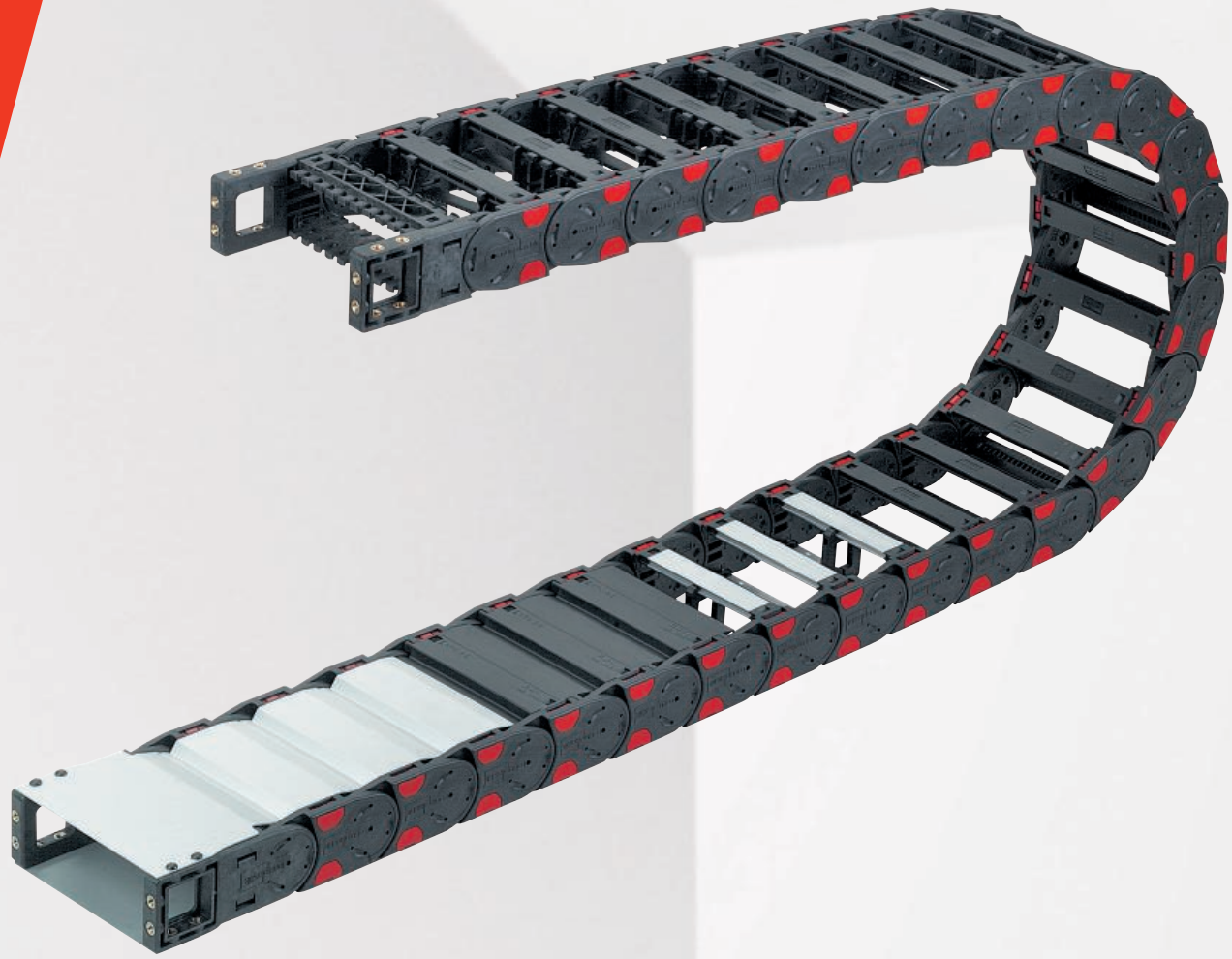
Data sheet

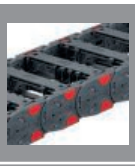
POWERLINE MP 41.2
MP 41.3



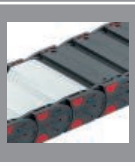
murrplastik®
Simply Smart Systems

POWERLINE

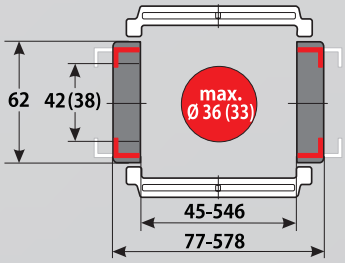
41.2
OPEN

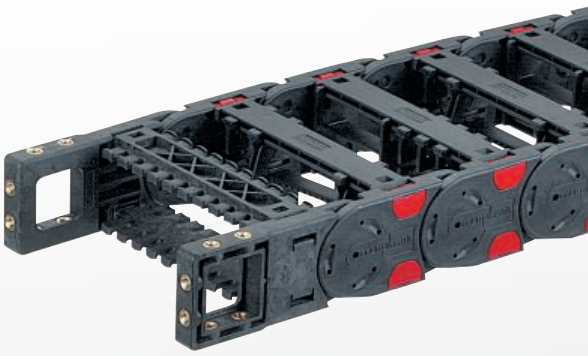


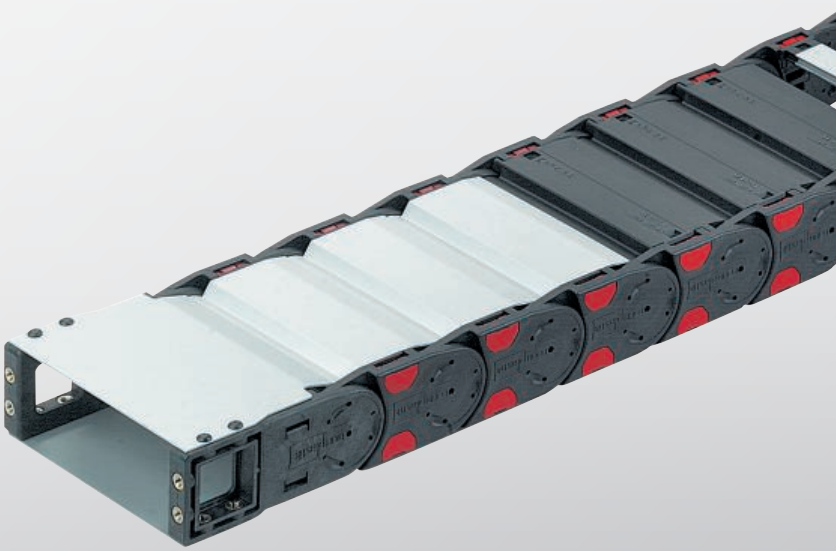
41.3
CLOSED



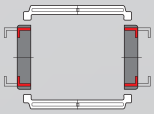
- GLIDING SHOES FOR LONGER SERVICE LIFE
- BROAD INTERIOR LAYOUT
- FLEXIBLE CHAIN BRACKET
- PLASTIC AND ALUMINUM VERSION



