.10
Arc projection (M <sub>L</sub> )	205.65

#### DAMPING ELEMENTS FOR THE SIDE LINKS



The dampening elements in the stops make for a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

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

## **POWERLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

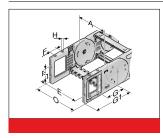
#### MP 52.3 / MP 52.5 PLASTIC COVER



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

Туре	Order No.	Description	Installation site	Inside width inch
A-523062, outside	052306210000	Cover	Outside bend	2.44
I-523062, inside	052306220000	Cover	Inside bend	2.44
A-523096, outside	052309610000	Cover	Outside bend	3.78
I-523096, inside	052309620000	Cover	Inside bend	3.78
A-523121, outside	052312110000	Cover	Outside bend	4.76
I-523121, inside	052312120000	Cover	Inside bend	4.76
A-523146, outside	052314610000	Cover	Outside bend	5.75
I-523146, inside	052314620000	Cover	Inside bend	5.75
A-523182, outside	052318210000	Cover	Outside bend	7.17
I-523182, inside	052318220000	Cover	Inside bend	7.17
A-523196, outside	052319610000	Cover	Outside bend	7.72
I-523196, inside	052319620000	Cover	Inside bend	7.72
A-523220, outside	052322010000	Cover	Outside bend	8.66
I-523220, inside	052322020000	Cover	Inside bend	8.66
A-523246, outside	052324610000	Cover	Outside bend	9.69
I-523246, inside	052324620000	Cover	Inside bend	9.69
A-523296, outside	052329610000	Cover	Outside bend	11.65
I-523296, inside	052329620000	Cover	Inside bend	11.65
A-523346, outside	052334610000	Cover	Outside bend	13.62
I-523346, inside	052334620000	Cover	Inside bend	13.62

#### **KA 52.1 CHAIN BRACKET FLEXIBLE**

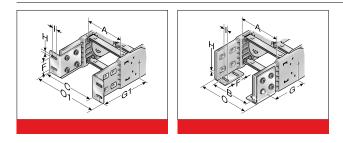


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

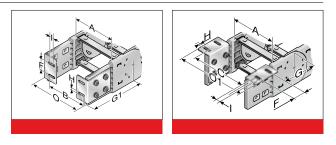
Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	H	HØ inch	Outside width of KA O inch
KA 52.1-FB Female end	0521000056	Plastic	with bush	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75		0.33	A+1.42
KA 52.1-FB male end	0521000057	Plastic	with bush	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75		0.33	A+1.42
KA 52.1-FG female end	0521000058	Plastic	with thread	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75	M8		A+1.42
KA 52.1-FG male end	0521000059	Plastic	with thread	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75	M8		A+1.42



#### **KA 52.1 CHAIN BRACKET ANGLE**



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



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

Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	G1 inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 52.1 Female end	0521000050	Sheet steel	1.77 – 21.50	A-0.10	A+1.36	1.26	3.76	5.67	0.26	0.55	A+1.26	A+2.80
KA 52.1 Male end	0521000051	Sheet steel	1.77 – 21.50	A-0.10	A+1.36	1.26	3.76	5.67	0.26	0.55	A+1.26	A+2.80

## **GS 52.2 SLIDING BLOCK**



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

Туре	Order No.	Installation site	Min. radius inch	Sliding block height inch
GS 52.2.1 right	052290400302	For right side link	5.91	0.16
GS 52.2.2 left	052290400300	For left side link	5.91	0.16

#### GLP 5 (52.2-D) 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 0.1 in (2.5 mm). We recommend replacing the cable drag chain when this limit has been reached. Depending on the application, the service life of the cable drag chain may be extended two-fold, by using gliding plates. The cable drag chain must be placed on its side before opening.

Туре	Order No.	Installation site	for radius inch	Gliding plate height inch
SG 52.2-D RK200.2 right with GLP5, mounted	052200020096	Right chain link including gliding plate	7.87	0.28
SG 52.2-D RK200.2 left with GLP5, mounted	052200020094	Left chain link including gliding plate	7.87	0.28

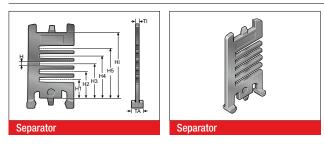
## **TR 52 SEPARATOR**

		)
Separator	Separator	
Tune Order No	Description	Version

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 98.42 ft (30 m) or greater.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52	052000009200	TR 52 Separator	lockable	0.14	0.39	0.17	0.64	0.88	1.11	1.33	1.57	2.05

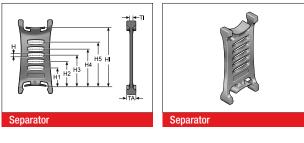
## **TR 52.1 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52.1	052100009200	TR 52.1 Separator	lockable	0.14	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

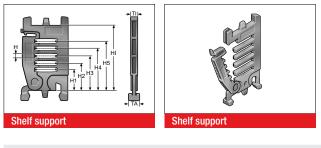
#### **TR 52-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52-V	052000009300	TR 52-V Separator	movable	0.14	0.51	0.16	0.64	0.88	1.11	1.33	1.57	2.05

## **RTT 52 SHELF SUPPORT, DIVISIBLE**



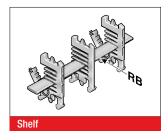
In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimize the friction between them.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 52	100090522000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

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## **RB-5 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	10000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

#### **RSV 52 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 52	052000009600	Crossbar connector	0.30
RSV 52 Alu	052000009800	Crossbar connector for aluminum crossbars	0.30

#### **RE 52 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 36/17	100000361714	H-shaped shelf unit	1.67	1.44	1.22	0.69	2.05
RE 59/24	100000592414	H-shaped shelf unit	2.56	2.32	0.95	0.95	2.05
RE 81/12	100000811214	H-shaped shelf unit	3.44	3.21	1.42	0.49	2.05

#### **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

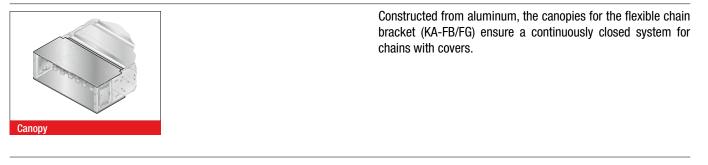
## **D5 CHAIN BRACKET COVER**

Cover	Self-locking covers close the side mounting window on the flexible chain bracket (KA-FB/FG).
Туре	Order No.

0523888002

D5 Cover

## **MP 52.3 CHAIN BRACKET CANOPY**



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

	Туре:	KA 52.1 FB/FG AB	Inside width	2-2					
THE	Order No.:	0521	Inside width	060					
Canopy for chain bracket, fixed poi	nt inside bend: Type	e and Order No. configura	tor						
	Туре:	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									
	Туре:	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									
	Туре:	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 3.78 in (96 mm).

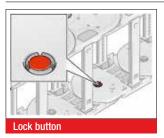
## **RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**

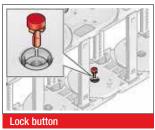


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

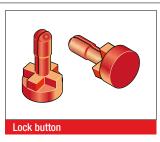
Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69

#### **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".

#### Туре

MP52/62/72 lock button

052000080

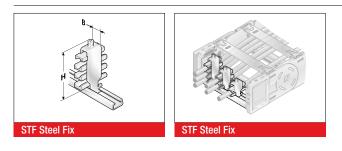
Order No.

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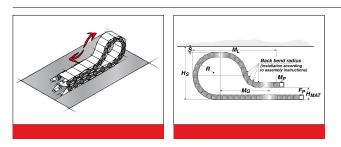
#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 - 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 - 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 - 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 - 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

## **MP 52-D LOWERED FIXING POINT**



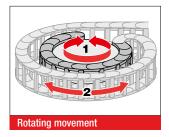
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
7.87	8.27	1.97	22.24	32.68	10	3

#### MP 52.2-D REARWARD RADII



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Order No.	Radius inch	Back radius inch
SR 52.2 (RÜ200/R200) left	SR 52.2-D (RÜ200/R200) links	7.87	7.87
SR 52.2 (RÜ200/R200) right	SR 52.2-D (RÜ200/R200) rechts	7.87	7.87

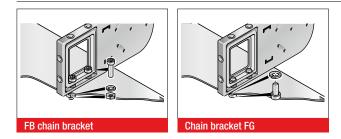
#### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

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



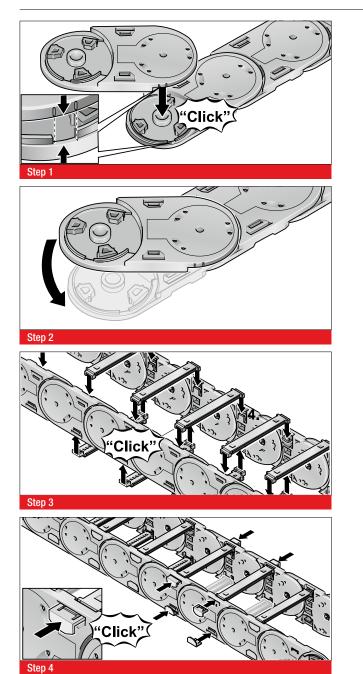
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

#### Version KA-FB:

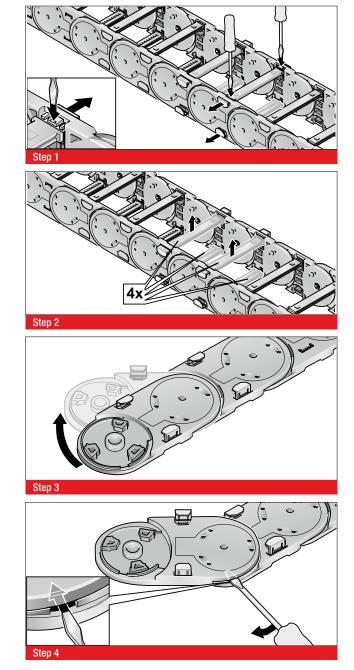
Integrated through-hole fastened down using nut and bolt. Version KA-FG:

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

## ASSEMBLY

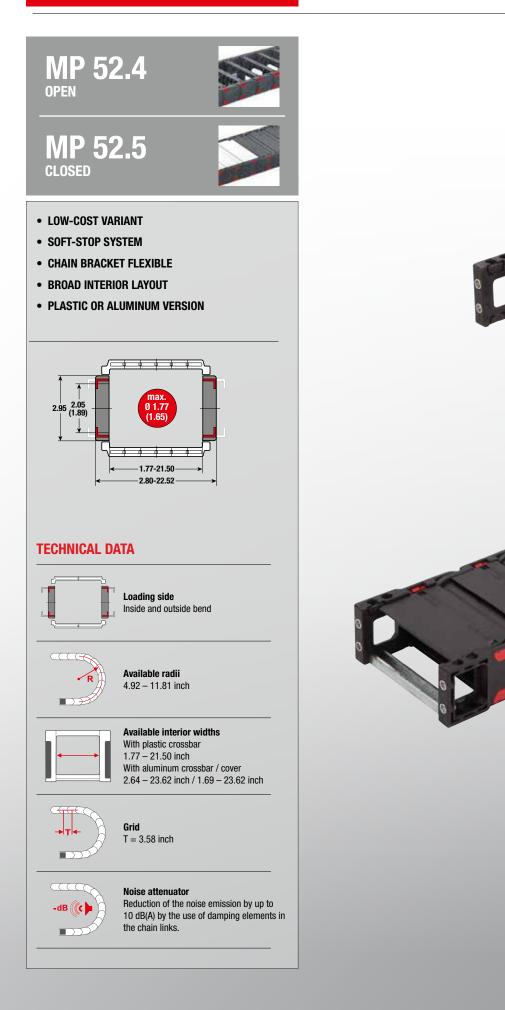


## DISASSEMBLY



# POWERLINE





#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	164.04 ft.
Travel distance self-supporting L, max.	see diagram on page 253
Travel distance vertical, hanging L <sub>vb</sub> max.	164.04 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	13.12 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	3.28 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V, max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>

 $\label{eq:contact} \mbox{ Contact our engineering department to meet any higher requirements: efk@murrplastik.de \\$ 

## **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **ACCESSORIES**



Sliding block







**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

## STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix



**CHAIN BRACKET** 

Chain bracket flexible







RS shelving system







H-shaped shelf unit RE







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## **ORDERING KEY**

Variation  con outside bend on inside bend in inside and outside of bend inside of bend inside of bend inside and outside of bend	Inside width           045 <sup>1</sup> ) [1.77]           057 <sup>1</sup> ) [2.24]           062 <sup>1</sup> ) [2.44]           071 [2.80]           084 [3.31]           093 [3.66]	Outside width [2.80] 083 [3.27] 088 [3.46] 097 [3.82] 110 [4.33]	Inside width 233 [9.17] 246 <sup>2</sup> ) [9.69] 252 [9.92] 258 [10.16]	Outside width           259 [10.20]           272 [10.71]           278 [10.94]	Radius           125 <sup>1</sup> )           [4.92]           135 <sup>1</sup> )	0	Rail variant Plastic, full-ridged with bias	Material Polyamide without attenuator (PA/black)	Chain length
r on outside bend on inside bend n inside and outside of bend i closed outside of bend inside of bend	[1.77] 057 <sup>1</sup> ) [2.24] 062 <sup>1</sup> ) [2.4] 071 [2.80] 071 [2.80] 084 [3.31] 093	[2.80] 083 [3.27] 088 [3.46] 097 [3.82] 110	[9.17] <b>246<sup>2)</sup></b> [9.69] <b>252</b> [9.92] <b>258</b>	[10.20] <b>272</b> [10.71] <b>278</b> [10.94]	[4.92]			2 attenuator (PA/black)	
n inside and outside of bend	[2.24] 062 <sup>1)</sup> [2.44] 071 [2.80] 084 [3.31] 093	[3.27] 088 [3.46] 097 [3.82] 110	[9.69] <b>252</b> [9.92] <b>258</b>	[10.71] <b>278</b> [10.94]			with bias	(PA/black)	
i outside of bend i inside of bend	[2.44] 071 [2.80] 084 [3.31] 093	[3.46] 097 [3.82] 110	[9.92] <b>258</b>	[10.94]	135 <sup>1)</sup>				
	[2.80] 084 [3.31] 093	[3.82] <b>110</b>		284		1	Plastic, full-ridged	Polyamide with <b>3</b> attenuator	
	[3.31] 093			[11.18]	[5.31]	Ľ	without bias	(PA/black)	
			<b>296<sup>2)</sup></b> [11.65]	<b>322</b> [12.68]	150		Plastic, half-ridged	<ul> <li>Special version (on</li> </ul>	
		119 [4.69]	<b>346<sup>2)</sup></b> [13.62]	<b>372</b> [14.65]	[5.91]	2	with bias	9 Special Version (on request)	
	<b>096<sup>2)</sup></b> [3.78]	<b>122</b> [4.80]	<b>350</b> [13.78]	<b>376</b> [14.80]	175		Plastic half-ridged		
	<b>104</b> [4.09]	<b>130</b> [5.12]	<b>358</b> [14.09]	<b>384</b> [15.12]	[6.89]	3	without bias		
	<b>107</b> [4.21]	<b>133</b> [5.24]	<b>371</b> [14.61]	<b>397</b> [15.63]	200	200 [7.87] 4	Aluminum full-ridged		
	<b>121</b> <sup>2)</sup> [4.76]	147 [5.79]	<b>396</b> [15.59]	<b>422</b> [16.61]			with bias		
	<b>133</b> [5.24]	159 [6.26]	<b>421</b> [16.57]	<b>447</b> [17.60]	250	5	Aluminum full ridged		-
	144	170	446	472	[9.84]		without bias		
	146 <sup>2)</sup>	172	496	522	200		Aluminum holf sides d		-
	<b>158</b> [6.22]	<b>184</b> [7.24]	<b>546</b> [21.50]	<b>572</b> [22.52]	[11.81]	6	with bias		
	<b>164</b> [6.46]	<b>190</b> [7.48]					Aluminum half ridgod		
	171	197				7	without bias		
	<b>182<sup>2)</sup></b> [7.17]	<b>208</b> [8.19]					Special version (on		-
	<b>196</b> <sup>2)</sup>	<b>222</b> [8.74]				9	request)		
	208	234							-
	<b>220<sup>2)</sup></b> [8.66]	<b>246</b> [9.69]							
		V		]	↓	Ļ			↓ ↓
						_			
		104         [4.09]         107         [4.0]         1212         [4.2]         [4.2]         [133]         [5.7]         144         [5.7]         158         [6.2]         164         [6.2]         111         [6.2]         1212         1212         144         [5.7]         158         [6.2]         164         [6.2]         171         [6.2]         18229         [7.72]         196 <sup>2</sup> [8.19]         208         [8.29]         220 <sup>2</sup>	104       130         107       133         107       133         1212       147         1212       147         147       579         133       159         144       170         158       1462         158       184         159       158         158       190         158       190         158       190         171       197         1822       208         1962       222         1962       222         1962       222         1962       222         208       234         192       246	104         130         358           107         133         371           1212         152         115           1212         147         396           1212         147         396           1212         147         396           1212         147         396           1212         147         396           1212         147         396           1212         147         396           121         152         421           152         158         159         426           1558         184         546         19.0           158         184         546         19.0           171         197         17.0         19.0           1822         208         8.19.9         1.0           1969         222         1.0         1.0         1.0           1969         222         1.0         1.0         1.0         1.0           1969         222         1.0         1.0         1.0         1.0         1.0           1969         222         1.0         1.0         1.0         1.0         1.0         1.0	104       130       358       384         107       133       371       397         1212       147       396       15.53         1212       147       396       422         14.70       15.24       199       421         15.24       159       421       447         15.24       170       446       472         15.47       16.69       17.50       18.59         144       170       446       472         15.57       16.69       17.2       496         15.57       17.2       496       522         15.8       184       546       572         15.8       184       190       22.59         16.4       190       22.59       20.59         17.1       197       1.50       1.50         1829       208       2.10       1.50         1969       222       1.50       1.50         1969       222       1.71       1.50       1.50         1969       222       1.71       1.50       1.50         1969       222       1.51       1.50       1.50	104       130       358       384       [6.89]         107       133       (14.09)       [15.12]       200         12129       147       396       422       [7.37]         1213       15.79       [15.59]       [16.57]       [7.37]         1213       147       396       422       [16.57]       [7.37]         15.24       16.57]       [15.59]       [16.57]       [17.60]       [25.0]         15.24       16.69       17.2       496       522       [20.5]       [3.00]         15.67       16.71       [19.53]       [20.5]       [11.81]       [1.81]	104       130       358       384       1173       3         107       133       371       397       200       7.87       4         12121       147       15.29       (14.61)       (15.68)       200       7.87       4         12121       147       15.79       (15.59)       (16.61)       17.80       250       7.87       5         133       159       (16.57)       (17.56)       (18.58)       184       6       522       19.84       5         144       170       4465       522       (19.53)       (20.55)       300       11.81       6         158       184       17.4       [21.50]       [22.52]       300       11.81       6         158       184       17.9       [25.50]       300       11.81       7         164       190       17.49       [25.50]       [20.55]       300       11.81       7         164       190       17.49       [25.50]       [20.55]       300       [11.81]       7         17.1       197       [15.79]       [27.50]       [27.50]       [27.50]       300       [11.81]       7         1822 <td< td=""><td>104       130       358       384       17.3       1 add, 1 add without bias         107       133       371       397       (6.89)       200       4       Aluminum full-ridged with bias         1212       147       396       422       (16.91)       200       4       Aluminum full-ridged with bias         1212       147       15.99       (16.57)       (17.60)       250       5       Aluminum full-ridged with bias         15.91       (16.57)       (17.50)       (16.57)       (17.60)       250       5       Aluminum full-ridged with bias         164       170       (15.57)       (17.50)       (18.81)       3       6       Aluminum full-ridged with bias         164       170       (15.57)       (17.50)       (18.51)       300       6       Aluminum full-ridged with bias         164       190       (17.59)       (12.59)       (18.51)       7       Aluminum full-ridged with bias         182       (2.22)       (7.24)       (2.59)       300       1       6       Aluminum full-ridged with bias         182       (2.81)       (2.42)       (2.59)       300       1       1       1         171       197       (2.59)       <t< td=""><td>104       130       358       384       10.3       10.4       10.4       10.4       10.7       13.3       37.1       39.7       200       4       Auminum full-tidged         107       133       1579       10.579       10.589       10.689       4       Auminum full-tidged         1212       167.9       1579       10.599       (16.57)       (17.69)       200       4       Auminum full-tidged         15.20       162.9       (16.57)       (17.69)       250       5       Auminum full-tidged         16.4       1700       446       552       300       6       Auminum full-tidged         16.64       179.9       122.9       (16.57)       (17.69)       300       6       Auminum full-tidged         17.1       197       198.5       124.546       572       300       6       Auminum full-tidged         18.64       19.0       10.591       12.591       12.591       11.619       9       Special version (on request)         18.62       10.891       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991</td></t<></td></td<>	104       130       358       384       17.3       1 add, 1 add without bias         107       133       371       397       (6.89)       200       4       Aluminum full-ridged with bias         1212       147       396       422       (16.91)       200       4       Aluminum full-ridged with bias         1212       147       15.99       (16.57)       (17.60)       250       5       Aluminum full-ridged with bias         15.91       (16.57)       (17.50)       (16.57)       (17.60)       250       5       Aluminum full-ridged with bias         164       170       (15.57)       (17.50)       (18.81)       3       6       Aluminum full-ridged with bias         164       170       (15.57)       (17.50)       (18.51)       300       6       Aluminum full-ridged with bias         164       190       (17.59)       (12.59)       (18.51)       7       Aluminum full-ridged with bias         182       (2.22)       (7.24)       (2.59)       300       1       6       Aluminum full-ridged with bias         182       (2.81)       (2.42)       (2.59)       300       1       1       1         171       197       (2.59) <t< td=""><td>104       130       358       384       10.3       10.4       10.4       10.4       10.7       13.3       37.1       39.7       200       4       Auminum full-tidged         107       133       1579       10.579       10.589       10.689       4       Auminum full-tidged         1212       167.9       1579       10.599       (16.57)       (17.69)       200       4       Auminum full-tidged         15.20       162.9       (16.57)       (17.69)       250       5       Auminum full-tidged         16.4       1700       446       552       300       6       Auminum full-tidged         16.64       179.9       122.9       (16.57)       (17.69)       300       6       Auminum full-tidged         17.1       197       198.5       124.546       572       300       6       Auminum full-tidged         18.64       19.0       10.591       12.591       12.591       11.619       9       Special version (on request)         18.62       10.891       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991</td></t<>	104       130       358       384       10.3       10.4       10.4       10.4       10.7       13.3       37.1       39.7       200       4       Auminum full-tidged         107       133       1579       10.579       10.589       10.689       4       Auminum full-tidged         1212       167.9       1579       10.599       (16.57)       (17.69)       200       4       Auminum full-tidged         15.20       162.9       (16.57)       (17.69)       250       5       Auminum full-tidged         16.4       1700       446       552       300       6       Auminum full-tidged         16.64       179.9       122.9       (16.57)       (17.69)       300       6       Auminum full-tidged         17.1       197       198.5       124.546       572       300       6       Auminum full-tidged         18.64       19.0       10.591       12.591       12.591       11.619       9       Special version (on request)         18.62       10.891       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991       10.991

#### ORDERING EXAMPLE: 0524 30 220 150 0 3 2500

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 8.66 in. (220 mm), radius 5.91 in. (150 mm) Plastic, full-ridged with bias, material polyamide with damper (PA/black)

Chain length 98.42 in. (2500 mm) (28 links)

<sup>1)</sup> for variant MP 52.4 only

<sup>2)</sup> MP 52.5 also available with plastic cover
 <sup>3)</sup> reduced inner height, reduced max. cable diameter, see chain window drawing on previous page

#### NOTE ON CONFIGURATION

#### Aluminum crossbars:

Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.64 inch – 23.62 inch are available for delivery.

#### **Aluminum covers:**

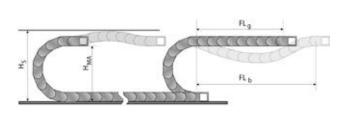
Aluminum covers in 0.04 in (1 mm) width sizes for inner widths from 1.69 inch -23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inch, we recommend the deployment of crossbar connectors (RSV).

Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminum.

#### **SELF-SUPPORTING LENGTH**



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

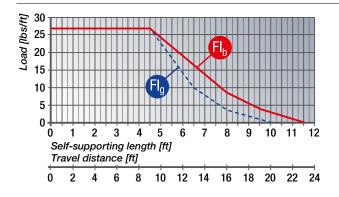
For detailed information, please consult the corresponding product documentation.

The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{g}$  = Self-supporting length, upper run straight
- $FL_{b}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



## FL, 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 2.76 inch.

#### FL, Self-supporting length, upper run bent

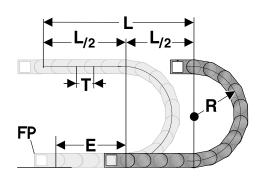
In the  $FL_{b}$  range, the chain upper run has a sag of more than 2.76 inch, but this is still less than the maximum sag.

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 optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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 lbs/ft (kg/m)), you must add 1.00 lbs/ft (1.5 kg/m), to account for the higher weight of closed-cover chains.



## **DETERMINING THE CHAIN LENGTH**



## **INSTALLATION DIMENSIONS**

S<sub>V</sub>/S<sub>K</sub> Н Нма M The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$  $\approx$  1 ft chain = 4 qty. x 3.58 inch.

E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 3.58 inch

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

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

For chain links without damping elements, the value "Installed

height with bias  $H_{sv}$  without damping elements, the value "installed height without damper" or "Installed height without damper" must be taken into account. If the chain links are equipped with a damping element, the value "Installed height with bias  $H_{sv}$  with damper" or "Installed height without bias  $H_{sv}$  with damper" is to be taken into account.

Radius R	125	135	150	175	200	250	300
Outside height of chain link $(H_g)$	2.95	2.95	2.95	2.95	2.95	2.95	2.95
Height of bend (H)	252.95	272.95	302.95	352.95	402.95	502.95	602.95
Height of moving end connection $(H_{MA})$	250.00	270.00	300.00	350.00	400.00	500.00	600.00
Safety margin with bias (S $_{\!\nu}\!)$	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Installation height with bias $(H_{sv})$ without damper	256.10	276.10	306.10	356.10	406.10	506.10	606.10
Installation height with bias $(H_{sv})$ with damper	257.28	277.28	307.28	357.28	407.28	507.28	607.28
Safety margin without bias ( $S_{\kappa}$ )	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Installation height without bias $(\mathrm{H}_{\mathrm{sk}})$ without damper	253.74	273.74	303.74	353.74	403.74	503.74	603.74
Installation height without bias $(\mathrm{H}_{\mathrm{sk}})$ with damper	254.92	274.92	304.92	354.92	404.92	504.92	604.92
Arc projection (M <sub>L</sub> )	130.06	140.06	155.06	180.06	205.06	255.06	305.06

## DAMPING ELEMENTS FOR THE SIDE LINKS



The dampening elements in the stops make for a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

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

## **POWERLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

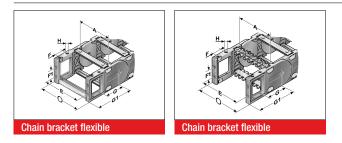
#### MP 52.3 / MP 52.5 PLASTIC COVER



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

Туре	Order No.	Description	Installation site	Inside width inch
A-523062, outside	052306210000	Cover	Outside bend	2.44
I-523062, inside	052306220000	Cover	Inside bend	2.44
A-523096, outside	052309610000	Cover	Outside bend	3.78
I-523096, inside	052309620000	Cover	Inside bend	3.78
A-523121, outside	052312110000	Cover	Outside bend	4.76
I-523121, inside	052312120000	Cover	Inside bend	4.76
A-523146, outside	052314610000	Cover	Outside bend	5.75
I-523146, inside	052314620000	Cover	Inside bend	5.75
A-523182, outside	052318210000	Cover	Outside bend	7.17
I-523182, inside	052318220000	Cover	Inside bend	7.17
A-523196, outside	052319610000	Cover	Outside bend	7.72
I-523196, inside	052319620000	Cover	Inside bend	7.72
A-523220, outside	052322010000	Cover	Outside bend	8.66
I-523220, inside	052322020000	Cover	Inside bend	8.66
A-523246, outside	052324610000	Cover	Outside bend	9.69
I-523246, inside	052324620000	Cover	Inside bend	9.69
A-523296, outside	052329610000	Cover	Outside bend	11.65
I-523296, inside	052329620000	Cover	Inside bend	11.65
A-523346, outside	052334610000	Cover	Outside bend	13.62
I-523346, inside	052334620000	Cover	Inside bend	13.62

## **KA 52.4 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the cable drag chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Press-in metal metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	H	HØ inch	Outside width of KA O inch
KA 52.4-FB Female end	0524000050	Plastic	with bush	1.77 – 21.50	A+0.63	0.79	1.18	3.35	4.92		0.35	A+1.34
KA 52.4-FB Female end, pendular	0524000052	Plastic	with bush	1.77 – 21.50	A+0.63	0.79	1.18	3.35	4.92		0.35	A+1.34
KA 52.4-FB male end	0524000051	Plastic	with bush	1.77 – 21.50	A+0.63	0.79	1.18	3.35	4.92		0.35	A+1.34
KA 52.4-FG female end	0524000053	Plastic	with thread	1.77 – 21.50	A+0.63	0.79	1.18	3.35	4.92	M8		A+1.34
KA 52.4-FG Female end, pendular	0524000055	Plastic	with thread	1.77 – 21.50	A+0.63	0.79	1.18	3.35	4.92	M8		A+1.34
KA 52.4-FG male end	0524000054	Plastic	with thread	1.77 – 21.50	A+0.63	0.79	1.18	3.35	4.92	M8		A+1.34

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# **GS 52.4 SLIDING BLOCK**



In the case of cable drag chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side). The sliding blocks are set onto the side links on the interior bend instead of the usual crossbar interlocks; (no tools needed). This forces the chain to slide on the sliding blocks instead on the side links of the chain. Depending on the application, the service life of the cable drag chain may be extended five-

fold, by using slide blocks.

Information about the minimum bending radius of the cable drag chain at the sliding block insert is listed in the following table.

Туре	Order No.	Installation site	Min. radius inch	Sliding block height inch
GS 52.4.1 right	052490400302	For right side link	5.91	0.16
GS 52.4.2 left	052490400300	For left side link	5.91	0.16

# 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 0.1 in (2.5 mm). We recommend replacing the cable drag chain when this limit has been reached. Depending on the application, the service life of the cable drag chain may be extended two-fold, by using gliding plates. The cable drag chain must be placed on its side before opening.

Туре	Order No.	Installation site	for radius inch	Gliding plate height inch
SG 52.4 RK125.1 right with GLP5, mounted	052400012566	Right chain link including gliding plate	4.92	0.28
SG 52.4 RK125.2 left with GLP5, mounted	052400012564	Left chain link including gliding plate	4.92	0.28
SG 52.4 RK135.1 right with GLP5, mounted	052400013566	Right chain link including gliding plate	5.31	0.28
SG 52.4 RK135.2 left with GLP5, mounted	052400013564	Left chain link including gliding plate	5.31	0.28
SG 52.4 RK150.1 right with GLP5, mounted	052400015066	Right chain link including gliding plate	5.91	0.28
SG 52.4 RK150.2 left with GLP5, mounted	052400015064	Left chain link including gliding plate	5.91	0.28
SG 52.4 RK175.1 right with GLP5, mounted	052400017566	Right chain link including gliding plate	6.89	0.28
SG 52.4 RK175.2 left with GLP5, mounted	052400017564	Left chain link including gliding plate	6.89	0.28
SG 52.4 RK200.1 right with GLP5, mounted	052400020066	Right chain link including gliding plate	7.87	0.28
SG 52.4 RK200.2 left with GLP5, mounted	052400020064	Left chain link including gliding plate	7.87	0.28
SG 52.4 RK250.1 right with GLP5, mounted	052400025066	Right chain link including gliding plate	9.84	0.28
SG 52.4 RK250.2 left with GLP5, mounted	052400025064	Left chain link including gliding plate	9.84	0.28
SG 52.4 RK300.1 right with GLP5, mounted	052400030066	Right chain link including gliding plate	11.81	0.28
SG 52.4 RK300.2 left with GLP5, mounted	052400030064	Left chain link including gliding plate	11.81	0.28
SG 52.4-D RK125.1 right with GLP5, mounted	052400012596	Right chain link including gliding plate	4.92	0.28
SG 52.4-D RK125.2 left with GLP5, mounted	052400012594	Left chain link including gliding plate	4.92	0.28
SG 52.4-D RK135.1 right with GLP5, mounted	052400013596	Right chain link including gliding plate	5.31	0.28
SG 52.4-D RK135.2 left with GLP5, mounted	052400013594	Left chain link including gliding plate	5.31	0.28
SG 52.4-D RK150.1 right with GLP5, mounted	052400015096	Right chain link including gliding plate	5.91	0.28
SG 52.4-D RK150.2 left with GLP5, mounted	052400015094	Left chain link including gliding plate	5.91	0.28
SG 52.4-D RK175.1 right with GLP5, mounted	052400017596	Right chain link including gliding plate	6.89	0.28
SG 52.4-D RK175.2 left with GLP5, mounted	052400017594	Left chain link including gliding plate	6.89	0.28
SG 52.4-D RK200.1 right with GLP5, mounted	052400020096	Right chain link including gliding plate	7.87	0.28
SG 52.4-D RK200.2 left with GLP5, mounted	052400020094	Left chain link including gliding plate	7.87	0.28
SG 52.4-D RK250.1 right with GLP5, mounted	052400025096	Right chain link including gliding plate	9.84	0.28
SG 52.4-D RK250.2 left with GLP5, mounted	052400025094	Left chain link including gliding plate	9.84	0.28
SG 52.4-D RK300.1 right with GLP5, mounted	052400030096	Right chain link including gliding plate	11.81	0.28
SG 52.4-D RK300.2 left with GLP5, mounted	052400030094	Left chain link including gliding plate	11.81	0.28

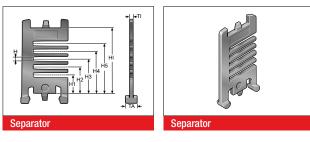
# **TR 52 SEPARATOR**

H     H       H <th>Separator</th> <th></th>	Separator	
Type Order No.	Description	Version

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 98.42 ft (30 m) or greater.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52	052000009200	TR 52 Separator	lockable	0.14	0.39	0.17	0.64	0.88	1.11	1.33	1.57	2.05

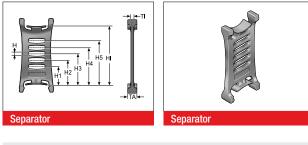
# **TR 52.1 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52.1	052100009200	TR 52.1 Separator	lockable	0.14	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

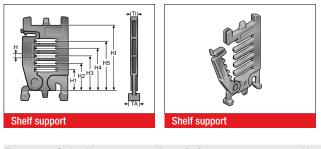
# **TR 52-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52-V	052000009300	TR 52-V Separator	movable	0.14	0.51	0.16	0.64	0.88	1.11	1.33	1.57	2.05

# **RTT 52 SHELF SUPPORT, DIVISIBLE**



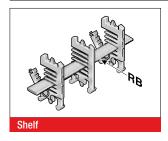
In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimize the friction between them.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 52	100090522000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

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# **RB-5 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	10000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

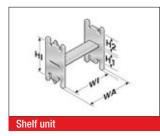
# **RSV 52 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 52	052000009600	Crossbar connector	0.30
RSV 52 Alu	052000009800	Crossbar connector for aluminum crossbars	0.30

# **RE 52 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 36/17	100000361714	H-shaped shelf unit	1.67	1.44	1.22	0.69	2.05
RE 59/24	100000592414	H-shaped shelf unit	2.56	2.32	0.95	0.95	2.05
RE 81/12	100000811214	H-shaped shelf unit	3.44	3.21	1.42	0.49	2.05

# **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

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# **D4 CHAIN BRACKET COVER**



Туре	Order No.
D4 Cover	0413888002

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

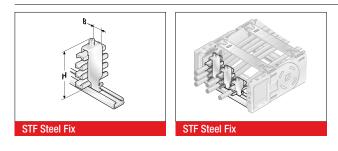


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69



# **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one o	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 - 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 - 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 – 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

# **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**

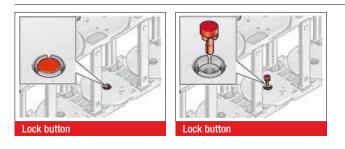


A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

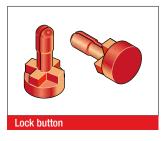
The variable guide channel ensures that the cable drag chain is supported and guided securely.

