



Cable drag chain systems

MP 45.1, MP 45.2

**New chain series
45 mm interior height
With additional
noise reduction**

MP 45.1

OPEN

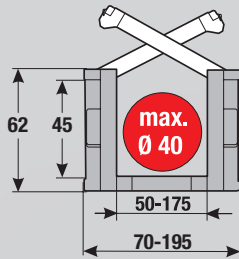


MP 45.2

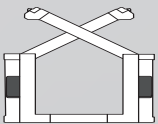
OPEN



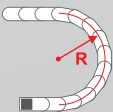
- REDUCED-COST
- SOFT-STOP SYSTEM
- SUITABLE FOR UNIVERSAL USE
- CHAIN BRACKET WITH INTEGRATED STRAIN RELIEF
- BROAD INTERIOR LAYOUT



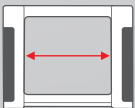
TECHNICAL DATA



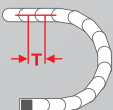
Loading side
Inside or outside bend



Available radii
75.0 – 300.0



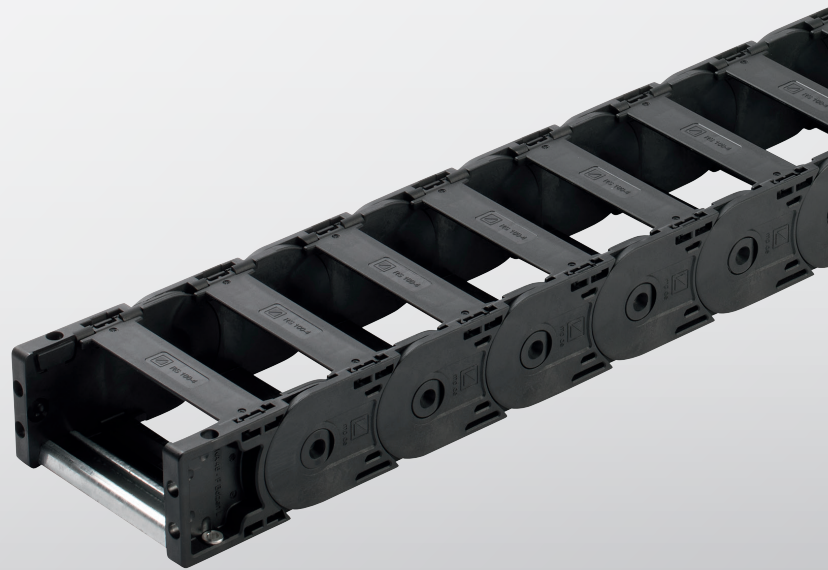
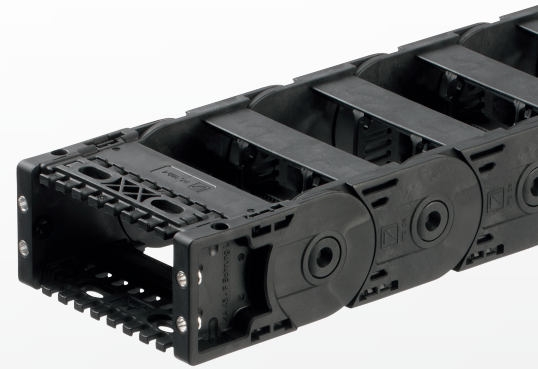
Available interior widths
With plastic frame bridge
50.0 – 175.0



Pitch
T = 67.0 mm



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





TECHNICAL SPECIFICATIONS

Travel distance gliding L_g max.	80.0 m
Travel distance self-supporting L_f max.	see diagram on page 5
Travel distance vertical, hanging L_{vh} max.	60.0 m
Travel distance vertical, upright L_{vs} max.	4.0 m
Rotated 90°, unsupported L_{90f} max.	1.0 m
Speed, gliding V_g max.	5.0 m/s
Speed, self-supporting V_f max.	20.0 m/s

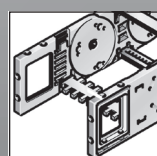
MATERIAL PROPERTIES

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

Other material properties on request.