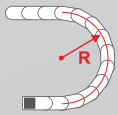




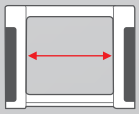
TECHNICAL DATA



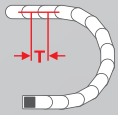
Loading side
Inside and outside bend



Available radii
90.0 – 350.0 mm



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



Grid
T = 77.0 mm

TECHNICAL SPECIFICATIONS

Travel distance gliding L_g max.	120.0 m
Travel distance self-supporting L_f max.	see diagram on page 5
Travel distance vertical, hanging L_{vh} max.	50.0 m
Travel distance vertical standing L_{vs} max.	6.0 m
Rotated 90°, self-supporting L_{90f} max.	1.0 m
Speed, gliding V_g max.	5.0 m/s
Speed, self-supporting V_f max.	20.0 m/s
Acceleration, gliding a_g max.	25.0 m/s^2
Acceleration, self-supporting a_f max.	30.0 m/s^2

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

MATERIAL PROPERTIES

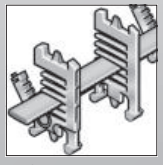
Standard material	Polyamide (PA) black
Service temperature	-30.0 – 120.0 °C (-76 to 176 °F)
Gliding friction factor	0.3
Static friction factor	0.45
Fire classification	UL 94 HB

Other material properties on request.

ACCESSORIES

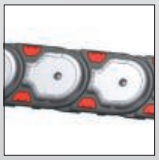
SHELVING SYSTEM


TR separator


RS shelving system

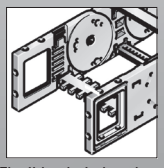
ACCESSORIES

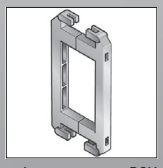

Gliding shoes

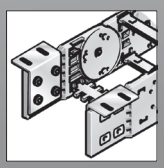

Gliding plate

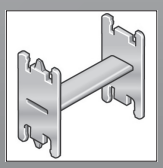

Bracket bar

CHAIN BRACKET


Flexible chain bracket


Crossbar connector RSV

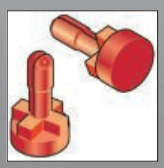

Chain bracket angle


H-shaped shelf unit (RE)

GUIDE CHANNELS

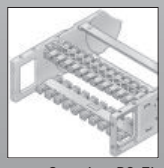

Cover

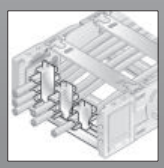

VAW steel galvanized / stainless steel


Lock button


VAW aluminum

STRAIN RELIEF

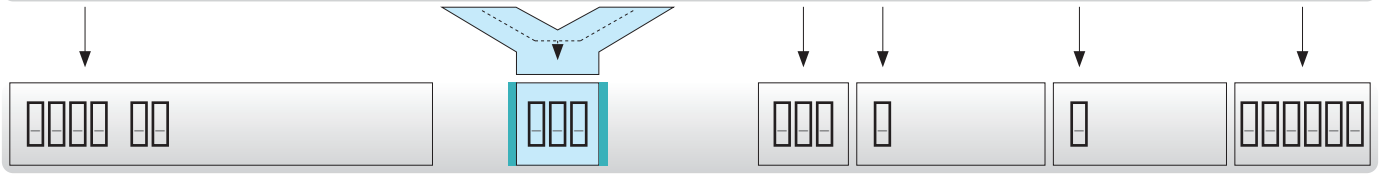

Crossbar RS-ZL


STF Steel Fix

ORDER KEY

Dimensions in mm [US inch]

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



ORDERING EXAMPLE: 0412 30 045 090 0 0 1386

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

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

NOTE ON CONFIGURATION

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

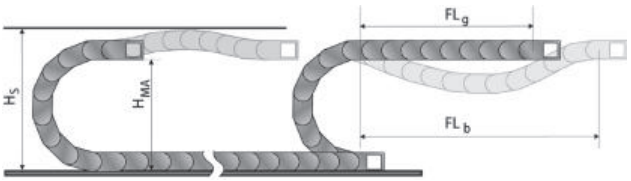
Aluminum covers:
Aluminum crossbars can be supplied in 1 mm width sizes for inner widths from 43.0 – 600.0 mm.

Crossbar connector and crossbar strain relief plate:
Once inside widths exceed 9.69 in (246 mm), we recommend the deployment of crossbar connectors (RSV).
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.

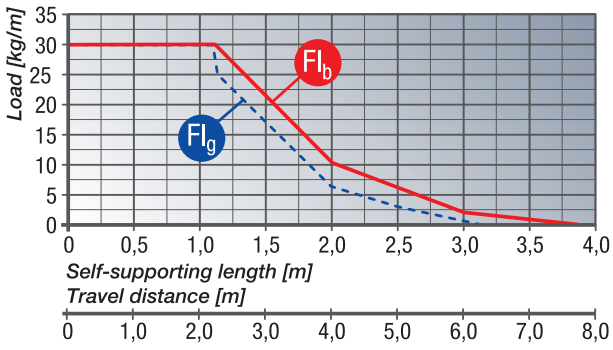
SELF-SUPPORTING LENGTH



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

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

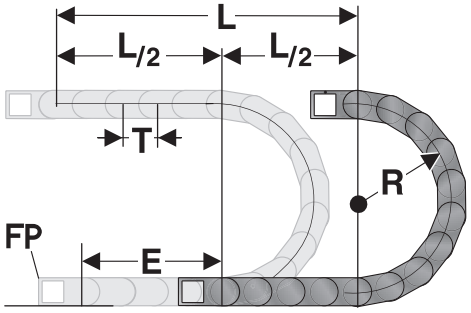
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

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

DETERMINING THE CHAIN LENGTH

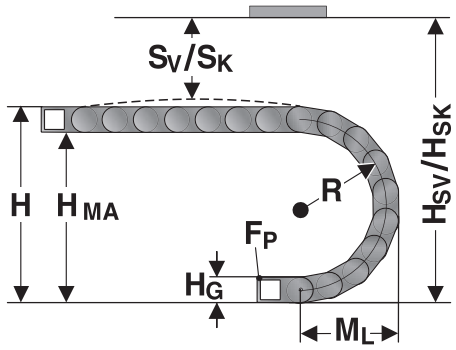


The fixed point of the energy chain should be connected in the middle of the travel distance.
This arrangement gives the shortest connection between the fixed point (FP) and the moving bracket and thus the most efficient chain length.