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# **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".

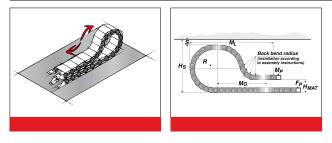
Order No.

052000080

MP52/62/72 lock button

Туре

# **LOWERED FIXING POINT MP 52.4**



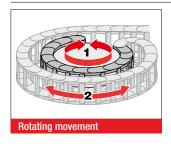
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>#</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
6.89	7.09	1.97	18.70	24.41	6	3
7.87	8.27	1.97	20.67	32.68	10	3
9.84	9.84	1.97	24.61	38.98	13	3
11.81	11.81	1.97	28.54	35.43	14	3

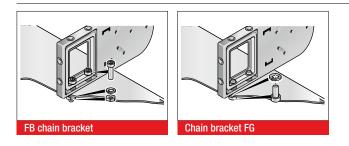
# **MP 52.4 REARWARD RADII**



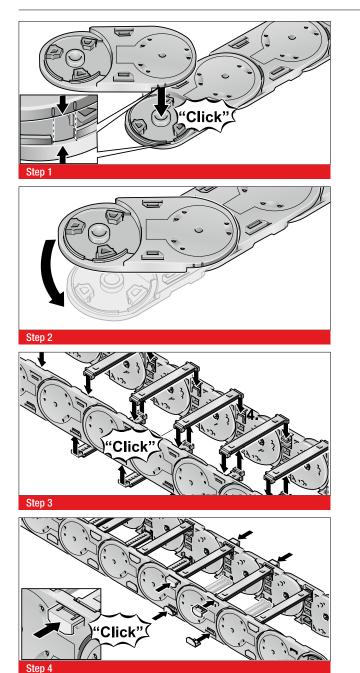
Side links with forward radius (R) and rearward radius (Rü) allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Note: This type of chain has different chain links for the left or right side! Rotation movements are only possible with open variants.

Туре	Order No.	Radius inch	Back radius inch
SR 52.4 (RÜ200/R200.1) right	052400020062	7.87	7.87
SR 52.4 (RÜ200/R200.2) left	052400020060	7.87	7.87

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



# **ASSEMBLY**



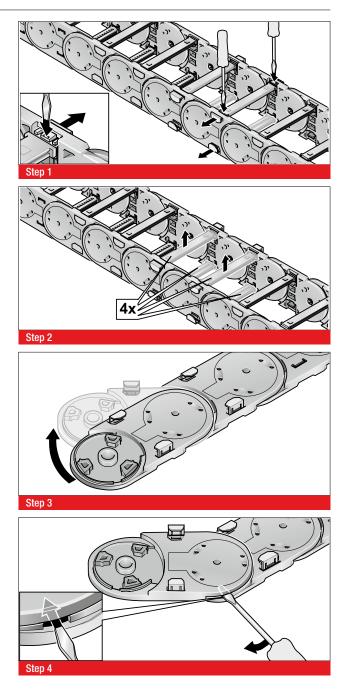
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

# Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

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

# DISASSEMBLY

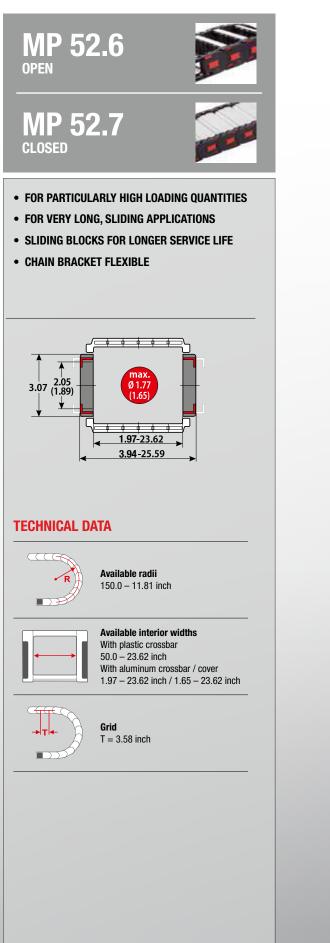


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# POWERLINE







# **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	492.13 ft.
Travel distance vertical, hanging L <sub>vh</sub> max.	262.47 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.
Rotated 90°, unsupported L <sub>qof</sub> max.	4.92 ft.
Speed, gliding $V_a$ max.	19.69 ft/s
Acceleration, gliding a max.	32.81 ft/s <sup>2</sup>

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

# **SHELVING SYSTEM**





Crossbar connector RSV

RS shelving system

**CHAIN BRACKET** 

Chain bracket flexible







Sliding block

# **GUIDE CHANNELS**



VAW steel galvanized / stainless steel



VAW aluminum





STF Steel Fix



Dimensions in mm [US inch]

# **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
	MP 52.6 open Crossbar on outside bend	<b>050</b> [1.97]	<b>100</b> [3.94]	<b>252</b> [9.92]	<b>302</b> [11.89]	150	E Aluminum full-ridged	Polyamide (PA):	
0526 30	Crossbar on inside bend Opens on inside and outside of bend	<b>071</b> [2.80]	<b>121</b> [4.76]	<b>258</b> [10.16]	<b>308</b> [12.13]	[5.91]	5 Aluminum full-ridged without bias	0 standard (PA/black)	
	MP 52.7 closed Cover on outside of bend	<b>084</b> [3.31]	134 [5.28]	<b>296</b> [11.65]	<b>346</b> [13.62]	200	- Aluminum half-ridged		
<b>0527 44</b> <sup>1)</sup>	Cover on inside of bend Opens on inside and outside of bend	<b>093</b> [3.66]	143 [5.63]	<b>346</b> [13.62]	<b>396</b> [15.59]	[7.87]	7 Aluminum half-ridged without bias		
		<b>096</b> [3.78]	<b>146</b> [5.75]	<b>350</b> [13.78]	<b>400</b> [15.75]	250			
		<b>104</b> [4.09]	<b>154</b> [6.06]	<b>358</b> [14.09]	<b>408</b> [16.06]	[9.84]			
		<b>107</b> [4.21]	157 [6.18]	<b>371</b> [14.61]	<b>421</b> [16.57]	300			
		<b>121</b> [4.76]	<b>171</b> [6.73]	<b>396</b> [15.59]	<b>446</b> [17.56]	[11.81]			
		<b>133</b> [5.24]	<b>183</b> [7.20]	<b>421</b> [16.57]	<b>471</b> [18.54]				
		<b>144</b> [5.67]	<b>194</b> [7.64]	<b>446</b> [17.56]	<b>496</b> [19.53]				
		<b>146</b> [5.75]	<b>196</b> [7.72]	<b>496</b> [19.53]	546 [21.50]				
		<b>158</b> [6.22]	<b>208</b> [8.19]	<b>546</b> [21.50]	<b>596</b> [23.46]				
		<b>164</b> [6.46]	<b>214</b> [8.43]	<b>600</b> [23.62]	650 [25.59]				
		<b>171</b> [6.73]	<b>221</b> [8.70]						
		<b>182</b> [7.17]	<b>232</b> [9.13]						
		<b>196</b> [7.72]	<b>246</b> [9.69]						
		<b>208</b> [8.19]	<b>258</b> [10.16]						
		<b>220</b> [8.66]	<b>270</b> [10.63]						_
		<b>233</b> [9.17]	<b>283</b> [11.14]						
		<b>246</b> [9.69]	<b>296</b> [11.65]						
$\checkmark$			V		-	↓	↓ ↓	V	

# ORDERING EXAMPLE: 0526 30 220 250 5 0 25000

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 8.66 in. (220 mm), radius 9.84 in. (250 mm)

Aluminum bridge, full-ridged without bias, material black-colored polyamide

Chain length 984.25 in. (25000 mm) (275 links)

 $^{\scriptscriptstyle 1\!\!\!0}$  reduced inner height, reduced max. cable diameter, see chain window drawing on previous page



## Crossbars and cover from aluminum:

This cable drag chain is suitable for aluminum crossbars and covers only.

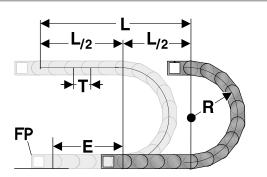
Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 1.97 inch – 23.62 inch are available for delivery.

Aluminum covers in 0.04 in (1 mm) width sizes for inner widths from 1.65 inch -23.62 inch are available for delivery.

# **Crossbar connector and strain relief:**

Once inside widths exceed 9.69 inch, we recommend the deployment of crossbar connectors (RSV).

**DETERMINING THE CHAIN LENGTH** 



# **INSTALLATION DIMENSIONS**

 $H H_{MA}$   $F_{P}$   $H_{G}$   $H_{G}$ 

Crossbar connectors cannot be used in conjunction with covers made from aluminum.

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.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 4 gty. x 3.58 inch.

E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 3.58 inch

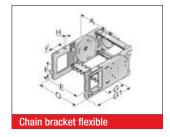
The moving end chain connection is to be screw fixed at height  $\rm H_{_{\rm MA}}$  for the respective radius.

For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to be taken into account.

Radius R	150	200	9.84	11.81
Outside height of chain link ( $H_g$ )	3.07	3.07	3.07	3.07
Height of bend (H)	303.07	403.07	22.75	26.69
Height of moving end connection (H <sub>MA</sub> )	300.00	400.00	19.68	23.62
Safety margin (S)	0.47	0.47	0.47	0.47
Installation height (H <sub>s</sub> )	303.54	403.54	23.22	27.16
Arc projection (M <sub>L</sub> )	155.12	205.12	14.96	16.93



# **KA 52.6 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Pressed-in metal bushes with a through-hole ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

Туре	Order No.	Material	Version	Inside width A E		F	F1	G	G1	HØ	Outside width of KA O
				inch	inch	inch	inch	inch	inch	inch	inch
KA 52.6-F Hole, completely	0526000050	Plastic	with bush	1.97 – 23.62	A+0.98	1.38	1.18	2.85	5.16	0.33	A+1.97
KA 52.6-F Male end, completely	0526000051	Plastic	with bush	1.97 – 23.62	A+0.98	1.38	1.18	2.85	5.16	0.33	A+1.97

# **GS 52.6 SLIDING BLOCK**



In the case of cable drag chains, sliding blocks are used in a horizontally sliding installation mode (the tight side of the chain slides on the slack side).

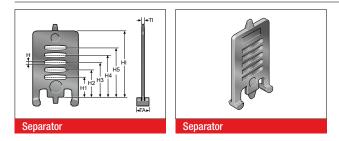
The sliding blocks are set onto the side links on the interior bend (no tools necessary). This forces the chain to slide on the sliding blocks instead on the side links of the chain.

Depending on the application, the service life of the cable drag chain may be extended five-fold, by using slide blocks.

Information about the minimum bending radius of the cable drag chain at the sliding block insert is listed in the following table.

Туре	Order No.	Installation site	Min. radius inch	Sliding block height inch
GS 52.6.1 G	052690400306	For right side link	5.91	0.16
GS 52.6.2 G	052690400304	For left side link	5.91	0.16

# **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 98.42 ft (30 m) or greater.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52	052000009200	TR 52 Separator	lockable	0.14	0.39	0.17	0.64	0.88	1.11	1.33	1.57	2.05

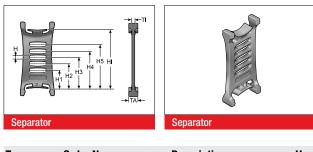


# **TR 52.1 SEPARATOR**

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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52.1	052100009200	TR 52.1 Separator	lockable	0.14	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

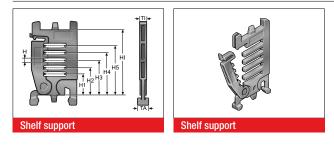
# **TR 52-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52-V	052000009300	TR 52-V Separator	movable	0.14	0.51	0.16	0.64	0.88	1.11	1.33	1.57	2.05

# **RTT 52 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 52	100090522000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

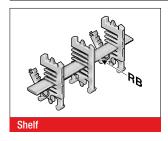
# **RSV 52 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 52 Alu	052000009800	Crossbar connector for aluminum crossbars	0.30

# **RB-5 SHELF**

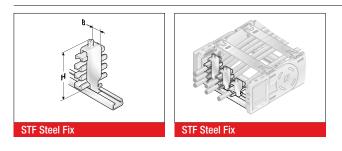


In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimize the friction between them.

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	100000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62



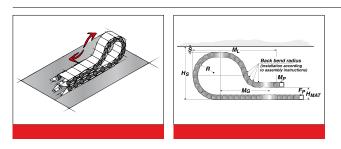
# **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one o	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 – 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

# **MP 52.6 LOWERED FIXING POINT**



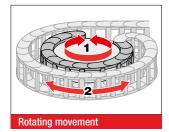
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
7.87	8.27	1.97	20.79	32.68	10	3
9.84	9.84	1.97	24.72	38.98	13	3
11.81	11.81	1.97	28.66	35.43	14	3

# **MP 52.6 REARWARD RADII**



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Order No.	Radius inch	Back radius inch
SR 52.6 (RÜ200/R250) left	052600025060	9.84	9.84
SR 52.6 (RÜ200/R250) right	052600025062	9.84	9.84

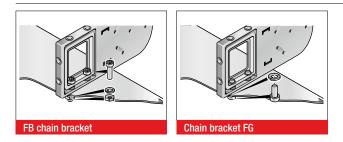
# **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

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



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

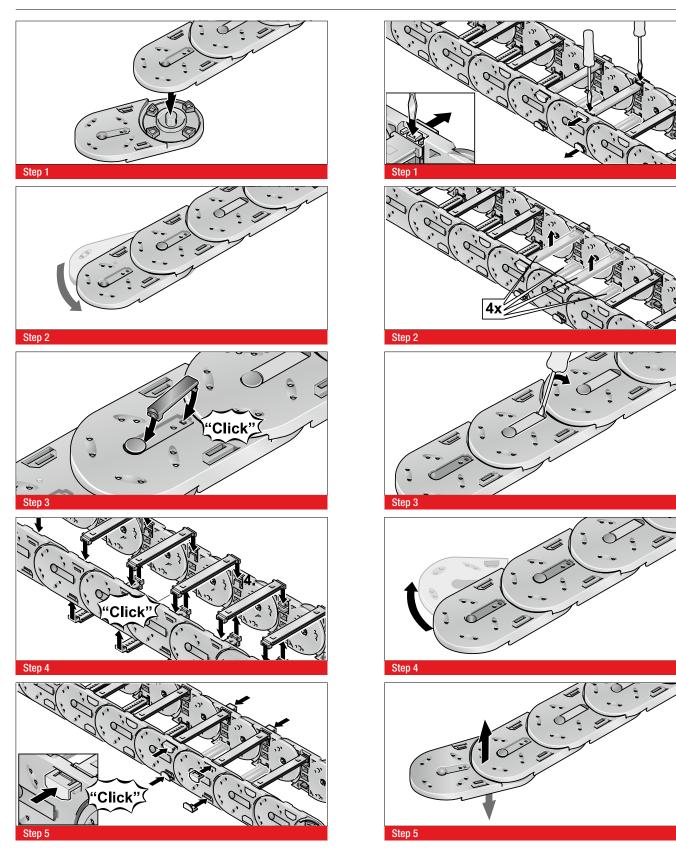
## Version KA-FB:

Integrated through-hole fastened down using nut and bolt. Version KA-FG:

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



# ASSEMBLY



DISASSEMBLY

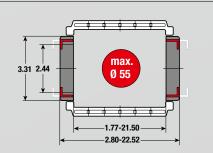
# POWERLINE



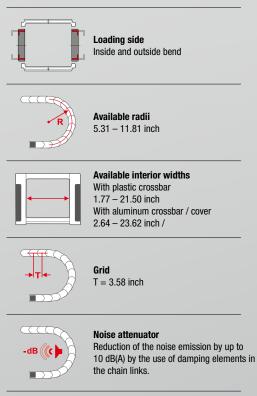
MP 62.4

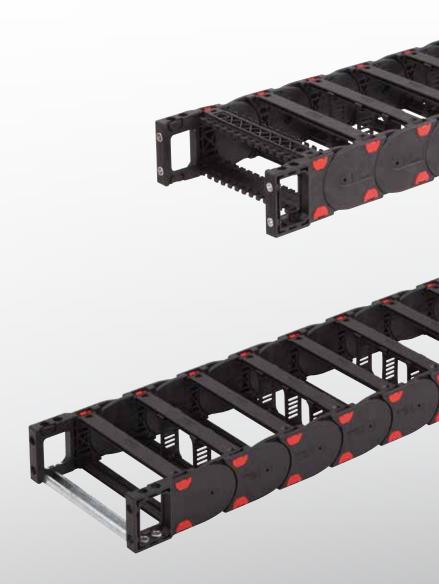


- LOW-COST VARIANT
- SOFT-STOP SYSTEM
- CHAIN BRACKET FLEXIBLE
- BROAD INTERIOR LAYOUT
- PLASTIC OR ALUMINUM VERSION



# **TECHNICAL DATA**





# **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	164.04 ft.
Travel distance self-supporting L, max.	see diagram on page 279
Travel distance vertical, hanging L <sub>vb</sub> max.	164.04 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	13.12 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	3.28 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V, max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>
· · · · · · · · · · · · · · · · · · ·	

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

# **ACCESSORIES**



Sliding block



Gliding plate



**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

# **STRAIN RELIEF**



RS-ZL crossbar strain relief



277



**CHAIN BRACKET** 

Chain bracket flexible

**SHELVING SYSTEM** 









Crossbar connector RSV



Lock button



Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend Inside width 5.67 in. (144 mm), radius 7.87 in. (200 mm) Plastic, full-ridged with bias, material polyamide with damper (PA/black) Chain length 118.11 in. (3000 mm) (33 links)

# MP 62.4 OPEN

			GΚ	<b>FV</b>
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<b>U</b>		_		

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

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant		Material	Chain length
0624 30	Crossbar on outside bend Crossbar on inside bend	<b>045<sup>1)</sup></b> [1.77]	<b>071</b> [2.80]	<b>233</b> [9.17]	<b>259</b> [10.20]	135	0	Plastic, full-ridged with bias	2	Polyamide without attenuator	
	Opens on inside and outside of bend	<b>057</b> <sup>1)</sup> [2.24]	<b>083</b> [3.27]	<b>246</b> [9.69]	<b>272</b> [10.71]	[5.31]		with dias		(PA/black)	
		<b>062</b> <sup>1)</sup> [2.44]	<b>088</b> [3.46]	<b>252</b> [9.92]	<b>278</b> [10.94]	150		Plastic, full-ridged		Polyamide with	
		<b>071</b> [2.80]	<b>097</b> [3.82]	<b>258</b> [10.16]	<b>284</b> [11.18]	[5.91]	1	without bias	3	attenuator (PA/black)	
		084	<b>110</b> [4.33]	296	<b>322</b> [12.68]						
		[3.31] 093	119	[11.65] <b>346</b>	372	175 [6.89]	2	Plastic, half-ridged with bias	9	Special version (on request)	
		[3.66] 096	[4.69] <b>122</b>	[13.62] <b>350</b>	[14.65] <b>376</b>				-		
		[3.78] <b>104</b>	[4.80] <b>130</b>	[13.78] <b>358</b>	[14.80] <b>384</b>	<b>200</b> [7.87]	3	Plastic, half-ridged without bias			
		[4.09]	[5.12]	[14.09]	[15.12]						
		<b>107</b> [4.21]	133 [5.24]	<b>371</b> [14.61]	<b>397</b> [15.63]	250	4	Aluminum full-ridged			
		<b>121</b> [4.76]	147 [5.79]	<b>396</b> [15.59]	<b>422</b> [16.61]	[9.84]		with bias			
		<b>133</b> [5.24]	159 [6.26]	<b>421</b> [16.57]	<b>447</b> [17.60]	300		Aluminum full-ridged			
		<b>144</b> [5.67]	170 [6.69]	<b>446</b> [17.56]	<b>472</b> [18.58]	[11.81]		without bias			
		<b>146</b> [5.75]	<b>172</b> [6.77]	<b>496</b> [19.53]	<b>522</b> [20.55]			Aluminum half-ridged			
		<b>158</b> [6.22]	<b>184</b> [7.24]	<b>546</b> [21.50]	<b>572</b> [22.52]		6	with bias			
		<b>164</b> [6.46]	<b>190</b> [7.48]					Aluminum half-ridged			
		<b>171</b> [6.73]	<b>197</b> [7.76]				7	without bias			
		<b>182</b> [7.17]	<b>208</b> [8.19]								
		196	222				9	Special version (on request)			
		[7.72] 208	[8.74] 234								
		[8.19] <b>220</b>	[9.21] <b>246</b>								
		[8.66]	[9.69]		-						
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	88								-		
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# murrplastik

Dimensions in mm [US inch]

# **NOTE ON CONFIGURATION**

### Aluminum crossbars:

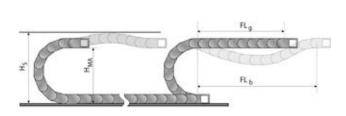
Aluminum crossbars can be supplied in 1 mm width sizes for inner widths from 2.64 inch -23.62 inch.

## Crossbar strain relief plate:

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

For detailed information, please consult the corresponding product documentation.

# **SELF-SUPPORTING LENGTH**

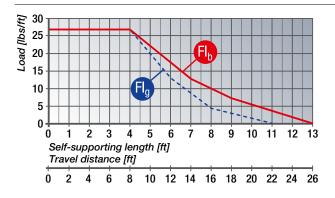


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{g}$  = Self-supporting length, upper run straight
- $FL_{b}$  = Self-supporting length, upper run bent

# LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



# FL<sub>a</sub> Self-supporting length, upper run straight

In the  $FL_{g}$  range, the chain upper run still has a bias, is straight or has a maximum sag of 2.76 inch.

# FL, Self-supporting length, upper run bent

In the FL, range, the chain upper run has a sag of more than 2.76 inch, but this is still less than the maximum sag.

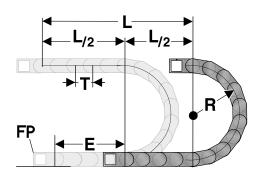
Where the sag is greater than that permitted in the  $FL_{b}$  range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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 lbs/ft (kg/m)), you must add 1.00 lbs/ft (1.5 kg/m), to account for the higher weight of closed-cover chains.

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# **DETERMINING THE CHAIN LENGTH**



# **INSTALLATION DIMENSIONS**

S<sub>V</sub>/S<sub>K</sub> Н Нма M

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$  $\approx$  1 ft chain = 4 qty. x 3.58 inch.

E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 3.58 inch

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

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

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

Radius R	135	150	175	200	250	300
Outside height of chain link $(H_g)$	3.31	3.31	3.31	3.31	3.31	3.31
Height of bend (H)	273.31	303.31	353.31	403.31	503.31	603.31
Height of moving end connection $(H_{MA})$	270.00	300.00	350.00	400.00	500.00	600.00
Safety margin with bias ( $S_{\nu}$ )	0.79	0.79	0.79	0.79	0.79	0.79
Installation height with bias $(H_{sv})$ without damper	276.46	306.46	356.46	406.46	506.46	606.46
Installation height with bias $(H_{sv})$ with damper	277.64	307.64	357.64	407.64	507.64	607.64
Safety margin without bias ( $S_{\kappa}$ )	0.79	0.79	0.79	0.79	0.79	0.79
Installation height without bias $(\mathrm{H}_{\mathrm{sk}})$ without damper	274.10	304.10	354.10	404.10	504.10	604.10
Installation height without bias $(\mathrm{H}_{\mathrm{sk}})$ with damper	275.28	305.28	355.28	405.28	505.28	605.28
Arc projection (M <sub>L</sub> )	140.24	155.24	180.24	205.24	255.24	305.23

# DAMPING ELEMENTS FOR THE SIDE LINKS



The dampening elements in the stops make for a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.

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

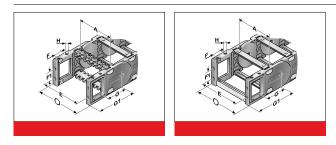
# **POWERLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

# KA 62.4 CHAIN BRACKET FLEXIBLE



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Pressed-in metal bushes with a through-hole ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch		H	HØ inch	Outside width of KA 01 inch
KA 62.4-FB Female end	0624000050	Plastic	with bush	1.77 – 21.50	A+0.63	0.79	1.77	3.35	4.92		0.35	A+1.34
KA 62.4-FB male end	0624000051	Plastic	with bush	1.77 – 21.50	A+0.63	0.79	1.77	3.35	4.92		0.35	A+1.34
KA 62.4-FB Female end, pendular	0624000052	Plastic	with bush	1.77 – 21.50	A+0.63	0.79	1.77	3.35	4.92		0.35	A+1.34
KA 62.4-FG female end	0624000053	Plastic	with thread	1.77 – 21.50	A+0.63	0.79	1.77	3.35	4.92	M8		A+1.34
KA 62.4-FG Female end, pendular	0624000055	Plastic	with thread	1.77 – 21.50	A+0.63	0.79	1.77	3.35	4.92	M8		A+1.34
KA 62.4-FG male end	0624000054	Plastic	with thread	1.77 – 21.50	A+0.63	0.79	1.77	3.35	4.92	M8		A+1.34

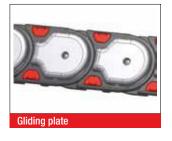
# **GS 62.4 SLIDING BLOCK**



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

Туре	Order No.	Installation site	Min. radius inch	Sliding block height inch
GS 62.4.1 right	062490400302	For right side link	6.89	0.16
GS 62.4.2 left	062490400300	For left side link	6.89	0.16

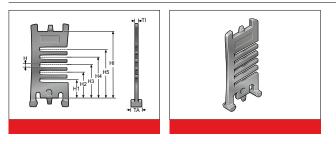
# GLP 5 (62.4) GLIDING PLATE



The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 0.1 in (2.5 mm). We recommend replacing the cable drag chain when this limit has been reached. Depending on the application, the service life of the cable drag chain may be extended two-fold, by using gliding plates. The cable drag chain must be placed on its side before opening.

Туре	Order No.	Installation site	for radius inch	Gliding plate height inch
SG 62.4 RK135.1 right with GLP5, mounted	062400013566	Right chain link including gliding plate	5.31	0.28
SG 62.4 RK135.2 left with GLP5, mounted	062400013564	Left chain link including gliding plate	5.31	0.28
SG 62.4 RK150.1 right with GLP5, mounted	062400015066	Right chain link including gliding plate	5.91	0.28
SG 62.4 RK150.2 left with GLP5, mounted	062400015064	Left chain link including gliding plate	5.91	0.28
SG 62.4 RK175.1 right with GLP5, mounted	062400017566	Right chain link including gliding plate	6.89	0.28
SG 62.4 RK175.2 left with GLP5, mounted	062400017564	Left chain link including gliding plate	6.89	0.28
SG 62.4 RK200.1 right with GLP5, mounted	062400020066	Right chain link including gliding plate	7.87	0.28
SG 62.4 RK200.2 left with GLP5, mounted	062400020064	Left chain link including gliding plate	7.87	0.28
SG 62.4 RK250.1 right with GLP5, mounted	062400025066	Right chain link including gliding plate	9.84	0.28
SG 62.4 RK250.2 left with GLP5, mounted	062400025064	Left chain link including gliding plate	9.84	0.28
SG 62.4 RK300.1 right with GLP5, mounted	062400030066	Right chain link including gliding plate	11.81	0.28
SG 62.4 RK300.2 left with GLP5, mounted	062400030064	Left chain link including gliding plate	11.81	0.28
SG 62.4-D RK135.1 right with GLP5, mounted	062400013596	Right chain link including gliding plate	5.31	0.28
SG 62.4-D RK135.2 left with GLP5, mounted	062400013594	Left chain link including gliding plate	5.31	0.28
SG 62.4-D RK150.1 right with GLP5, mounted	062400015096	Right chain link including gliding plate	5.91	0.28
SG 62.4-D RK150.2 left with GLP5, mounted	062400015094	Left chain link including gliding plate	5.91	0.28
SG 62.4-D RK175.1 right with GLP5, mounted	062400017596	Right chain link including gliding plate	6.89	0.28
SG 62.4-D RK175.2 left with GLP5, mounted	062400017594	Left chain link including gliding plate	6.89	0.28
SG 62.4-D RK200.1 right with GLP5, mounted	062400020096	Right chain link including gliding plate	7.87	0.28
SG 62.4-D RK200.2 left with GLP5, mounted	062400020094	Left chain link including gliding plate	7.87	0.28
SG 62.4-D RK250.1 right with GLP5, mounted	062400025096	Right chain link including gliding plate	9.84	0.28
SG 62.4-D RK250.2 left with GLP5, mounted	062400025094	Left chain link including gliding plate	9.84	0.28
SG 62.4-D RK300.1 right with GLP5, mounted	062400030096	Right chain link including gliding plate	11.81	0.28
SG 62.4-D RK300.2 left with GLP5, mounted	062400030094	Left chain link including gliding plate	11.81	0.28

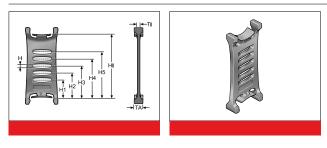
# **TR 62.4 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 62.4	062400009200	TR 62.4 Separator	lockable	0.14	0.43	0.16	0.67	0.94	1.22	1.50	1.77	2.44

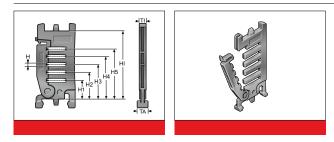
# **TR 62.4-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 62.4-V	062400009300	TR 62.4-V Separator	movable	0.14	0.51	0.16	0.67	0.94	1.22	1.50	1.77	2.44

# **RTT 62.4 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 62.4	100090624000	Shelf support, divisible	lockable	0.28	0.43	0.16	0.67	0.94	1.22	1.50	1.77	2.44

# **RSV 62.4 CROSSBAR CONNECTOR**



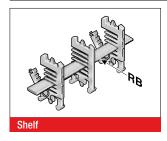
For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Order No.	Description	TI inch
062400009700	Crossbar connector	0.24
062400009800	Crossbar connector for aluminum crossbars	0.24

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# **RB-5 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	10000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	100000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

# **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

# **D5 CHAIN BRACKET COVER**



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

# Order No. Туре D5 Cover 0523888002

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



Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76

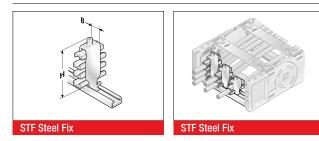
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# **RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**

Туре	Order No.	Description	Inside width inch
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69

# **STRAIN RELIEF WITH STEEL FIX**



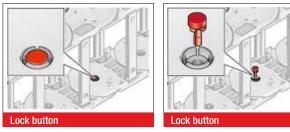
C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Single clamp (for one cable STF 12-1 Steel Fix	) 81661801 81661802	Hooped clamp				
STF 12-1 Steel Fix		Hooped clamp				
	81661802		1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	01001002	Hooped clamp	1	0.47 - 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two cable	es)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 - 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 – 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
riple clamp (for three cabl	es)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86

# **STRAIN RELIEF WITH STEEL FIX**

Туре	Part number	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

# **MP 52/62/72 LOCK BUTTON**

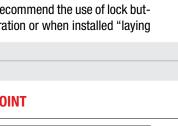


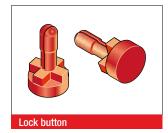
To increase the side stability we recommend the use of lock buttons during strong lateral acceleration or when installed "laying

Type

MP52/62/72 lock button

# **MP 62.4 LOWERED FIXING POINT**





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

Part number 052000080

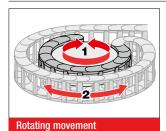
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
6.89	7.09	1.97	19.06	24.41	6	3
7.87	8.27	1.97	21.02	32.68	10	3
9.84	9.84	1.97	24.96	38.98	13	3
11.81	11.81	1.97	28.90	35.43	14	3

# MP 62.4 REARWARD RADII



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Part number	Radius inch	Back radius inch
SR 62.4 (RÜ200/R150.2) left	062400015060	5.91	7.87
SR 62.4 (RÜ200/R150.1) right	062400015062	5.91	7.87
SR 62.4 (RÜ200/R200.2) left	062400020060	7.87	7.87
SR 62.4 (RÜ200/R200.1) right	062400020062	7.87	7.87

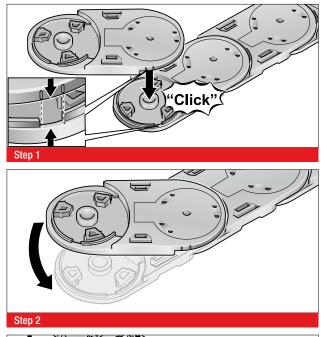
288

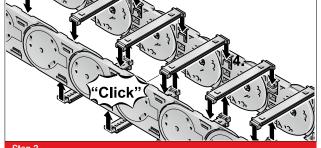
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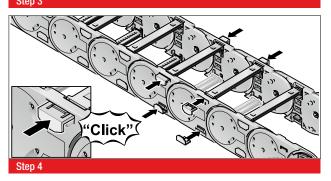
# **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



# ASSEMBLY



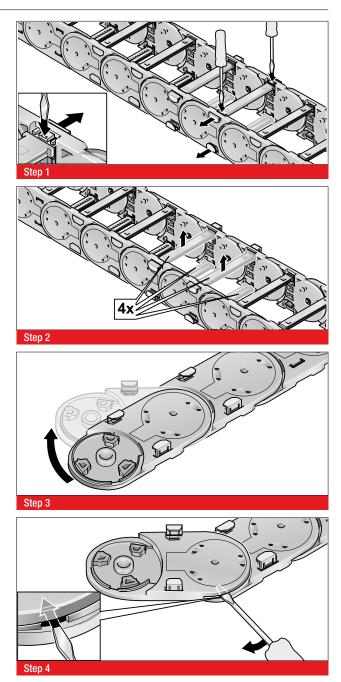




A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

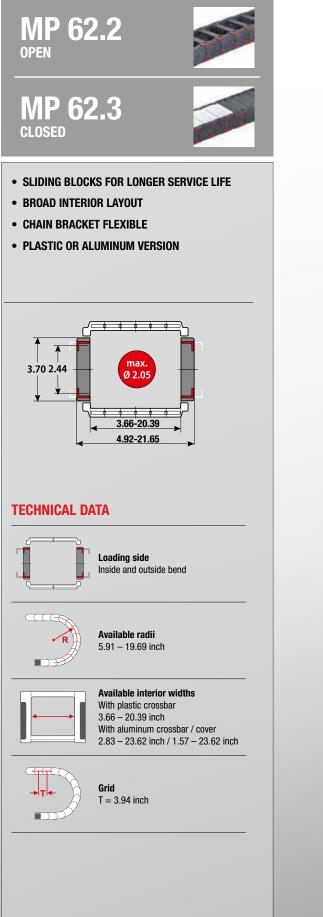
The variable guide channel ensures that the cable drag chain is supported and guided securely.