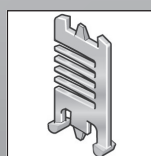
MP 45.1 OPEN / MP 45.2 OPEN

CHAIN BRACKET

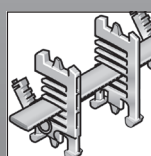


Chain bracket flexible

SHELVING SYSTEM

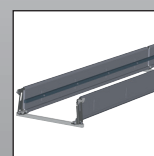


Separator TR

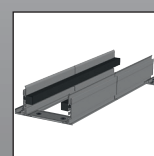


RS shelving system

GUIDE CHANNELS

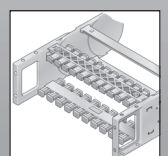


VAW steel galvanized / stainless steel

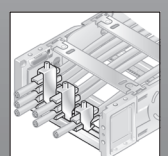


VAW aluminium

STRAIN RELIEF



RS-ZL frame rail

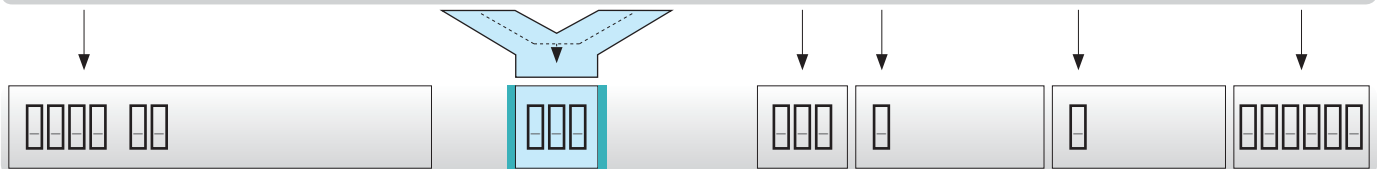


STF Steel Fix

ORDERING KEY

Dimensions in mm [US inch]

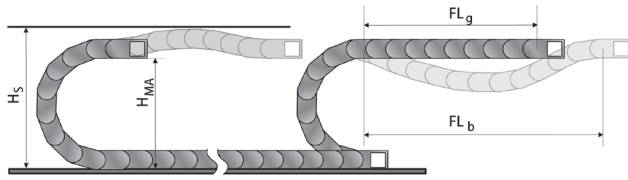
Type code	Variation	Inside width	Outside width	Inside width	Outside width	Radius	Rail variant	Material	Chain length
0451 01	MP 45.1 open Frame bridge on outside of radius Frame bridge on inside bend Opens on outside bend	050 [1.97]	070 [2.76]			075 [2.95]	0 Plastic, full-ridged with bias	2 Polyamide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



SAMPLE ORDER: 0452 02 075 100 0 3 2000

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

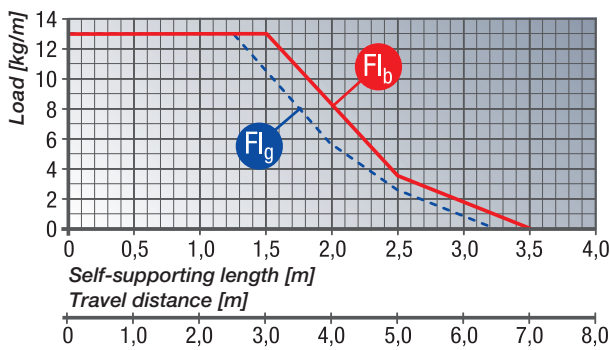
SELF-SUPPORTING LENGTH



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

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

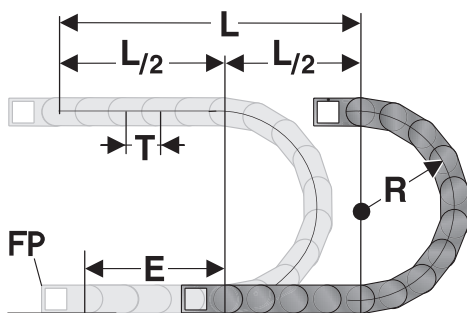
LOAD DIAGRAM FOR SELF-SUPPORTING APPLICATIONS