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

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

INSTALLATION DIMENSIONS



The moving end chain bracket is to be screw fixed at height H_{MA} for the respective radius.
Concerning the installed dimensions, you must take into account whether the chain links are equipped with or without bias.
For chain links without bias, the "installed height without bias H_{SK}" has to be taken into account.
If the chain links are equipped with a bias, the "installed height with bias H_{SV}" has to be taken into account.

Radius R	90	120	150	175	200	250	300	350
Outside height of chain link (H_G)	62	62	62	62	62	62	62	62
Height of bend (H)	252	312	372	422	472	572	672	772
Height of moving end bracket (H_{MA})	190	250	310	360	410	510	610	710
Safety margin with bias (S_V)	30	30	30	30	30	30	30	30
Installation height with bias (H_{SV})	282	342	402	452	502	602	702	802
Safety margin without bias (S_K)	15	15	15	15	15	15	15	15
Installation height without bias(H_{SK})	267	327	387	437	487	587	687	787
Arc projection (M_L)	203	233	263	288	313	363	413	463

POWERLINE PLASTIC CROSSBAR

Crossbar

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

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

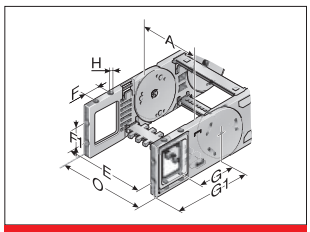
MP 41.3 PLASTIC COVER

Cover

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

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

KA 41 FLEXIBLE CHAIN BRACKET

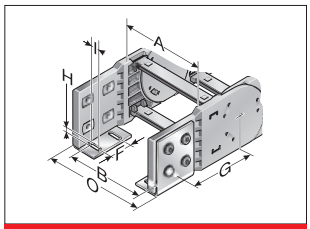


KA 41-F...

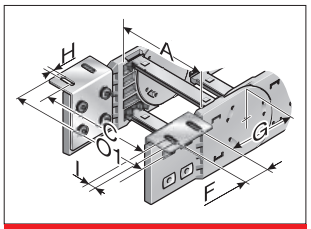
This chain bracket offers universal connection options (top, bottom and front) and is attached to the ends of the chain like a side link. This allows the chain to move right up to the bracket. Each chain requires one male and one female bracket. M6 screws are used to secure the brackets in place. Extrusion-coated 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 energy chain.

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

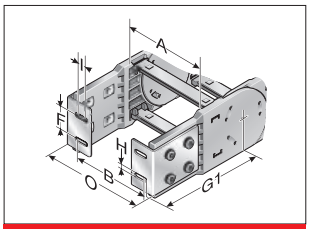
KA 41 ANGLE CHAIN BRACKET



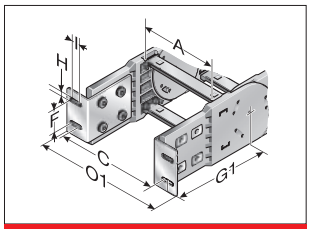
KA 41 (inside up / down)



KA 41 (outside up / down)



KA 41 (front internal)

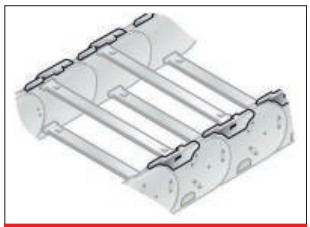


KA 41 (front exterior)

There are several options regarding the chain bracket. The fixed-point bracket (inside/down) and the moving end bracket (inside/up) 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 A mm	B mm	C mm	F mm	G mm	G1 mm	G2 mm	HØ mm	I mm	Outside width KA O mm	Outside width KA O1 mm
KA 41	0410000051	Sheet steel	45.0 – 546.0	A-2.5	A+34.5	32.0	79.0	120.0	125.7	6.5	14.0	A+32.0	A+71.0

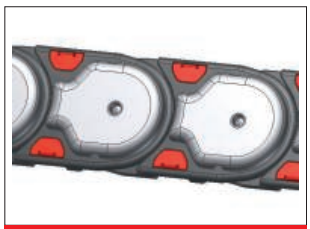
GS 41.2 GLIDING SHOE


Gliding shoes

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

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

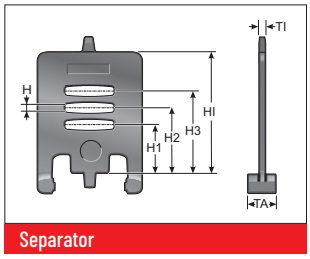
GLP 4 (41.2) GLIDING PLATE


Gliding plate

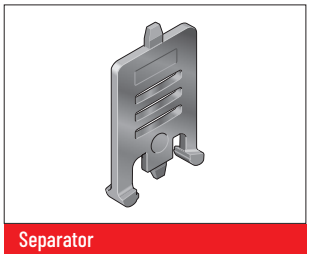
The gliding plates are mounted in a horizontal position, with the chain laying on its side, to minimize friction wear to the sides. They are mounted to the side links using a special screw. The wear limit is 0.10 in (2.5 mm). We recommend replacing the energy chain when this limit has been reached. Depending on the application, the service life of the energy chain may be extended two-fold, by using gliding plates. The energy chain can also be opened in the lateral position.