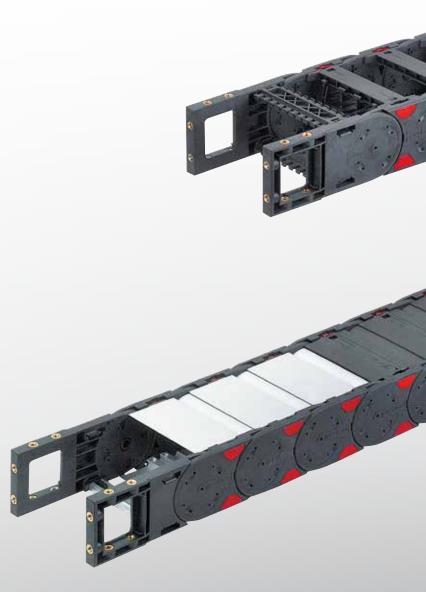
# DISASSEMBLY



# HEAVYLINE







# **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	492.13 ft.
Travel distance self-supporting L, max.	see diagram on page 293
Travel distance vertical, hanging L <sub>vb</sub> max.	213.25 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	13.12 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V <sub>r</sub> max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	131.23 ft/s <sup>2</sup>
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Contact our engineering department to meet any higher requirements: efk@murrplastik.de

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

# ACCESSORIES







GUIDE CHANNELS



VAW steel galvanized / stainless steel



VAW aluminum

# STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix



SHELVING SYSTEM



**CHAIN BRACKET** 



Chain bracket flexible



Chain bracket angle



RS shelving system



Crossbar connector RSV









# **ORDERING KEY**

ORDERIN									_	Dimensions	in mm [US inch]
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant		Material	Chain length
0622 30	MP 62.2 open Crossbar on outside bend Crossbar on inside bend Opens on inside and outside of bend	<b>093</b> [3.66]	<b>125</b> [4.92]	<b>468</b> [18.43]	<b>500</b> [19.69]	<b>1501)</b> [5.91]	0	Plastic, full-ridged	0	Polyamide (PA): standard (PA/black)	
		<b>106</b> [4.17]	<b>138</b> [5.43]	<b>518</b> [20.39]	<b>550</b> [21.65]		ľ	with bias			
0623 44	MP 62.3 closed Cover on outside of bend	<b>118<sup>2)</sup></b> [4.65]	<b>150</b> [5.91]			200	1	Plastic, full-ridged	5	Polypropylene	
	Cover on inside of bend Opens on inside and outside of bend	<b>131</b> [5.16]	<b>163</b> [6.42]			[7.87]	Ľ.	without bias	ľ	(PP/blue)	
		143 <sup>2)</sup> [5.63]	175 [6.89]			250		Plastic, half-ridged	- ESD		
		156 [6.14]	<b>188</b> [7.40]			[9.84]	2 Plastic, half-ridged with bias		(PA/light gray)		
		<b>168</b> [6.61]	<b>200</b> [7.87]			300		Plastic, half-ridged	9	Special version (on	
		<b>181</b> [7.13]	213 [8.39]			[11.81]	3	without bias		request)	
		<b>193<sup>2)</sup></b> [7.60]	<b>225</b> [8.86]			350 4	Aluminum full-ridged				
		206         238         [13.78]         4 with bias           [8.11]         [9.37]         1 </td <td></td> <td></td> <td></td> <td></td>									
		<b>218</b> [8.58]	<b>250</b> [9.84]			400 =		5 Aluminum full-ridged			
		<b>231</b> [9.09]	<b>263</b> [10.35]			[15.75]	5	without bias			
		<b>243<sup>2)</sup></b> [9.57]	<b>275</b> [10.83]			500		Aluminum half-ridged			
		<b>256</b> [10.08]	<b>288</b> [11.34]			[19.69]	6	6 Aluminum nair-noged with bias			
		<b>268</b> [10.55]	<b>300</b> [11.81]				- Aluminum half-ridged				
		<b>293<sup>2)</sup></b> [11.54]	<b>325</b> [12.80]				7	without bias			
		<b>318</b> [12.52]	<b>350</b> [13.78]					Special version (on			
		<b>343<sup>2)</sup></b> [13.50]	<b>375</b> [14.76]				9	request)			
		<b>368</b> [14.49]	<b>400</b> [15.75]								
		<b>418<sup>2)</sup></b> [16.46]	<b>450</b> [17.72]								
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									E		

# ORDERING EXAMPLE: 0622 118 150 0 0 000062

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 4.65 in.; radius 5.91 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 62 in. (16 links)

\_\_\_\_\_

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

<sup>2)</sup> also available with plastic cover

#### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.83 inch – 23.62 inch are available for delivery.

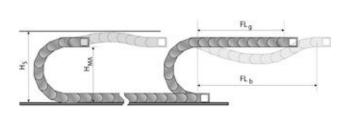
#### Aluminum covers:

Aluminum covers in 0.04 in (1 mm) width sizes for inner widths from 1.57 inch -23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inches (243 mm), we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminum.

#### **SELF-SUPPORTING LENGTH**



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

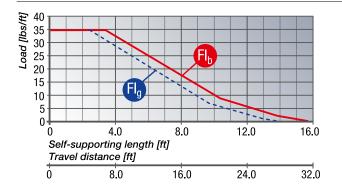
For detailed information, please consult the corresponding product documentation.

The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_{g}$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{g}$  = Self-supporting length, upper run straight
- $FL_{b}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the  $FL_{g}$  range, the chain upper run still has a bias, is straight or has a maximum sag of 3.15 inch.

#### FL, Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 3.15 inch, but this is still less than the maximum sag.

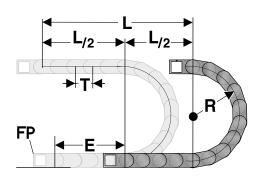
Where the sag is greater than that permitted in the  $FL_{b}$  range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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.

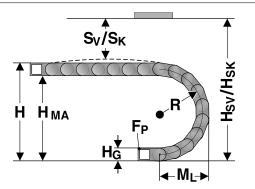




# **DETERMINING THE CHAIN LENGTH**



#### INSTALLATION DIMENSIONS



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$  $\approx$  1 ft chain = 3 qty. x 3.94 inch.

E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 3.94 inch

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

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the "Installed height without bias  $H_{sk}$ " value has to be taken into account.

If the chain links are equipped with a bias, the value "Installed height with bias  $\rm H_{sv}$ " has to be taken into account.

Radius R	5.91	7.87	9.84	11.81	13.78	15.75	19.69
Outside height of chain link ( $H_g$ )	3.70	3.70	3.70	3.70	3.70	3.70	3.70
Height of bend (H)	16.70	20.62	24.56	28.50	32.44	36.38	44.26
Height of moving end connection (H <sub>MA</sub> )	13.00	16.92	20.86	24.80	28.74	32.68	40.56
Safety margin with bias $(S_v)$	1.97	1.97	1.97	1.97	1.97	1.97	1.97
Installation height with bias $(H_{sv})$	18.67	22.59	26.53	30.47	34.41	38.35	46.23
Safety margin without bias $(S_{\kappa})$	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Installation height without bias $(H_{s\kappa})$	17.49	21.41	25.35	29.29	33.23	37.17	45.05
Arc projection (M <sub>L</sub> )	12.29	14.25	16.22	18.19	20.16	22.13	26.07

# **HEAVYLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 093-7	072009300000	Crossbar	3.66
BS 106-7	072010600000	Crossbar	4.17
BS 118-7	072011800000	Crossbar	4.65
BS 131-7	072013100000	Crossbar	5.16
BS 143-7	072014300000	Crossbar	5.63

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# **HEAVYLINE PLASTIC CROSSBAR**

Туре	Order No.	Description	Inside width inch
BS 156-7	072015600000	Crossbar	6.14
BS 168-7	072016800000	Crossbar	6.61
BS 181-7	072018100000	Crossbar	7.13
BS 193-7	072019300000	Crossbar	7.60
BS 206-7	072020600000	Crossbar	8.11
BS 231-7	072023100000	Crossbar	9.09
BS 243-7	072024300000	Crossbar	9.57
BS 256-7	072025600000	Crossbar	10.08
BS 268-7	072026800000	Crossbar	10.55
BS 293-7	072029300000	Crossbar	11.54
BS 318-7	072031800000	Crossbar	12.52
BS 343-7	072034300000	Crossbar	13.50
BS 368-7	072036800000	Crossbar	14.49
BS 418-7	072041800000	Crossbar	16.46
BS 468-7	072046800000	Crossbar	18.43
BS 518-7	072051800000	Crossbar	20.39

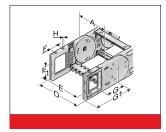
#### **MP 62.3 PLASTIC COVER**



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

Туре	Order No.	Description	Installation site	Inside width inch
A-623118, outside	062311810000	Cover	Outside bend	4.65
I-623118, inside	062311820000	Cover	Inside bend	4.65
A-623143, outside	062314310000	Cover	Outside bend	5.63
I-623143, inside	062314320000	Cover	Inside bend	5.63
A-623193, outside	062319310000	Cover	Outside bend	7.60
I-623193, inside	062319320000	Cover	Inside bend	7.60
A-623243, outside	062324310000	Cover	Outside bend	9.57
I-623243, inside	062324320000	Cover	Inside bend	9.57
A-623293, outside	062329310000	Cover	Outside bend	11.54
I-623293, inside	062329320000	Cover	Inside bend	11.54
A-623343, outside	062334310000	Cover	Outside bend	13.50
I-623343, inside	062334320000	Cover	Inside bend	13.50
A-623418, outside	062341810000	Cover	Outside bend	16.46
I-623418, inside	062341820000	Cover	Inside bend	16.46

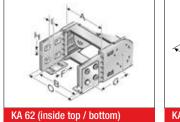
# **KA 62.1 CHAIN BRACKET FLEXIBLE**

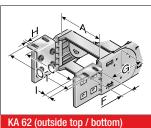


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

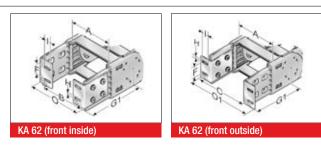
Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	H	HØ inch	Outside width of KA O inch
KA 62-FB Female end	0620000056	Plastic	with bush	3.66 - 20.39	A+0.67	1.38	1.77	4.21	6.75		0.33	A+1.42
KA 62-FB male end	0620000057	Plastic	with bush	3.66 - 20.39	A+0.67	1.38	1.77	4.21	6.75		0.33	A+1.42
KA 62-FG Female end	0620000058	Plastic	with thread	3.66 - 20.39	A+0.67	1.38	1.77	4.21	6.75	M8		A+1.42
KA 62-FG male end	0620000059	Plastic	with thread	3.66 - 20.39	A+0.67	1.38	1.77	4.21	6.75	M8		A+1.42

## **KA 62.1 CHAIN BRACKET ANGLE**





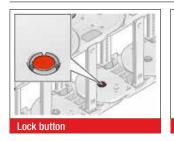
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8

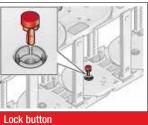


screws are used to secure the brackets in place. Metal inserts (supplied) help to minimize the cold flow properties. This is an enormous advantage, guaranteeing the smooth transfer of high loads to the chain.

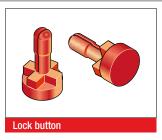
Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	G1 inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 62 Female end	0620000050	Sheet steel	3.66 - 20.39	A-0.47	A+1.73	1.77	4.02	6.75	0.35	0.59	A+1.26	A+3.54
KA 62 Male end	0620000051	Sheet steel	3.66 - 20.39	A-0.47	A+1.73	1.77	4.02	6.75	0.35	0.59	A+1.26	A+3.54

#### **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

MP52/62/72 lock button

052000080

Order No.

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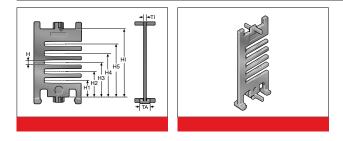
### **GS 62.2 SLIDING BLOCK**



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

Туре	Order No.	Installation site	Min. radius inch	Sliding block height inch
GS 62.2.1 right	062290400302	For right side link	7.87	0.24
GS 62.2.2 left	062290400300	For left side link	7.87	0.24

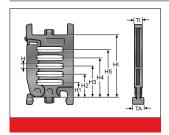
## **TR 62 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 62	062000009200	Separator	lockable	0.14	0.51	0.22	0.58	0.91	1.24	1.56	1.89	2.44

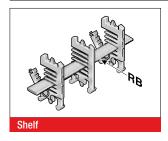
#### **RTT 62 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 62	100090622000	Shelf support, divisible	lockable	0.31	0.31	0.22	0.58	0.91	1.24	1.56	1.89	2.44

## **RB-7 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 056-7	10000005600	Shelf	2.20	3.66
RB 061-7	1000006107	Shelf	2.40	3.66
RB 066-7	10000006600	Shelf	2.60	3.66
RB 071-7	1000007107	Shelf	2.80	3.66
RB 076-7	1000007607	Shelf	2.99	3.66
RB 081-7	10000008100	Shelf	3.19	3.66
RB 086-7	1000008607	Shelf	3.39	3.66
RB 091-7	1000009107	Shelf	3.58	4.17
RB 096-7	1000009607	Shelf	3.78	4.17
RB 101-7	1000010107	Shelf	3.98	4.17
RB 106-7	10000010600	Shelf	4.17	4.17
RB 111-7	1000011107	Shelf	4.37	4.65
RB 116-7	100000011600	Shelf	4.57	4.65
RB 121-7	1000012107	Shelf	4.76	5.16
RB 126-7	1000012607	Shelf	4.96	5.16
RB 131-7	1000013107	Shelf	5.16	5.63
RB 136-7	1000013607	Shelf	5.35	5.63
RB 141-7	1000014107	Shelf	5.55	5.63
RB 146-7	1000014607	Shelf	5.75	6.14
RB 151-7	1000015107	Shelf	5.94	6.14
RB 156-7	1000015607	Shelf	6.14	6.14
RB 161-7	1000016107	Shelf	6.34	6.61
RB 166-7	10000016600	Shelf	6.54	6.61
RB 171-7	1000017107	Shelf	6.73	7.13
RB 176-7	1000017607	Shelf	6.93	7.13
RB 181-7	1000018107	Shelf	7.13	7.60
RB 186-7	1000018607	Shelf	7.32	7.60
RB 191-7	1000019107	Shelf	7.52	7.60
RB 196-7	1000019607	Shelf	7.72	8.11
RB 201-7	1000020107	Shelf	7.91	8.11
RB 206-7	1000020607	Shelf	8.11	8.11
RB 211-7	1000021107	Shelf	8.31	8.58
RB 216-7	10000021600	Shelf	8.50	8.58

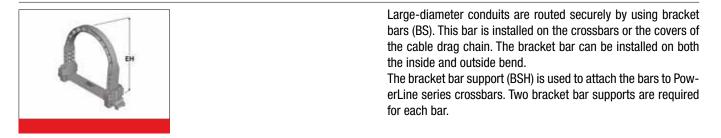
## **RSV 62 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

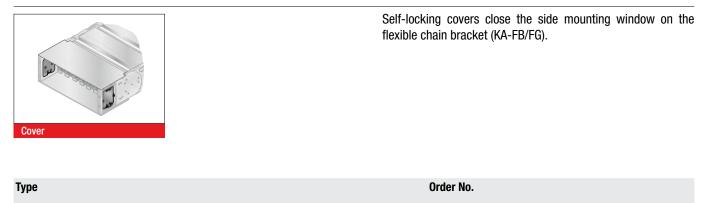
Туре	Order No.	Description	TI inch
RSV 62	06200009600	Crossbar connector	0.31
RSV 62 Alu	062000009800	Crossbar connector for aluminum crossbars	0.31

#### **BS-5 BRACKET BAR**



Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
Assembly set	052400000001	Assembly set			

#### **D6 CHAIN BRACKET COVER**



Cover D6 KA 62.1-FB/FG

0623888002

# **MP 62.3 CHAIN BRACKET CANOPY**



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

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

	Type:	KA 62.1 FB/FG AB	Inside width	2-2					
	Order No.:	0621	Inside width	060					
Canopy for chain bracket, fixed p	Canopy for chain bracket, fixed point inside bend: Type and Order No. configurator								
2115	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: T	ype and Order No. configu	irator						
	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					
STR. TIL	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 4.65 inch (118 mm).

# **RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**



Fixed integrated crossbar strain relief plates in the chain brackets. Accommodated to all widths of the frame ridges, up to 10.08 inch in size. May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 093-7	072009300010	Crossbar strain relief plate	3.66
RS-ZL 106-7	072010600010	Crossbar strain relief plate	4.17
RS-ZL 118-7	072011800010	Crossbar strain relief plate	4.65
RS-ZL 131-7	072013100010	Crossbar strain relief plate	5.16
RS-ZL 143-7	072014300010	Crossbar strain relief plate	5.63
RS-ZL 156-7	072015600010	Crossbar strain relief plate	6.14
RS-ZL 168-7	072016800010	Crossbar strain relief plate	6.61
RS-ZL 181-7	072018100010	Crossbar strain relief plate	7.13
RS-ZL 193-7	072019300010	Crossbar strain relief plate	7.60

300

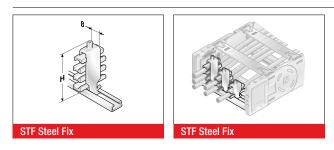
Learn more at www.murrplastik.de Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

301

# **RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**

Туре	Order No.	Description	Inside width inch
RS-ZL 206-7	072020600010	Crossbar strain relief plate	8.11
RS-ZL 218-7	072021800010	Crossbar strain relief plate	8.58
RS-ZL 231-7	072023100010	Crossbar strain relief plate	9.09
RS-ZL 243-7	072024300010	Crossbar strain relief plate	9.57
RS-ZL 256-7	072025600010	Crossbar strain relief plate	10.08

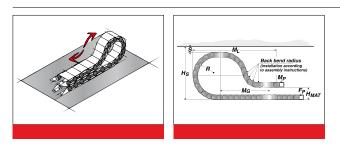
## **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

					J	3 3 9 1
Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one o	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 – 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

# LOWERED FIXING POINT MP 62



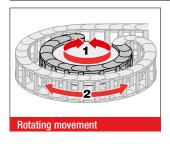
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>#</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
7.87	9.06	2.36	22.20	33.46	11	2
9.84	10.63	2.36	26.14	38.98	12	2
11.81	12.60	2.36	30.08	41.73	12	3
15.75	14.96	3.54	27.32	41.73	14	3
19.69	17.32	2.36	45.83	59.84	17	3

#### MP 62.2 REARWARD RADII



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Order No.	Radius inch	Back radius inch
SR 62.2 (RÜ300/R300) left	062200030060	11.81	11.81
SR 62.2 (RÜ300/R300) right	062200030062	11.81	11.81

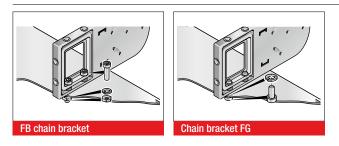
# **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

# ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



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

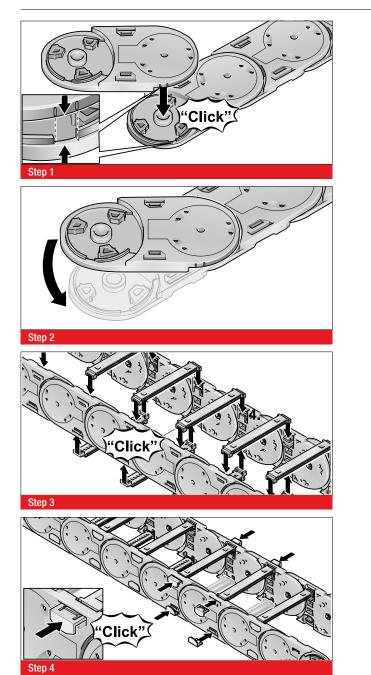
#### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

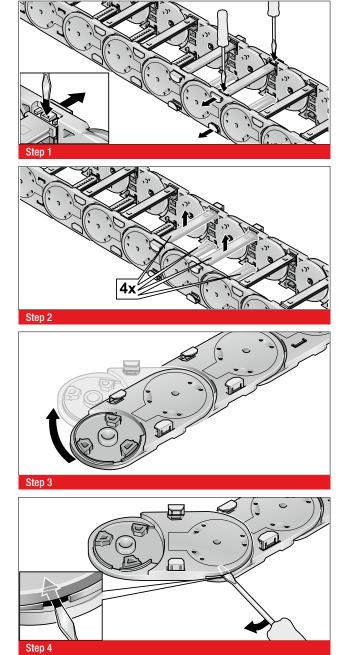
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.



# ASSEMBLY

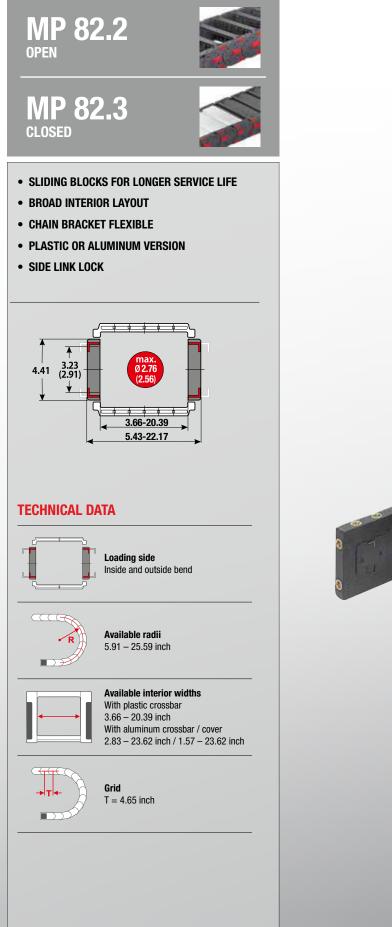


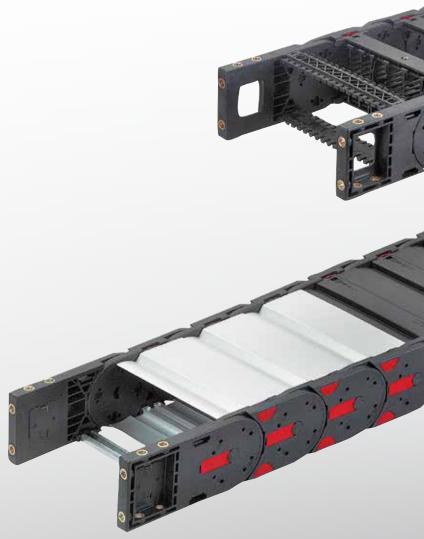
#### DISASSEMBLY



# HEAVYLINE







## **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	492.13 ft.
Travel distance self-supporting L, max.	see diagram on page 307
Travel distance vertical, hanging L <sub>vb</sub> max.	262.47 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.
Rotated 90°, unsupported L <sub>sof</sub> max.	9.84 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V, max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	131.23 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### ACCESSORIES







Gliding plate



# Bracket bar



**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

# **STRAIN RELIEF**



RS-ZL crossbar strain relief



STF Steel Fix



**CHAIN BRACKET** 

Chain bracket flexible

**SHELVING SYSTEM** 





RS shelving system



Crossbar connector RSV







Dimensions in mm [US inch]

## **ORDERING KEY**

									Dimensions	
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
	MP 82.2 open Crossbar on outside bend	<b>093</b> [3.66]	<b>138</b> [5.43]	<b>468</b> [18.43]	<b>513</b> [20.20]	150 <sup>1)</sup>		Plastic, full-ridged	Polyamide (PA):	
0822 30	Crossbar on inside bend Opens on inside and outside of bend	<b>106</b> [4.17]	<b>151</b> [5.94]	<b>518</b> [20.39]	<b>563</b> [22.17]	[5.91]	0	with bias	0 standard (PA/black)	
	MP 82.3 closed Cover on outside of bend	<b>118</b> [4.65]	163 [6.42]			200		Plastic, full-ridged	Polypropylene	
0823 44 <sup>2)</sup>	Cover on inside of bend Opens on inside and outside of bend	<b>131</b> [5.16]	<b>176</b> [6.93]			[7.87]	1	without bias	5 Polypropylene (PP/blue)	
		143 [5.63]	<b>188</b> [7.40]			250		Plastic, half-ridged	- ESD	
		<b>156</b> [6.14]	<b>201</b> [7.91]			[9.84]	2	with bias	7 (PA/light gray)	
		<b>168</b> [6.61]	<b>213</b> [8.39]			300		Plastic, half-ridged	Special version (on	
		<b>181</b> [7.13]	<b>226</b> [8.90]			[11.81]	3	without bias	9 Special version (on request)	
		<b>193</b> [7.60]	<b>238</b> [9.37]			350	4	Aluminum full-ridged		
		<b>206</b> [8.11]	<b>251</b> [9.88]			[13.78]	4	4 with bias		
		218 [8.58]	<b>263</b> [10.35]			400	5	Aluminum full-ridged		
		<b>231</b> [9.09]	<b>276</b> [10.87]			[15.75]	5	without bias		
		<b>243<sup>3)</sup></b> [9.57]	<b>288</b> [11.34]			500	6	Aluminum half-ridged		
		<b>256</b> [10.08]	<b>301</b> [11.85]			[19.69]		with bias		
		<b>268</b> [10.55]	<b>313</b> [12.32]			650	7	Aluminum half-ridged		
		<b>293</b> [11.54]	<b>338</b> [13.31]			[25.59]	Ĺ	without bias		
		<b>318</b> [12.52]	<b>363</b> [14.29]				9	Special version (on		
		<b>343</b> [13.50]	<b>388</b> [15.28]					request)		
		<b>368</b> [14.49]	<b>413</b> [16.26]							
		<b>418</b> [16.46]	<b>463</b> [18.23]							
↓ ▼			V V			↓	↓			↓ ▼

#### ORDERING EXAMPLE: 0822 118 150 0 0 000060

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 4.65 in.; radius 5.91 in.

Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 60 in. (13 links)

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

reduced inner height, reduced max. cable diameter, see chain window drawing on previous page
 also available with plastic cover

#### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.83 inch – 23.62 inch are available for delivery.

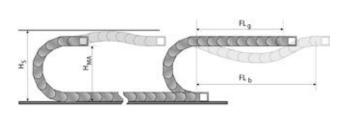
#### **Aluminum covers:**

Aluminum covers in 0.04 in (1 mm) width sizes for inner widths from 1.57 inch -23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inches (243 mm), we recommend the deployment of crossbar connectors (RSV). Crossbar connectors cannot be used in conjunction with covers made from plastic or aluminum.

#### **SELF-SUPPORTING LENGTH**



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

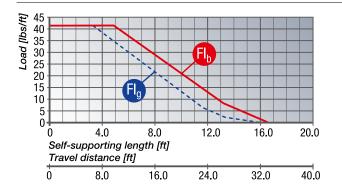
For detailed information, please consult the corresponding product documentation.

The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{g}$  = Self-supporting length, upper run straight
- $FL_{b}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the  $FL_{g}$  range, the chain upper run still has a bias, is straight or has a maximum sag of 3.15 inch.

#### FL, Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 3.15 inch, but this is still less than the maximum sag.

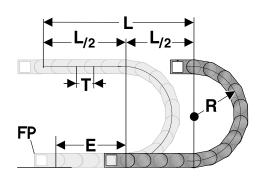
Where the sag is greater than that permitted in the  $FL_{b}$  range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

Closed cable drag 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**



S<sub>V</sub>/S<sub>K</sub>

Мı

## **INSTALLATION DIMENSIONS**

H H<sub>MA</sub>

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 3 qty. x 4.65 inch.

E = Distance between entry point and middle of travel distance

L = Travel distance

R = Radius

P = Grid 4.65 inch

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

Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias. For chain links without bias, the "Installed height without bias  $H_{sk}$ " value has to be taken into account.

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

Radius R	5.91	7.87	9.84	11.81	13.78	15.75	19.69	25.59
Outside height of chain link $(H_g)$	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41
Height of bend (H)	16.63	20.55	24.49	28.43	32.37	36.31	44.19	55.99
Height of moving end connection (H <sub>MA</sub> )	12.22	16.14	20.08	24.02	27.96	31.90	39.78	51.58
Safety margin (S)	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97
Installation height (H <sub>s</sub> )	17.81	21.73	25.67	29.61	33.55	37.49	45.37	57.17
Safety margin without bias $(S_{\kappa})$	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18
Installation height without bias $(H_{_{SK}})$	17.81	21.73	25.67	29.61	33.55	37.49	45.37	57.17
Arc projection (M <sub>L</sub> )	12.97	14.93	16.90	18.87	20.84	22.81	26.74	32.64

## **HEAVYLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 093-7	072009300000	Crossbar	3.66
BS 106-7	072010600000	Crossbar	4.17
BS 118-7	072011800000	Crossbar	4.65
BS 131-7	072013100000	Crossbar	5.16
BS 143-7	072014300000	Crossbar	5.63
BS 156-7	072015600000	Crossbar	6.14
BS 168-7	072016800000	Crossbar	6.61
BS 181-7	072018100000	Crossbar	7.13
BS 193-7	072019300000	Crossbar	7.60
BS 206-7	072020600000	Crossbar	8.11
BS 231-7	072023100000	Crossbar	9.09
BS 243-7	072024300000	Crossbar	9.57
BS 256-7	072025600000	Crossbar	10.08
BS 268-7	072026800000	Crossbar	10.55
BS 293-7	072029300000	Crossbar	11.54
BS 318-7	072031800000	Crossbar	12.52
BS 343-7	072034300000	Crossbar	13.50
BS 368-7	072036800000	Crossbar	14.49
BS 418-7	072041800000	Crossbar	16.46
BS 468-7	072046800000	Crossbar	18.43
BS 518-7	072051800000	Crossbar	20.39

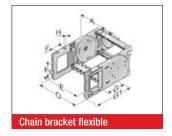
#### **MP 82.3 PLASTIC COVER**



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

Туре	Order No.	Description	Installation site	Inside width inch
A-823243, outside	082324310000	Cover	Outside bend	9.57
I-823243, inside	082324320000	Cover	Inside bend	9.57

# **KA 82.2 CHAIN BRACKET FLEXIBLE**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Pressed-in metal bushes with a through-hole ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	H	HØ inch	Outside width of KA O inch
KA 82-FB Female end	0820000056	Plastic	with bush	3.66 - 20.39	A+0.91	1.38	2.60	4.61	7.17		0.43	A+1.77
KA 82-FB male end	0820000057	Plastic	with bush	3.66 - 20.39	A+0.91	1.38	2.60	4.61	7.17		0.43	A+1.77
KA 82-FG Female end	0820000058	Plastic	with thread	3.66 - 20.39	A+0.91	1.38	2.60	4.61	7.17	M10		A+1.77
KA 82-FG male end	0820000059	Plastic	with thread	3.66 - 20.39	A+0.91	1.38	2.60	4.61	7.17	M10		A+1.77

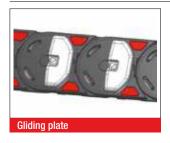
# **GS 82.2 SLIDING BLOCK**



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

Туре	Order No.	Installation site	Min. radius inch	Sliding block height inch
GS 82.2.1 right	082290400302	For right side link	7.87	0.24
GS 82.2.2 left	082290400300	For left side link	7.87	0.24

#### **GLP 8 (82.2) GLIDING PLATE**



The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. The gliding plates are placed onto the side links instead of the usual chain link side locks (no tools required). The wear limit is 0.1 in (2.5 mm). We recommend replacing the cable drag chain when this limit has been reached. Depending on the application, the service life of the cable drag chain may be extended two-fold, by using gliding plates. The cable drag chain must be placed on its side before opening.