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

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

DETERMINING THE CHAIN LENGTH



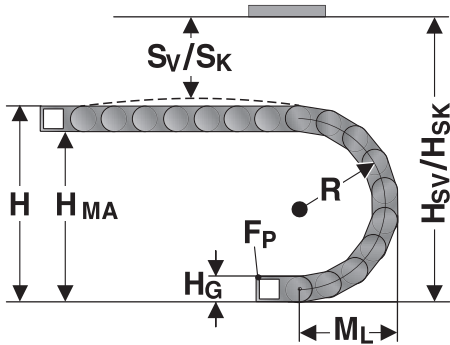
The fixed point of the energy chain should be connected in the middle of the travel distance. This arrangement gives the shortest connection between the fixed point (FP) and the moving consumer and thus the most efficient chain length.

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

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

MP 45.1 OPEN / MP 45.2 OPEN

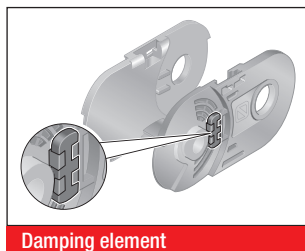
EINBAUMASSE



The moving end chain connection is to be screw fixed at height H_{MA} for the respective radius.
 Concerning the installed dimensions, you must take into consideration whether the chain links are equipped with damping elements or not.
 For chain links without damping elements, the value “Installed height with bias H_{SV} without damper” or “Installed height without bias H_{SK} without damper” must be taken into account.
 If the chain links are equipped with a damping element, the value “Installed height with bias H_{SV} with damper” or “Installed height without bias H_{SK} with damper” is to be taken into account.

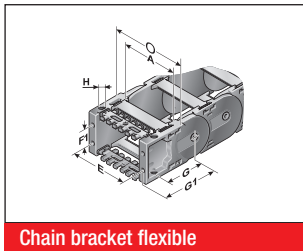
Radius R	75	100	125	150	200	250	300
Outside height of chain link (H_G)	62	62	62	62	62	62	62
Height of bend (H)	212	262	312	362	462	562	662
Height of moving end bracket (H_{MA})	150	200	250	300	400	500	600
Safety margin with bias (S_V)	20	20	20	20	20	20	20
Installation height with bias (H_{SV}) without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

DAMPING ELEMENT FOR THE CHAIN LINKS

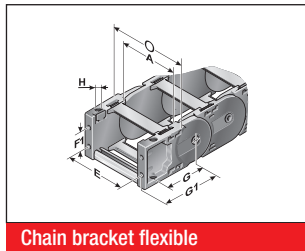


The damping elements in the stops facilitate a significantly quieter unrolling of the chain links. The dampers can be chosen optionally.
 A reduction of the noise emission by up to 10 dB(A) comparing to the variants without the use of damping elements is possible.

KA 45 FLEXIBLE CHAIN BRACKET



Chain bracket flexible



Chain bracket flexible

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

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

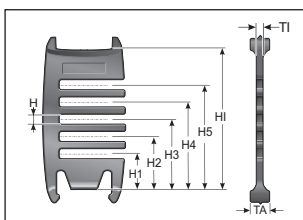
Type	Order No.	Material	Inside width						Outside width KA	
			A mm	E mm	F1 mm	G mm	G1 mm	HØ mm	O mm	
	0450005054									
	0450005055									
	0450005056									
	0450005057									
	0450007554									
	0450007555									
	0450007556									
	0450007557									
	0450010054									
	0450010055									
	0450010056									
	0450010057									
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	0450015054									
	0450015055									
	0450015056									
	0450015057									
	0450017554									
	0450017555									
	0450017556									
	0450017557									
KA 45-F Female end, 050, complete	0450005050	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0	
KA 45-F Female end, 050, pendular, complete	0450005052	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0	
KA 45-F Male end, 050, complete	0450005051	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0	
KA 45-F Male end, 050, pendular, complete	0450005053	Plastic	50.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0	
KA 45-F Female end, 075, complete	0450007550	Plastic	75.0	A+13.0	22.0	60.0	82.0	5.5	A+24.0	