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

TR 41 SEPARATOR



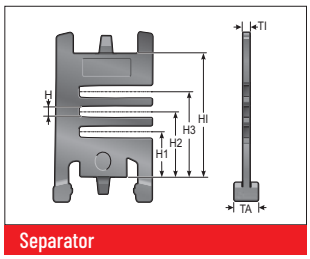
Separator


Separator

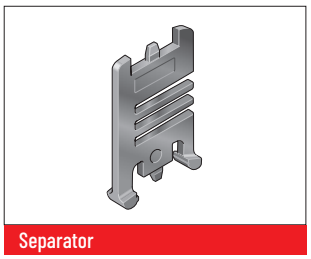
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41	041000009200	Separator	lockable	3.5	10.0	4.2	16.1	22.9	28.9	42.0

TR 41.1 SEPARATOR



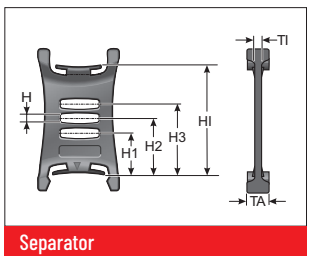
Separator


Separator

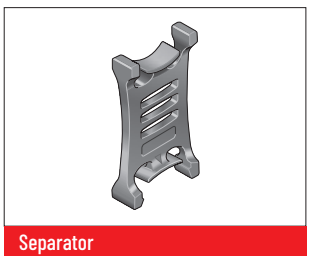
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41.1	041200009200	Separator	lockable	3.5	8.0	4.0	16.1	22.9	28.9	42.0

SEPARATOR TR 41-V



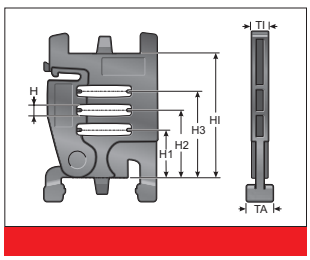
Separator

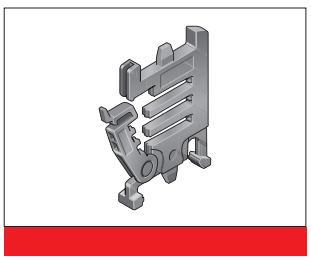

Separator

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

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	HI mm
TR 41-V	041000009300	Separator	movable	3.5	12.0	4.0	16.1	22.9	28.9	42.0

RTT 41 SHELF SUPPORT DIVISIBLE

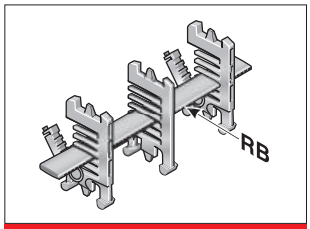




In connection with two separable shelf supports (RTT) with at least one end-to-end shelf (RB) the shelf becomes an easy to fill shelving system. The additional levels prevent cables from criss-crossing and minimize the friction between them.

Type	Order No.	Description	Version	TI mm	TA mm	H mm	H1, mm	H2, mm	H3, mm	HI mm
RTT 41	100090412000	Shelf support divisible	lockable	7.0	8.0	4.0	16.1	22.9	28.9	42.0

RB-5 SHELF



Shelf

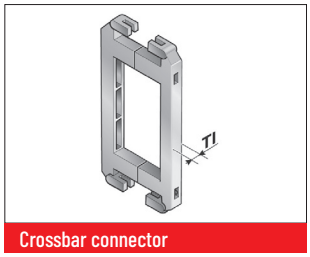
The shelf RBD creates a horizontal division over the entire inner width of the chain link. When used together with the TRT separator, an additional vertical division can be realized.

Type	Order No.	Description	Width mm	for inside width mm
RB 028-5	100000002800	Shelf	28.0	45.0
RB 034-5	1000003405	Shelf	33.6	45.0
RB 039-5	1000003905	Shelf	39.2	45.0
RB 045-5	1000004505	Shelf	44.8	57.0
RB 050-5	1000005005	Shelf	50.4	57.0
RB 056-5	100000005601	Shelf	56.0	62.0
RB 062-5	1000006205	Shelf	61.6	62.0
RB 067-5	1000006705	Shelf	67.2	84.0
RB 073-5	1000007305	Shelf	72.8	84.0
RB 078-5	1000007805	Shelf	78.4	84.0
RB 084-5	100000008400	Shelf	84.0	84.0
RB 090-5	1000009005	Shelf	89.6	96.0
RB 095-5	1000009505	Shelf	95.2	96.0
RB 101-5	1000010105	Shelf	100.8	107.0
RB 106-5	1000010605	Shelf	106.4	107.0
RB 112-5	100000011200	Shelf	112.0	121.0
RB 118-5	1000011805	Shelf	117.6	121.0
RB 123-5	1000012305	Shelf	123.2	133.0
RB 129-5	1000012905	Shelf	128.8	133.0
RB 134-5	1000013405	Shelf	134.4	144.0
RB 140-5	100000014000	Shelf	140.0	144.0
RB 146-5	1000014605	Shelf	145.6	158.0
RB 151-5	1000015105	Shelf	151.2	158.0
RB 157-5	1000015705	Shelf	156.8	164.0
RB 162-5	1000016205	Shelf	162.4	164.0
RB 168-5	100000016800	Shelf	168.0	182.0
RB 174-5	1000017405	Shelf	173.6	182.0
RB 179-5	1000017905	Shelf	179.2	196.0
RB 185-5	1000018505	Shelf	184.8	196.0
RB 190-5	1000019005	Shelf	190.4	196.0
RB 196-5	100000019600	Shelf	196.0	196.0
RB 201-5	1000020105	Shelf	202.3	346.0
RB 207-5	1000020705	Shelf	207.8	346.0
RB 213-5	1000021305	Shelf	213.6	346.0
RB 218-5	1000021805	Shelf	219.2	346.0
RB 224-5	1000022405	Shelf	224.8	346.0
RB 229-5	1000022905	Shelf	230.4	346.0
RB 235-5	1000023505	Shelf	236.0	346.0

RB-5 SHELF

Type	Order No.	Description	Width mm	for inside width mm
RB 241-5	1000024105	Shelf	241.8	346.0
RB 246-5	1000024605	Shelf	247.2	346.0
RB 252-5	1000025205	Shelf	252.9	346.0
RB 257-5	1000025705	Shelf	258.6	346.0
RB 263-5	1000026305	Shelf	264.0	346.0
RB 269-5	1000026905	Shelf	269.7	346.0
RB 274-5	1000027405	Shelf	274.4	346.0
RB 280-5	1000028005	Shelf	281.0	346.0
RB 285-5	1000028505	Shelf	285.0	346.0
RB 291-5	100000029100	Shelf	291.2	346.0