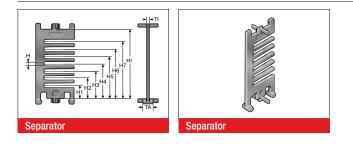
Туре	Order No.	Installation site	Gliding plate height inch
GLP 8	082290400301	GLP8 gliding plate for the MP82.2, MP82.3	0.28

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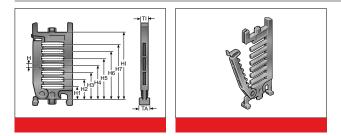
## **TR 82 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	H6 inch	H7 inch	HI inch
TR 82-S	082000009300	Separator	lockable	0.16	0.58	0.22	0.91	1.56	2.22					3.23
TR 82	082000009200	Separator	lockable	0.14	0.59	0.22	0.59	0.91	1.24	1.57	1.89	2.22	2.55	3.23

# **RTT 82 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch		H inch		H2 inch	H3 inch	H4 inch	H5 inch	H6 inch	H7 inch	HI inch
RTT 82	100090822000	Shelf support, divisible	lockable	0.31	0.31	0.22	0.59	0.91	1.24	1.57	1.89	2.22	2.55	3.23

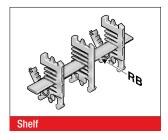
#### **MP 82.2 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 82	082000009600	Crossbar connector	0.31
RSV 82 Alu	082000009800	Crossbar connector for aluminum crossbars	0.31

## **RB-7 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 056-7	10000005600	Shelf	2.20	3.66
RB 061-7	1000006107	Shelf	2.40	3.66
RB 066-7	10000006600	Shelf	2.60	3.66
RB 071-7	1000007107	Shelf	2.80	3.66
RB 076-7	1000007607	Shelf	2.99	3.66
RB 081-7	10000008100	Shelf	3.19	3.66
RB 086-7	1000008607	Shelf	3.39	3.66
RB 091-7	1000009107	Shelf	3.58	4.17
RB 096-7	1000009607	Shelf	3.78	4.17
RB 101-7	1000010107	Shelf	3.98	4.17
RB 106-7	10000010600	Shelf	4.17	4.17
RB 111-7	1000011107	Shelf	4.37	4.65
RB 116-7	100000011600	Shelf	4.57	4.65
RB 121-7	1000012107	Shelf	4.76	5.16
RB 126-7	1000012607	Shelf	4.96	5.16
RB 131-7	1000013107	Shelf	5.16	5.63
RB 136-7	1000013607	Shelf	5.35	5.63
RB 141-7	1000014107	Shelf	5.55	5.63
RB 146-7	1000014607	Shelf	5.75	6.14
RB 151-7	1000015107	Shelf	5.94	6.14
RB 156-7	1000015607	Shelf	6.14	6.14
RB 161-7	1000016107	Shelf	6.34	6.61
RB 166-7	10000016600	Shelf	6.54	6.61
RB 171-7	1000017107	Shelf	6.73	7.13
RB 176-7	1000017607	Shelf	6.93	7.13
RB 181-7	1000018107	Shelf	7.13	7.60
RB 186-7	1000018607	Shelf	7.32	7.60
RB 191-7	1000019107	Shelf	7.52	7.60
RB 196-7	1000019607	Shelf	7.72	8.11
RB 201-7	1000020107	Shelf	7.91	8.11
RB 206-7	1000020607	Shelf	8.11	8.11
RB 211-7	1000021107	Shelf	8.31	8.58
RB 216-7	10000021600	Shelf	8.50	8.58

## **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend. The bracket bar support (BSH) is used to attach the bars to Pow-

erLine series crossbars. Two bracket bar supports are required for each bar.

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
Assembly set	052400000001	Assembly set			

#### **D8 CHAIN BRACKET COVER**



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

Туре	Order No.
Cover D8 KA 82.1-FB/FG	0823888002

### **MP 82.3 CHAIN BRACKET CANOPY**



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

## **MP 82.3 CHAIN BRACKET CANOPY**

Canopy for: chain bracket, fixed point ou	itside bend: T	ype and Order No. configu	rator	
	Туре:	KA 82.1 FB/FG AB	Inside width	2-2
	Order no.:	0821	Inside width	060
Canopy for: chain bracket, fixed point in	side bend: Ty	pe and Order No. configura	itor	
	Туре:	KA 82.1 FB/FG IB	Inside width	2-2
	Order no.:	0821	Inside width	058
Canopy for: chain bracket, moving end o	utside bend:	Type and Order No. configu	urator	
	Туре:	KA 82.1 FB/FG AB	Inside width	1-2
	Order no.:	0821	Inside width	059
Canopy for: chain bracket, moving end i	nside bend: T	ype and Order No. configur	rator	
	Туре:	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 4.65 inch (118 mm)

# **RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**



Fixed integrated crossbar strain relief plates in the chain brackets. Accommodated to all widths of the frame ridges, up to 10.08 inch in size. May be assembled on the inside and outside bends at both chain endings.

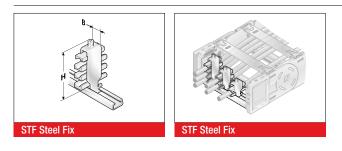
Туре	Order No.	Description	Inside width inch
RS-ZL 093-7	072009300010	Crossbar strain relief plate	3.66
RS-ZL 106-7	072010600010	Crossbar strain relief plate	4.17
RS-ZL 118-7	072011800010	Crossbar strain relief plate	4.65
RS-ZL 131-7	072013100010	Crossbar strain relief plate	5.16
RS-ZL 143-7	072014300010	Crossbar strain relief plate	5.63
RS-ZL 156-7	072015600010	Crossbar strain relief plate	6.14
RS-ZL 168-7	072016800010	Crossbar strain relief plate	6.61
RS-ZL 181-7	072018100010	Crossbar strain relief plate	7.13
RS-ZL 193-7	072019300010	Crossbar strain relief plate	7.60
RS-ZL 206-7	072020600010	Crossbar strain relief plate	8.11
RS-ZL 218-7	072021800010	Crossbar strain relief plate	8.58
RS-ZL 231-7	072023100010	Crossbar strain relief plate	9.09
RS-ZL 243-7	072024300010	Crossbar strain relief plate	9.57
RS-ZL 256-7	072025600010	Crossbar strain relief plate	10.08

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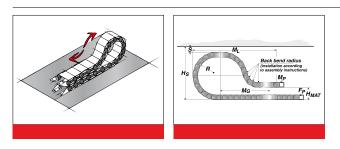
#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 – 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 – 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

# **MP 82.2 LOWERED FIXING POINT**



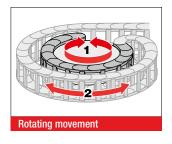
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>#</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
7.87	9.45	2.36	22.91	35.43	8	2
9.84	10.24	2.36	26.85	41.34	10	2
11.81	11.42	2.36	30.79	44.49	11	2
13.78	12.99	2.36	37.09	49.21	12	2
15.75	16.54	2.36	38.66	52.76	13	2
19.69	15.75	2.36	46.54	63.78	16	4

# **MP 82.2 REARWARD RADII**



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Order No.	Radius inch	Back radius inch
SR 82.2 (RÜ300/R300) left	082200030060	11.81	11.81
SR 82.2 (RÜ300/R300) right	082200030062	11.81	11.81

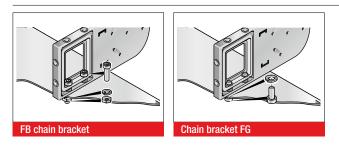
# **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is

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

# ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET FB/FG



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

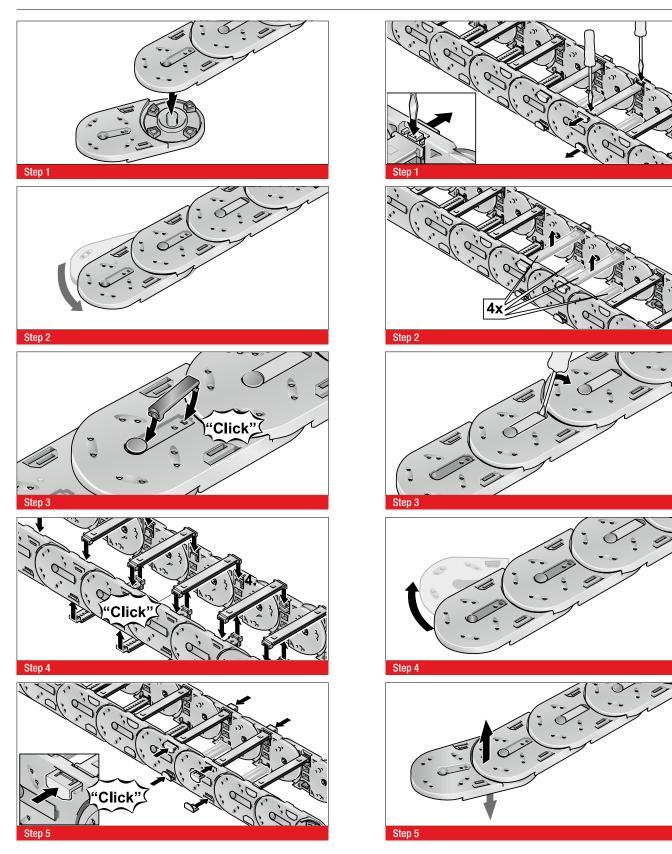
#### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

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



# ASSEMBLY



DISASSEMBLY

# HEAVYLINE

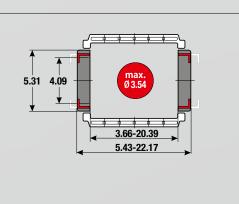


MP 102.2

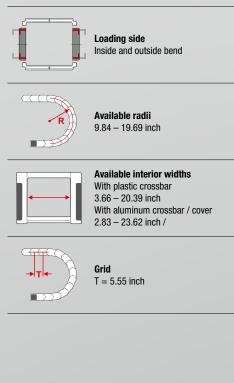


# • BROAD INTERIOR LAYOUT

- STEEL CHAIN BRACKET ANGLE
- PLASTIC OR ALUMINUM VERSION
- SIDE LINK LOCK



# **TECHNICAL DATA**







# **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	492.13 ft.
Travel distance self-supporting L, max.	see diagram on page 321
Travel distance vertical, hanging L <sub>vh</sub> max.	262.47 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	26.25 ft.
Rotated 90°, unsupported L <sub>qof</sub> max.	26.25 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V <sub>r</sub> max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	131.23 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request





RS shelving system

Crossbar connector RSV



Chain bracket angle

**CHAIN BRACKET** 



ACCESSORIES



Gliding plate



**GUIDE CHANNELS** 

VAW aluminum

## **STRAIN RELIEF**



RS-ZL crossbar strain relief



STF Steel Fix

# MP 102.2 OPEN

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	v
<b>ORDERING KE</b>	

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant		Material	Chain length
1022 30	Crossbar on outside bend	<b>093</b> [3.66]	<b>139</b> [5.47]	<b>468</b> [18.43]	<b>514</b> [20.24]	250	0	Plastic, full-ridged		Polyamide (PA):	
1022 30	Crossbar on inside bend Opens on inside and outside of bend	<b>106</b> [4.17]	<b>152</b> [5.98]	<b>518</b> [20.39]	<b>564</b> [22.20]	[9.84]		with bias	0	standard (PA/black)	
		<b>118</b> [4.65]	<b>164</b> [6.46]			300	2	Plastic, half-ridged	9	Special version (on	
		<b>131</b> [5.16]	<b>177</b> [6.97]			[11.81]	with bias		Ľ	request)	
		143 [5.63]	<b>189</b> [7.44]			400	4	Aluminum full-ridged			
		<b>156</b> [6.14]	<b>202</b> [7.95]			[15.75]	Ĺ	with bias			
		<b>168</b> [6.61]	<b>214</b> [8.43]			500	6	Aluminum half-ridged with bias			
		<b>181</b> [7.13]	<b>227</b> [8.94]			[19.69]		with blas			
		<b>193</b> [7.60]	<b>239</b> [9.41]				9	Special version (on request)			
		<b>206</b> [8.11]	<b>252</b> [9.92]								
		<b>218</b> [8.58]	264 [10.39]								
		<b>231</b> [9.09]	<b>277</b> [10.91]								
		<b>243</b> [9.57]	289 [11.38]								
		256 [10.08]	<b>302</b> [11.89]								
		268 [10.55]	<b>314</b> [12.36]								
		<b>293</b> [11.54]	<b>339</b> [13.35]								
		<b>318</b> [12.52]	<b>364</b> [14.33]								
		<b>343</b> [13.50]	<b>389</b> [15.31]								
		<b>368</b> [14.49]	<b>414</b> [16.30]								
		<b>418</b> [16.46]	<b>464</b> [18.27]								
¥			V			¥	V		<b>V</b>		¥
	(	ORDERI	NG EXA	MPLE:	1022 11	8 250 0	0 0	00077			

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 4.65 in.; radius 9.84 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 77 in. (14 links)

Dimensions in mm [US inch]

## **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

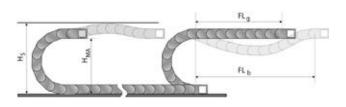
Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.83 inch – 23.62 inch are available for delivery.

#### Strain relief:

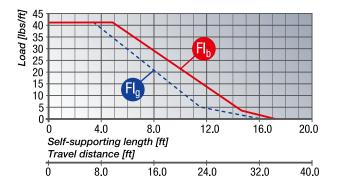
The end brackets utilize strain relief plates (ZL) for cable strain relief.

For detailed information, please consult the corresponding product documentation.

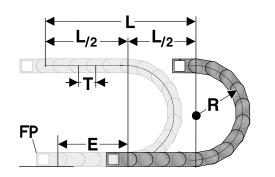
#### SELF-SUPPORTING LENGTH



# LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### **DETERMINING THE CHAIN LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL<sub>2</sub> range, the chain upper run still has a bias, is straight or has a maximum sag of 3.15 inch.

#### FL, Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 3.15 inch, 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 optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

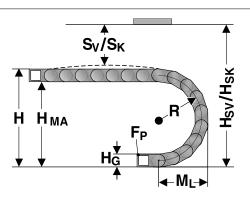
Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 3 qty. x 5.55 inch.

E = Distance between entry point and middle of travel distance

- L = Travel distance
- R = Radius
- P = Grid 5.55 inch

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# **INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$  " value has to

be taken into account.

Radius R	9.84	11.81	15.75	19.69
Outside height of chain link $(H_g)$	5.31	5.31	5.31	5.31
Height of bend (H)	25.77	29.71	37.59	45.47
Height of moving end connection $(H_{MA})$	20.46	24.40	32.28	40.16
Installation height (H <sub>s</sub> )	27.74	31.68	39.56	47.44
Safety margin without bias $(S_{\kappa})$	1.97	1.97	1.97	1.97
Installation height without bias $(H_{sk})$	27.74	31.68	39.56	47.44
Arc projection (M <sub>L</sub> )	18.43	20.41	24.35	28.29

#### **HEAVYLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 093-7	072009300000	Crossbar	3.66
BS 106-7	072010600000	Crossbar	4.17
BS 118-7	072011800000	Crossbar	4.65
BS 131-7	072013100000	Crossbar	5.16
BS 143-7	072014300000	Crossbar	5.63
BS 156-7	072015600000	Crossbar	6.14
BS 168-7	072016800000	Crossbar	6.61
BS 181-7	072018100000	Crossbar	7.13
BS 193-7	072019300000	Crossbar	7.60
BS 206-7	072020600000	Crossbar	8.11
BS 231-7	072023100000	Crossbar	9.09
BS 243-7	072024300000	Crossbar	9.57
BS 256-7	072025600000	Crossbar	10.08
BS 268-7	072026800000	Crossbar	10.55
BS 293-7	072029300000	Crossbar	11.54
BS 318-7	072031800000	Crossbar	12.52
BS 343-7	072034300000	Crossbar	13.50

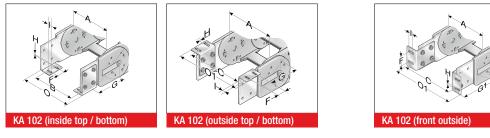
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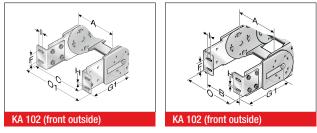
# **HEAVYLINE PLASTIC CROSSBAR**

Туре	Order No.	Description	Inside width inch
BS 368-7	072036800000	Crossbar	14.49
BS 418-7	072041800000	Crossbar	16.46
BS 468-7	072046800000	Crossbar	18.43
BS 518-7	072051800000	Crossbar	20.39

#### **KA 102 CHAIN BRACKET ANGLE**



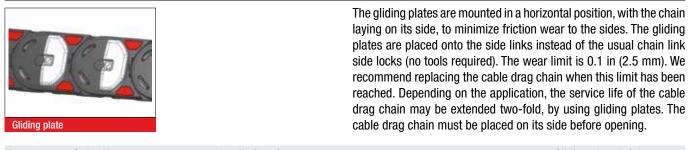
There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket



is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires one male and one female bracket. The brackets should be fastened with M12 screws.

Туре	Order No.	Material	Inside width A inch	B inch	C inch	-	G inch	G1 inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 102 Female end	1020000050	Sheet steel	3.66 - 20.39	A+0.08	A+1.50	1.97	9.29	12.93	0.51	0.98	A+1.10	A+4.21
KA 102 Male end	1020000051	Sheet steel	3.66 - 20.39	A+0.08	A+1.50	1.97	9.29	12.93	0.51	0.98	A+1.10	A+4.21

#### GLP 10 (102.2) GLIDING PLATE

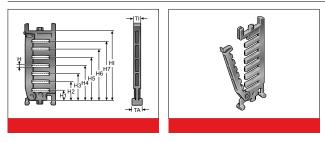


Туре	Order No.	Installation site	Gliding plate height inch
GLP10	102290400301	GLP10 gliding plate for the MP102.2	0.28

#### **TR 102 SEPARATOR**

H Separator											nultiple nstalled		ables or
Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	H6 inch	HI inch
TR 102	1020000092	Separator	lockable	0.16	0.51	0.22	1.09	1.57	2.06	2.55	3.03	3.52	4.09

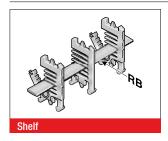
# **RTT 102 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch		H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	H6 inch	H7 inch	HI inch
RTT 102	100091022000	Shelf support, divisible	lockable	0.31	0.31	0.22	0.61	1.09	1.57	2.06	2.55	3.03	3.52	4.09

#### **RB-7 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 056-7	10000005600	Shelf	2.20	3.66
RB 061-7	1000006107	Shelf	2.40	3.66
RB 066-7	10000006600	Shelf	2.60	3.66
RB 071-7	1000007107	Shelf	2.80	3.66
RB 076-7	1000007607	Shelf	2.99	3.66
RB 081-7	10000008100	Shelf	3.19	3.66
RB 086-7	1000008607	Shelf	3.39	3.66
RB 091-7	1000009107	Shelf	3.58	4.17
RB 096-7	1000009607	Shelf	3.78	4.17
RB 101-7	1000010107	Shelf	3.98	4.17
RB 106-7	10000010600	Shelf	4.17	4.17
RB 111-7	1000011107	Shelf	4.37	4.65
RB 116-7	100000011600	Shelf	4.57	4.65
RB 121-7	1000012107	Shelf	4.76	5.16
RB 126-7	1000012607	Shelf	4.96	5.16
RB 131-7	1000013107	Shelf	5.16	5.63
RB 136-7	1000013607	Shelf	5.35	5.63
RB 141-7	1000014107	Shelf	5.55	5.63
RB 146-7	1000014607	Shelf	5.75	6.14
RB 151-7	1000015107	Shelf	5.94	6.14
RB 156-7	1000015607	Shelf	6.14	6.14
RB 161-7	1000016107	Shelf	6.34	6.61
RB 166-7	10000016600	Shelf	6.54	6.61
RB 171-7	1000017107	Shelf	6.73	7.13
RB 176-7	1000017607	Shelf	6.93	7.13
RB 181-7	1000018107	Shelf	7.13	7.60
RB 186-7	1000018607	Shelf	7.32	7.60

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## **RB-7 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 191-7	1000019107	Shelf	7.52	7.60
RB 196-7	1000019607	Shelf	7.72	8.11
RB 201-7	1000020107	Shelf	7.91	8.11
RB 206-7	1000020607	Shelf	8.11	8.11
RB 211-7	1000021107	Shelf	8.31	8.58
RB 216-7	10000021600	Shelf	8.50	8.58

# **RSV 102 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 102	1020000096	Crossbar connector	0.31
RSV 102 Alu	1020000098	Crossbar connector for aluminum crossbars	0.31

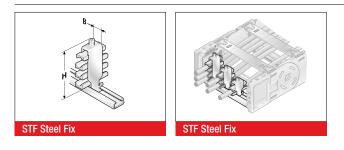
#### **RS-ZL CROSSBAR STRAIN RELIEF PLATE MP102.2**



Туре	Order No.	Description	Inside width inch
RS-ZL 093-7 MP102.2	80980291	Crossbar strain relief plate	3.66
RS-ZL 106-7 MP102.2	80980292	Crossbar strain relief plate	4.17
RS-ZL 118-7 MP102.2	80980204	Crossbar strain relief plate	4.65
RS-ZL 131-7 MP102.2	80980293	Crossbar strain relief plate	5.16
RS-ZL 143-7 MP102.2	80980160	Crossbar strain relief plate	5.63
RS-ZL 156-7 MP102.2	80980294	Crossbar strain relief plate	6.14
RS-ZL 168-7 MP102.2	80980205	Crossbar strain relief plate	6.61
RS-ZL 181-7 MP102.2	80980295	Crossbar strain relief plate	7.13
RS-ZL 193-7 MP102.2	80980206	Crossbar strain relief plate	7.60
RS-ZL 206-7 MP102.2	80980296	Crossbar strain relief plate	8.11
RS-ZL 218-7 MP102.2	80980207	Crossbar strain relief plate	8.58
RS-ZL 231-7 MP102.2	80980297	Crossbar strain relief plate	9.09
RS-ZL 243-7 MP102.2	80980208	Crossbar strain relief plate	9.57
RS-ZL 256-7 MP102.2	80980298	Crossbar strain relief plate	10.08



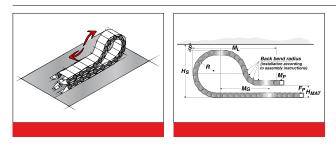
#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch		
Single clamp (for one cable)								
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17		
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 - 0.55	0.71	2.05		
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13		
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20		
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32		
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40		
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 - 1.02	1.18	2.76		
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91		
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07		
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23		
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58		
Double clamp (for two	cables)							
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87		
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91		
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23		
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39		
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58		
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 - 0.87	1.02	3.74		
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 - 1.02	1.18	4.25		
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76		
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08		
Triple clamp (for three	cables)							
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86		
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 - 0.55	0.71	3.86		
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13		
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37		
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65		
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12		

# **MP 102.2 LOWERED FIXING POINT**



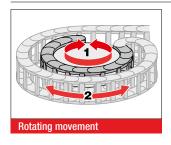
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

9.84	9.84	2.36	27.36	34.65	9	3
11.81	10.63	2.36	31.30	40.16	10	3
15.75	15.35	2.36	39.17	48.03	12	3
19.69	16.54	2.36	47.24	58.66	15	3

#### **MP 102 REARWARD RADII**



Side links with forward radius (R) and rearward radius (Rü) 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.

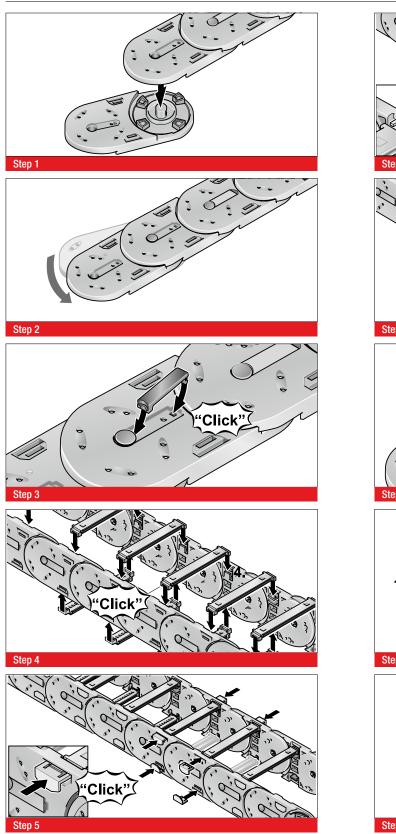
Туре	Order No.	Radius inch	Back radius inch
SR 102 (RÜ400/R400) left	10200040060	15.75	15.75
SR 102 (RÜ400/R400) right	10200040062	15.75	15.75

#### **VAW GUIDE CHANNEL**

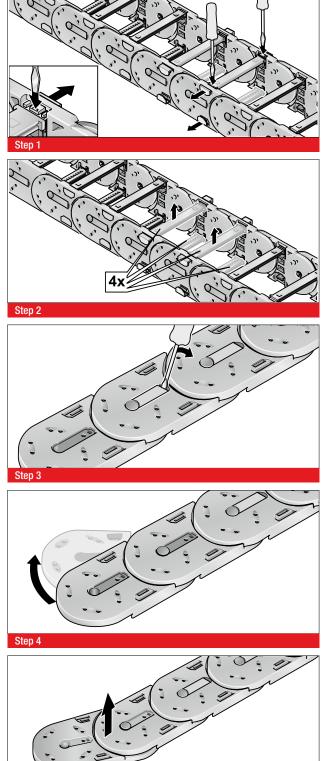


A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

# ASSEMBLY



# DISASSEMBLY



Step 5



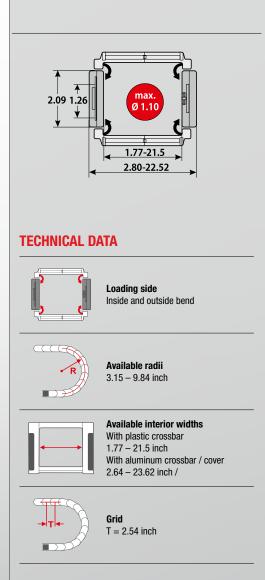
# **MP LEGACY**



**MP 32** OPEN



- PLASTIC OR ALUMINUM VERSION
- CHAIN BRACKET FLEXIBLE
- BROAD INTERIOR LAYOUT





#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	328.08 ft.
Travel distance self-supporting L, max.	see diagram on page 333
Travel distance vertical, hanging L <sub>vh</sub> max.	131.23 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	16.40 ft.
Rotated 90°, unsupported L <sub>gof</sub> max.	6.56 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V <sub>f</sub> max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>

 $\label{eq:contact} \mbox{ Contact our engineering department to meet any higher requirements: efk@murrplastik.de \\$ 

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**





RS shelving system





**CHAIN BRACKET** 



#### **ACCESSORIES**



Bracket bar



**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



#### STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix



# **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
	Crossbar on outside bend	<b>045</b> [1.77]	<b>071</b> [2.80]	<b>233</b> [9.17]	<b>259</b> [10.20]	080		Plastic, full-ridged	Polyamide (PA):	
0320 30	Crossbar on inside bend Opens on inside and outside of bend	<b>057</b> [2.24]	<b>083</b> [3.27]	<b>246</b> [9.69]	<b>272</b> [10.71]	[3.15]	0	with bias	0 standard (PA/black)	
		<b>062</b> [2.44]	<b>088</b> [3.46]	<b>252</b> [9.92]	<b>278</b> [10.94]	100		Plastic, half-ridged	Special version (on	
		<b>071</b> [2.80]	<b>097</b> [3.82]	<b>258</b> [10.16]	<b>284</b> [11.18]	[3.94]	2	with bias	9 request)	
		<b>084</b> [3.31]	<b>110</b> [4.33]	<b>296</b> [11.65]	<b>322</b> [12.68]	120		Aluminum full-ridged		
		<b>093</b> [3.66]	<b>119</b> [4.69]	<b>346</b> [13.62]	<b>372</b> [14.65]	[4.72]	4	with bias		
		<b>096</b> [3.78]	<b>122</b> [4.80]	<b>350</b> [13.78]	<b>376</b> [14.80]	150		Aluminum half-ridged		
		<b>104</b> [4.09]	<b>130</b> [5.12]	<b>358</b> [14.09]	<b>384</b> [15.12]	[5.91]	6	with bias		
		<b>107</b> [4.21]	<b>133</b> [5.24]	<b>371</b> [14.61]	<b>397</b> [15.63]	200	9	Special version (on		
		<b>121</b> [4.76]	<b>147</b> [5.79]	<b>396</b> [15.59]	<b>422</b> [16.61]	[7.87]	9	request)		
		<b>133</b> [5.24]	<b>159</b> [6.26]	<b>421</b> [16.57]	<b>447</b> [17.60]	250				
		<b>144</b> [5.67]	<b>170</b> [6.69]	<b>446</b> [17.56]	<b>472</b> [18.58]	[9.84]				
		<b>146</b> [5.75]	<b>172</b> [6.77]	<b>496</b> [19.53]	<b>522</b> [20.55]					
		<b>158</b> [6.22]	<b>184</b> [7.24]	<b>546</b> [21.50]	<b>572</b> [22.52]					
		<b>164</b> [6.46]	<b>190</b> [7.48]							
		<b>171</b> [6.73]	<b>197</b> [7.76]							
		<b>182</b> [7.17]	<b>208</b> [8.19]							
		<b>196</b> [7.72]	<b>222</b> [8.74]							
		<b>208</b> [8.19]	<b>234</b> [9.21]							
		<b>220</b> [8.66]	<b>246</b> [9.69]							
•					-	¥				•
					0320 0/	15 080 0	0.0	00050		

ORDERING EXAMPLE: 0320 045 080 0 0 000050

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 1.77 in.; radius 3.15 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 50 in. (20 links)

# **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

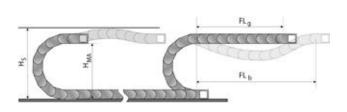
Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.64 inch - 23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inches (246 mm), we recommend the deployment of crossbar connectors (RSV). If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

#### SELF-SUPPORTING LENGTH

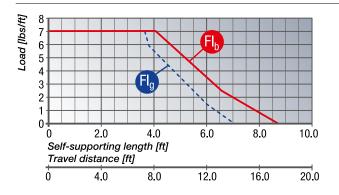


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant FL, offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{_{MA}}$  = Height of moving end connection
- $FL_{\alpha}$  = Self-supporting length, upper run straight
- $FL_{h} =$  Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



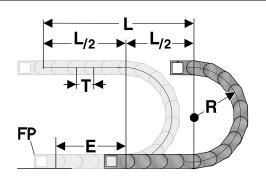
#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL<sub>a</sub> range, the chain upper run still has a bias, is straight or has a maximum sag of 2.76 inch.

**FL**<sub>b</sub> Self-supporting length, upper run bent In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.76 inch, but this is still less than the maximum sag.

Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

# **DETERMINING THE CHAIN LENGTH**



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

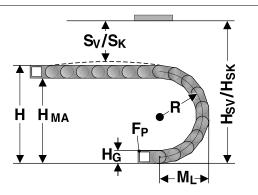
This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation = L/2 +  $\pi$  \* R + E  $\approx$  1 ft chain = 16 qty. x 2.54 inch.

E = Distance between entry point and middle of travel distance

- L = Travel distance
- R = Radius
- P = Grid 2.54 inch

#### **INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $\rm H_{\rm \tiny MA}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{\rm s}$ " value has to

For the installed dimension the "Installed height  $\rm H_{\rm S}$  " value has to be taken into account.

Radius R	3.15	3.94	4.72	5.91	7.87	9.84
Outside height of chain link $(H_{\rm g})$	2.09	2.09	2.09	2.09	2.09	2.09
Height of bend (H)	9.17	10.75	12.31	14.69	18.61	22.55
Height of moving end connection $(H_{MA})$	7.08	8.66	10.22	12.60	16.52	20.46
Safety margin (S)	1.18	1.18	1.18	1.18	1.18	1.18
Installation height (H <sub>s</sub> )	10.35	11.93	13.49	15.87	19.79	23.73
Arc projection $(M_L)$	7.13	7.92	8.70	9.89	11.85	13.82

# **POWERLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

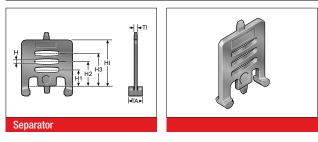
# **KA 32 CHAIN BRACKET FLEXIBLE**



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

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	н	HØ inch	Outside width of KA O inch
KA 32-FB	0321000054	Plastic	with bush	1.77 – 21.50	A+0.55	0.89	0.87	2.28	3.76		0.22	A+1.10
KA 32-FG	0321000055	Plastic	with thread	1.77 – 21.50	A+0.55	0.89	0.87	2.28	3.76	M5		A+1.10

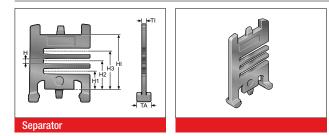
#### **TR 32 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 32	032000009200	Separator	lockable	0.12	0.39	0.17	0.41	0.64	0.87	1.26

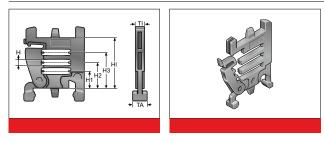
#### **TR 32.1 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 32.1	032200009200	Separator	lockable	0.14	0.31	0.16	0.41	0.65	0.89	1.26

#### **RTT 32 SHELF SUPPORT, DIVISIBLE**



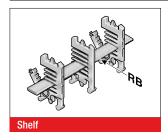
In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimize the friction between them.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
RTT 32	100090322000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.41	0.65	0.89	1.26

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### **RB-5 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	10000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

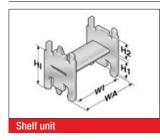
#### **RSV 32 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 32	032000009600	Crossbar connector	0.30
RSV 32 Alu	032000009800	Crossbar connector for aluminum crossbars	0.30

# **RE 32 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 32/35	100000322010	H-shaped shelf unit	1.70	1.39	0.56	0.56	1.28
RE 32/52	100000323510	H-shaped shelf unit	2.36	2.05	0.56	0.56	1.28
RE 32/75	100000327510	H-shaped shelf unit	3.24	2.93	0.65	0.47	1.28

#### **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

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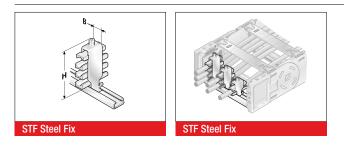
# **RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**



Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69

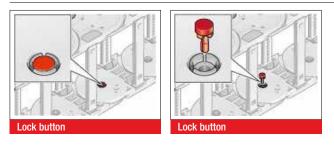
# **STRAIN RELIEF WITH STEEL FIX**



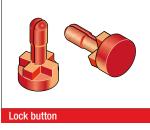
C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one c	able)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 - 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

#### 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".

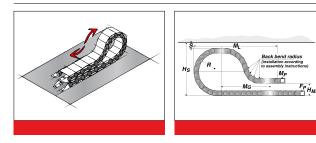
Order No.