MP 45.1 OPEN / MP 45.2 OPEN

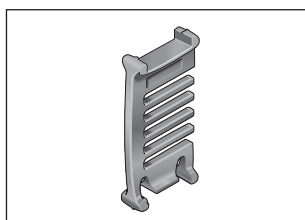
KA 45 FLEXIBLE CHAIN BRACKET

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

TRT 45 DIVISIBLE SEPARATOR



Separator

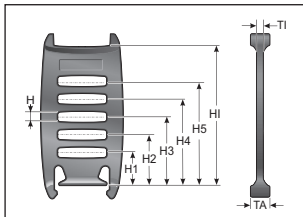


Separator

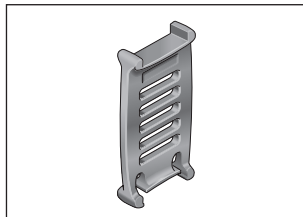
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

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

TR 45-V SEPARATOR



Separator

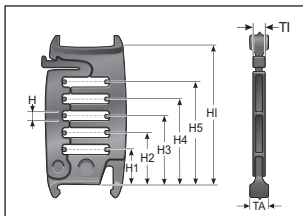


Separator

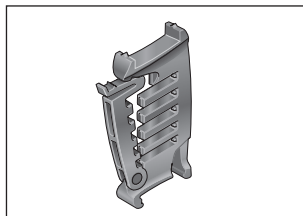
We recommend that separators be used if multiple round cables or conduits with differing diameters are to be installed.

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

RTT 45 SHELF SUPPORT, DIVISIBLE



Shelf support

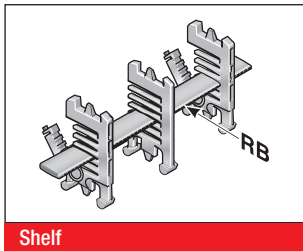


Shelf support

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

Type	Order No.	Designation	Version	TI mm	TA mm	H mm	H1 mm	H2 mm	H3 mm	H4 mm	H5 mm	H6 mm	H7 mm	HI mm
RTT 45	100090450000	Shelf support, divisible	lockable	5.0	8.0	3.2	11.3	16.9	22.5	28.1	33.7			45.0

RB-3 SHELF



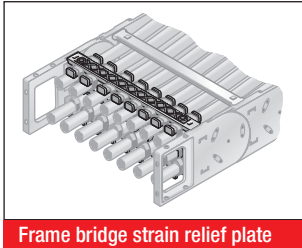
In connection with at least two separable shelf supports (RTT), the shelf becomes a shelving system. The additional levels prevent cables from criss-crossing and minimise the friction between them.