CROSSBAR CONNECTOR RSV 41

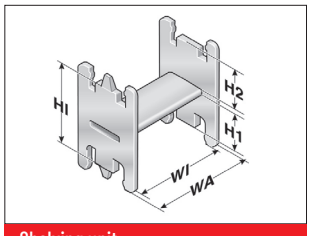


Crossbar connector

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

Type	Order No.	Description	TI mm
RSV 41	041000009600	Crossbar connector	7.5
RSV 41 Alu	041000009800	Crossbar connector for aluminum crossbars	7.5

MP 41 H-SHAPED SHELVING UNIT

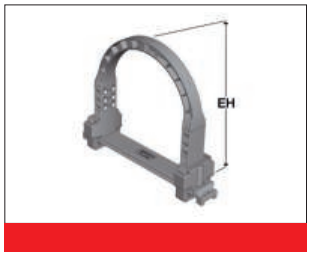


Shelving unit

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

Type	Order No.	Description	WA mm	WI mm	H1 mm	H2 mm	HI mm
RE 36/11	100000361112	H-shaped shelf unit	42.5	36.5	26.2	11.5	42.0
RE 59/18	100000591812	H-shaped shelf unit	65.0	59.0	18.8	18.8	42.0
RE 81/11	100000811112	H-shaped shelf unit	87.5	81.5	26.2	11.5	42.0

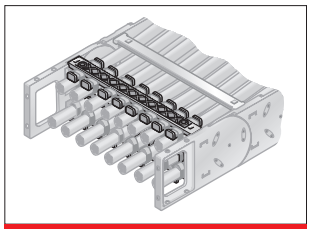
BS-5 BRACKET BAR



Large-diameter conduits are routed securely by using bracket bars (BS). The bracket bar can be installed on both the inside or 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.
The mounting on the aluminum or plastic covers or on the crossbars of the HeavyLine series is carried out with the help of the mounting set bracket bar RS-5/RS-7. One mounting set is required per bracket bar.

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

RS-ZL-5 CROSSBAR STRAIN RELIEF

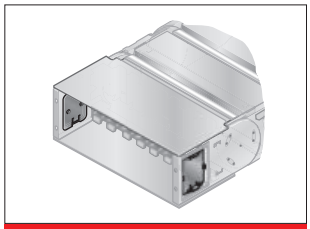


Crossbar strain relief plate

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

Type	Order No.	Description	for inside width mm
RS-ZL 045-5	052004500010	Crossbar strain relief plate	45.0
RS-ZL 057-5	052005700010	Crossbar strain relief plate	57.0
RS-ZL 062-5	052006200010	Crossbar strain relief plate	62.0
RS-ZL 071-5	052007100010	Crossbar strain relief plate	71.0
RS-ZL 084-5	052008400010	Crossbar strain relief plate	84.0
RS-ZL 093-5	052009300010	Crossbar strain relief plate	93.0
RS-ZL 096-5	052009600010	Crossbar strain relief plate	96.0
RS-ZL 104-5	052010400010	Crossbar strain relief plate	104.0
RS-ZL 107-5	052010700010	Crossbar strain relief plate	107.0
RS-ZL 121-5	052012100010	Crossbar strain relief plate	121.0
RS-ZL 133-5	052013300010	Crossbar strain relief plate	133.0
RS-ZL 144-5	052014400010	Crossbar strain relief plate	144.0
RS-ZL 146-5	052014600010	Crossbar strain relief plate	146.0
RS-ZL 158-5	052015800010	Crossbar strain relief plate	158.0
RS-ZL 164-5	052016400010	Crossbar strain relief plate	164.0
RS-ZL 171-5	052017100010	Crossbar strain relief plate	171.0
RS-ZL 182-5	052018200010	Crossbar strain relief plate	182.0
RS-ZL 196-5	052019600010	Crossbar strain relief plate	196.0
RS-ZL 208-5	052020800010	Crossbar strain relief plate	208.0
RS-ZL 220-5	052022000010	Crossbar strain relief plate	220.0
RS-ZL 233-5	052023300010	Crossbar strain relief plate	233.0
RS-ZL 246-5	052024600010	Crossbar strain relief plate	246.0

CHAIN BRACKET COVER D4

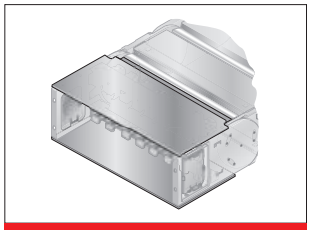


Cover

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

Type	Order No.
D4 Cover	0413888002

MP 41.3 CHAIN BRACKET CANOPY



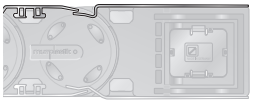
Canopy*

Constructed from 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 number configurator

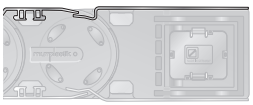
Type:	KA 41.1 FB/FG AB	Inside width	2-2
Order No.:	0411	Inside width	060

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



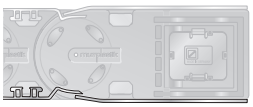
Type:	KA 41.1 FB/FG IB	Inside width	2-2
Order No.:	0411	Inside width	058

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



Type:	KA 41.1 FB/FG AB	Inside width	1-2
Order No.:	0411	Inside width	059

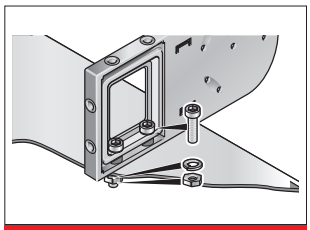
Canopy for chain bracket, moving end inside bend: Type and order number configurator



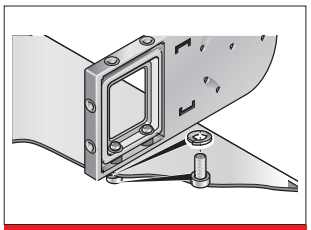
Type:	KA 41.1 FB/FG IB	Inside width	1-2
Order No.:	0411	Inside width	057

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 96 mm.