MP32/41 lock button

Туре



# **MP 32 LOWERED FIXING POINT**



04100008000

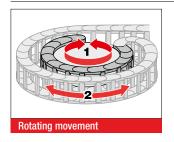
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>#</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
7.87	8.27	1.97	20.59	28.35	14	3
9.84	9.06	1.97	24.53	34.65	17	3

#### **MP 32 REARWARD RADII**



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

Туре	Order No.	Radius inch	Back radius inch
SR 32 (RÜ200/R120)	03200008060	4.72	7.87
SR 32 (RÜ200/R135)	032000010060	5.31	7.87
SR 32 (RÜ200/R150)	032000012060	5.91	7.87
SR 32 (RÜ200/R170)	032000015060	6.69	7.87
SR 32 (RÜ200/R200)	032000020060	7.87	7.87
SR 32 (RÜ200/R250)	032000025060	9.84	7.87

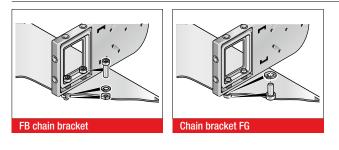
steel



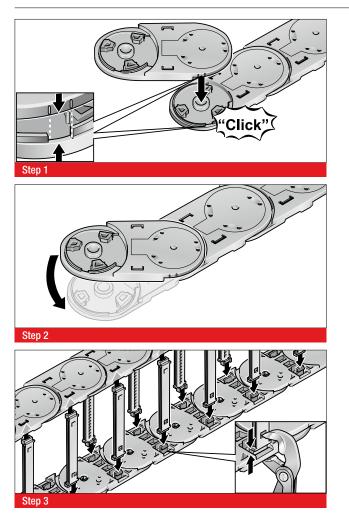
A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

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



# **ASSEMBLY**



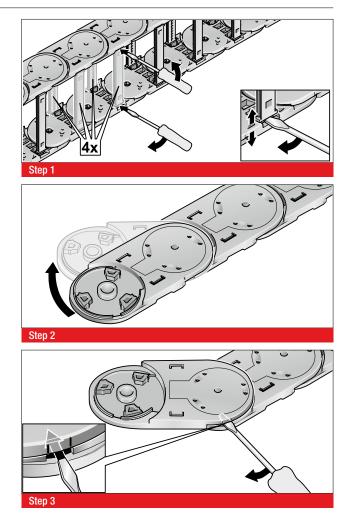
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. Version KA-FG:

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

# DISASSEMBLY





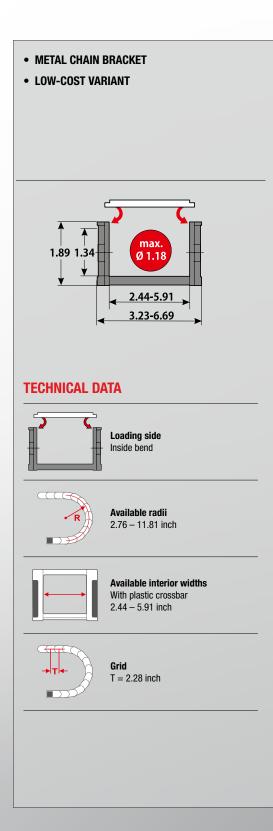


# **MP LEGACY**



**MP 35** OPEN







### **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	262.47 ft.
Travel distance self-supporting L, max.	see diagram on page 347
Travel distance vertical, hanging L <sub>vh</sub> max.	131.23 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>gof</sub> max.	3.28 ft.
Speed, gliding V <sub>a</sub> max.	9.84 ft/s
Speed, self-supporting V <sub>f</sub> max.	32.81 ft/s
Acceleration, gliding a max.	49.21 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	65.62 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**



Separator TR







H-shaped shelf unit RE

#### **GUIDE CHANNELS**



VAW steel galvanized / stainless steel



VAW aluminum



**CHAIN BRACKET** 

Chain bracket angle

Chain bracket U-part

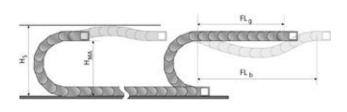
# **ORDERING KEY**

Type code Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
Crossbar on outside bend 0350 02 Crossbar on inside bend	<b>062</b> [2.44]	<b>082</b> [3.23]			070	0 Plastic, full-ridged with bias	Polyamide (PA): <b>0</b> standard	
Opens on inside of bend	<b>086</b> [3.39]	<b>106</b> [4.17]			[2.76]	- with bias	(PA/black)	
	<b>102</b> [4.02]	<b>122</b> [4.80]			100	1 Plastic, full-ridged without bias	9 Special version (on	
	<b>125</b> [4.92]	<b>145</b> [5.71]			[3.94]	<ul> <li>without bias</li> </ul>	equest)	
	150 [5.91]	170 [6.69]			<b>150</b> [5.91]			
	_							
					<b>200</b> [7.87]			
	_				<b>300</b> [11.81]			
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	-							
	-							
		V		]		<b>↓</b>	Ļ	
Cross						0 000050		

Inside width 2.44 in.; radius 2.76 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 50 in. (22 links)

# **SELF-SUPPORTING LENGTH**

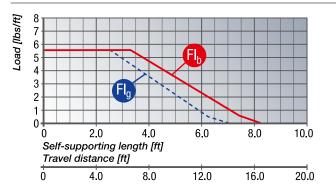


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

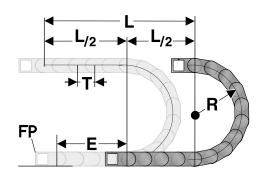
The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

# LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



# **DETERMINING THE CHAIN LENGTH**



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL<sub>b</sub> Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.36 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

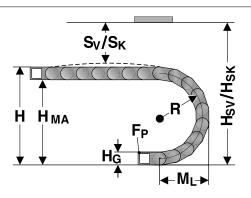
The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + 2 * T + E \approx 1$  ft chain = 17 qty. x 2.28 inch.

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Grid 2.28 inch

### **INSTALLATION DIMENSIONS**



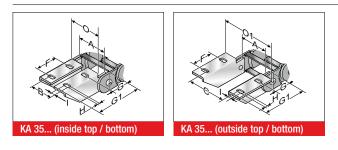
The moving end chain connection is to be screw fixed at height  ${\rm H}_{\rm \tiny MA}$  for the respective radius.

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  $H_{s\kappa}$ " value has to be taken into account.

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

<b>7.87</b> 1.89	<b>11.81</b> 1.89
1.89	1.90
	1.09
17.63	25.51
15.74	23.62
1.57	1.57
19.20	27.08
0.59	0.59
18.22	26.10
11.10	15.04
	17.63 15.74 1.57 19.20 0.59 18.22

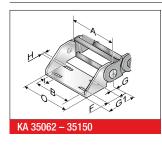
# **KA 35 CHAIN BRACKET ANGLE**



The chain bracket can be supplied either in galvanized sheet steel or stainless steel. To secure one cable drag chain, you will need two angle brackets (left and right) with a drilled hole and two angle brackets (left and right) with a bolt. The Order No.s given below each comprise a left and right angle bracket.

Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 3508 Female end	0350000054	Sheet steel	2.44 – 5.91	A-0.28	A+1.10	0.98	0.79	0.28	0.31	A+0.79	A+2.05
KA 3508 Male end	0350000055	Sheet steel	2.44 – 5.91	A-0.47	A+1.52	0.98	0.79	0.28	0.31	A+0.39	A+2.05
KA 3509 Female end	0350000056	Stainless steel 1.4301	2.44 – 5.91	A-0.28	A+1.10	0.98	0.79	0.28	0.31	A+0.79	A+2.05
KA 3509 Male end	0350000057	Stainless steel 1.4301	2.44 – 5.91	A-0.47	A+1.52	0.98	0.79	0.28	0.31	A+0.39	A+2.05

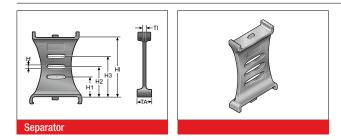
# KA 35 CHAIN BRACKET U-PART



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.

Туре	Order No.	Material	Inside width A	В	F	G	G1	HØ		Outside width of KA O
			inch	inch	inch	inch	inch	inch	inch	inch
KA 35062 Female end	035000007000	Sheet steel	2.44	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35062 Male end	035000007100	Sheet steel	2.44	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35086 Female end	035000007200	Sheet steel	3.39	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35086 Male end	03500007300	Sheet steel	3.39	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35102 Female end	035000007400	Sheet steel	4.02	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35102 Male end	035000007500	Sheet steel	4.02	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35125 Female end	035000007600	Sheet steel	4.92	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35125 Male end	035000007700	Sheet steel	4.92	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35150 Female end	035000007800	Sheet steel	5.91	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35150 Male end	035000007900	Sheet steel	5.91	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35062 Female end	035000008000	Stainless steel 1.4301	2.44	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35062 Male end	035000008100	Stainless steel 1.4301	2.44	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35086 Female end	035000008200	Stainless steel 1.4301	3.39	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35086 Male end	035000008300	Stainless steel 1.4301	3.39	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35102 Female end	035000008400	Stainless steel 1.4301	4.02	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35102 Male end	035000008500	Stainless steel 1.4301	4.02	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35125 Female end	035000008600	Stainless steel 1.4301	4.92	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35125 Male end	035000008700	Stainless steel 1.4301	4.92	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35150 Female end	035000008800	Stainless steel 1.4301	5.91	A-0.28	0.98	0.79	2.17	0.28	0.59	A+0.79
KA 35150 Male end	035000008900	Stainless steel 1.4301	5.91	A-0.47	0.98	0.79	2.17	0.28	0.59	A+0.79

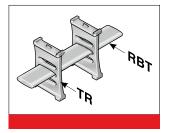
# **TR 35 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 35	035000009200	Separator	lockable	0.08	0.51	0.10	0.43	0.67	0.90	1.33

### **MP 35 SHELVING SYSTEM**



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

Туре	Order No.	Description	Width inch	Lock grid spacing inch
RBT 062	10000006200	Shelf	2.44	0.12
RBT 086	10000008600	Shelf	3.39	0.12
RBT 101	10000010100	Shelf	3.98	0.12
RBT 125	10000012500	Shelf	4.92	0.12
RBT 150	10000015000	Shelf	5.91	0.12

#### **RE 35 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 35/33	100000353310	H-shaped shelf unit	1.40	1.20	0.71	0.47	1.30
RE 35/48	100000354810	H-shaped shelf unit	1.99	1.79	0.71	0.47	1.30
RE 35/57	100000355710	H-shaped shelf unit	2.34	2.15	0.71	0.47	1.30

#### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**

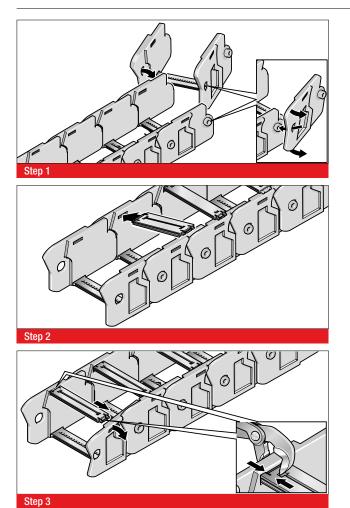


A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

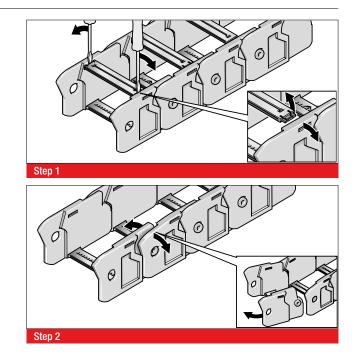
The variable guide channel ensures that the cable drag chain is supported and guided securely.

# MP 35 OPEN

# ASSEMBLY



# DISASSEMBLY



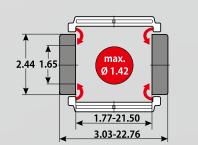
# **MP LEGACY**



MP 41



- PLASTIC OR ALUMINUM VERSION
- CHAIN BRACKET FLEXIBLE



# **TECHNICAL DATA**



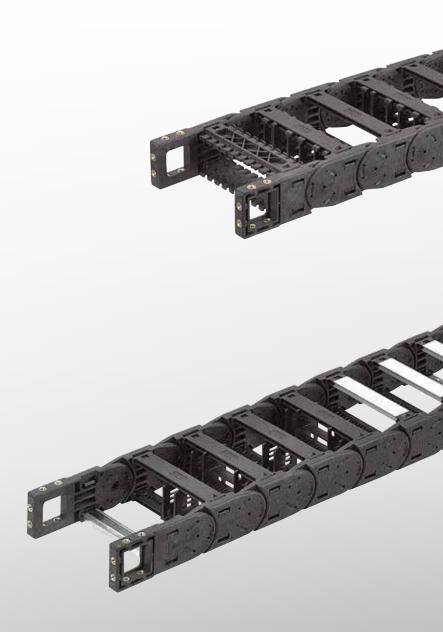
**Available radii** 3.54 – 13.78 inch

Loading side Inside and outside bend



Available interior widths With plastic crossbar 1.77 – 21.5 inch With aluminum crossbar / cover 2.64 – 23.62 inch /

**Grid** T = 3.03 inch



#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_a$ max.	393.70 ft.
Travel distance self-supporting L, max.	see diagram on page 355
Travel distance vertical, hanging L <sub>vb</sub> max.	164.04 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.
Rotated 90°, unsupported L <sub>anf</sub> max.	6.56 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V <sub>r</sub> max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>
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 $\label{eq:contact} \mbox{ Contact our engineering department to meet any higher requirements: efk@murrplastik.de \\$ 

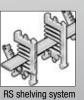
# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**





**CHAIN BRACKET** 



Chain bracket flexible



Chain bracket angle



Crossbar connector RSV



H-shaped shelf unit RE

#### ACCESSORIES



Bracket bar



Lock button

#### **GUIDE CHANNELS**



VAW steel galvanized / stainless steel



VAW aluminum

# **STRAIN RELIEF**



RS-ZL crossbar strain relief



STF Steel Fix

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

# **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
	Crossbar on outside bend	<b>045</b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	090		Plastic, full-ridged	Polyamide (PA):	
0410 30	Crossbar on inside bend Opens on inside and outside of bend	<b>057</b> [2.24]	089 [3.50]	<b>246</b> [9.69]	<b>278</b> [10.94]	[3.54]	0	with bias	0 standard (PA/black)	
		<b>062</b> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]	120		Diastia half ridgad	Crasic userian (or	
		<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]	[4.72]	2	Plastic, half-ridged with bias	9 Special version (on request)	
		<b>084</b> [3.31]	<b>116</b> [4.57]	<b>296</b> [11.65]	<b>328</b> [12.91]	150		Aluminum full sides d		
		<b>093</b> [3.66]	<b>125</b> [4.92]	<b>346</b> [13.62]	<b>378</b> [14.88]	<b>150</b> [5.91]	4	Aluminum full-ridged with bias		
		<b>096</b> [3.78]	<b>128</b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]					
		[0.70] <b>104</b> [4.09]	[5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]	<b>200</b> [7.87]	6	Aluminum half-ridged with bias		
		[4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	403 [15.87]	250		Occasiol version (or		
		<b>121</b> [4.76]	153 [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]	<b>250</b> [9.84]	9	Special version (on request)		
		<b>133</b> [5.24]	165 [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]	300				
		<b>144</b> [5.67]	176 [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]	[11.81]				
		<b>146</b> [5.75]	<b>178</b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]	350				
		<b>158</b> [6.22]	<b>190</b> [7.48]	<b>546</b> [21.50]	<b>578</b> [22.76]	[13.78]				
		<b>164</b> [6.46]	<b>196</b> [7.72]							
		<b>171</b> [6.73]	<b>203</b> [7.99]							
		<b>182</b> [7.17]	<b>214</b> [8.43]							
		<b>196</b> [7.72]	<b>228</b> [8.98]							
		<b>208</b> [8.19]	<b>240</b> [9.45]							
		<b>220</b> [8.66]	<b>252</b> [9.92]							
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ORDERING EXAMPLE: 0410 045 090 0 0 000054

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 1.77 in.; radius 3.54 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 54 in. (18 links)

### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

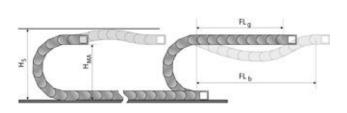
Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.64 inch - 23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inches (246 mm), we recommend the deployment of crossbar connectors (RSV). If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

#### SELF-SUPPORTING LENGTH

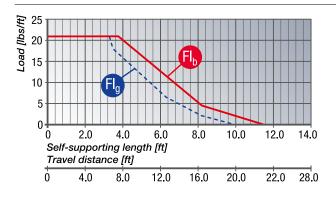


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant FL<sub>n</sub> offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{_{MA}}$  = Height of moving end connection
- $FL_g$  = Self-supporting length, upper run straight
- $FL_{h} =$  Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



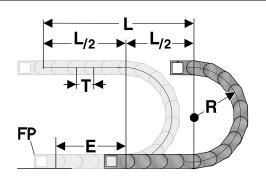
#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL<sub>a</sub> range, the chain upper run still has a bias, is straight or has a maximum sag of 2.76 inch.

**FL**<sub>b</sub> Self-supporting length, upper run bent In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.76 inch, but this is still less than the maximum sag.

Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

# **DETERMINING THE CHAIN LENGTH**



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

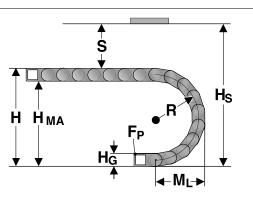
This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

 $\begin{array}{l} \mbox{Chain length calculation} = L/2 + \pi * R + E \\ \approx 1 \mbox{ ft chain} = 4 \mbox{ qty. x } 3.03 \mbox{ inch.} \end{array}$ 

E = Distance between entry point and middle of travel distance

- L = Travel distance
- R = Radius
- P = Grid 3.03 inch

#### **INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height  $\rm H_{_{MA}}$  for the respective radius. For the installed dimension the "Installed height  $\rm H_{_S}$ " value has to

For the installed dimension the "Installed height  $\rm H_{\rm S}$  " value has to be taken into account.

Radius R	3.54	4.72	5.91	7.87	9.84	11.81	13.78
Outside height of chain link $(H_g)$	2.44	2.44	2.44	2.44	2.44	2.44	2.44
Height of bend (H)	9.92	12.28	14.66	18.58	22.52	26.46	30.40
Height of moving end connection $(H_{MA})$	7.48	9.84	12.22	16.14	20.08	24.02	27.96
Safety margin (S)	1.18	1.18	1.18	1.18	1.18	1.18	1.18
Installation height (H <sub>s</sub> )	11.10	13.46	15.84	19.76	23.70	27.64	31.58
Arc projection $(M_L)$	7.99	9.17	10.36	12.32	14.29	16.26	18.23

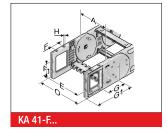
# **POWERLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

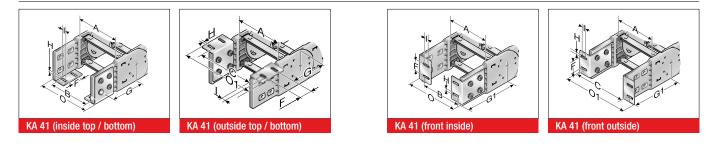
# KA 41 CHAIN BRACKET FLEXIBLE



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

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	н	HØ inch	Outside width of KA O inch
KA 41.1-FB	0411000054	Plastic	with bush	1.77 – 21.50	A+0.79	0.89	0.87	3.11	4.72		0.26	A+1.34
KA 41.1-FG	0411000055	Plastic	with thread	1.77 – 21.50	A+0.79	0.89	0.87	3.11	4.72	M6		A+1.34

#### **KA 41 CHAIN BRACKET ANGLE**

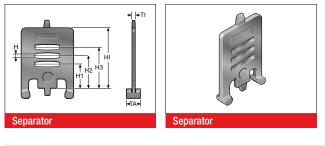


There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is fas-

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

Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	G1 inch	HØ inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 41	0410000051	Sheet steel	1.77 – 21.50	A-0.10	A+1.36	1.26	3.11	4.95	0.26	A+1.26	A+2.80

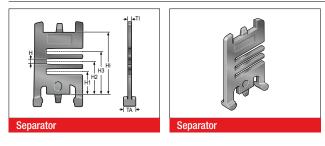
# **TR 41 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 41	041000009200	Separator	lockable	0.14	0.39	0.17	0.63	0.90	1.14	1.65

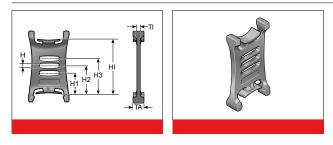
### **TR 41.1 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 41.1	041200009200	Separator	lockable	0.14	0.31	0.16	0.63	0.90	1.14	1.65

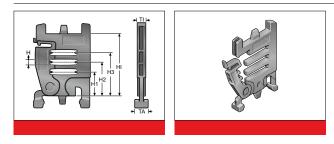
#### **TR 41-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TR 41-V	041000009300	Separator	movable	0.14	0.47	0.16	0.63	0.90	1.14	1.65

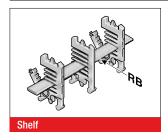
#### **RTT 41 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
RTT 41	100090412000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.63	0.90	1.14	1.65

### **RB-5 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	1000009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	10000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

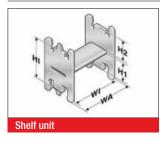
#### **RSV 41 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 41	041000009600	Crossbar connector	0.30
RSV 41 Alu	041000009800	Crossbar connector for aluminum crossbars	0.30

## **RE 41 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 36/11	100000361112	H-shaped shelf unit	1.67	1.44	1.03	0.45	1.65
RE 59/18	100000591812	H-shaped shelf unit	2.56	2.32	0.74	0.74	1.65
RE 81/11	100000811112	H-shaped shelf unit	3.44	3.21	1.03	0.45	1.65

#### **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

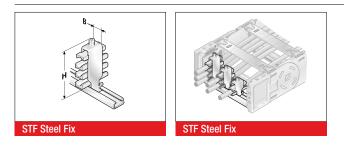
# **RS-ZL-5 CROSSBAR STRAIN RELIEF PLATE**



Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69

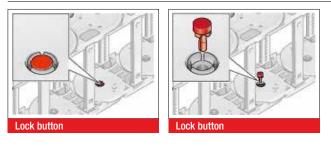
### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one c	able)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

#### MP 32/41 LOCK BUTTON

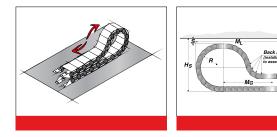


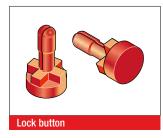
To increase the side stability we recommend the use of lock buttons during strong lateral acceleration or when installed "laying

#### Туре

MP32/41 lock button

#### **MP 41 LOWERED FIXING POINT**





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

Part number 04100008000

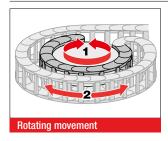
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>#</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
6.89	6.30	1.97	18.58	25.20	6	2
7.87	7.48	1.97	20.55	30.31	13	2
9.84	8.66	1.97	24.49	35.83	15	2
11.81	11.02	1.97	28.43	46.46	19	2
13.78	12.60	1.97	32.36	44.88	19	3

# **MP 41 REARWARD RADII**



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

Туре	Order No.	Radius inch	Back radius inch
SR 41 (RÜ200/R125)	04100009060	4.92	7.87
SR 41 (RÜ200/R160)	041000012060	6.30	7.87
SR 41 (RÜ200/R175)	041000015060	6.89	7.87
SR 41 (RÜ200/R200)	041000020060	7.87	7.87
SR 41 (RÜ200/R250)	041000025060	9.84	7.87
SR 41 (RÜ200/R300)	041000030060	11.81	7.87
SR 41 (RÜ200/R350)	041000035060	13.78	7.87

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A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

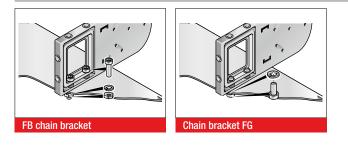
The variable guide channel ensures that the cable drag chain is supported and guided securely.

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

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

VAW aluminum

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



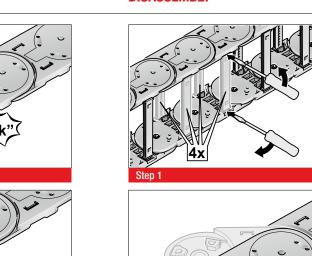
## Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

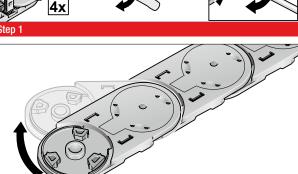
#### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

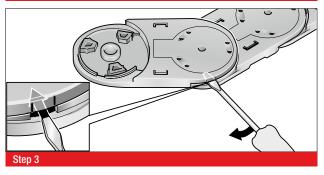
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

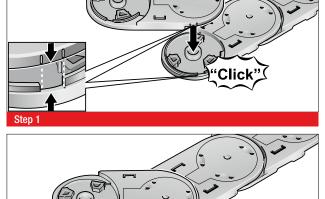
#### DISASSEMBLY



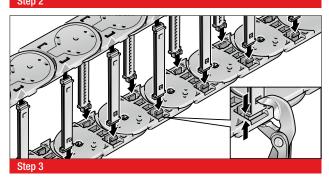


Step 2





Step 2



VAW steel galvanized / stainless

steel

**ASSEMBLY** 

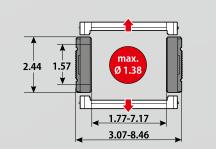
## **MP LEGACY**



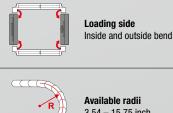
**MP 44** OPEN



- PLASTIC OR ALUMINUM VERSION
- METAL CHAIN BRACKET
- OPENS ON OUTSIDE BEND



#### **TECHNICAL DATA**



Available radii 3.54 - 15.75 inch



Available interior widths With plastic crossbar 1.77 – 7.17 inch With aluminum crossbar / cover 3.03 - 23.62 inch /



T = 2.97 inch



#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	164.04 ft.
Travel distance self-supporting L, max.	see diagram on page 369
Travel distance vertical, hanging L <sub>vh</sub> max.	131.23 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	9.84 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	3.28 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V <sub>f</sub> max.	49.21 ft/s
Acceleration, gliding $a_a$ max.	49.21 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	65.62 ft/s <sup>2</sup>

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

#### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**

Chain bracket angle

Chain bracket U-part









RS shelving system



VAW aluminum

**GUIDE CHANNELS** 

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### **ORDERING KEY**

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Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
0440 30	Crossbar on outside bend Crossbar on inside bend Opens on inside and outside of bend	045 [1.77] 062 [2.44]	078 [3.07] 095 [3.74]			<b>090</b> [3.54]	0	Plastic, full-ridged with bias	Polyamide (PA): <b>0</b> standard (PA/black)	
		084 [3.31] 105 [4.13]	117 [4.61] 138 [5.43]			<b>125</b> [4.92]	1	Plastic, full-ridged without bias	9 Special version (on request)	
		144 [5.67] 182 [7.17]	177 [6.97] 215 [8.46]			<b>150</b> [5.91]	2	Plastic, half-ridged with bias		
						<b>200</b> [7.87]	3	Plastic, half-ridged without bias		
						<b>250</b> [9.84]	4	Aluminum full-ridged with bias		
						<b>300</b> [11.81]	5	Aluminum full-ridged without bias		
						<b>400</b> [15.75]	6	Aluminum half-ridged with bias		
							7	Aluminum half-ridged without bias		
							9	Special version (on request)		
Ļ						↓ ↓	Ļ		↓ ↓	↓ ↓
							_			
						<b>15 090 0</b> De opened fro		bide and outside ben	d	

#### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

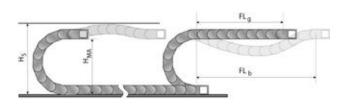
Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 3.03 inch – 23.62 inch are available for delivery.

#### Strain relief:

The end brackets utilize strain relief plates (ZL) for cable strain relief.

For detailed information, please consult the corresponding product documentation.

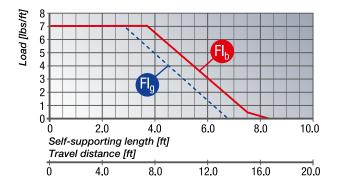
#### SELF-SUPPORTING LENGTH



# The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant $FL_g$ offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{q}$  = Self-supporting length, upper run straight
- $FL_{b}^{a}$  = Self-supporting length, upper run bent



#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS

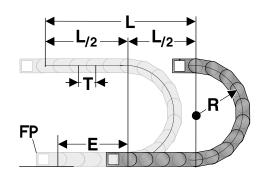
#### FL<sub>n</sub> Self-supporting length, upper run straight

In the FL, range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL, Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.36 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

#### **DETERMINING THE CHAIN LENGTH**



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

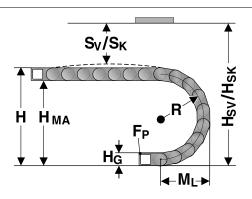
This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 13 qty. x 2.97 inch.

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Grid 2.97 inch



#### **INSTALLATION DIMENSIONS**



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

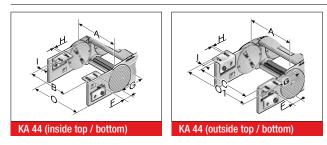
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

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

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

3.54	4.92	5.91	7.87	9.84	11.81	15.75
2.44	2.44	2.44	2.44	2.44	2.44	2.44
9.52	12.28	14.26	18.18	22.12	26.06	33.94
7.08	9.84	11.82	15.74	19.68	23.62	31.50
1.50	1.50	1.50	1.50	1.50	1.50	1.50
11.02	13.78	15.76	19.68	23.62	27.56	35.44
0.51	0.51	0.51	0.51	0.51	0.51	0.51
10.03	12.79	14.77	18.69	22.63	26.57	34.45
7.73	9.11	10.10	12.06	14.03	16.00	19.94
	2.44 9.52 7.08 1.50 11.02 0.51 10.03	2.44         2.44           9.52         12.28           7.08         9.84           1.50         1.50           11.02         13.78           0.51         0.51           10.03         12.79	2.44         2.44         2.44           9.52         12.28         14.26           7.08         9.84         11.82           1.50         1.50         1.50           11.02         13.78         15.76           0.51         0.51         0.51           10.03         12.79         14.77	2.442.442.442.449.5212.2814.2618.187.089.8411.8215.741.501.501.501.5011.0213.7815.7619.680.510.510.510.5110.0312.7914.7718.69	2.442.442.442.449.5212.2814.2618.1822.127.089.8411.8215.7419.681.501.501.501.501.5011.0213.7815.7619.6823.620.510.510.510.510.5110.0312.7914.7718.6922.63	2.442.442.442.442.449.5212.2814.2618.1822.1226.067.089.8411.8215.7419.6823.621.501.501.501.501.501.5011.0213.7815.7619.6823.6227.560.510.510.510.510.510.5110.0312.7914.7718.6922.6326.57

#### **KA 44 CHAIN BRACKET ANGLE**



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

Type Order No.	Material	Inside width										Outside width
		A inch	B inch	C inch	E inch	F inch				l inch	of KA O inch	of KA 01 inch
KA 44 0440000050	Sheet steel	2.44 – 7.17	A-0.57	A+1.52	A+1.26	1.26	1.70	3.39	0.26	0.49	A+1.30	A+2.52
KA 44 0440000052	Stainless steel 1.4301	2.44 – 7.17	A-0.57	A+1.52	A+1.26	1.26	1.70	3.39	0.26	0.49	A+1.30	A+2.52

#### **KA 44 CHAIN BRACKET U-PART**

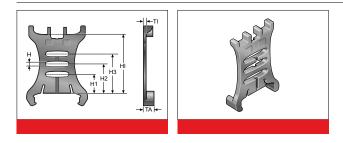
HI FF O KA 44 U	A A A A A A A A A A A A A A A A A A A		adjusted to the respective snapped in at the chain li female end bracket for ea fastened with M5 screws	II-plastic part. The bracket is precisely e chain width and only needs to be nk. Please order one male and one ach chain. The brackets should be . The cables or conduits may be fas- he integrated strain relief of the chain
Туре	Order No.	Material	Inside width	Outside width

A F G H1 H2 of KA O L inch inch inch inch inch inch inch 0440000054 KA 44 U Stainless steel 1.4301 1.77 1.10 1.77 0.26 0.33 1.30 A+1.30

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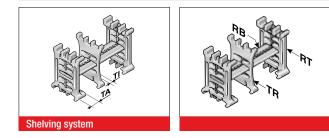
#### **MP 44 SEPARATOR**



We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed. For applications with aluminum crossbars or when movable separators are to be used, the TL 44 separator should be used.