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

RB-3 SHELF

Type	Order No.	Designation	Width mm	für Innenbreite mm
RB 129-3	1000012903	Shelf	128.6	150.0
RB 131-3	1000013103	Shelf	131.1	150.0
RB 134-3	1000013403	Shelf	133.6	150.0
RB 136-3	1000013603	Shelf	136.1	150.0
RB 139-3	1000013903	Shelf	138.6	150.0
RB 141-3	1000014103	Shelf	141.1	150.0
RB 144-3	1000014403	Shelf	143.6	150.0
RB 146-3	1000014603	Shelf	146.1	150.0
RB 149-3	030100014900	Shelf	148.6	150.0
RB 151-3	1000015103	Shelf	151.1	175.0
RB 154-3	1000015403	Shelf	153.6	175.0
RB 156-3	1000015603	Shelf	156.1	175.0
RB 159-3	1000015903	Shelf	158.6	175.0
RB 161-3	1000016103	Shelf	161.1	175.0
RB 164-3	1000016403	Shelf	163.6	175.0
RB 166-3	1000016603	Shelf	166.1	175.0
RB 169-3	1000016903	Shelf	168.6	175.0
RB 174-3	030100017400	Shelf	173.6	175.0
RB 176-3	1000017603	Shelf	176.1	200.0
RB 179-3	1000017903	Shelf	178.6	200.0
RB 181-3	1000018103	Shelf	181.1	200.0
RB 184-3	1000018403	Shelf	183.6	200.0
RB 186-3	1000018603	Shelf	186.1	200.0
RB 189-3	1000018903	Shelf	188.6	200.0
RB 191-3	1000019103	Shelf	191.1	200.0
RB 194-3	1000019403	Shelf	193.6	200.0
RB 196-3	1000019603	Shelf	196.1	200.0
RB 199-3	030100019900	Shelf	198.6	200.0

RS-ZL-3 ZLA MP 45 FRAME BRIDGE STRAIN RELIEF PLATE

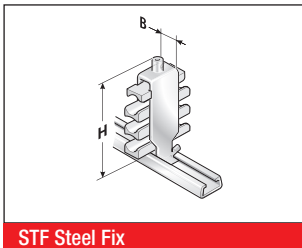


Frame bridge strain relief plate

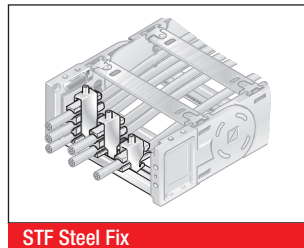
Fixed integrated frame bridge strain relief plates in the chain brackets. Tailored to all frame bridge widths up to 175 mm. May be assembled on the inside and outside bends at both chain endings.

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

STRAIN RELIEF WITH STEEL FIX



STF Steel Fix



STF 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 11 mm. Due to the design of the trough elements, a cable preserving cable guidance is ensured. May be assembled on the inside and outside bends at both chain endings. The overall height stated is a guide only. The actual height is, amongst other things, dependent on the diameter and the quality of the cable. A safety distance of 10 mm at the fixed point above the strain relief must be kept during gliding applications.

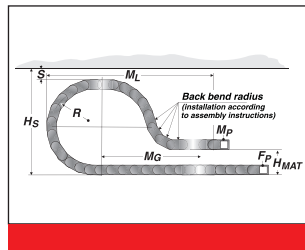
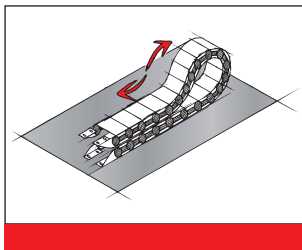
Type	Order No.	Designation	Seats qty.	Cable Ø mm	Overall height (H) mm
Single clamp (for two cables)					
STF 12-1 Steel Fix	81661801	Hooped clamp	1	6.0 – 12.0	55.0
STF 14-1 Steel Fix	81661802	Hooped clamp	1	12.0 – 14.0	52.0
STF 16-1 Steel Fix	81661803	Hooped clamp	1	14.0 – 16.0	54.0
STF 18-1 Steel Fix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

STRAIN RELIEF WITH STEEL FIX

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

MP 45.1 OPEN / MP 45.2 OPEN

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 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 qty.	of which additional back chain links qty.
150.0	200.0	50.0	412.0	630.0	12	3
200.0	200.0	50.0	512.0	760.0	13	3
250.0	200.0	50.0	612.0	930.0	18	4
300.0	200.0	50.0	712.0	1080.0	20	4