ASSEMBLY INSTRUCTION FB/FG FLEXIBLE CHAIN BRACKET



FB chain bracket



FG chain bracket

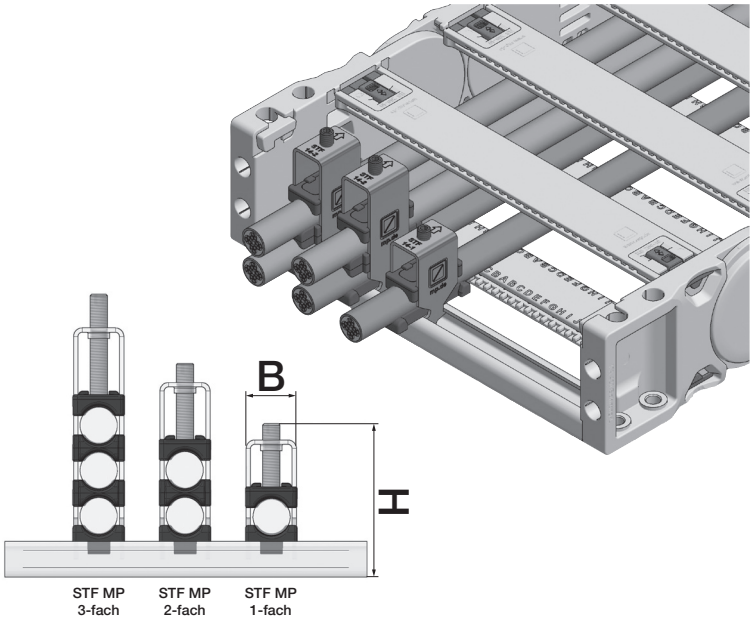
Brass bushes guarantee long-lasting fastening without cold flow in the plastic.

Type KA-FB:
Integrated through-hole fastened down using screw and nut.
Type KA-FG:
Built-in threads allow for quick and easy on-site mounting, since a screw, including a retaining washer where necessary, is sufficient.

Product information

Steel Fix bow clamps for secure strain relief of cables at the C-rail at high accelerations, loads and long travel distances. The specification of the total height is indicative.
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.

- Up to 3 cables on top of each other
- Suitable for C-rails with a slot width of 11 mm
- Plastic channels in specially developed design for strain relief that is gentle on cables
- May be assembled on the inside and outside bends at both ends of the energy chain

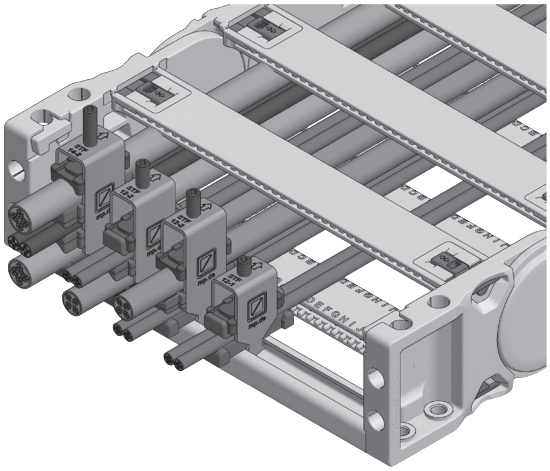


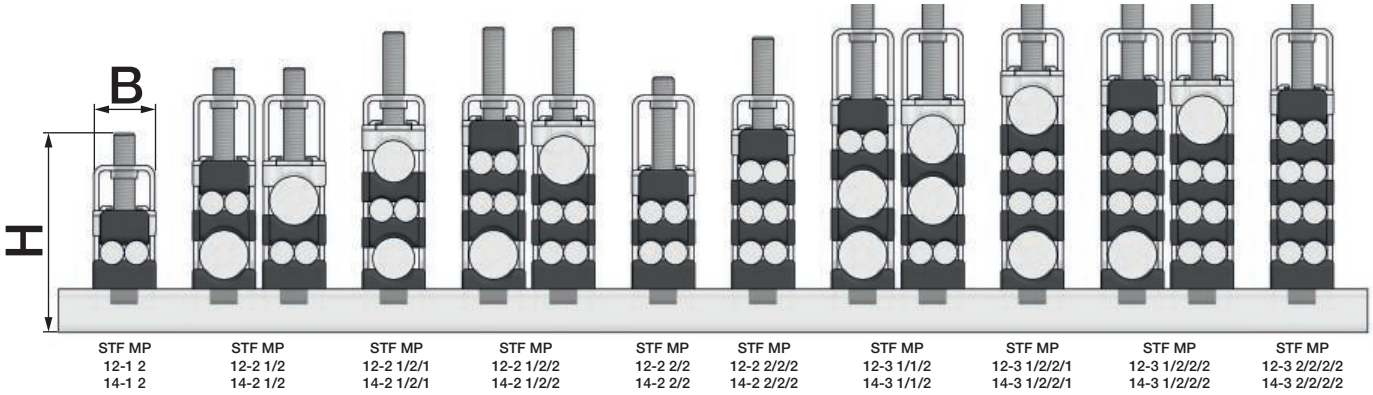
Type	Order No.	Description	Holders pieces	Cable Ø mm	Width (B) mm	Total height (H) mm
Single clamp (for one cable)						
STF MP 12-1 Steel Fix	80661801	Bow clamp	1	6 – 12	16	53
STF MP 14-1 Steel Fix	80661802	Bow clamp	1	12 – 14	18	53
STF MP 16-1 Steel Fix	80661803	Bow clamp	1	14 – 16	20	55
STF MP 18-1 Steel Fix	80661804	Bow clamp	1	16 – 18	22	57
STF MP 20-1 Steel Fix	80661805	Bow clamp	1	18 – 20	24	60
STF MP 22-1 Steel Fix	80661806	Bow clamp	1	20 – 22	26	62
STF MP 26-1 Steel Fix	80661807	Bow clamp	1	22 – 26	30	70
STF MP 30-1 Steel Fix	80661808	Bow clamp	1	26 – 30	34	74
STF MP 34-1 Steel Fix	80661809	Bow clamp	1	30 – 34	38	78
STF MP 38-1 Steel Fix	80661810	Bow clamp	1	34 – 38	42	82
STF MP 42-1 Steel Fix	80661811	Bow clamp	1	38 – 42	46	87
Double clamp (for two cables)						
STF MP 12-2 Steel Fix	80661821	Bow clamp	2	6 – 12	16	73
STF MP 14-2 Steel Fix	80661822	Bow clamp	2	12 – 14	18	74
STF MP 16-2 Steel Fix	80661823	Bow clamp	2	14 – 16	20	81
STF MP 18-2 Steel Fix	80661824	Bow clamp	2	16 – 18	22	85
STF MP 20-2 Steel Fix	80661825	Bow clamp	2	18 – 20	24	89
STF MP 22-2 Steel Fix	80661826	Bow clamp	2	20 – 22	26	93
STF MP 26-2 Steel Fix	80661827	Bow clamp	2	22 – 26	30	110
STF MP 30-2 Steel Fix	80661828	Bow clamp	2	26 – 30	34	118
STF MP 34-2 Steel Fix	80661829	Bow clamp	2	30 – 34	38	126
Triple clamp (for three cables)						
STF MP 12-3 Steel Fix	80661841	Bow clamp	3	6 – 12	16	96
STF MP 14-3 Steel Fix	80661842	Bow clamp	3	12 – 14	18	100
STF MP 16-3 Steel Fix	80661843	Bow clamp	3	14 – 16	20	106
STF MP 18-3 Steel Fix	80661844	Bow clamp	3	16 – 18	22	113
STF MP 20-3 Steel Fix	80661845	Bow clamp	3	18 – 20	24	120
STF MP 22-3 Steel Fix	80661846	Bow clamp	3	20 – 22	26	126

Product information

Compact strain relief for pneumatic hoses and signal cables. The specification of the total height is indicative. 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.