Туре	Order No.	Description	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	HI inch
TF 44	044000009400	Separator	0.16	0.33	0.17	0.52	0.81	1.09	1.61
TL 44	044000009200	Separator for aluminum crossbars	0.16	0.33	0.17	0.52	0.81	1.09	1.61

#### **SHELVING SYSTEM MP 44**



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

Туре	Order No.	Description	Width inch	Clearance width inch	Lock grid spacing inch	TI inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch
RB 031	10000003100	Shelf	1.65	1.22	0.06						
RB 048	10000004800	Shelf	2.32	1.89	0.06						
RB 070	10000007000	Shelf	3.19	2.76	0.06						
RB 092	10000009200	Shelf	4.06	3.62	0.06						
RB 100	100000010000	Shelf	4.37	3.94	0.06						
RB 128	100000012800	Shelf	5.47	5.04	0.06						
RB 167	100000016700	Shelf	7.01	6.57	0.06						
RT 44	1000902100	Shelf support	0.17		0.06	0.26	0.25	0.52	0.81	1.09	1.37

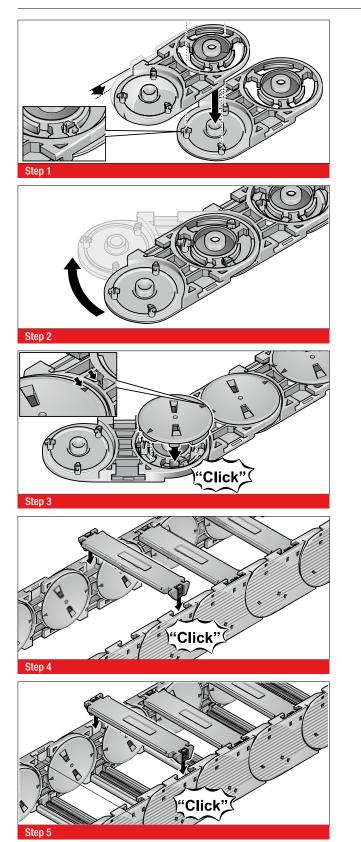
#### **VAW GUIDE CHANNEL**



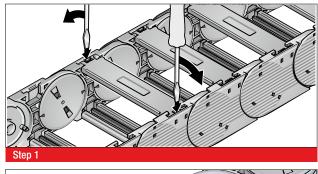
A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

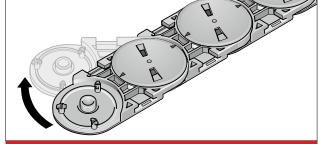


#### ASSEMBLY

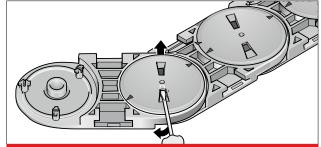


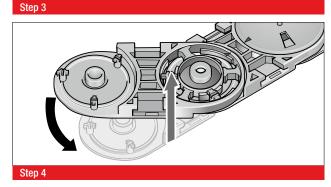
#### DISASSEMBLY





Step 2







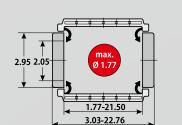
## **MP LEGACY**



MP 52.1 OPEN



- PLASTIC OR ALUMINUM VERSION
- CHAIN BRACKET FLEXIBLE



#### **TECHNICAL DATA**



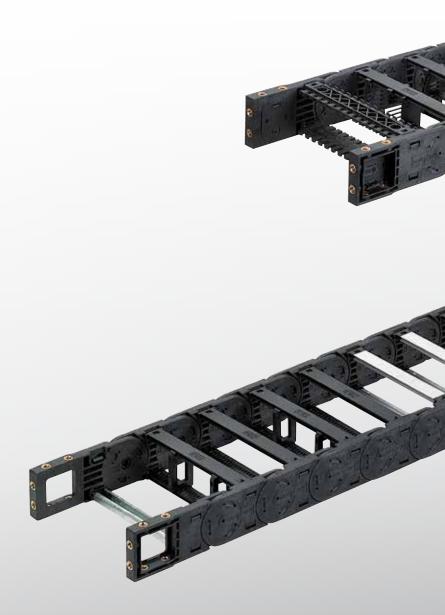
Available radii 3.94 – 13.78 inch



Available interior widths With plastic crossbar 1.77 – 21.5 inch With aluminum crossbar / cover 2.64 - 23.62 inch /







#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	492.13 ft.				
Travel distance self-supporting L, max.	see diagram on page 377				
Travel distance vertical, hanging L <sub>vb</sub> max.	196.85 ft.				
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.				
Rotated 90°, unsupported L <sub>gof</sub> max.	9.84 ft.				
Speed, gliding V <sub>a</sub> max.	16.40 ft/s				
Speed, self-supporting V, max.	65.62 ft/s				
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>				
Acceleration, self-supporting a, max.	98.43 ft/s <sup>2</sup>				

 $\label{eq:contact} \mbox{ Contact our engineering department to meet any higher requirements: efk@murrplastik.de \\$ 

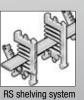
#### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**





**CHAIN BRACKET** 



Chain bracket flexible



Chain bracket angle



Crossbar connector RSV



H-shaped shelf unit RE

#### ACCESSORIES



Bracket bar



Lock button

#### **GUIDE CHANNELS**



VAW steel galvanized / stainless steel



VAW aluminum

#### STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

#### **ORDERING KEY**

**MP 52.1 OPEN** 

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant		Material	Chain length
	Crossbar on outside bend	<b>045</b> [1.77]	<b>077</b> [3.03]	<b>233</b> [9.17]	<b>265</b> [10.43]	100		Diantia full ridged		Polyamide (PA):	
0521 30	Crossbar on inside bend Opens on inside and outside of bend	<b>057</b> [2.24]	089 [3.50]	<b>246</b> [9.69]	<b>278</b> [10.94]	[3.94]	0	Plastic, full-ridged with bias	0	standard (PA/black)	
		<b>062</b> [2.44]	<b>094</b> [3.70]	<b>252</b> [9.92]	<b>284</b> [11.18]	150		Plastic, full-ridged		Crassiel version (on	
		<b>071</b> [2.80]	<b>103</b> [4.06]	<b>258</b> [10.16]	<b>290</b> [11.42]	[5.91]		without bias	9	Special version (on request)	
		<b>084</b> [3.31]	<b>116</b> [4.57]	<b>296</b> [11.65]	<b>328</b> [12.91]	200		Diastia half ridgad			
		<b>093</b> [3.66]	<b>125</b> [4.92]	<b>346</b> [13.62]	<b>378</b> [14.88]	[7.87]	2	Plastic, half-ridged with bias			
		<b>096</b> [3.78]	<b>128</b> [5.04]	<b>350</b> [13.78]	<b>382</b> [15.04]	250		Diastia half ridgad			
		<b>104</b> [4.09]	136 [5.35]	<b>358</b> [14.09]	<b>390</b> [15.35]	[9.84]	3	Plastic, half-ridged without bias			
		<b>107</b> [4.21]	<b>139</b> [5.47]	<b>371</b> [14.61]	<b>403</b> [15.87]	300		Aluminum full-ridged			
		<b>121</b> [4.76]	153 [6.02]	<b>396</b> [15.59]	<b>428</b> [16.85]	[11.81]	4	with bias			
		<b>133</b> [5.24]	165 [6.50]	<b>421</b> [16.57]	<b>453</b> [17.83]	350		Aluminum full-ridged			
		<b>144</b> [5.67]	176 [6.93]	<b>446</b> [17.56]	<b>478</b> [18.82]	[13.78]	5	without bias			
		<b>146</b> [5.75]	<b>178</b> [7.01]	<b>496</b> [19.53]	<b>528</b> [20.79]			Aluminum half-ridged			
		<b>158</b> [6.22]	<b>190</b> [7.48]	<b>546</b> [21.50]	<b>578</b> [22.76]		6	with bias			
		<b>164</b> [6.46]	<b>196</b> [7.72]					Aluminum half-ridged			
		<b>171</b> [6.73]	203 [7.99]				7	without bias			
		<b>182</b> [7.17]	<b>214</b> [8.43]					Special version (on			
		<b>196</b> [7.72]	<b>228</b> [8.98]				9	request)			
		<b>208</b> [8.19]	<b>240</b> [9.45]								
		<b>220</b> [8.66]	<b>252</b> [9.92]								
						Ļ	,		Ļ		↓ ↓
				MPI F. (	1521 0/	45 100 0					

ORDERING EXAMPLE: 0521 045 100 0 0 000053

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 1.77 in.; radius 3.94 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 53 in. (15 links)

#### **NOTE ON CONFIGURATION**

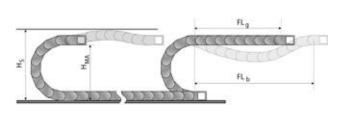
#### **Aluminum crossbars:**

Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.64 inch – 23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inches (246 mm), we recommend the deployment of crossbar connectors (RSV). If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account. For detailed information, please consult the corresponding product documentation.

#### **SELF-SUPPORTING LENGTH**

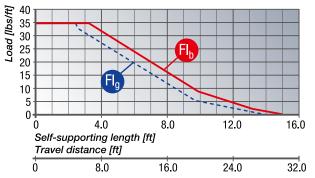


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

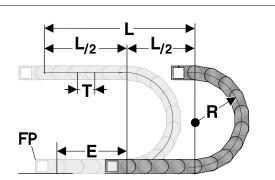
The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{q}$  = Self-supporting length, upper run straight
- $FL_{b}^{*}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



DETERMINING THE CHAIN LENGTH



#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL<sub>g</sub> range, the chain upper run still has a bias, is straight or has a maximum sag of 2.76 inch.

#### FL, Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 2.76 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>b</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

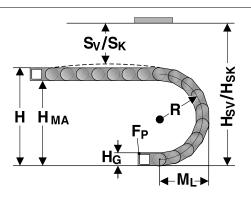
Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 11 qty. x 3.58 inch.

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Grid 3.58 inch

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#### **INSTALLATION DIMENSIONS**



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

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

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

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

Radius R	3.94	5.91	7.87	9.84	11.81	13.78
Outside height of chain link $(H_{\rm g})$	2.95	2.95	2.95	2.95	2.95	2.95
Height of bend (H)	12.01	15.95	19.87	23.81	27.75	31.69
Height of moving end connection $(H_{MA})$	9.06	13.00	16.92	20.86	24.80	28.74
Safety margin with bias $(S_{\boldsymbol{\nu}})$	1.81	1.81	1.81	1.81	1.81	1.81
Installation height with bias (H <sub>sv</sub> )	13.82	17.76	21.68	25.62	29.56	33.50
Safety margin without bias ( $S_{\kappa}$ )	0.63	0.63	0.63	0.63	0.63	0.63
Installation height without bias ( $H_{\rm sk}$ )	12.64	16.58	20.50	24.44	28.38	32.32
Arc projection (M <sub>L</sub> )	9.59	11.56	13.52	15.49	17.45	19.42

#### **POWERLINE PLASTIC CROSSBAR**



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

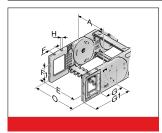
Туре	Order No.	Description	Inside width inch
BS 045-5	052004500000	Crossbar	1.77
BS 057-5	052005700000	Crossbar	2.24
BS 062-5	052006200000	Crossbar	2.44
BS 071-5	052007100000	Crossbar	2.80
BS 084-5	052008400000	Crossbar	3.31
BS 093-5	052009300000	Crossbar	3.66
BS 096-5	052009600000	Crossbar	3.78
BS 104-5	052010400000	Crossbar	4.09
BS 107-5	052010700000	Crossbar	4.21
BS 121-5	052012100000	Crossbar	4.76
BS 133-5	052013300000	Crossbar	5.24
BS 144-5	052014400000	Crossbar	5.67
BS 146-5	052014600000	Crossbar	5.75
BS 158-5	052015800000	Crossbar	6.22
BS 164-5	052016400000	Crossbar	6.46

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#### **POWERLINE PLASTIC CROSSBAR**

Туре	Order No.	Description	Inside width inch
BS 171-5	052017100000	Crossbar	6.73
BS 182-5	052018200000	Crossbar	7.17
BS 196-5	052019600000	Crossbar	7.72
BS 208-5	052020800000	Crossbar	8.19
BS 220-5	052022000000	Crossbar	8.66
BS 233-5	052023300000	Crossbar	9.17
BS 246-5	052024600000	Crossbar	9.69
BS 252-5	052025200010	Crossbar	9.92
BS 258-5	052025800000	Crossbar	10.16
BS 296-5	052029600000	Crossbar	11.65
BS 346-5	052034600000	Crossbar	13.62
BS 350-5	052035000000	Crossbar	13.78
BS 358-5	052035800000	Crossbar	14.09
BS 371-5	052037100000	Crossbar	14.61
BS 396-5	052039600000	Crossbar	15.59
BS 421-5	052042100000	Crossbar	16.57
BS 446-5	052044600000	Crossbar	17.56
BS 496-5	052049600000	Crossbar	19.53
BS 546-5	052054600000	Crossbar	21.50

#### **KA 52.1 CHAIN BRACKET FLEXIBLE**

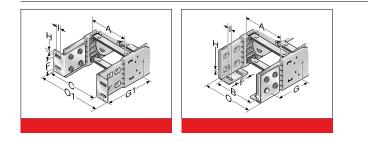


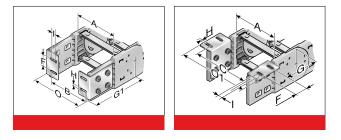
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	Н	HØ inch	Outside width of KA O inch
KA 52.1-FB Female end	0521000056	Plastic	with bush	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75		0.33	A+1.42
KA 52.1-FB male end	0521000057	Plastic	with bush	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75		0.33	A+1.42
KA 52.1-FG female end	0521000058	Plastic	with thread	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75	M8		A+1.42
KA 52.1-FG male end	0521000059	Plastic	with thread	1.77 – 21.50	A+0.63	1.38	1.18	3.50	5.75	M8		A+1.42

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#### **KA 52.1 CHAIN BRACKET ANGLE**



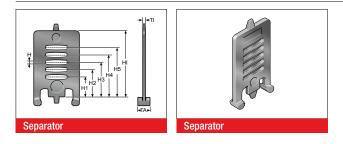


There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket

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

Туре	Order No.	Material	Inside width A inch	B inch	C inch	-	-		HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 52.1 Female end	0521000050	Sheet steel	1.77 – 21.50	A-0.10	A+1.36	1.26	3.76	5.67	0.26	0.55	A+1.26	A+2.80
KA 52.1 Male end	0521000051	Sheet steel	1.77 – 21.50	A-0.10	A+1.36	1.26	3.76	5.67	0.26	0.55	A+1.26	A+2.80

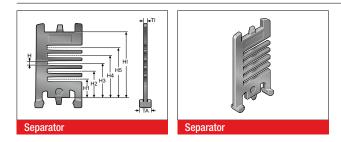
#### **TR 52 SEPARATOR**



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 98.42 ft (30 m) or greater.

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52	052000009200	TR 52 Separator	lockable	0.14	0.39	0.17	0.64	0.88	1.11	1.33	1.57	2.05

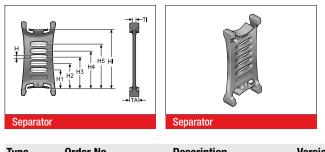
#### **TR 52.1 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52.1	052100009200	TR 52.1 Separator	lockable	0.14	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

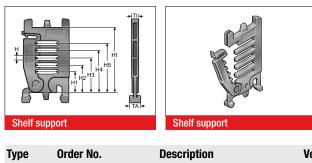
#### **TR 52-V SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 52-V	052000009300	TR 52-V Separator	movable	0.14	0.51	0.16	0.64	0.88	1.11	1.33	1.57	2.05

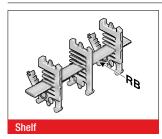
#### **RTT 52 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 52	100090522000	Shelf support, divisible	lockable	0.28	0.31	0.16	0.61	0.87	1.11	1.36	1.61	2.05

#### **RB-5 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 028-5	10000002800	Shelf	1.10	1.77
RB 034-5	1000003405	Shelf	1.32	1.77
RB 039-5	1000003905	Shelf	1.54	1.77
RB 045-5	1000004505	Shelf	1.76	2.24
RB 050-5	1000005005	Shelf	1.98	2.24
RB 056-5	10000005601	Shelf	2.20	2.44
RB 062-5	1000006205	Shelf	2.43	2.44
RB 067-5	1000006705	Shelf	2.65	3.31
RB 073-5	1000007305	Shelf	2.87	3.31
RB 078-5	1000007805	Shelf	3.09	3.31
RB 084-5	10000008400	Shelf	3.31	3.31
RB 090-5	100009005	Shelf	3.53	3.78
RB 095-5	1000009505	Shelf	3.75	3.78
RB 101-5	1000010105	Shelf	3.97	4.21
RB 106-5	1000010605	Shelf	4.19	4.21

#### **RB-5 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 112-5	100000011200	Shelf	4.41	4.76
RB 118-5	1000011805	Shelf	4.63	4.76
RB 123-5	1000012305	Shelf	4.85	5.24
RB 129-5	1000012905	Shelf	5.07	5.24
RB 134-5	1000013405	Shelf	5.29	5.67
RB 140-5	100000014000	Shelf	5.51	5.67
RB 146-5	1000014605	Shelf	5.73	6.22
RB 151-5	1000015105	Shelf	5.95	6.22
RB 157-5	1000015705	Shelf	6.17	6.46
RB 162-5	1000016205	Shelf	6.39	6.46
RB 168-5	10000016800	Shelf	6.61	7.17
RB 174-5	1000017405	Shelf	6.83	7.17
RB 179-5	1000017905	Shelf	7.06	7.72
RB 185-5	1000018505	Shelf	7.28	7.72
RB 190-5	1000019005	Shelf	7.50	7.72
RB 196-5	100000019600	Shelf	7.72	7.72
RB 291-5	10000029100	Shelf	11.46	13.62

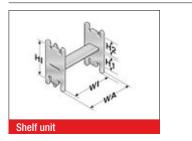
#### **RSV 52 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 52	052000009600	Crossbar connector	0.30
RSV 52 Alu	052000009800	Crossbar connector for aluminum crossbars	0.30

#### **RE 52 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 36/17	100000361714	H-shaped shelf unit	1.67	1.44	1.22	0.69	2.05
RE 59/24	100000592414	H-shaped shelf unit	2.56	2.32	0.95	0.95	2.05
RE 81/12	100000811214	H-shaped shelf unit	3.44	3.21	1.42	0.49	2.05

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Learn more at www.murrplastik.de Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

#### **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
BSH-5	052400000000	Bracket bar support			
Assembly set	052400000001	Assembly set			

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

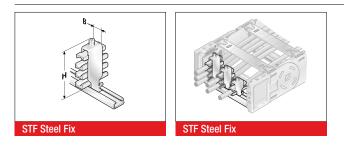


Fixed integrated crossbar strain relief plates in the chain brackets. Tailored to all crossbar widths up to 9.69 inch (246 mm). May be assembled on the inside and outside bends at both chain endings.

Crossbar strain relief plate

Туре	Order No.	Description	Inside width inch
RS-ZL 045-5	052004500010	Crossbar strain relief plate	1.77
RS-ZL 057-5	052005700010	Crossbar strain relief plate	2.24
RS-ZL 062-5	052006200010	Crossbar strain relief plate	2.44
RS-ZL 071-5	052007100010	Crossbar strain relief plate	2.80
RS-ZL 084-5	052008400010	Crossbar strain relief plate	3.31
RS-ZL 093-5	052009300010	Crossbar strain relief plate	3.66
RS-ZL 096-5	052009600010	Crossbar strain relief plate	3.78
RS-ZL 104-5	052010400010	Crossbar strain relief plate	4.09
RS-ZL 107-5	052010700010	Crossbar strain relief plate	4.21
RS-ZL 121-5	052012100010	Crossbar strain relief plate	4.76
RS-ZL 133-5	052013300010	Crossbar strain relief plate	5.24
RS-ZL 144-5	052014400010	Crossbar strain relief plate	5.67
RS-ZL 146-5	052014600010	Crossbar strain relief plate	5.75
RS-ZL 158-5	052015800010	Crossbar strain relief plate	6.22
RS-ZL 164-5	052016400010	Crossbar strain relief plate	6.46
RS-ZL 171-5	052017100010	Crossbar strain relief plate	6.73
RS-ZL 182-5	052018200010	Crossbar strain relief plate	7.17
RS-ZL 196-5	052019600010	Crossbar strain relief plate	7.72
RS-ZL 208-5	052020800010	Crossbar strain relief plate	8.19
RS-ZL 220-5	052022000010	Crossbar strain relief plate	8.66
RS-ZL 233-5	052023300010	Crossbar strain relief plate	9.17
RS-ZL 246-5	052024600010	Crossbar strain relief plate	9.69

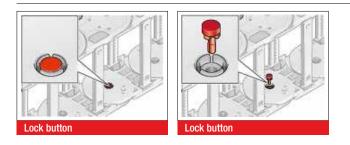
#### **STRAIN RELIEF WITH STEEL FIX**



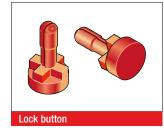
C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one o	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 - 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

#### **MP 52/62/72 LOCK BUTTON**



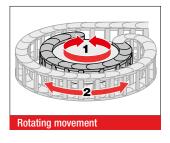
To increase the side stability we recommend the use of lock buttons during strong lateral acceleration or when installed "laying



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

Туре	Order No.
MP52/62/72 lock button	052000080

#### **MP 52.1 REARWARD RADII**



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Order No.	Radius inch	Back radius inch
SR 52.1 (RÜ200/R300) left	052100030060	11.81	7.87
SR 52.1 (RÜ200/R300) right	052100030062	11.81	7.87

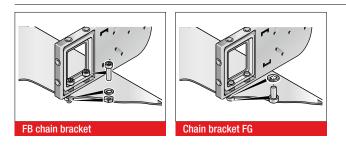
#### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



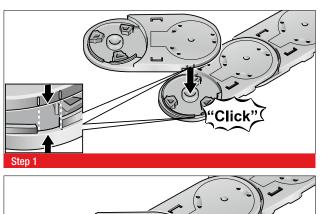
A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

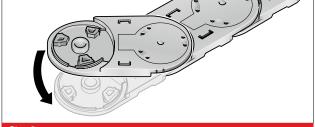
The variable guide channel ensures that the cable drag chain is supported and guided securely.

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

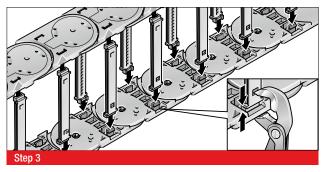


#### ASSEMBLY





Step 2



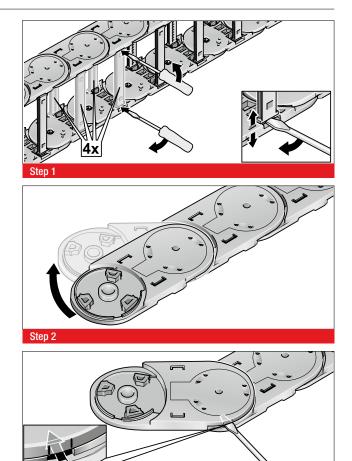
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

#### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

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

#### DISASSEMBLY



Step 3



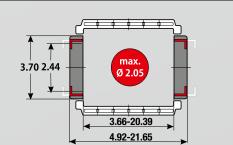
## **MP LEGACY**



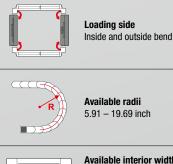
MP 62.1



- PLASTIC OR ALUMINUM VERSION
- CHAIN BRACKET FLEXIBLE



#### **TECHNICAL DATA**



Available radii 5.91 - 19.69 inch



Available interior widths With plastic crossbar 3.66 – 20.39 inch With aluminum crossbar / cover 2.83 - 23.62 inch /



T = 3.94 inch



#### **TECHNICAL SPECIFICATIONS**

Travel distance gliding L <sub>a</sub> max.	492.13 ft.
Travel distance self-supporting L, max.	see diagram on page 391
Travel distance vertical, hanging L <sub>vb</sub> max.	213.25 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	13.12 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V, max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	131.23 ft/s <sup>2</sup>

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

#### **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### **SHELVING SYSTEM**



**CHAIN BRACKET** 



Chain bracket flexible



Chain bracket angle



RS shelving system



Crossbar connector RSV

#### ACCESSORIES



Bracket bar



Lock button

#### **GUIDE CHANNELS**



VAW steel galvanized / stainless steel



VAW aluminum



RS-ZL crossbar strain relief



STF Steel Fix

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

#### **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
	Crossbar on outside bend	<b>093</b> [3.66]	<b>125</b> [4.92]	<b>468</b> [18.43]	<b>500</b> [19.69]	150	Plastic, full-ridged	Polyamide (PA):	
0621 30	Crossbar on inside bend Opens on inside and outside of bend	<b>106</b> [4.17]	<b>138</b> [5.43]	<b>518</b> [20.39]	550 [21.65]	[5.91]	with bias	0 standard (PA/black)	
		<b>118</b> [4.65]	150 [5.91]			200	Plastic, full-ridged	<ul> <li>Special version (on</li> </ul>	
		<b>131</b> [5.16]	<b>163</b> [6.42]			[7.87]	1 Plastic, full-ridged without bias	9 special version (on request)	
		143 [5.63]	175 [6.89]			250	<ul> <li>Plastic, half-ridged</li> </ul>		
		<b>156</b> [6.14]	<b>188</b> [7.40]			[9.84]	2 Plastic, hair-hoged with bias		
		<b>168</b> [6.61]	<b>200</b> [7.87]			300	3 Plastic, half-ridged		
		<b>181</b> [7.13]	213 [8.39]			[11.81]	3 Plastic, half-ridged without bias		
		<b>193</b> [7.60]	<b>225</b> [8.86]			400	Aluminum full-ridged		
		<b>206</b> [8.11]	<b>238</b> [9.37]			[15.75]	4 Auminum full-hoged with bias		
		218 [8.58]	<b>250</b> [9.84]			500	5 Aluminum full-ridged		
		<b>231</b> [9.09]	<b>263</b> [10.35]			[19.69]	9 without bias		
		<b>243</b> [9.57]	<b>275</b> [10.83]				6 Aluminum half-ridged		
		<b>256</b> [10.08]	<b>288</b> [11.34]				• with bias		
		<b>268</b> [10.55]	<b>300</b> [11.81]				7 Aluminum half-ridged		
		<b>293</b> [11.54]	<b>325</b> [12.80]				without bias		
		<b>318</b> [12.52]	<b>350</b> [13.78]				9 Special version (on		
		<b>343</b> [13.50]	<b>375</b> [14.76]				equest)		
		<b>368</b> [14.49]	<b>400</b> [15.75]						
		<b>418</b> [16.46]	<b>450</b> [17.72]						
↓ ↓			Y		-	↓ I	V	¥	$\downarrow$

murrplasti

ORDERING EXAMPLE: 0623 118 150 0 0 000062

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 4.65 in.; radius 5.91 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 62 in. (16 links)

#### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

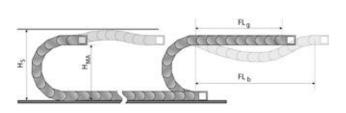
Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.83 inch - 23.62 inch are available for delivery.

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

Once inside widths exceed 9.69 inches (246 mm), we recommend the deployment of crossbar connectors (RSV). If crossbar strain relief plates (RS-ZL) are to be deployed in the chain brackets, take standard inside widths into account.

For detailed information, please consult the corresponding product documentation.

#### SELF-SUPPORTING LENGTH

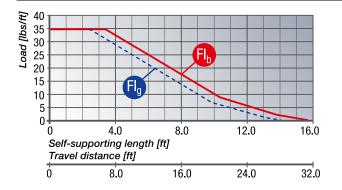


The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant FL<sub>a</sub> offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{q}$  = Self-supporting length, upper run straight
- $FL_{h}^{\prime}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### In the FL range, the chain upper run still has a bias, is straight

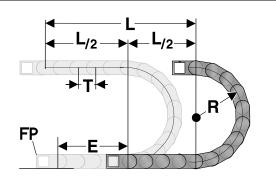
FL, Self-supporting length, upper run straight

or has a maximum sag of 3.15 inch.

#### FL, Self-supporting length, upper run bent

In the FL<sub>b</sub> range, the chain upper run has a sag of more than 3.15 inch, but this is still less than the maximum sag. Where the sag is greater than that permitted in the FL<sub>k</sub> range, the application is critical and should be avoided. The self-supporting length can be optimized by using a support for the upper run or a more stable cable drag chain.

#### DETERMINING THE CHAIN LENGTH



The fixed point of the cable drag chain should be connected in the middle of the travel distance.

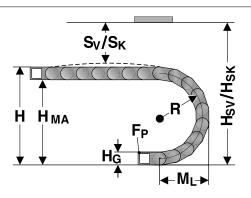
This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$  $\approx$  1 ft chain = 10 qty. x 3.94 inch.

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Grid 3.94 inch

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#### **INSTALLATION DIMENSIONS**



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

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

For chain links without bias, the "Installed height without bias

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

Radius R	5.91	7.87	9.84	11.81	15.75	19.69
Outside height of chain link $(H_g)$	3.70	3.70	3.70	3.70	3.70	3.70
Height of bend (H)	16.70	20.62	24.56	28.50	36.38	44.26
Height of moving end connection (H <sub>MA</sub> )	13.00	16.92	20.86	24.80	32.68	40.56
Safety margin with bias (S $_{\!\nu}\!)$	1.97	1.97	1.97	1.97	1.97	1.97
Installation height with bias $(H_{sv})$	18.67	22.59	26.53	30.47	38.35	46.23
Safety margin without bias $(S_{\kappa})$	0.79	0.79	0.79	0.79	0.79	0.79
Installation height without bias $(H_{sk})$	17.49	21.41	25.35	29.29	37.17	45.05
Arc projection (M <sub>L</sub> )	12.29	14.25	16.22	18.19	22.13	26.07

#### **HEAVYLINE PLASTIC CROSSBAR**



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

Туре	Order No.	Description	Inside width inch
BS 093-7	072009300000	Crossbar	3.66
BS 106-7	072010600000	Crossbar	4.17
BS 118-7	072011800000	Crossbar	4.65
BS 131-7	072013100000	Crossbar	5.16
BS 143-7	072014300000	Crossbar	5.63
BS 156-7	072015600000	Crossbar	6.14
BS 168-7	072016800000	Crossbar	6.61
BS 181-7	072018100000	Crossbar	7.13
BS 193-7	072019300000	Crossbar	7.60
BS 206-7	072020600000	Crossbar	8.11
BS 231-7	072023100000	Crossbar	9.09
BS 243-7	072024300000	Crossbar	9.57
BS 256-7	072025600000	Crossbar	10.08
BS 268-7	072026800000	Crossbar	10.55

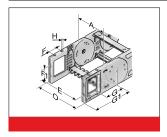
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#### **HEAVYLINE PLASTIC CROSSBAR**

Туре	Order No.	Description	Inside width inch
BS 293-7	072029300000	Crossbar	11.54
BS 318-7	072031800000	Crossbar	12.52
BS 343-7	072034300000	Crossbar	13.50
BS 368-7	072036800000	Crossbar	14.49
BS 418-7	072041800000	Crossbar	16.46
BS 468-7	072046800000	Crossbar	18.43
BS 518-7	072051800000	Crossbar	20.39

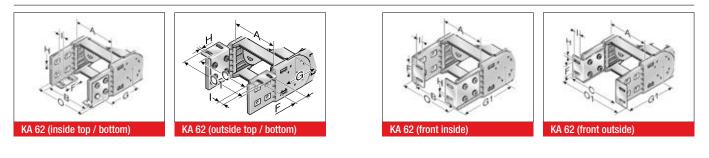
#### **CHAIN BRACKET KA 62.1**



This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Extrusion-coated metal bushes with either a through-hole (-FB) or a threaded hole (-FG) ensure the permanent, high-strength transmission of even extreme forces onto the cable drag chain.

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	H	HØ inch	Outside width of KA O inch
KA 62-FB Female end	0620000056	Plastic	with bush	3.66 - 20.39	A+0.67	1.38	1.77	4.21	6.75		0.33	A+1.42
KA 62-FB male end	0620000057	Plastic	with bush	3.66 - 20.39	A+0.67	1.38	1.77	4.21	6.75		0.33	A+1.42
KA 62-FG Female end	0620000058	Plastic	with thread	3.66 - 20.39	A+0.67	1.38	1.77	4.21	6.75	M8		A+1.42
KA 62-FG male end	0620000059	Plastic	with thread	3.66 - 20.39	A+0.67	1.38	1.77	4.21	6.75	M8		A+1.42

#### **KA 62.1 CHAIN BRACKET ANGLE**

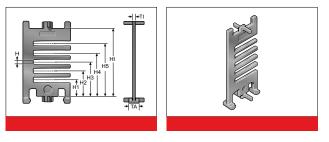


This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M8 screws are used to secure the brackets in place. Metal inserts (supplied) help to minimize the cold flow properties. This is an enormous advantage, guaranteeing the smooth transfer of high loads to the chain.

Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	G1 inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 62 Female end	0620000050	Sheet steel	3.66 - 20.39	A-0.47	A+1.73	1.77	4.02	6.75	0.35	0.59	A+1.26	A+3.54
KA 62 Male end	0620000051	Sheet steel	3.66 - 20.39	A-0.47	A+1.73	1.77	4.02	6.75	0.35	0.59	A+1.26	A+3.54

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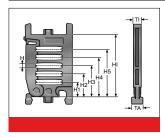
#### **MP 62 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TR 62	062000009200	Separator	lockable	0.14	0.51	0.22	0.58	0.91	1.24	1.56	1.89	2.44

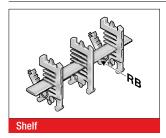
#### **RTT 62 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 62	100090622000	Shelf support, divisible	lockable	0.31	0.31	0.22	0.58	0.91	1.24	1.56	1.89	2.44

#### **RB-7 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 056-7	10000005600	Shelf	2.20	3.66
RB 061-7	1000006107	Shelf	2.40	3.66
RB 066-7	10000006600	Shelf	2.60	3.66
RB 071-7	1000007107	Shelf	2.80	3.66
RB 076-7	1000007607	Shelf	2.99	3.66
RB 081-7	10000008100	Shelf	3.19	3.66
RB 086-7	100008607	Shelf	3.39	3.66
RB 091-7	1000009107	Shelf	3.58	4.17
RB 096-7	100009607	Shelf	3.78	4.17
RB 101-7	1000010107	Shelf	3.98	4.17
RB 106-7	10000010600	Shelf	4.17	4.17
RB 111-7	1000011107	Shelf	4.37	4.65
RB 116-7	10000011600	Shelf	4.57	4.65
RB 121-7	1000012107	Shelf	4.76	5.16
RB 126-7	1000012607	Shelf	4.96	5.16

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#### **RB-7 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 131-7	1000013107	Shelf	5.16	5.63
RB 136-7	1000013607	Shelf	5.35	5.63
RB 141-7	1000014107	Shelf	5.55	5.63
RB 146-7	1000014607	Shelf	5.75	6.14
RB 151-7	1000015107	Shelf	5.94	6.14
RB 156-7	1000015607	Shelf	6.14	6.14
RB 161-7	1000016107	Shelf	6.34	6.61
RB 166-7	10000016600	Shelf	6.54	6.61
RB 171-7	1000017107	Shelf	6.73	7.13
RB 176-7	1000017607	Shelf	6.93	7.13
RB 181-7	1000018107	Shelf	7.13	7.60
RB 186-7	1000018607	Shelf	7.32	7.60
RB 191-7	1000019107	Shelf	7.52	7.60
RB 196-7	1000019607	Shelf	7.72	8.11
RB 201-7	1000020107	Shelf	7.91	8.11
RB 206-7	1000020607	Shelf	8.11	8.11
RB 211-7	1000021107	Shelf	8.31	8.58
RB 216-7	10000021600	Shelf	8.50	8.58

#### **MP 62 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 62	06200009600	Crossbar connector	0.31
RSV 62 Alu	06200009800	Crossbar connector for aluminum crossbars	0.31

#### **BS-5 BRACKET BAR**



Large-diameter conduits are routed securely by using bracket bars (BS). This bar is installed on the crossbars or the covers of the cable drag chain. The bracket bar can be installed on both the inside and outside bend.