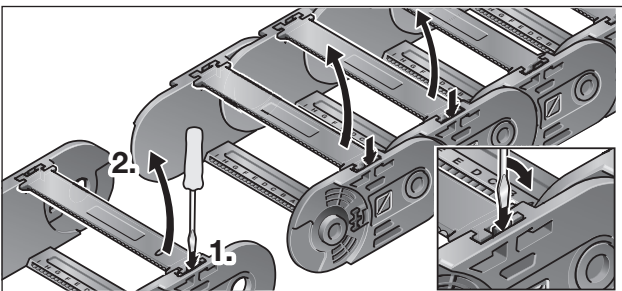
GUIDE CHANNEL VAW (ALUMINIUM / STAINLESS STEEL)



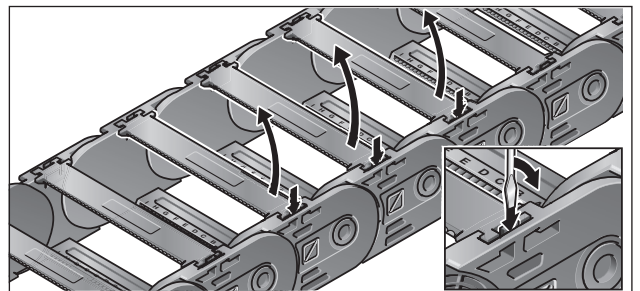
A range of variable guide channel systems, constructed from aluminium or stainless steel sections, are available for this energy chain. The variable guide channel ensures that the energy chain is supported and guided securely. For help on choosing, please consult the chapter "Variable Guide Channel System".

ASSEMBLY

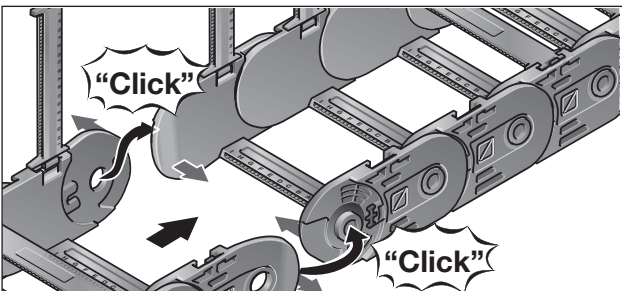
DISASSEMBLY



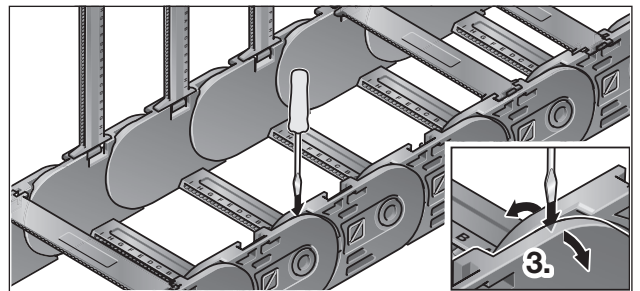
Step 1



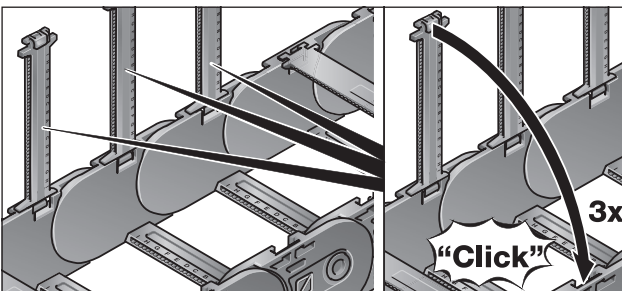
Step 1



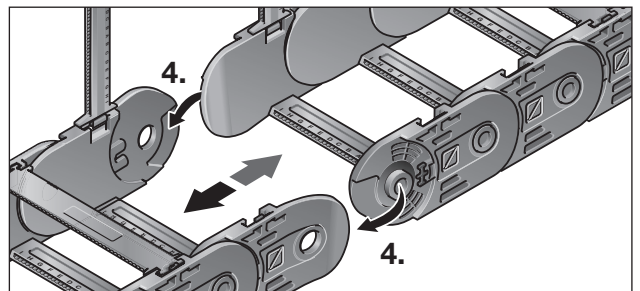
Step 2



Step 2



Step 3



Step 3

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