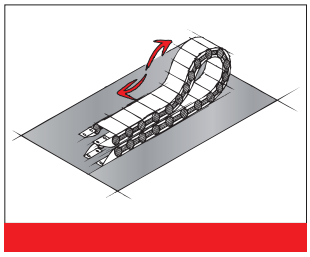
- For 2 cables side by side with max. Ø 7 mm
- Up to 4 cables on top of each other
- Suitable for C-rails with a slot width of 11 mm
- Plastic channels in specially developed design for strain relief that is gentle on cables
- May be assembled on the inside and outside bends at both ends of the energy chain

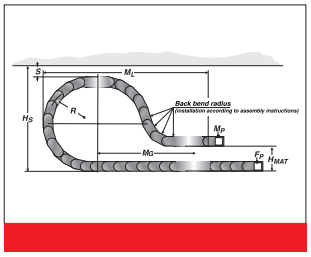




Type	Order No.	Description	Holders pieces	Cable Ø 2 x / 1 x mm	Width (B) mm	Total height (H) mm
Bow clamp multiple size 12 (for two cables side by side)						
STF MP 12-1 2	80662001	Bow clamp	2	3-6 / -	16	54
STF MP 12-2 1/2	80662025	Bow clamp	3	3-6 / 6-12	16	74
STF MP 12-2 1/2/1	80662029	Bow clamp	4	3-6 / 6-10	16	83
STF MP 12-2 1/2/2	80662027	Bow clamp	5	3-6 / 6-12	16	73
STF MP 12-2 2/2	80662021	Bow clamp	4	3-6 / -	16	70
STF MP 12-2 2/2/2	80662023	Bow clamp	6	3-6 / -	16	80
STF MP 12-3 1/1/2	80662045	Bow clamp	4	3-6 / 6-12	16	97
STF MP 12-3 1/2/2/1	80662047	Bow clamp	6	3-6 / 6-12	16	104
STF MP 12-3 1/2/2/2	80662043	Bow clamp	7	3-6 / 6-12	16	101
STF MP 12-3 2/2/2/2	80662041	Bow clamp	8	3-6 / -	16	97
Bow clamp multiple size 14 (for two cables side by side)						
STF MP 14-1 2	80662002	Bow clamp	2	5-7 / -	18	57
STF MP 14-2 1/2	80662026	Bow clamp	3	5-7 / 12-14	18	76
STF MP 14-2 1/2/1	80662030	Bow clamp	4	5-7 / 12	18	86
STF MP 14-2 1/2/2	80662028	Bow clamp	5	5-7 / 12-14	18	87
STF MP 14-2 2/2	80662022	Bow clamp	4	6-7 / -	18	73
STF MP 14-2 2/2/2	80662024	Bow clamp	6	5-7 / 12-14	18	85
STF MP 14-3 1/1/2	80662046	Bow clamp	4	5-7 / 12-14	18	104
STF MP 14-3 1/2/2/1	80662048	Bow clamp	6	5-7 / 12-14	18	112
STF MP 14-3 1/2/2/2	80662044	Bow clamp	7	5-7 / 12-14	18	109
STF MP 14-3 2/2/2/2	80662042	Bow clamp	8	5-7 / -	18	107

LOWERED MOVING END BRACKET MP 41





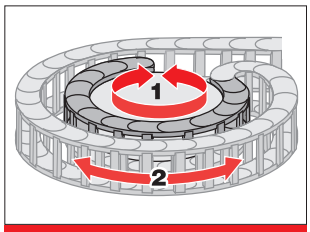
It is sometimes necessary to lower the height of the moving end bracket.

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

Please contact our application engineers.

Radius R mm	Height of moving end bracket (H_{MA}) mm	Safety margin (S) mm	Installation height incl. safety (H_S) mm	Projection (M_L) mm	Additional links pcs.	of which additional rearward chain links pcs.
175.0	160.0	50.0	472.0	640.0	6	2
200.0	190.0	50.0	522.0	770.0	13	2
250.0	220.0	50.0	622.0	910.0	15	2
300.0	280.0	50.0	722.0	1180.0	19	2
350.0	320.0	50.0	822.0	1140.0	19	3

MP 41.2 REARWARD RADII

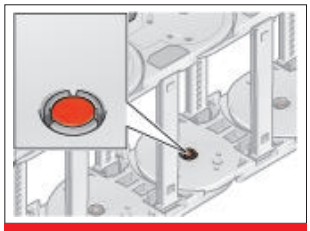


Rotating movement

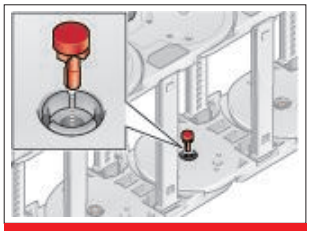
Side links with rearward radius allow movements in both directions. This is intended for rotating movements and lowered chain brackets. Rotation movements are only possible with open variants.