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

Туре	Order No.	Description	Conduit diameter max. inch	Installation height inch	Inner chain width min. inch
BS 120-5	052412000000	Bracket bar	4.53	5.51	6.46
BS 153-5	052415300000	Bracket bar	5.83	6.69	8.19
BS 187-5	052418700000	Bracket bar	7.17	8.07	9.17
Assembly set	052400000001	Assembly set			

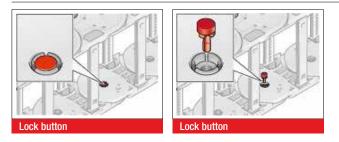
#### **RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**



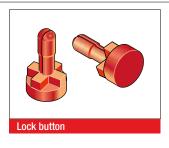
Fixed integrated crossbar strain relief plates in the chain brackets. Accommodated to all widths of the frame ridges, up to 10.08 inch in size. May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 093-7	072009300010	Crossbar strain relief plate	3.66
RS-ZL 106-7	072010600010	Crossbar strain relief plate	4.17
RS-ZL 118-7	072011800010	Crossbar strain relief plate	4.65
RS-ZL 131-7	072013100010	Crossbar strain relief plate	5.16
RS-ZL 143-7	072014300010	Crossbar strain relief plate	5.63
RS-ZL 156-7	072015600010	Crossbar strain relief plate	6.14
RS-ZL 168-7	072016800010	Crossbar strain relief plate	6.61
RS-ZL 181-7	072018100010	Crossbar strain relief plate	7.13
RS-ZL 193-7	072019300010	Crossbar strain relief plate	7.60
RS-ZL 206-7	072020600010	Crossbar strain relief plate	8.11
RS-ZL 218-7	072021800010	Crossbar strain relief plate	8.58
RS-ZL 231-7	072023100010	Crossbar strain relief plate	9.09
RS-ZL 243-7	072024300010	Crossbar strain relief plate	9.57
RS-ZL 256-7	072025600010	Crossbar strain relief plate	10.08

#### **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".

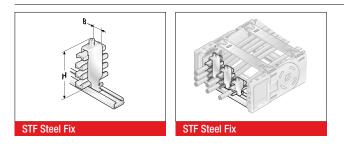
Order No.

MP52/62/72 lock button

Туре



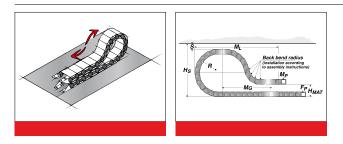
#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 - 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 – 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 - 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

#### LOWERED FIXING POINT MP 62



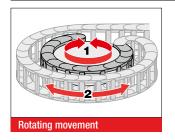
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>H</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
7.87	9.06	2.36	22.20	33.46	11	2
9.84	10.63	2.36	26.14	38.98	12	2
11.81	12.60	2.36	30.08	41.73	12	3
15.75	14.96	3.54	27.32	41.73	14	3
19.69	17.32	2.36	45.83	59.84	17	3

#### **MP 62.1 REARWARD RADII**



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Order No.	Radius inch	Back radius inch
SR 62.1 (RÜ300/R300) left	062100030060	11.81	11.81
SR 62.1 (RÜ300/R300) right	062100030062	11.81	11.81

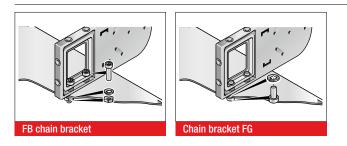
#### **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

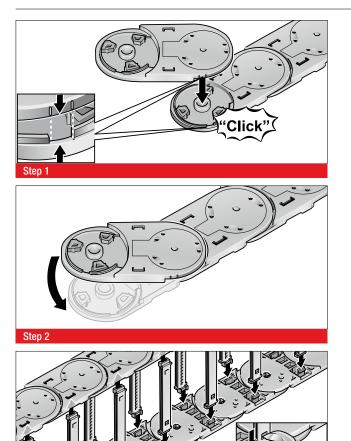
The variable guide channel ensures that the cable drag chain is supported and guided securely.

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



#### ASSEMBLY

Step 3



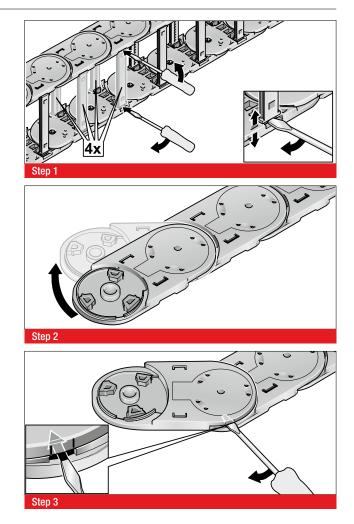
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

#### Version KA-FB:

Integrated through-hole fastened down using nut and bolt. **Version KA-FG:** 

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

#### DISASSEMBLY



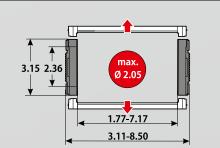
## **MP LEGACY**



MP 66



- PLASTIC OR ALUMINUM VERSION
- METAL CHAIN BRACKET
- OPENS ON INSIDE AND OUTSIDE OF BEND



#### **TECHNICAL DATA**



**Available radii** 5.91 – 15.75 inch

Loading side Inside and outside bend



Available interior widths With plastic crossbar 1.77 – 7.17 inch With aluminum crossbar / cover 3.03 – 23.62 inch /

**Grid** T = 3.60 inch



# **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	196.85 ft.
Travel distance self-supporting L, max.	see diagram on page 403
Travel distance vertical, hanging L <sub>vb</sub> max.	164.04 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	16.40 ft.
Rotated 90°, unsupported L <sub>gof</sub> max.	6.56 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V <sub>r</sub> max.	49.21 ft/s
Acceleration, gliding a max.	49.21 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	65.62 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	Based on UL 94 HB

Other material properties on request

#### **CHAIN BRACKET**



Chain bracket angle

Chain bracket U-part

nam bracket o-part



Chain bracket flange

**SHELVING SYSTEM** 



Separator TR



RS shelving system





VAW aluminum



# MP 66 OPEN

# **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
0660 30	Crossbar on outside bend Crossbar on inside bend	<b>045</b> [1.77]	<b>079</b> [3.11]			150 [5.91]	0	Plastic, full-ridged with bias	Polyamide (PA): O standard	
	Opens on inside and outside of bend	<b>062</b> [2.44]	<b>096</b> [3.78]			[5.91]			(PA/black)	
		<b>084</b> [3.31]	<b>118</b> [4.65]			200	1	Plastic, full-ridged	9 Special version (on	
		<b>105</b> [4.13]	<b>139</b> [5.47]			[7.87]	Ľ	without bias	equest)	
		<b>144</b> [5.67]	<b>178</b> [7.01]			240		Plastic, half-ridged		
		<b>182</b> [7.17]	<b>216</b> [8.50]			[9.45]	2	with bias		
						<b>280</b> [11.02]	3	Plastic, half-ridged without bias		
						<b>350</b> [13.78]	4	Aluminum full-ridged with bias		
						<b>400</b> [15.75]	5	Aluminum full-ridged without bias		
							6	Aluminum half-ridged with bias		
							7	Aluminum half-ridged without bias		
							9	Special version (on request)		
Ļ			V		-	$\downarrow$	Ļ		Ļ	<b>↓</b>
									8	
			d, crossbar	on inside				DOO61	d	

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Inside width 1.77 in.; radius 5.91 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 61 in. (17 links)

### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

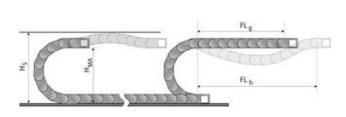
Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 3.03 inch – 23.62 inch are available for delivery.

#### Strain relief:

The end brackets utilize strain relief plates (ZL) for cable strain relief.

For detailed information, please consult the corresponding product documentation.

### **SELF-SUPPORTING LENGTH**



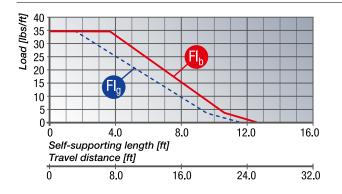
The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

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The maximum travel parameters (speed and acceleration) can be applied for this variant.

- H<sub>s</sub> = Installation height plus safety
- $H_{MA}$  = Height of moving end connection
- $FL_{q}$  = Self-supporting length, upper run straight
- $FL_{b}$  = Self-supporting length, upper run bent

#### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



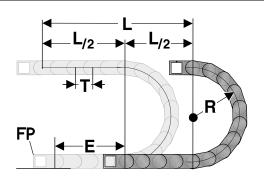
#### FL<sub>a</sub> Self-supporting length, upper run straight

In the  $FL_{g}$  range, the chain upper run still has a bias, is straight or has a maximum sag of 2.36 inch.

#### FL, Self-supporting length, upper run bent

In the  $FL_b$  range, the chain upper run has a sag of more than 2.36 inch, 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 optimized by using a support for the upper run or a more stable cable drag chain.

# **DETERMINING THE CHAIN LENGTH**



# **INSTALLATION DIMENSIONS**

Sv/Sk H H<sub>MA</sub> M The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

Chain length calculation =  $L/2 + \pi * R + E$  $\approx$  1 ft chain = 11 qty. x 3.60 inch.

E = Distance between entry point and middle of travel distance

- L = Travel distance
- R = Radius
- P = Grid 3.60 inch

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

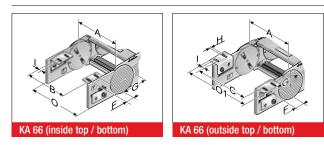
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.

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

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

Radius R	5.91	7.87	9.45	11.02	13.78	15.75
Outside height of chain link $(H_{\rm g})$	3.15	3.15	3.15	3.15	3.15	3.15
Height of bend (H)	14.97	18.89	22.05	25.19	30.71	34.65
Height of moving end connection $(H_{MA})$	11.82	15.74	18.90	22.04	27.56	31.50
Safety margin with bias ( $S_v$ )	1.97	1.97	1.97	1.97	1.97	1.97
Installation height with bias $(H_{sv})$	16.94	20.86	24.02	27.16	32.68	36.62
Safety margin without bias ( $S_{\kappa}$ )	0.59	0.59	0.59	0.59	0.59	0.59
Installation height without bias $(H_{s\kappa})$	15.56	19.48	22.64	25.78	31.30	35.24
Arc projection (M <sub>L</sub> )	11.09	13.05	14.62	16.20	18.95	20.93

# **KA 66 CHAIN BRACKET ANGLE**



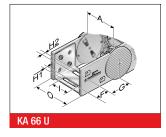
There are several options regarding the chain bracket. The fixed-point bracket (inside/bottom) and the moving end bracket (inside/top) are supplied as standard. However, any other combination can be supplied upon request. The chain bracket is fastened at the end like a side link. This enables the chain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

Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	G1 inch	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 66	0660000050	Sheet steel	2.44 - 7.17	A-0.67	A+2.01	1.77	1.99	3.39	0.35	0.39	A+1.34	A+2.52
KA 66	0660000060	Stainless steel 1.4301	2.44 – 7.17	A-0.67	A+2.01	1.77	1.99	3.39	0.35	0.39	A+1.34	A+2.52

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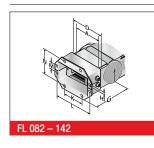
# **KA 66 CHAIN BRACKET U-PART**



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.

Туре	Order No.	Material	Inside width A inch	F inch	G inch	H1 inch	H2 inch	l inch	Outside width of KA O inch
KA 66 U	0660000054	Sheet steel	1.77	1.10	2.30	0.26	0.33	1.30	A+1.34

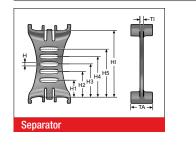
#### **KA 65 CHAIN BRACKET FLANGE**



A cable drag 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.

Туре	Order No.	Material	Inside width A inch	G inch	HØ inch	K inch	L inch	M inch	N inch
FL 082	065000070	Sheet steel	3.39	5.35	0.28	3.07	5.57	1.57	4.13
FL 107	0650000072	Sheet steel	4.02	5.35	0.28	3.94	6.44	1.57	4.13
FL 142	0650000074	Sheet steel	4.92	5.35	0.28	5.43	7.93	1.57	4.13
FL 082	0650000080	Stainless steel 1.4301	3.39	5.35	0.28	3.07	5.57	1.57	4.13
FL 107	0650000082	Stainless steel 1.4301	4.02	5.35	0.28	3.94	6.44	1.57	4.13
FL 142	0650000084	Stainless steel 1.4301	4.92	5.35	0.28	5.43	7.93	1.57	4.13

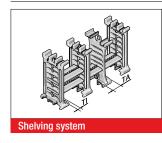
#### **MP 66 SEPARATOR**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
TV 66	066000009000	Separator	lockable	0.14	0.79	0.17	0.62	0.90	1.18	1.46	1.74	2.36

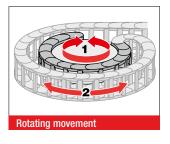
# **SHELVING SYSTEM MP 66**



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

Туре	Order No.	Description	Width inch	Clearance width inch	Lock grid spacing inch	TI inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	H6 inch	H7 inch
RB 031	10000003100	Shelf	1.65	1.22	0.06								
RB 048	10000004800	Shelf	2.32	1.89	0.06								
RB 070	10000007000	Shelf	3.19	2.76	0.06								
RB 092	10000009200	Shelf	4.06	3.62	0.06								
RB 100	10000010000	Shelf	4.37	3.94	0.06								
RB 128	100000012800	Shelf	5.47	5.04	0.06								
RB 167	100000016700	Shelf	7.01	6.57	0.06								
RT 66	1000900100	Shelf support	0.17		0.06	0.26	0.34	0.62	0.90	1.18	1.46	1.74	2.02

#### **MP 66 REARWARD RADII**



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

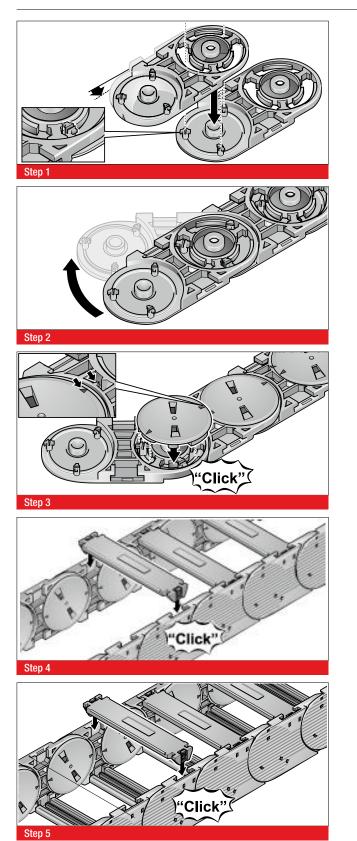
Туре	Order No.	Back radius inch	Version
SR 66 (RÜ240)	06600000060	9.45	Available for radii 5.91, 7.87, 9.45, 11.02 and 13.78 in

#### **VAW GUIDE CHANNEL**

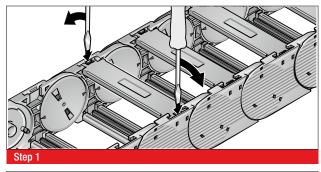


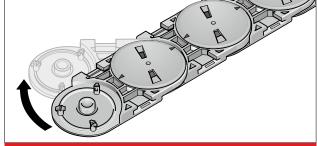
A variable guide channel system, constructed from aluminum sections, is available for this cable drag chain. The variable guide channel ensures that the cable drag chain is supported and guided securely.

# ASSEMBLY

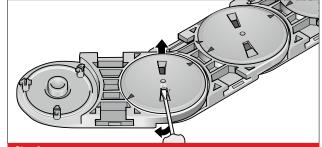


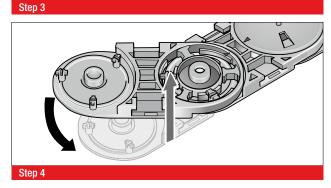
# DISASSEMBLY





Step 2





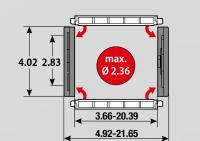
# **MP LEGACY**



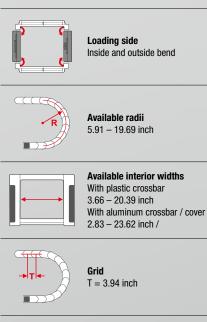
MP 72

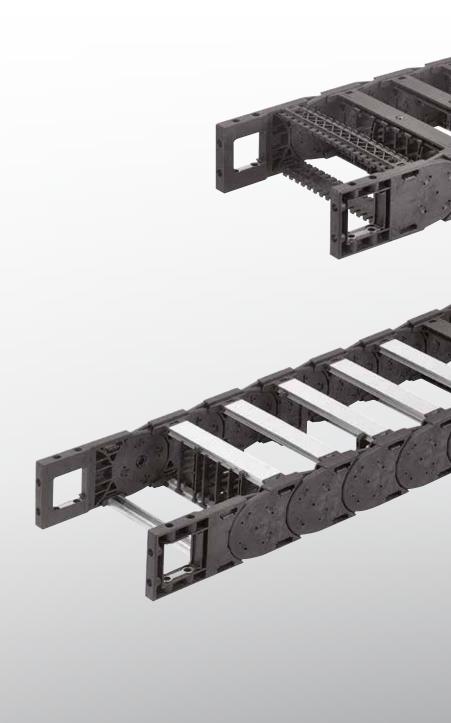


- PLASTIC OR ALUMINUM VERSION
- CHAIN BRACKET FLEXIBLE



# **TECHNICAL DATA**





### **TECHNICAL SPECIFICATIONS**

Travel distance gliding $L_{a}$ max.	492.13 ft.
Travel distance self-supporting L, max.	see diagram on page 411
Travel distance vertical, hanging L <sub>vh</sub> max.	262.47 ft.
Travel distance vertical, upright L <sub>vs</sub> max.	19.69 ft.
Rotated 90°, unsupported L <sub>90f</sub> max.	19.69 ft.
Speed, gliding V <sub>a</sub> max.	16.40 ft/s
Speed, self-supporting V, max.	65.62 ft/s
Acceleration, gliding a max.	82.02 ft/s <sup>2</sup>
Acceleration, self-supporting a, max.	131.23 ft/s <sup>2</sup>

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

# **MATERIAL PROPERTIES**

Standard material	Polyamide (PA) black
Service temperature	-22.00 – 248.00 °F
Gliding friction factor	0.30
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request

#### SHELVING SYSTEM





**CHAIN BRACKET** 



Chain bracket flexible



Chain bracket angle



Crossbar connector RSV



H-shaped shelf unit RE





**GUIDE CHANNELS** 



VAW steel galvanized / stainless steel



VAW aluminum

# STRAIN RELIEF



RS-ZL crossbar strain relief



STF Steel Fix

Courtesy of Steven Engineering, Inc - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

# **ORDERING KEY**

Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius		Rail variant	Material	Chain length
	Crossbar on outside bend	<b>093</b> [3.66]	<b>125</b> [4.92]	<b>468</b> [18.43]	<b>500</b> [19.69]	150		Plastic, full-ridged	Polyamide (PA):	
0720 30	Crossbar on inside bend Opens on inside and outside of bend	<b>106</b> [4.17]	<b>138</b> [5.43]	<b>518</b> [20.39]	<b>550</b> [21.65]	[5.91]	0	with bias	0 standard (PA/black)	
		<b>118</b> [4.65]	150 [5.91]			200		Plastic, half-ridged	G Special version (on	
		<b>131</b> [5.16]	163 [6.42]			[7.87]	2	with bias	9 request)	
		<b>143</b> [5.63]	<b>175</b> [6.89]			250		Aluminum full-ridged		
		<b>156</b> [6.14]	<b>188</b> [7.40]			[9.84]	4	with bias		
		<b>168</b> [6.61]	<b>200</b> [7.87]			300		Aluminum half-ridged		
		<b>181</b> [7.13]	213 [8.39]			[11.81]	6	with bias		
		<b>193</b> [7.60]	<b>225</b> [8.86]			400	9	Special version (on		
		<b>206</b> [8.11]	<b>238</b> [9.37]			[15.75]	9	request)		
		<b>218</b> [8.58]	<b>250</b> [9.84]			500				
		<b>231</b> [9.09]	<b>263</b> [10.35]			[19.69]				
		<b>243</b> [9.57]	<b>275</b> [10.83]							
		<b>256</b> [10.08]	<b>288</b> [11.34]							
		<b>268</b> [10.55]	<b>300</b> [11.81]							
		<b>293</b> [11.54]	<b>325</b> [12.80]							
		<b>318</b> [12.52]	<b>350</b> [13.78]							
		<b>343</b> [13.50]	<b>375</b> [14.76]							
		<b>368</b> [14.49]	<b>400</b> [15.75]							
		<b>418</b> [16.46]	<b>450</b> [17.72]							
•			V			•	↓ ▼			•
							_			
					1720 11	8 150 0	0.00	00062		

ORDERING EXAMPLE: 0720 118 150 0 0 000062

Crossbar on outside bend, crossbar on inside bend, can be opened from inside and outside bend

Inside width 4.65 in.; radius 5.91 in. Plastic crossbar, full-ridged with bias, material black-colored polyamide

Chain length 62 in. (16 links)

### **NOTE ON CONFIGURATION**

#### Aluminum crossbars:

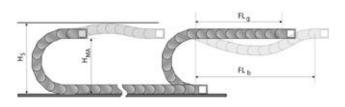
Aluminum crossbars in 0.04 in (1 mm) width sizes for inner widths from 2.83 inch – 23.62 inch are available for delivery.

#### Strain relief:

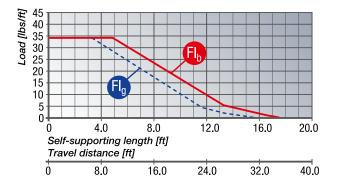
The end brackets utilize strain relief plates (ZL) for cable strain relief.

For detailed information, please consult the corresponding product documentation.

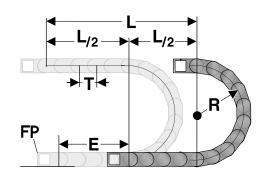
#### SELF-SUPPORTING LENGTH



### LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



#### **DETERMINING THE CHAIN LENGTH**



The self-supporting length is the distance between the chain bracket on the moving end and the start of the chain arch. The installation variant  $FL_g$  offers the lowest load and wear for the cable drag chain.

The maximum travel parameters (speed and acceleration) can be applied for this variant.

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

#### FL<sub>a</sub> Self-supporting length, upper run straight

In the FL range, the chain upper run still has a bias, is straight or has a maximum sag of 3.15 inch.

#### FL, Self-supporting length, upper run bent

In the  $FL_{b}$  range, the chain upper run has a sag of more than 3.15 inch, 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 optimized by using a support for the upper run or a more stable cable drag chain.

The fixed point of the cable drag chain should be connected in the middle of the travel distance.

This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

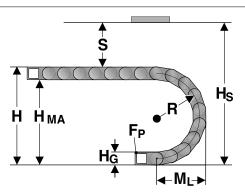
Chain length calculation =  $L/2 + \pi * R + E \approx 1$  ft chain = 10 qty. x 3.94 inch.

- E = Distance between entry point and middle of travel distance
- L = Travel distance
- R = Radius
- P = Grid 3.94 inch

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# **INSTALLATION DIMENSIONS**



The moving end chain connection is to be screw fixed at height

 $H_{MA}$  for the respective radius. For the installed dimension the "Installed height  $H_s$ " value has to be taken into account.

Radius R	5.91	7.87	9.84	11.81	15.75	19.69
Outside height of chain link $(H_{\rm g})$	4.02	4.02	4.02	4.02	4.02	4.02
Height of bend (H)	16.62	20.54	24.48	28.42	36.30	44.18
Height of moving end connection (H <sub>MA</sub> )	12.60	16.52	20.46	24.40	32.28	40.16
Safety margin (S)	0.79	0.79	0.79	0.79	0.79	0.79
Installation height (H <sub>s</sub> )	17.41	21.33	25.27	29.21	37.09	44.97
Arc projection $(M_L)$	12.25	14.21	16.18	18.15	22.09	26.03

# **HEAVYLINE PLASTIC CROSSBAR**



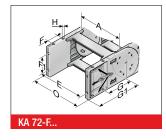
The crossbars connect the two side runs of the cable drag chain. The crossbar length is synonymous with the inside width of the cable drag chain.

Туре	Order No.	Description	Inside width inch
BS 093-7	072009300000	Crossbar	3.66
BS 106-7	072010600000	Crossbar	4.17
BS 118-7	072011800000	Crossbar	4.65
BS 131-7	072013100000	Crossbar	5.16
BS 143-7	072014300000	Crossbar	5.63
BS 156-7	072015600000	Crossbar	6.14
BS 168-7	072016800000	Crossbar	6.61
BS 181-7	072018100000	Crossbar	7.13
BS 193-7	072019300000	Crossbar	7.60
BS 206-7	072020600000	Crossbar	8.11
BS 231-7	072023100000	Crossbar	9.09
BS 243-7	072024300000	Crossbar	9.57
BS 256-7	072025600000	Crossbar	10.08
BS 268-7	072026800000	Crossbar	10.55
BS 293-7	072029300000	Crossbar	11.54
BS 318-7	072031800000	Crossbar	12.52
BS 343-7	072034300000	Crossbar	13.50
BS 368-7	072036800000	Crossbar	14.49
BS 418-7	072041800000	Crossbar	16.46
BS 468-7	072046800000	Crossbar	18.43
BS 518-7	072051800000	Crossbar	20.39

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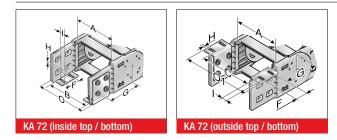
# **CHAIN BRACKET KA 72**



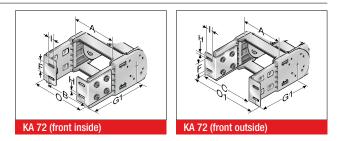
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M10 screws are used to secure the brackets in place. Metal inserts (supplied) help to minimize the cold flow properties. This is an enormous advantage, guaranteeing the smooth transfer of high loads to the chain.

Туре	Order No.	Material	Version	Inside width A inch	E inch	F inch	F1 inch	G inch	G1 inch	HØ inch	Outside width of KA O inch
KA 72-F Female end	0720000054	Plastic	with bush	3.66 - 20.39	A+0.43	1.38	1.77	4.21	6.75	0.43	A+1.26
KA 72-F male end	0720000055	Plastic	with bush	3.66 - 20.39	A+0.43	1.38	1.77	4.21	6.75	0.43	A+1.26

# **KA 72 CHAIN BRACKET ANGLE**



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



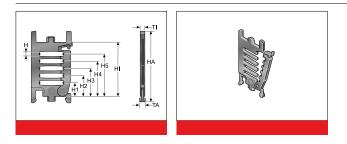
is fastened at the end like a side link. This enables the chain to move right up to the bracket. Each chain requires one male and one female bracket. The brackets should be fastened with M8 screws.

Туре	Order No.	Material	Inside width A inch	B inch	C inch	F inch	G inch	۰.	HØ inch	l inch	Outside width of KA O inch	Outside width of KA 01 inch
KA 72 Female end	0720000050	Sheet steel	3.66 - 20.39	A-0.63	A+1.89	1.77	4.17	7.07	0.35	1.26	A+1.26	A+4.96
KA 72 Male end	0720000051	Sheet steel	3.66 - 20.39	A-0.63	A+1.89	1.77	4.17	7.07	0.35	1.26	A+1.26	A+4.96

#### **MP 72 SEPARATOR**

Separato									ed if mul are to be		nd cables
Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	HI inch
TR 72	072000009200	Separator	lockable	0.14	0.51	0.22	1.00	1.42	1.83	2.24	2.83

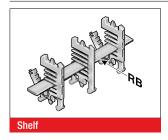
# **RTT 72 SHELF SUPPORT, DIVISIBLE**



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

Туре	Order No.	Description	Version	TI inch	TA inch	H inch	H1 inch	H2 inch	H3 inch	H4 inch	H5 inch	HI inch
RTT 72	100090722000	Shelf support, divisible	lockable	0.31	0.31	0.22	0.59	1.00	1.42	1.83	2.24	2.83

### **RB-7 SHELF**



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

Туре	Order No.	Description	Width inch	Inside width inch
RB 056-7	10000005600	Shelf	2.20	3.66
RB 061-7	1000006107	Shelf	2.40	3.66
RB 066-7	10000006600	Shelf	2.60	3.66
RB 071-7	1000007107	Shelf	2.80	3.66
RB 076-7	1000007607	Shelf	2.99	3.66
RB 081-7	10000008100	Shelf	3.19	3.66
RB 086-7	1000008607	Shelf	3.39	3.66
RB 091-7	1000009107	Shelf	3.58	4.17
RB 096-7	1000009607	Shelf	3.78	4.17
RB 101-7	1000010107	Shelf	3.98	4.17
RB 106-7	10000010600	Shelf	4.17	4.17
RB 111-7	1000011107	Shelf	4.37	4.65
RB 116-7	100000011600	Shelf	4.57	4.65
RB 121-7	1000012107	Shelf	4.76	5.16
RB 126-7	1000012607	Shelf	4.96	5.16
RB 131-7	1000013107	Shelf	5.16	5.63
RB 136-7	1000013607	Shelf	5.35	5.63
RB 141-7	1000014107	Shelf	5.55	5.63
RB 146-7	1000014607	Shelf	5.75	6.14
RB 151-7	1000015107	Shelf	5.94	6.14
RB 156-7	1000015607	Shelf	6.14	6.14
RB 161-7	1000016107	Shelf	6.34	6.61

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# **RB-7 SHELF**

Туре	Order No.	Description	Width inch	Inside width inch
RB 166-7	100000016600	Shelf	6.54	6.61
RB 171-7	1000017107	Shelf	6.73	7.13
RB 176-7	1000017607	Shelf	6.93	7.13
RB 181-7	1000018107	Shelf	7.13	7.60
RB 186-7	1000018607	Shelf	7.32	7.60
RB 191-7	1000019107	Shelf	7.52	7.60
RB 196-7	1000019607	Shelf	7.72	8.11
RB 201-7	1000020107	Shelf	7.91	8.11
RB 206-7	1000020607	Shelf	8.11	8.11
RB 211-7	1000021107	Shelf	8.31	8.58
RB 216-7	10000021600	Shelf	8.50	8.58

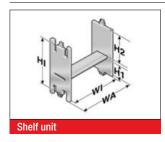
# **RSV 72 CROSSBAR CONNECTOR**



For crossbars wider than 9.69 inch (246 mm), we recommend the use of crossbar connectors. These prevent deformation to the crossbar under large amounts of additional weight of the chain assembly.

Туре	Order No.	Description	TI inch
RSV 72	07200009600	Crossbar connector	0.31
RSV 72 Alu	072000009800	Crossbar connector for aluminum crossbars	0.31

# **RE 72 H-SHAPED SHELF UNIT**



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

Туре	Order No.	Description	WA inch	WI inch	H1 inch	H2 inch	HI inch
RE 75/24	100000752418	H-shaped shelf unit	2.95	2.66	1.69	0.94	2.83
RE 75/36	100000753618	H-shaped shelf unit	2.95	2.66	1.32	1.32	2.83

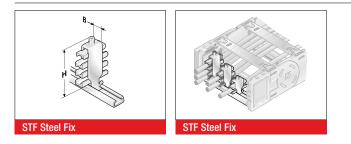
# **RS-ZL-7 CROSSBAR STRAIN RELIEF PLATE**



Fixed integrated crossbar strain relief plates in the chain brackets. Accommodated to all widths of the frame ridges, up to 10.08 inch in size. May be assembled on the inside and outside bends at both chain endings.

Туре	Order No.	Description	Inside width inch
RS-ZL 093-7	072009300010	Crossbar strain relief plate	3.66
RS-ZL 106-7	072010600010	Crossbar strain relief plate	4.17
RS-ZL 118-7	072011800010	Crossbar strain relief plate	4.65
RS-ZL 131-7	072013100010	Crossbar strain relief plate	5.16
RS-ZL 143-7	072014300010	Crossbar strain relief plate	5.63
RS-ZL 156-7	072015600010	Crossbar strain relief plate	6.14
RS-ZL 168-7	072016800010	Crossbar strain relief plate	6.61
RS-ZL 181-7	072018100010	Crossbar strain relief plate	7.13
RS-ZL 193-7	072019300010	Crossbar strain relief plate	7.60
RS-ZL 206-7	072020600010	Crossbar strain relief plate	8.11
RS-ZL 218-7	072021800010	Crossbar strain relief plate	8.58
RS-ZL 231-7	072023100010	Crossbar strain relief plate	9.09
RS-ZL 243-7	072024300010	Crossbar strain relief plate	9.57
RS-ZL 256-7	072025600010	Crossbar strain relief plate	10.08

#### **STRAIN RELIEF WITH STEEL FIX**



C-rails (galvanized) for permanent integration, for accommodating the Steel Fix bow clamps in the chain brackets. The bow clamps can take up to 3 cables and are suitable for C-rails with a groove width of 0.43 in (11 mm). Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 0.39 in (10 mm) at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
Single clamp (for one o	cable)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	0.24 - 0.47	0.63	2.17
STF 14-1 Steel Fix	81661802	Hooped clamp	1	0.47 – 0.55	0.71	2.05
STF 16-1 Steel Fix	81661803	Hooped clamp	1	0.55 – 0.63	0.79	2.13
STF 18-1 Steel Fix	81661804	Hooped clamp	1	0.63 – 0.71	0.87	2.20
STF 20-1 Steel Fix	81661805	Hooped clamp	1	0.71 – 0.79	0.94	2.32
STF 22-1 Steel Fix	81661806	Hooped clamp	1	0.79 – 0.87	1.02	2.40

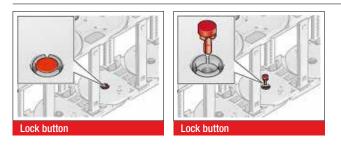
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# STRAIN RELIEF WITH STEEL FIX

Туре	Order No.	Description	Seats qty.	Cable Ø inch	Width (B) inch	Total height (H) inch
STF 26-1 Steel Fix	81661807	Hooped clamp	1	0.87 – 1.02	1.18	2.76
STF 30-1 Steel Fix	81661808	Hooped clamp	1	1.02 – 1.18	1.34	2.91
STF 34-1 Steel Fix	81661809	Hooped clamp	1	1.18 – 1.34	1.50	3.07
STF 38-1 Steel Fix	81661810	Hooped clamp	1	1.34 – 1.50	1.65	3.23
STF 42-1 Steel Fix	81661811	Hooped clamp	1	1.50 – 1.65	1.81	3.58
Double clamp (for two	cables)					
STF 12-2 Steel Fix	81661821	Hooped clamp	2	0.24 - 0.47	0.63	2.87
STF 14-2 Steel Fix	81661822	Hooped clamp	2	0.47 – 0.55	0.71	2.91
STF 16-2 Steel Fix	81661823	Hooped clamp	2	0.55 - 0.63	0.79	3.23
STF 18-2 Steel Fix	81661824	Hooped clamp	2	0.63 – 0.71	0.87	3.39
STF 20-2 Steel Fix	81661825	Hooped clamp	2	0.71 – 0.79	0.94	3.58
STF 22-2 Steel Fix	81661826	Hooped clamp	2	0.79 – 0.87	1.02	3.74
STF 26-2 Steel Fix	81661827	Hooped clamp	2	0.87 – 1.02	1.18	4.25
STF 30-2 Steel Fix	81661828	Hooped clamp	2	1.02 – 1.18	1.34	4.76
STF 34-2 Steel Fix	81661829	Hooped clamp	2	1.18 – 1.34	1.50	5.08
Triple clamp (for three	cables)					
STF 12-3 Steel Fix	81661841	Hooped clamp	3	0.24 - 0.47	0.63	3.86
STF 14-3 Steel Fix	81661842	Hooped clamp	3	0.47 – 0.55	0.71	3.86
STF 16-3 Steel Fix	81661843	Hooped clamp	3	0.55 – 0.63	0.79	4.13
STF 18-3 Steel Fix	81661844	Hooped clamp	3	0.63 – 0.71	0.87	4.37
STF 20-3 Steel Fix	81661845	Hooped clamp	3	0.71 – 0.79	0.94	4.65
STF 22-3 Steel Fix	81661846	Hooped clamp	3	0.79 – 0.87	1.02	5.12

#### **MP 52/62/72 LOCK BUTTON**



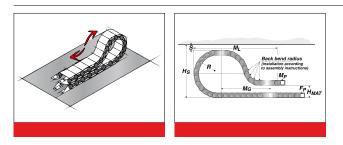
To increase the side stability we recommend the use of lock buttons during strong lateral acceleration or when installed "laying



on the side (turned  $90^\circ)$  without support".