Type	Order No.	Radius mm	Rearward radius mm
SR 41.2 (RÜ200/R125)	041200009060	125.0	200.0
SR 41.2 (RÜ200/R160)	041200012060	160.0	200.0
SR 41.2 (RÜ200/R175)	041200015060	175.0	200.0
SR 41.2 (RÜ200/R200)	041200020060	200.0	200.0
SR 41.2 (RÜ200/R250)	041200025060	250.0	200.0
SR 41.2 (RÜ200/R300)	041200030060	300.0	200.0
SR 41.2 (RÜ200/R350)	041200035060	350.0	200.0

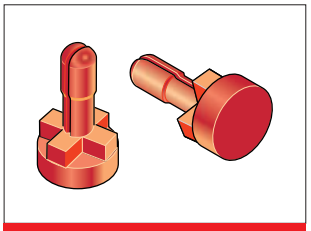
MP 32/41 LOCK BUTTON



Lock button



Lock button

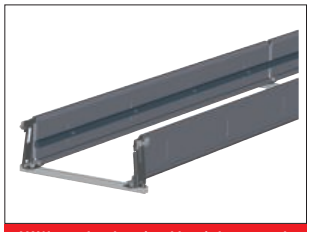


Lock button

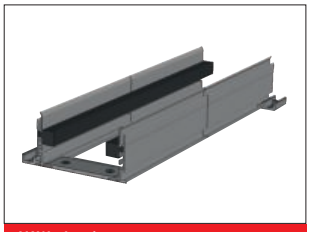
To increase the side stability we recommend the use of lock buttons during strong lateral acceleration or when installed "laying on the side (turned 90°) without support".

Type	Order No.
MP32/41 lock button	041000008000

VAW GUIDE CHANNEL (ALUMINUM / STAINLESS STEEL)



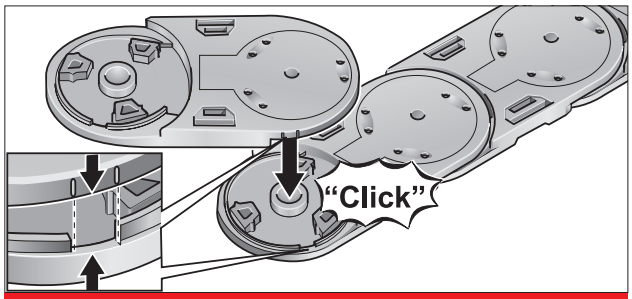
VAW steel galvanized/stainless steel



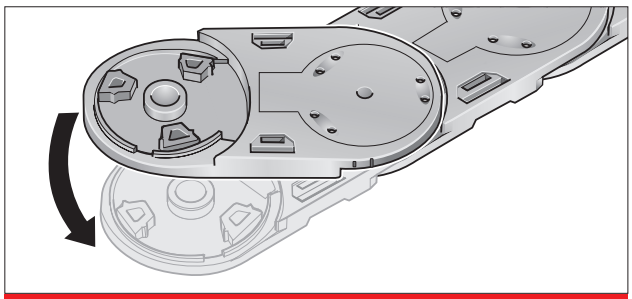
VAW aluminum

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

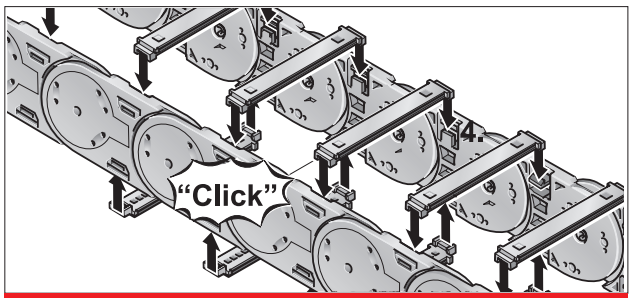
ASSEMBLY



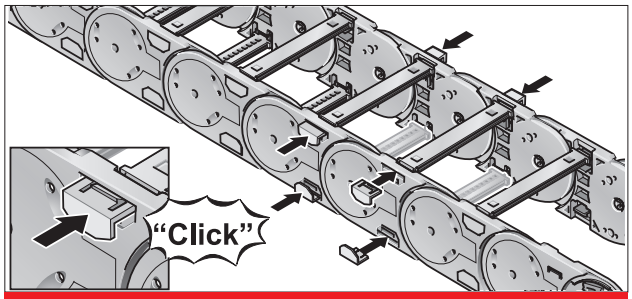
Step 1



Step 2

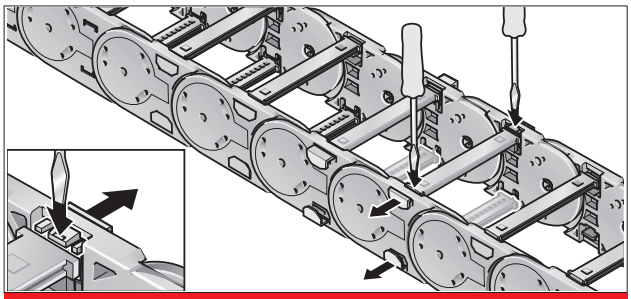


Step 3

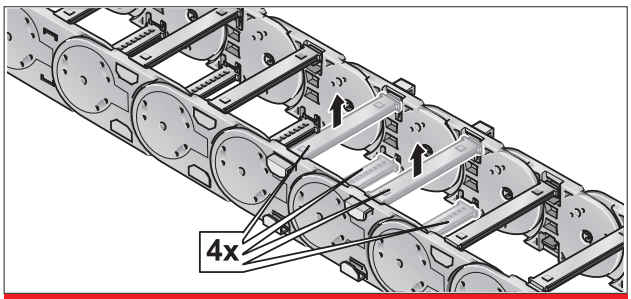


Step 4

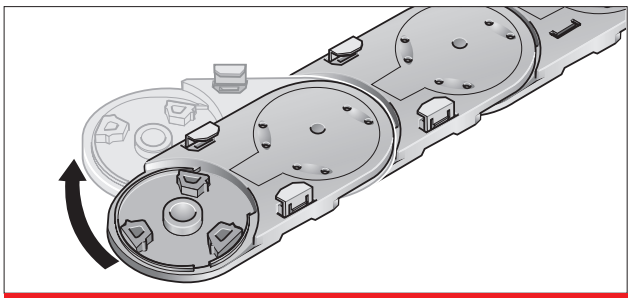
DISASSEMBLY



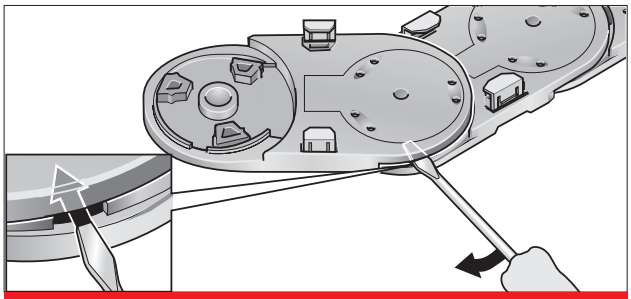
Step 1



Step 2



Step 3



Step 4

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