Туре	Order No.
MP52/62/72 lock button	052000080

# **LOWERED FIXING POINT MP 72**



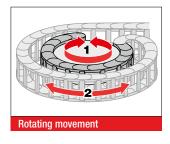
It is sometimes necessary to lower the height of the moving attachment point.

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

Please contact our application engineers.

Radius R inch	Height of moving end connection (H <sub>MA</sub> ) inch	Safety margin (S) inch	Installation height incl. safety ( <sub>#</sub> S) inch	Projection (M <sub>L</sub> ) inch	Additional links qty.	of which additional back chain links qty.
7.87	9.45	2.36	22.83	33.46	9	2
9.84	10.24	2.36	26.77	39.76	12	3
11.81	11.42	2.36	30.71	45.28	13	3
15.75	13.78	2.36	38.58	53.54	16	3
19.69	15.75	2.36	46.46	63.78	20	3

### **MP 72 REARWARD RADII**



Side links with forward radius (R) and rearward radius (Rü) 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.

Туре	Order No.	Radius inch	Back radius inch
SR 72 (RÜ300/R300) left	072000030060	11.81	11.81
SR 72 (RÜ300/R300) right	072000030062	11.81	11.81

# **GUIDE CHANNEL VAW (ALUMINUM / STAINLESS STEEL)**



A range of variable guide channel systems, constructed from aluminum or stainless steel sections, is available for this cable drag chain.

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

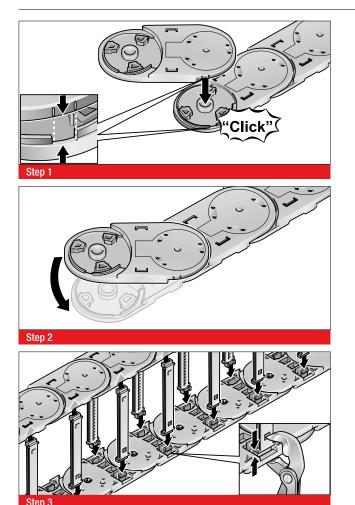
# ASSEMBLY INSTRUCTION FLEXIBLE CHAIN BRACKET EB

000 EB chain bracket

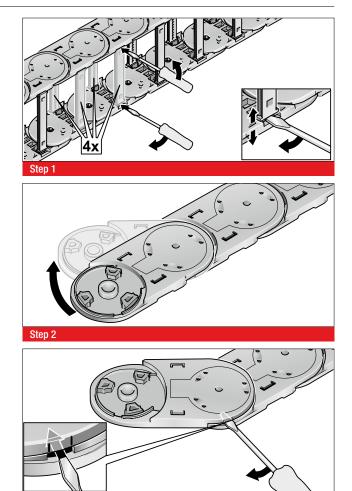
418

The flexible chain bracket is delivered with insert panels to reduce the plastic's cold flow properties.

# ASSEMBLY



# DISASSEMBLY



Step 3





# Strain relief systems

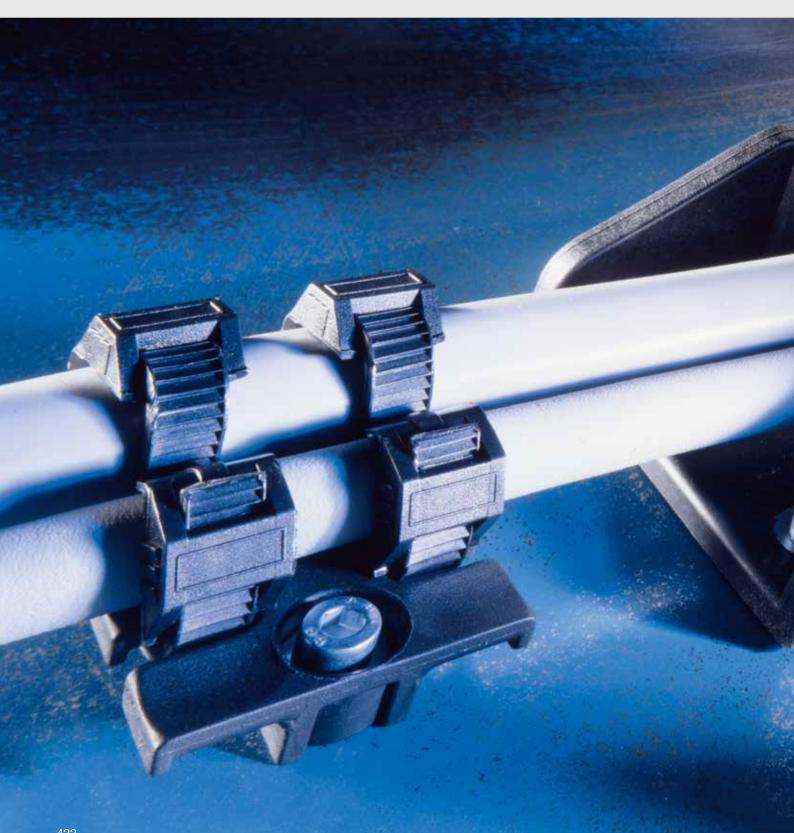








# Introduction







#### For every system: The right strain relief

Cables and conduits that are to be routed in an 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.

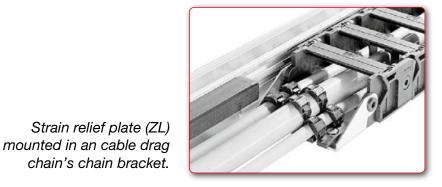
#### ZL (strain relief plate)

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.

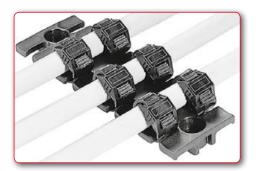




# **Benefits**

# Secure hold

The undercut on the underside of the plate prevents the cable tie from slipping off – even with very large cable diameters.



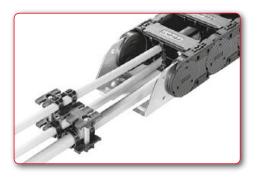
# Longer life

Each cable is secured by two power cable ties on each end. This spreads the pressure on the cable and thereby minimizes the risk of damage to the cable core.



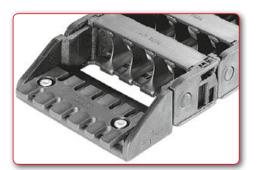
# Wide support face on the individual plate tongues

The cables are optimally secured by the wide supporting surfaces of the individual strain relief tongues. The wide power cable ties help to facilitate strain relief which is quick and simple but gentle on the cables.



# Two-tier assembly

The DH spacer sleeves allow mounting one above the other.



# Compatible fixing holes

The dimensions of the holes on the plates system match those on the chain brackets.

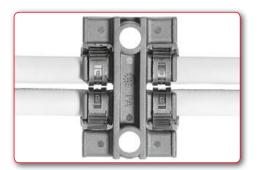
Please note the dimension of the holes on the strain relief plate when using strain relief in the chain bracket.





# Durable fastening with metal bushing.

The metal bushings inhibit cold flow properties. Metal is screwed onto metal. The screws are prevented from working loose. (Please order separately.)



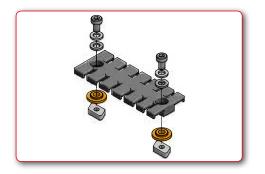
# Easy assembly

Even if two cables are immediately next to each other, it is possible to secure them with two power cable ties.



# **Different cable diameters**

The flexible use of power cable ties provides strain relief which is quick and simple but very gentle on the cables, even for cables of very different diameters with extremely high packing density.



# Single or as a complete set

Our strain relief plates are available singly or in a set, e.g. for mounting on a C-rail:

A strain relief plate, complete with cylinder head bolt, plain and serrated washer, insert bushings and T-slot nut.



# Steel Fix bow clamps

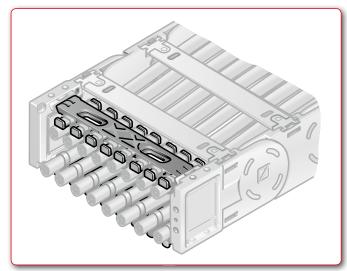
- for C-rails with a groove width of 0.43 inch (11 mm)
- for one, two or three cables on top of each other
- Corrosion protection via cathodic dip painting (CDP)
- Trough elements with low-wear cable design
- Stainless steel design available on request



# Selection criteria / engineering notes

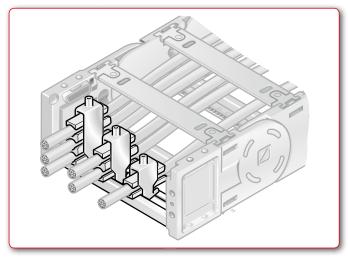
# Where is the strain relief made?

For cable drag chains with standard inside widths of up to 9.57 inch (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 precut 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.

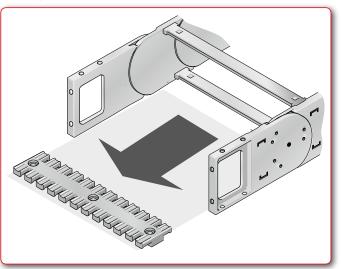
We offer two separate strain relief systems for this specific application:

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 ZLformat strain relief plates, which match crossbar strain relief plates in form and function.

The options described above assume that the distance from the last movable point of the cable drag chain to the strain relief mechanism is sufficient for all of the installed power cabling/media conduits (depends on the minimum bending radius).

If this is not the case, then you will need to use one of the options as described below:

# 1. Reposition strain relief in front of chain



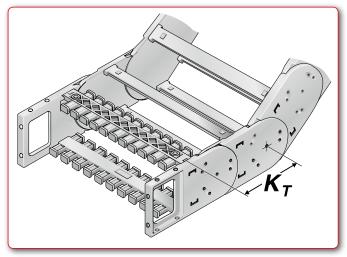
To increase the distance from the strain relief to the first movable point, the strain relief can be moved to a position outside the chain bracket. To do so, you can utilise our Steel Fix bow clamps and ZL-C strain relief plates, which are mounted on C-rails. The ZL strain relief plates can also be secured to a load-bearing substrate directly, without using C-rails.

A further positive effect of this option is that the chain bracket itself remains free of additional pulling forces.

# **Design / structure**

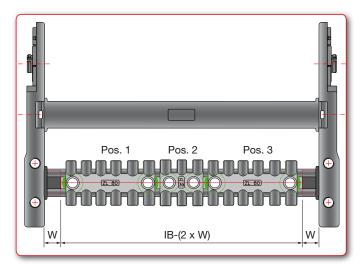
# 2. Lengthening the chain

If the installation space available permits and the circular arc distance may be increased still further, then the installation of additional chain links can also be used to achieve the necessary distance between the strain relief and the first movable point of the chain.



Note on installation width when using a permanently installed C-rail.

To secure a C-rail within the chain bracket (order no.: 81661610), one fixing clip is inserted into the C-rail on both sides. This slightly reduces the installation space available for strain relief plates or for bow clamps. The space required for the mounting clip depends on the chain type deployed and is in the range 0.16–0.59 inch (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 inch			Recor	nmended 2	ZL combina	ations
Nominal	-2xW	Effective	Item 1	Item 2	Item 3	Item 4
9.69	1.18	8.50	ZL 87	ZL 39	ZL 87	
9.92	1.18	8.74	ZL 39	ZL 121	ZL 60	
10.08	1.18	8.90	ZL 87	ZL 140		
10.16	1.18	8.98	ZL 87	ZL 140		
10.55	1.18	9.37	ZL 60	ZL 87	ZL 87	
11.54	1.18	10.35	ZL 87	ZL 87	ZL 87	
11.65	1.18	10.47	ZL 87	ZL 180		
12.52	1.18	11.34	ZL 60	ZL 87	ZL 140	
13.50	1.18	12.32	ZL 87	ZL 103	ZL 121	
13.62	1.18	12.44	ZL 87	ZL 87	ZL 140	
13.78	1.18	12.6	ZL 180	ZL 140		
14.09	1.18	12.91	ZL 121	ZL 103	ZL 103	
14.49	1.18	13.31	ZL 80	ZL 80	ZL 180	
14.61	1.18	13.43	ZL 140	ZL 121	ZL 39	ZL 39
15.59	1.18	14.41	ZL 121	ZL 103	ZL 140	
16.46	1.18	15.28	ZL 87	ZL 121	ZL 180	
16.57	1.18	15.39	ZL 140	ZL 121	ZL 87	ZL 39
17.56	1.18	16.38	ZL 87	ZL 121	ZL 121	ZL 87
18.43	1.18	17.24	ZL 87	ZL 87	ZL 87	ZL 180
19.53	1.18	18.35	ZL 121	ZL 121	ZL 103	ZL 121
20.39	1.18	19.21	ZL 87	ZL 103	ZL 121	ZL 180
21.50	1.18	20.31	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. 1.75 inch (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.



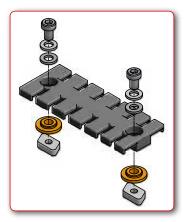


# Strain relief plate, type ZL-C set and ZL

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.



Legend for dimensions

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

A = Length

B = Width

Z = Installation width = C+X+Y

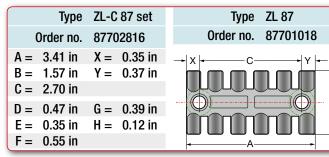
# ZL-C set

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.

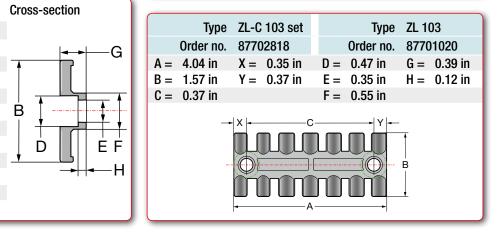
Туре	ZL-C 39 set	Type ZL 39
Order no.	87702810	Order no. 87701014
A = 1.52 in	X = 0.35 in	→ X - C - Y -
B = 1.57 in	Y = 0.35 in	
C = 0.77 in		
D = 0.47 in	G = 0.39 in	В
E = 0.35 in	H = 0.12 in	
F = 0.55 in		→ A →

Туре	ZL-C 60 set	Type ZL 60
Order no.	87702812	Order no. 87701016
A = 2.34 in	X = 0.35 in	+  X
B = 1.57 in	Y = 0.28 in	
C = 1.71 in	Z = 2.42 in	
D = 0.47 in	G = 0.39 in	
E = 0.35 in	H = 0.12 in	
F = 0.55 in		

Туре	ZL-C 80 set	Type ZL 80
Order no.	87702814	Order no. 87701015
$\begin{array}{llllllllllllllllllllllllllllllllllll$	Y =       0.22 in         Z =       3.39 in         G =       0.39 in	
F = 0.55 in		<b>← A ← →  </b> ← Z ← →

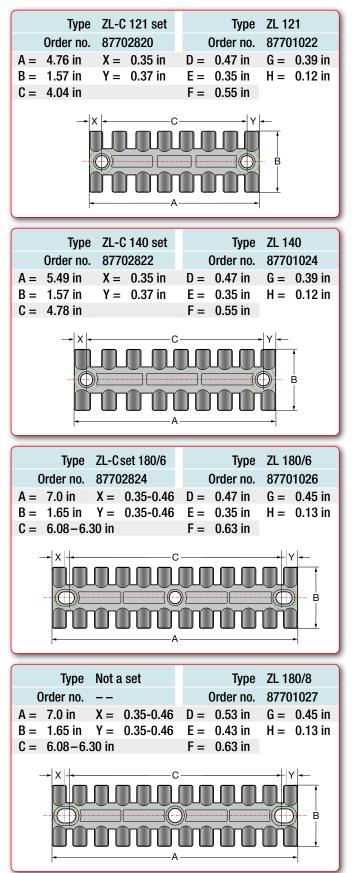


B



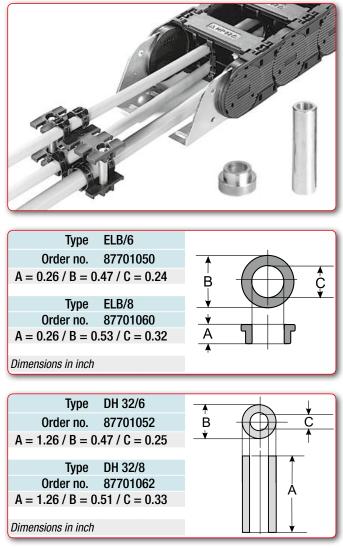


# Strain relief plate, type ZL / two-tier strain relief plate



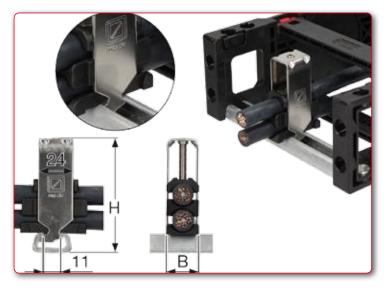
# **Two-tier installation**

When deploying a shelving system and to achieve highed packing densities, you can also installtwo strain relief plates above each other. The necessary distance between the levels is ensured by using spacer sleeves type DH.





# **Steel Fix bow clamp**



A permanently integrated C-rail (dip galvanised, order no. 81661610) for accommodating the Steel Fix bow clamps in the chain brackets.

The bow clamps can take up to 3 cables and are suitable for C-rails with a slot width of 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. Adjusted to all chain inside widths up to 200 mm in size. May be assembled on the inside and outside bends at both chain endings.

A stainless steel model is also available.

The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

Туре	Order no.	Cable Ø inch	Width (B) inch	Height (H)* inch	Pitch (T)
Single bow clamp (for	1 cable)				
STF 12-1 Steel Fix	81661801	0.24 - 0.47	0.63	2.17	0.94 in (24 mm)
STF 14-1 Steel Fix	81661802	0.47 – 0.55	0.71	2.05	0.94 in (24 mm)
STF 16-1 Steel Fix	81661803	0.55 - 0.63	0.79	2.13	0.94 in (24 mm)
STF 18-1 Steel Fix	81661804	0.63 – 0.71	0.87	2.20	0.94 in (24 mm)
STF 20-1 Steel Fix	81661805	0.71 – 0.79	0.94	2.32	0.94 in (24 mm)
STF 22-1 Steel Fix	81661806	0.79 – 0.87	1.02	2.40	0.94 in (24 mm)
STF 26-1 Steel Fix	81661807	0.87 – 1.02	1.18	2.76	0.94 in (24 mm)
STF 30-1 Steel Fix	81661808	1.02 – 1.18	1.34	2.91	0.94 in (24 mm)
STF 34-1 Steel Fix	81661809	1.18 – 1.34	1.50	3.07	0.94 in (24 mm)
STF 38-1 Steel Fix	81661810	1.34 – 1.50	1.65	3.23	0.94 in (24 mm)
STF 42-1 Steel Fix	81661811	1.50 – 1.65	1.81	3.58	0.94 in (24 mm)
Double bow clamp (for	<sup>·</sup> 2 cables)				
STF 12-2 Steel Fix	81661821	0.24 - 0.47	0.63	2.87	0.94 in (24 mm)
STF 14-2 Steel Fix	81661822	0.47 – 0.55	0.71	2.91	0.94 in (24 mm)
STF 16-2 Steel Fix	81661823	0.55 - 0.63	0.79	3.23	0.94 in (24 mm)
STF 18-2 Steel Fix	81661824	0.63 - 0.71	0.87	3.39	0.94 in (24 mm)
STF 20-2 Steel Fix	81661825	0.71 – 0.79	0.94	3.58	0.94 in (24 mm)
STF 22-2 Steel Fix	81661826	0.79 – 0.87	1.02	3.74	0.94 in (24 mm)
STF 26-2 Steel Fix	81661827	0.87 – 1.02	1.18	4.25	0.94 in (24 mm)
STF 30-2 Steel Fix	81661828	1.02 - 1.18	1.34	4.76	0.94 in (24 mm)
STF 34-2 Steel Fix	81661829	1.18 – 1.34	1.50	5.08	0.94 in (24 mm)
Triple bow clamp (for 3	3 cables)				
STF 12-3 Steel Fix	81661841	0.24 - 0.47	0.63	3.86	0.94 in (24 mm)
STF 14-3 Steel Fix	81661842	0.47 – 0.55	0.71	3.86	0.94 in (24 mm)
STF 16-3 Steel Fix	81661843	0.55 – 0.63	0.79	4.13	0.94 in (24 mm)
STF 18-3 Steel Fix	81661844	0.63 – 0.71	0.87	4.37	0.94 in (24 mm)
STF 20-3 Steel Fix	81661845	0.71 – 0.79	0.94	4.65	0.94 in (24 mm)
STF 22-3 Steel Fix	81661846	0.79 – 0.87	1.02	5.12	0.94 in (24 mm)
****					. /

\* 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 1.97 in (50 mm) and larger	The object probe, a sphere of 1.97 in (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.	800 800
2	Protected against solid foreign sub- stances of 0.49 in (12.5 mm) diameter and above.	The object probe, a sphere of 0.49 in (12.5 mm) in diameter, must not fully penetrate.	AB3	2	Protected against diagonally falling (up to 15°) drops of water	Drops which fall vertically must not have any harmful effects if the hous- ing is inclined at an angle of up to 15° at either side of the perpendicular.	
3	Protected against solid foreign sub- stances of 0.10 in (2.5 mm) diameter and above.	The object probe of di- ameter 0.10 in (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 per- pendicular must not have any harmful effects.	
4	Protected against solid foreign sub- stances of 0.04 in (1.0 mm) dia. and above.	The object probe of di- ameter 0.04 in (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 sub- mersion 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 per- manent 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: $3.94 - 5.91$ in (10 - 15 cm) Water volume: $14 - 16$ litres per min. Water temperature: $176 \text{ °F} + 1/- 5 \text{ °F}$ 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, selfextinguishing 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, selfextinguishing must also occur after an average of 25 seconds (individual values not to exceed 30 seconds). However, any possible dripping material must not ignite the cotton wool. Any afterglow must not exceed 30 seconds.



# Fire classification V0

In the vertical combustion test, self-extinguishing must occur after an average of less than 5 seconds (individual values not to exceed 10 seconds).

Any material dropping off must not ignite cotton wool placed underneath and any afterglow must not exceed 30 seconds.

# Description of fire classifications according to DIN 5510



# **Combustion class S4**

Test procedure: acc. to DIN 54837

**Requirements:** 

- Length of the destroyed area:  $\leq$  7.87 in (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 x  $10^6$  Gy gamma radiation, the mechanical properties change very little.



# Vacuum

Murrplastik plastic cable drag chains may be safely used in a vacuum. Gas will only be given off in very low amounts.



# Welding flashes and hot sparks

For cables on robotic welding machines, Murrplastik cable drag chains offer the best line protection possible. This has been demonstrated both in laboratory testing and numerous references. The material may appear optically impaired but in no way will its function be reduced. Murrplastik cable drag chains have successfully passed tests involving medium-sized hot metal swarf at 500 °C.



# Use in EX explosion proof areas

The Murrplastik cable drag chain may be used in explosion proof areas if manufactured to specification with a special material and if the standard regulations are observed. All Murrplastik cable drag chains are certified in accordance with ATEX European Directive 94/9 EC and can therefore be used in the relevant areas without hesitation.



# Weatherproof

Murrplastik cable drag chains are suitable for outdoor applications. Experience has shown that the mechanical properties are not impaired.



# Use in clean rooms

Murrplastik uses a special material. This reduces even further the very low wear of a normal chain. In many applications in which difficult special conditions apply, the cable drag chain can still be used. An intensive test program can be set up to verify its suitability in self-supporting and gliding applications.



# **Special colours**

Cable drag chains can be supplied in colours other than black on request. Several colours can also be combined where colour-psychological effects are desired. Minimum order quantities and special prices apply.



# Use in cold storage

A special material is used for cold storage resistant cable drag chains.



# Parts made of plastic / standard material



Murrplastik cable drag chains have been developed for use in extreme conditions. The standard material is glass fibre reinforced plastic in standard black.

# **Properties**

The PA (polyamide) we have developed meets stringent requirements for high mechanical capability regarding strain, pressure, torsion and free running. For specific, problematic scenarios (e.g. clean-room applications, specific climatic requirements, deployment in hygienically demanding environments), we draw on our long-standing experience to offer modified materials and can hence offer a solution to match almost any scenario.

The cable drag chain plastic is free of halogens, silicones and hard metals such as lead and cadmium. No formaldehydes are used in manufacturing.

Mechanical properties		Test	Test value	Unit
Tensile strength (DIN 53 455)		dry	190	N/mm <sup>2</sup>
- · · ·		humidity	120	N/mm <sup>2</sup>
Crack resistance (DIN 53 455)		dry	4	%
		humidity	6	%
Elasticity module	Tensile test	dry	7000	N/mm <sup>2</sup>
		humidity	10000	N/mm <sup>2</sup>
Impact resistance (DIN 53 455)	73 °F (23 °C)	dry	60	kJ/m <sup>2</sup>
	73 °F (23 °C)	humidity	75	kJ/m <sup>2</sup>
	-40 °C	dry	50	kJ/m <sup>2</sup>
Creep module E	73 – 122 °F (23 – 50 °C)	humidity	5400	N/mm <sup>2</sup>
	248 °F (120 °C)	dry	2100	N/mm <sup>2</sup>
Heat conductivity			0.3	W/k x m
Static electricity value (DIN 53 455)		dry	3.8	MHz
		humidity	6.8	MHz
Special volume resistance		dry	<b>10</b> <sup>15</sup>	Ω x cm
		humidity	10 <sup>12</sup>	Ω x cm
Impact resistance	Thickness 0.6 0.8 mm		80	kV/mm
Surface resistance ROA		dry	<b>10</b> <sup>12</sup>	Ω
		humidity	<b>10</b> <sup>10</sup>	Ω
Moisture absorption	73 – 77 °F (23 – 25 °C)		1.8±0.2	%
Temperature limits				
permissible temperature	-22 – 212 °F (-30 – 100 °C)			
5000 hours	up to 275 °F (135 °C)			
several hours	up to 338 °C (170 °C)			
Other properties				
Density	dry	1.4 g/cm <sup>2</sup>		
Coefficient of sliding friction	unlubricated	0.3-0.45		
Combustion profile	DIN VDE 0304 Part 3			
Fire classification acc. to UL	НВ			

# 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 processing 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	Concen- tration %	At + °F	Polyethylene PE	Polyamide PA6	Polyamide PA 12	Polypropylene PP	Polyurethane PU
Acetaldehyde	100	68	+	40% o	+		+
Acetic acid	10	68	+	0	0	+	0
Acetone	100	68	+	+	+	+	-
Allyl alcohol	96	68		30% o	0	+	-
Alum, aqueous	diluted	104			+	+	
Aluminium chloride, aqueous	diluted	104	+		+	+	+
Aluminium sulphate, aqueous	diluted	104	+			+	+
Ammonia, aqueous	any	68	+	20% +		+	0
Ammonium chloride, aqueous	any	140	+		0	+	+
Ammonium nitrate, aqueous	diluted	104	+			+	+
Ammonium sulphate, aqueous	diluted	104	+			+	+
Aniline chlorohydrate, aqueous	saturated	68					
Aniline, pure	100	68	+	0	0	+	-
Benzahldehyde, aqueous	0.3	68	-	pure o	0	+	
Benzine	100	68	-	+	+	0	+
Benzoic acid	any	104	+		0	+	+
Benzol	100	68	-	+	+	0	-
Bleaching lye	12.5 Cl	68		-	0	0	
Boracic acid, aqueous	diluted	104	+	0	+	+	-
Borax, aqueous	diluted	104	•	0	+	+	
Boron	50	104		0	•	•	
Bromine, liquid	100	68	-	-	0	-	-
Butane diol	10	68		pure +	0	+	0
Butanol	100	68		pure		+	+
Butyl acetate	100	68				0	-
Butyl alcohol	100	68	-			+	0
Calcium chloride, aqueous	any	104	+	+	0	+	+
Calcium nitrate, aqueous	50	104	+	т	0	+	+
Carbon bisulphide	100	68	-	0	+	+	+
Carbon dioxide	100	140	+	0	Ŧ		+
Carbon oxide	100	140	+			+	
Carbon tetrachloride	100	68	+		0	+	+
	50	68		+ 50% +	0	0	+
Caustic potash solution				50% +		+	0
Chlorine	any	68	-	-	-	-	-
Chromic alum, aqueous Citric acid	diluted 10	104 104				+	<u>^</u>
		68	+			+	0
Copper chloride, aqueous	saturated		+			+	+
Copper sulphate, aqueous	any	104	+			+	+
Cresol, aqueous	90	68	-	pure -	-	+	-
Crystallisable acetic acid	100	68			0	+	
Cyclohexanol	100	68		+		+	-
Ethyl acrylate/acrylic resin lacquer	100	68	-	30% -	-		
Ethyl alcohol, aqueous	10	68		0		+	+
Ethyl ether	100	68		30% +		0	-
Ethylene chloride	100	68				0	-
Ethylene oxide, liquid	100	68					
Exhaust gases containing carbon dioxide	any	140				+	+
Exhaust gases containing carbon oxide	any	140				+	+
Fluorine	50	104		-			
Formaldehyde, aqueous	diluted	104	+	pure +	0	+	0
Formic acid, aqueous	100	68		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	Concen- tration %	At + °F	Polyethylene PE	Polyamide PA6	Polyamide PA 12	Polypropylene PP	Polyurethane PU
Glucose, aqueous	any	68	+			+	+
Hydrobromic acid, aqueous	10	104	+	-		+	-
Hydrochloric acid	10	86-104					
Hydrochloric acid, aqueous	10	68	+	20% -	0	+	-
Hydrogen	100	140		+			+
Hydrosilicofluoric acid	30	68	-				
Hydroxylamine sulphate, aqueous	12	35					+
Iron chloride, aqueous	10	104	+	0	+	+	+
Lactic acid, aqueous	50	68	0	pure +	0	+	0
Magnesium carbonate	any	68					+
Magnesium chloride, aqueous	any	68	+	10% o		+	+
Mercury		140	+	+	+	+	+
Methyl alcohol	100	68	+			+	0
Methyl chloride	100	68					
Methylene chloride	100	68		0	0	-	-
Nickel chloride, aqueous	any	68		10% o		+	+
Nickel sulphate, aqueous	any	68	+	10% o		+	+
Nitric acid, aqueous	6	68	+	50% -	-	+	-
Nitroglycerine	diluted	68					
Oils and greases		68	0	+	+	+	+
Oleic acid	100	68	U U	+		+	0
Oxalic acid	saturated	68	+	10% o		+	0
Ozone	100	68	0	0	+	0	0
Petroleum	100	00	0	0		0	+
Phosgene, liquid	100	68					-
Phosphoric acid, aqueous	diluted	68		10% -	0		-
Phosphorus pentoxide	100	68	+	1070 -	0	+ +	0
Photographic developer	100	104				+	
Potash, aqueous	saturated	104				т	
		104		10% +	+		+
Potassium bromide, aqueous	any		+			+	0
Potassium chloride, aqueous	any	68	+	10% +		+	+
Potassium dichromate, aqueous	40	68	-			+	+
Potassium ferrocyanide, aqueous	any	140	0	100/		+	
Potassium nitrate	any	68	+	10% +	+	+	+
Potassium permanganate, aqueous	6	68	+		0	+	-
Potassium persulphate, aqueous	diluted	104	-		+	+	+
Salt solution	any	104			+	+	+
Seawater		104	+	+	0	+	+
Soap solution, aqueous	concentrated	68		0		+	+
Soda lye, aqueous	10	68	+	+	+	+	0
Sodium chlorate, aqueous	any	68	+	10% o		+	
Sodium sulphide, aqueous	diluted	104				+	
Sulphuric acid	10	68	+	40-80% -	0	+	+
Tin chloride, aqueous	diluted	104			+	+	+
Toluene	100	68	-	+	+	0	+
Trichloroethylene	100	68	-	0		0	-
Urea, aqueous	10	104		20% +		+	+
Vinyl acetate	100	68					-
Xylene	100	68		+	+	0	+
Zinc chloride, aqueous	diluted	140	+	10% o	0	+	+
Zinc sulphate, aqueous	diluted	140	+			+	+

resistant + means: o means: limited resistance not resistant - means:



