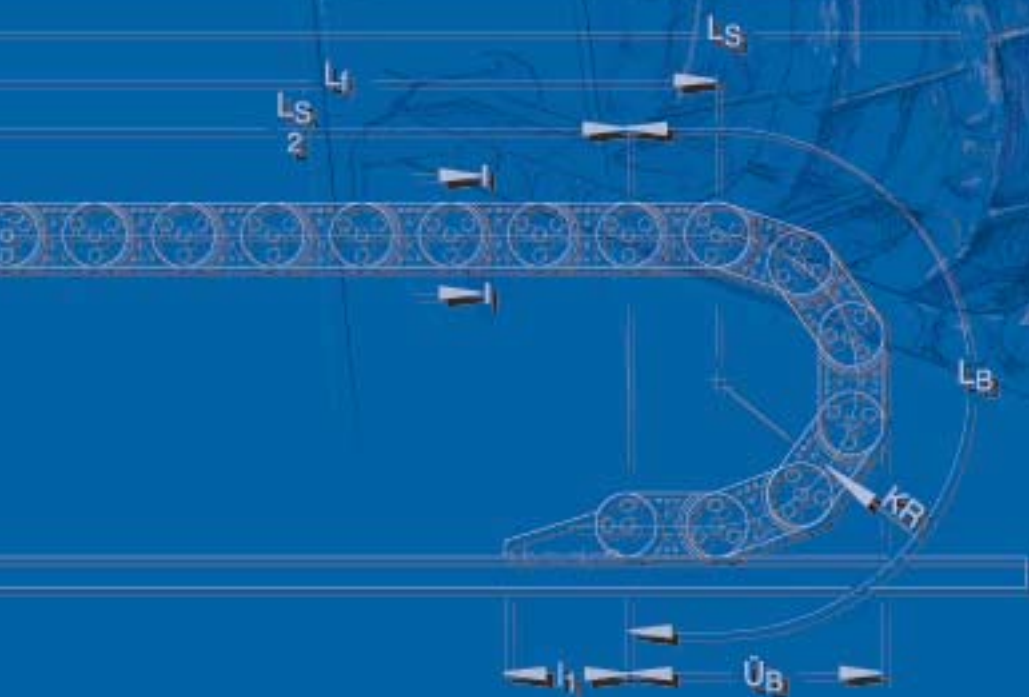


Steel Cable Carriers





Certified in Accordance with DIN EN ISO 9001, 8.94

Certificate No.: ESN06623AQ97

Energy in Motion

In many industries today, automation is no longer feasible without the KABELSCHLEPP cable carrier system.

Using sophisticated machines, systems and services, we can provide you with technology which is trusted throughout the world.

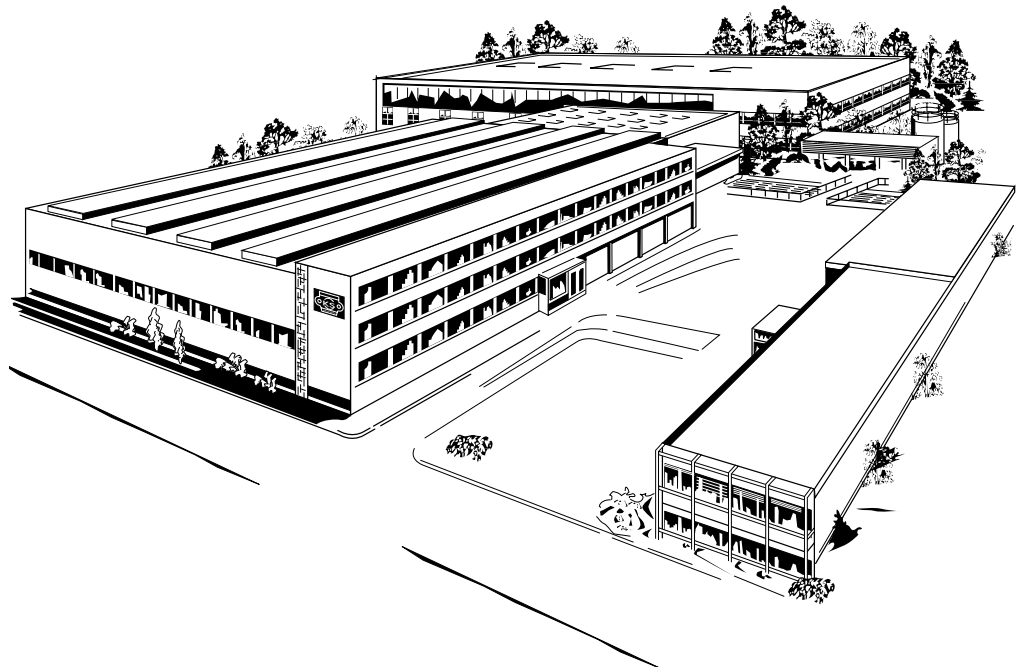
Technical progress, innovation and the demand for quality on a world-wide scale are basic values which our customers have a right to expect from us.

Total focus on our customers' requirements is KABELSCHLEPP'S main objective.

We are then not only able to supply the most advanced products, but can also offer a service which is second to none.

This catalog is to help you select and order the right KABELSCHLEPP steel cable carrier system and includes details of our extensive range of accessories.

KABELSCHLEPP – Profit from the expertise and experience of a highly efficient group.

**KABELSCHLEPP GMBH**



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Selection of Cable Carrier System

Prior to recommending a cable carrier system, we require the following details:



Application travel length



Maximum acceleration/deceleration



Travel speed



Travel frequency



Installation variants (installation diagram)



Installation widths available



Number and external diameter of cables to be installed (with/without fixed fittings)



Type of conductor (cables/hoses)



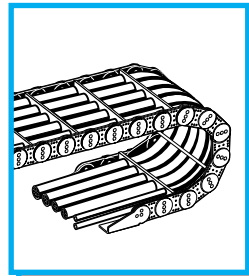
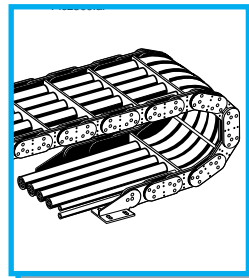
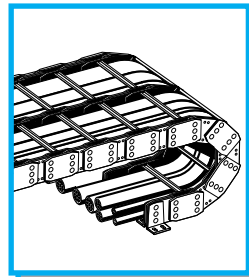
Smallest possible bend radii of the cables (in accordance with manufacturer's specification)



Environmental influences/conditions (Temperature, sunlight, humidity, contamination, abrasive substances etc.)

KABELSCHLEPP Cable Carriers are protected world-wide by international patents and conform to all valid safety technical requirements.

The following guidelines have been produced to enable you to select a suitable system.

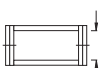
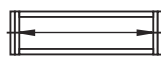
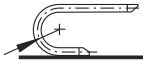
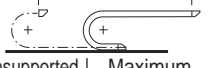
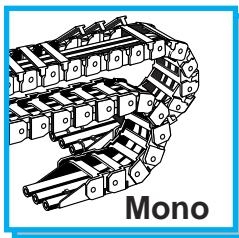
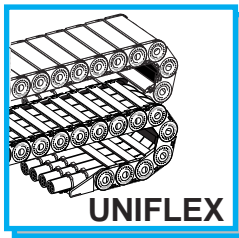
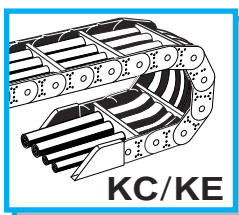

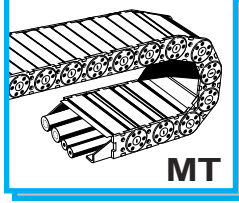
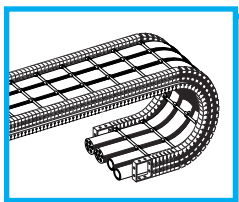
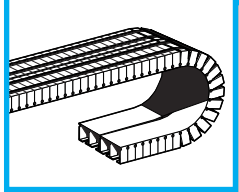



Product Symbol	Product	Series	Type	Clearance Height h_1 in mm	Carrier width B_k in mm		Bend radii in mm		Travel length L_S in m		Carrier/hose width	Variants of carrier/hose cross-section (Stay variants – see Page 014)										Available Carrier Dividers		Bored Hole Stays	Additional Cover Options	Dynamics				Technical Data See page **	Type
					From	To	Min.	Max.	Unsupported Arrangement	maximum travel length		Closed Frame	Frame Stay RS 1	Frame Stay RS 2	Frame Stay RV	Frame Stay RM	Frame Stay RMR	Frame Stay RMD	Frame Stay RMA	Tube Stay RR	Vertical	Vertical/Horizontal	Unsupported arrangement and arrangement with support roller			with support carriage**	Unsupported arrangement and arrangement with support roller	with support carriage			
	Cable Carriers with side bands made from zinc-plated steel*	0600	S 0650	31	70	400	75	300	6	60	◆		■	■						■	■	◆	◆	■	2.5	4	5	8	P 043	S 0650	
		0900	S 0950	46	125	600	125	410	9	60	◆		■	■						■	■	◆	◆	■	2.5	4	5	8	P 051	S 0950	
		1200	S 1250	72	130	800	145	600	12	150	◆		■	■	■	■	■	■	■	■	■	◆	◆	■	2.5	4	5	8	P 061	S 1250	
			S 1252	72	130	800	145	700	12	150	◆		■	■	■	■	■	■	■	■	■	◆	◆	■	2.5	4	5	8	P 073	S 1252	
		1800	S 1800	104	180	1000	265	1405	18	200	◆					■				■	■	◆	◆	■	2	3	3	5	P 085	S 1800	
			S 1802	104	180	1000	265	890	18	200	◆					■				■	■	◆	◆	■	2	3	3	5	P 093	S 1802	
		2500	S 2500	180	250	1200	365	1395	24	×	◆									●	●	●	◆	■	2	●	3	5	P 099	S 2500	
		3200	S 3200	220	250	1500	470	1785	25	×	◆									●	●	●	◆	■	2	●	2.5	4	P 103	S 3200	
		5000	S 5000	150	150	1000	500	1200	12	×	◆									●	●	●	◆	■	2	●	3	5	P 107	S 5000	
		6000	S 6000	240	200	1200	700	1500	18	×	◆									●	●	●	◆	■	1.5	●	2	3	P 107	S 6000	
7000	S 7000	370	300	1500	1100	2400	25	×	◆									●	●	●	◆	■	1	●	1	2	P 107	S 7000			
	Cable Carriers with side bands made from stainless steel*	0600	SX 0650	31	70	400	75	300	4	60	◆		■	■				■	■	◆	◆	■	2	3	5	8	P 043	SX 0650			
		1200	SX 1252	72	130	800	145	700	8	80	◆		■	■	■	■	■	■	■	■	◆	◆	■	2	3	5	8	P 073	SX 1252		
		1800	SX 1802	104	180	1000	265	890	13	120	◆					■			■	■	◆	◆	■	1.5	1	3	5	P 093	SX 1802		
		2500	SX 2500	180	250	1200	365	1395	16	×	◆									●	●	●	◆	■	1.5	●	3	5	P 099	SX 2500	
		3200	SX 3200	220	250	1500	470	1785	17	×	◆									●	●	●	◆	■	1.5	●	2.5	4	P 103	SX 3200	
		5000	SX 5000	150	150	1000	500	1200	12	×	◆									●	●	●	◆	■	2	●	3	5	P 107	SX 5000	
		6000	SX 6000	240	200	1200	700	1500	18	×	◆									●	●	●	◆	■	1.5	●	2	3	P 107	SX 6000	
		7000	SX 7000	370	300	1500	1100	2400	25	×	◆									●	●	●	◆	■	1	●	1	2	P 107	SX 7000	
	Flexible Energy Conduits made from steel or steel and plastic	MOBIFLEX	MF 030	24	---	26	---	80	3	---	■	■												10	---	20	---	P 113	MF 030		
			MF 050	44	---	45	75	200	3	---	■	■													10	---	20	---	P 113	MF 050	
			MF 080	78	---	80	100	200	4	---	■	■													10	---	18	---	P 113	MF 080	
			MF 110	108	---	109	150	300	4	---	■	■														6	---	15	---	P 113	MF 110
			MF 170	167	---	170	190	365	5	---	■	■														6	---	12	---	P 113	MF 170
		CONDUFLEX	CF 055	25	---	45	65	150	3.0	---	■	■											■		10	---	20	---	P 117	CF 055	
			CF 060	40	---	36	---	100	3.5	---	■	■												■	10	---	20	---	P 117	CF 060	
			CF 085	38	---	73	100	250	4.5	---	■	■												■	8	---	18	---	P 117	CF 085	
			CF 115	52	---	102	140	300	5.0	---	■	■												■	8	---	16	---	P 117	CF 115	
			CF 120	70	---	100	155	200	5.5	---	■	■												■	6	---	15	---	P 117	CF 120	
CF 175	72	---	162	185	350	6.0	---	■	■												■	6	---	12	---	P 117	CF 175				

Reference:

- Standard
- ◆ Customized Standard products
- Special order as per customer specifications
- ✕ On request

* Multiple band chains are available to handle larger widths!
 ** Maximum travel speed where unsupported length is exceeded will depend mainly on the additional load installed.
 Please consult our specialists regarding any speeds higher than the ones indicated.

** Maximum travel acceleration where the unsupported length is exceeded will depend on the mass to be moved, i.e. on the cable carrier's own weight and the additional load (cables and hoses).
 The values given are guidelines for mean length and width ranges.
 Where these values are exceeded, please contact us for advice!

Product Productsymbol	Series Type	Clearance Height h_1 in mm 	Carrier width B_1 in mm 		Bend radii in mm 		Travel length L_S in m 		
			From	To	Min.	Max.	Unsupported arrangement	Maximum travel length	
 Mono	0130	10	6	20	20	37	1.0	40	
	0132	10	6	40	20	37	1.0	40	
	0180	15	10	40	28	50	1.5	70	
	0182	15	10	40	28	50	1.5	70	
	0202	11	6	15	18	50	1.5	70	
	0320	19	13	29	37	100	2.4	80	
	0450	28	29	103	52	200	3.0	120	
	0625	42	65	169	75	300	5.0	130	
	 UNIFLEX	0250.030	17.5	20	80	28	100	2.7	60
		0345.030/.040/.050	20	15	90/90/65	38	150	3.0	80
		0345.060	19.5	15	65	75	150	3.0	80
		0455.030/.040/.050	26	25	130	52	225	4.0	120
		0455.060	25	25	130	95	225	4.0	120
		0555.030/.040/.050	38	50	150	63	230	5.0	125
		0555.060	36	50	150	100	230	5.0	125
		0665.030/.040/.050	44	50	250	75	300	5.5	150
	0665.060	42	50	175	120	300	5.5	150	
0600.080	44	50	125	100	200	3.5	100		
 KC/KE	KC 0650	38	75	600	75	300	5.0	220	
	KE 0650	42	68	260	75	300	5.0	220	
	KC 0900	58	100	800	130	385	8.0	260	
	KE 0900	58	81	561	130	385	8.0	260	
	 MC/ME/MK	MC 0320	19	25	280	37	200	2.6	80
		ME 0320	19	25	149	37	200	2.6	80
		MK 0475	28	24	280	55	300	3.0	120
		MT 0475	26	24	300	75	300	3.0	100
		MC 0650	38	50	600	75	300	5.0	220
		ME 0650	42	50	266	75	300	5.0	220
		MK 0650	42	50	266	75	300	5.0	220
		MT 0650	38.5	50	600	95	300	5.0	170
		MC 0950	58	100	700	140	380	8.0	260
		ME 0950	58	77	557	140	380	8.0	260
	 MT	MK 0950	58	77	557	140	380	8.0	260
		MT 0950	54.5	77	700	140	380	8.0	230
		MC 1250	72	100	800	180	500	10.0	320
		ME 1250	72	103	551	180	500	10.0	320
MK 1250		72	103	551	180	500	10.0	320	
MT 1250		68.5	103	800	220	500	10.0	270	
  Further cable carriers	<ul style="list-style-type: none">  QUANTUM Cable Carrier System Almost silent cable carrier, extremely flexible and lightweight. For high accelerations and extreme operational speeds.  PROFILE® Cable Carrier System The extruded cable carrier system made of 100 % recyclable polypropylene is used in a wide range of industries.  Festoon systems / Cable reels Available on request in many variants! <p>Please request detailed information for your specific application!</p>								

Code	Symbol	Description	Steel Cable Carriers	
			Cable Carriers	Energy conduits
EBV 01		Horizontal arrangement "self-supporting"	■	■
EBV 02		Horizontal arrangement "self-supporting – overhanging"	■	■
EBV 03		Horizontal arrangement "with permissible sag"	---	---
EBV 04		Horizontal arrangement "with support"	◆	●
EBV 05		Horizontal arrangement "resting in guide channel"	◆	---
EBV 06		Horizontal arrangement "with continuous support structure"	◆	---
EBV 07		Horizontal arrangement "rotated 90° – straight"	◆	●
EBV 08		Horizontal arrangement "rotated 90° – looped"	◆	●
EBV 09		Horizontal arrangement "rotated 90° – circular"	■	---
EBV 10		Vertical arrangement "standing"	■	■
EBV 11		Vertical arrangement "hanging"	■	■
EBV 12		Horizontal/vertical arrangement "combined"	■	■
EBV 13		Vertical arrangement "looped"	■	■
EBV 14		Vertical arrangement "hanging with bearing bolts"	◆	---

Reference:

■ Standard



◆ Customized standard product



● Special order

Design Guidelines

Design Guidelines

General Abbreviations

Please fold out this flap for ready reference when working with this brochure!

Design Guidelines

General abbreviations

When reading and using this brochure you will find the following abbreviations:

- a_T = Distance from the inside edge of the end piece/end divider to the centre of the first/last divider
- a_x = Centre-to-centre spacing of dividers
- a_{1-3} = Distance between height separators in the divider
- B_i = Cavity width inside the carrier cross-section
- B_k = Width of cable carrier
- B_{St} = Width of hole stays
- B_A = Width of the support tray
- b_1 = Clearance inside width of the support tray
- c = Distance between holes (for hole stays)
- d = Cable or hose diameter
- D = Hole diameter in hole stay
 - $D \underline{\underline{\geq}} 1.1 d$ for electric cables
 - $D \underline{\underline{\geq}} 1.2 d$ for hoses
- G_K = Weight of the cable carrier (without connectors)
- G_S = Weight of flexible conduit (without connectors)
- H = Connection mounting height
- H_Z = Installation height (required clear height)
- h_A = Height of the support tray
- h_G = Link height
- h_i = Clearance height inside the carrier cross-section
- KR = Bending radius of the cable carrier
- L_A = Length of the support tray
- L_B = Length of the loop at the bend
- L_f = Self-supporting length
- L_k = Length of the cable carrier
- L_{ES} = Length of flexible conduit
- L_S = Maximum travel length of the application
- L_V = Longitudinal offsets between cable carrier fixed point and centre of the travel length
- l_{1-3} = Connection dimensions
- n_T = Number of dividers per cross-section
- q_{EF} = Total weight of the carrier/m (Total weight of the carrier per metre)
 - $q_{EF} = \text{Intrinsic carrier weight } q_k + \text{additional load } q_z$
- q_k = Intrinsic carrier weight per metre
- q_z = Additional load/m of cable carrier
- RKR = Reverse bending radius
- s = Sheet metal thickness
- s_H = Thickness of height separators
- s_T = Divider thickness
- t = Pitch
- \ddot{U}_B = Loop overhang (Depot)
- X = Distance between the fixed points (in an opposing arrangement)
- z = Pre-tension on the cable carrier

Further terms are given in the technical data for the carrier in each case.

Applications



Steel cable carriers intended for specific applications offer clear advantages over plastic carriers.

- if the cables/hoses to be installed are heavy
- where long unsupported lengths must be spanned
- with heavy mechanical loads
- when moving over rough edges
- if the ambient temperature is high
- under extreme environmental conditions
- in areas at risk of explosion

Reasons for using the KABELSCHLEPP cable carrier system



1 Maximum additional load along the unsupported lengths



2 High level of operational safety



3 Practically maintenance-free



4 Easy installation



5 Small space requirements



6 Low-wear cable/hose movement



7 Aesthetically pleasing



8 Cost-effective/efficient



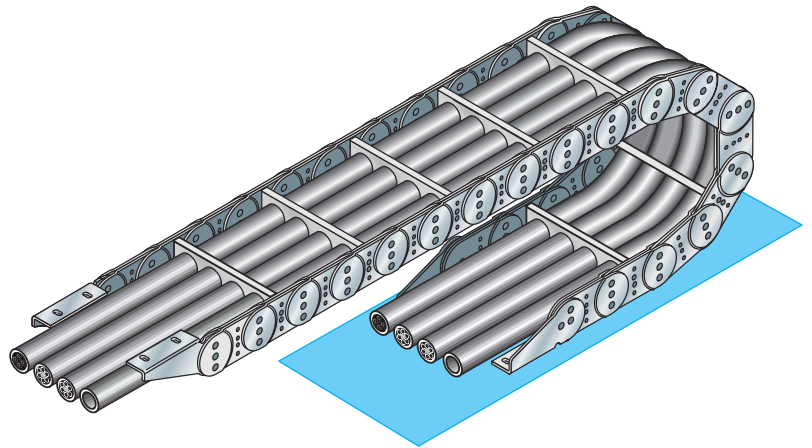
9 Accident-proof

Design

KABELSCHLEPP steel cable carriers consist of two or more chain bands running parallel, made from high quality zinc-plated or stainless and acid-resistant steel.

The chain bands are joined by stays of variable widths and design. Together, they define the cavity in which cables and hoses are laid.

All chain links are engineered so that when assembled, the bend radius along the direction of travel cannot fall below the specified value.

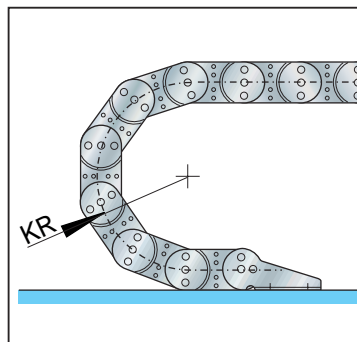


Bend radius KR

The required bend radius is determined by the Technical Data for the electrical cables and hoses to be used.

“Minimum bend radii” can be found in the specifications provided by cable and hose manufacturers.

The rule of thumb for selecting the minimum bend radius is as follows:



$KR_{min} = 5 \dots 12$
cable/hose-Ø diameter d

Any questions?
Ask our specialists!

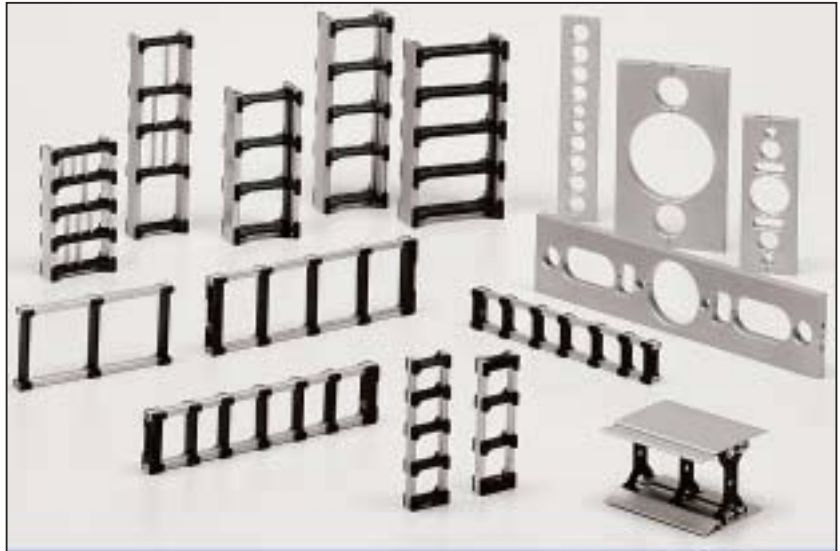
KR-manufacturing
tolerance: **0**
- 5%

Standard bend radii for steel cable/hose carriers range from 75 to 2400 mm.

Stay Designs

The heart of any cable carrier is the stay which must properly accommodate the cables and hoses to be handled.

In the dynamics of the carrier's rolling movement, the stay defines by its surface structure, cross-section and stability, the efficiency and safety of every cable carrier system.



- 1** The stay, owing to the different bend radii of the cable carrier and cables/hoses installed in the chain cross section, is the point where cables/hoses come into direct contact with the carrier structure and friction/abrasion may occur.

The properties of the stay material and/or the stay cross section and the ability to ensure the gliding quality of the flexible cables/hoses are of the utmost importance here.

- 2** Narrow stay/divider cross-sections offer more protection when guiding the cables than wide ones.

- 3** Aluminium, a "soft material", has proved its performance qualities in direct interaction with the cables/hoses. With a small cross-section and a low intrinsic weight, it guarantees maximum stability for the dynamics of the entire cable carrier system.

Only when using aluminium stays is it possible for cable carriers to be designed to the nearest millimetre of your application's installation width.

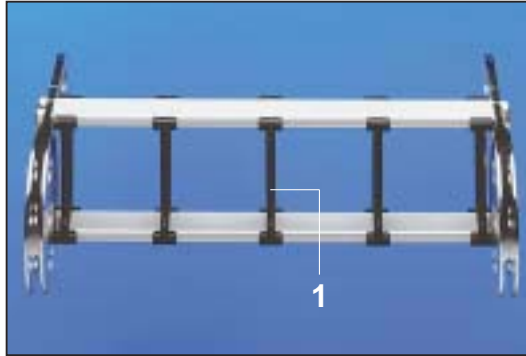
Arrangement of Cables and Hoses

Special care must always be taken when positioning and installing cables and hoses in carriers in order to ensure operational safety and reliability.

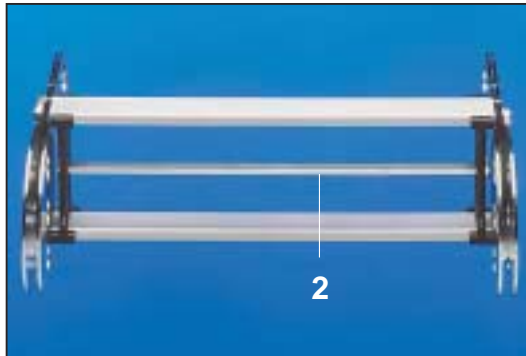
Divider options are available to allow for the best arrangement of the cables and hoses in the carrier cavity.

We offer different arrangement options:

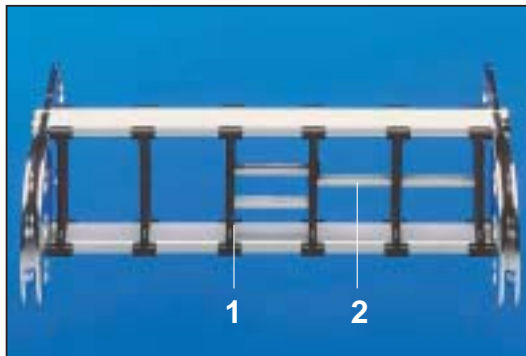
Using frame stays:



arrange cables/hoses over cross-section width with vertical dividers (1)



arrange cables and hoses over cross section height with horizontal separators (2)



arrange cables/hoses over cross-section with a combination of vertical dividers and horizontal separators (1 + 2)

Using hole stays:



With hole stays the number and the position of the conductors and their exact outline are taken into consideration in the cross-section. The cables are guided in the neutral bending zone.

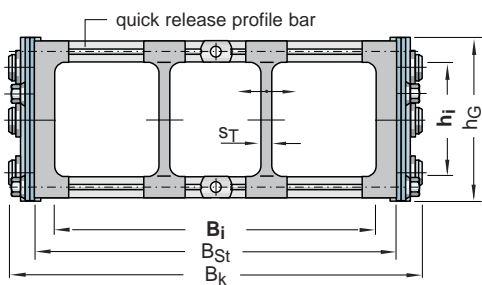
Advantage: there is little relative movement of the cables in relation to the stay/divider.

Chain cross sections / Stay variants

Movable dividers in all frame stays allow for cables and hoses to be divided in the chain cross section and prevent them from rubbing against each other.

An additional height division permits multi-layer installation.

Please follow the guidelines for installing the cables/hoses.



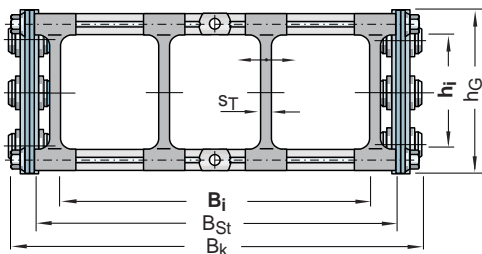
Stay variant RS 1

Frame stay – with quick-release profile bar, outside or inside

Material: Aluminium alloy

Available in widths specific to each individual client

For series: 0600, 0900 and 1200



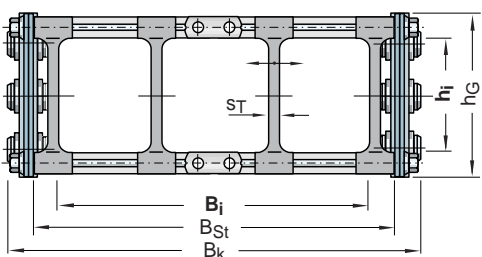
Stay variant RS 2

Frame stay – with bolted profile bars

Material: Aluminium alloy

Available in widths specific to each individual client

For series: 0600, 0900 and 1200



Stay variant RV

Frame stay – reinforced design

Profile bars bolted inside and outside on both sides to the chain bands.

Material: Aluminium alloy

Available in widths specific to each individual client

For series: 1200

Chain cross sections / Stay variants

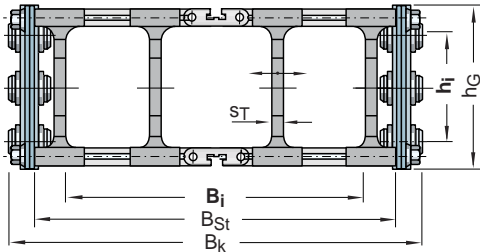


Stay variant RM

Frame stay – heavy duty solid design

High stability – for maximum stay widths

Profile bars are double-bolted on the inside and outside of the chain bands.



Material: aluminum alloy

Available in widths specific to each individual client

For series: 0900, 1200 and 1800



Stay variant RMR

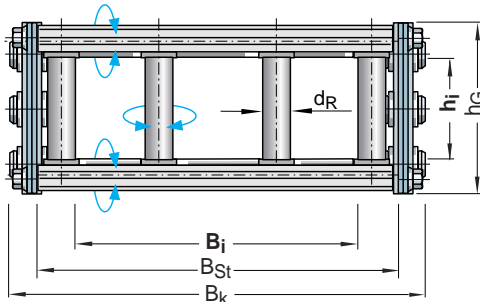
Frame stay with plastic roller system

For the highest specifications – protecting and supporting the cables

Material:

Profile rods: Aluminium alloy

Roller system: Plastic



Available in widths specific to each individual client

For series: 0900 and 1200



Stay variant RMD

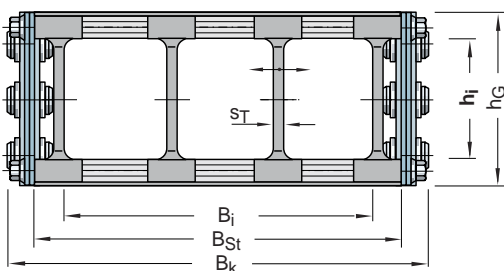
Frame stay – heavy duty solid design as cover system Enclosed cable carrier system

Cover double-bolted to chain bands on the inside and the outside.

Material: aluminum alloy

Available in widths specific to each individual client

For series: 0900 and 1200



Chain cross sections / Stay variants



Stay variant RMA Mounting frame stay

for cables with large diameters

Mounting frame stay (for Type S/SX 0650) and mounting frame stay combined with the standard chain stay (for Types S 1250 and S/SX 1252)

Available with through heights H_i of 130, 160 and 200 mm.

The mounting stay can be fitted inside or outside in the bending radius according to preference.

Fitted inside — note the minimum bending radius.

Fitted outside — consider the operating and installation heights.

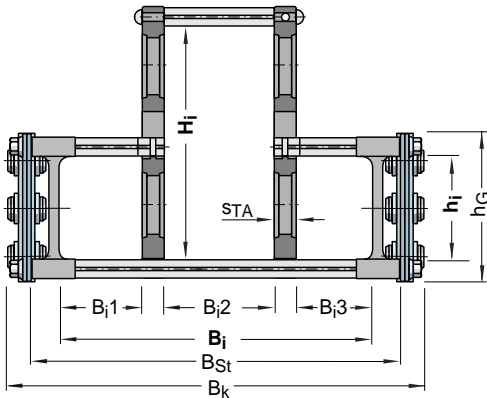
Material:

Profile rods → Aluminium alloy

Frame stay → Plastic

Available in widths specific to each individual client

For series: 0600 and 1200



Stay variant RR Frame stay – Tube design Recommended for hydraulic cables/hoses

Connector profiles form a shaft, made of single tubes, thus minimizing friction between the tube stay and the cables/hoses during relative movement.

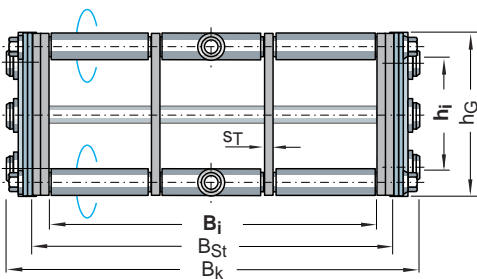
Material:

Shafts and tubes → specific to your application

Available in widths specific to each individual client

For series: 0600, 0900, 1200 and 1800

For all other series upon request!



Special stays Frame stay – tube design

Connector profiles form a shaft, vertical dividers and horizontal separators with single tubes minimize friction between the stay and the cables/hoses during relative movement.

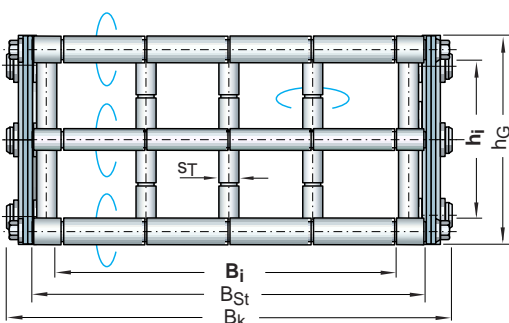
Material:

Shafts and tubes → specific to your application

Available in widths specific to each individual client

For series: 5000, 6000 and 7000

For all other series upon request!



Chain cross sections / Stay variants



Stay variant LG

Hole stay – split design

(divided into upper and lower stay sections)

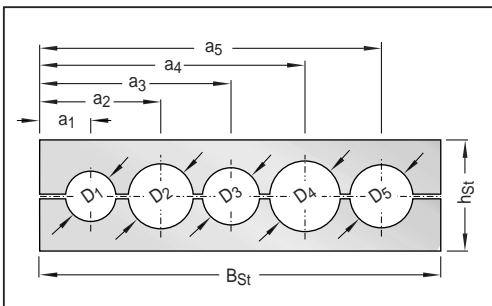
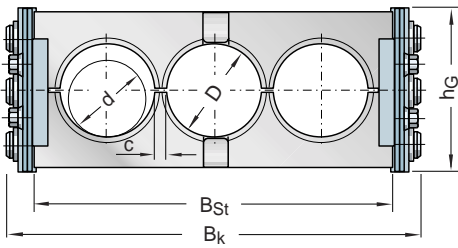
Ensures optimal installation of cables/hoses in the cable carrier's neutral axis, no relative movement between stay and cables/hoses.

Maximum operational safety, even under the most difficult conditions.

Material: aluminum alloy

Custom manufacture of hole pattern as per customer specification!

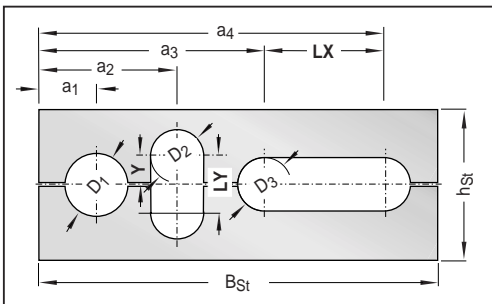
For series 0600 3200



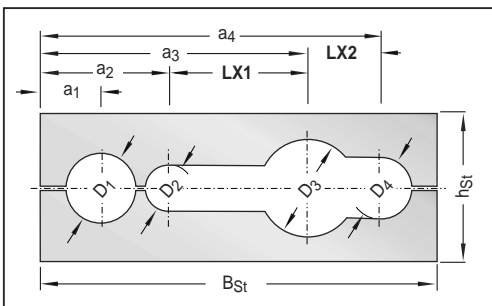
Examples of various hole patterns:



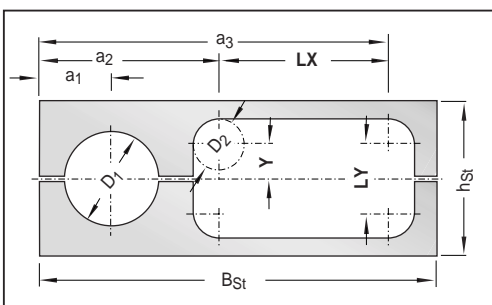
split hole stay with individual holes



split hole stay with horizontal and vertical oval holes *



split hole stay with offset oval hole



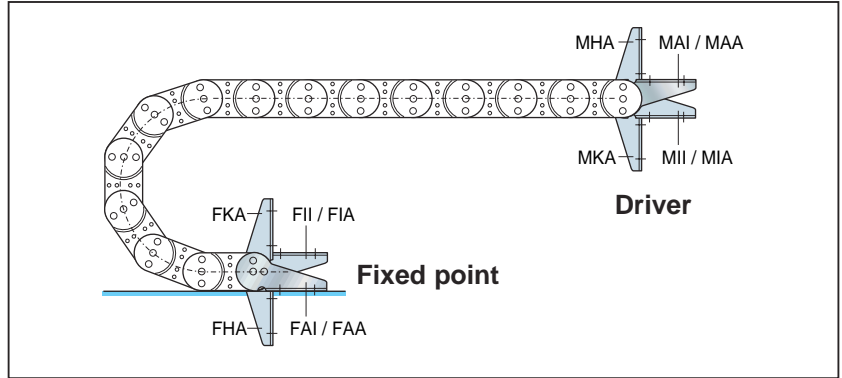
split hole stay with rectangular long hole *

*) Where holes are placed off-centre, cables will be subjected to relative motion during movement of the carrier.

Carrier Connection

There are no special construction requirements for connecting the cable carrier to your machine components.

Several connection variants can be realised through only four types of connection element.



Fixed point connection:

Mounting/fixing to the static part of the machine, floor and system/installation

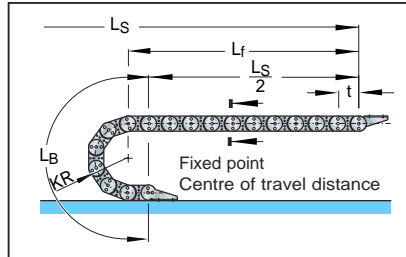
Driver Connection:

Connection to moving parts of machines or components

We recommend that the fixed point be situated in the middle of the travel length. This results in the shortest length of cable carrier.

If the fixed point is arranged in the centre of the machine's travel length L_S the following applies:

Chain length L_k



$$L_f = \frac{L_S}{2} + t$$

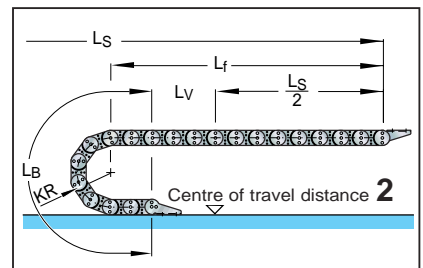
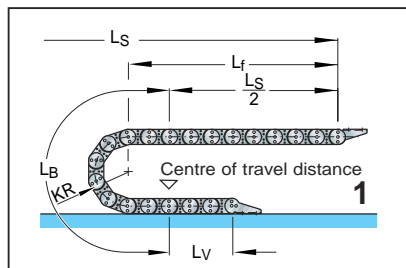
L_f perm see also Technical Data for this type!

$$L_k = \frac{L_S}{2} + L_B$$

rounded to pitch t

Bend length $L_B = KR \cdot \pi + \text{reserve}$

Fixed point arrangement off-centre of the machine's travel length L_S :



$$L_k = \frac{L_S}{2} + L_B + L_V$$

rounded to pitch t

with variant 2, note unsupported length L_f (relevant to travel length)

Installation area

The surface of the installation area must be flat and free from obstruction. If a proper area cannot be provided, a support tray should be installed.

Further details can be found in the section describing system components.

Chain cover

For better cable/hose protection, the cable carriers can be covered internally and/or externally.




- 1** Through steel strip covers made of rust and acid resistant spring steel
- 2** by the aluminium cover system (stay variant RMD)

Material Specifications

The cable carrier material depends on its intended application.

Depending on the expected level of corrosion, we can offer various materials.




The standard design, in zinc-plated steel, can be used for light loads. For higher loads the carriers can be chrome-plated. In the case of extremely high specifications the high grade stainless steel option is available.

Chain band material	 Galvanized zinc-plated steel	 High grade stainless steel Material: ER 1	 High grade stainless steel Material: ER 2
Chemical resistance	limited	good	good
Applications		Particularly suitable for chemical manufacture apparatus and the food industry	Particularly resistant to stress crack corrosion when exposed to chlorine and against pitting; also resistant to intercrystalline corrosion when welded
Weather resistance	good	very good	very good
Mechanical specification	wear-resistant	wear-resistant	particularly wear-resistant, good mechanical properties
Typical/preferred areas of application	General machine building industry, welding and punching machines, steel works and rolling mills, automotive industry, conveyor systems etc.	Chemical manufacturers, food and dairy industries, breweries	Chemical and petro-chemical industries, nuclear-technology, salt water

Material Details – Alloy Components

The advantages of alloys lie in the combination of mechanical, physical and chemical properties of these materials.

Material: **Aluminium Alloy**

-  Light, strong, hard, smooth and resistant
-  Modern design
-  Optimum friction and wear characteristics

Technical Data:

Density _____ 2.7 g/cm³
 Modulus of Elasticity _____ 70 kN/mm²
 Electrical conductivity _____ 28 - 34 m/W mm²
 Thermal conductivity _____ 1.9 - 2.1 W/k · cm
 Heat expansion coefficient _____ 23.4 cm/cm k 10⁶
 Strength _____ 215 N/mm²
 Elongation after fracture _____ 12 %

Light metal alloys show no tendency towards brittleness at low temperatures.



Application: Hole stays, frame stay profiles, profiles to separate the cables/hoses in the chain cross-section

Material Specifications - Plastic components -

Table:
**Chemical resistance
of plastic components**

Abbreviations:

- resistant
- limited resistance
- ✗ non-resistant
- ∇ soluble

G = saturated diluted solution

H = commercial grade

TR = technically pure

The table on the right shows that plastic components should not be used when exposed to acid agents.

Please contact us regarding materials not listed in the table!

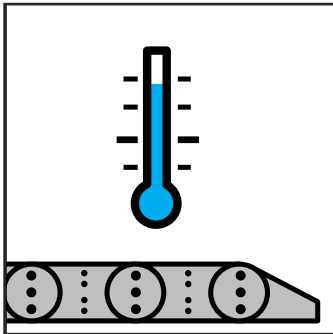
Material:
**KS 74265, reinforced fibre-glass
special plastic**
Standard colour: black

The plastic used is free of halogens, silicon and heavy metals such as lead and cadmium. No formaldehydes are used in the manufacturing process.

Plastic components meet food industry standards and can be used without restriction.

Agent	percentage of mass	temperature °C	Resistance
Acetone	TR		●
Formic acid	10		■
Ammonia (aqueous)	TR	+ 70	■
Ammonia		+ 20	●
Benzine	H	85	●
Benzol	H		●
Bitumen	H		●
Boric Acid (aqueous)	H		●
Butyric acid	20		●
Calcium chloride (aqueous)	GL	23	●
Chlorine, chlorinated water			●
Chlorine water	H		✗
Chromic acid (aqueous)	10		✗
Diesel oil	H		●
Acetic acid aqueous, conc.	95		✗
Acetic acid (aqueous)	10		■
Ethanol	40		●
Ethyl acetate	TR		●
Paints & lacquers			●
Greases and waxes	H		●
Liquid petrol. gas (DIN 51622)			●
Fluorinated hydrocarbons			●
Formaldehyde and polymac.	TR		●
Formaldehyde (aqueous)	30		●
Hydraulic oils	H		●
Potassium hydroxide	10		●
Potassium chloride (aqueous)	10		●
Potassium nitrate (aqueous)	10		●
Methyl acetate	TR		●
Milk	H		●
Lactic acid (aqueous)	10		●
Lactic acid	90		✗
Mineral oil	H		●
Sodium carbonate (aqueous)	10		●
Oil/edible and lubricating	H		●
Oleic acid	H		●
Paraffin, paraffin oil	H		●
Polyester resins	H		●
Propane gas, propyl. hydride	TR		●
Mercury	TR		●
Hydrochloric acid (aqueous)	> 20		∇
Hydrochloric acid	2		✗
Lubricants, edible fats	Hy		●
Vaseline	H		●
Tartaric acid (aqueous)	10		●
Tartaric acid	50		■
Xylene	TR		●

Environmental influences

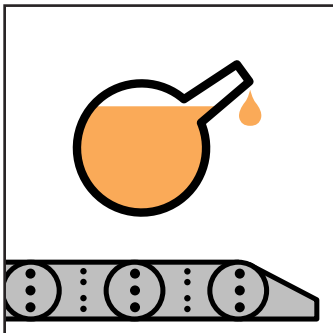


Temperature

The cable carriers, depending on the stay type, can be used in the following temperature ranges:

Stay Type	Temperature range
Frame stays with plastic elements	- 25 °C to + 100 °C
Bolted aluminium stays	- 25 °C to + 250 °C
Bolted tube stays (total steel design)	- 25 °C to + 400 °C

Please comply with the permissible temperature range of the cables/hoses to be installed!

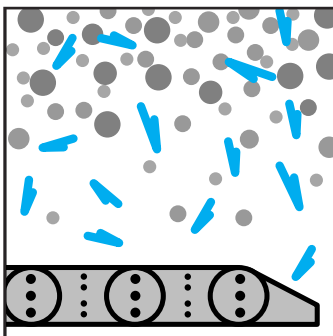


Chemical Influences

KABELSCHLEPP Cable Carriers with steel chain bands are resistant to many chemical influences.

Please note that zinc-plated steel cable carriers are not resistant to acid.

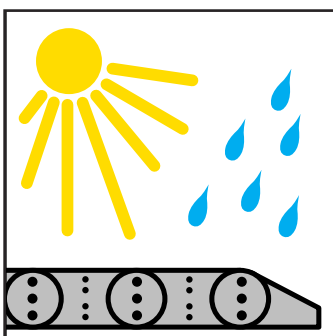
If the cable carriers are to be used in a harsh environment, we recommend the type with chain bands made from rust- and acid-resistant steel.



Dust / Chips

Our cable carriers with steel band covers or our aluminium cover systems provide protection for the cables/hoses from dust, contaminants and other mechanical influences.

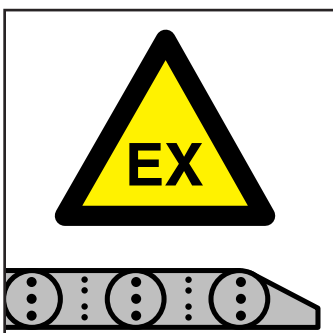
- Steel strip covers → see system components
- Stays with aluminium covers → see stay variant RMD



Humidity / UV Influences

Steel cable carriers can also be used in humid areas or outside, since they are corrosion-resistant.

The plastics used for the stays are UV resistant.



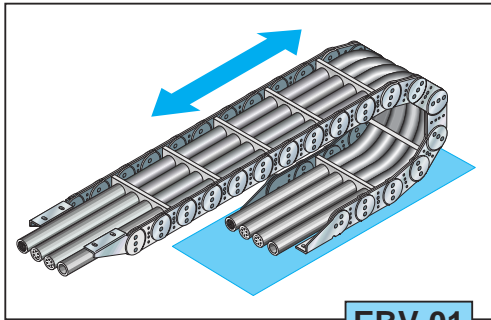
Explosion Protection

Cable carriers with steel chain bands are conductive and do not become statically charged. They can be used in confined areas liable to contain explosive mixtures.

It is necessary to earth the cable carrier at the connection.

Installation variants

Horizontal unsupported arrangement



EBV 01

The installation variants illustrated show the wide variety of movements which can be realised with one single cable carrier.

Definition:

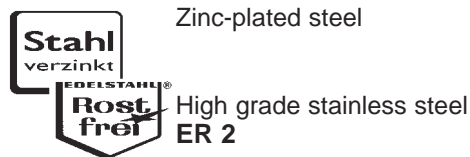
The upper run of the cable carrier stands free, i.e. unsupported and without sag, **parallel** over the entire supported lower run.

Load diagram for two-band chains

Unsupported lengths / travel lengths dependent on the additional load

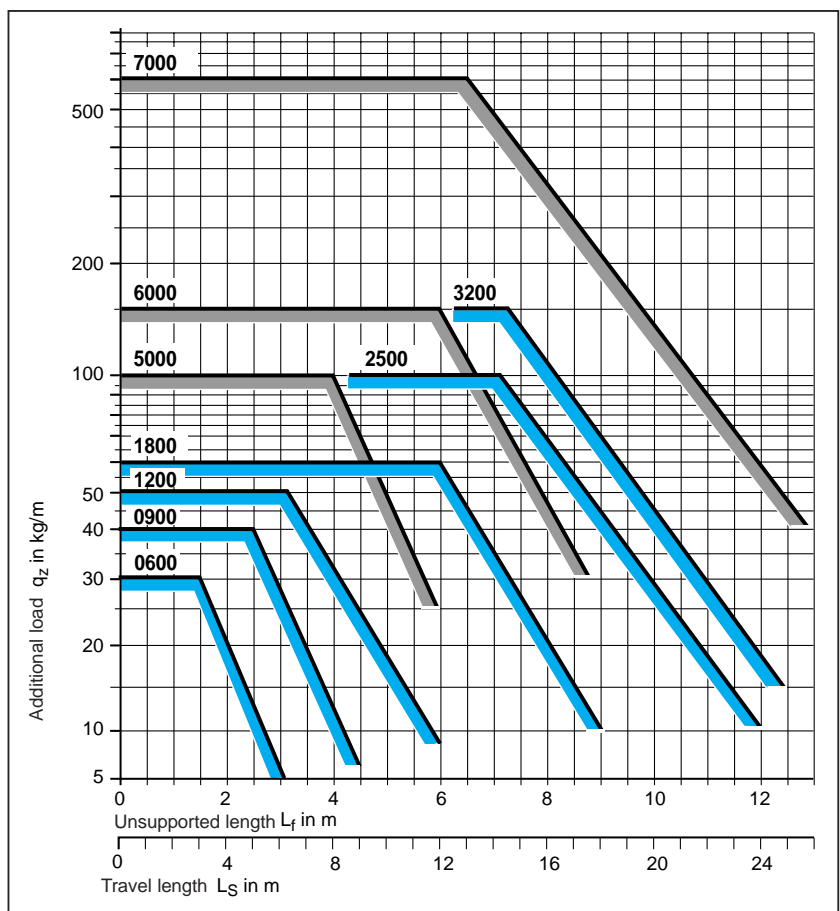
- Cable Carrier series 0600
- Cable Carrier series 0900
- Cable Carrier series 1200
- Cable Carrier series 1800
- Cable Carrier series 2500
- Cable Carrier series 3200
- Cable Carrier series 5000
- Cable Carrier series 6000
- Cable Carrier series 7000

Material:



With high grade stainless steel type ER1, the unsupported length L_f is reduced by approx. 30 %

Details can be found with the Technical Details for this type.

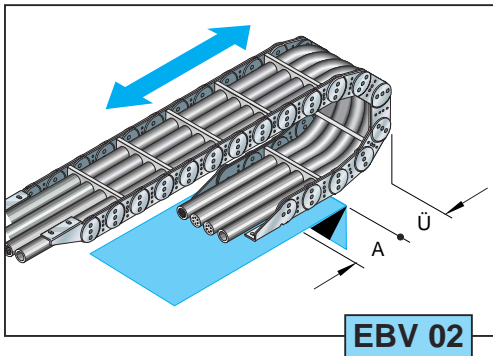


Note:

If you are unable to find a suitable cable carrier type for your particular application among the “unsupported arrangement diagrams” we recommend that the following checks are carried out:

- 1** Provide support for the cable carrier in the unsupported area (see installation variant EBV 04)
- 2** Select the “gliding in a guide channel” cable carrier system (see installation variant EBV 045).
- 3** Use the cable carrier system “with continuous support structure” (see installation variant EBV 06)

Horizontal arrangement self-supporting-with overhang



Definition:

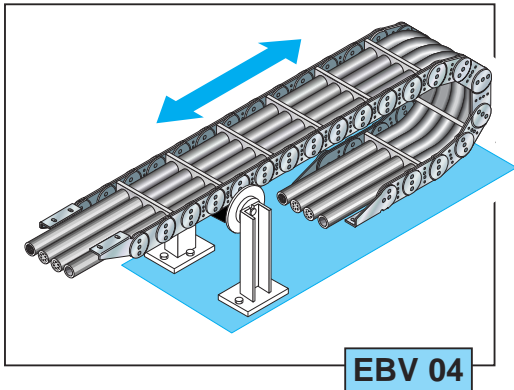
The lower run of the cable carrier is not supported over its total travel length.

We will be happy to calculate the required measurements $A + \ddot{U}$ for your individual application.

$$\ddot{U}_{\max} \leq \frac{L_f}{4}$$

Allow us to plan your application for you.

Horizontal arrangement with support



Definition:

If the self-supporting length of the cable carrier is exceeded, the upper run can be supported.

Instead of using a KABELSCHLEPP cable carrier with support you should however consider selecting the next largest type, if space permits.

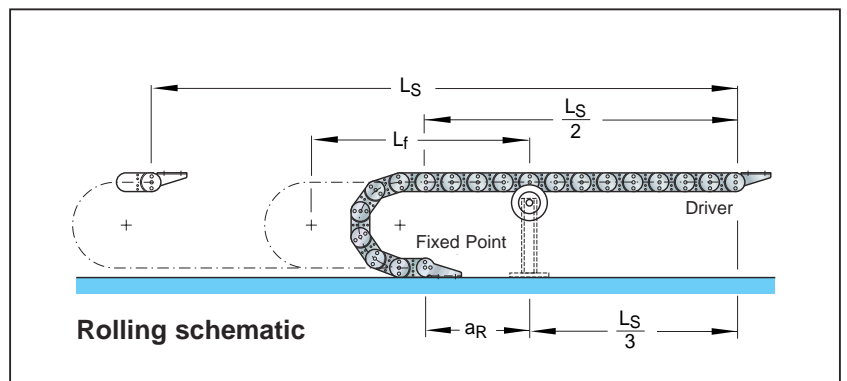
Support Roller(s)

Arrangement of support

Arrangement using one support roller:

When $L_S < 3 L_f$ $a_R = \frac{L_S}{6}$

The distance of the support to the fixed point in this arrangement is approx. 1/6 of the total travel length.



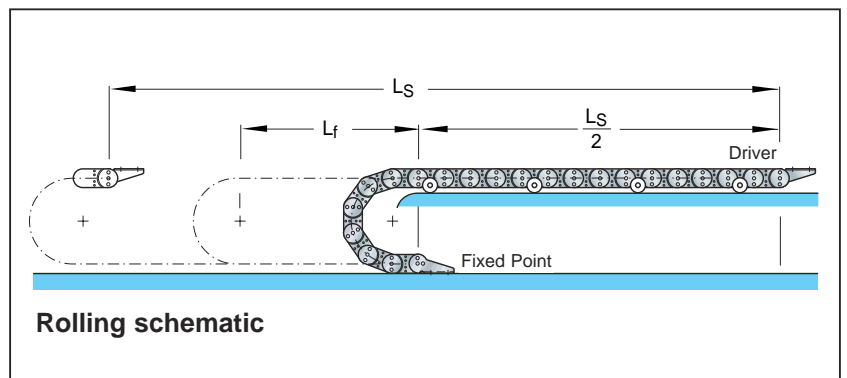
Special design with lateral rollers:

When $L_S < 4 L_f$

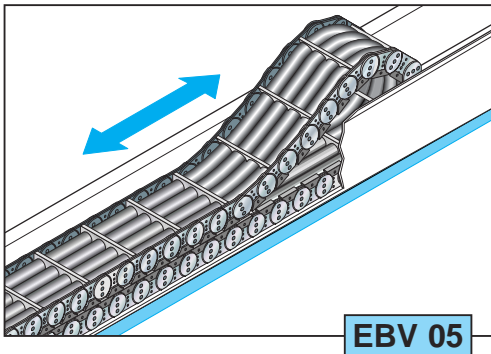
This arrangement is used when the upper run (behind the fixed point) cannot be supported by a support roller.

Lateral rollers are mounted onto the chain links.

This kind of installation needs a flat surface, in certain cases a support tray may need to be installed (see system components).



Horizontal arrangement gliding in a guide channel



EBV 05

Definition:

The upper run of the cable carrier **glides** on the lower run or on a sliding surface of the relevant guide channel.

Application:

For long travel lengths, which can no longer be realised in an unsupported design.

Condition:

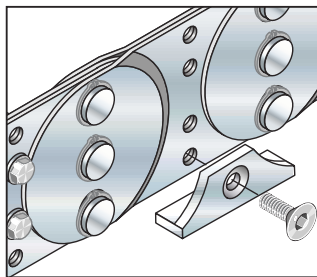
The cable carriers **must** be placed in a channel.

Glide elements:

Glide shoes are bolted to the side plates of the cable carrier.

KABELSCHLEPP is able to supply attachable glide shoes made of plastic materials with special elastic properties.

The glide friction coefficient can be reduced to a value of $\mu < 0.2!$

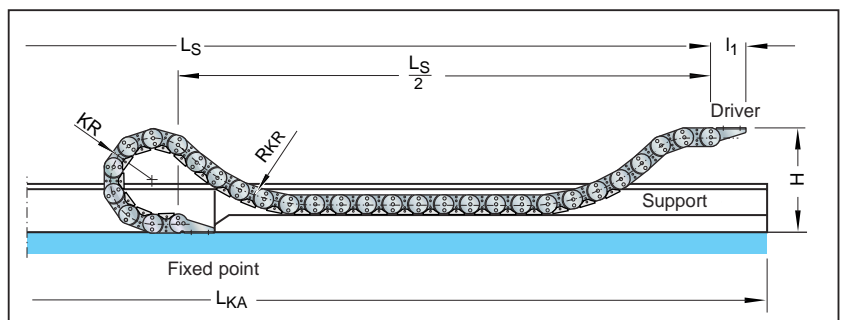


Single-sided arrangement of Cable Carrier

Determining the chain length:

$$L_k = \frac{L_S}{2} + L_B + KR \quad \text{rounded to pitch } t$$

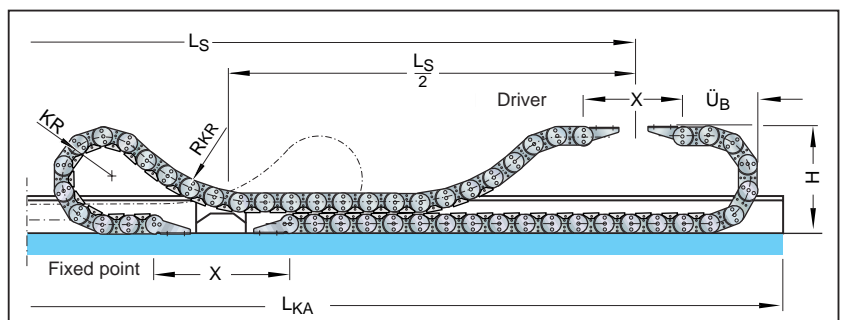
L_B → see technical data for selected chain type!



Opposing arrangement of Cable Carrier

The chain length is determined as for the single-sided arrangement!

It should be noted that for a moving application, both Cable Carriers should be designed to the same length and width.



Design information:

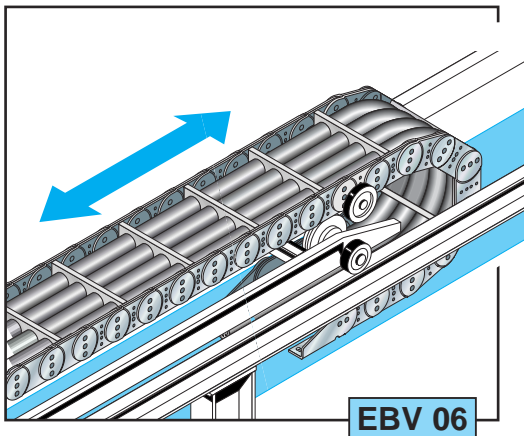
The support construction of the guide channel needs to have the required stability.

Technical data – Dimensional details of guide channels

→ see system components.

Because of the many design parameters which need to be considered such an installation as this should be planned and designed by our engineers!

Horizontal arrangement with continuous support structure



If the structural situation does not allow for the installation of a standard cable carrier or a carrier with support rollers-owing to the total travel length, acceleration or travel speed, a carriage system can be used instead.

Again, the basic element is the cable carrier.

Cable carrier installations are particularly suited to use on exposed manufacturing plant, for large loads, long travel lengths and high travel speeds.

Owing to the multitude of parameters which must be taken into consideration, the system should be designed by our specialists!

Cable Carrier system Type 225




The KABELSCHLEPP type 225 carriage system is used either in a single-sided arrangement with one cable carrier or in an opposing arrangement with two cable carriers.

A rolling carriage supports the cable carriers over their entire length.

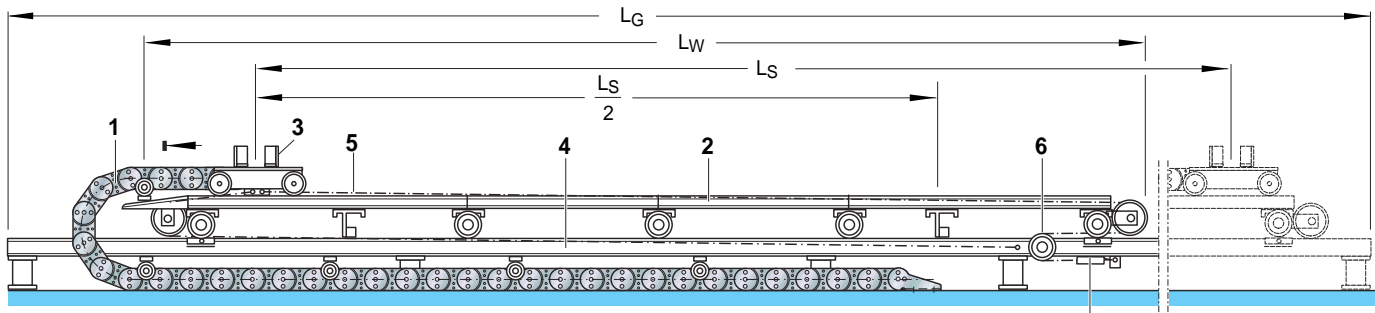
The support structure is moved in both directions by a tension cable system fixed to the driver.

Because of the roller support and roller guidance of the cable carriers on the support carriage, which itself is gliding on the rolling carriage, frictional forces on the system are minimal.

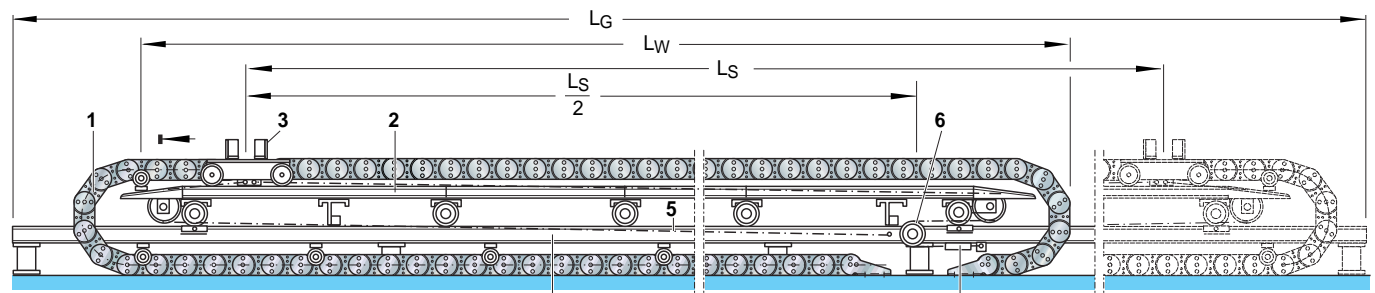
To date, KABELSCHLEPP has supplied systems with the following specifications:

	Maximum total travel length	$L_{s \max} = 222 \text{ m}$
	Maximum travel speed	$v_{\max} = 4 \text{ m/s}$
	Maximum acceleration	$a_{\max} = 8 \text{ m/s}^2$

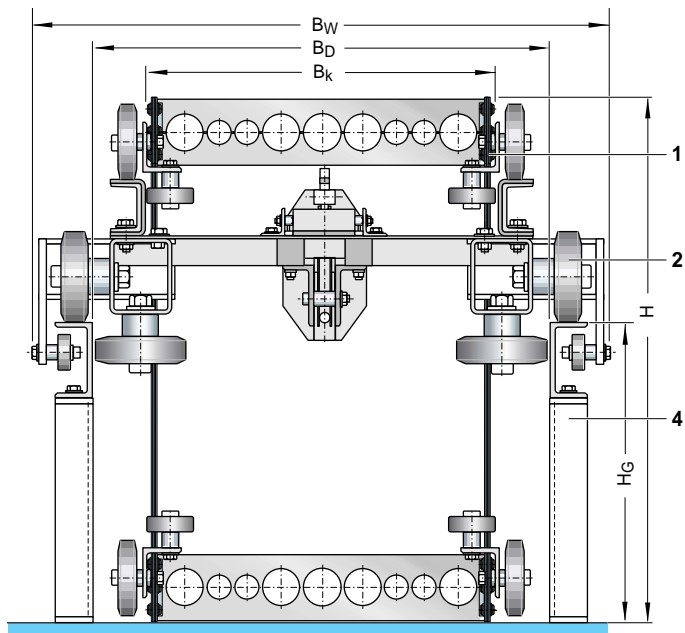
Cable Carrier System Type 225



- one sided arrangement (schematic illustration)



- opposing arrangement (schematic illustration)



Cross-section view of cable carrier system

The KABELSCHLEPP cable carrier system type 225 consists of the following components:

- 1 Cable Carrier(s)** with running and guide rollers attached to the side
- 2 Support carriage** with running and guide rollers providing support over the entire length
- 3 Driver carriage** with running and guide rollers
- 4 Rolling carriage**
- 5 Tension cable**
- 6 Tension cable roller**
- 7 Tensioning device**

Abbreviations:

- B_D = Clear width in rolling carriage
- B_G = Overall width of rolling carriage
- B_K = Width of cable carrier(s)
- B_W = Support carriage width (max. width)
- H = Installation height of cable carrier(s)
- H_G = Rolling carriage height
- L_G = Rolling carriage length
- L_S = Travel length
- L_W = Support carriage length

Cable Carrier System Type 228

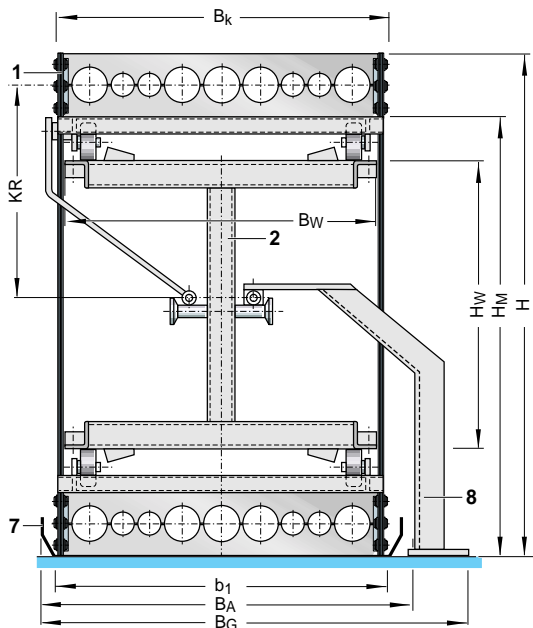
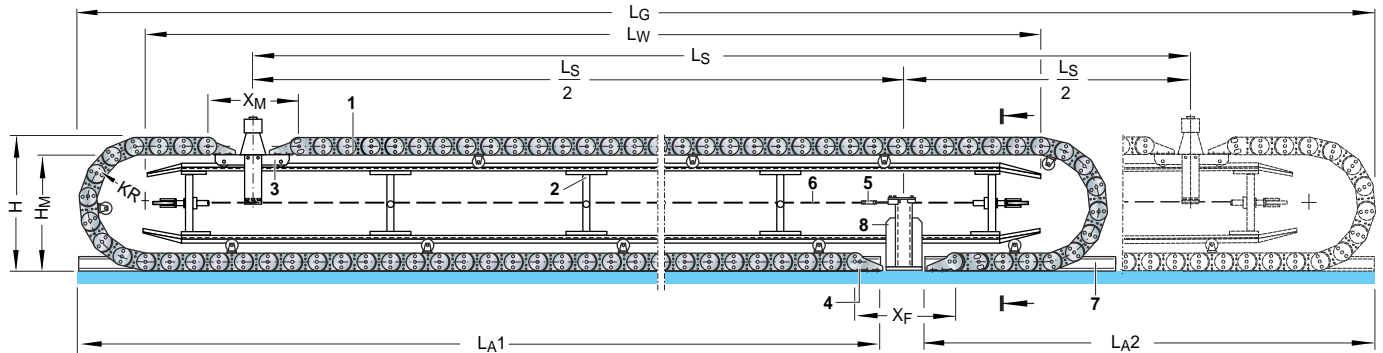
For arrangement of Cable Carriers running in opposite directions!

The cable carriers with running rollers are supported along their entire length by the support carriage which travels with the system.

The support carriage is moved by means of a tension cable system.

This cable carrier system requires less width than the Type 225 cable carrier system. The overall width is only slightly greater than the chain width B_k .

General view of the Cable Carrier System (schematic illustration)



The KABELSCHLEPP cable carrier system Type 228 consists of the following components:

- 1** Cable Carrier(s) with running rollers
- 2** Support carriage, supporting carrier(s) along their entire length
- 3** Driver carriage with running rollers
- 4** Fixed point connection
- 5** Cable tensioning device
- 6** Tension cable with guiding rollers
- 7** Support tray
- 8** Tension cable anchor at the fixed point

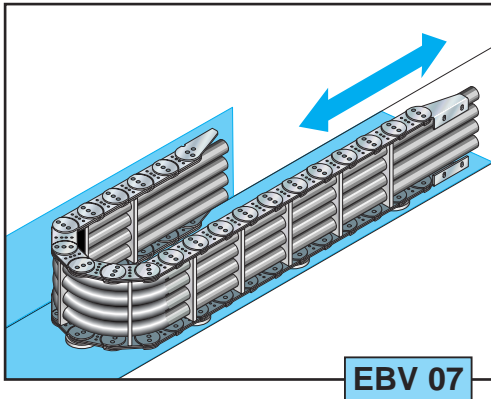
Cross-sectional view of the cable carrier system

Abbreviations:

B_A = support tray width
 b_1 = clear width of support tray
 B_G = overall system width
 B_k = cable carrier width
 B_W = support carriage width
 H = Installation height of cable carriers
 H_M = driver carriage height
 H_W = support carriage height

KR = Bend radius of cable carriers
 L_A = support tray length
 L_S = Travel length
 L_W = support carriage length
 X_F = distance between connections at fixed-point
 X_M = Distance between connections at driver

Horizontal Arrangement rotated through 90° – straight



This installation variant can be designed with all steel Cable Carriers.

The Cable Carrier used in the traditional horizontal arrangement is rotated through 90°. It glides on the outside of the chain band on a tray or in a channel by means of special slides or rollers.

Application:

Generally, Cable Carriers turned through 90° are used if the height of the installation area is insufficient to allow a horizontal installation.

Make sure that cables/hoses are placed in the carrier with sufficient clearance from one another.

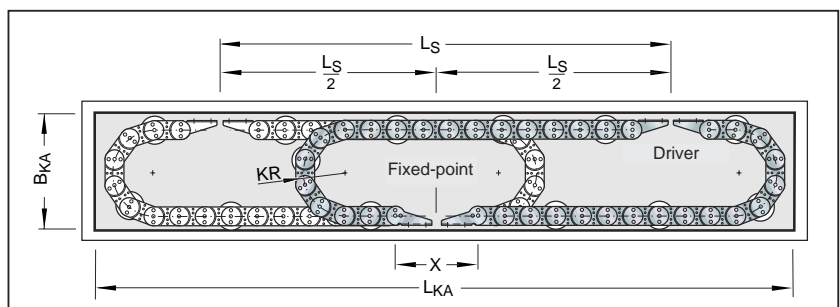
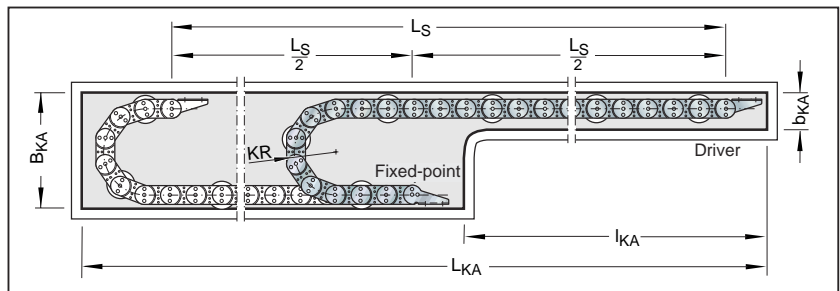
The best technical solution for this is the hole stay, which allows for the optimum placement of cables/hoses in carrier.

Systems for extended travel lengths

Abbreviations:

b_{KA} = Width of restricted channel
 l_{KA} = Length of restricted channel

Single-sided arrangement (with guide channel)



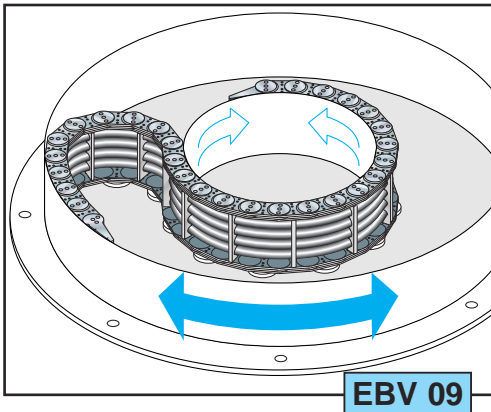
Opposing arrangement

The material and quality of the channel floor must be such that a low-wear process is guaranteed with the lowest frictional forces.

The Cable Carriers run on plastic gliders, ball castors, steel rollers or steel rollers with rubber tyres.

Distance glides or rollers are mounted to the outside and/or inside of the chain band. These prevent wearing of the channel walls and guarantee smooth operation of the system.
 (See installation variant EV 09).

Horizontal arrangement Circular – rotated through 90°



In this arrangement the Cable Carrier is rotated through 90° for use with machine components performing circular operations.

Through the combination of bend radius KR and reverse bend radius RKR, the cable carrier deliberately moves in two precisely defined circular movements.

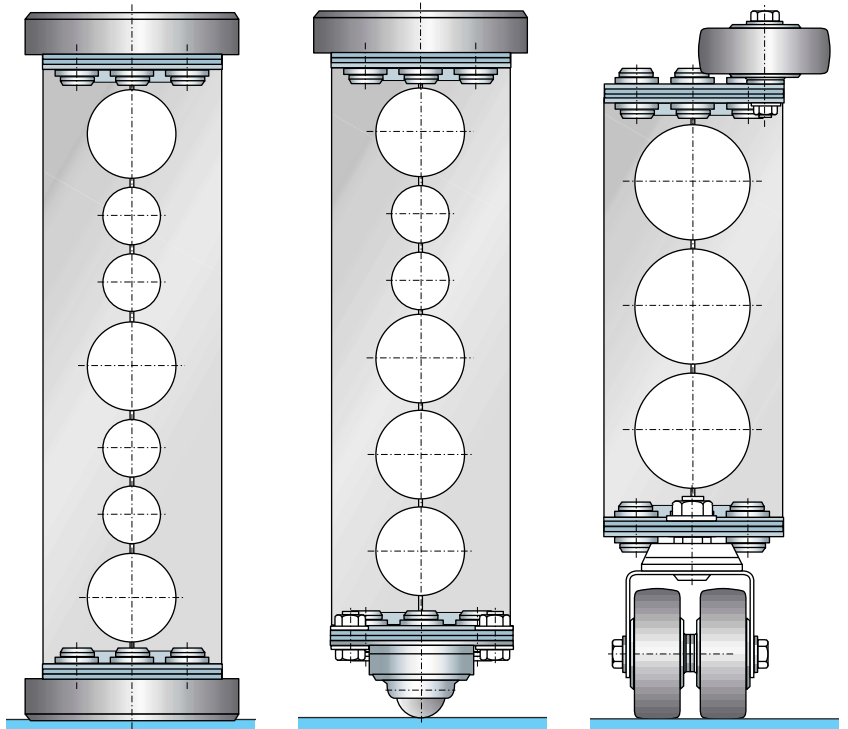
The carrier system is mounted to the inner and outer ring of a guide channel. The moving ring (inner or outer ring) is the driver for this installation.

Cable carriers in this configuration will always have to be guided in a channel. The driver can be fitted either on the inside or the outside.

In order for the carrier system to perform a circular motion, a special chain link design is necessary.

The circular – rotated through 90° Cable Carriers either run on round gliders, ball castors, steel rollers or steel rollers with rubber tyres attached to the lower chain band in a sheet steel channel.

Support and guide elements (possible combinations)



Glidors
on upper and lower
chain band *

**Glidors on upper
and ball castors**
on lower chain band

**Glidors on upper
and double guiding
rollers** on lower
chain band

*) for installations with insufficient carrier installation height H_E the glider on the upper chain band can be omitted.

The sheet steel guide channel can be delivered in two different versions:

- Recessed channel** - for the installation of a single-sided carrier system
- Continuous channel** - for the installation of opposing carrier systems

Spacers for gliders or rollers are mounted to the inside or outside of the upper chain band in order to prevent the cable carriers dragging along the channel walls and to ensure smooth operation of the installation.

With long travel lengths or particularly tall installations, a guide carriage is used to stabilize the cable carriers.

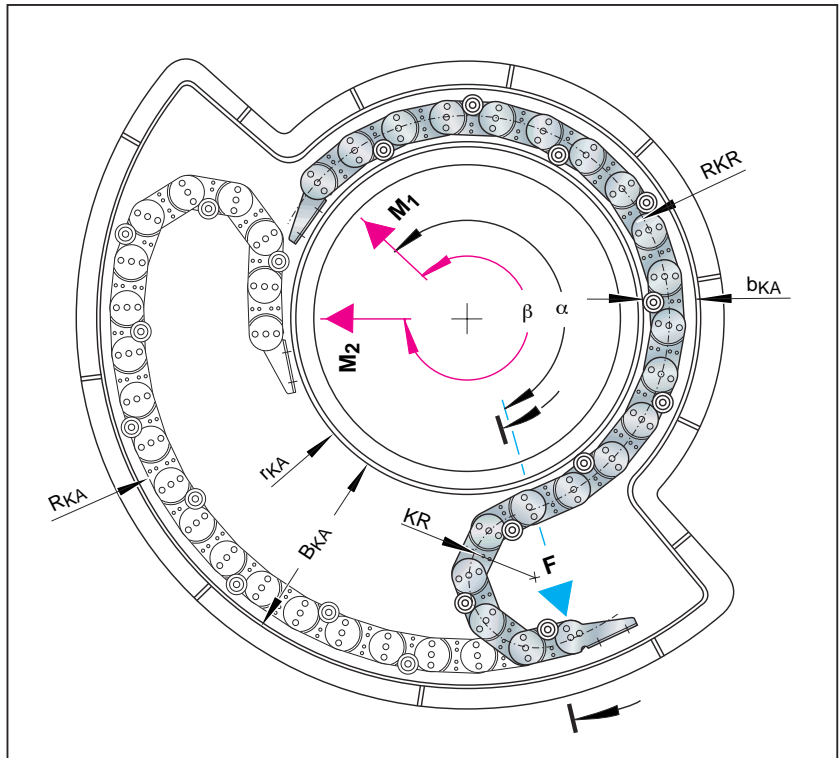
Single-sided arrangement

With detached guide channel
(schematic illustration)

Angles of rotation of up to **600°** are possible in a single-sided arrangement!

Abbreviations:

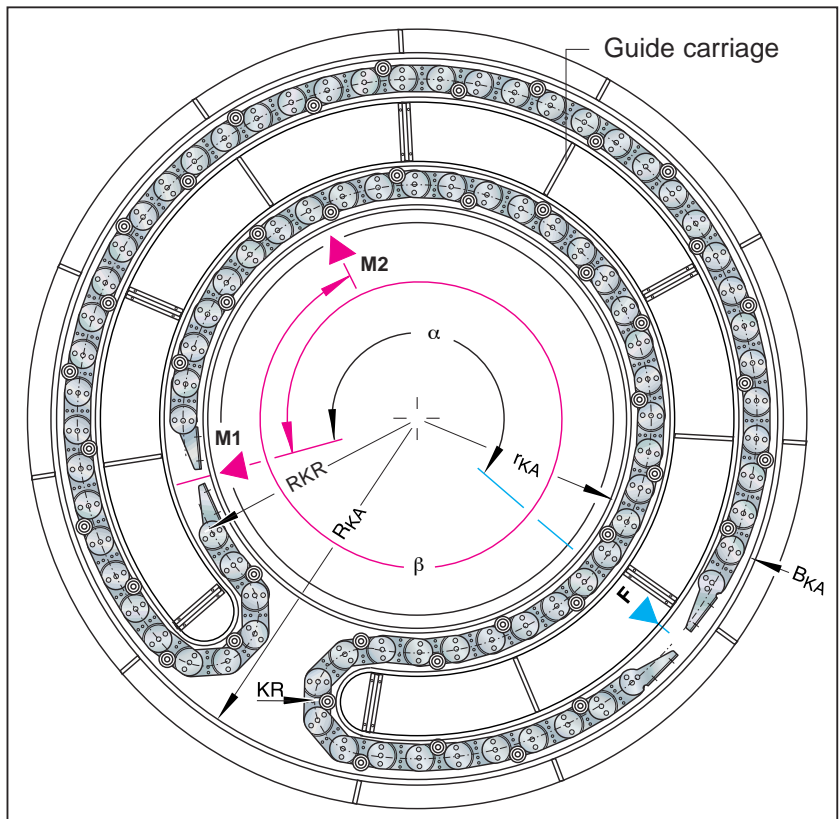
- α = Fixed point angle
- β = Travel length
- B_E = Width of cable carrier
- b_{KA} = Channel width in the narrow section
- B_{KA} = Channel width
- H_E = Height of cable carrier
- H_{KA} = Height of guide channel
- KR = Bend radius
- RKR = Reverse bend radius
- r_{KA} = Internal channel radius
- R_{KA} = External channel radius
- F** = Fixed point
- M 1** = Driver – End position 1
- M 2** = Driver – End position 2



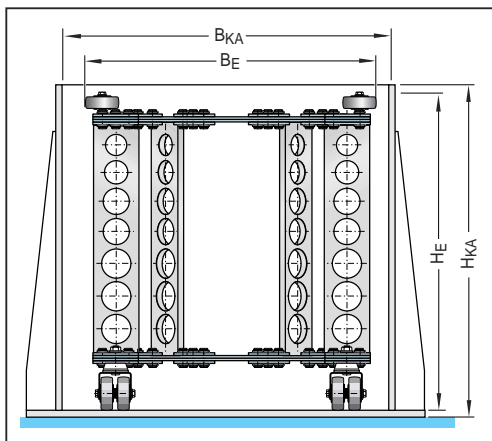
Opposing arrangement

with guide carriage
(schematic illustration)

Angles of rotation of up to **500°** are possible with the opposing arrangement!



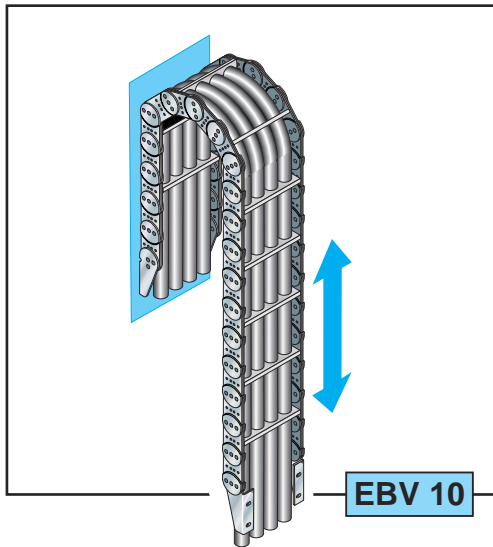
Channel cross sectional view



Owing to the numerous design options available with this installation variant, please contact us for assistance.

We can supply the complete solution:
ready to assemble, installation included if required.

Vertical standing arrangement



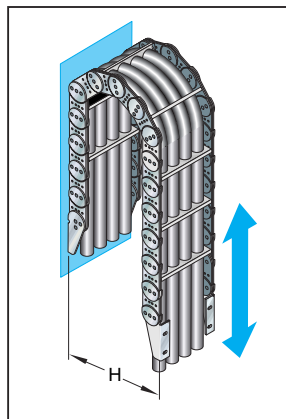
With this kind of arrangement, the following details have to be taken into consideration:

Cable Carrier

Mount the cable carrier in a way to ensure parallel movement of the active and passive runs.

No or only the minimum pre-tension should be applied to the cable carrier.

Calculation of the chain length: see page P 018.

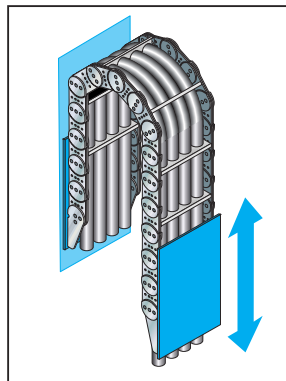


Connection elements

The connection elements have to be mounted to the machine (fixed-point/driver) to prevent the cable carrier from tilting to the outside, i.e. the connection has to be **rigid**.

$$H = 2 KR + hG$$

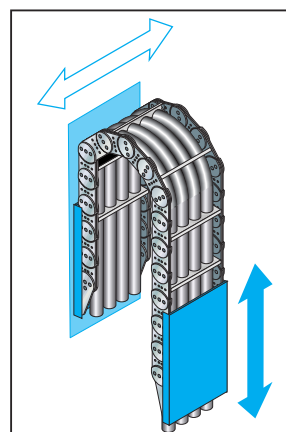
The distance between the fixed-point and driver connection depends on the selected bend radius.



Support

Generally, the cable carrier has to be supported at the fixed point and **on the outside** of the driver.

The length of the support is determined by the additional load, degree to which the carrier is filled, travel length and the selected cable carrier.

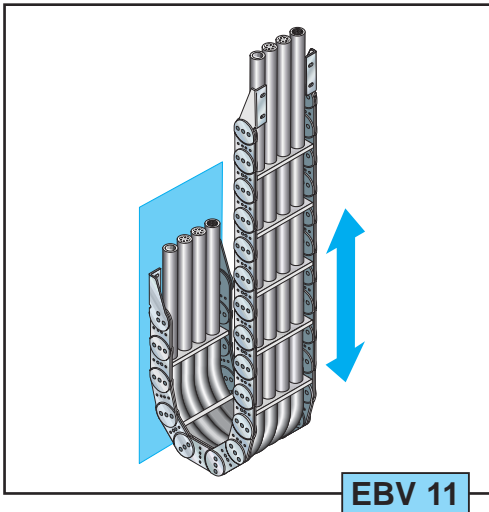


Direction of Movement

In some instances, the complete unit also moves **crosswise** to the carrier standing vertically.

In these cases the carrier needs to be equipped with the appropriate guides to follow this movement.

Vertical hanging arrangement

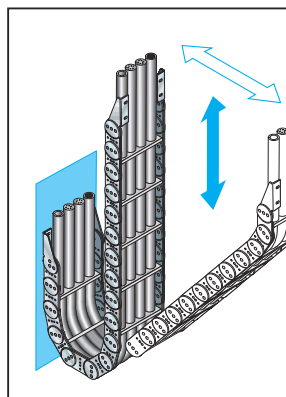


We differentiate between:

- Vertical hanging arrangement**
 Direction of movement of Cable Carrier:
 vertical only

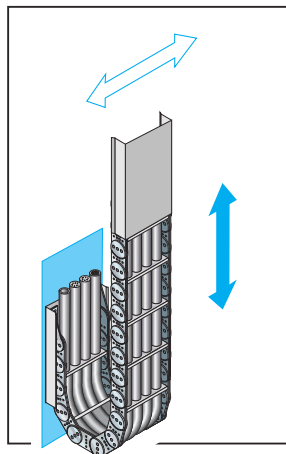
In the case of a purely vertical movement, the cable carrier can be installed without special side supports.

Calculation of the chain length: see page P 018



- Vertical hanging arrangement**
 Direction of movement
 of Cable Carrier:
vertical/horizontal combined

Even with a combined vertical/horizontal movement, the cable carrier can be installed without special side supports.



- Vertical – hanging arrangement**
 Direction of movement
 of cable carrier:
vertical only

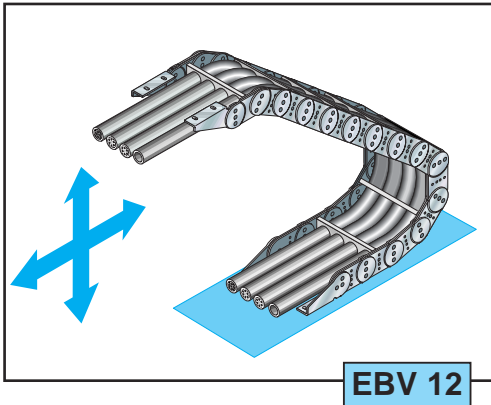
If the entire unit moves crosswise and/or along to the hanging cable carrier, an additional side guide must be fitted to the longer cable carriers.

Generally, the following applies to the vertical hanging arrangement

- The cable carrier must always be installed **without** any or **with only minimal** pre-tension.
- Extreme care should be taken when fixing the cables/hoses to the driver and to the fixed point.

Please comply with the **Guidelines for installing cables/hoses in KABELSCHLEPP cable carrier systems**

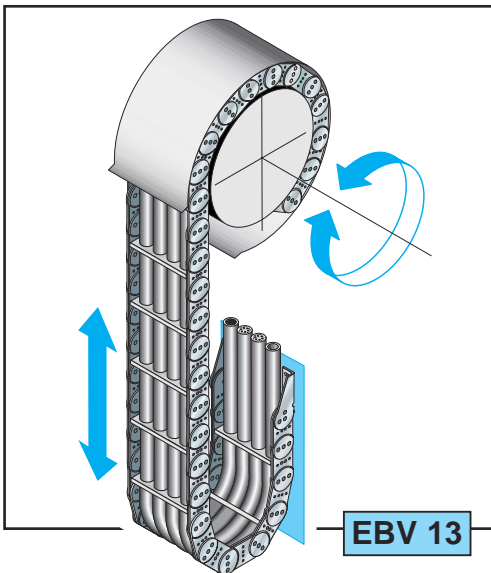
Horizontal/vertical arrangement Multi-axis



KABELSCHLEPP cable carriers can also be utilized for combined horizontal/vertical motion ("Multi-axis").

This arrangement requires no special structural preconditions.

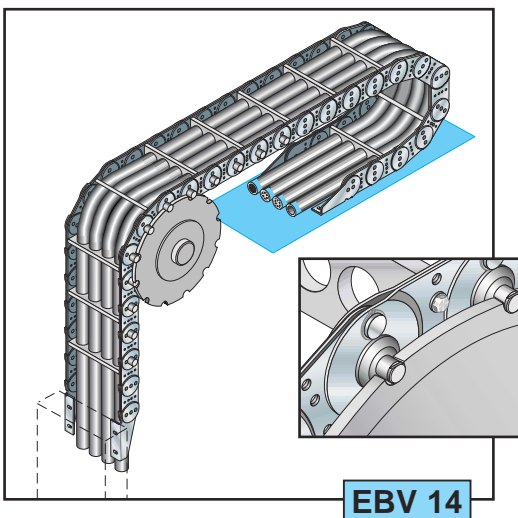
Vertical arrangement coiled



For this kind of arrangement cable carriers are available in all standard versions.

Depending on spin/acceleration appropriate guide plates should be provided to ensure optimal functionality (see illustration).

Vertical arrangement hanging with support pin



This vertical arrangement of the cable carrier with additional support elements attached offers the option of using the cable carrier as a lifting device for machine components attached to its elements (e.g. control panels, manipulators etc.).

The cable carrier is driven by sprocket wheels.

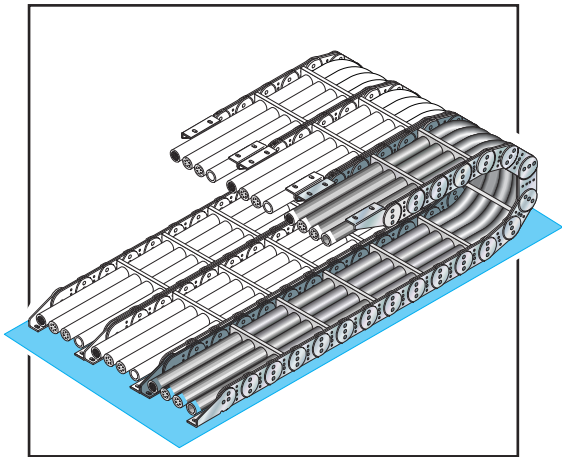
The pitch circle radius must be equal to or larger than the selected bend radius of the cable carrier.

This installation is either motor driven or a balance weight is used.

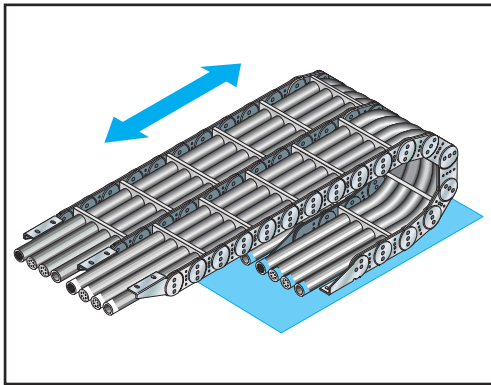
Owing to the multitude of design options inherent to this kind of configuration, please consult our technical team about this installation variant.

Below are some further options which are possible in connection with the installation variants described.

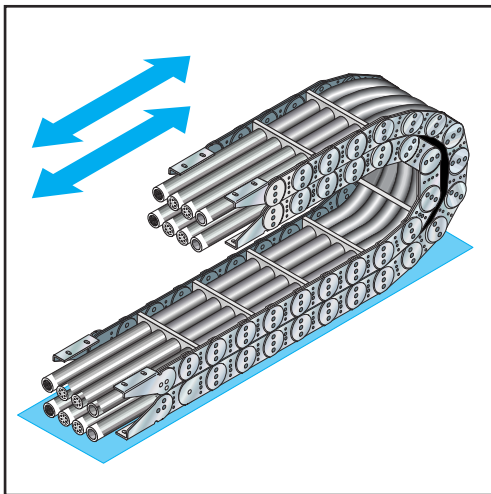
If the cable carrier cross section is inadequate to accommodate the number of cables/hoses, the following installation options are available:



A 1 **Adjacent arrangement**
possible with all cable carriers and hoses

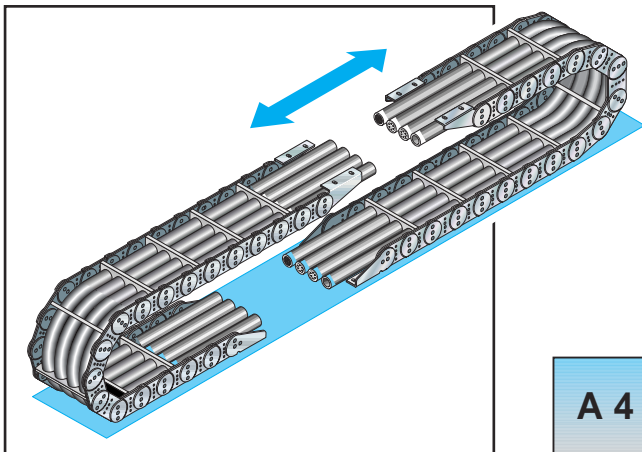


A 2 **Multi-band arrangement**
possible with all cable carriers



If the available space will not allow a cable carrier system to be installed because of the required width, a **nesting** or **opposing** system can be arranged.

A 3 **Nesting arrangement**
possible with all cable carriers and hoses.



A 4 **Opposing arrangement**
possible with all cable carriers and hoses.

Guidelines

For the installation of cables/hoses
in KABELSCHLEPP Steel Cable Carriers

Extreme care must be taken when installing supply cables in cable carriers or flexible conduits.

Please always observe the following:

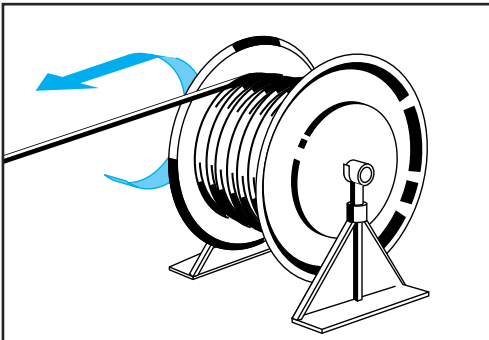
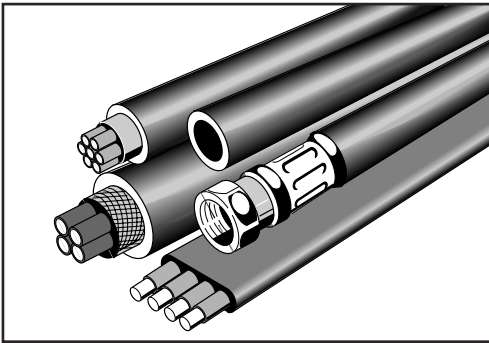
Only electric cables suitable for use in a cable carrier system should be used.

Hoses must be highly flexible and may only contract or expand slightly in length when under pressure.

Information on the properties of hoses with regard to length can be found in the hose manufacturer's catalogue.

The weight distribution in the chain stay and/or in the conduit cross section must be as symmetrical as possible.

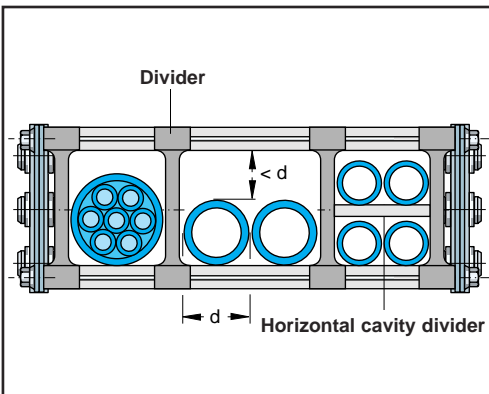
We will supply the optimal cables/hoses for your application.



Cables should be installed twist-free into the cable carrier and should be of an adequate length. In the case of electric cables, 0.2 % of the cable length should be held at the fixed point as a reserve length.

Cables must be rolled tangentially off rings or drums.

Never take up cables in loops!

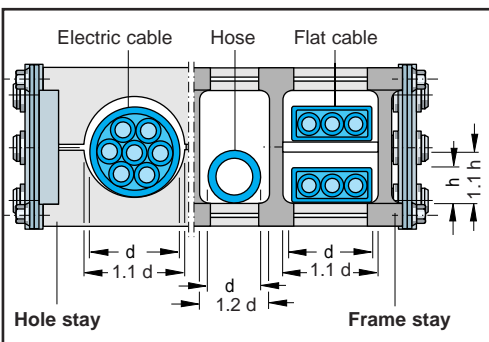


Install the cables individually and loosely side by side!

Installing several cables on top of each other and placing cables with different diameters adjacent to each other should be avoided. In the case of multi-layer installation, horizontal cavity dividers should be placed between the individual layers.

Each cable should be installed in a separate compartment.

Individually produced hole stays or sub-divisions through dividing stays in the frame stay prevent cables/hoses installed adjacent to each other from rubbing. If several cables have to be installed next to each other without dividers, make sure that the remaining clearance is less than the cable diameter, to prevent the cables from twisting around each other.



The supply cables must be able to move freely within the cable carrier. They must not be attached to the carrier, nor should they be bound together.

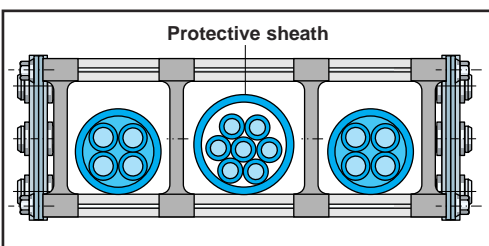
Divider bars must always be placed between layers of installed flat cable.

To calculate the required clearance, the following apply as reference values:

for round cables: **10%** of the cable diameter

for flat cables: **10%** each of either the cable width or the cable thickness

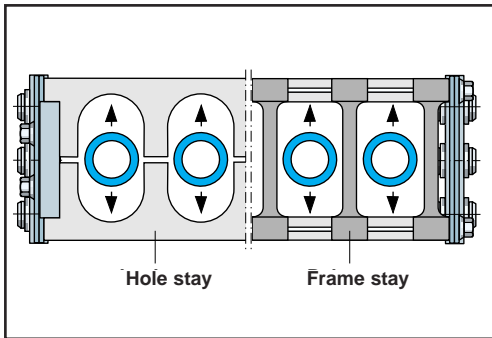
for hoses: **20%** of the hose diameter



Highly flexible, thin cables with low bending strength should be installed loose side by side and arranged in a protective sheath.

The cross section of the protective sheath should be chosen considerably larger than the total of the individual cable cross sections.

As a reference value for measuring the cross section, each cable should have a clearance of approx. 10 % of its diameter.

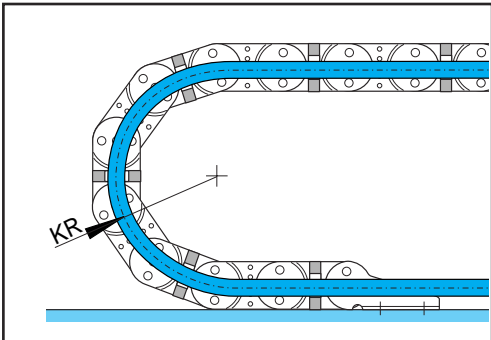


Regardless of the kind of divider used for chain stay cross-sections, the following details have to be taken into consideration:

Pressure hoses must be able to move freely, as they may contract or expand with pressure fluctuations.

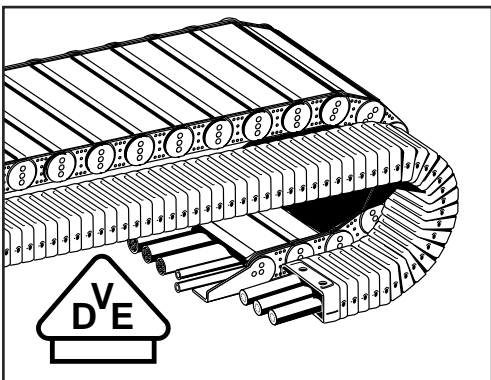
Contraction or expansion can only be compensated for in the bend radius section of the carrier.

In order to calculate the necessary clearance, please refer to hose manufacturers' information with regard to linear expansion or contraction.



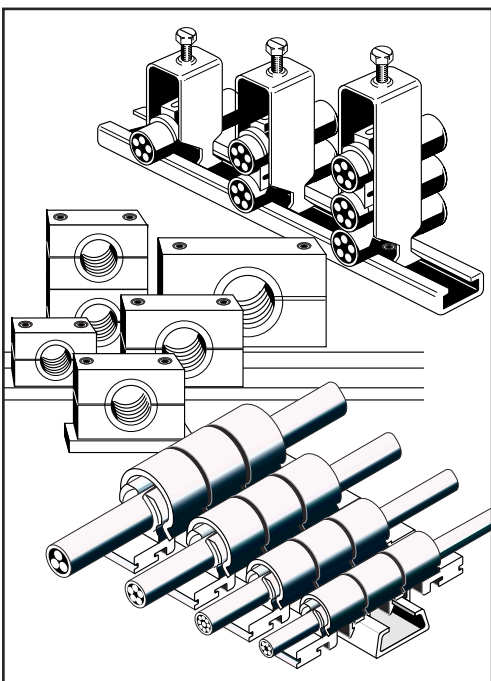
In general, it is very important that the cables/hoses pass through the neutral bend radius without any restriction.

When stacking the cables/hoses remember to leave enough slack to allow them to move freely side by side.



When placing a large number of electric cables in covered cable carriers or flexible conduits the power ratings of the cables have to comply with VDE norm 0100 to avoid exceeding the maximum permissible temperatures for the respective cable and cable carrier materials.

The maximum sustained temperature should not exceed 60 °C for covered cable carriers.

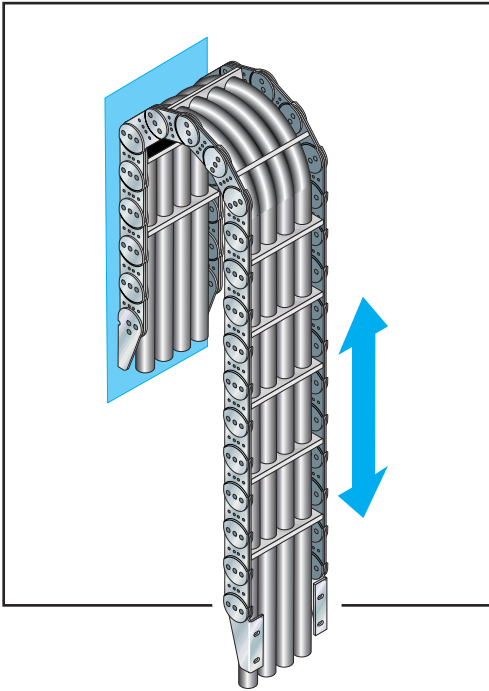


Strain relief for cables is dependant upon the cable type, total carrier length and installation situation.

- Cables with high flexibility and low intrinsic rigidity need to be firmly clamped at the fixed point and driver. Otherwise they might snake out in between the carrier chain stays.
- With vertically hanging carriers the cables must likewise be clamped at the fixed point and driver of the carrier.
- For travel lengths in the unsupported section of the carrier, strain relief for electric cables should be provided at both the driver and fixed point of the carrier.
- For longer travel lengths strain relief for cables should only be provided at the driver end (except for cables with low intrinsic rigidity).
- Pressure hoses with threaded caps clamped in direct vicinity of the driver and fixed end of the carrier do not need strain relief. In cases where clamping is located further away from the driver and fixed end of the carrier, we recommend strain relief as for electric cables.

In general, apply compression only to the outer sheath of the cable over a wide area in order to avoid shifting of cables and individual strands being squeezed.

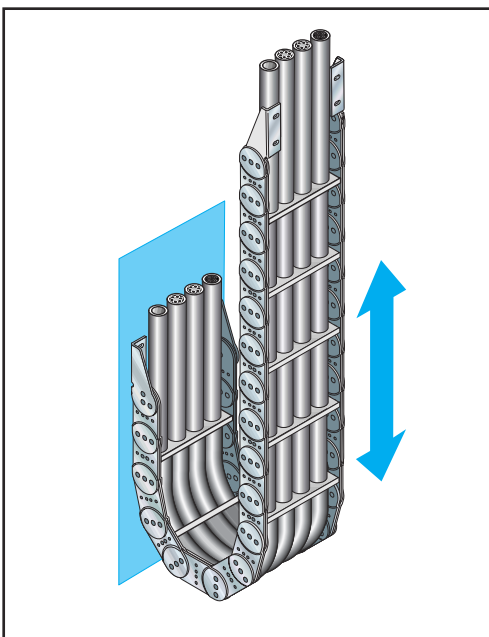
Installing the cables/hoses with a vertically standing arrangement



Please ensure that:

- 1** Electric cables and hoses are installed so that they can move **freely** in the cable carrier.
The weight distribution in the cable carrier cross section must be as symmetrical as possible.
- 2** The cables/hoses must be fixed at both ends with a strain relief device.

Installing the cables/hoses with a vertically hanging arrangement



Please ensure that:

- 1** When installing the cables care should be taken that these can run freely through the overhanging bend.
The cables should not exert any pulling forces or pressure on the stays/dividers in the bend of the cable carrier.
- 2** The cables/hoses must be fixed at both ends with a strain relief device.

It should be pointed out here that hanging electric cables/hoses extend after a certain amount of time and must therefore be **re-adjusted**.

**Cable Carriers**

made of zinc-plated steel and high grade rust and acid resistant steel



Cable Carriers

Type **S 0650**

Type **SX 0650**

Profile:

Type S 0650: smallest cable carrier made of high-quality zinc-plated steel with offset chain links.
Type SX 0650: same design, made from rust and acid-resistant steel.

Stay variants:
Frame stay RS
Frame stay RMD
Frame stay RMA
Frame stay RR
Hole stay LG

Materials:

Chain bands and mounting brackets

S 0650 steel, zinc-plated
SX 0650 steel, rust and acid-resistant
 → Refer to design guidelines

Stays

Stay variant RS **aluminum alloy**
 Stay variant RMD **aluminum alloy**
 Stay variant RMA **aluminum alloy**
 Stay variant LG **aluminum alloy**
 Dividers/end pieces on frame stays **plastic**
 Stay variant RR **steel**, zinc-plated for type S 0650
steel, rust and acid-resistant for type SX 0650

Chain pitch: **65 mm**

Clearance height h_i : **31 mm** for stay variant RS
30 mm for stay variant RMD
26 mm for stay variant RR
200 mm for stay variant RMA

Max. hole diameter: **40 mm** for stay variant LG

Chain width: **customer-specific**
 the desired width for every individual application

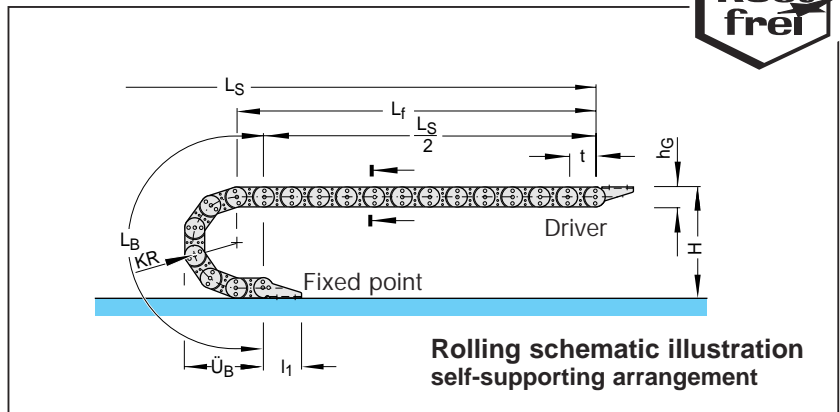
Bend radii: **11 standard bend radii**
 (intermediate radii upon request)

Type S 0650 Type SX 0650 Cable Carrier design

Chain pitch t = 65 mm
 Height h_G = 50 mm
 Connection height $H_{min} = 2 KR + 50$ mm
 Connection length $l_1 = 95/25$ mm
 (see connection dimensions)

Variable sizes depending on bend radius

The connection height of the chain should be 25 mm higher than the height H_{min} !



Bend radius	75	95	115	125	135	145	155	175	200	250	300
Loop length L_B	496	558	621	653	684	716	747	810	888	1045	1202
Loop overhang (depot) \ddot{U}_B	230	250	270	280	290	300	310	330	355	405	455
Height H_{min}	200	240	280	300	320	340	360	400	450	550	650

Dimensions in mm

Calculation of chain length:

$$L_k \approx \frac{L_s}{2} + L_B$$

Rounded to pitch 65 mm

Installation height

(required clearance height):

$$H_z = H + z$$

Pre-tension $z \approx 10$ mm/m chain length

Load diagram

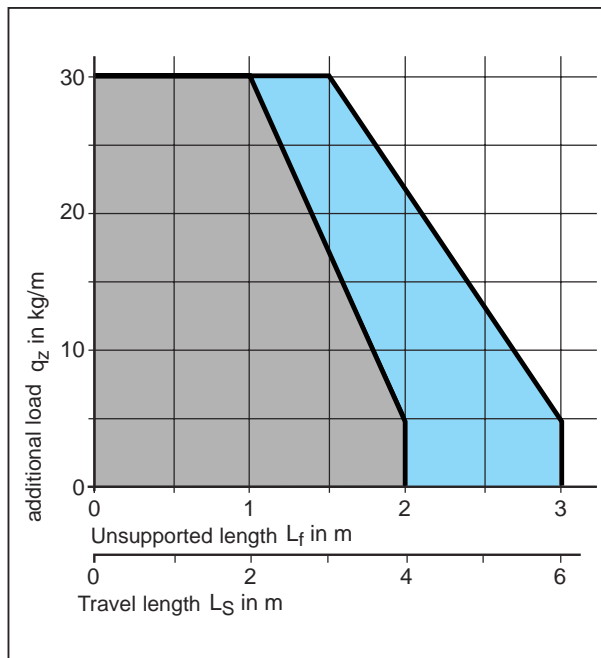
**Unsupported length L_f and
travel length L_s without support**
depending on additional load
(see Design Guidelines)

An intrinsic chain weight of **4.5 kg/m** was used as a basis on the load diagram.

With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.

Explanation of
Load diagram:

- S 0650** - Material **Steel**
- SX 0650** - Material **ER 2**
- SX 0650** - Material **ER 1**



For circular operations, combinations of KR/RKR are possible. Please contact us for details.

A flat and level surface is required for the cable carrier to extend and retract reliably.

Under certain conditions, a support tray needs to be installed (see system components).

Type **S 0650**

Type **SX 0650**

Chain cross sections

in accordance with section in schematic illustration

Stays mounted on every 2nd chain link!

Stay variant **“RS 1”**

Frame stay -
with a detachable profile bar

for short to medium travel lengths and
low travel speeds

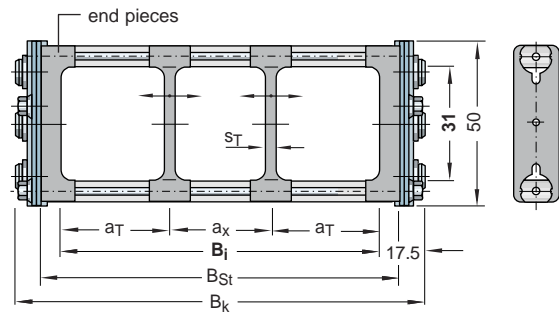
L_{smax} : 6 m for S 0650
5 m for SX 0650

v_{max} : 1 m/s

Please call for advice in marginal cases.

The stay variant RS 1 can be supplied with
movable dividers.

Please state the number of dividers per
cross section.



Calculation of the chain width:

$$B_k = B_i + 35 \text{ mm}$$

$$B_k \text{ min} = 100 \text{ mm}$$

$$B_k \text{ max} = 300 \text{ mm}$$

$$s_T = 3 \text{ mm}$$

$$a_T \text{ min} = 11.5 \text{ mm}$$

$$a_x \text{ min} = 13 \text{ mm}$$

Calculation of the stay width:

$$B_{St} = B_i + 20 \text{ mm}$$

Stay variant **“RS 2”**

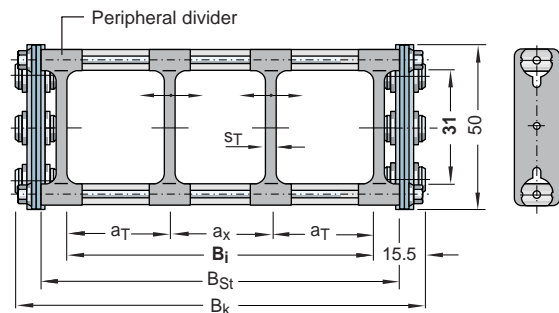
Frame stay -
with bolted profile bars

for short to medium travel lengths
and low travel speeds

L_{smax} : 9 m for S 0650
6 m for SX 0650

v_{max} : 1.5 m/s

Please call for advice in marginal cases.



Calculation of the chain width:

$$B_k = B_i + 31 \text{ mm}$$

$$B_k \text{ min} = 100 \text{ mm}$$

$$B_k \text{ max} = 300 \text{ mm}$$

$$s_T = 3 \text{ mm}$$

$$a_T \text{ min} = 11.5 \text{ mm}$$

$$a_x \text{ min} = 13 \text{ mm}$$

Calculation of the stay width:

$$B_{St} = B_i + 16 \text{ mm}$$

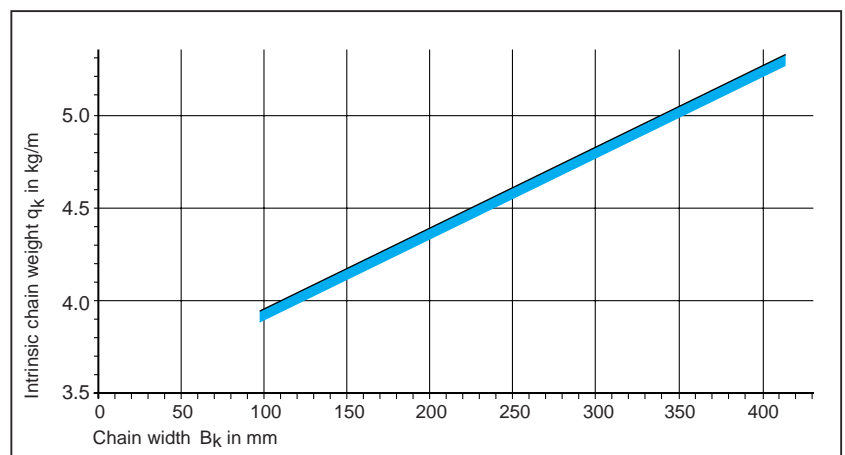
Intrinsic chain weight

for two band chains

depending on the chain width

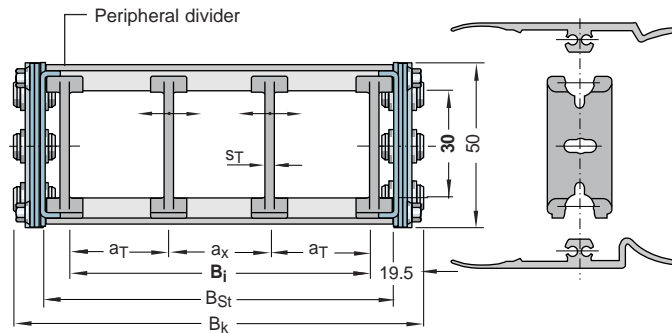
with frame stays RS 1 / RS 2

Weight of the chain bands: 3.6 kg/m
(excluding stays)



Stay Variant "RMD" Frame stay - with cover Enclosed cable carrier system

Aluminium profiles bolted on the inside and the outside.



Calculation of chain width:

$$B_k = B_i + 35 \text{ mm}$$

Standard dividers are movable.

Calculation of stay width:

$$B_{St} = B_i + 20 \text{ mm}$$

Please indicate the number of dividers per cross-section.

$$B_{kmin} = 100 \text{ mm}$$

$$B_{kmax} = 500 \text{ mm}$$

$$KR_{min} = 115 \text{ mm}$$

$$ST = 3 \text{ mm}$$

$$a_{Tmin} = 11.5 \text{ mm}$$

$$a_{xmin} = 13 \text{ mm}$$

Stay Variant "RMA" Mounting frame stay for cables with large diameters

Fitted to the inside – note minimum KR:

$$H_i = 130 \text{ mm} \quad - \quad KR_{min} = 175 \text{ mm}$$

$$H_i = 160 \text{ mm} \quad - \quad KR_{min} = 220 \text{ mm}$$

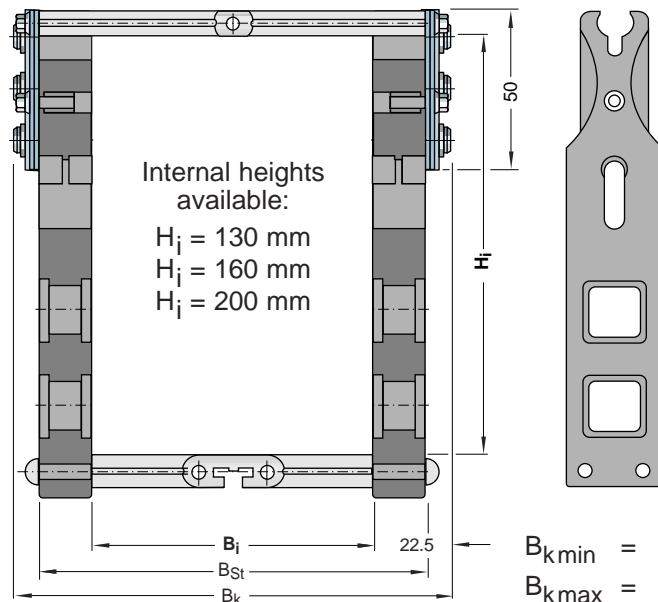
$$H_i = 200 \text{ mm} \quad - \quad KR_{min} = 300 \text{ mm}$$

Calculation of chain width:

$$B_k = B_i + 45 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 30 \text{ mm}$$



$$B_{kmin} = 200 \text{ mm}$$

$$B_{kmax} = 400 \text{ mm}$$

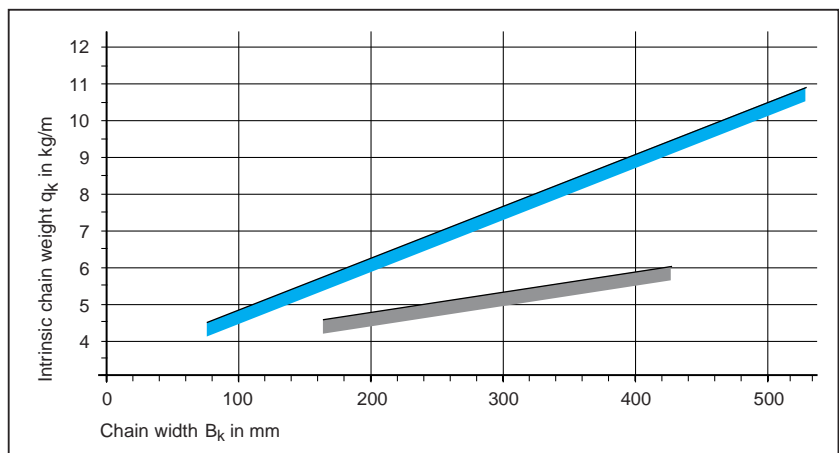
Because of the design parameters which need to be considered we would ask that you consult our technical advisors!

Intrinsic Carrier Weight for two band chains depending on the chain width

— With frame stays RMD

— With mounting frame stay RMA

Weight of the chain bands: 3.6 kg/m (excluding stays)



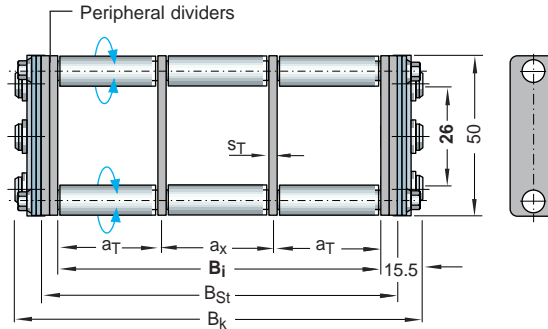
Stay variant "RR" Frame stay – tube design

For short to medium travel lengths and low travel speeds

L_{max} : 9 m for S 0650
 6 m for SX 0650

v_{max} : 1.5 m/s

In marginal cases please consult our technical staff!



Calculation of chain width:

$$B_k = B_i + 31 \text{ mm}$$

$$B_{k\text{min}} = 100 \text{ mm}$$

$$B_{k\text{max}} = 400 \text{ mm}$$

$$s_T = 4 \text{ mm}$$

$$a_{T\text{min}} = 20 \text{ mm}$$

$$a_{x\text{min}} = 25 \text{ mm}$$

Calculation of stay width:

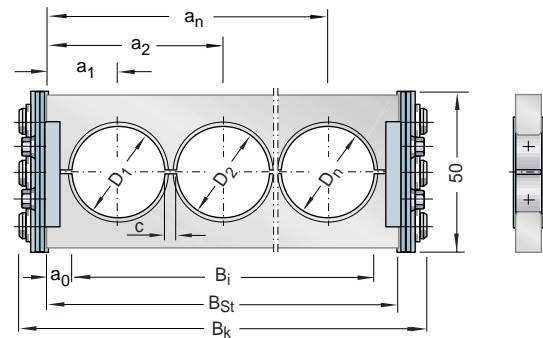
$$B_{St} = B_i + 16 \text{ mm}$$

Fixed dividers are available to separate cables and hoses across the section.

Please indicate the number of dividers needed and their desired spacing.

Stay variant "LG" Hole stay – split design

Custom manufacture of hole pattern to your specifications.



Calculation of chain width:

$$B_k = \sum D + \sum c + 35 \text{ mm}$$

$$B_{k\text{min}} = 70 \text{ mm}$$

$$B_{k\text{max}} = 500 \text{ mm}$$

Calculation of stay width:

$$B_{St} = \sum D + \sum c + 18 \text{ mm}$$

$$D_{\text{max}} = 40 \text{ mm}$$

$$c_{\text{min}} = 4 \text{ mm}$$

$$B_i = B_{St} - 2 a_0$$

$$a_{0\text{min}} = 9 \text{ mm}$$

Hole stays are also available in an unsplit design.

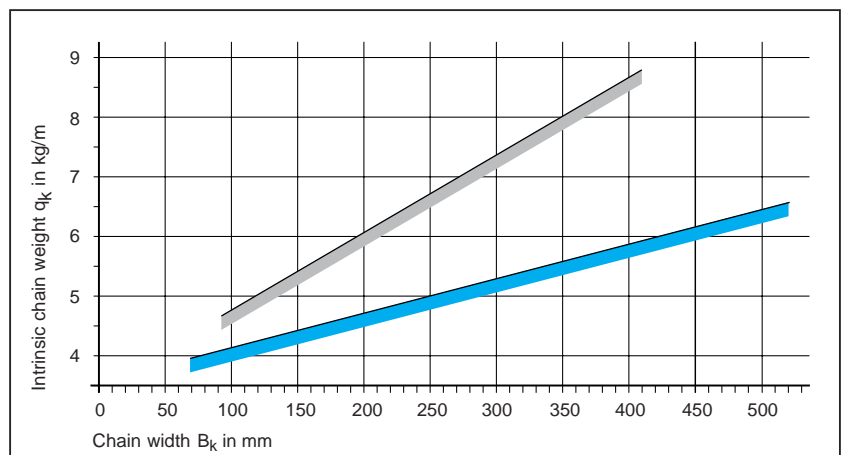
Intrinsic chain weight

For two band chains

Depending on chain width

- frame stay – tube design**
(without height dividers)
- hole stays**, holes account for 50 % of the area.

Weight of the chain bands: 3.6 kg/m (excluding stays)

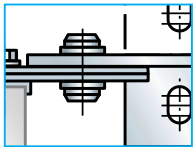


Type S 0650
Type SX 0650
Connection dimensions

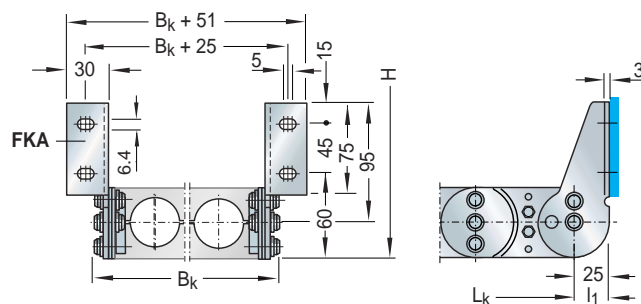
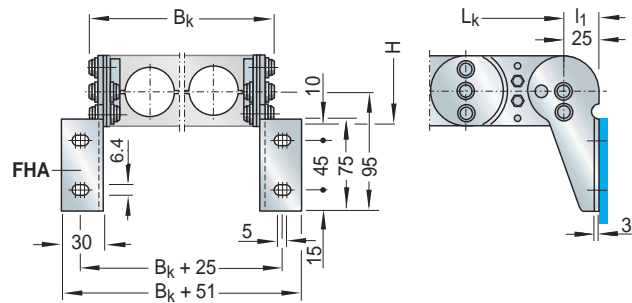
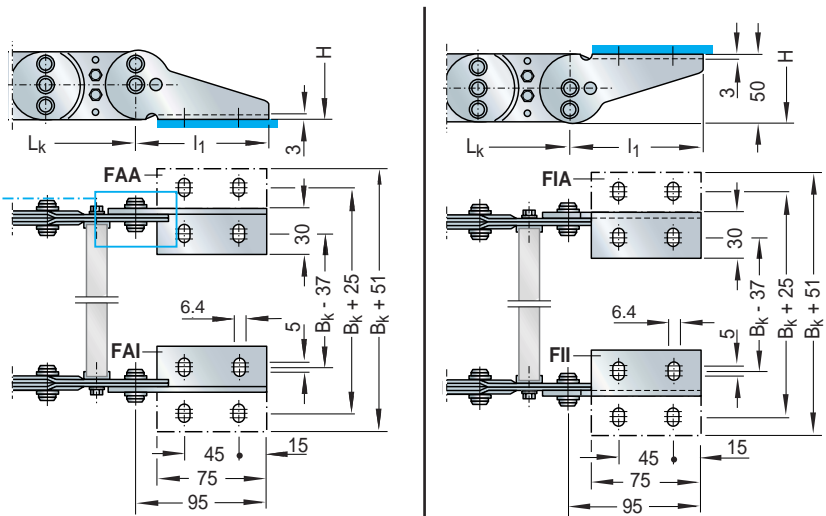
The connection variants at the fixed point and at the driver can be combined and subsequently changed if required.

Please indicate your required connection variants in accordance with the ordering key (next page)!

Fixed point connection



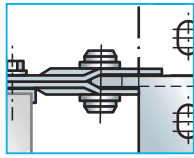
The mounting brackets at the closed end of the chains form the fixed-point.



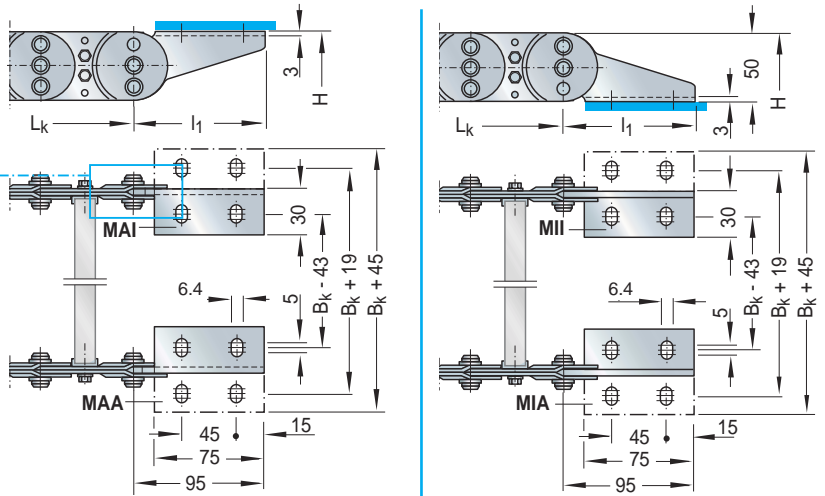
Type S 0650 Type SX 0650

Connection dimensions (continued)

Driver Connection



Connection brackets at the fork end of the chain from the driver



Ordering key for connector:

X.X.X

Point of connection

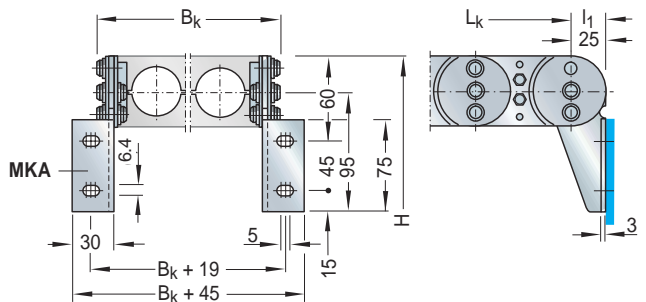
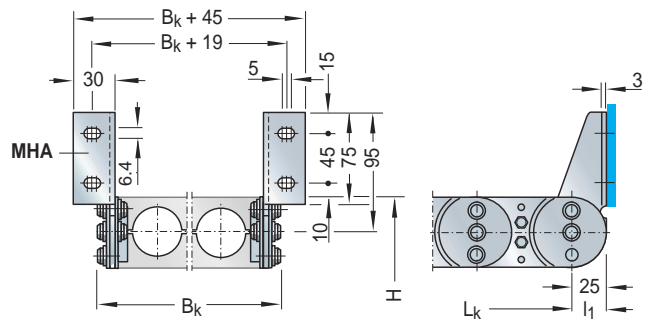
- F - fixed-point
- M - driver

Type of connection

- A - bolts facing outward (standard)
- I - bolts facing inward (towards bend radius)
- H - mounting brackets rotated through 90° to the outside
- K - mounting brackets rotated through 90° to the inside (towards bend radius)

Connection surface

- I - connector surface inside (< B_k)
- A - connector surface outside (> B_k)



Ordering key for the cable carrier:

S 0650 . 180 - LG - 135 - St - 1430

Example:

Cable carrier type S 0650, stay width B_{St} 180 mm - hole stay, split design (hole pattern according to your specifications), bend radius KR 135 mm, steel – zinc-plated, chain length L_k 1430 mm.

- | Type
- | Stay width B_{St} in mm
- | Stay variant
- | Bend radius KR in mm
- | Chain band material
- | Chain length L_k in mm (without connector)



**Cable Carriers
Type S 0950**

Profile:

Cable carrier made of high-grade steel with offset chain links

- Stay variants:**
- Frame stay RS
 - Frame stay RM
 - Frame stay RMR
 - Frame stay RMD
 - Frame stay RR
 - Hole stay LG

Materials:

Chain bands and connecting brackets

Steel - zinc-plated
→ see design guidelines

Stays

- | | |
|--|--|
| Stay variant RS | aluminium alloy |
| Stay variant RM | aluminium alloy |
| Stay variant RMR | aluminium alloy
with plastic roller system |
| Stay variant RMD | aluminium alloy |
| Stay variant RR | Steel - zinc-plated |
| Dividers /
end pieces
on frame stays | plastic |
| Stay variant LG | aluminium alloy |

Chain pitch: 95 mm

Clearance height h_i : 46 mm for stay variant RS
43 mm for stay variant RM
40 mm for stay variant RMR
43 mm for stay variant RMD
42 mm for stay variant RR

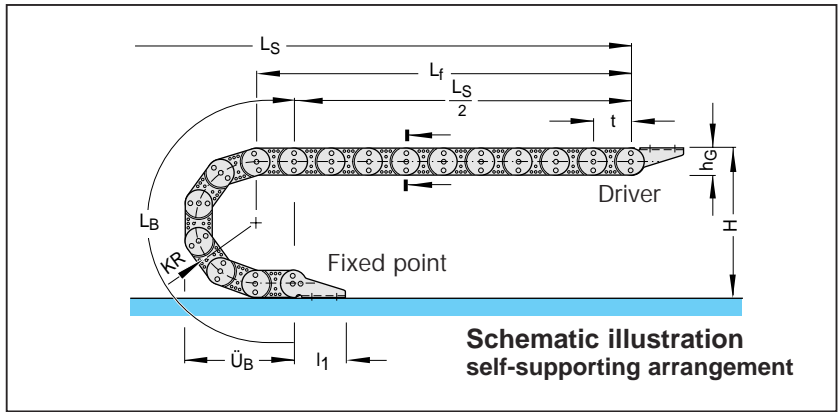
Max. hole diameter: 48 mm for stay variant LG

Chain width: **customer-specific**
the desired width for every individual application

Bend radii: 9 standard bend radii
Intermediate radii on request.

Type S 0950 Cable Carrier design

- Chain pitch t = 95 mm
- Height h_G = 68 mm
- Connection height H_{min} = $2 KR + 68$ mm
- Connection length l_1 = 125/34 mm
(see connection dimensions)



Variable Sizes depending on bend radius

The connection height of the chain should be 34 mm higher than the height H_{min} !

Bend radius	125	140	170	200	260	290	320	350	410
Bend Length L_B	773	820	914	1008	1197	1291	1385	1480	1668
Bend overhang \ddot{U}_B	350	365	395	425	485	515	545	575	635
Height H_{min}	318	348	408	468	588	648	708	768	888

Dimensions in mm

Calculation of chain width:

$$L_k \approx \frac{L_s}{2} + L_B$$

rounded to pitch 95 mm

Installation height (required clearance height):

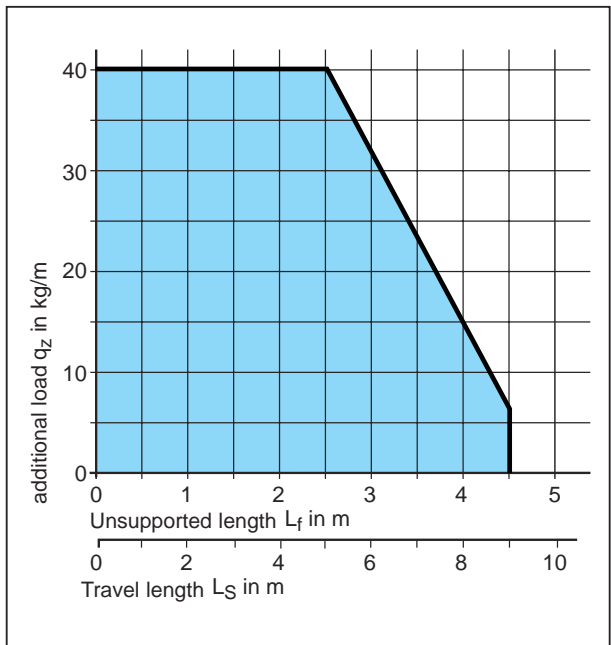
$$H_z = H + z$$

pre-tension $z \approx 10$ mm/m chain length

Load diagram Self-supporting length L_f and travel length L_s without support depending on the additional load (see design guidelines)

An intrinsic chain weight of **7.6 kg/m** was used as a basis on the load diagram.

With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.



For circular operations, KR/RKR – combinations are possible. Please contact us for details!

A flat and level surface is required for the carrier system to be installed properly.

If necessary, a support tray should be installed (see system components).

Type S 0950

Chain cross sections

In accordance with sections in schematic illustration

Stays mounted on every 2nd chain link.

Stay variant "RS1"

Frame stay - with detachable profile bars

For short to medium travel lengths and low travel speeds.

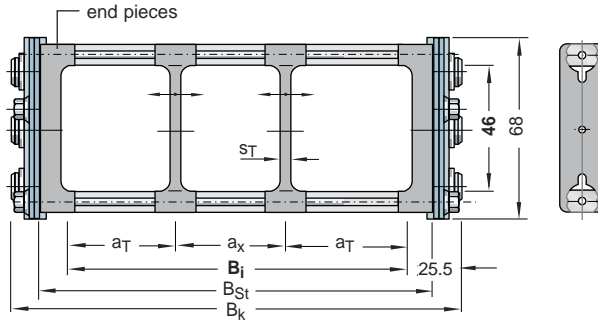
L_{smax} : 7 m

v_{max} : 1 m/s

In marginal cases, please consult our technical staff.

Standard dividers are moveable.

Please indicate the number of dividers per cross section.



Calculation of chain width::

$$B_k = B_i + 43 \text{ mm}$$

$$B_k \text{ min} = 150 \text{ mm}$$

$$B_k \text{ max} = 300 \text{ mm}$$

$$ST = 4 \text{ mm}$$

$$a_T \text{ min} = 12 \text{ mm}$$

$$a_x \text{ min} = 14 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 24 \text{ mm}$$

Stay variant "RS2"

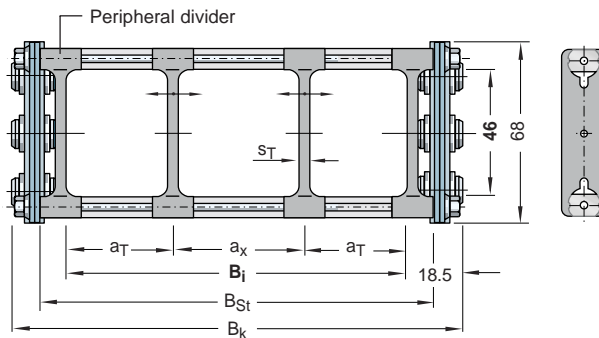
Frame stay - with bolted profile bars

For short to medium travel lengths and low travel speeds.

L_{smax} : 10 m

v_{max} : 1.5 m/s

In marginal cases, please consult our technical staff.



Calculation of chain width:

$$B_k = B_i + 37 \text{ mm}$$

$$B_k \text{ min} = 150 \text{ mm}$$

$$B_k \text{ max} = 400 \text{ mm}$$

$$ST = 4 \text{ mm}$$

$$a_T \text{ min} = 12 \text{ mm}$$

$$a_x \text{ min} = 14 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 18 \text{ mm}$$

Standard dividers are moveable.

Please indicate the number of dividers per cross section

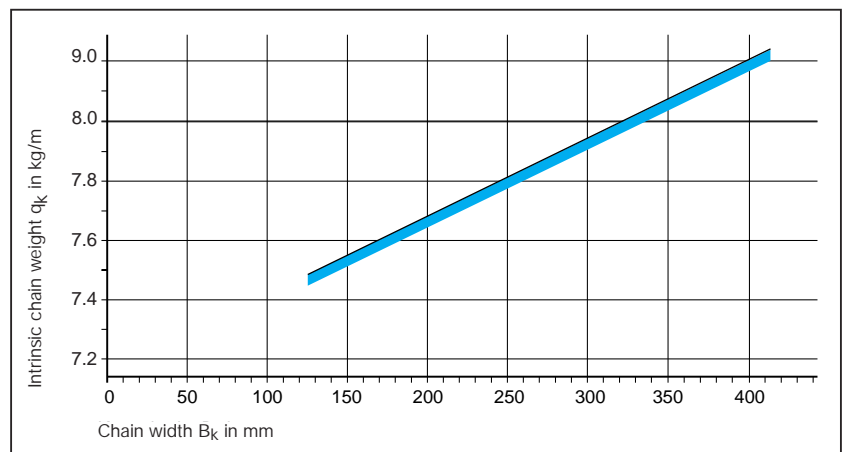
Intrinsic chain weight

For two band chains

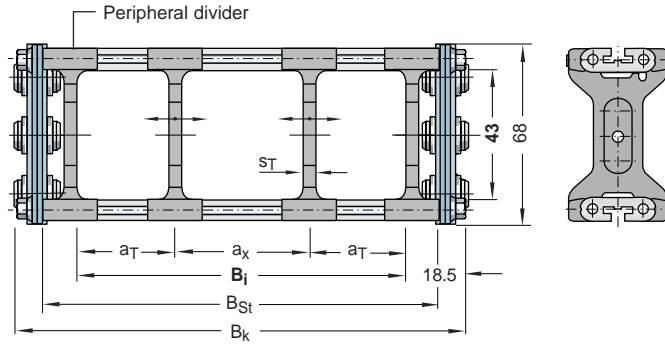
Depending on the chain width

— With frame stays RS 1 / RS 2

Weight of the chain bands: 7.2 kg/m (excluding stays)



**Stay variant "RM"
Frame stay - Solid design**



Aluminium profiles double bolted on the inside and outside.

Calculation of chain width:

$$B_k = B_i + 37 \text{ mm}$$

$$B_{k \text{ min}} = 125 \text{ mm}$$

$$B_{k \text{ max}} = 600 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 18 \text{ mm}$$

$$s_T = 4 \text{ mm}$$

$$a_{T \text{ min}} = 10 \text{ mm}$$

$$a_{x \text{ min}} = 14 \text{ mm}$$

Standard dividers are moveable.

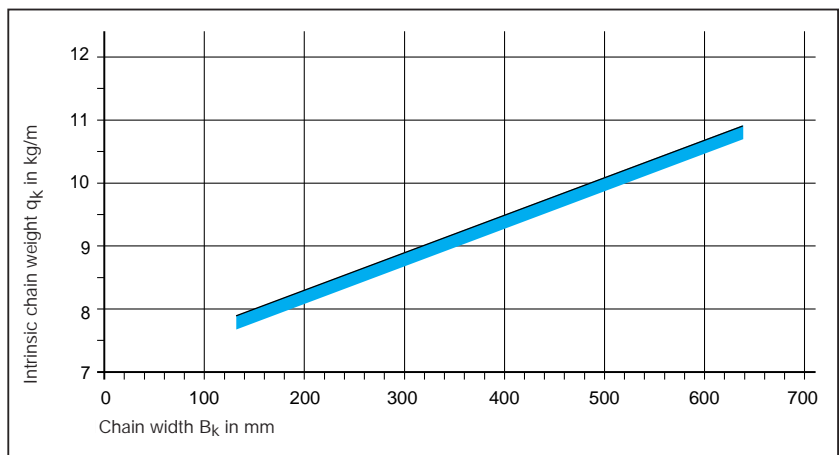
Please indicate the number of dividers per cross section

**Intrinsic chain weight
for two band chains**

Depending on the chain width

with frame stays RM

Weight of the chain bands: 7.2 kg/m
(excluding stays)

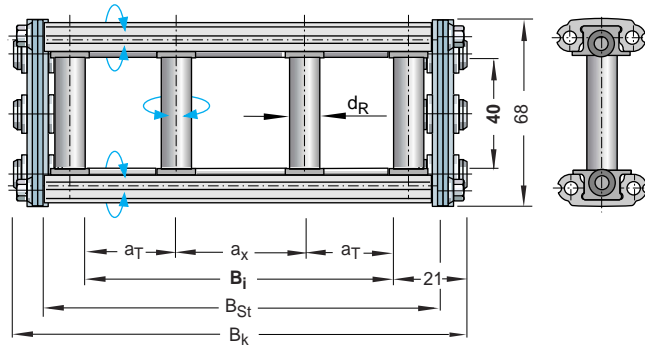


Stay variant "RMR"
Frame stay
with plastic roller system

Aluminium profiles double bolted on the inside and outside.

Specially developed for applications using hoses with soft sheaths.

For the highest specifications - the solution which offers the most protection and support to the cables.



Calculation of chain width:

$$B_k = B_i + 42 \text{ mm}$$

$$B_k \text{ min} = 150 \text{ mm}$$

$$B_k \text{ max} = 600 \text{ mm}$$

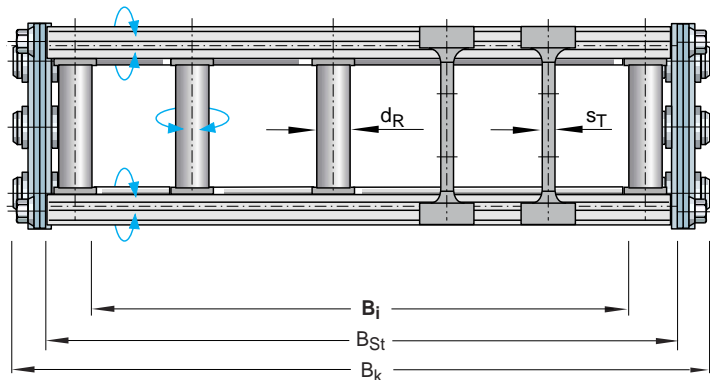
$$d_R = 10 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 23 \text{ mm}$$

$$a_T \text{ min} = 11.5 \text{ mm}$$

$$a_x \text{ min} = 37 \text{ mm}$$



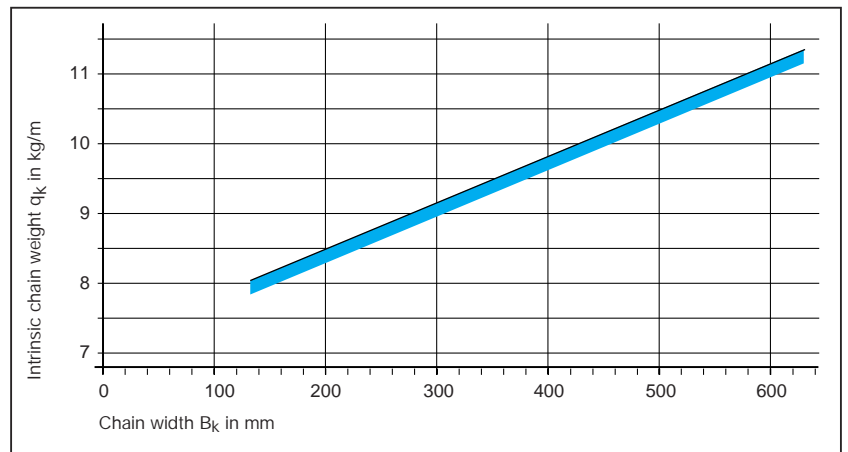
The cross-sections of stay variant RMR can be subdivided using movable dividers of stay variant RM ($s_T = 4 \text{ mm}$) werden.

Please indicate the number of dividers per cross-section.

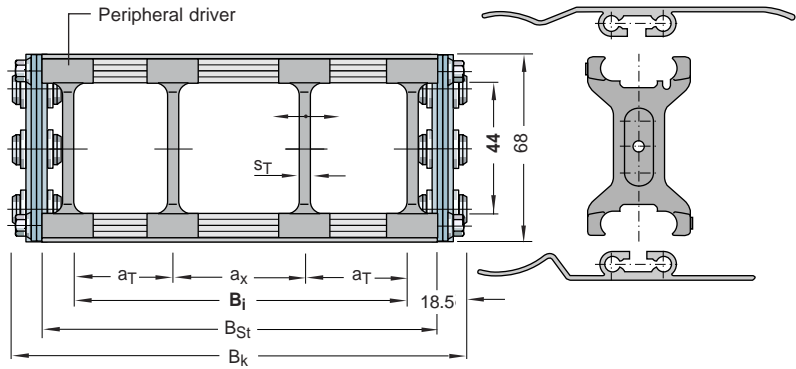
Intrinsic Carrier Weight
for two band chains
depending on the chain width

— With frame stays RMR

Weight of the chain bands: 7.2 kg/m
(excluding stays)



Stay variant "RMD"
Frame stay – with cover
Enclosed cable carrier system



Aluminium profiles double bolted on the inside and outside.

Calculation of chain width:

$$B_k = B_i + 37 \text{ mm}$$

$$B_{k \text{ min}} = 125 \text{ mm}$$

$$B_{k \text{ max}} = 600 \text{ mm}$$

$$KR_{\text{min}} = 170 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 18 \text{ mm}$$

$$s_T = 4 \text{ mm}$$

$$a_{T \text{ min}} = 12 \text{ mm}$$

$$a_{x \text{ min}} = 14 \text{ mm}$$

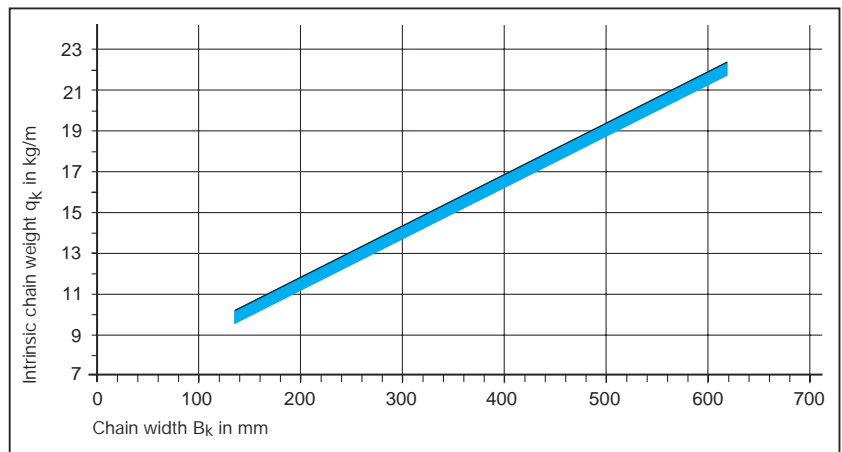
Standard dividers are movable.

Please indicate the number of dividers per cross-section.

**Intrinsic Carrier Weight
for two band chains**
depending on the chain width

With frame stays RMD

Weight of the chain bands: 7.2 kg/m
(excluding stays)



Stay variant "RR"

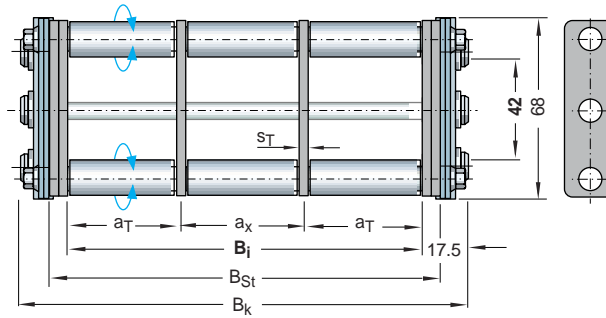
Frame stay – Tube design

for short to medium travel lengths and low travel speeds

L_{smax} : 10 m

v_{max} : 1.5 m/s

Please consult our technical staff in marginal cases.



Calculation of chain width:

$$B_k = B_i + 35 \text{ mm}$$

$$B_{k \text{ min}} = 150 \text{ mm}$$

$$B_{k \text{ max}} = 500 \text{ mm}$$

$$s_T = 4 \text{ mm}$$

$$a_{T \text{ min}} = 20 \text{ mm}$$

$$a_{x \text{ min}} = 20 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 16 \text{ mm}$$

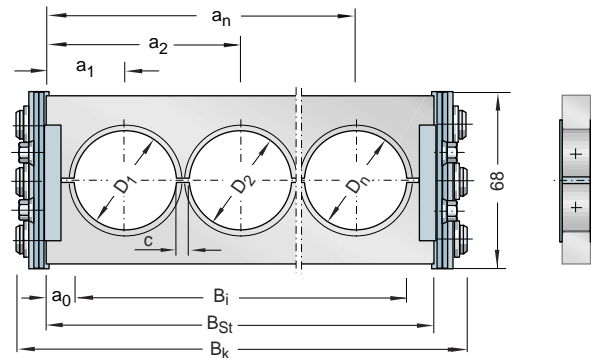
Fixed dividers are available for separating cables/hoses across the width of the carrier section.

Please state the number of, and distance between, the dividers.

Stay variant "LG"

Hole stay – split design

Custom manufacture of hole pattern according to your specifications!



Calculation of chain width:

$$B_k = \sum D + \sum c + 43 \text{ mm}$$

$$D_{max} = 48 \text{ mm}$$

$$a_{0 \text{ min}} = 11 \text{ mm}$$

Calculation of stay width:

$$B_{St} = \sum D + \sum c + 22 \text{ mm}$$

$$c_{min} = 4 \text{ mm}$$

$$B_{k \text{ min}} = 70 \text{ mm}$$

$$B_i = B_{St} - 2 a_0$$

$$B_{k \text{ max}} = 600 \text{ mm}$$

Hole stay is available in an unsplit design.

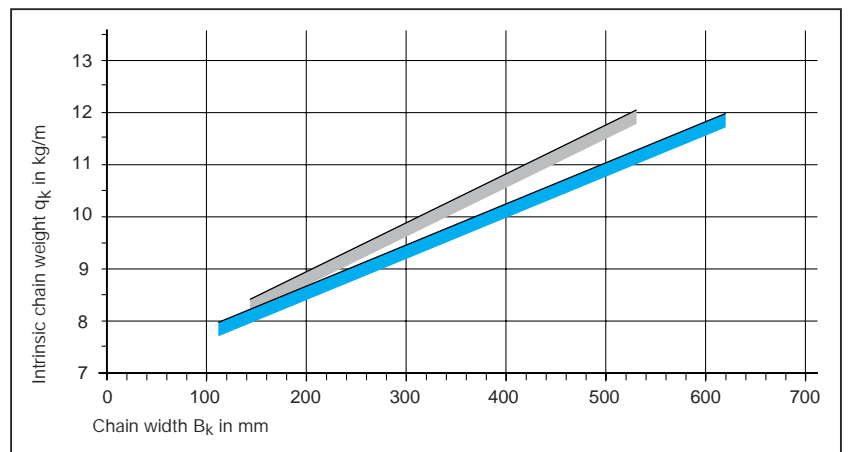
Intrinsic chain weight

for two band chains

Depending on the chain width

- Frame stays - tube design**
(excluding height sub-division)
- Hole stays: holes account for 50 % of area**

Weight of the chain bands: 7.2 kg/m
(excluding stays)

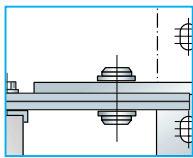


**Type S 0950
Connection dimensions**

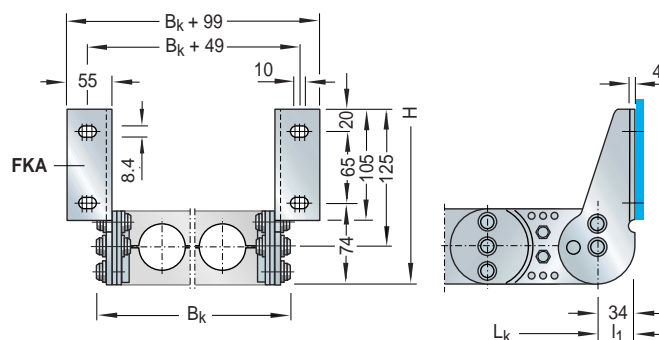
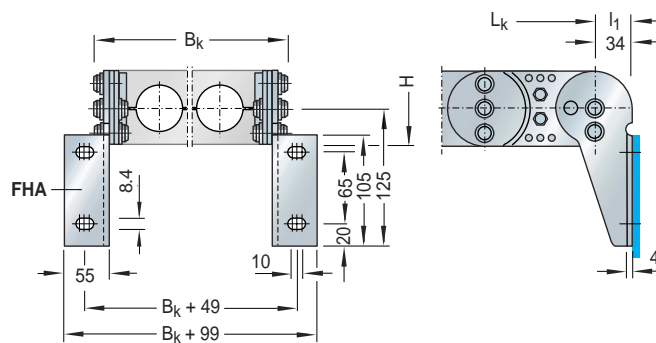
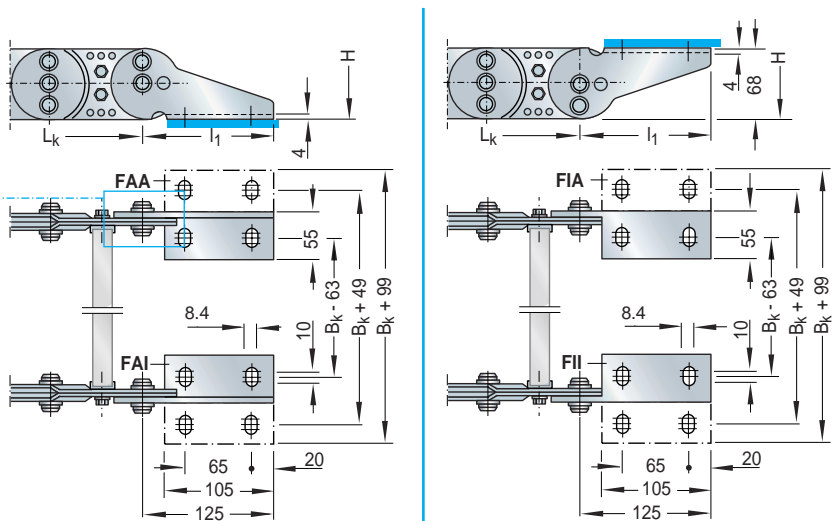
The connection variants at the fixed-point and the driver can be combined and subsequently changed if required.

Please indicate required connection variants in accordance with the ordering key (next page).

Fixed-point connection

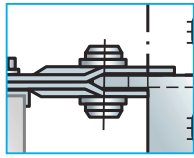


The mounting brackets at the closed end of the chains form the fixed-point.



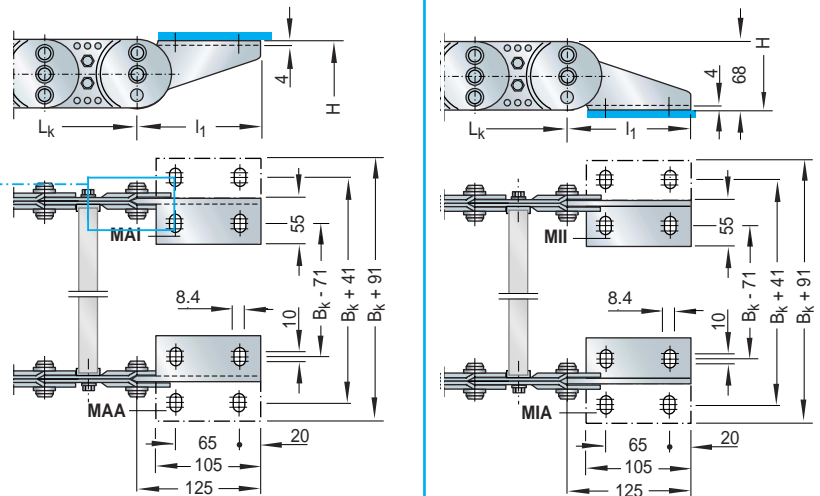
Type S 0950 Connection dimensions

(continued)



The mounting brackets at the forked end of the chain form the driver!

Driver connection



Ordering key for the connection:

X.X.X

Connection point

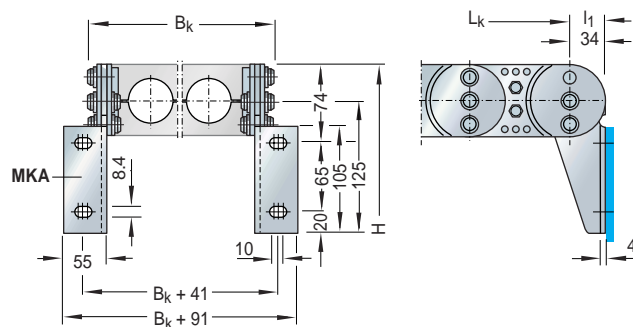
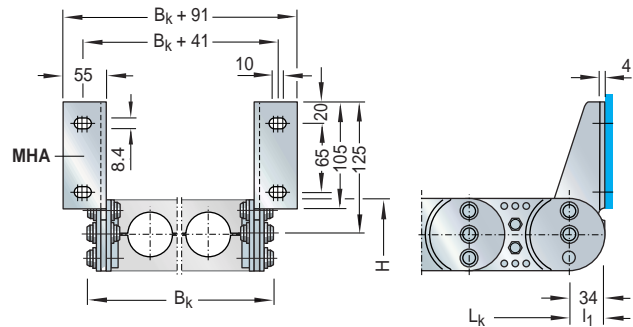
- F - Fixed point
- M - Driver

Connection type

- A - Bolts facing outward (standard)
- I - Bolts facing inward (towards bend radius)
- H - Mounting brackets rotated through 90° to the outside
- K - Mounting brackets rotated through 90° to the inside (towards bend radius)

Connection surface

- I - Connection surface inside (< B_k)
- A - Connection surface outside (> B_k)



Ordering key for the cable carrier:

S 0950 . 300 - RS1/3 - 200 - St - 2375

Example:

Cable carrier type S 0950, stay width B_{St} 300 mm - Frame stay RS 1 with 3 movable dividers, bend radius KR 200 mm, made of zinc-plated steel, chain length L_k 2375 mm.

- Type
- Stay width B_{St} in mm
- Stay variant
- Bend radius KR in mm
- Chain band material
- Chain length L_k in mm (excluding connection)



**Cable Carriers
Type S 1250**

Cable Carriers made of high-quality zinc-plated steel with offset chain links

Profile:

- Stay variants:**
- frame stay RS
 - frame stay RV
 - frame stay RM
 - frame stay RMR
 - frame stay RMD
 - frame stay RMA
 - frame stay RR
 - hole stay LG

Materials:

Chain bands and mounting brackets

Steel - zinc-plated steel
→ (see design guidelines)

Stays

- Stay variant RS **aluminum alloy**
- Stay variant RV **aluminum alloy**
- Stay variant RM **aluminum alloy**
- Stay variant RMR **aluminum alloy**
with plastic roller system
- Stay variant RMD **aluminum alloy**
- Stay variant RMA **aluminum alloy**
- Stay variant RR zinc-plated **steel**
- Dividers/end pieces on frame stays **plastic**
- Stay variant LG **aluminum alloy**

Chain pitch: 125 mm

Clearance height h_i:

- 72 mm for stay variants RS
- 72 mm for stay variants RV
- 69 mm for stay variants RM
- 66 mm for stay variants RMR
- 69 mm for stay variants RMD
- 200 mm for stay variants RMA
- 66 mm for stay variants RR

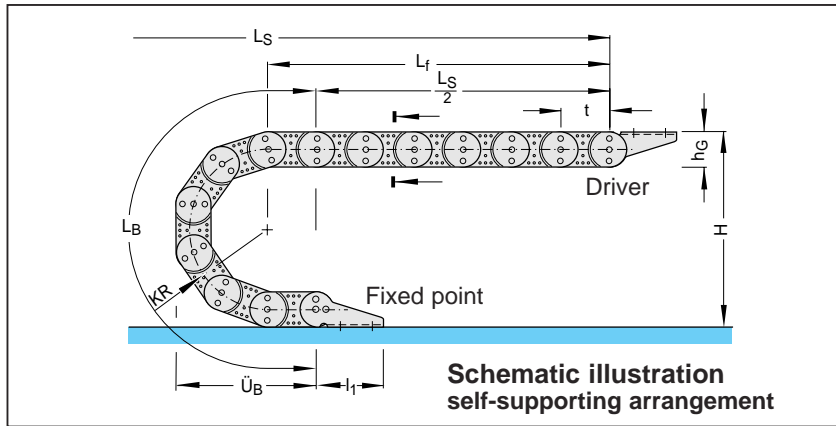
Max. hole diameter: 74 mm for stay variants LG

Chain width: **customer-specific**
the desired width for every individual application

Bend radii: 12 **standard bend radii**
(intermediate radii upon request).

Type S 1250 Cable Carrier design

- Chain pitch $t = 125 \text{ mm}$
- Height $h_G = 94 \text{ mm}$
- Connection height $H_{\min} = 2 \text{ KR} + 94 \text{ mm}$
- Connection length $l_1 = 155/47 \text{ mm}$
(see connection dimensions)



Variable sizes depending on the bend radius

Dimensions in mm

Bend radius	145	200	220	260	300	340	380	420	460	500	540	600	1000
Bend length L_B	955	1128	1191	1317	1442	1568	1694	1820	1945	2071	2196	2385	3640
Bend overhang \ddot{U}_B	442	497	517	557	597	637	677	717	757	797	837	897	1297
Height H_{\min}	384	494	534	614	694	774	854	934	1014	1094	1174	1294	2094

The connection height of the chain should be 47 mm higher than the height H_{\min} !

Calculation of chain length:

$$L_k \approx \frac{L_s}{2} + L_B$$

rounded to pitch 125 mm

Installation height
(required clearance height):

$$H_z = H + z$$

pre-tension $z \approx 10 \text{ mm/m}$ chain length

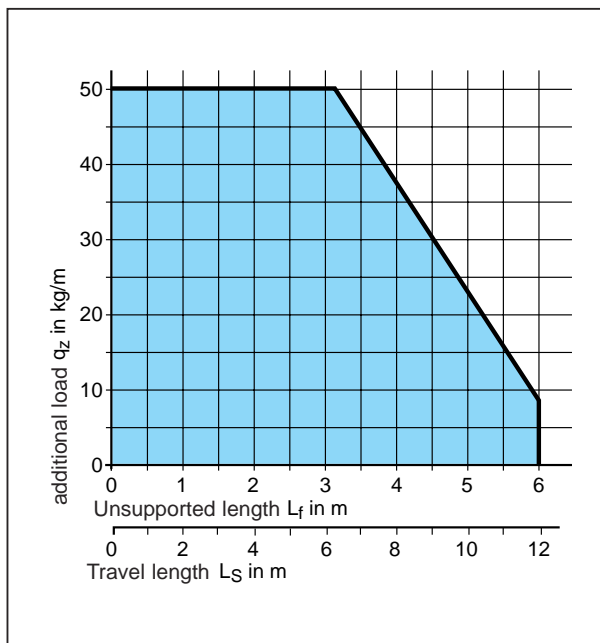
Load diagram

Self-supported length L_f and travel length L_s without support

depending on the additional load
(see design guidelines)

An intrinsic chain weight of **13 kg/m** was used as a basis on the load diagram.

With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.



For circular movements, KR/RKR – combinations are possible. Please contact us for details!

A flat and level surface is required for the cable carrier system to be installed properly.

If necessary, a support tray should be installed (see system components).

Type S 1250

Chain cross sections

in accordance with section in schematic illustration

Stays mounted on every 2nd chain link!

Stay variant "RS 1"

Frame stay - with detachable profile bar

for short to medium travel lengths and low travel speeds

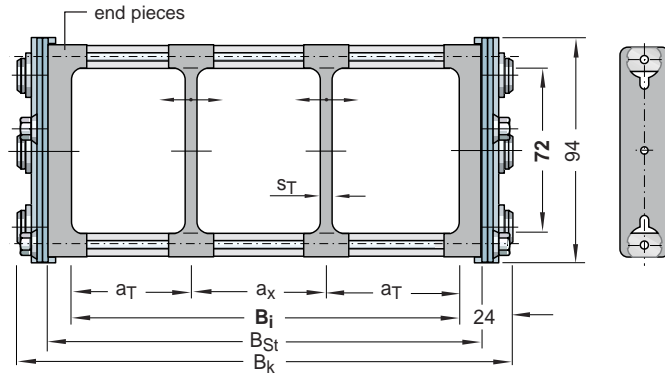
L_{max} : 8.5 m

v_{max} : 1 m/s

In marginal cases, please consult our technical staff.

The stay variant RS 1 can be supplied with movable dividers.

Please indicate the number of dividers per cross section.



Calculation of chain width:

$$B_k = B_i + 48 \text{ mm}$$

$$B_k \text{ min} = 200 \text{ mm}$$

$$B_k \text{ max} = 400 \text{ mm}$$

$$ST = 5 \text{ mm}$$

$$a_T \text{ min} = 12.5 \text{ mm}$$

$$a_x \text{ min} = 15 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 24 \text{ mm}$$

Stay variant "RS 2"

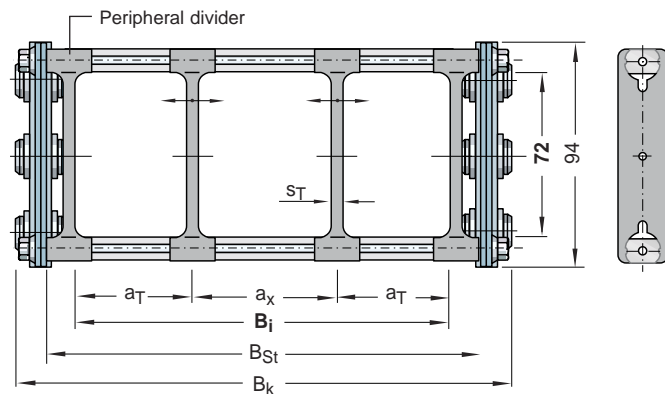
Frame stay - with bolted profile bars

for short to medium travel lengths and low travel speeds

L_{max} : 12 m

v_{max} : 1.5 m/s

In marginal cases, please consult our technical staff.



Calculation of chain width:

$$B_k = B_i + 44 \text{ mm}$$

$$B_k \text{ min} = 200 \text{ mm}$$

$$B_k \text{ max} = 500 \text{ mm}$$

$$ST = 5 \text{ mm}$$

$$a_T \text{ min} = 12.5 \text{ mm}$$

$$a_x \text{ min} = 15 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 20 \text{ mm}$$

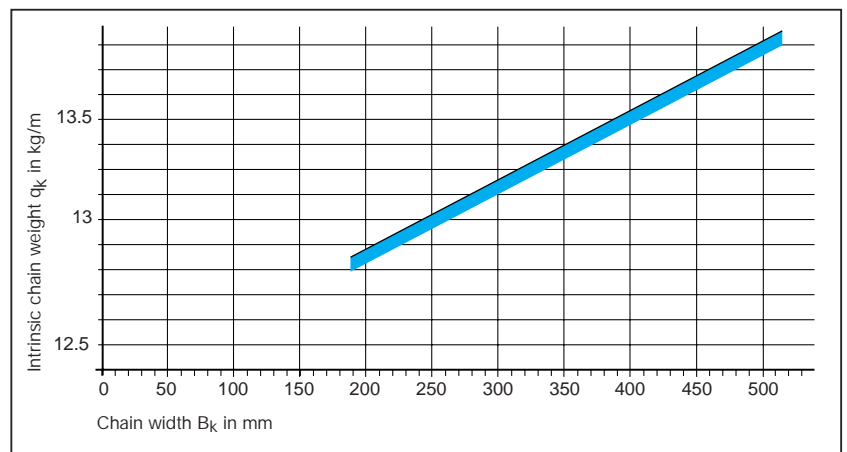
Standard dividers are moveable.

Please indicate the number of dividers per cross section.

Intrinsic chain weight for two band chains

Depending on the chain width

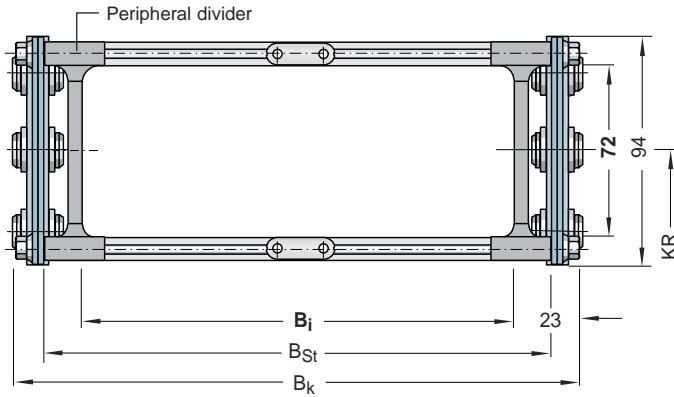
with frame stays RS 1 / RS 2



Weight of the chain bands: 12 kg/m (excluding stays)

Stay variant "RV" Frame stay – reinforced design

Aluminum profile bars, double-bolted on the inside and outside.



$B_{k \text{ min}} = 200 \text{ mm}$
 $B_{k \text{ max}} = 600 \text{ mm}$

Calculation of chain width:

$$B_k = B_i + 46 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 22 \text{ mm}$$

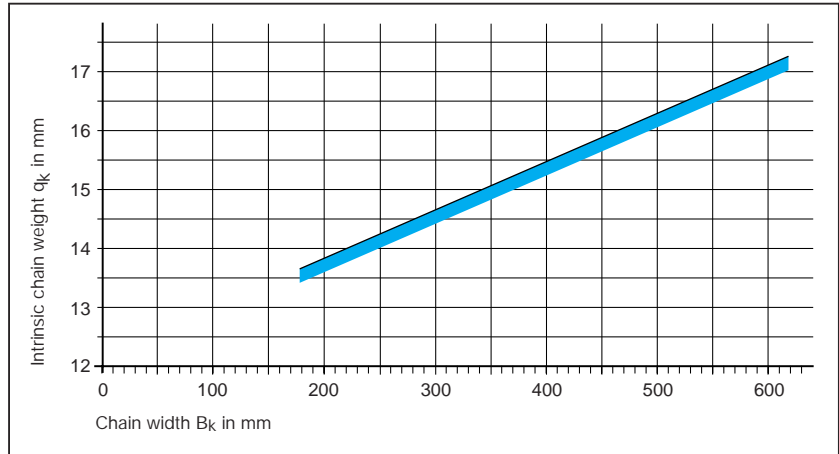
Intrinsic chain weight

For two band chains

Depending on the chain width

— With frame stays RV

Weight of the chain bands: 12 kg/m (excluding stays)



Divider system for stay variant "RV"

You yourself or our technical team can design an appropriate divider system based on your information regarding the contents of the cable carriers.

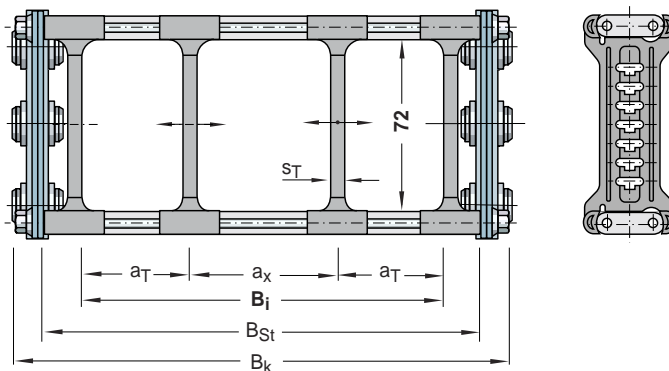
In the standard version, the divider system is attached to each frame stay.

Divider system TS 0 Without height dividers

$s_T = 6 \text{ mm}$
 $a_{T \text{ min}} = 13 \text{ mm}$
 $a_{x \text{ min}} = 16 \text{ mm}$
 $n_{T \text{ min}} = 2$

Please indicate the number of dividers per cross section n_T .

Example for ordering:
Divider system TS 0/ n_T 2



Dividers can be moved in the carrier cross section!

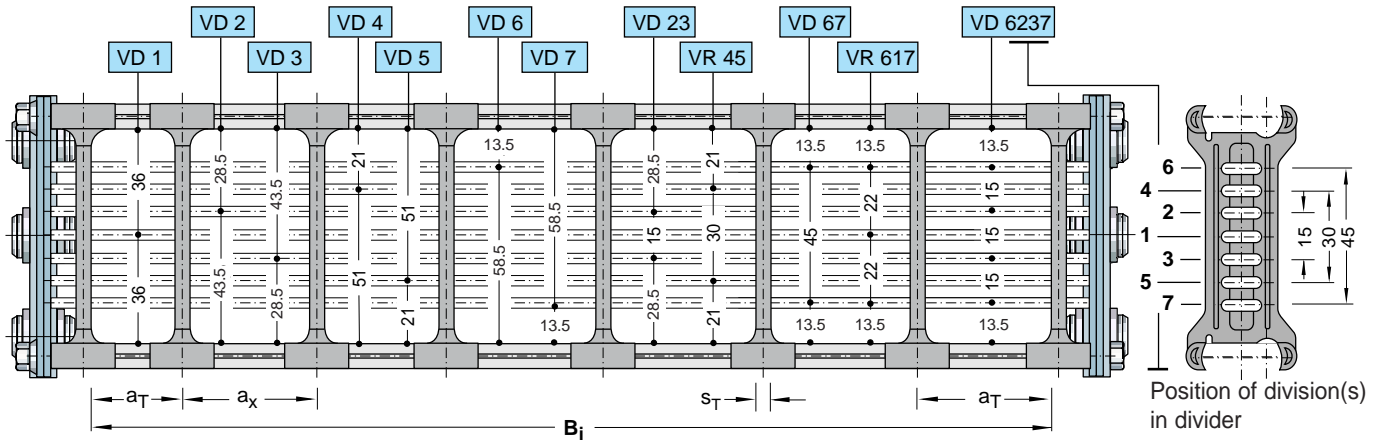
Divider system TS 1

with continuous height division

Height division: **Aluminium-profile 9 x 2 mm**
Aluminium-profile 11 x 4 mm

Recommended variants:

VD 1, VD 2, VD 3, VD 4 and VD 45



$s_T = 6 \text{ mm}$

$a_{T \text{ min}} = 13 \text{ mm}$

$a_{x \text{ min}} = 16 \text{ mm}$

$n_{T \text{ min}} = 2$

Dividers can be moved in the cross section!

Please indicate variants for height division and number of stays per cross section n_T .

Example for Ordering: Divider system TS – 1 VD45/nT4

Divider system TS 2

with grid division (1 mm grid)

Height division:

Aluminium profile 11 x 4 mm

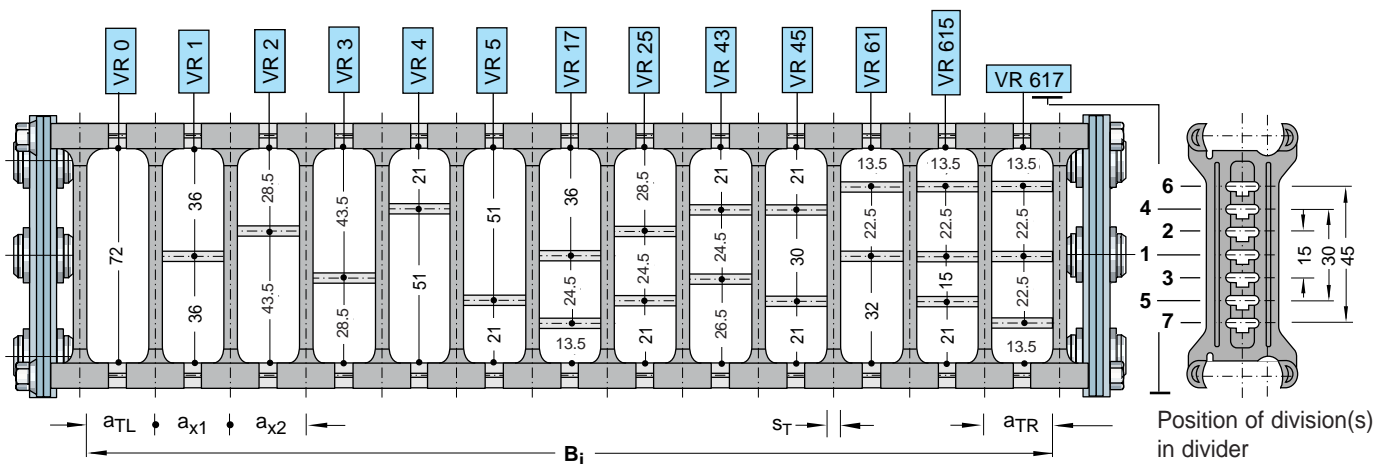
Recommended variants:

VR 0, VR 1, VR 2, VR 3, VR 5 and VR 45

Dividers fixed by height division.

Grid can be moved in the carrier cross section.

Division variants with clearance height 18.5 mm can be sub-divided.



$s_T = 6 \text{ mm}$

$a_{T \text{ min}} = 13 \text{ mm}$

$a_{x \text{ min}} = 20 \text{ mm}$ (with height division)

$a_{x \text{ min}} = 16 \text{ mm}$ (for VR 0)

$n_{T \text{ min}} = 2$

When ordering, please indicate the chambers (from left to right), divider variants and the installation intervals a_T and a_x .

Example for ordering: Divider system TS 2 - K(Chamber) 1 - VR 0 / 50 mm

K 2 - VR 25 / 60 mm

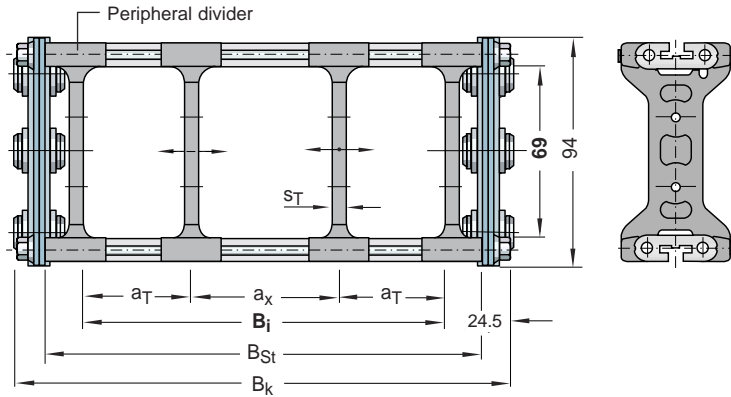
K 3 - VR 1 / 60 mm

K 4 - VR 0 / 90 mm

K 5 - VR 1 / 60 mm

K 6 - VR 0 / 50 mm

Stay variant "RM"
Frame stay – solid design



Aluminium profile bars, double bolted on the inside and outside

Calculation of chain width:

$$B_k = B_i + 49 \text{ mm}$$

$$B_k \text{ min} = 200 \text{ mm}$$

$$B_k \text{ max} = 800 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 25 \text{ mm}$$

$$s_T = 5 \text{ mm}$$

$$a_T \text{ min} = 17.5 \text{ mm}$$

$$a_x \text{ min} = 20 \text{ mm}$$

Standard dividers are movable.

Please state the number of dividers.

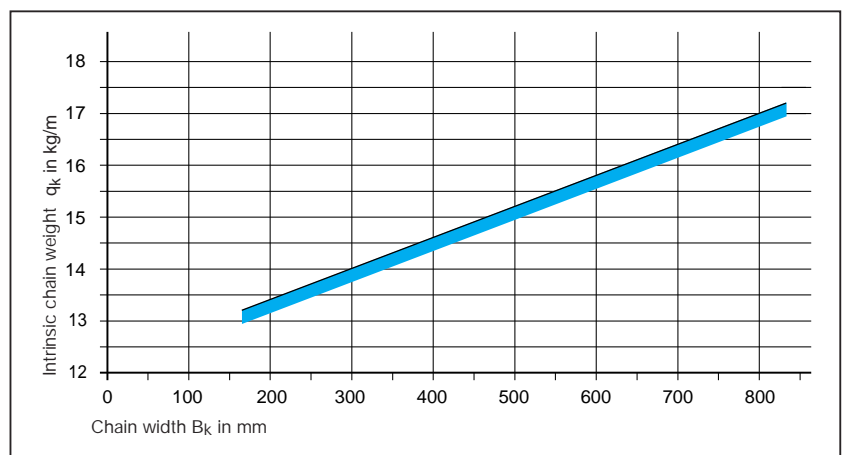
Intrinsic chain weight

For two band chains

Depending on the chain width

With frame stays RM

Weight of the chain bands: 12 kg/m
(excluding stays)

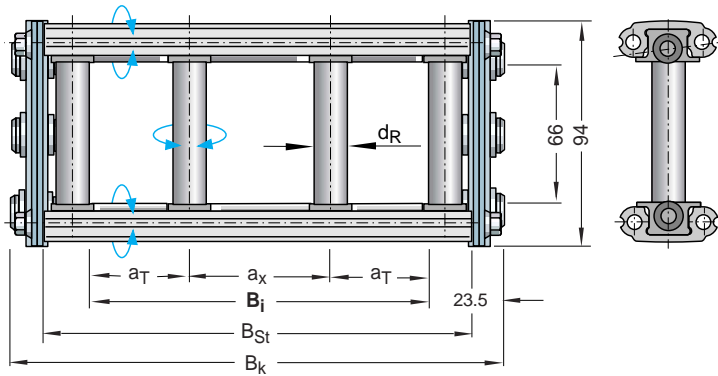


Stay variant "RMR"
Frame stay
with plastic roller system

Aluminium profiles double bolted on the inside and outside.

Specially developed for applications using hoses with soft sheaths.

For the highest specifications - the solution which offers the most protection and support to the cables.



Calculation of chain width:

$$B_k = B_i + 47 \text{ mm}$$

$$B_{k \text{ min}} = 200 \text{ mm}$$

$$B_{k \text{ max}} = 800 \text{ mm}$$

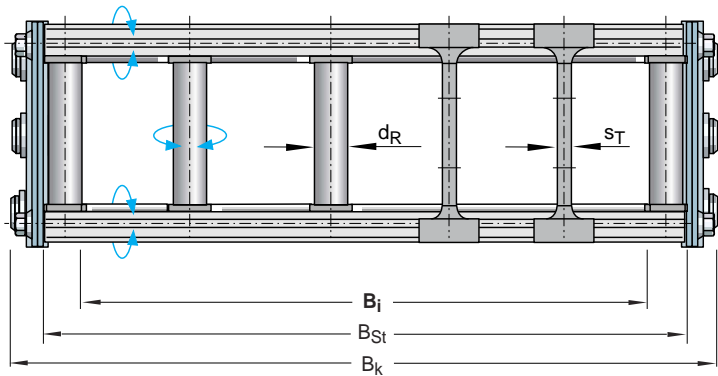
$$d_R = 10 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 24 \text{ mm}$$

$$a_{T \text{ min}} = 11.5 \text{ mm}$$

$$a_{x \text{ min}} = 37 \text{ mm}$$



The cross-sections of stay variant RMR can be subdivided using movable dividers of stay variant RM ($s_T = 4 \text{ mm}$).

Please indicate the number of dividers per cross-section.

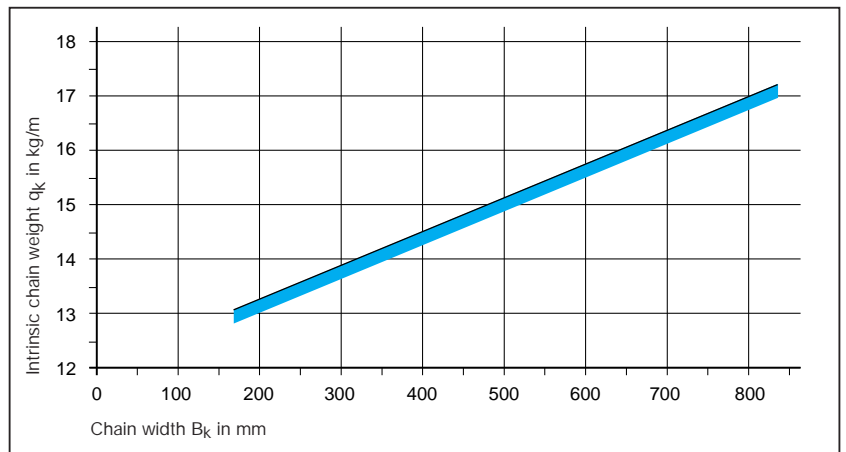
Intrinsic chain weight

For two band chains

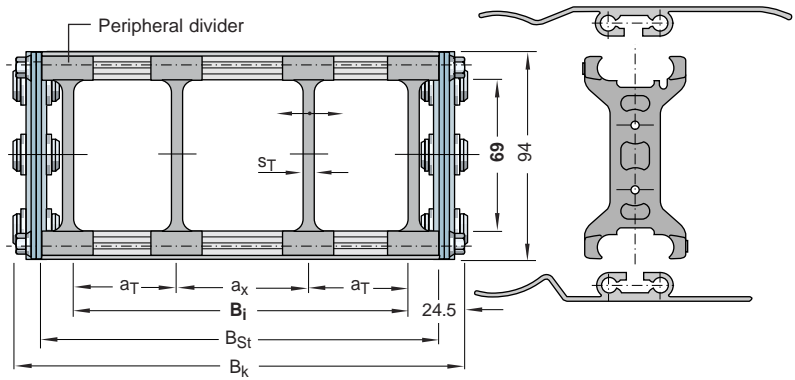
Depending on the chain width

With frame stays RMR

Weight of the chain bands: 12 kg/m (excluding stays)



Stay variant "RMD"
Frame stay – Cover system
Enclosed cable carrier



Aluminium profile bars, double bolted on the inside and outside

Calculation of chain width:

$$B_k = B_i + 49 \text{ mm}$$

$$B_k \text{ min} = 150 \text{ mm}$$

$$B_k \text{ max} = 800 \text{ mm}$$

$$KR_{\text{min}} = 240 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 25 \text{ mm}$$

$$s_T = 5 \text{ mm}$$

$$a_T \text{ min} = 17.5 \text{ mm}$$

$$a_x \text{ min} = 20 \text{ mm}$$

Standard dividers are movable.

Please indicate the number of dividers per cross section

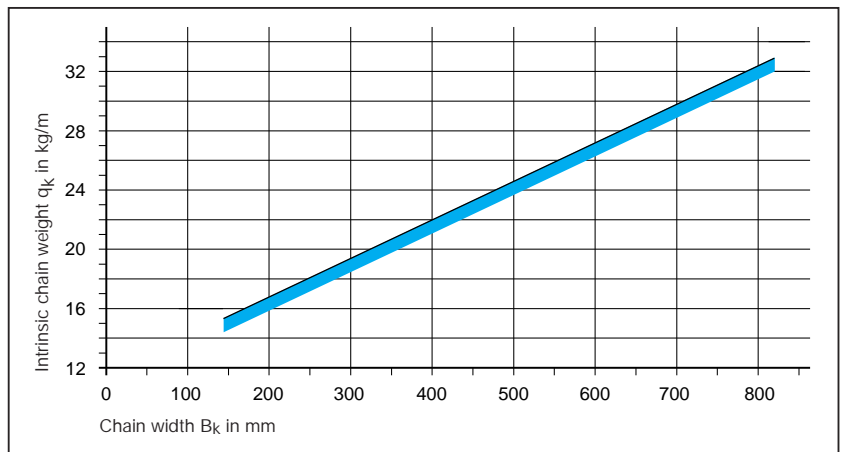
Intrinsic chain weight

For two band chains

Depending on the chain width

— With frame stays RMR

Weight of the chain bands: 12 kg/m
(excluding stays)



Stay variant "RMA"

Mounting frame stay

for cables with large diameters

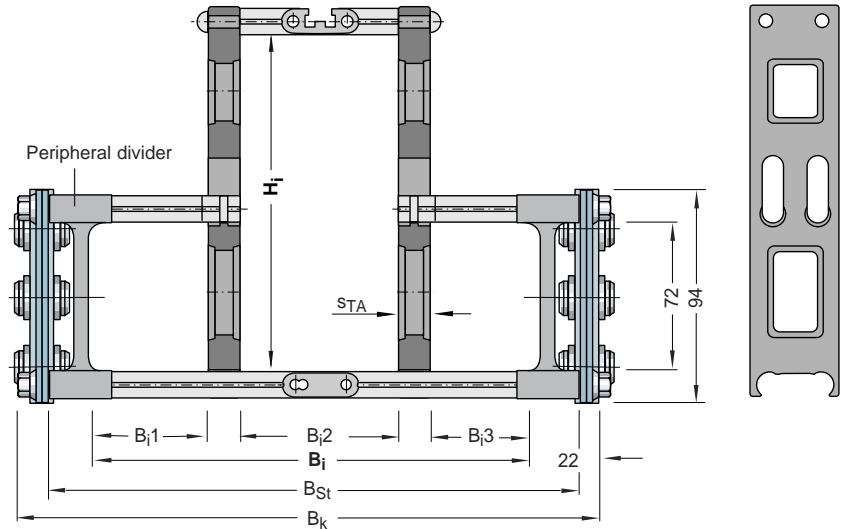
Stay variant RMA is used to help guide cables with particularly large diameters within the cable carrier.

The mounting frame stay can be fitted **inside** or **outside** in the bend radius according to preference.

Profile bars: made of **Aluminium alloy**

Dividers: made of **plastic**

The cable must be lying on the chain bands and not on the dividers.



Fitted to the inside -

note minimum KR:

$$H_i = 130 \text{ mm} \quad - \quad KR_{\min} = 200 \text{ mm}$$

$$H_i = 160 \text{ mm} \quad - \quad KR_{\min} = 260 \text{ mm}$$

$$H_i = 200 \text{ mm} \quad - \quad KR_{\min} = 300 \text{ mm}$$

Because of the design parameters which need to be considered we would ask that you consult our technical advisors!

Calculation of chain width:

$$B_k = B_i + 44 \text{ mm}$$

$$B_{k\min} = 200 \text{ mm}$$

$$B_{k\max} = 600 \text{ mm}$$

$$B_{i1\min} = 24 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 20 \text{ mm}$$

$$B_{i2\min} = 128 \text{ mm}$$

$$B_{i3\min} = 24 \text{ mm}$$

$$S_{TA} = 15 \text{ mm}$$

Fitted to the outside -

Consider the operating and installation height:

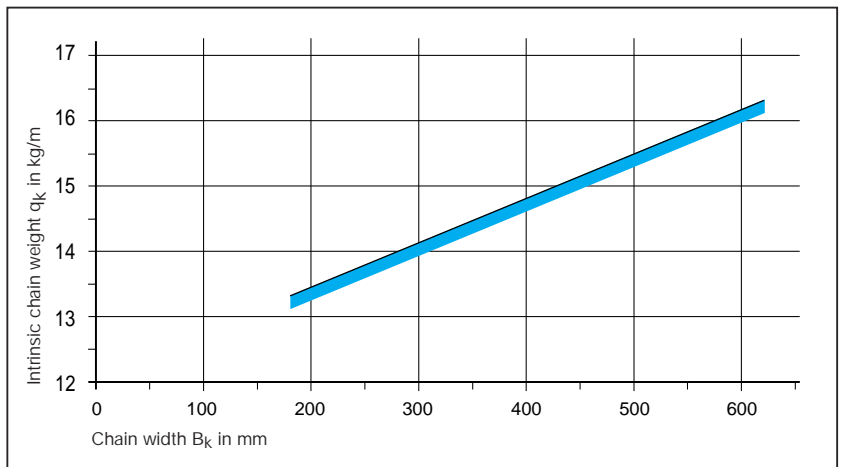
The cable must be lying on the chain bands and not on the dividers.

Intrinsic chain weight

For two band chains

Depending on the chain width

With mounting frame stays RMA



Weight of the chain bands: 12 kg/m (excluding stays)

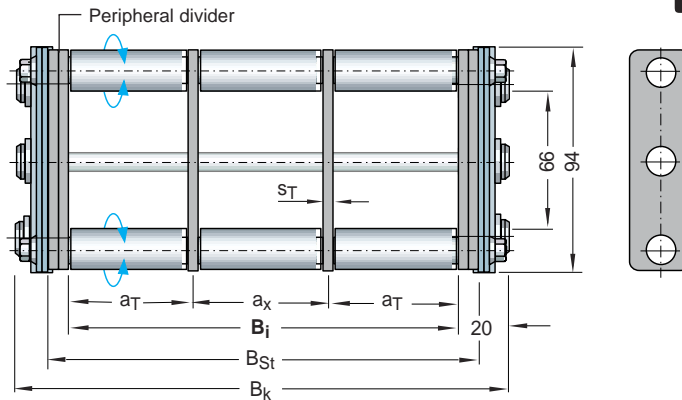
Stay variant "RR" Frame stay – tube design

for short to medium travel lengths and low travel speeds

L_{Smax} : 12 m

v_{max} : 1 m/s

Please consult our technical staff in marginal cases!



Calculation of chain width:

$$B_k = B_i + 40 \text{ mm}$$

$$B_k \text{ min} = 200 \text{ mm}$$

$$B_k \text{ max} = 600 \text{ mm}$$

$$s_T = 4 \text{ mm}$$

$$a_T \text{ min} = 30 \text{ mm}$$

$$a_x \text{ min} = 30 \text{ mm}$$

Calculation of stay width:

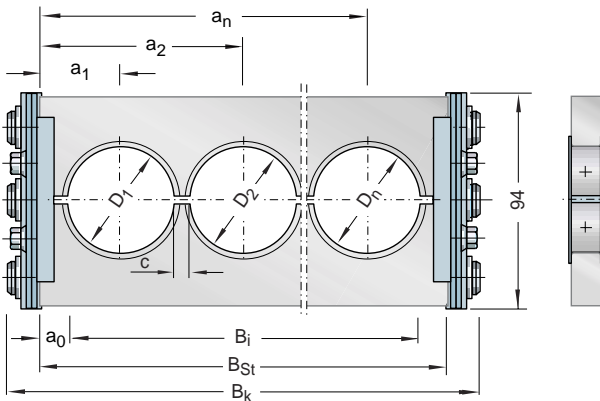
$$B_{St} = B_i + 16 \text{ mm}$$

Fixed dividers are available to separate cables/hoses in the carrier cross section.

Please indicate the number of dividers and the distance between them.

Stay variant "LG" Hole stay – split design

Custom manufacture of hole pattern in accordance with your specifications!



Calculation of chain width:

$$B_k = \sum D + \sum c + 48 \text{ mm}$$

$$D_{max} = 74 \text{ mm}$$

$$a_0 \text{ min} = 11 \text{ mm}$$

$$c_{min} = 4 \text{ mm}$$

$$B_k \text{ min} = 130 \text{ mm}$$

$$B_k \text{ max} = 800 \text{ mm}$$

Calculation of stay width:

$$B_{St} = \sum D + \sum c + 22 \text{ mm}$$

$$B_i = B_{St} - 2 a_0$$

Hole stays are available in an unsplit design.

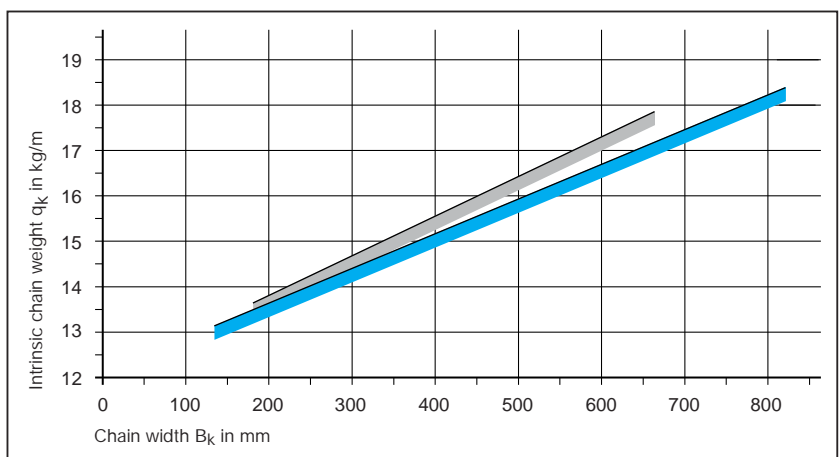
Intrinsic chain weight

For two band chains

Depending on the chain width

- frame stays – tube design (excluding height division)
- hole stays, holes account for 50 % of area

Weight of the chain bands: 12 kg/m (excluding stays)

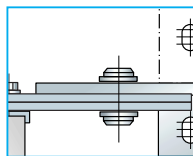


Type S 1250 Connection dimensions

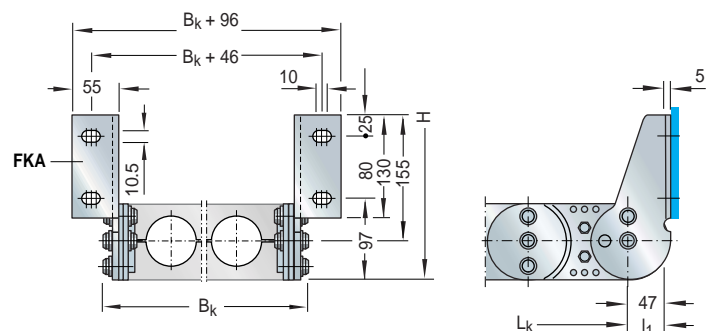
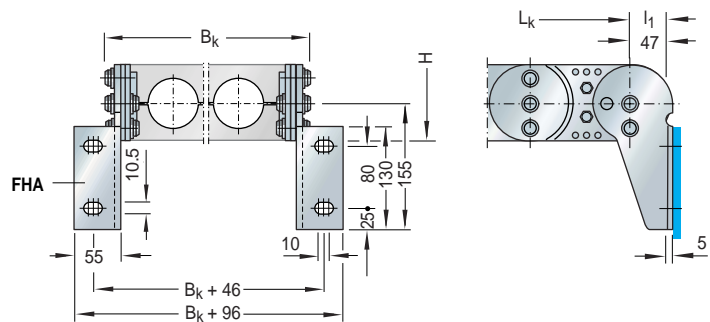
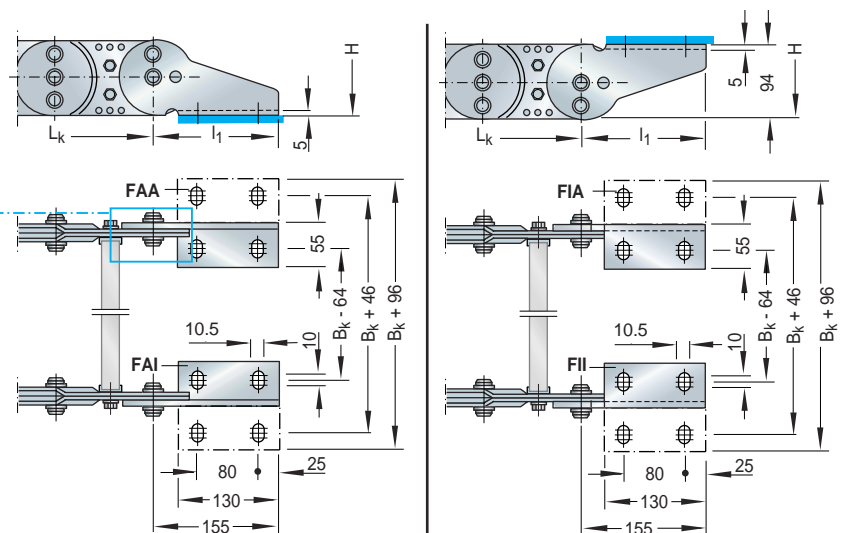
The connection variants at the fixed point and at the driver can be combined and subsequently changed if required.

Please indicate required connection variants in accordance with the ordering key (next page).

Fixed point connection

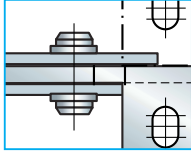


The mounting brackets at the closed end of the chain form the fixed point!



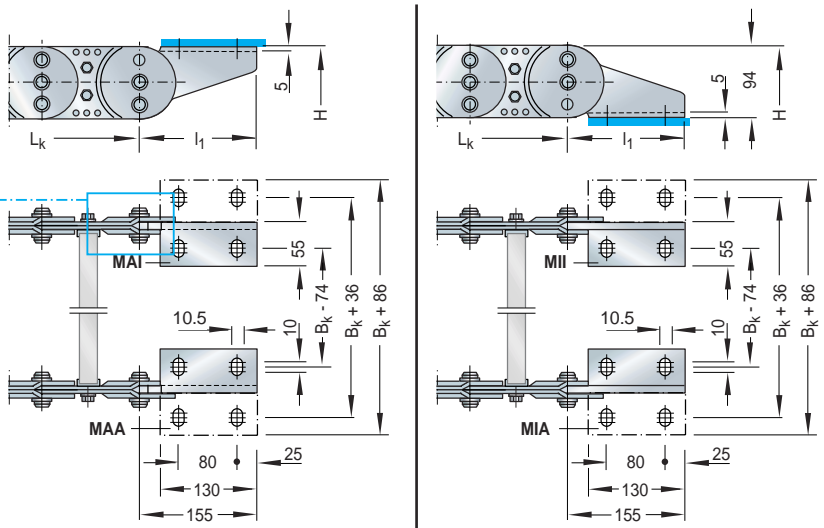
Type S 1250 Connection dimensions

(continued)



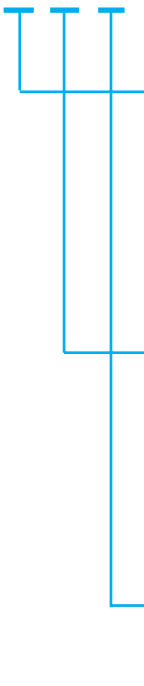
The mounting brackets at the forked end of the chain form the driver!

Driver connection



Ordering key for the connector:

X.X.X



Connection point

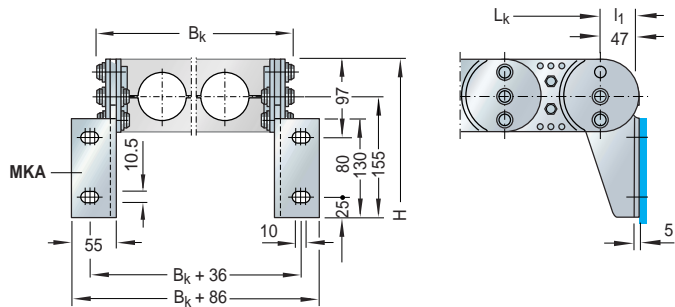
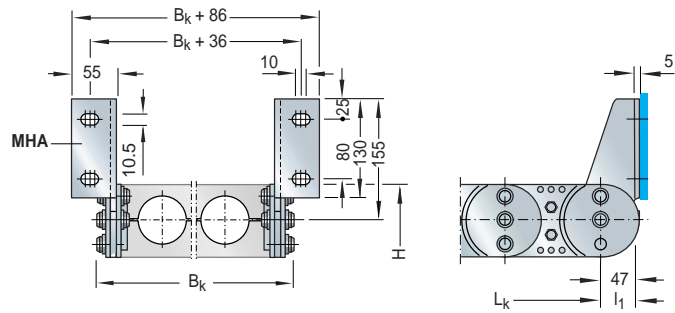
- F - fixed-point
- M - driver

Connection type

- A - bolts facing outward (standard)
- I - bolts facing inward (towards bend radius)
- H - mounting brackets rotated through 90° to the outside
- K - mounting brackets rotated through 90° to the inside (towards bend radius)

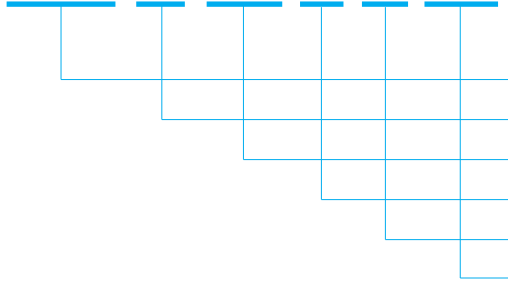
Connection surface

- I - connection surface inside (<math>< B_k</math>)
- A - connection surface outside (>math>> B_k</math>)



Ordering key for cable carrier:

S 1250 . 352 - RV - 260 - St - 4750



Example:

Cable carrier type S 1250, stay width B_{St} 352 mm, frame stay RV (reinforced design), bend radius KR 260 mm, steel – zinc-plated, Chain length L_k 4750 mm.

- Type
- Stay width B_{St} in mm
- Stay variant
- Bend radius KR in mm
- Chain band material
- Chain length L_k in mm (excluding connection)



Cable carriers

Type **S 1252**

Type **SX 1252**

Type **S 1252:**

Cable carrier made of high grade steel with straight chain links

Type **SX 1252:**

Same design, made of rust and acid resistant steel

Profile:

Stay variants:

- Frame stay **RS**
- Frame stay **RV**
- Frame stay **RM**
- Frame stay **RMR**
- Frame stay **RMA**
- Frame stay **RR**
- Hole stay **LG**

Materials:

Chain bands and mounting brackets

S 1252

Steel - zinc-plated

SX 1252

Steel - rust and acid resistant

→ see design guidelines

Stays

- Stay variant **RS**
- Stay variant **RV**
- Stay variant **RM**
- Stay variant **RMR**

- Aluminium alloy**
- Aluminium alloy**
- Aluminium alloy**
- Aluminium alloy** with plastic roller system

Stay variant **RMA**

Aluminium alloy

Stay variant **RR**

Steel - zinc-plated for Type S 1252

Steel - rust and acid resistant, for Type SX 1252

Dividers/end pieces on frame stays

Plastic

Stay variant **LG**

Aluminium alloy

Chain pitch:

125 mm

Clearance height h_i :

- 72 mm** for stay variant **RS**
- 72 mm** for stay variant **RV**
- 69 mm** for stay variant **RM**
- 66 mm** for stay variant **RMR**
- 200 mm** for stay variant **RMA**
- 66 mm** for stay variant **RR**

max.

Hole diameter:

110 mm for stay variant **LG**

Chain width:

customer-specific
the desired width for every individual application

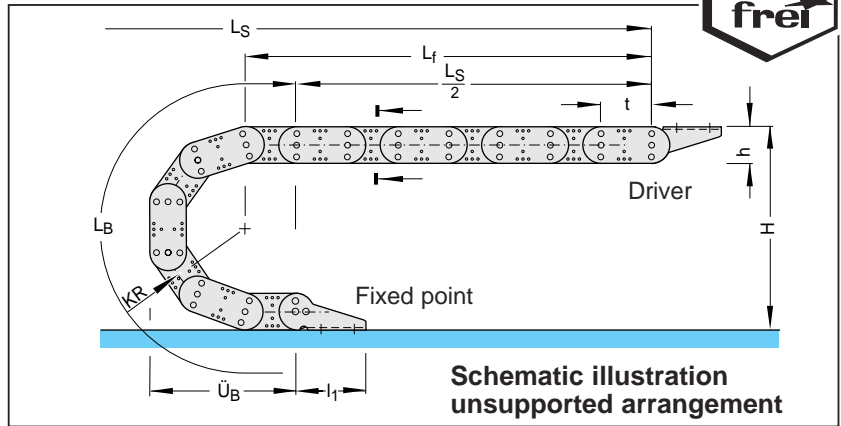
Bend radii:

13 standard bend radii
Intermediate radii upon request.

Type **S 1252**
Type **SX 1252**

Cable Carrier design

Chain pitch $t = 125 \text{ mm}$
 Height $h_G = 94 \text{ mm}$
 Connection height $H_{\min} = 2 \text{ KR} + 94 \text{ mm}$
 Connection length $l_1 = 155/47 \text{ mm}$
 (see connection dimensions)



Variable sizes (depending on the bend radius)

Dimensions in mm

Bend radius	145	200	220	260	300	340	380	420	460	500	540	600	700
Loop length L_B	955	1128	1191	1317	1442	1568	1694	1820	1945	2071	2196	2385	2700
Loop overhang \ddot{U}_B	442	497	517	557	597	637	677	717	757	797	837	897	997
Height H_{\min}	384	494	534	614	694	774	854	934	1014	1094	1174	1294	1494

The connection height of the chain should be 47 mm higher than height H_{\min} !

Calculation of chain length:

$$L_k \approx \frac{L_s}{2} + L_B$$

Rounded to pitch 125 mm

Installation height (required clearance height):

$$H_z = H + z$$

Pre-tension $z \approx 10 \text{ mm/m}$ chain length

Load diagram

Unsupported length L_f and travel length L_s without support

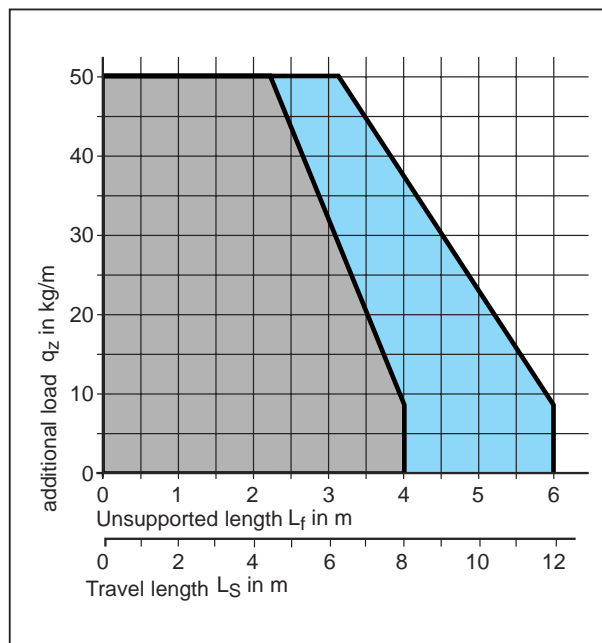
Depending on the additional load (see design guidelines)

An intrinsic chain weight of **13 kg/m** was used as a basis on the load diagram.

With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.

Explanation of load diagram:

- S 1252** - material: **steel**
- SX 1252** - material: **ER 2**
- SX 1252** - material: **ER 1**



For circular operations KR/RKR combinations are possible. Please contact us for details!

A flat and level surface is required for the carrier system to be installed properly.

If necessary, a support tray should be installed (see system components).

Type S 1252 Type SX1252 Chain cross sections

in accordance with section in schematic illustration

Stays mounted on every 2nd chain link!

Stay variant "RS 1"

Frame stay - with detachable profile bar

for short to medium travel lengths and low travel speeds

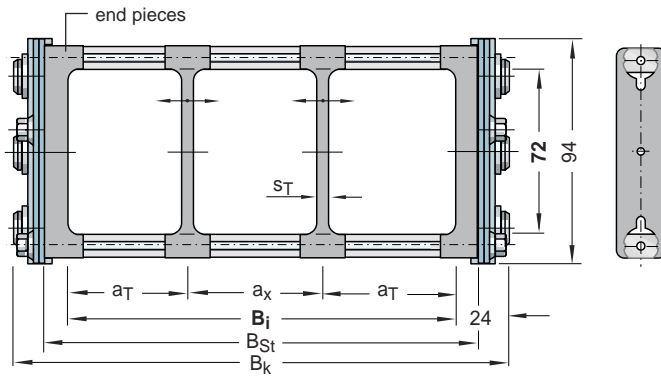
L_{max} : 8.5 m

v_{max} : 1 m/s

In marginal cases, please consult our technical staff.

Standard dividers are movable.

Please indicate the number of dividers per cross section.



Calculation of chain width:

$$B_k = B_i + 48 \text{ mm}$$

$$B_k \text{ min} = 200 \text{ mm}$$

$$B_k \text{ max} = 400 \text{ mm}$$

$$s_T = 5 \text{ mm}$$

$$a_T \text{ min} = 12.5 \text{ mm}$$

$$a_x \text{ min} = 15 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 24 \text{ mm}$$

Stay variant "RS 2"

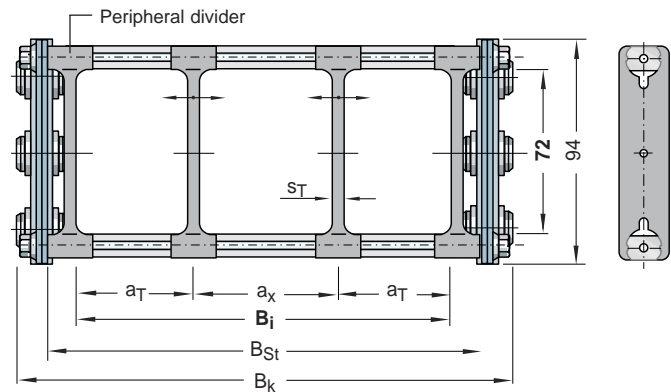
Frame stay - with bolted profile bars

for short to medium travel lengths and low travel speeds

L_{max} : 12 m

v_{max} : 1.5 m/s

In marginal cases, please consult our technical staff.



Calculation of chain width:

$$B_k = B_i + 44 \text{ mm}$$

$$B_k \text{ min} = 200 \text{ mm}$$

$$B_k \text{ max} = 500 \text{ mm}$$

$$s_T = 5 \text{ mm}$$

$$a_T \text{ min} = 12.5 \text{ mm}$$

$$a_x \text{ min} = 15 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 20 \text{ mm}$$

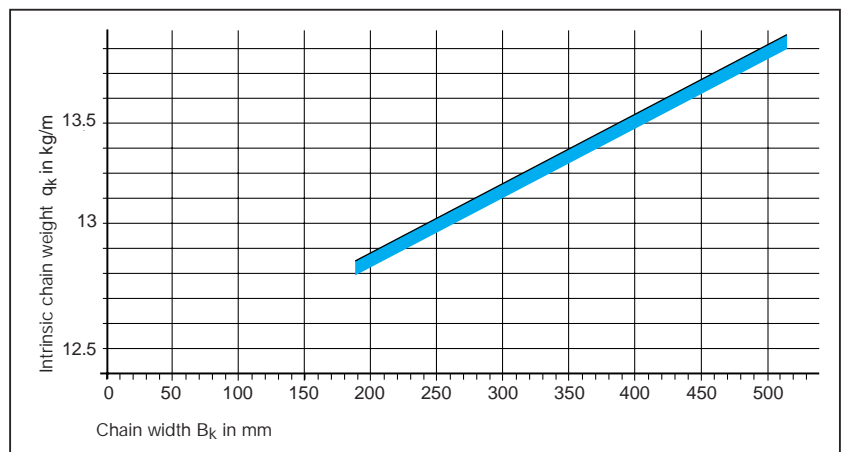
Standard dividers are movable.

Please indicate the number of dividers per cross section.

Intrinsic chain weight for two band chains

Depending on the chain width

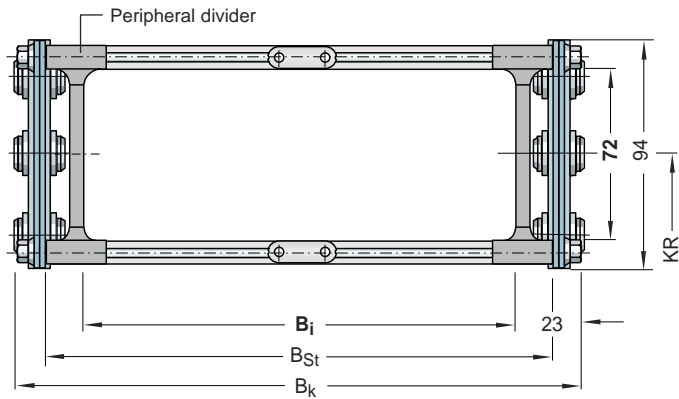
with frame stays RS 1 / RS 2



Weight of the chain bands: 12 kg/m (excluding stays)

Stay variant "RV" Frame stay – reinforced design

Aluminum profile bars, double-bolted on inside and outside



$B_{k \text{ min}} = 200 \text{ mm}$
 $B_{k \text{ max}} = 600 \text{ mm}$

Calculation of chain width:

$$B_k = B_i + 46 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 22 \text{ mm}$$

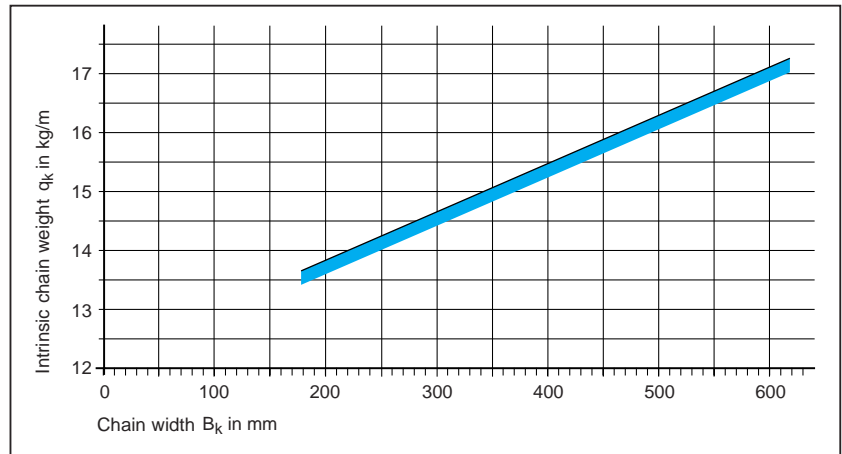
Intrinsic chain weight

For two band chains

Depending on the chain width

— With frame stays RV

Weight of chain bands : 12 kg/m
(excluding stays)



Divider system for stay variant "RV"

You yourself or our technical team can design an appropriate divider system based on your information regarding the contents of the cable carriers.

In the standard version, the divider system is attached to each frame stay.

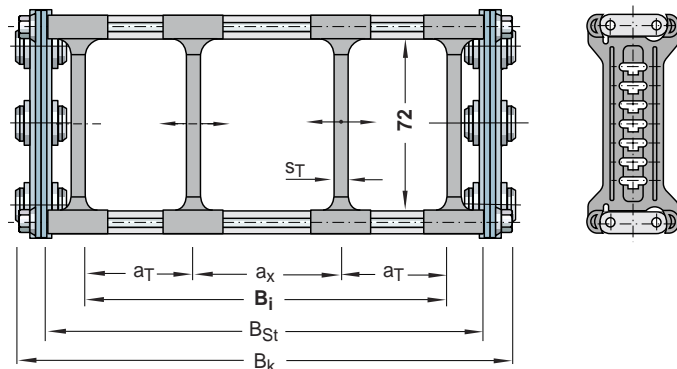
Divider system TS 0

Without height dividers

$s_T = 6 \text{ mm}$
 $a_{T \text{ min}} = 13 \text{ mm}$
 $a_{x \text{ min}} = 16 \text{ mm}$
 $n_{T \text{ min}} = 2$

Please indicate the number of dividers per cross section n_T .

Example for ordering:
Divider system TS 0/ n_T 2



Divider System TS 1

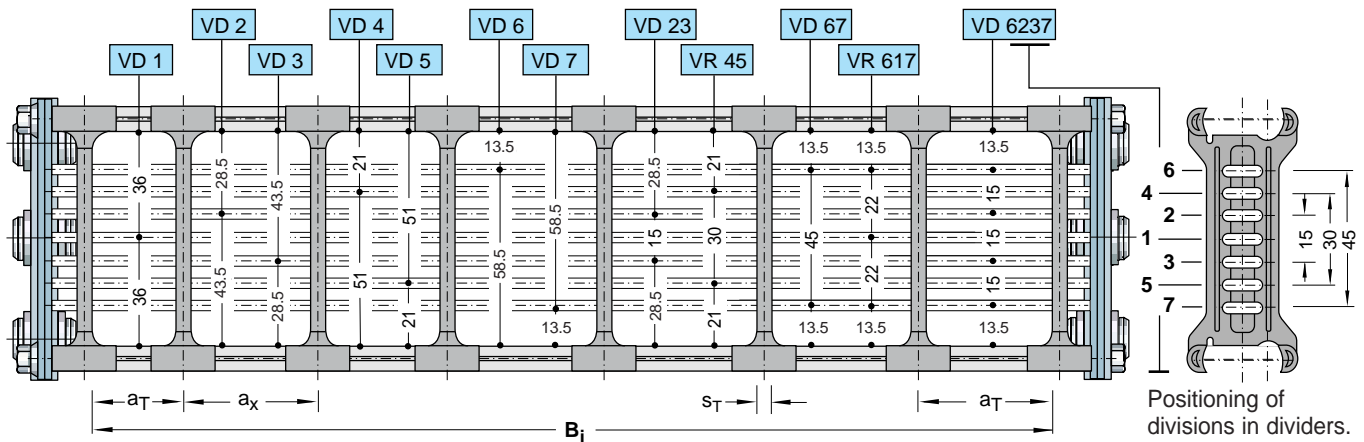
With continuous height division

Height division:

Aluminium profile 11 x 4 mm

Recommended variants:

VD 1, VD 2, VD 3, VD 4 and VD 45



$$s_T = 6 \text{ mm}$$

$$a_{T \text{ min}} = 13 \text{ mm}$$

$$a_{x \text{ min}} = 16 \text{ mm}$$

$$n_{T \text{ min}} = 2$$

Dividers can be moved in cross section!

Please indicate variants in height division and number of stays per cross section n_T.

Example for ordering: divider system TS 1 – VD 45/n_T 4

Divider System TS 2

With grid division (1 mm grid)

Height division:

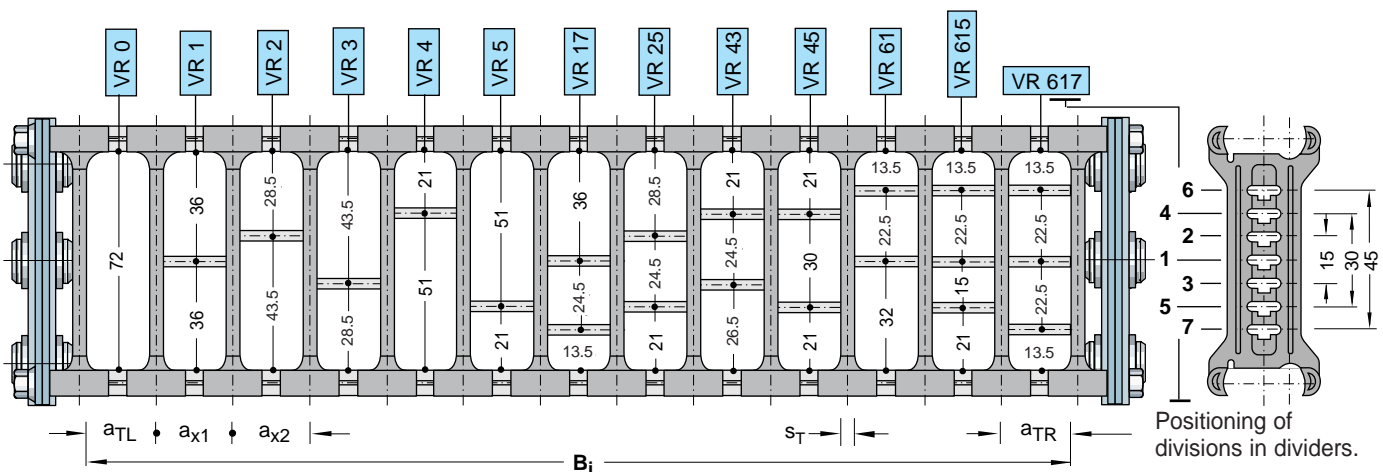
Aluminium profile 11 x 4 mm

Recommended variants:

VR 0, VR 1, VR 2, VR 3, VR 5 and VR 45

Dividers fixed by height division. Grid can be moved in chain cross section.

Division variants with clearance height 18.5 mm can be sub-divided.



$$s_T = 6 \text{ mm}$$

$$a_{T \text{ min}} = 13 \text{ mm}$$

$$a_{x \text{ min}} = 20 \text{ mm (with height division)}$$

$$a_{x \text{ min}} = 16 \text{ mm (with VR 0)}$$

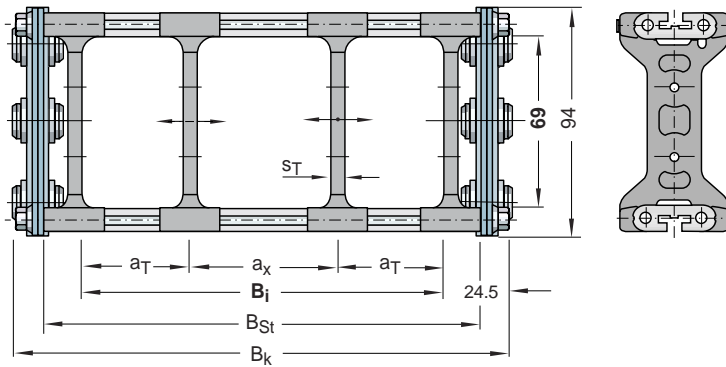
$$n_{T \text{ min}} = 2$$

When ordering, please indicate the chambers (from left to right), divider variants and installation intervals a_T and a_x.

Example for ordering:

divider system TS 2 K (chamber) – 1 - VR 0 / 50 mm
 K 2 - VR 25 / 60 mm
 K 3 - VR 1 / 60 mm
 K 4 - VR 0 / 90 mm
 K 5 - VR 1 / 60 mm
 K 6 - VR 0 / 50 mm

Frame stay "RM"
Frame stay - solid design



Aluminium profile bars, double bolted on the inside and outside.

Calculation of chain width:

$$B_k = B_i + 49 \text{ mm}$$

$$B_k \text{ min} = 200 \text{ mm}$$

$$B_k \text{ max} = 800 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 25 \text{ mm}$$

$$s_T = 5 \text{ mm}$$

$$a_T \text{ min} = 17.5 \text{ mm}$$

$$a_x \text{ min} = 20 \text{ mm}$$

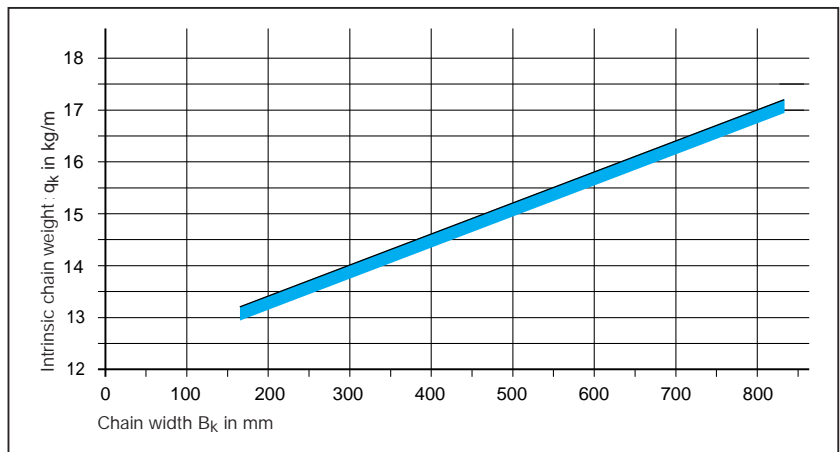
Standard dividers are movable.

Please indicate the number of dividers per cross section.

Intrinsic chain weight
for two band chains
Depending on the chain width

With frame stays RM

Weight of the chain bands: 12 kg/m
(excluding stays)

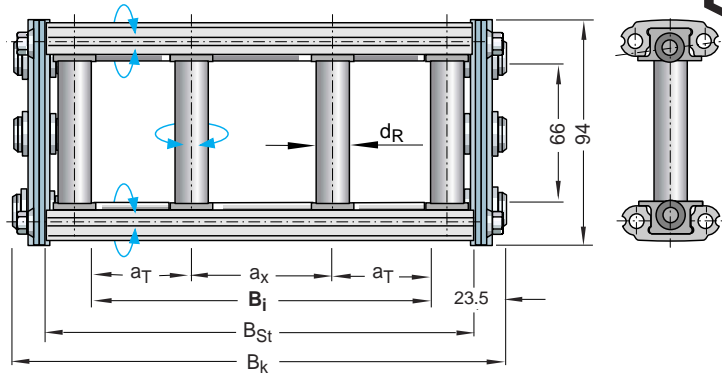


Stay variant "RMR" Frame stay with plastic roller system

Aluminium profiles double bolted on the inside and outside.

Specially developed for applications using hoses with soft sheaths.

For the highest specifications – the solution which offers the most protection and support to the cables.



Calculation of chain width:

$$B_k = B_i + 47 \text{ mm}$$

$$B_{k \text{ min}} = 200 \text{ mm}$$

$$B_{k \text{ max}} = 800 \text{ mm}$$

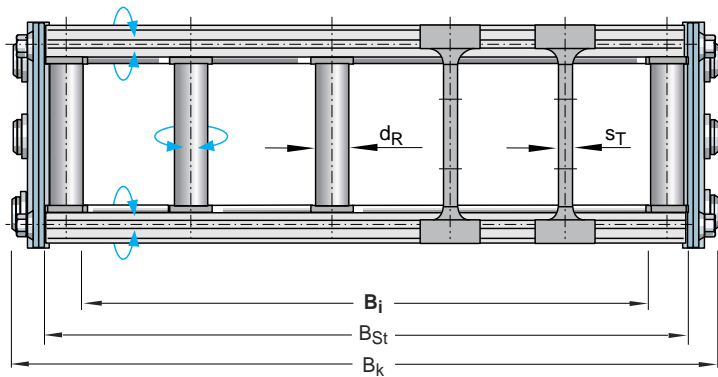
$$d_R = 10 \text{ mm}$$

$$a_T \text{ min} = 11.5 \text{ mm}$$

$$a_x \text{ min} = 37 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 24 \text{ mm}$$



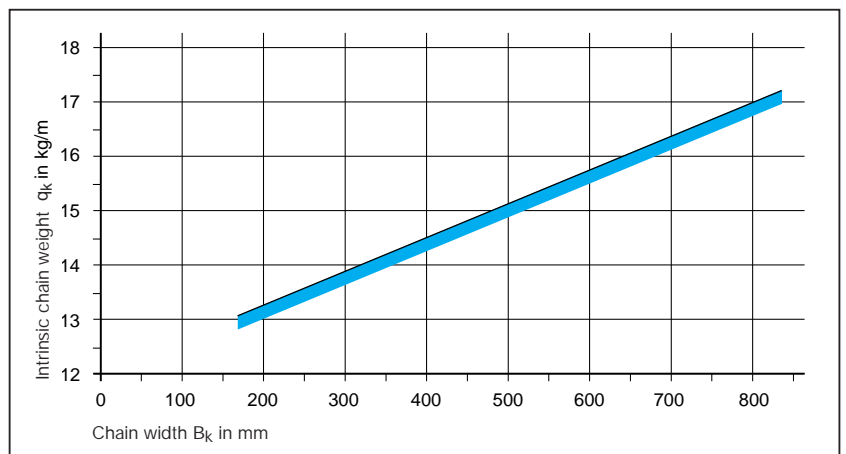
The cross-sections of stay variant RMR can be subdivided using movable dividers of stay variant RM ($S_T = 4 \text{ mm}$).

Please indicate the number of dividers per cross-section.

Intrinsic Carrier Weight for two band chains depending on the chain width

— With frame stays RMR

Weight of the chain bands: 12 kg/m (excluding stays)



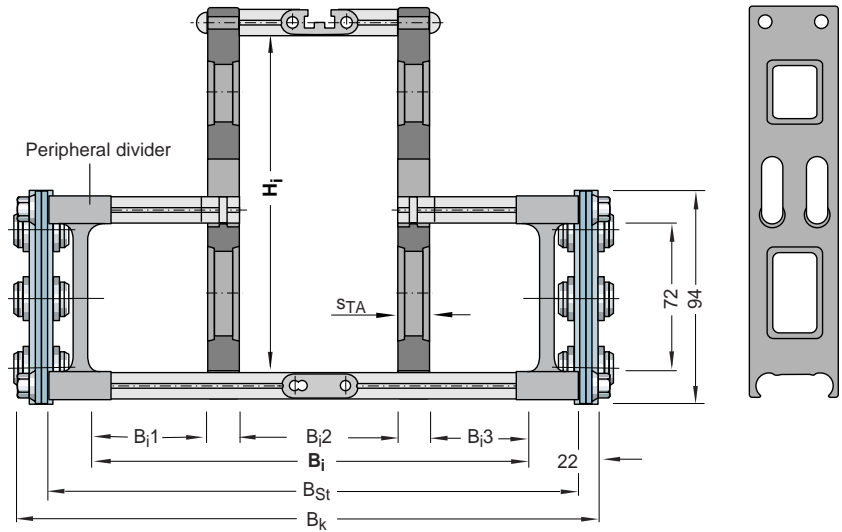
Stay variant "RMA" Mounting frame stay for cables with large diameters

Stay variant RMA is used to help guide cables with particularly large diameters within the cable carrier.

The mounting frame stay can be fitted **inside** or **outside** in the bend radius according to preference.

Profile bars: made of **Aluminium alloy**
Dividers: made of **plastic**

The cable must be lying on the chain bands and not on the dividers.



Fitted to the inside –

note minimum KR:

$$H_i = 130 \text{ mm} \quad - \quad KR_{\min} = 200 \text{ mm}$$

$$H_i = 160 \text{ mm} \quad - \quad KR_{\min} = 260 \text{ mm}$$

$$H_i = 200 \text{ mm} \quad - \quad KR_{\min} = 300 \text{ mm}$$

Fitted to the outside –

Consider the operating and installation height:

The cable must be lying on the chain bands and not on the dividers.

Because of the design parameters which need to be considered we would ask that you consult our technical advisors!

Calculation of chain width:

$$B_k = B_i + 44 \text{ mm}$$

$$B_{k\min} = 200 \text{ mm}$$

$$B_{k\max} = 600 \text{ mm}$$

$$B_{i1\min} = 24 \text{ mm}$$

$$B_{i2\min} = 128 \text{ mm}$$

$$B_{i3\min} = 24 \text{ mm}$$

$$STA = 15 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 20 \text{ mm}$$

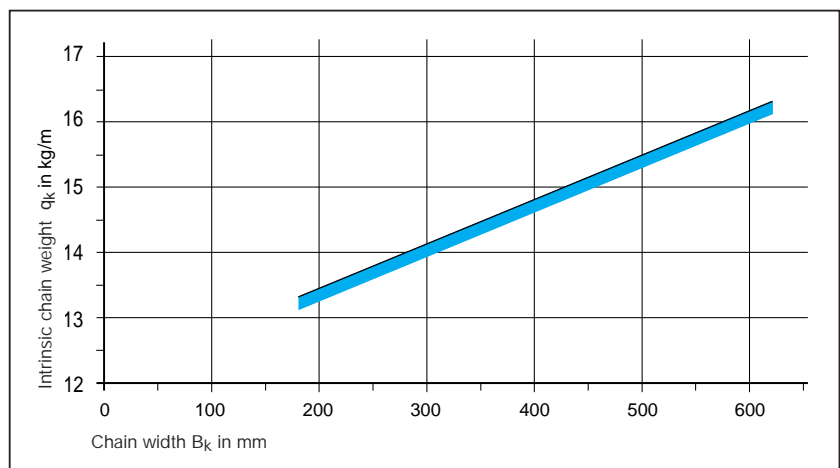
Intrinsic Carrier Weight

for two band chains

depending on the chain width

— With mounting frame stay RMA

Weight of the chain bands: 12 kg/m
(excluding stays)



Stay variant "RR"

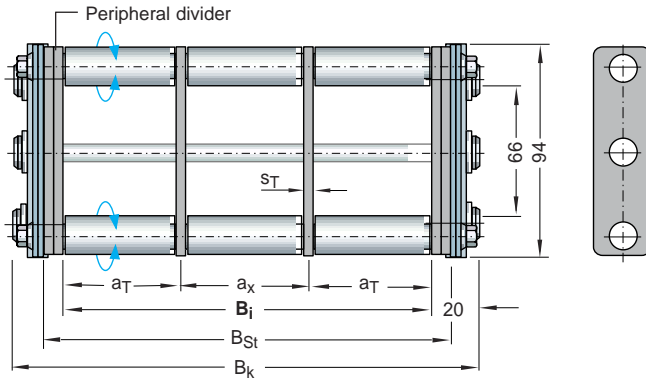
Frame stay – tube design

for short to medium travel lengths and low travel speeds

L_{max} : 12 m

v_{max} : 1 m/s

Please consult our technical staff in marginal cases!



Calculation of chain width:

$$B_k = B_i + 40 \text{ mm}$$

$$B_k \text{ min} = 200 \text{ mm}$$

$$B_k \text{ max} = 600 \text{ mm}$$

$$s_T = 4 \text{ mm}$$

$$a_T \text{ min} = 30 \text{ mm}$$

$$a_x \text{ min} = 30 \text{ mm}$$

Fixed dividers are available to separate cables/hoses in the carrier cross section.

Please indicate the number of dividers, and the distances between them.

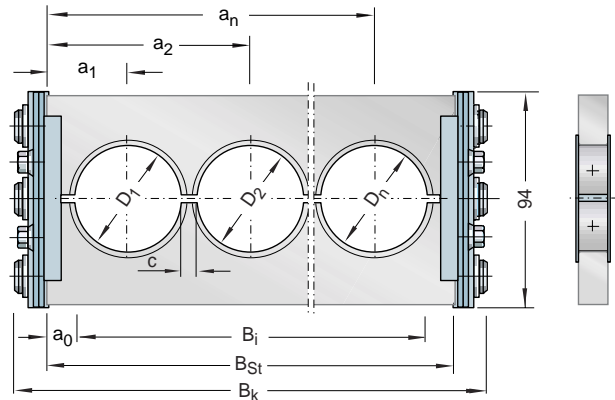
Calculation of stay width:

$$B_{St} = B_i + 16 \text{ mm}$$

Stay variant "LG"

Hole stay – split design

Custom manufacture of hole pattern in accordance with your specifications!



Calculation of chain width:

$$B_k = \sum D + \sum c + 48 \text{ mm}$$

$$D_{\text{max}} = 74 \text{ mm}$$

$$a_0 \text{ min} = 11 \text{ mm}$$

$$c_{\text{min}} = 4 \text{ mm}$$

$$B_k \text{ min} = 130 \text{ mm}$$

$$B_k \text{ max} = 800 \text{ mm}$$

Calculation of stay width:

$$B_{St} = \sum D + \sum c + 22 \text{ mm}$$

$$B_i = B_{St} - 2 a_0$$

Hole stays are available in an unsplit design.

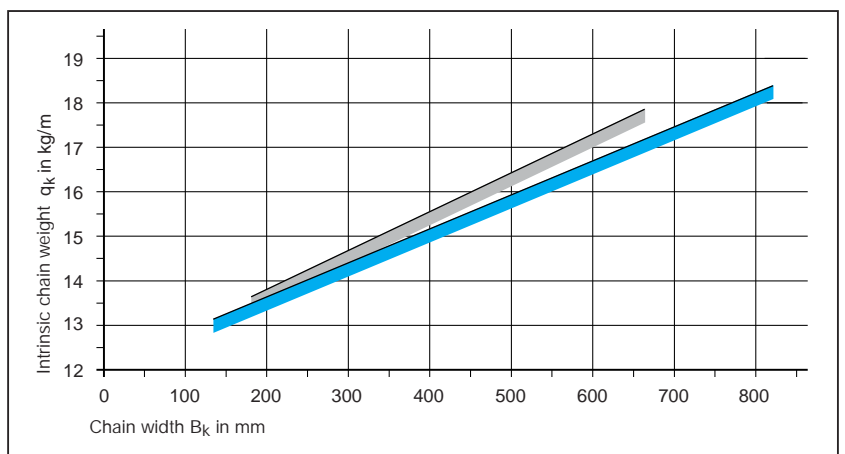
Intrinsic chain weight

For two band chains

Depending on the chain width

- frame stays – tube design**
(excluding height division)
- hole stays, holes account for 50 % of area**

Weight of chain bands per 12 kg/m
(excluding stays)

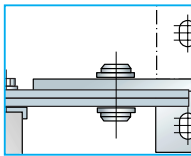


Type S 1252
Type SX 1252
Connection dimensions

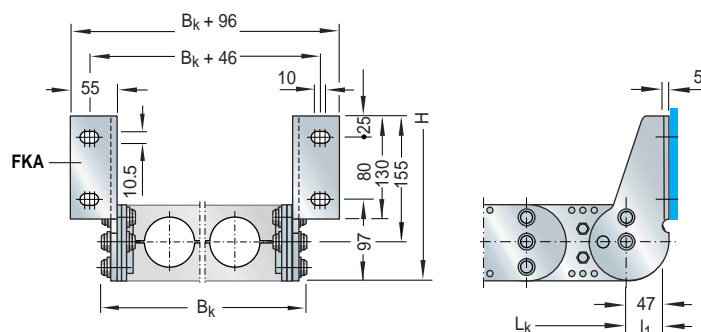
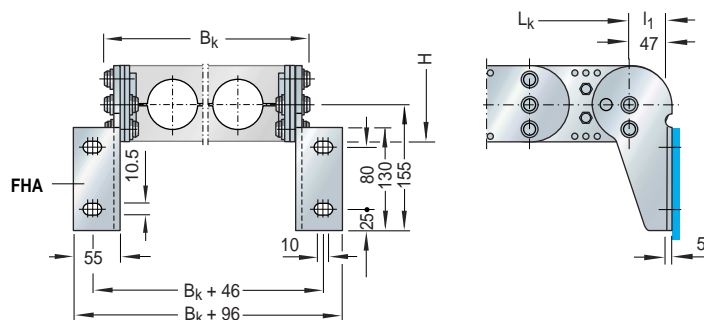
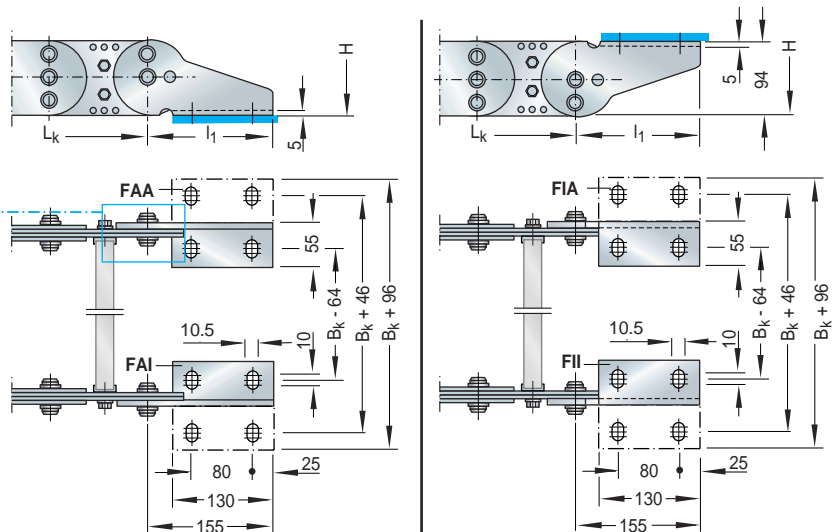
The connection variants at the fixed point and at the driver can be combined and subsequently changed if required.

Please indicate required connection variants in accordance with ordering key (next page).

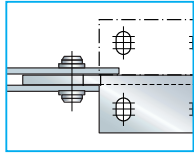
Fixed point connection



The mounting brackets at the closed end of the chain (inner plates) form the fixed point.

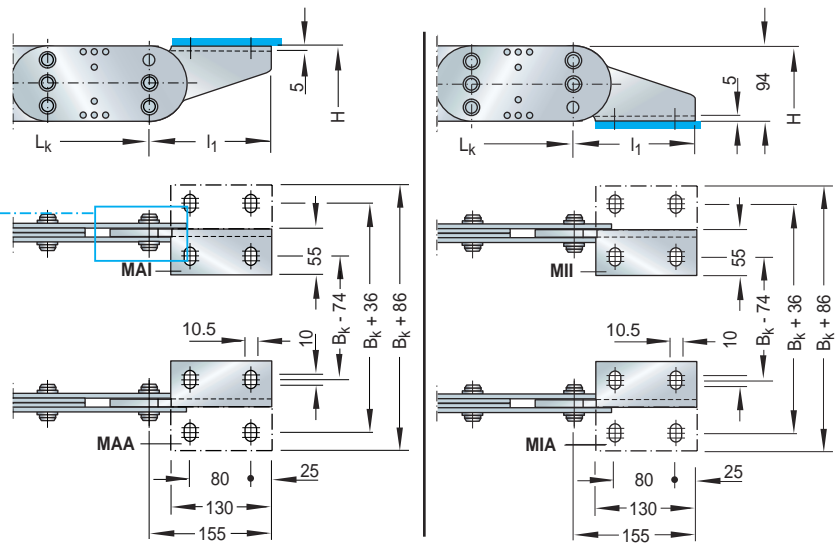


Type S 1252
Type SX 1252
Connection dimensions
(continued)



The mounting brackets at the forked end of the chain (outer plates) form the driver!

Driver connection



Ordering key for the connection:

X.X.X

Connection Point

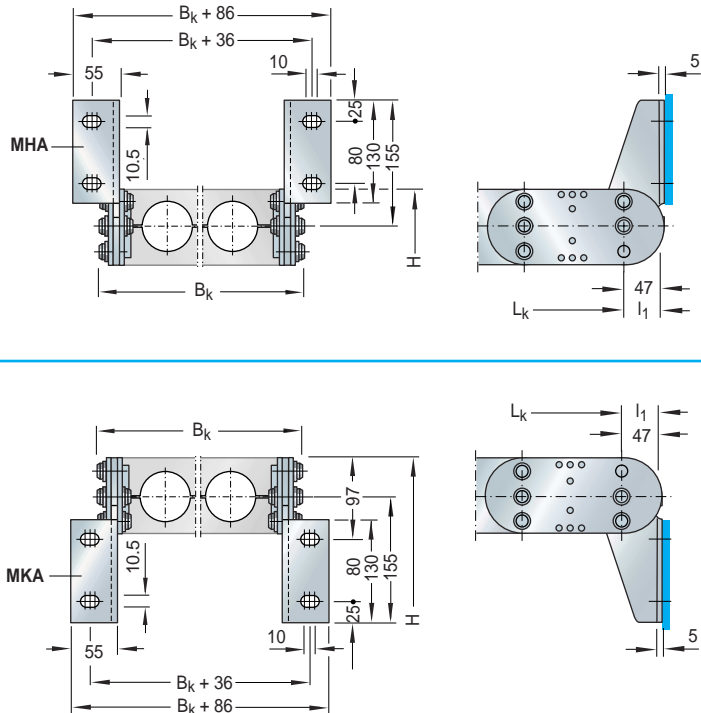
- F - fixed-point
- M - driver

Connection Type

- A - bolts facing outward (standard)
- I - bolts facing inward (towards bend radius)
- H - mounting brackets rotated through 90° to the outside
- K - mounting brackets rotated through 90° to the inside (towards bend radius)

Connection surface

- I - connection surface inside (< B_k)
- A - Connection surface outside (> B_k)

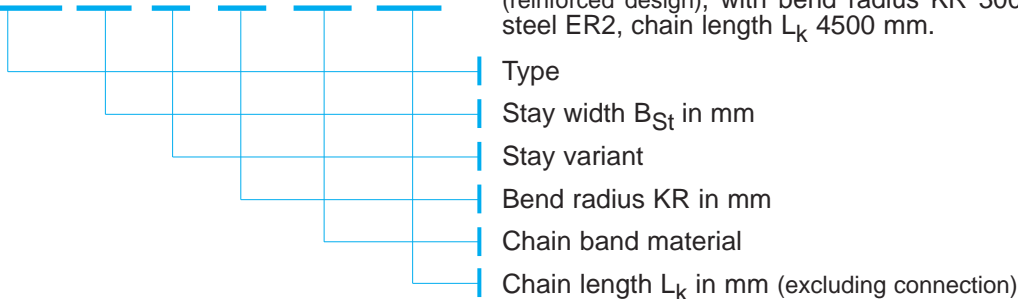


Ordering key for cable carrier:

SX 1252. 380 - RR - 300 - ER 2 - 4500

Example:

Cable carrier type SX1252, stay width B_{St} 380 mm - frame stay RR (reinforced design), with bend radius KR 300 mm, made of high grade steel ER2, chain length L_k 4500 mm.





**Cable Carriers
Type S 1800**

Profile:

Cable Carrier made of high-quality zinc-plated steel with offset chain links.

Stay variants: **Frame stay RM**
 Frame stay RMD
 Frame stay RR
 Hole stay LG

Materials:

Chain Bands and Mounting Brackets

Steel, zinc-plated
 → Refer to design guidelines

Stays

Stay variant RM **Aluminum alloy**

Stay variant RMD **Aluminum alloy**

Stay variant LG **Aluminum alloy**

Dividers/end pieces
on frame stays **Plastic**

Stay variant RR **Steel - zinc-plated**

Chain pitch: **180 mm**

Clearance height h_j : **109 mm** on stay variant RM
 104 mm on stay variant RMD
 104 mm on stay variant RR

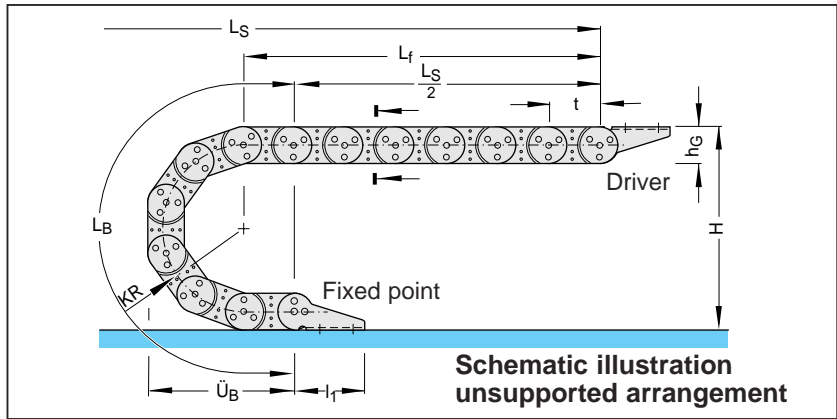
max. hole diameter: **110 mm** on stay variant LG

Chain width: **customer-specific**
 the desired width for every individual application

Bend radii: **10 standard bend radii**
 (intermediate radii upon request).

Type S 1800 Cable Carrier design

- Chain pitch $t = 180 \text{ mm}$
- Height $h_G = 140 \text{ mm}$
- Connection height $H_{\min} = 2 KR + 140 \text{ mm}$
- Connection length $l_1 = 210/70 \text{ mm}$
(see connection dimensions)



Variable sizes (depending on bend radius)

Dimensions in mm

Bend radius	265	320	375	435	490	605	720	890	1175	1405
Loop length L_B	1552	1725	1898	2087	2259	2620	2982	3516	4411	5164
Loop overhang \ddot{U}_B	695	750	805	865	920	1035	1150	1320	1605	1835
Height H_{\min}	670	780	890	1010	1120	1350	1580	1920	2490	2950

The connection height of the chain should be 70 mm higher than height H_{\min} !

Calculation of chain length:

$$L_k \approx \frac{L_s}{2} + L_B$$

Rounded to pitch 180 mm

Installation height (required clearance height):

$$H_z = H + z$$

pre-tension $z \approx 10 \text{ mm/m}$ chain length

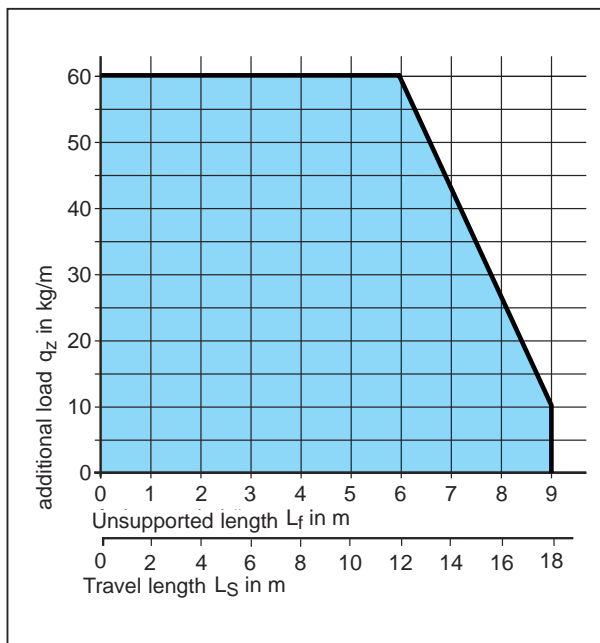
Load diagram

Unsupported length L_f and and travel length L_s without support

Depending on the additional load
(see design guidelines)

An intrinsic chain weight of **26 kg/m** was used as a basis on the load diagram.

With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.



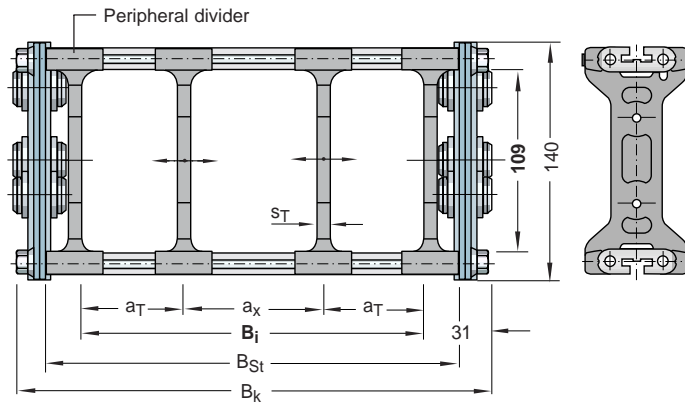
For circular operations KR/RKR combinations are possible. Please contact us for details!

A flat and level surface is required for the carrier system to be installed properly.

If necessary, a support tray should be installed (see system components).

Type S 1800 Chain cross sections Stay mounted on every 2nd chain link

Stay variant "RM 1"
Frame stay – Solid design



Aluminium profile bars double bolted both inside and outside

Calculation of chain width:

$$B_k = B_i + 62 \text{ mm}$$

$$B_{k \text{ min}} = 250 \text{ mm}$$

$$B_{k \text{ max}} = 1000 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 33 \text{ mm}$$

$$s_T = 7.5 \text{ mm}$$

$$a_{T \text{ min}} = 21.5 \text{ mm}$$

$$a_{x \text{ min}} = 25 \text{ mm}$$

Standard dividers are moveable.

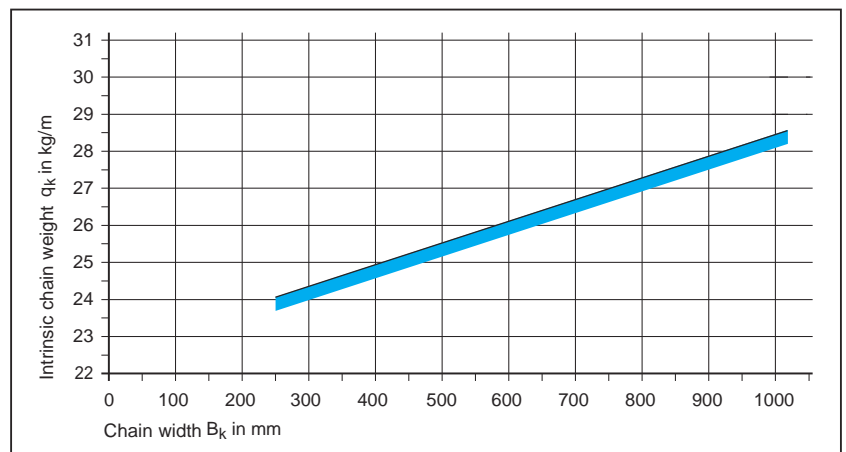
Please state the number of dividers.

Intrinsic chain weight for two band chains

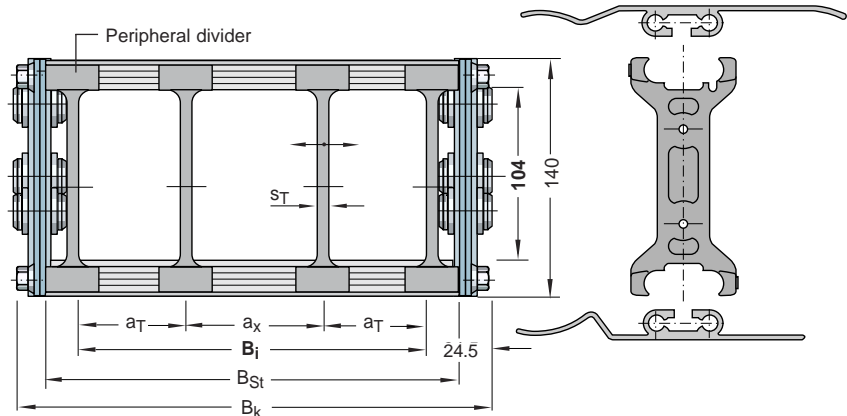
Depending on the chain width

With frame stays RM

Weight of the chain bands: 22.8 kg/m
(excluding stays)



Stay variant "RMD"
Frame stay - with cover
Enclosed cable carrier system



Aluminium profiles double bolted on the inside and outside

Calculation of chain width:

$$B_k = B_i + 49 \text{ mm}$$

$$B_k \text{ min} = 250 \text{ mm}$$

$$B_k \text{ max} = 1000 \text{ mm}$$

$$KR_{\text{min}} = 320 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 24 \text{ mm}$$

$$s_T = 6 \text{ mm}$$

$$a_T \text{ min} = 13 \text{ mm}$$

$$a_x \text{ min} = 16 \text{ mm}$$

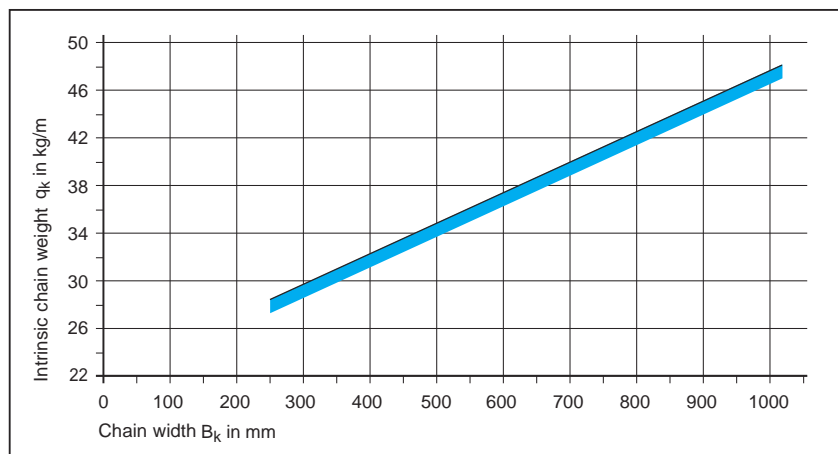
Standard dividers are moveable.

Please indicate the number of dividers per cross-section.

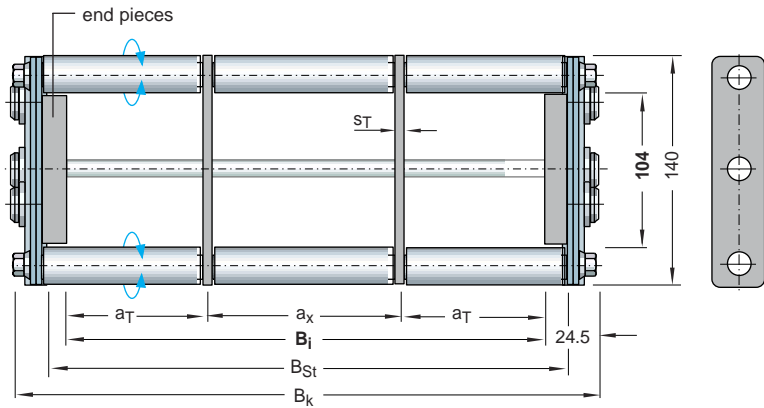
Intrinsic chain weight
For two band chains
Depending on the chain width

— With frame stays RMD

Weight of the chain bands: 22.8 kg/m
(excluding stays)



Stay variant "RR" Frame stay - Tube design



Fixed dividers are available to separate the cables/hoses in the carrier cross section.

Please indicate the number of dividers and the distances between them.

Calculation of chain width:

$$B_k = B_i + 49 \text{ mm}$$

$$B_{k \text{ min}} = 250 \text{ mm}$$

$$B_{k \text{ max}} = 800 \text{ mm}$$

Calculation of stay width:

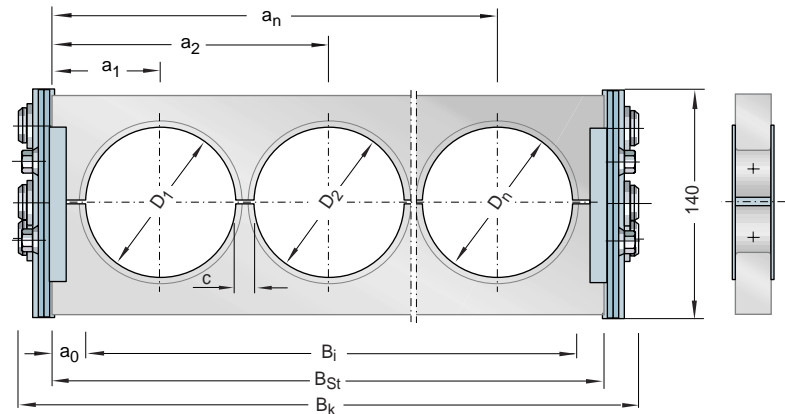
$$B_{St} = B_i + 20 \text{ mm}$$

$$s_T = 4 \text{ mm}$$

$$a_{T \text{ min}} = 45 \text{ mm}$$

$$a_{x \text{ min}} = 45 \text{ mm}$$

Stay variant "LG" Hole stay - split version



Custom manufacture of hole pattern in accordance with your specifications!

Hole stays are available in an unsplit design.

Calculation of chain width:

$$B_k = \sum D + \sum c + 59 \text{ mm}$$

$$D_{\text{max}} = 110 \text{ mm}$$

$$a_{0 \text{ min}} = 13.5 \text{ mm}$$

Calculation of stay width:

$$B_{St} = \sum D + \sum c + 27 \text{ mm}$$

$$c_{\text{min}} = 4 \text{ mm}$$

$$B_{k \text{ min}} = 180 \text{ mm}$$

$$B_i = B_{St} - 2 a_0$$

$$B_{k \text{ max}} = 1000 \text{ mm}$$

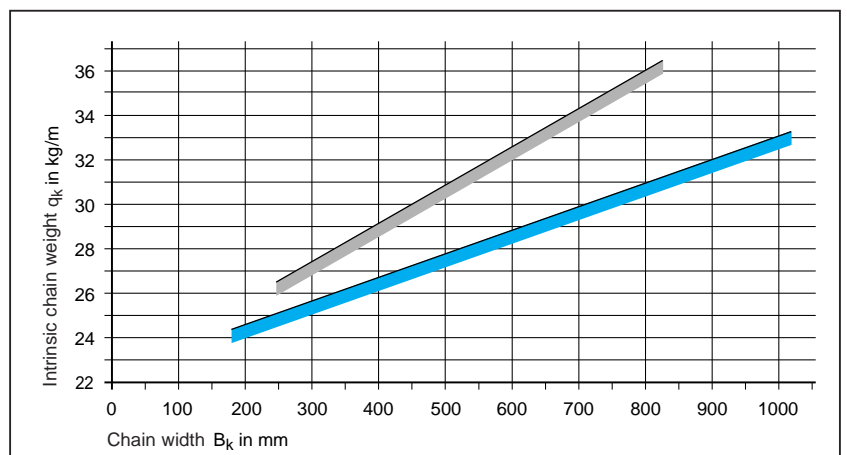
Intrinsic chain weight

For two band chains

Depending on the chain width

- frame stays - tube design (excluding height division)
- hole stays, holes account for 50 % of area

Weight of the chain bands: 22.8 kg/m (excluding stays)

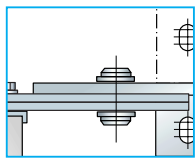


**Type S 1800
Connection dimensions**

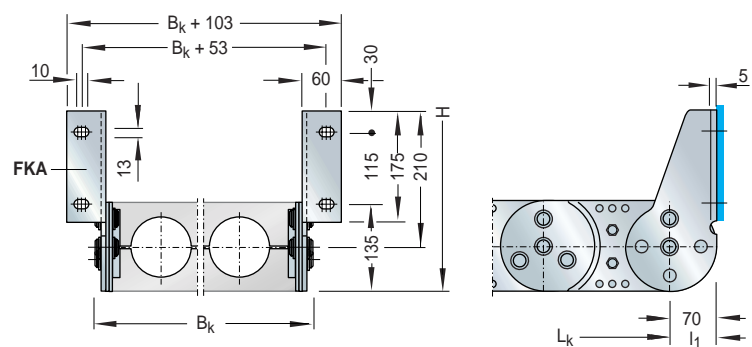
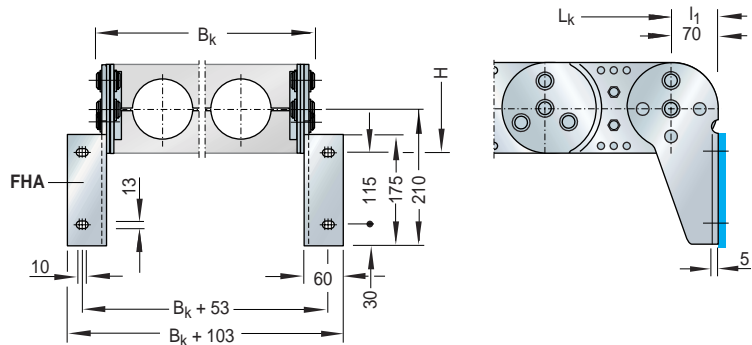
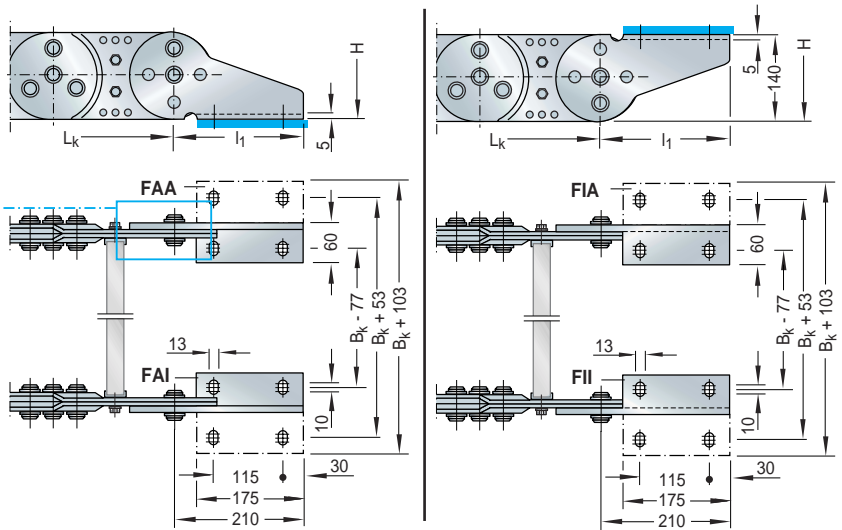
The connection variants at the fixed point and at the driver can be combined und subsequently changed if required.

Please indicate required connection variants in accordance with the ordering key (next page).

Fixed point connection



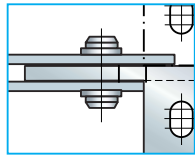
The mounting brackets at the closed end of the chain form the fixed point.



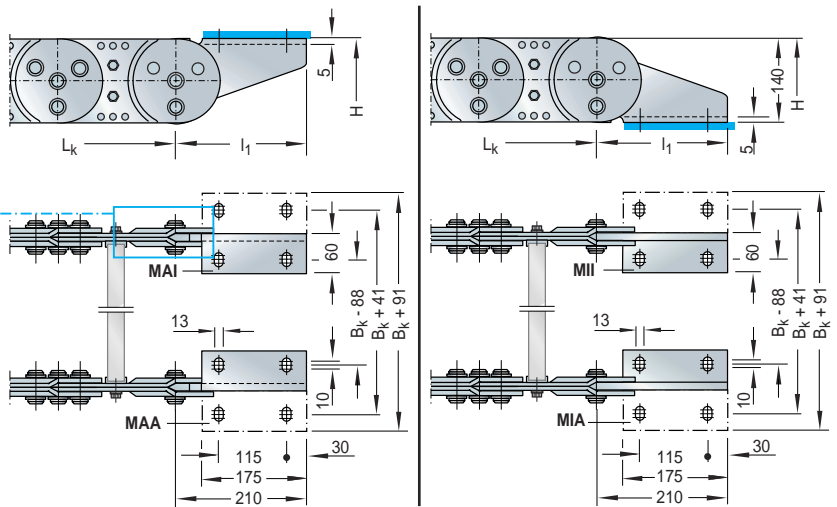
Type S 1800 Connection dimensions

(continued)

Driver connection



The mounting brackets at the forked end of the chain form the driver!



Ordering key for the connection:

X.X.X

Connection Point

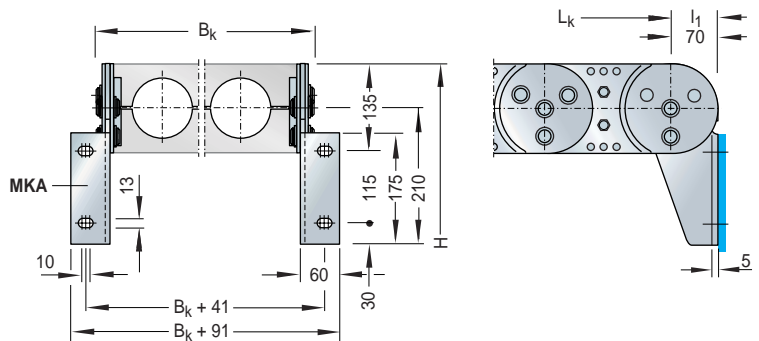
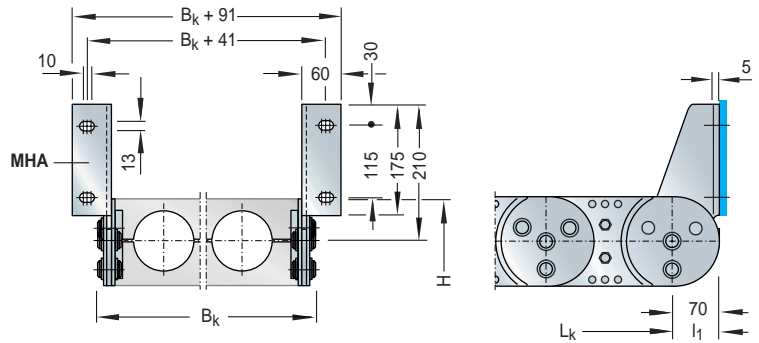
- F - fixed-point
- M - driver

Connection Type

- A - bolts facing outward (standard)
- I - bolts facing inward (towards bend radius)
- H - mounting brackets rotated through 90° to the outside
- K - mounting brackets rotated through 90° to the inside (towards bend radius)

Connection surface

- I - Connection surface inside (< B_k)
- A - Connection surface outside (> B_k)

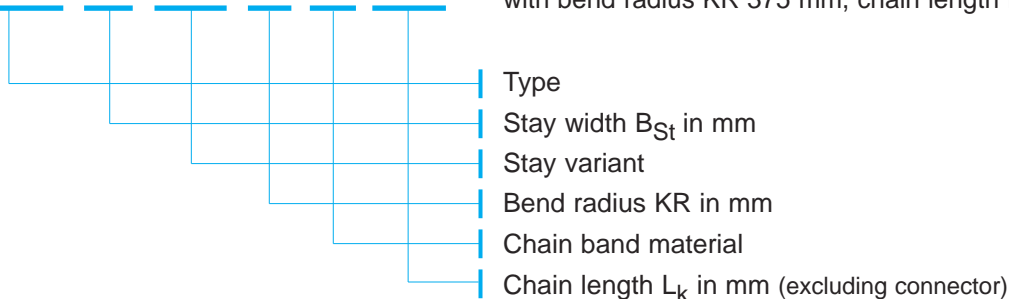


Ordering key for cable carrier:

S 1800 . 450 - RM - 375 - St - 5940

Example:

Cable carrier type S 1800, stay width, B_{St} 450 mm - Frame stay RM, with bend radius KR 375 mm, chain length L_k 5940 mm.





SX 1802 - LG



Cable Carriers

Type **S 1802**

Type **SX 1802**

Profile:

Type S 1802: Cable Carrier made of high-quality zinc-plated steel with straight chain links.

Type SX 1802: same design, made from rust and acid-resistant steel

Stay variants:
Frame stay RM
Frame stay RR
Hole stay LG

Materials:

Chain Bands and Mounting Brackets

S 1802 steel, zinc-plated

SX 1802 steel, rust and acid resistant
 → Refer to design guidelines

Stays

Stay variant RM **aluminum alloy**

Stay variant LG **aluminum alloy**

Dividers/end pieces for frame stays **plastic**

Stay variant RR **steel, zinc-plated for type S 1802**
Steel, rust and acid resistant for type SX 1802

Chain pitch: **180 mm**

Clearance height h_j : **109 mm** on stay variant RM
104 mm on stay variant RR

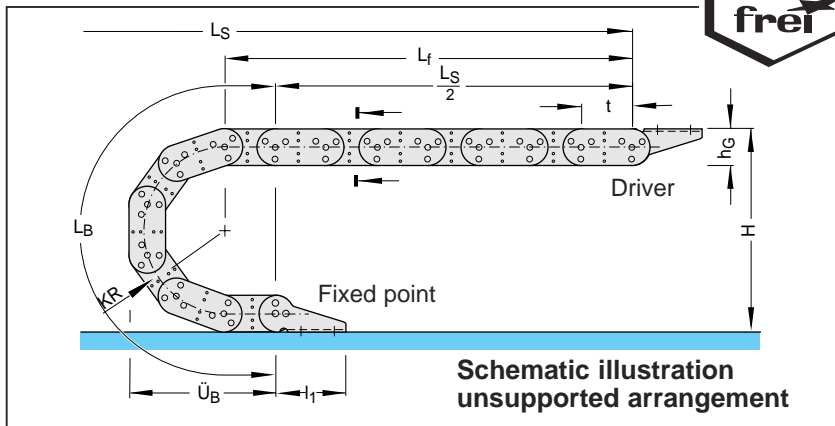
Max. Hole diameter: **110 mm** on stay variant LG

Chain width: **customer-specific**
 the desired width for every individual application

Bend radii: **9 standard bend radii**
 (intermediate radii upon request)

Type S 1802 Type SX 1802 Cable Carrier design

- Chain pitch $t = 180 \text{ mm}$
- Height $h_G = 140 \text{ mm}$
- Connection height $H_{\min} = 2 KR + 140 \text{ mm}$
- Connection length $l_1 = 210/70 \text{ mm}$
 (see connection dimensions)



Variable sizes (depending on the bend radius)

Dimensions in mm

Bend radius	265	320	375	435	490	545	605	720	890
Loop length L_B	1552	1725	1898	2087	2259	2432	2620	2982	3516
Loop overhang \ddot{U}_B	695	750	805	865	920	975	1035	1150	1320
Height H_{\min}	670	780	890	1010	1120	1224	1350	1580	1920

The connection height of the chain should be 70 mm higher than height H_{\min} !

Calculation of chain length:

$$L_k \approx \frac{L_S}{2} + L_B$$

Rounded to pitch 180 mm

Installation height (required clearance height):

$$H_z = H + z$$

pre-tension $z \approx 10 \text{ mm/m}$ chain length

Load diagram

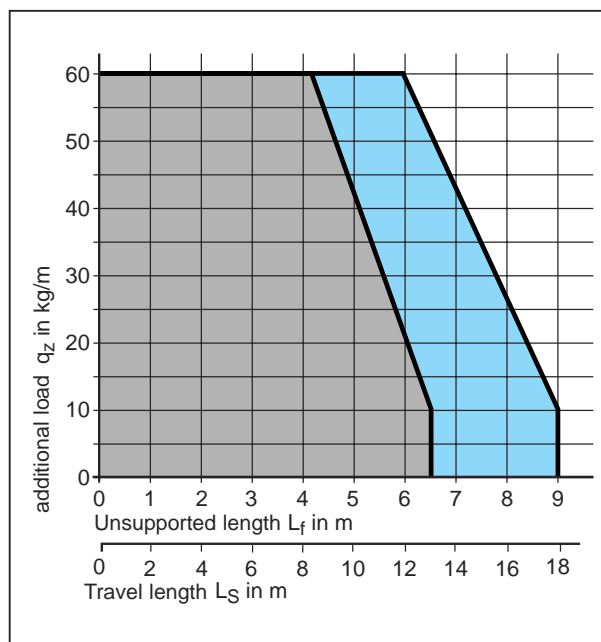
Unsupported length L_f and travel length L_S without support

Depending on the additional load (see design guidelines)

An intrinsic chain weight of **26 kg/m** was used as a basis on the load diagram.
 With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.

Explanation of load diagram:

- S 1802** - material: **steel**
- SX 1802** - material: **ER 2**
- SX 1802** - material: **ER 1**



For circular operations KR/RKR combinations are possible. Please contact us for details!

A flat and level surface is required for the carrier system to be installed properly.

If necessary, a support tray should be installed (see system components).

Type S 1802

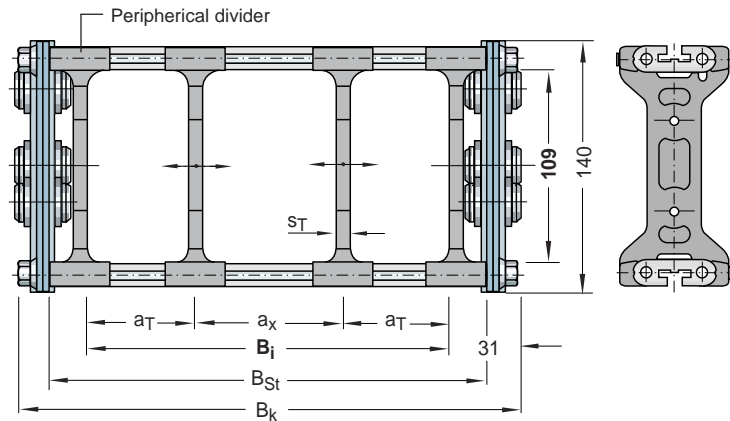
Type SX 1802

Chain cross sections

Stay mounted on every 2nd chain link

Stay variant "RM"

Frame stay – Solid design



Aluminium profile bars, double bolted on the inside and outside

Calculation of chain width:

$$B_k = B_i + 62 \text{ mm}$$

$$B_{k \text{ min}} = 250 \text{ mm}$$

$$B_{k \text{ max}} = 1000 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 33 \text{ mm}$$

$$s_T = 7.5 \text{ mm}$$

$$a_{T \text{ min}} = 21.5 \text{ mm}$$

$$a_{x \text{ min}} = 25 \text{ mm}$$

Standard dividers are movable.

Please state the number of dividers.

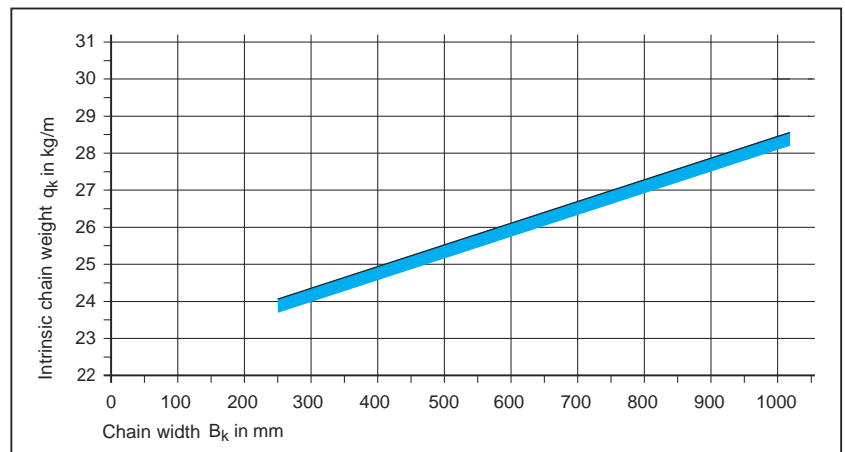
Intrinsic chain weight

for two band chains

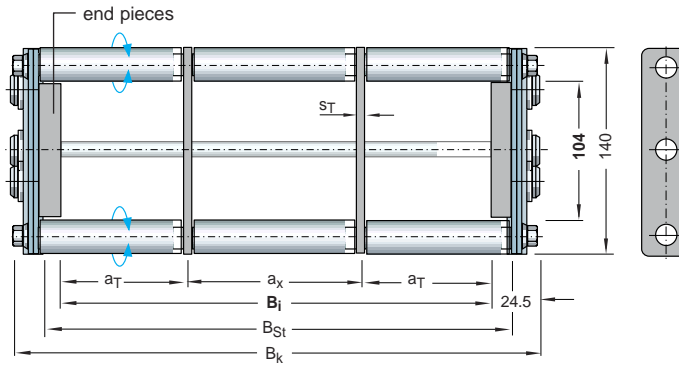
Depending on the chain width

with frame stays RM

Weight of the chain bands: 22.8 kg/m
(excluding stays)



Stay variant "RR" Frame stay - Tube design



Fixed dividers are available to separate the cables/hoses in the carrier cross section.

Please indicate the number of dividers and the distances between them.

Calculation of chain width:

$$B_k = B_i + 49 \text{ mm}$$

$$B_k \text{ min} = 250 \text{ mm}$$

$$B_k \text{ max} = 800 \text{ mm}$$

Calculation of stay width:

$$B_{St} = B_i + 20 \text{ mm}$$

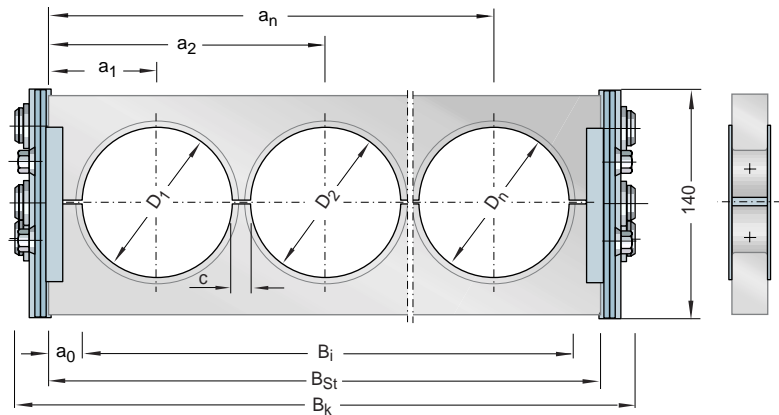
$$s_T = 4 \text{ mm}$$

$$a_T \text{ min} = 45 \text{ mm}$$

$$a_x \text{ min} = 45 \text{ mm}$$

Stay variant "LG" Hole stay - split version

Custom manufacture of hole pattern in accordance with your specifications!



Calculation of chain width:

$$B_k = \sum D + \sum c + 59 \text{ mm}$$

$$D_{\text{max}} = 110 \text{ mm}$$

$$a_0 \text{ min} = 13.5 \text{ mm}$$

Calculation of stay width:

$$B_{St} = \sum D + \sum c + 27 \text{ mm}$$

$$c_{\text{min}} = 4 \text{ mm}$$

$$B_k \text{ min} = 180 \text{ mm}$$

$$B_i = B_{St} - 2 a_0$$

$$B_k \text{ max} = 1000 \text{ mm}$$

Hole stays are available in an unsplit design.

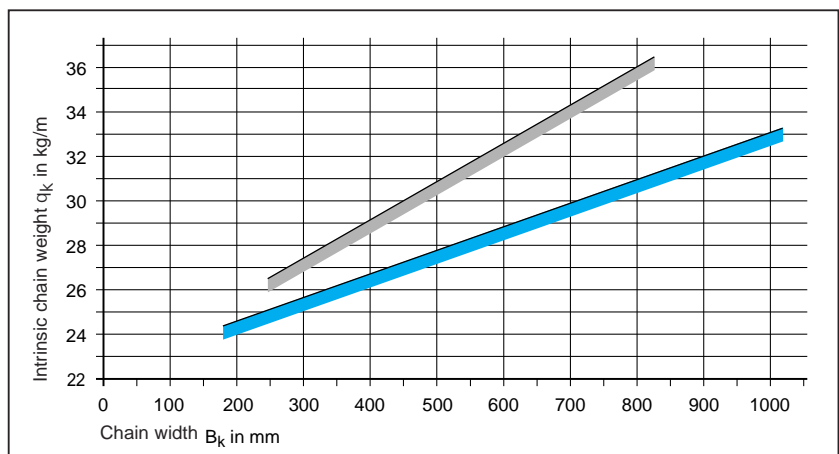
Intrinsic chain weight

For two band chains

Depending on the chain width

- frame stays - tube design (excluding height division)
- hole stays, holes account for 50 % of area

Weight of the chain bands: 22.8 kg/m (excluding stays)

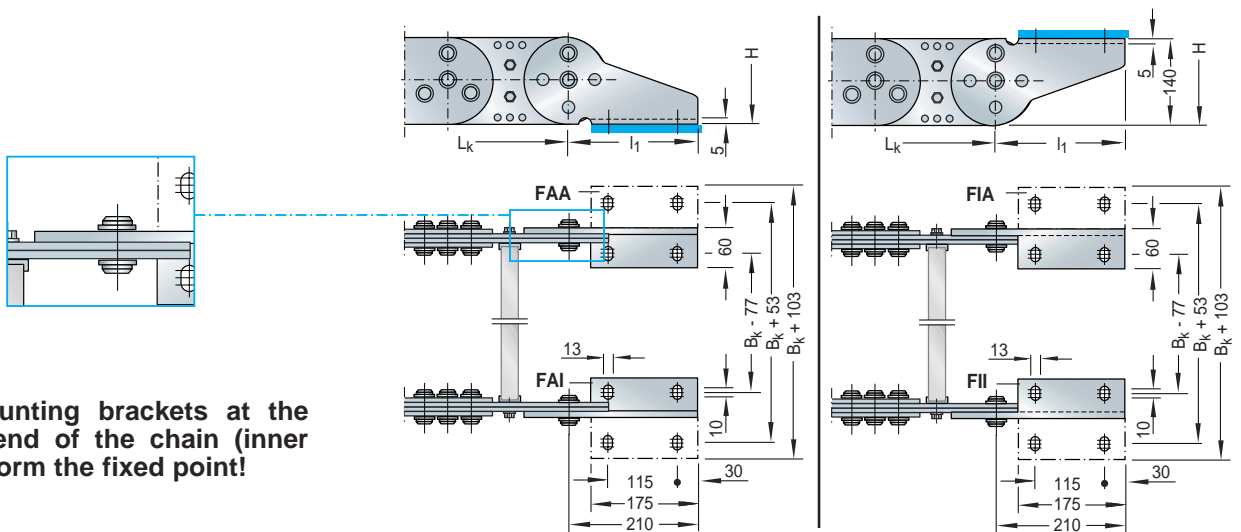


Type S 1802
Type SX 1802
Connection dimensions

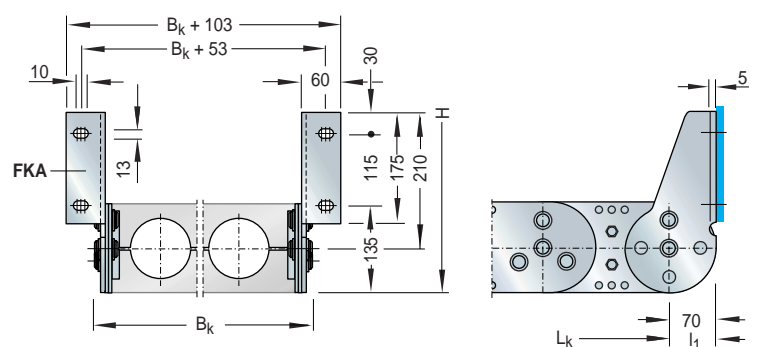
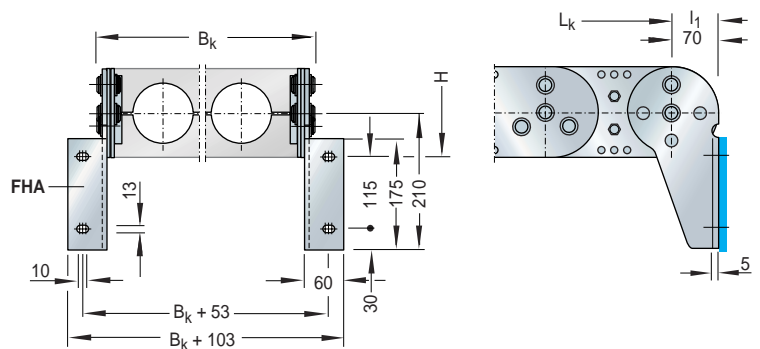
The connection variants at the fixed point and at the driver can be combined and subsequently changed if required.

Please indicate the required connection variants in accordance with the ordering key (next page).

Fixed point connection

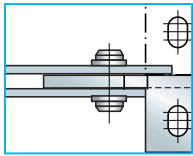


The mounting brackets at the closed end of the chain (inner plates) form the fixed point!

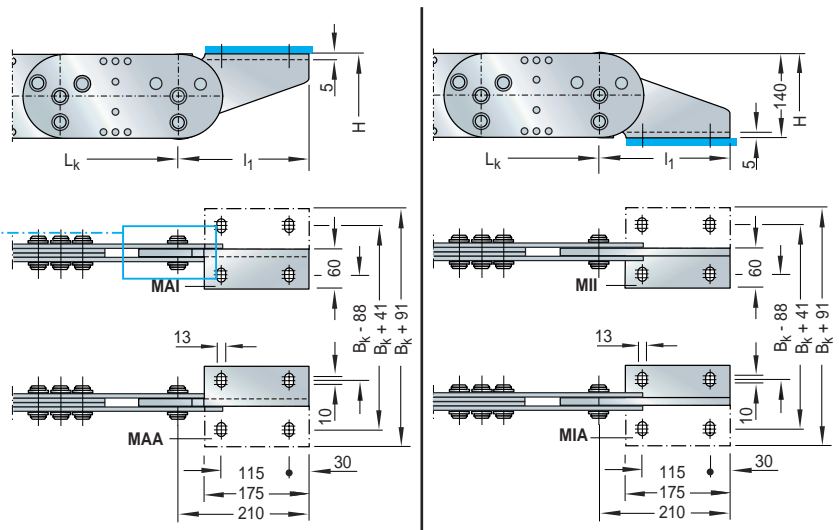


Type S 1802
Type SX 1802
Connection dimensions
(continued)

Driver connection



The mounting brackets at the forked end of the chain (outer plates) form the driver!



Ordering key for the connector:

X.X.X

Connection Point

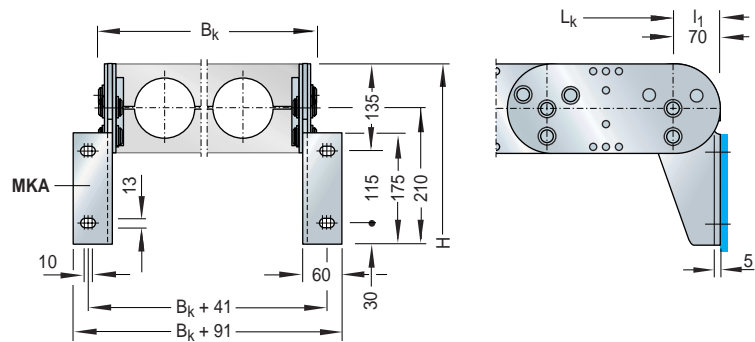
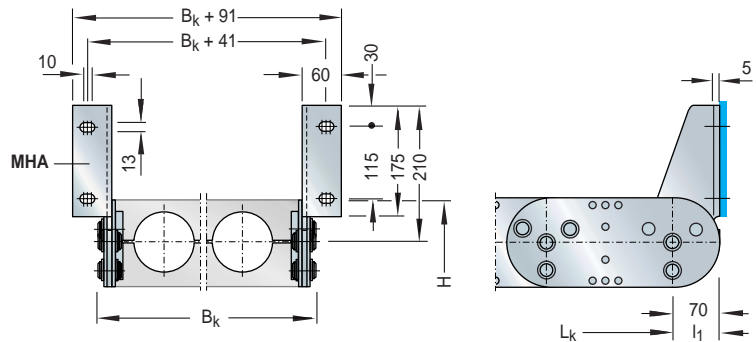
- F - fixed-point
- M - driver

Connection Type

- A - bolts facing outward (standard)
- I - bolts facing inward (towards bend radius)
- H - mounting brackets rotated through 90° to the outside
- K - mounting brackets rotated through 90° to the inside (towards bend radius)

Connection surface

- I - Connection surface inside (< B_k)
- A - Connection surface outside (> B_k)



Ordering key for cable carrier:

SX 1802 . 524 - LG - 435 - ER 1 - 6840

Example:

Cable carrier type SX 1802, stay width B_{St} 524 mm, hole stay, split design – (hole pattern as per your specifications), bend radius KR 435 mm, made of stainless steel ER1, Chain length L_k 6840 mm

- Type
- Stay width B_{St} in mm
- Stay variant
- Bend radius KR in mm
- Chain band material
- Chain length L_k in mm (excluding connector)



Cable Carriers

Type **S 2500**

Type **SX 2500**

Profile:

Type S 2500: Cable carrier made of high grade steel with straight chain links

Type SX 2500: Same design made of rust and acid resistant steel

Stay variants: Hole stay LG (Standard)
 Frame stay RR (Special order)

Materials:

Chain Bands and Mounting Brackets

S 2500 Steel - zinc-plated
SX 2500 Steel - rust and acid resistant
 → see design guidelines

Stays

Stay variant LG Aluminium alloy

Chain pitch: 250 mm

Max. hole diameter: 180 mm on stay variant LG

Chain width: customer-specific
 the desired width for every individual application

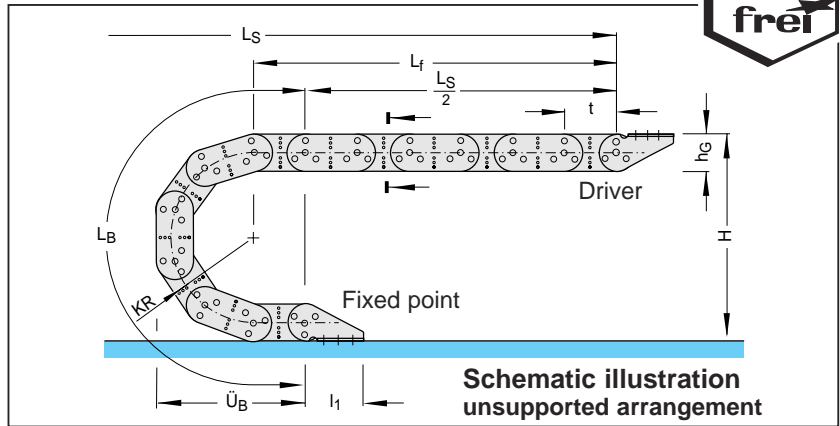
Bend radii: 8 standard bend radii
 (intermediate radii upon request)

Type S 2500 Type SX 2500 Cable Carrier design

Chain pitch t = 250 mm
 Height h_G = 220 mm
 Connection height H_{min} = $2 KR + 220$ mm
 Connection length l_1 = 300 mm

Variable sizes depending on the bend radius

Connection height of chain should be 110 mm higher than height H_{min} !



Bend radius	365	445	600	760	920	1075	1235	1395
Loop length L_B	2147	2398	2885	3388	3890	4377	4880	5383
Loop overhang \ddot{U}_B	975	1055	1210	1370	1530	1685	1845	2005
Height H_{min}	950	1110	1420	1740	2060	2370	2690	3010

Dimensions in mm

Calculation of chain length:

$$L_k \approx \frac{L_s}{2} + L_B$$

Rounded to pitch 250 mm

Installation height

(required clearance height):

$$H_z = H + z$$

Pre-tension $z \approx 10$ mm/m chain length

Load diagram

Unsupported length L_f and travel length L_s without support

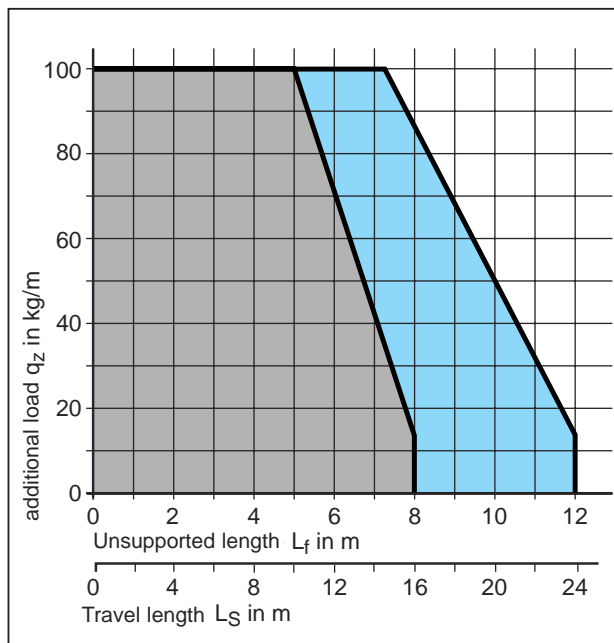
Depending on the additional load
 (see design guidelines)

An intrinsic chain weight of **41 kg/m** was used as a basis on the load diagram.

With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.

Explanation of load diagram:

- S 2500** - material **steel**
- SX 2500** - material **ER 2**
- SX 2500** - material **ER 1**



For circular operations KR/RKR combinations are possible. Please contact us for details!

A flat and level surface is required for the carrier system to be installed properly.

If necessary, a support tray should be installed (see system components).

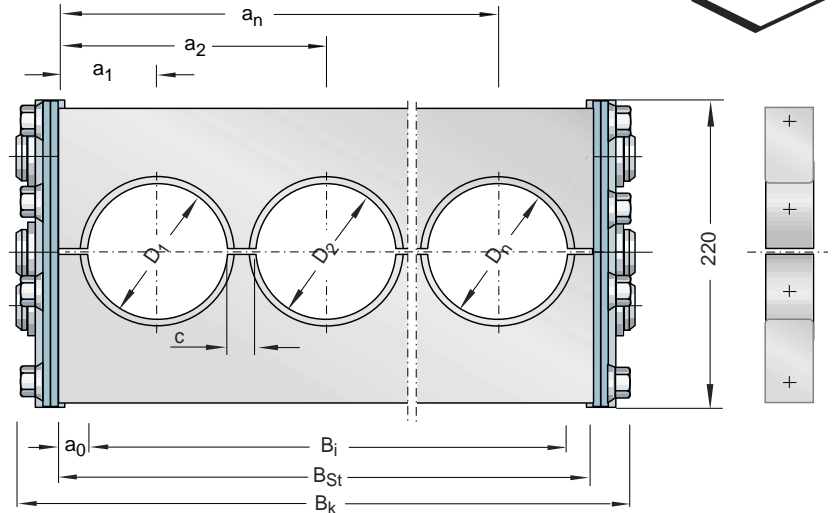
Type S 2500
Type SX 2500

Chain cross sections

In accordance with section in schematic illustration

Stays mounted on every 2nd chain link.

Stay variant "LG"
Hole stay – split design



Custom manufacture of hole pattern in accordance with your specifications!

Calculation of chain width:

$$B_k = \sum D + \sum c + 76 \text{ mm}$$

$$D_{\max} = 180 \text{ mm}$$

$$a_{0\min} = 22 \text{ mm}$$

Calculation of stay width:

$$B_{St} = \sum D + \sum c + 44 \text{ mm}$$

$$c_{\min} = 4 \text{ mm}$$

$$B_{k\min} = 250 \text{ mm}$$

$$B_i = B_{St} - 2 a_0$$

$$B_{k\max} = 1200 \text{ mm}$$

Hole stays are available in an unsplit design.

Special stays

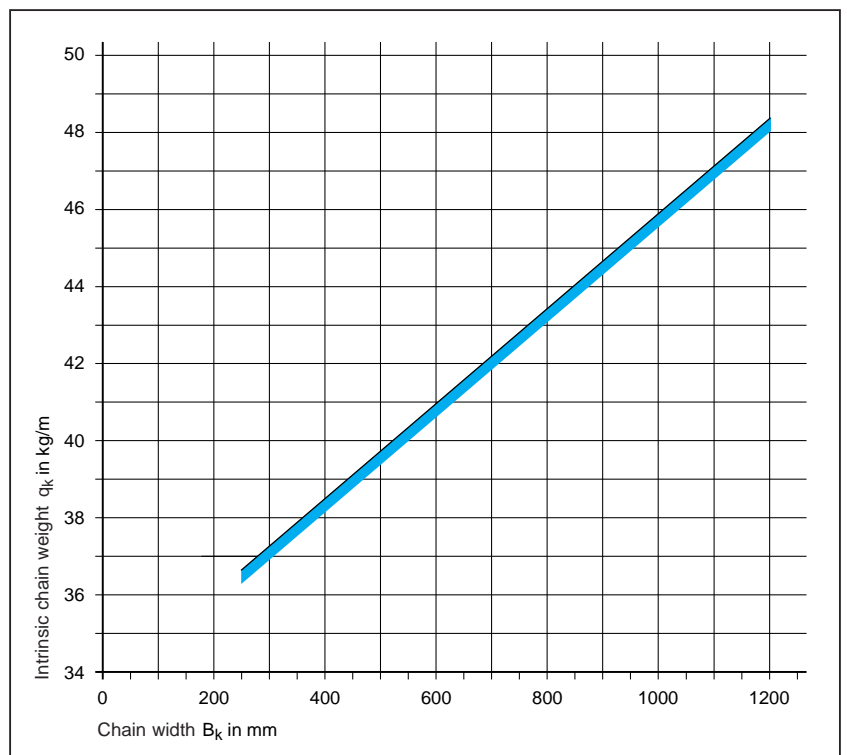
Custom manufacture of stays with regard to design and materials is available based on your specifications.

Intrinsic chain weight

For two band chains

Depending on the chain width

hole stays,
holes account for 50 % of area



Weight of the chain bands: 34 kg/m (excluding stays)

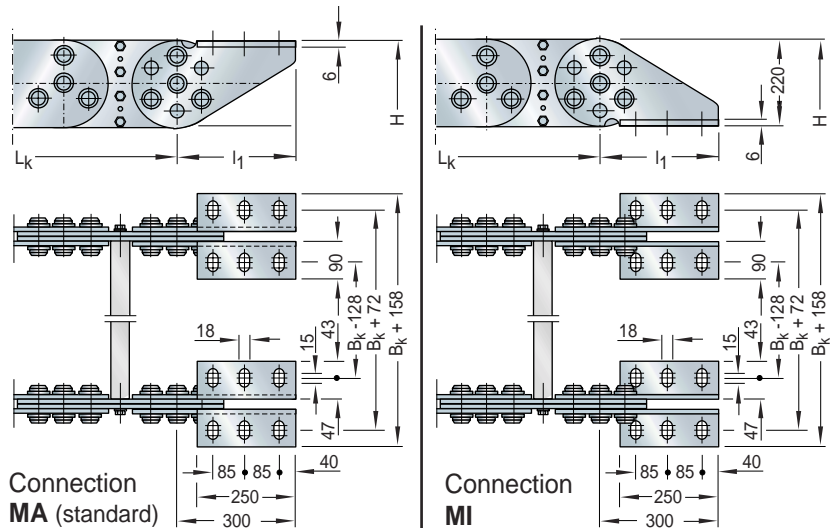
Type S 2500
Type SX 2500
Connection dimensions

The connection variants at the fixed point and at the driver can be combined and subsequently changed if required.

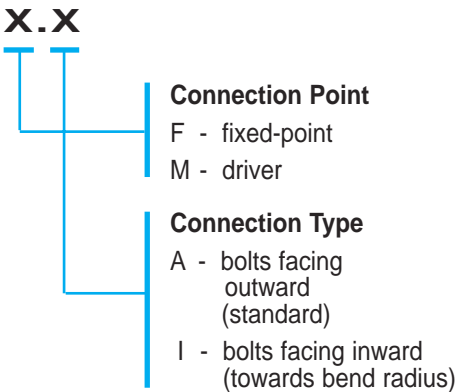
Please state required connection variants in accordance with the ordering key!

The driver and fixed-point connection occurs by attaching double mounting brackets on the inner links.

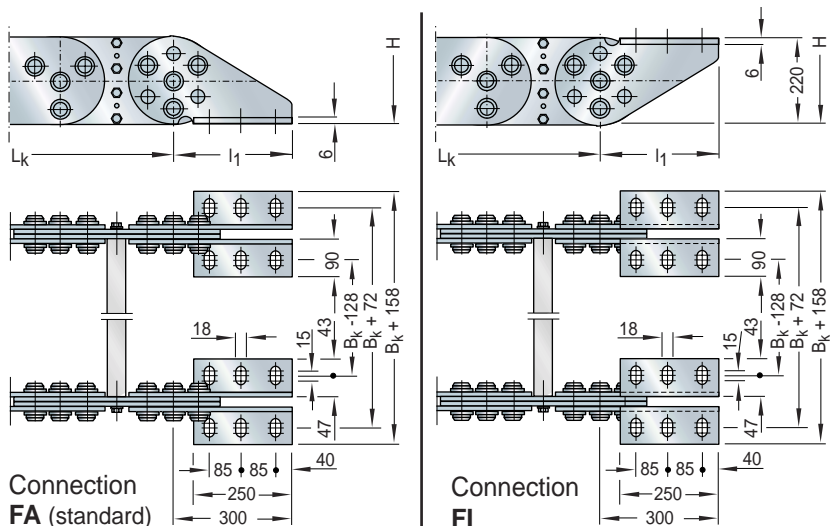
Driver connection



Ordering key for the connector:

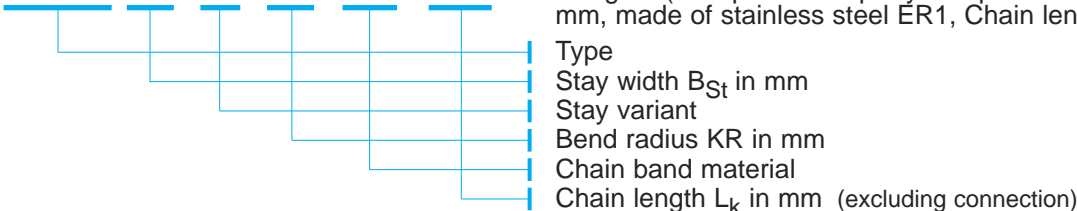


Fixed-point connection



Ordering key for cable carrier:

SX 2500.850 - LG - 760 - ER 1 - 9250



Example:

Cable carrier type SX 2500, stay width B_{St} 850 mm, hole stay – split design – (hole pattern as per your specifications), bend radius KR 760 mm, made of stainless steel ER1, Chain length L_k 9250 mm.



Cable Carriers

Type **S 3200**

Type **SX 3200**

Profile:

Type S 3200: Cable Carrier made of high-quality zinc-plated steel with straight chain links.

Typ SX 3200: same design, made of rust and acid resistant steel

Stay variants: **Hole stay LG** (standard)
Frame stay RR (special order)

Materials:

Chain Bands and Mounting Brackets

S 3200 steel, zinc-plated

SX 3200 steel - rust and acid resistant

→ Refer to design guidelines

Stays:

Stay variant LG aluminum alloy

Chain pitch: 320 mm

Max. hole diameter: 220 mm on stay variant LG

Chain width: customer-specific
the desired width for every individual application

Bend radii: 7 standard bend radii
(intermediate radii upon request)

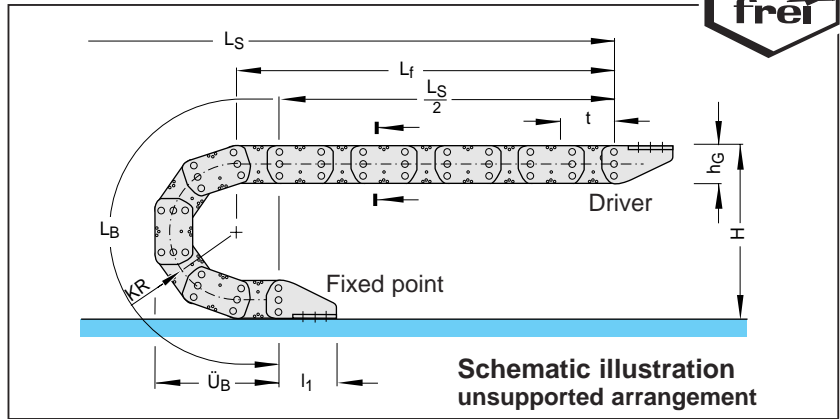
Type S 3200 Type SX 3200 Cable Carrier design

Chain pitch t = 320 mm
 Height h_G = 300 mm
 Connection height H_{min} = $2 KR + 300$ mm
 Connection length l_1 = 350 mm

Variable sizes

depending on the bend radius

The connection height of the chain should be 150 mm higher than the height H_{min} !



Bend radius	470	670	870	1075	1275	1480	1785
Loop length L_B	2757	3385	4013	4657	5286	5930	6888
Loop overhang \ddot{U}_B	1260	1460	1660	1865	2065	2270	2575
Height H_{min}	1240	1640	2040	2450	2850	3260	3870

Dimensions in mm

Calculation of chain length:

$$L_k \approx \frac{L_s}{2} + L_B$$

Rounded to pitch 320 mm

Installation height

(required clearance height):

$$H_z = H + z$$

Pre-tension $z \approx 10$ mm/m chain length

Load diagram

Unsupported length L_f and travel length L_s without support

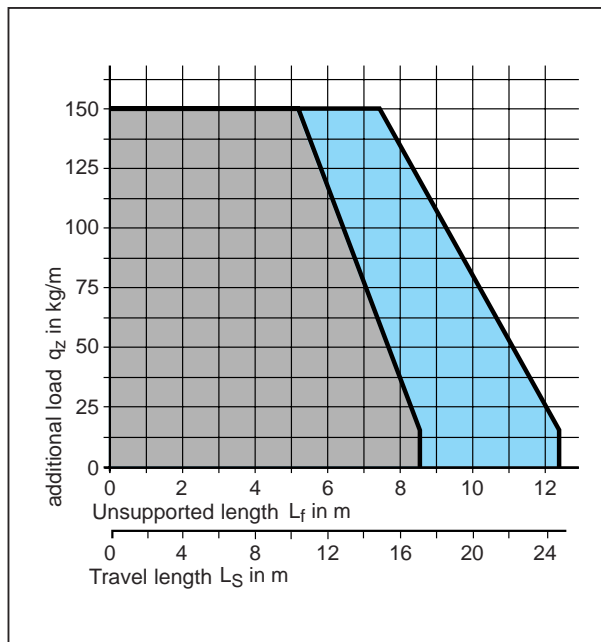
Depending on the additional load
(see design guidelines)

An intrinsic chain weight of **62 kg/m** was used as a basis on the load diagram.

With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.

Explanation of load diagram:

- S 3200** - material **steel**
- SX 3200** - material **ER 2**
- SX 3200** - material **ER 1**



For circular operations KR/RKR combinations are possible. Please contact us for details!

A flat and level surface is required for the carrier system to be installed properly.

If necessary, a support tray should be installed (see system components).

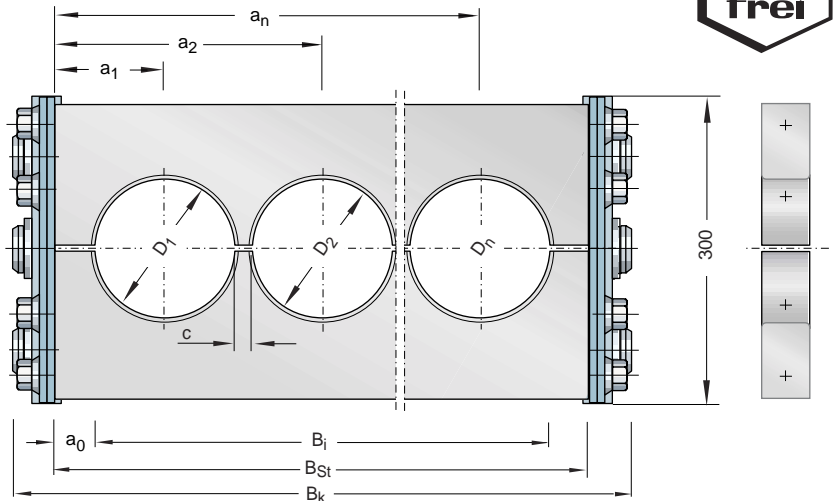
Type **S 3200**
 Type **SX 3200**

Chain cross sections

In accordance with sections in schematic illustration

Stays mounted on every 2nd chain link.

Stay variant **“LG”**
 Hole stay – split design



Custom manufacture of hole pattern in accordance with your specifications!

Calculation of chain width:

$$B_k = \sum D + \sum c + 84 \text{ mm}$$

$$D_{\max} = 220 \text{ mm}$$

$$a_{0 \min} = 22 \text{ mm}$$

Calculation of stay width:

$$B_{St} = \sum D + \sum c + 44 \text{ mm}$$

$$c_{\min} = 4 \text{ mm}$$

$$B_{k \min} = 250 \text{ mm}$$

$$B_i = B_{St} - 2 a_0$$

$$B_{k \max} = 1500 \text{ mm}$$

Hole stays are available in an unsplit design.

Special stays

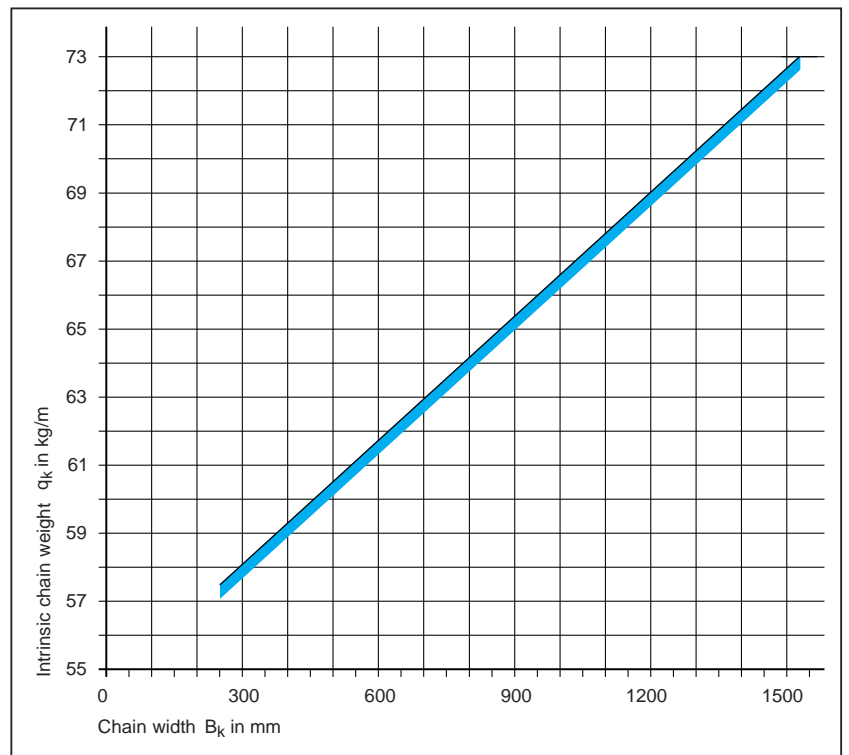
Custom manufacture of stays with regard to design and materials is available based on your specifications.

Intrinsic chain weight

For two band chains

Depending on the chain width

Hole stays,
 holes account for 50 % of area



Weight of the chain bands: 55 kg/m (excluding stays)

Type S 3200

Type SX 3200

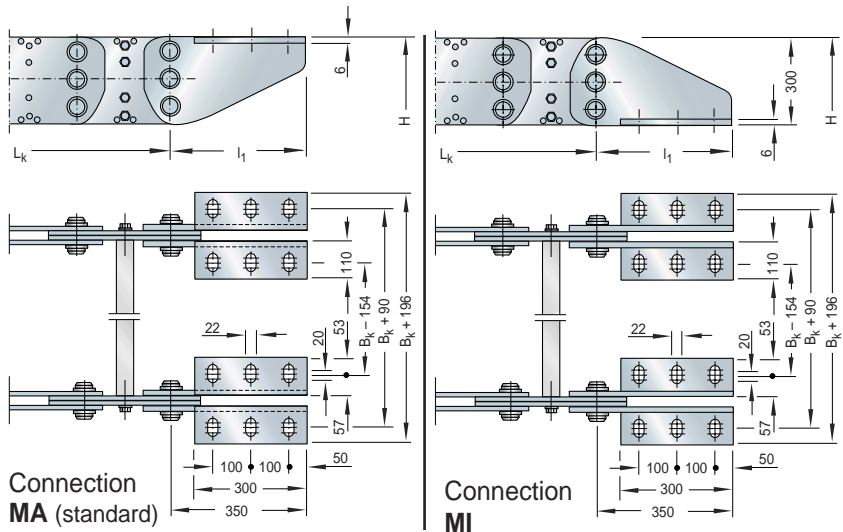
Connection dimensions

The connection variants at the fixed point and at the driver can be combined and subsequently changed if required.

Please state required connection variants in accordance with the ordering key!

Driver connection

Driver and fixed-point connection occurs by attaching double mounting brackets on the inner links.



Ordering key for the connector:

X.X

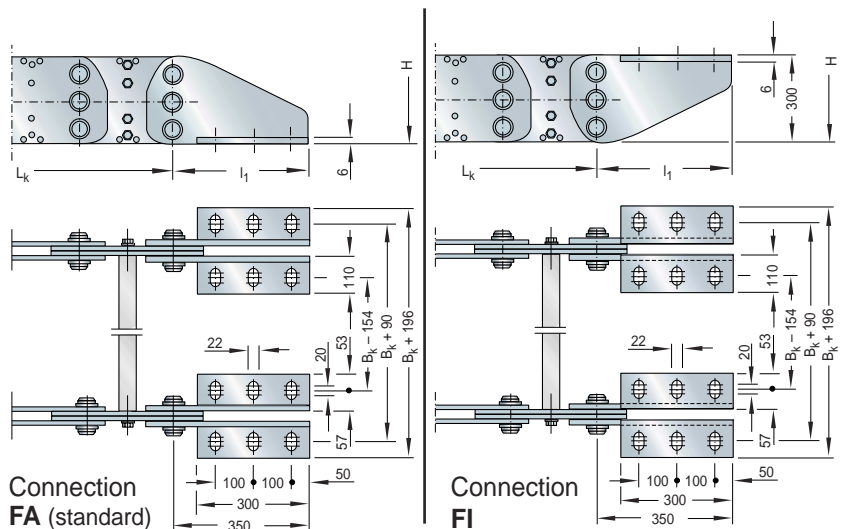
Connection Point

- F - fixed-point
- M - driver

Connection Type

- A - bolts facing outward (standard)
- I - bolts facing inward (towards bend radius)

Fixed-point connection



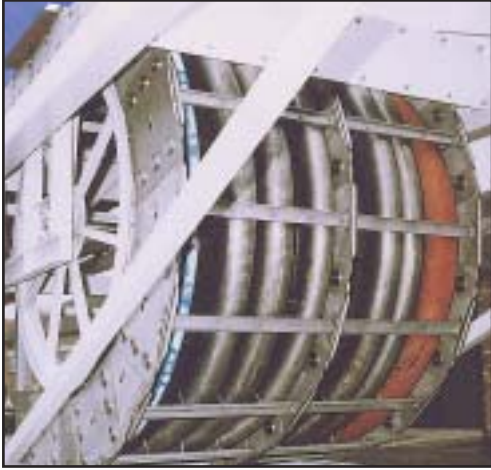
Ordering key for cable carrier:

SX 3200.820 - LG - 1075 - ER 1 - 9280

Example:

Cable carrier type SX 3200, stay width B_{St} 820 mm, hole stay – split design – (hole pattern as per your specifications), bend radius KR 1075 mm, made of stainless steel ER1, chain length L_k 9280 mm.

- Type
- Stay width B_{St} in mm
- Stay variant
- Bend radius KR in mm
- Chain band material
- Chain length L_k in mm (excluding connector)



Cable Carriers

Type S 5000

Type S 6000

Type S 7000



Type SX 5000

Type SX 6000

Type SX 7000

Profile:

Cable Carriers with straight chain links

Type S: high quality steel

Type SX: rust and acid resistant steel

Using standard components, all carrier systems can be custom manufactured to meet individual application requirements.

Stay variants: frame and hole stay design – special order

Materials:

Chain Bands and Mounting Brackets

Type S: steel, zinc-plated

Type SX: rust and acid resistant steel

→ Refer to design guidelines

Stays

steel

to suit your own individual application requirements

Chain pitch: 200 mm → for types **S/SX 5000**

320 mm → for types **S/SX 6000**

450 mm → for types **S/SX 7000**

Clearance height h_i : 150 mm → for types **S/SX 5000**

240 mm → for types **S/SX 6000**

370 mm → for types **S/SX 7000**

Chain width:

customer-specific

the desired width for every individual application

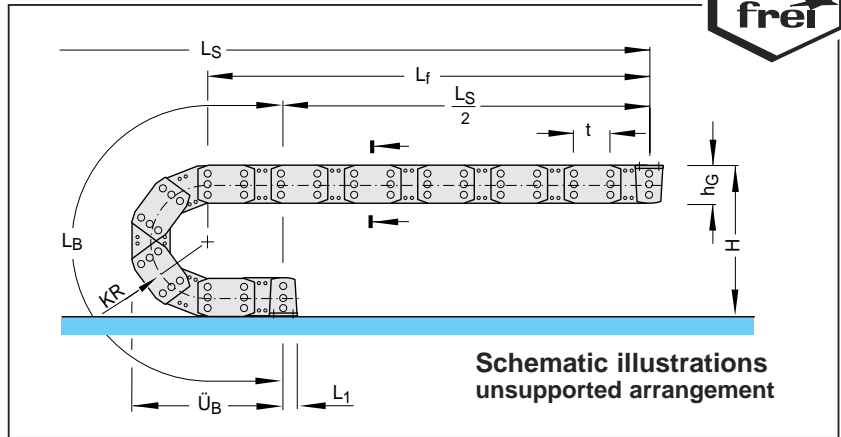
Bend radii:

5 standard bend radii per type

(intermediate radii upon request)

Type S/SX 5000
Type S/SX 6000
Type S/SX 7000
Cable Carrier design

Type	S/SX 5000	S/SX 6000	S/SX 7000
Chain pitch t	200	320	450
Height h _G	200	300	450
Connec. height H _{min}	2 KR + h _G		
Connec. length l ₁	75	125	200



Variable sizes depending on the bend radius

Dimensions in mm

The connection height of the chain should be h_G/2 higher than the height H_{min}!

Bend radius	500	600	800	1000	1200
Loop length L _B	2370	2685	3315	3940	4570
Loop overhang Ü _B	1075	1175	1375	1575	1775
Height H _{min}	1200	1400	1800	2200	2600

Type S/SX 5000

Bend radius	700	900	1100	1300	1500
Loop length L _B	3480	4110	4735	5365	5995
Loop overhang Ü _B	1615	1815	2015	2215	2415
Height H _{min}	1700	2100	2500	2900	3300

Type S/SX 6000

Bend radius	1100	1250	1500	1800	2400
Loop length L _B	5255	5725	6510	7450	9335
Loop overhang Ü _B	2425	2575	2825	3125	3725
Height H _{min}	2650	2950	3450	4050	5250

Type S/SX 7000

A flat surface is required for storing the cable carrier.

Installation height
(required clearance height):

A support tray should be used if required (see System Components).

Calculation of chain length:

$$L_k \approx \frac{L_s}{2} + L_B$$

Rounded to pitch

$$H_z = H + z$$

Pre-tension z ≈ 10 mm/m chain length

Load diagram

Unsupported length L_f and travel length L_s without support

Depending on the additional load (see design guidelines)

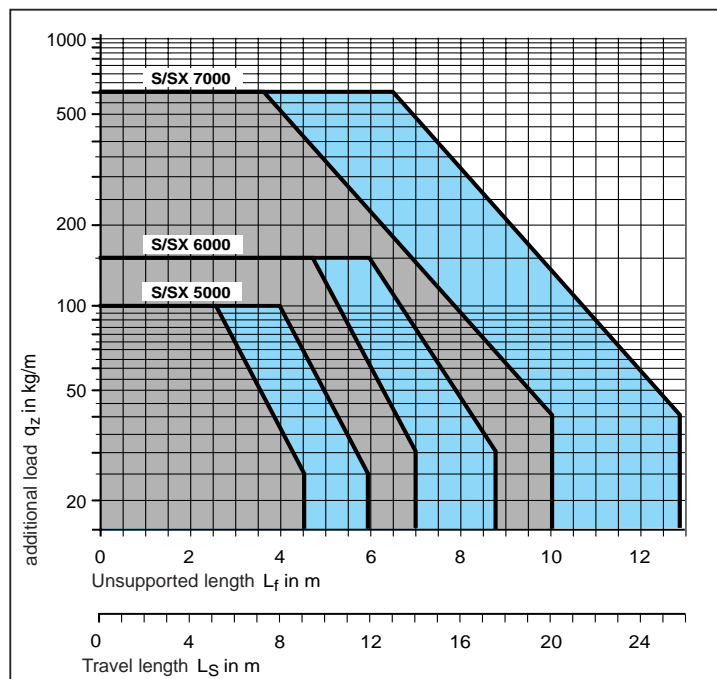
An intrinsic chain weight was used as a basis on the load diagram.

40 kg/m for type **S/SX 5000**

50 kg/m for type **S/SX 6000**

125 kg/m for type **S/SX 7000**

With a larger intrinsic weight (for example with stay variant RMD) the permissible additional load is reduced by the amount of the difference.



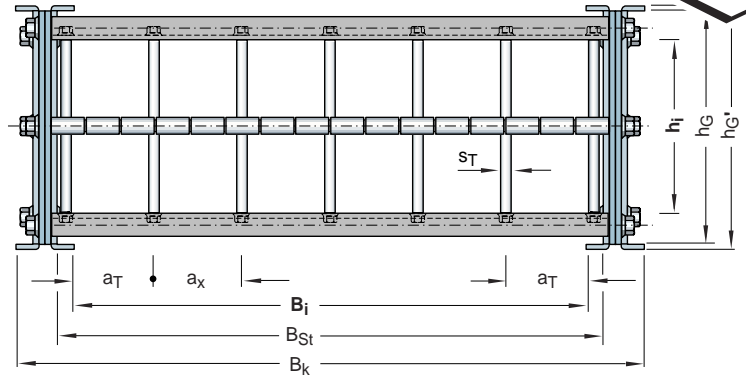
Explanation of load diagram:

- S** _____ - Material **steel**
- SX** _____ - Material **ER 2**
- SX** _____ - Material **ER 1**

Type S/SX 5000
 Type S/SX 6000
 Type S/SX 7000

Chain cross section

in accordance with section details in schematic illustration



Stay design

Tube/frame construction

with dividing stays and dividing bars for separating the cables/hoses

Calculation of the chain and stay width

Dimensions in mm

Type	Chain width B_k	Stay width B_{St}	h_i max
S/SX 5000	$B_i + 117$	$B_i + 38$	150
S/SX 6000	$B_i + 123$	$B_i + 38$	240
S/SX 7000	$B_i + 150$	$B_i + 60$	370

Stays installed on every 2nd chain link!

Type	B_k min	B_k max	s_T	a_T max	a_x max
S/SX 5000	250	1200	10	150	150
S/SX 6000	300	1500	10	200	200
S/SX 7000	350	1800	10	250	250

Please give the number of, and distance between, the dividing stays and bars.

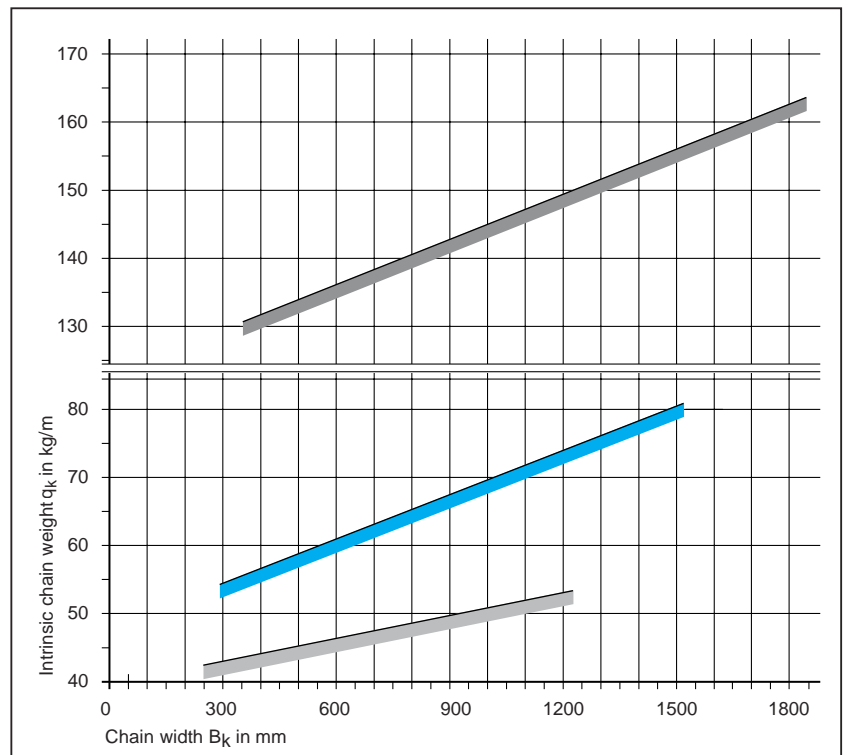
Intrinsic chain weight for two band chains

Depending on the chain width

- Type S/SX 5000
- Type S/SX 6000
- Type S/SX 7000

Weight of the chain bands (excluding stays):

- 40 kg/m** for type S/SX 5000
- 50 kg/m** for type S/SX 6000
- 125 kg/m** for type S/SX 7000



Type S/SX 5000
Type S/SX 6000
Type S/SX 7000

Connection dimensions

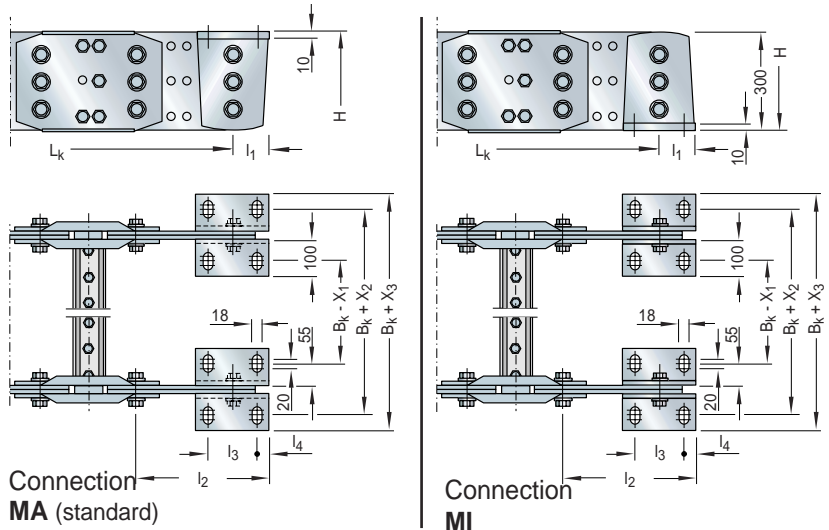
The connection variants at the fixed point and at the driver can be combined and subsequently changed if required.

Please indicate connection variant in accordance with the ordering key!

Driver and fixed-point connection occurs by attaching double mounting brackets on the inner links.

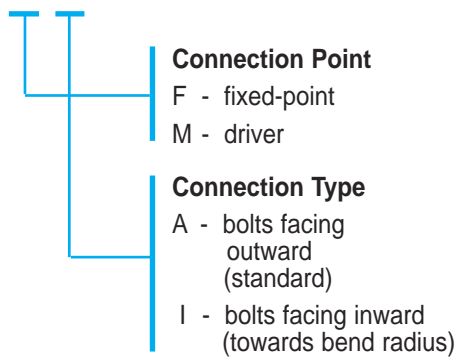
Type	S/SX 5000	S/SX 6000	S/SX 7000
l_1	75	125	200
l_2	275	445	650
l_3	100	200	230
l_4	25	25	25
X_1	189	195	200
X_2	44	38	38
X_3	134	128	128

Driver connection

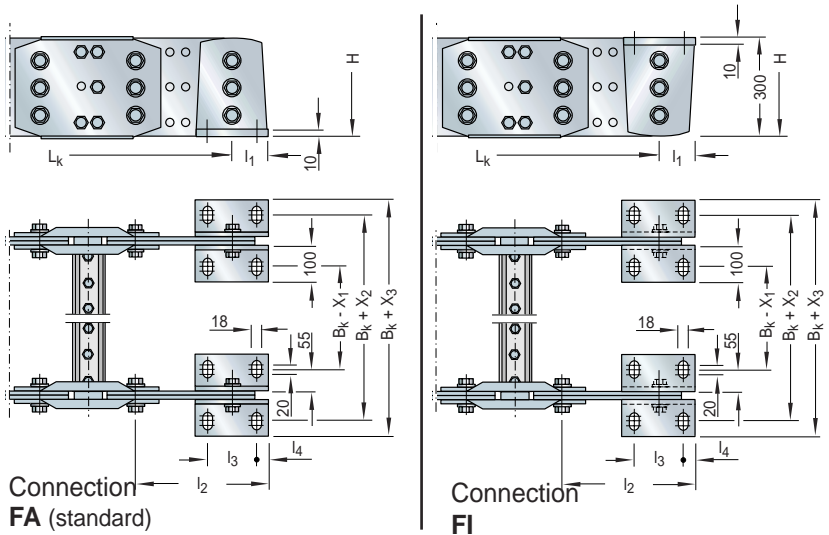


Ordering key for the connection:

X.X



Fixed-point connection



Ordering key for cable carrier:

SX 5000.925 - 800 - ER 1 - 9400

Example:

Cable carrier type SX 5000, stay width B_{St} 9250 mm, Tube-/frame stay (as per your specifications), bend radius KR 800 mm, made of stainless steel ER1, chain length L_k 9400 mm.

- Type
- Stay variant B_{St} in mm
- Bend radius KR in mm
- Chain band material
- Chain length L_k in mm (excluding connection)

Flexible Energy Conduits

made of steel and high-grade steel/plastic

- MOBIFLEX Flexible Energy Conduits
- CONDUFLEX Flexible Energy Conduits

**Profile:****MOBIFLEX
Flexible Energy Conduits**

MOBIFLEX flexible energy conduits consist of flexible metal coil tubes, which as a result of the insertion of pretensioned special-alloy steel strips are self-supporting up to certain lengths.

The “**Guidelines for Installing Cables and Hoses in Cable Carriers**” are to be observed when designing the conduits (see page P 037).

Note:

When a number of electric cables are installed in a flexible conduit, the electrical current-carrying capacities of these cables should be selected in accordance with the VDE 0100 code such that the maximum permissible temperatures for the cable jackets and the material of the flexible conduit are not exceeded. (Maximum continuous temperature = 60 °C).

The following types are available from KABELSCHLEPP's stock:

MOBIFLEX MF 030.1	→ interior cross-section	26 x 24 mm
MOBIFLEX MF 050.1	→ interior cross-section	45 x 24 mm
MOBIFLEX MF 050.2	→ interior cross-section	45 x 44 mm
MOBIFLEX MF 080.1	→ interior cross-section	80 x 40 mm
MOBIFLEX MF 080.2	→ interior cross-section	80 x 54 mm
MOBIFLEX MF 080.3	→ interior cross-section	80 x 78 mm
MOBIFLEX MF 110.1	→ interior cross-section	109 x 53 mm
MOBIFLEX MF 110.2	→ interior cross-section	109 x 73 mm
MOBIFLEX MF 110.3	→ interior cross-section	109 x 108 mm
MOBIFLEX MF 170.1	→ interior cross-section	170 x 72 mm
MOBIFLEX MF 170.2	→ interior cross-section	170 x 102 mm
MOBIFLEX MF 170.3	→ interior cross-section	170 x 167 mm

MOBIFLEX flexible energy conduits have proved themselves in the engineering construction and apparatus manufacturing industries!

Design of the MOBIFLEX Flexible Energy Conduits

Connection height H:

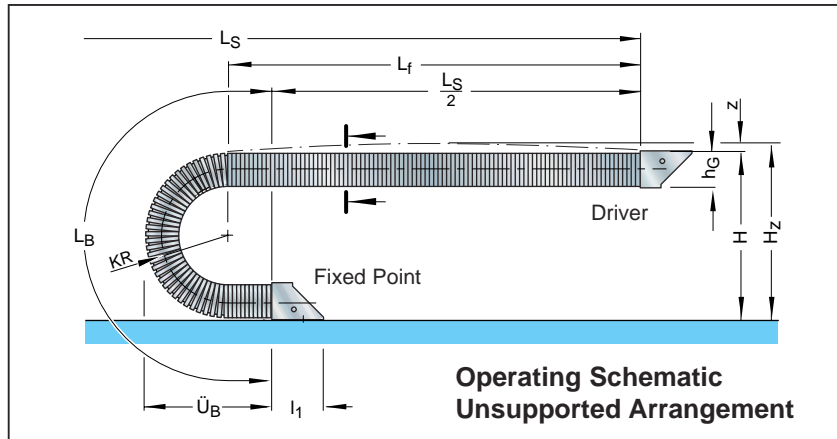
$$H_{\min} = 2KR + h_G$$

Required clearance height H_z :

$$H_z = H + z \quad z \approx 50 \text{ mm}$$

Loop overhang \ddot{U}_B :

$$\ddot{U}_B = 1.5 KR + h_G/2$$



Load Diagram

Unsupported length L_f / Travel length L_S depending on the additional load

Calculation of length of conduit:

$$L_{ES} = \frac{L_S}{2} + L_B$$

Loop length $L_B = KR \cdot \pi + \text{Reserve (KR)}$

Conduit length when extended:

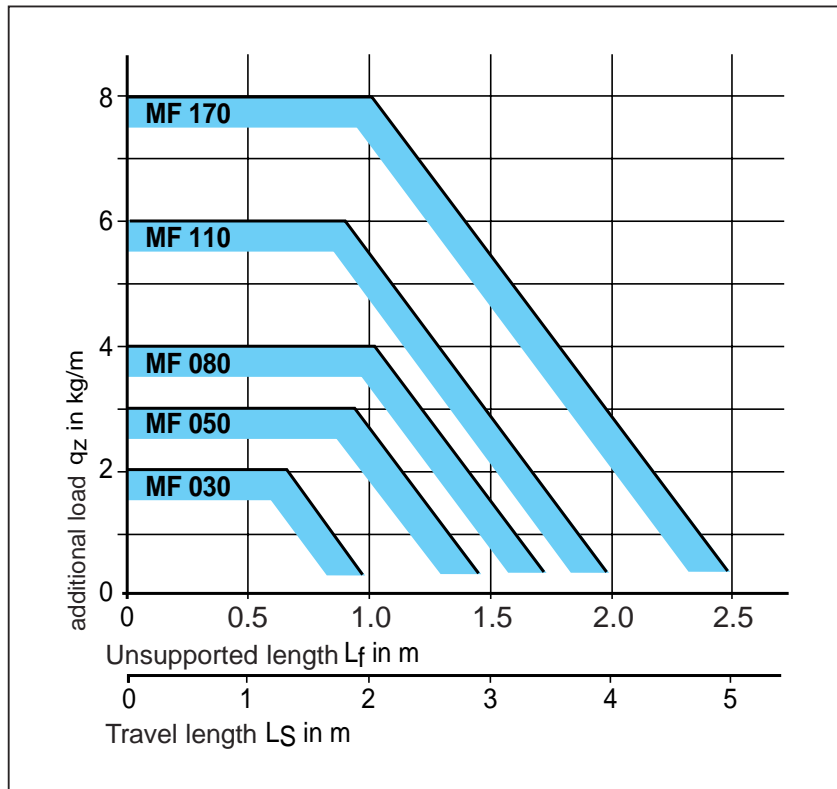
$$L_{\text{gestr.}} = L_{ES} - L_{VK}$$

Conduit contraction $L_{VK} = h_G/2 \cdot \pi$

Long travel lengths

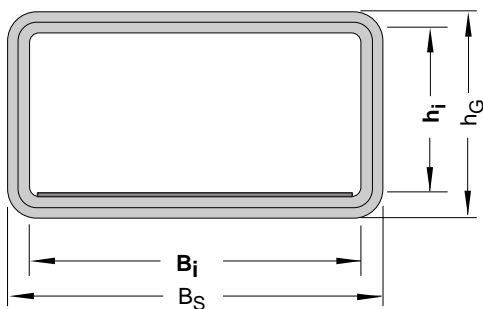
If the unsupported length of the flexible conduit is exceeded, it may be possible to cover the required travel length with the assistance of suitable supports.

KABELSCHLEPP will be pleased to provide design assistance!



Dimensions / Weight

Dimensions in mm / Weights in kg/m

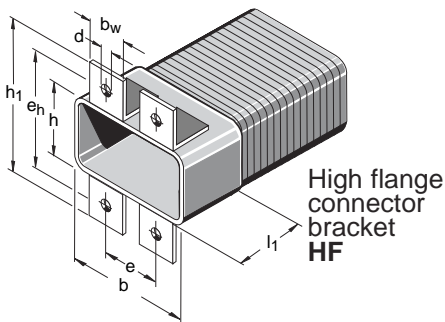
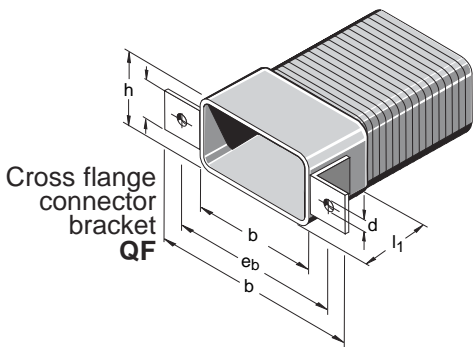
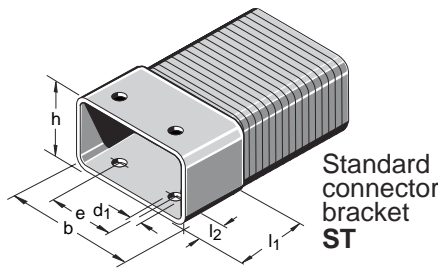
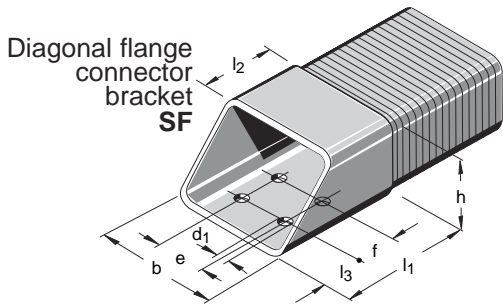


Indicated bend radii = KR_{\max}

Manufacturing tolerances: -20 to -30 mm

Conduit Type	B _S	B _i	h _G	h _i	Available bend radii G _S				Weight
MF 030.1	30	26	30	24	80	---	---	---	1.2
MF 050.1	50	45	30	24	75	100	---	150	2.0
MF 050.2	50	45	50	44	110	150	---	200	2.5
MF 080.1	85	80	45	40	100	150	---	200	3.0
MF 080.2	85	80	60	54	150	200	---	250	3.5
MF 080.3	85	80	85	78	200	---	---	---	5.1
MF 110.1	115	109	60	53	150	200	---	250	4.8
MF 110.2	115	109	80	73	200	250	---	350	5.3
MF 110.3	115	109	115	108	300	---	---	---	6.6
MF 170.1	175	170	80	72	190	250	300	350	7.2
MF 170.2	175	170	110	102	250	300	---	400	8.2
MF 170.3	175	170	175	167	365	---	---	---	9.2

Connection Dimensions for MOBIFLEX Flexible Energy Conduits



Connection dimensions

For diagonal flange connector brackets

Dimensions in mm

Type	b	h	e	f	d	l ₁	l ₂	l ₃
MF 030.1	34	34	---	40	9	120	60	10
MF 050.1	54	34	20	40	9	120	60	10
MF 050.2	54	54	20	40	9	120	60	10
MF 080.1	90	50	50	40	9	120	60	10
MF 080.2	90	65	50	40	9	120	60	10
MF 080.3	90	90	50	40	9	120	60	10
MF 110.1	120	65	80	40	9	120	60	10
MF 110.2	120	85	80	40	9	120	60	10
MF 110.3	120	120	80	40	9	120	60	10
MF 170.1	180	85	140	40	9	120	60	10
MF 170.2	180	115	140	40	9	120	60	10
MF 170.3	180	180	140	40	9	120	60	10

Connection dimensions

For standard, cross-flange and high flange connector brackets

Dimensions in mm

Type	b	h	e	e _b	e _h	d	l ₁	l ₂	b _w	b ₁	h ₁
MF 030.1	34	34	---	56	56	9	60	20	20	74	74
MF 050.1	54	34	20	76	56	9	60	20	20	94	74
MF 050.2	54	54	20	76	76	9	60	20	20	94	94
MF 080.1	89	49	50	111	71	9	75	20	20	129	89
MF 080.2	89	64	50	111	86	9	75	20	20	129	104
MF 080.3	89	89	50	111	111	9	75	20	20	129	129
MF 110.1	119	64	80	141	86	9	95	20	20	159	104
MF 110.2	119	84	80	141	106	9	95	20	20	159	124
MF 110.3	119	119	80	141	141	9	95	20	20	159	159
MF 170.1	179	84	140	201	106	9	95	20	20	219	124
MF 170.2	179	114	140	201	136	9	95	20	20	219	154
MF 170.3	179	179	140	201	201	9	95	20	20	219	219

Front flange connector brackets can be made up following customer drawings!

The SF, ST, QF and HF connector brackets can be combined.

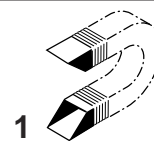
Please state the desired type of connector with your order.

Example:

Fixed Point **SF** (Diagonal flange connector bracket)

Driver **QF** (Cross flange connector bracket)

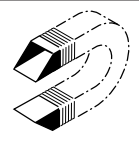
Connector variants for diagonal flange connector brackets



1
Connecting surfaces outside/outside



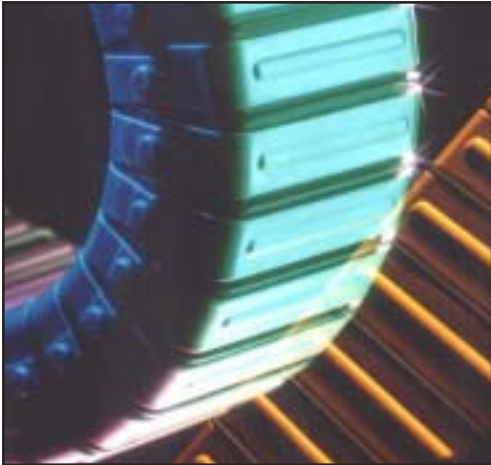
2
Connecting surfaces inside/outside



3
Connecting surfaces inside/inside

Support Tray

A flat and level surface is required for the flexible conduit to be installed properly. If necessary a support tray should be used (see System Components).



CONDUFLEX Flexible Energy Conduits

Profile:

CONDUFLEX (patented by KS) flexible energy conduits consist of high grade steel stirrups and frames made of glass-fibre-reinforced polyamide.

The brackets, assembled with the frames, form the flexible conduit. The number of units assembled gives the conduit length required, which can easily be lengthened or shortened.

In the case of any external damage occurring to the brackets, these can easily be replaced.

CONDUFLEX flexible conduits can be used for horizontal, vertical and combined horizontal and vertical movements.

The following types are immediately available from KABELSCHLEPP's stock and our agencies' warehouses:

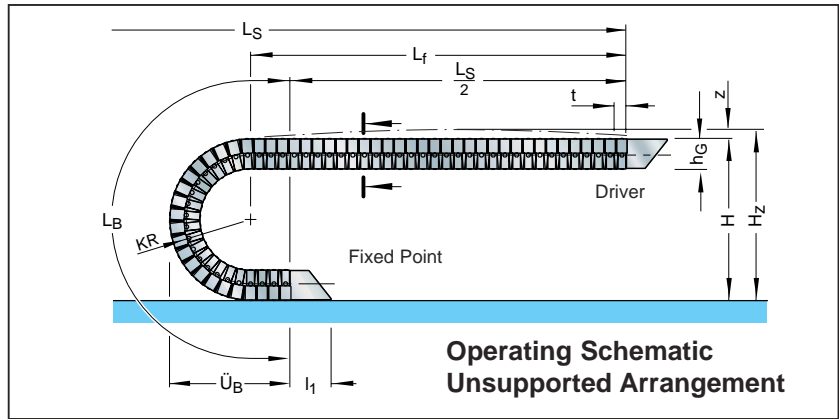
CONDUFLEX CF 055	→	interior cross-section	45 x 25 mm
CONDUFLEX CF 060	→	interior cross-section	36 x 40 mm
CONDUFLEX CF 085	→	interior cross-section	73 x 38 mm
CONDUFLEX CF 115	→	interior cross-section	102 x 52 mm
CONDUFLEX CF 120	→	interior cross-section	100 x 70 mm
CONDUFLEX CF 175	→	interior cross-section	162 x 72 mm

CONDUFLEX flexible energy conduits have proved themselves in the engineering construction and apparatus manufacturing industries and on handling equipment and robots to great effect!

CONDUFLEX Range Design of the Flexible Energy Conduits

- Pitch t → see dimensions table
- Height h_G → see conduit cross sections
- Height $H_{min} = 2 KR + h_G$
- Length l_1 → see connection dimensions

A flat and level surface is required for the flexible conduit to be installed properly. If necessary a support tray should be used (see System Components).



Variable Models

depending on the bend radius

Weights

Abbreviations:

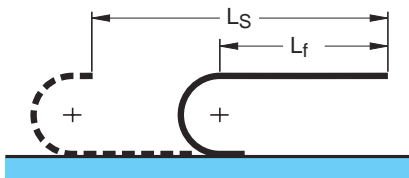
- KR = Bend radius
- LB = Length of bend
- UB = Bend overhang
- H_{min} = Minimum connection height

Dimensions in mm

CONDUFLEX Type	KR	LB	UB	H _{min}	Conduit weight in kg/m
CF 055	65	405	184	168	1.25
	100	515	219	238	
	150	675	269	338	
CF 060	100	515	226	252	1.60
CF 085	100	515	226	252	1.90
	150	675	276	353	
	200	830	326	452	
CF 115	140	690	299	347	2.60
	225	960	384	517	
	300	1200	459	667	
CF 120	155	740	323	396	3.80
	200	880	368	486	
CF 175	185	830	382	464	5.20
	250	1035	447	594	
	350	1400	547	794	

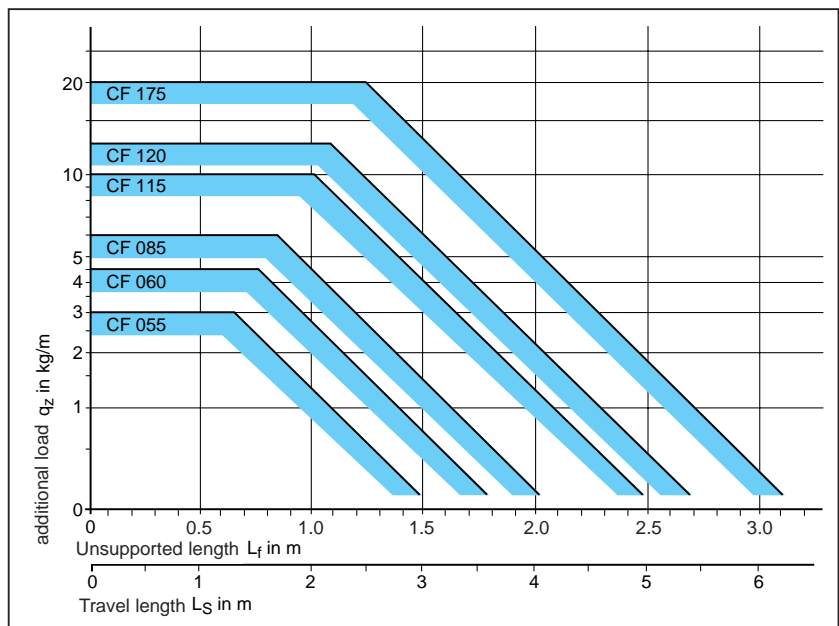
Load Diagram

Unsupported length L_f /Travel lengths depending on the additional load (see Construction Guidelines)



Calculation of length of conduit:

$$L_{ES} \approx \frac{L_s}{2} + L_B \quad \text{rounded to pitch } t$$



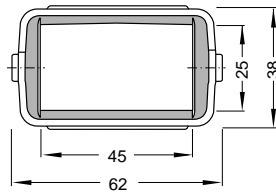
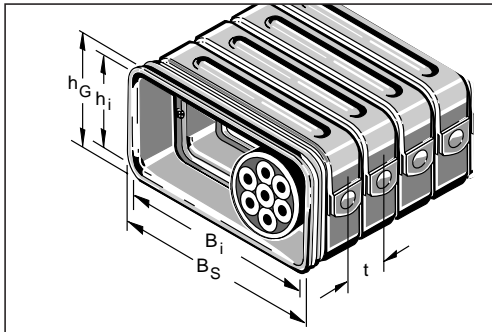
Long travel lengths

If the unsupported length of the flexible conduit is exceeded, it may be possible to cover the required travel length with the assistance of suitable supports. Please consult us!

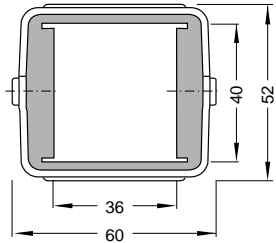
Design → see Construction Guidelines

CONDUFLEX Range Conduit Cross-Sections

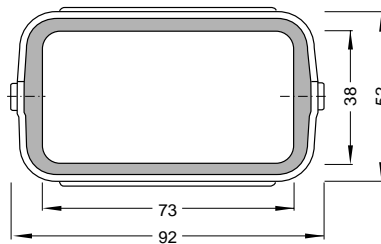
according to sectional
detail with operating schematic



**CONDUFLEX
Type CF 055***



**CONDUFLEX
Type CF 060**

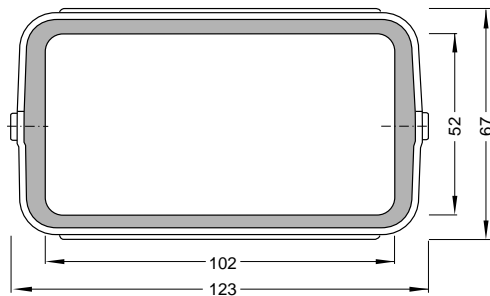


**CONDUFLEX
Type CF 085***

Overview

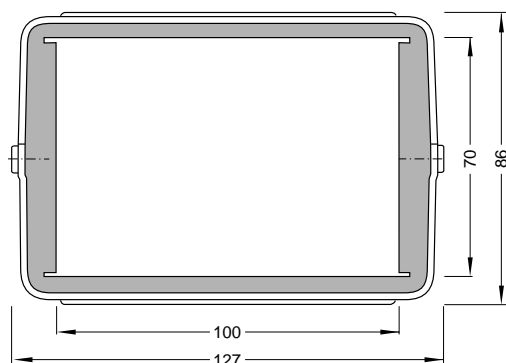
Dimensions in mm

CONDUFLEX Type	B _s	B _i	h _G	h _i	t
CF 055*	62	45	38	25	20
CF 060	60	36	52	40	20
CF 085*	92	73	52	38	20
CF 115*	123	102	67	52	25
CF 120	127	100	86	70	25
CF 175*	190	162	94	72	30

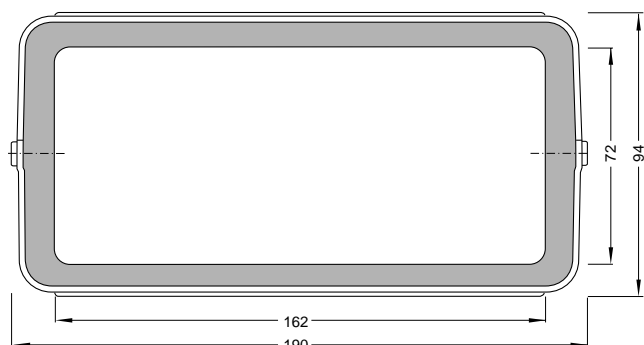


**CONDUFLEX
Type CF 115***

*) KABELSCHLEPP CONDUFLEX flexible energy conduits types CF 055, CF 085, CF 115 and CF 175 can be fitted with protective straps to shield the impact slots of the plastic frames from contamination.



**CONDUFLEX
Type CF 120**

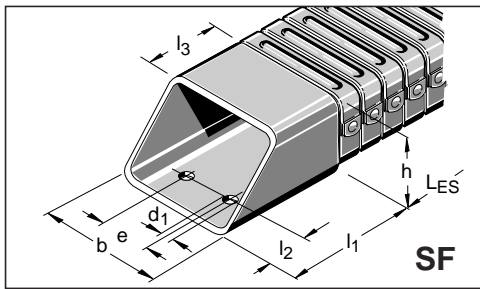


**CONDUFLEX
Type CF 175***

The "Guidelines for Installing Cables and Hoses in Cable Carriers" are to be observed when planning a CONDUFLEX flexible energy conduit!

→ see Construction Guidelines

CONDUFLEX Range - Connection Dimensions



Connector variants for diagonal flange connectors

The SF, ST, QF and HF connector brackets can be combined.

Please state the desired type of connector with your order.

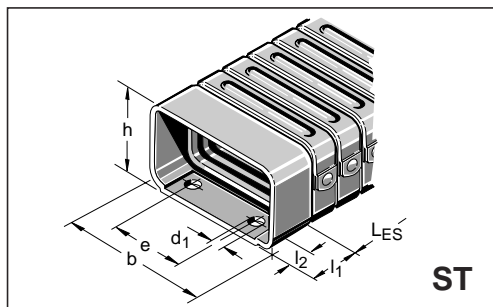
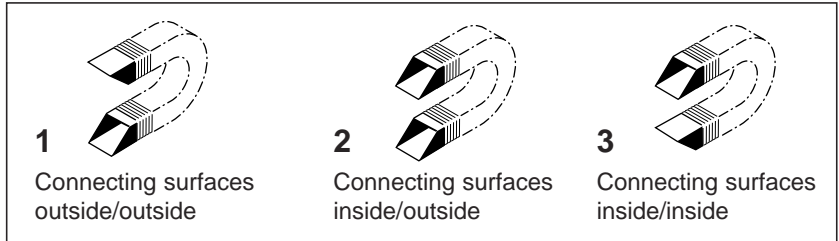
Example:

Driver **SF** (Diagonal flange connector bracket) with connecting surface outside

Fixed Point **QF** (Cross-flange connector bracket)

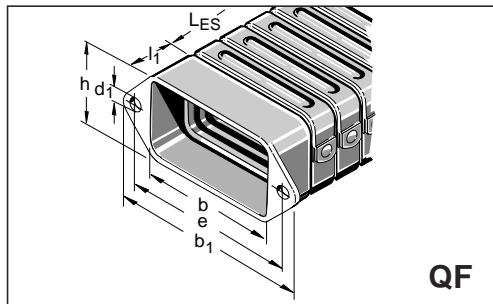
Diagonal Flange Connector Bracket

CONDUFLEX Type	b	h	e	d ₁	l ₁	l ₂	l ₃
CF 055	55	36	22	6.5	44	12.5	20
CF 060	55	52	22	6.5	44	12.5	20
CF 085	85	50	50	6.5	70	15.0	32
CF 115	117	66	70	8.5	84	17.5	34
CF 120	120	84	70	8.5	82	17.5	48
CF 175	182	92	100	10.5	100	22.5	45



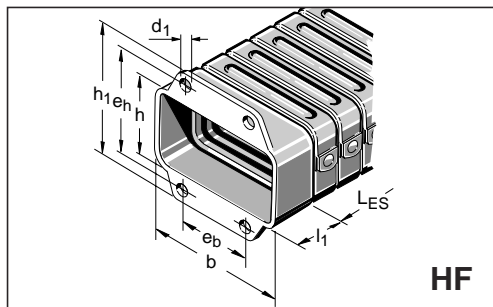
Standard Connector Bracket

CONDUFLEX Type	b	h	e	d ₁	l ₁	l ₂
CF 055	55	36	22	6.5	20	8.5
CF 060	--	--	--	--	--	--
CF 085	85	52	50	6.5	25	10.0
CF 115	116	68	65-70	8.5	35	10.0
CF 120	120	84	70	8.5	35	12.5
CF 175	182	92	100	10.5	40	15.0



Cross-Flange Connector Bracket

CONDUFLEX Type	b	h	b ₁	e	d ₁	l ₁
CF 055	55	35	90	75	6.5	20
CF 060	--	--	--	--	--	--
CF 085	85	50	120	105	6.5	25
CF 115	116	64	160	140	8.5	35
CF 120	--	--	--	--	--	--
CF 175	182	90	226	200	10.5	40



High Flange Connector Bracket

CONDUFLEX Type	b	h	h ₁	e _b	e _h	d ₁	l ₁
CF 055	55	35	70	18	55	6.5	20
CF 060	--	--	--	--	--	--	--
CF 085	85	50	85	45	70	6.5	25
CF 115	116	64	110	60	90	8.5	35
CF 120	--	--	--	--	--	--	--
CF 175	182	90	136	95	110	10.5	40

Ordering Key:

CF 115 - 140 - 1200







CONDUFLEX flexible energy conduit type CF 115 with bend radius KR 140 mm and a length L_{ES} of 1200 mm

CONDUFLEX Type

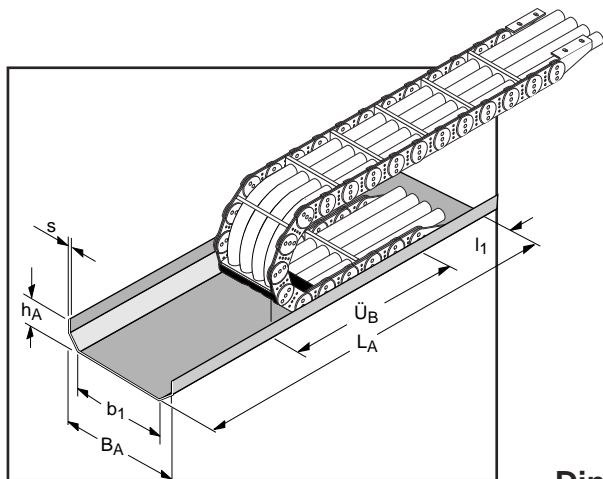
Bend radius KR in mm

Conduit length L_{ES} in mm (without connector)

System components

-  Trays
-  Guide channels
-  Support rollers
-  Steel strip covers
-  Electric cables
-  Strain relief components

Support trays



An even surface is required for the safe operation of the cable carrier system.

If this is not available, a support tray must be used.

Length of support tray:
(with standard connection)

$$L_A = \frac{L_S}{2} + \ddot{U}_B + l_1$$

\ddot{U}_B = Bend overhang
 l_1 = Connection length
 \ddot{U}_B and l_1 – See Technical Data for cable carrier

If strain relief is taking place at the fixed point, the length of the tray must be increased accordingly.

Material:

Stahl verzinkt Steel sheet – zinc-plated
 OR
EDELSTAHL® Rost frei High grade steel, rust and acid resistant.

Standard supply length: 2000 mm

Example for ordering:
 Support tray for cable carrier
 Type S 0950 - Bk 250 mm
 Length L_A 3200 mm
 Material: zinc-plated steel sheet

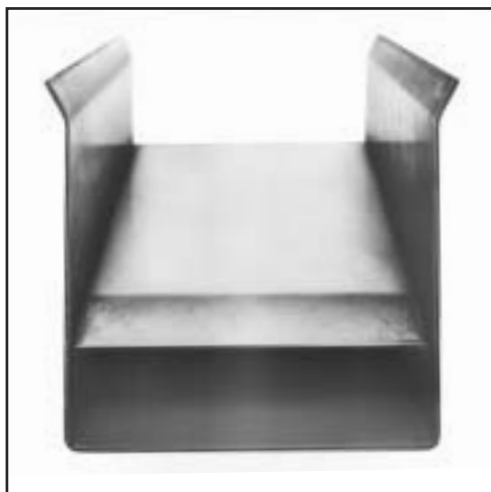
Dimensions Table:

Dimensions in mm

Series	Inside width b_1	Total width B_A	Total-height h_A	Steel sheet thickness s
0600 / 0900	$B_k + 15$	$B_k + 40$	30	2
1200 / 1800	$B_k + 20$	$B_k + 60$	50	3
2500 / 3200	$B_k + 25$	$B_k + 75$	80	3
5000 / 6000 / 7000	$B_k + 25$	$B_k + 75$	80	3
MF 030.	40	55	20	1.5
MF 050.	65	80	20	1.5
MF 080.	100	115	20	1.5
MF 110.	135	165	30	2.0
MF 170.	200	230	40	3.0
CF 055 / CF 060	65	80	20	1.5
CF 085	100	115	20	1.5
CF 115	130	150	30	2.0
CF 120	135	165	30	2.0
CF 175	200	230	40	3.0

Guide channels

for Installation Variant **EBV 05**



The gliding area of the upper chain run is continued in the channel with a slide piece.

(see schematic illustration to the right)

With an opposing arrangement this tray is used as a bridge between the fixed point connections.

In order to reduce the gliding resistance and the abrasive action between the cable carrier and the support, a special glide support can be affixed. This is recommended for speeds of > 0.5 m/s and for frequent travel cycles.

Material:

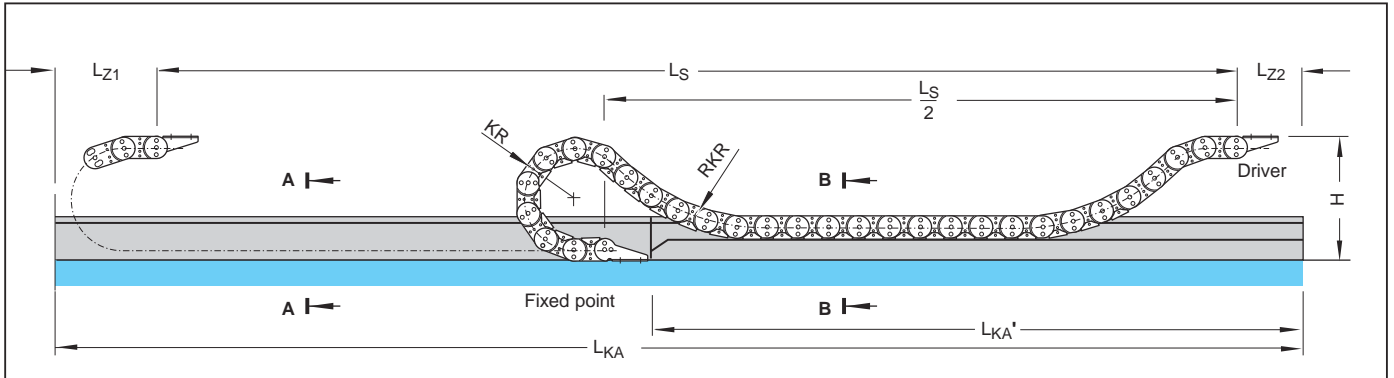
Stahl verzinkt Steel sheet – zinc-plated
 OR
EDELSTAHL® Rost frei High grade steel, rust and acid resistant.

Standard supply length: 2000 mm

Calculation of Guide Channel Length L_{KA}

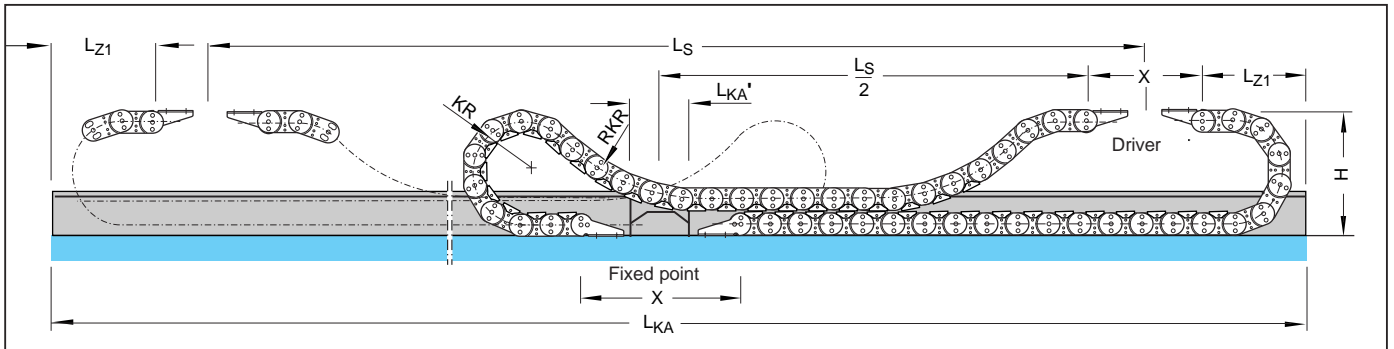
Single-sided arrangement of Cable Carrier

$$L_{KA} = L_S + L_{Z1} + L_{Z2}$$

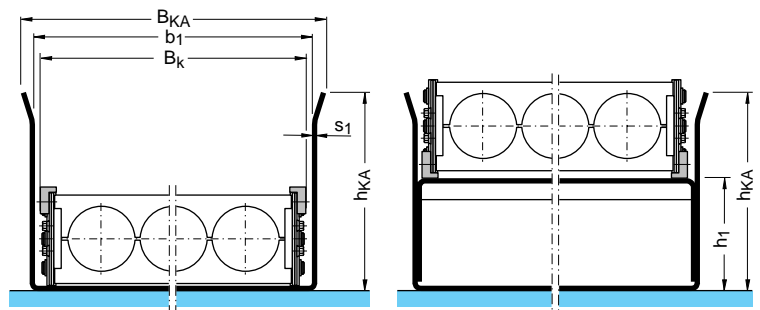


Opposing arrangement of Cable Carriers

$$L_{KA} = L_S + 2 L_{Z1} + X$$



Channel cross-sections:



Cross section A-A

Channel profile without support

Cross section B-B

Channel profile with support

Measurements:

Dimensions in mm

Abbreviations:

L_{KA} = total channel length

L_{KA}' = channel length with support

$\cong L_S/2$ With single-sided arrangement

$\cong X - 2 l_1$ With opposing arrangement

L_{Z1} = Additional dimension for loop overhang

$\cong \ddot{U}_B + 50 \text{ mm}$

L_{Z2} = Additional dimension for connection

$\cong l_1 + 50 \text{ mm}$

Series	b_1	B_{KA}	h_{KA}	h_1	s_1
0600	$B_k + 7$	$B_k + 12$	200	54	2
0900	$B_k + 9$	$B_k + 14$	300	73	2
1200	$B_k + 9$	$B_k + 15$	400	99	3
1800	$B_k + 11$	$B_k + 21$	400	155	3

Guide channels for all other series on request!

For all other abbreviations see page P 009!

Support Rollers

for installation variant **EBV 04**

DR 90 for series **0600**

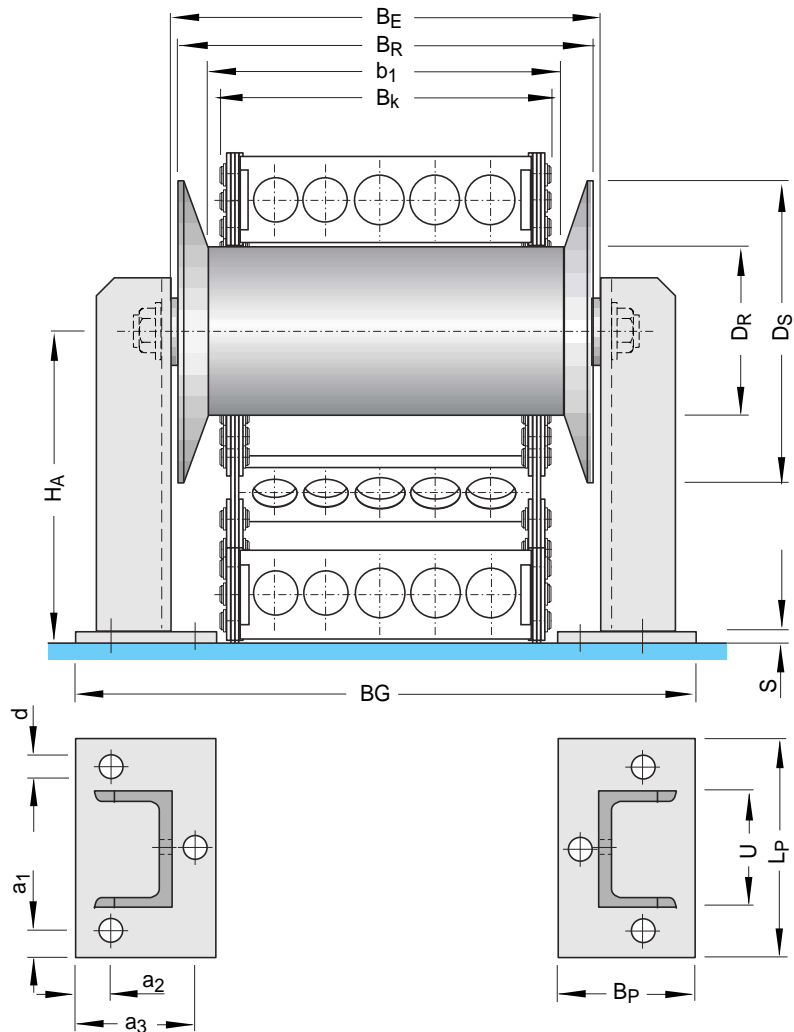
DR 120 for series **0900/1200/1800**

DR 220 for series **2500**

Rollers for all other series on request!

Abbreviations:

- DR = Diameter of support roller
- DS = Diameter of wheel flange
- B_k = Chain width
- b₁ = Clearance width of roller
- B_G = Total width of support
- B_R = Width of roller
- B_E = Contact width of roller
- B_P = Width of base plate
- H_A = Axle height of support roller
- L_P = Length of base plate
- U = Width of U profile
- a₁ = Hole distance to side edge of base plate
- a₂ = Hole distance to outer edge of base plate
- a₃ = Hole distance to outer edge of base plate
- d = diameter of fixing holes
- s = thickness of base plate



Dimension table for support rollers:

DR	b ₁	B _R	B _E	B _G	D _S
90	B _k + 15	B _k + 45	B _k + 59	B _k + 169	Ø 170
120	B _k + 20	B _k + 50	B _k + 64	B _k + 174	Ø 200
220	B _k + 30	B _k + 60	B _k + 74	B _k + 184	Ø 300

Dimensions in mm

Dimension table for support blocks:

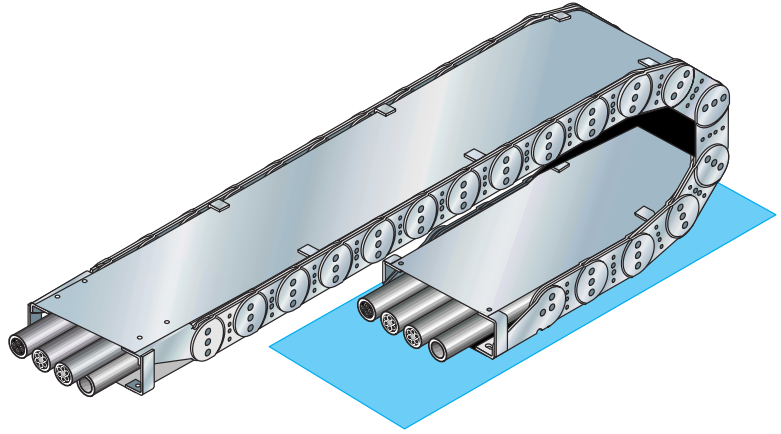
Dimensions in mm

For roller	H _A	B _P	L _P	U	a ₁	a ₂	a ₃	d	s
90	2 KR - 45	80	180	80	20	40	---	Ø 14	8
120	2 KR - 60	100	180	80	20	20	80	Ø 18	8
220	2 KR - 110	100	180	80	20	20	80	Ø 18	8

Steel strip covers

To protect cables and hoses from hot chips and heavy grime, cable carriers can be fitted with a cover made of rust and acid resistant spring steel.



Maximum width of steel strip: **1000 mm**

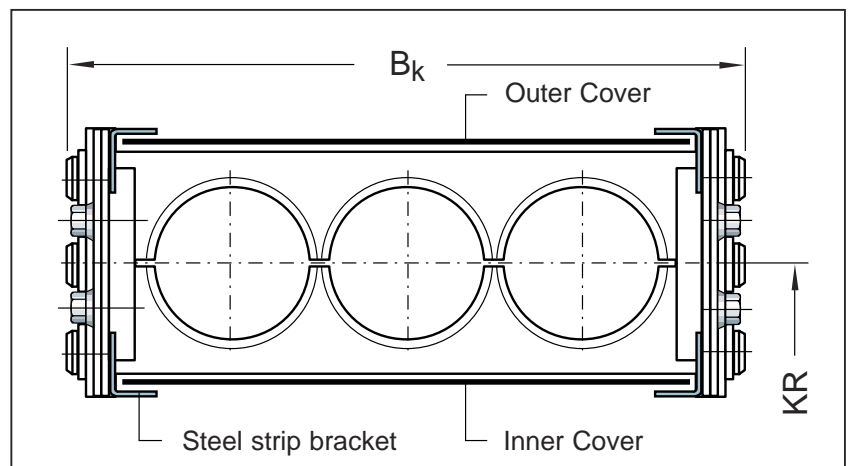


Guidance of steel strip cover:

Is by way of strip retaining brackets on inside of chain bands

Fixing of steel strip cover: (for standard connection)

-  **Cover on inside:**
with strip retainers on mounting brackets
-  **Cover on outside:**
with fixing bolts on mounting brackets



Measurements

Dimensions in mm

Steel strip covers for all other series are available on request!

Series	Length of steel strip cover		Steel strip cover
	Outer cover	Inner cover	
0600	$L_k + 280$	$L_k + 130$	$B_k - 22$
0900	$L_k + 360$	$L_k + 150$	$B_k - 27$
1200	$L_k + 470$	$L_k + 170$	$B_k - 34$
1800	$L_k + 640$	$L_k + 200$	$B_k - 40$
2500	$L_k + 945$	$L_k + 255$	$B_k - 48$

Electric cables

Which Cables? – For which application?

There is no standard solution!

The bending flexibility of the cable required for a moving cable carrier is achieved by a special stranding technique of the inner cable which performs at its optimum under maximum load.

It is the interaction between stranding, cable lead and cover insulation material and also sliding and filling materials which turn a cable into a moving power carrier.

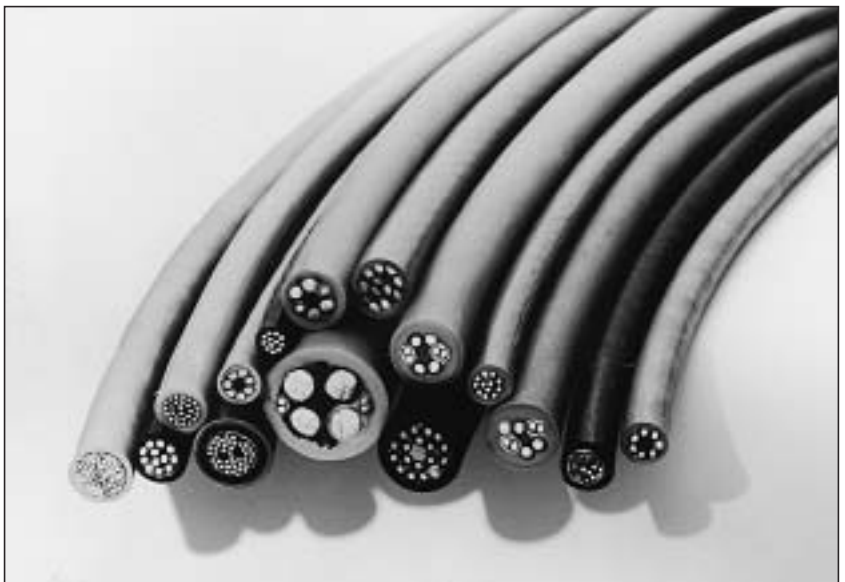
Long-term evaluations and field tests on cables have conclusively shown which are the optimal materials and design configurations. KABELSCHLEPP offers numerous cable solutions for all applications, ensuring optimum operation of the carrier system by selecting the right combination of cable carriers and appropriate cables.

For example, an outer cover made of PVC or PUR, with its outstanding mechanical and chemical properties, guarantees the required level of operational safety in cable carrier systems.

For applications with high loads or applications which are mechanically complex (for example in limited installation areas), our solutions are:

Cables with reduced diameters for cable carrier systems

with adapted stranding technology and optimised insulation materials (e.g. TPE).



We offer:

**KABELSCHLEPP
System Competence**

+ Cable - Expertise

**= Operational reliability
for your application**

Flexible electric cables for KABELSCHLEPP Cable Carriers

To complete your cable carrier system, we offer high-quality standard electric cables featuring highly flexible outer covers, resistant to abrasion and chemicals

Cover Materials:

PVC - polyvinyl chloride










PUR - polyurethane

TPE - thermoplastic elastomer
(halogen-free)

Supply Index:

 → From stock

Cable length according to your specification to suit the selected carrier system!

Supply Index	Type of cable	Insulation materials		
		Core insulation	Outer cover	
	Power cable	- optional: shielding -	PVC	PVC
	Power cable		PVC	PUR
	Power cable (reduced diameter)		TPE	PUR
	Control cable		PVC	PVC
	Control cable		PVC	PUR
	Control cable (reduced diameter)		TPE	PUR
	Electronic cable - screened - - twin cable -		TPE	PUR
	Systems oriented control cables for NC machines		According to CNC specification	
	Special cables for cable carrier systems		according to application	

KABELSCHLEPP supplies cost-effective electric cables in a variety of performance categories, capable of ideally matching your application. Cables can be shipped with the cable carrier, ready for installation.

Contact us – we are here to help!

Strain relief components

The proper selection of strain relief components is essential for operational reliability in a cable/hose carrier system.

The forces being carried by the cable carriers must not be transferred onto the cables/hoses.

Always follow the guidelines for installing cables and hoses in KABELSCHLEPP cable carrier systems!

Strain relief at the chain connection

by SZL-Strain relief devices

by means of saddle-type clamps and/or block clamps with profile rails for series **0600, 0900, 1200** and **1800**

Strain relief components for other series are available on request!

Clamping is dependent on the type of cable, cable carrier length and installation length.

Strain relief on both sides:

- for cables with a high degree of flexibility or low intrinsic strength
- for vertically-arranged cable carriers
- for power cables which move within the unsupported area of the cable carriers.

Strain relief at the driver:

- for longer travel lengths
(except for electric cables with lower intrinsic strength)
- for pressure hoses



In the case of cable carriers with stacked sliding upper and lower runs (installation variant EBV 05), the screw heads of the saddle clamps and/or the height of the block clamps must not exceed the height of the chain link!



SZL Strain relief devices

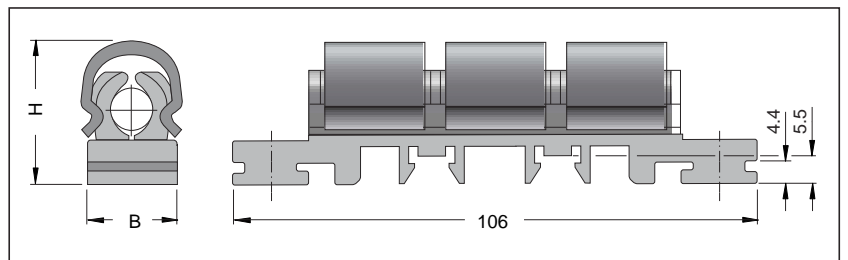
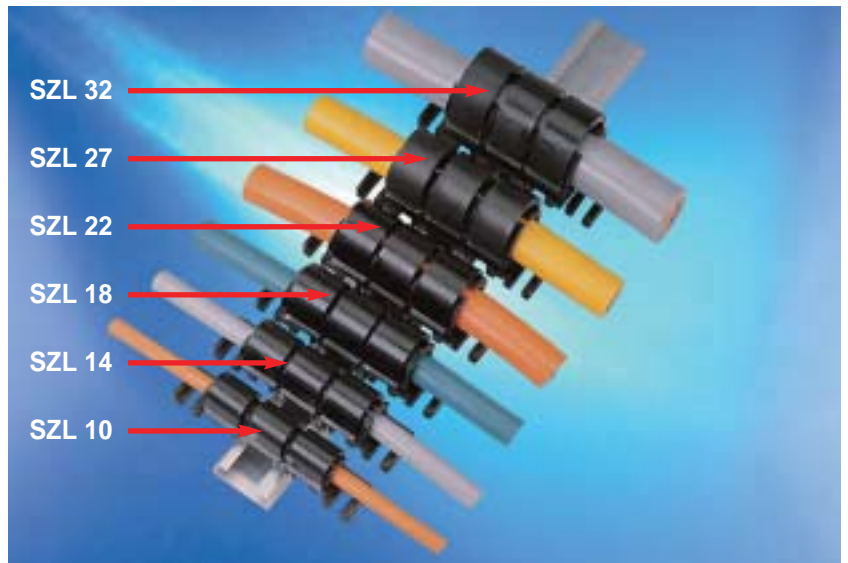
The first really effective strain relief device – soft and protective of cables in cable carriers

Fixing options for **strain relief devices**:

- By clipping into C-Profiles 34 x 15 mm with slit width of 16 -17 mm
- By clipping onto cap bar 35 x 7.5 mm - DIN EN 50022
- By pushing onto two C-rails 20 x 10 mm with slit width of 11 - 12 mm (fastening of basic elements via slotted screw bolt connection)
- By directly screwing onto the basic elements

Benefits:

- No screws or cable ties
- Large surface area in contact with the cables
- Defined contact pressure exerted by spring clamps
- Vibration-safe
- Assembly – quick, easy and no tools required
- Damage to the cables or hoses arising from the saddle clamps being set tightly or too loosely, or from the cable ties causing pinching, is ruled out.
- Suitable for standard commercial bearing rails (see picture, top left)
- Can also be used for strain relief in switch cabinets.



Available Sizes:

Dimensions in mm

Type	Ident-No.	For Diameter \varnothing	Width B bei		Height H
			\varnothing_{\min}	\varnothing_{\max}	
SZL 10	24990	> 8.0 - 10.5 mm	20	20	30
SZL 14	24991	> 10.5 - 14.5 mm	23	26	35
SZL 18	24992	> 14.5 - 18.0 mm	25	32	40
SZL 22	24993	> 18.0 - 22.0 mm	30	36	44
SZL 27	24994	> 22.0 - 27.0 mm	34	39	50
SZL 32	24995	> 27.0 - 32.0 mm	39	44	56



Double-decker strain relief

If a cable carrier is fitted with very many conductors, the SZL strain relief device can be installed in a doubledecker arrangement in a plastic cable carrier as shown here.

Please ask us for more information!

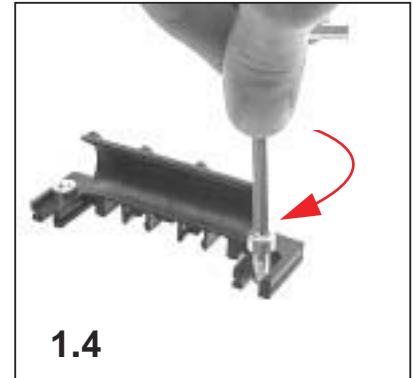
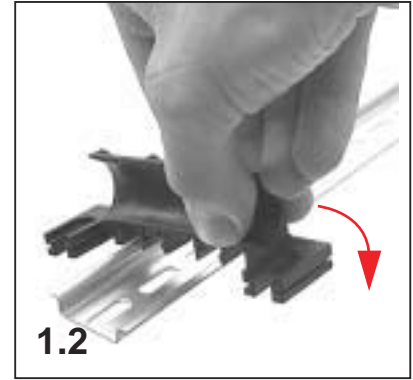
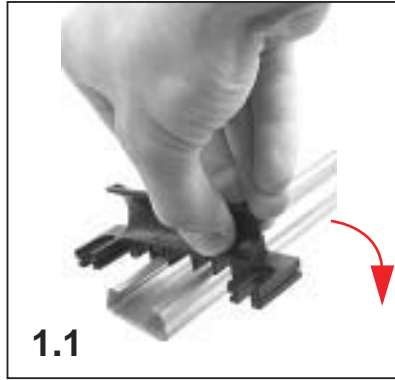
**Fitting Instructions
for SZL strain relief devices**

**Fixing
of the basic element**

- 1.1 by clipping into a C-Rail
- 1.2 by clipping onto a cap bar

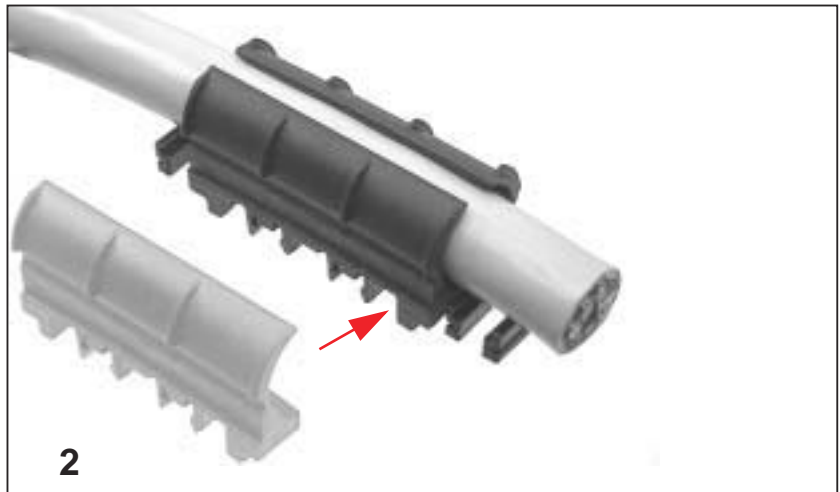
- 1.3 by insertion into two C-Profiles; the basic elements are fastened via a slotted screw bolt connection in the profiles
- 1.4 by directly screwing it on.

Solutions 1.3 and 1.4 are for transferring higher tensile forces and are therefore strongly recommended as a standard solution.

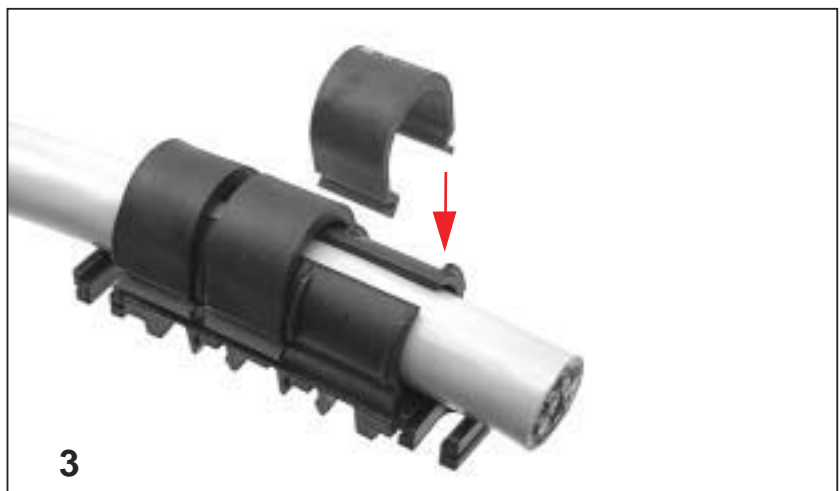


After fixing the basic element insert the cables, then:

- 2. Attach the counterpart of the strain relief device.



- 3. Fix the basic element, counterpart and electric cable together by attaching the clamping clip.



Positioning of strain relief components



For series 0600 + 0900:

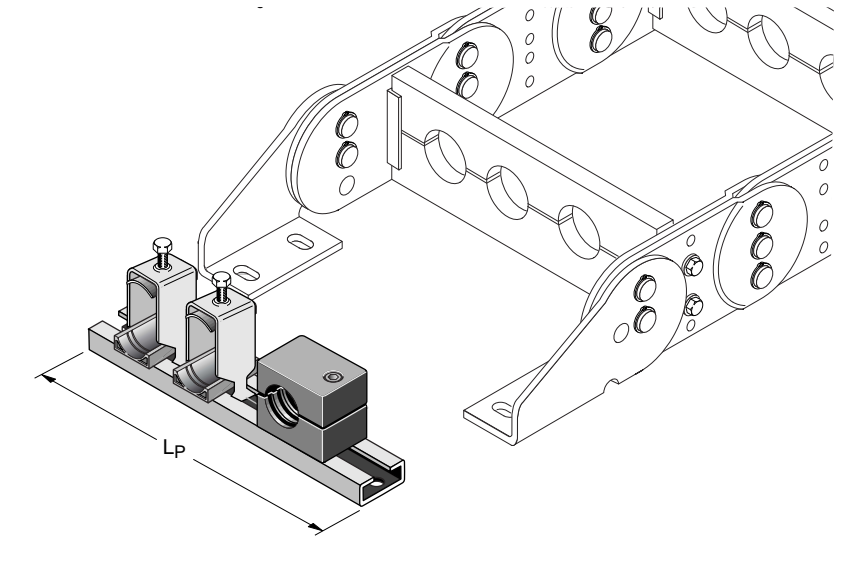
The C-steel profile is installed behind mounting brackets.

Strain relief at the fixed-point and at the driver connection is identical!

Profile length $L_P \triangleq$ chain width B_K

The C-steel profile fits all commercial saddle-type clamps with a small base and comparable block-type clamps. (slit width 11 - 12 mm)

Attach profile with M 6 - DIN 6912 sockethead cap screws.



For series 1200 + 1800:

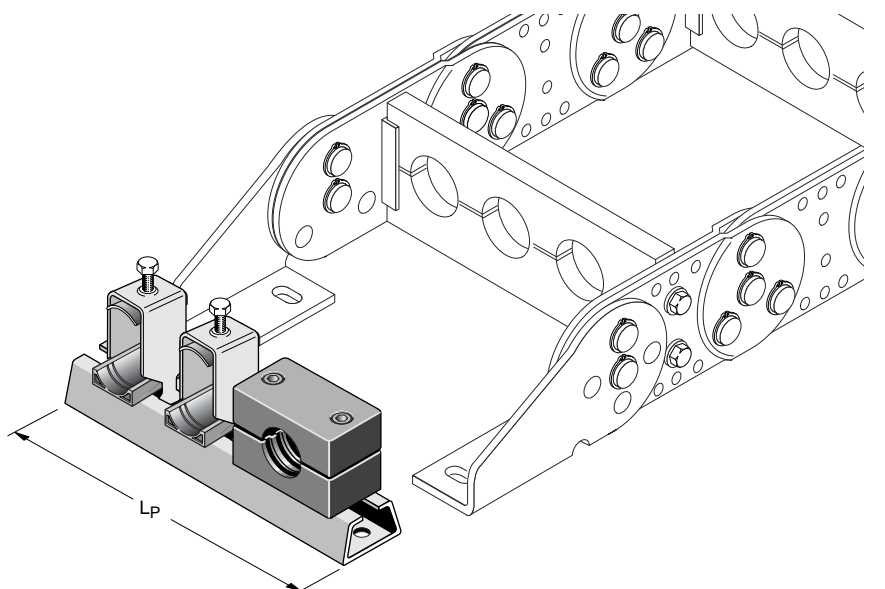
The C profile made of steel or aluminum is installed behind mounting brackets.

Strain relief at the fixed-point and at the driver connection are identical!

Profile length $L_P \triangleq$ chain width B_K

The C profile fits all commercial saddle-type clamps with a large base and comparable block-type clamps. (slit width 16 - 17 mm)

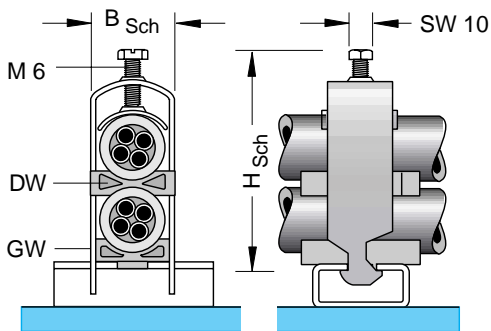
Attach profile with M 10 - DIN 6912 sockethead cap screws.



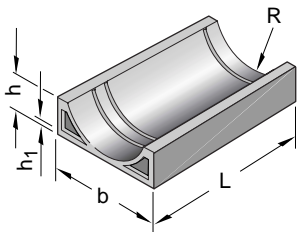
Strain relief equipment for all other series is available on request!

Strain relief elements for series 0600 and 0900

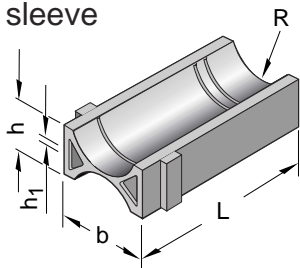
Saddle-type clamps with small base



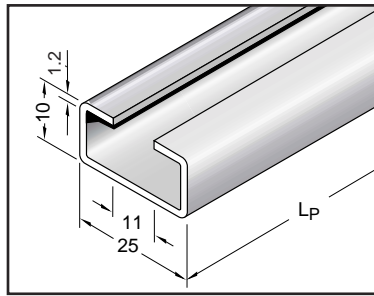
Opposite sleeve GWA



Double sleeve DW



Other sizes and designs available
on request!



Assembly profile

C-profile

fits all commercial saddle-type
clamps with small base
(slit width 11 - 12 mm)

Material: **steel**

Item-no.: **3931**

Single clamps - for one cable

Type	for cable Ø	Height HSch	Width BSch	Item No.
BA 12	6 - 12 mm	33 - 49	16	16891
BA 14	10 - 14 mm	34 - 50	18	16892
BA 16	12 - 16 mm	36 - 52	20	16893
BA 18	14 - 18 mm	40 - 56	22	16894
BA 22	18 - 22 mm	44 - 60	26	16895
BA 26	22 - 26 mm	49 - 65	30	16896
BA 30	26 - 30 mm	53 - 69	34	16897
BA 34	30 - 34 mm	60 - 76	38	16898
BA 38	34 - 38 mm	72 - 88	42.5	16899
BA 42	38 - 42 mm	85 - 101	46.5	16900

Double clamps - for two cables stacked on one top of the other

Type	for cable Ø	Height HSch	Width BSch	Item No.
BA 12/2	6 - 12 mm	43.5 - 59.5	16	16901
BA 14/2	10 - 14 mm	46.5 - 62.5	18	16902
BA 16/2	12 - 16 mm	52.5 - 68.5	20	16903
BA 18/2	14 - 18 mm	55.5 - 71.5	22	16904
BA 22/2	18 - 22 mm	64 - 80	26	16905

Triple clamps - for three cables stacked on top of each other

Type	for cable Ø	Height HSch	Width BSch	Item No.
BA 12/3	6 - 12 mm	59.5 - 75.5	16	16906
BA 14/3	10 - 14 mm	78 - 98	18	16907

Opposite sleeves - for uniform distribution of tensile forces

Type	for cable Ø	b	h	h1	R	L	Item No.
GW 12	6 - 12 mm	12	4	1.0	6	40	16908
GW 14	10 - 14 mm	14	4.5	1.0	7	40	16909
GW 16	12 - 16 mm	16	4.5	1.0	8	40	16910
GW 18	14 - 18 mm	18	4.5	1.0	9	40	16911
GW 22	18 - 22 mm	20	5.5	1.5	11	40	16912
GW 26	22 - 26 mm	24	6.5	1.5	13	40	16913
GW 30	26 - 30 mm	28	7	1.5	15	40	16914
GW 34	30 - 34 mm	32	8	2.0	18	40	16915
GW 38	34 - 38 mm	38	9	2.0	19.5	40	16916
GW 42	38 - 42 mm	42	10	2.0	21.5	40	16917

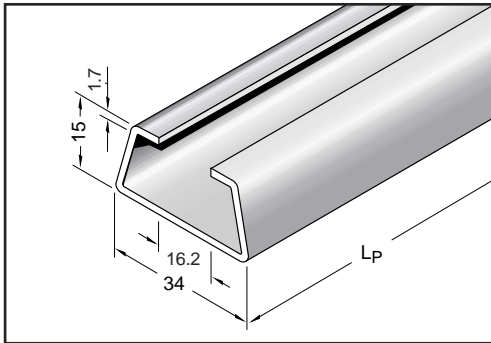
Double

Type	for cable Ø	b	h	h1	R	L	Item No.
DW 12	6 - 12 mm	12	7	1.0	6	40	16862
DW 14	10 - 14 mm	14	8	1.0	7	40	16863
DW 16	12 - 16 mm	16	9	1.0	8	40	16864
DW 18	14 - 18 mm	18	9	1.0	10	40	16865
DW 22	18 - 22 mm	22	10	1.5	12	40	16875

Strain relief elements for series 1200 and 1800

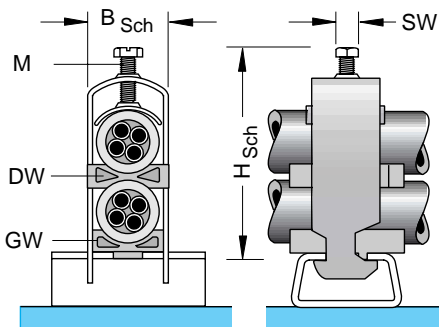
Assembly profile-C-Rail

fits all commercial saddle-type clamps with a large base
(slit width 16 – 17 mm)

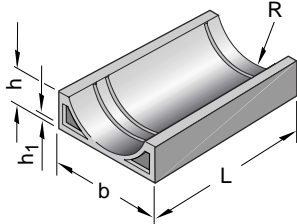


Material :	Aluminium	Steel
Item No.:	3926	3932

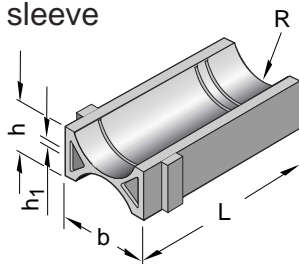
Saddle-type clamps with a large base



Opposite sleeve GW



Double sleeve DW



Other sizes and designs available on request!

	Type	for cable Ø	Height HSch	Width BSch	M	SW	Item No.
Single clamps	B 12	6 - 12 mm	31.5 - 47.5	16	6	10	16840
	B 14	10 - 14 mm	33.5 - 49.5	18	6	10	16841
	B 16	12 - 16 mm	34.5 - 50.5	20	6	10	16842
	B 18	14 - 18 mm	37.5 - 53.5	22	6	10	16843
	B 22	18 - 22 mm	41.5 - 57.5	26	6	10	16844
	B 26	22 - 26 mm	47.5 - 63.5	30	6	10	16845
	B 30	26 - 30 mm	52.5 - 68.5	34	6	10	16846
	B 34	30 - 34 mm	64.5 - 80.5	38	6	10	16847
	B 38	34 - 38 mm	70.5 - 86.5	42.5	6	10	16848
	B 42	38 - 42 mm	73.5 - 89.5	46.5	6	10	16866
B 46	42 - 46 mm	80.5 - 96.5	50.5	8	13	16867	
B 50	46 - 50 mm	83.5 - 99.5	54.5	8	13	16868	
Double clamps	B 12/2	6 - 12 mm	43.5 - 59.5	16	6	10	16849
	B 14/2	10 - 14 mm	49.5 - 65.5	18	6	10	16850
	B 16/2	12 - 16 mm	55.5 - 71.5	20	6	10	16851
	B 18/2	14 - 18 mm	60.5 - 76.5	22	6	10	16852
	B 22/2	18 - 22 mm	75.5 - 91.5	26	6	10	16872
	B 26/2	24 - 26 mm	83.5 - 99.5	30	6	10	16873
	B 30/2	28 - 30 mm	91.5 - 107.5	34	6	10	16933
	B 34/2	32 - 34 mm	99.5 - 115.5	38	6	10	16934
Triple clamps	B 12/3	12 mm	54.5 - 70.5	16	6	10	16876
	B 14/3	14 mm	66.5 - 82.5	18	6	10	16877
	B 16/3	16 mm	71.5 - 87.5	20	6	10	16878
	B 18/3	18 mm	77.5 - 93.5	22	6	10	16937
	B 22/3	22 mm	89.5 - 105.5	26	6	10	16938
	B 26/3	26 mm	101.5 - 117.5	30	6	10	16939
	B 30/3	30 mm	113.5 - 129.5	34	6	10	16940

Opposite sleeve - for uniform distribution of tensile forces

Type	for cable Ø	b	h	h1	R	L	Item No.
GW 12	6 - 12 mm	12	4	1.0	6	40	16853
GW 14	10 - 14 mm	14	4.5	1.0	7	40	16854
GW 16	12 - 16 mm	16	4.5	1.0	8	40	16855
GW 18	14 - 18 mm	18	4.5	1.0	9	40	16856
GW 22	18 - 22 mm	20	5.5	1.5	11	40	16857
GW 26	22 - 26 mm	24	6.5	1.5	13	40	16858
GW 30	26 - 30 mm	28	7	1.5	15	40	16859
GW 34	30 - 34 mm	32	8	2.0	18	40	16860
GW 38	34 - 38 mm	38	9	2.0	19.5	40	16861
GW 42	38 - 42 mm	42	10	2.0	21.5	40	16869
GW 46	42 - 46 mm	46	11	2.0	23.5	40	16870
GW 50	46 - 50 mm	50	12	2.0	25.5	40	16871

Double sleeve - for distribution of tensile forces on both sides

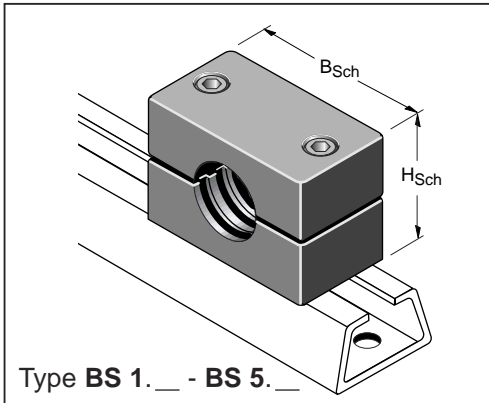
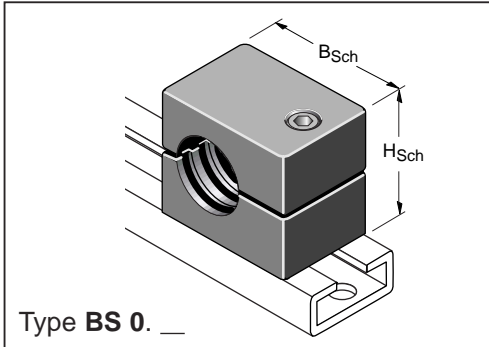
Type	for cable Ø	b	h	h1	R	L	Item No.
DW 12	6 - 12 mm	12	7	1.0	6	40	16862
DW 14	10 - 14 mm	14	8	1.0	7	40	16863
DW 16	12 - 16 mm	16	9	1.0	8	40	16864
DW 18	14 - 18 mm	18	9	1.0	10	40	16865
DW 22	18 - 22 mm	22	10	1.5	12	40	16875
DW 24	22 - 24 mm	24	10	1.5	12	40	16941
DW 26	24 - 26 mm	26	12	1.5	14	40	16942
DW 28	26 - 28 mm	28	12	1.5	14	40	16943
DW 30	28 - 30 mm	30	15	2.0	16	40	16944
DW 34	30 - 34 mm	34	15	2.0	18	40	16945
DW 38	34 - 38 mm	38	15	2.0	20	40	16946
DW 42	38 - 42 mm	42	20	4.0	21.5	40	16947

Block clamps

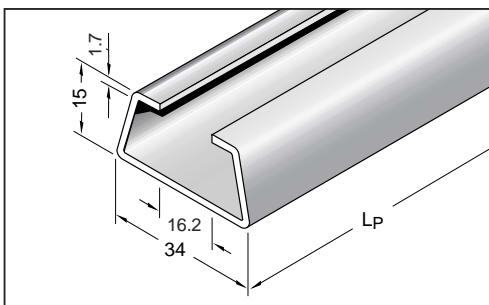
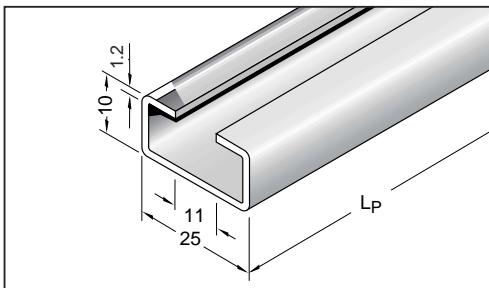
with tightening screw(s) and mounting rail nut

for series **0600 ... 1800**

Clamping jaw material: **PP**



Additional sizes and designs are available on request!



Single block clamps - for one cable

Type	for cable Ø	Height HSch	Width BSch	Screws M 6 - DIN 6912		Item No.
				No.	Length	
BS 0.06	6 - 7 mm	26	28	1	35	16701
BS 0.07	7 - 8 mm	26	28	1	35	16702
BS 0.08	8 - 9 mm	26	28	1	35	16703
BS 0.09	9 - 10 mm	26	28	1	35	16704
BS 0.10	10 - 12 mm	26	28	1	35	16705
BS 1.06	6 - 7 mm	26	34	2	35	16706
BS 1.07	7 - 8 mm	26	34	2	35	16707
BS 1.08	8 - 9 mm	26	34	2	35	16708
BS 1.09	9 - 10 mm	26	34	2	35	16709
BS 1.10	10 - 11 mm	26	34	2	35	16710
BS 1.12	12 - 14 mm	26	34	2	35	16711
BS 2.14	14 - 16 mm	32	40	2	40	16712
BS 2.16	16 - 18 mm	32	40	2	40	16713
BS 2.18	18 - 20 mm	32	40	2	40	16714
BS 3.20	20 - 22 mm	36	48	2	45	16715
BS 3.22	22 - 23 mm	36	48	2	45	16716
BS 3.23	23 - 25 mm	36	48	2	45	16717
BS 3.25	25 - 27 mm	36	48	2	45	16718
BS 3.27	27 - 30 mm	36	48	2	45	16719
BS 3.30	30 - 34 mm	36	48	2	45	16721
BS 4.32	32 - 34 mm	56	69	2	65	16722
BS 4.34	34 - 36 mm	56	69	2	65	16723
BS 4.35	35 - 37 mm	56	69	2	65	16724
BS 4.38	38 - 40 mm	56	69	2	65	16725
BS 4.40	40 - 42 mm	56	69	2	65	16726
BS 4.42	42 - 44 mm	56	69	2	65	16727
BS 5.45	45 - 48 mm	65	85	2	75	16728
BS 5.48	48 - 51 mm	65	85	2	75	16729
BS 5.51	51 - 54 mm	65	85	2	75	16731

Assembly profiles

C-profile

fits all commercial clamps (slit width 11 - 12 mm)

Material: **Steel** Item No.: **3931**

Attach profile with M 6 - DIN 6912 sockethead cap screws.

C-rails

fit all commercial clamps (slit width 16 - 17 mm)

Material:	Aluminium	Steel
Item No.:	3926	3932

Attach profile with M 10 - DIN 6912 sockethead cap screws.

Appendix

- FAX – Questionnaire
- Design and Layout Notes
- FAX Order Forms

Fax Enquiry Form

For steel cable carriers



Fax No.: +49-271/5801-220

To KABELSCHLEPP GMBH

Postfach 100654
D-57006 Siegen

Marienborner Straße 75
D-57074 Siegen

Phone: +49-271-5801-0

Date: _____ Page No.: _____ No. of pages: _____

From:

Company: _____

Contact: _____ Department: _____

Phone: _____ Extension: _____

Telefax: _____ Telex/Email: _____

Please submit exact specifications in order for us to plan a solution for your application.
We would be pleased to submit a comprehensive proposal based on your enquiry!

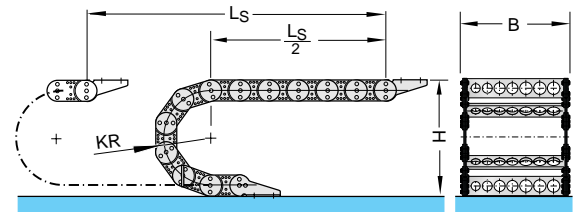
- Please have an applications engineer call for an appointment!
- Proposal for: **Enquiry number:** _____
- Cable carriers including enclosed designs**
- Accessories** support trays
- zinc-plated steel rust and acid resistant stainless steel
- CONDUFLEX MOBIFLEX
- guide channels Electric cables Strain relief devices

We require the following information to prepare a proposal:

1.00 Machinery data

- .10 Application _____
- .20 Environmental conditions _____
- .21 Ambient operating temperature _____ °C
- .30 maximum machine travel length L_S _____ mm
- .40 max. acceleration/deceleration _____ m/s^2
- .50 travel speed _____ m/s
- .60 travel frequency _____ times/h
- .70 installation situation (drawing/outline) _____
- .71 max. installation height _____ mm
- .72 max. installation width _____ mm
- .73 installation variant EBV _____

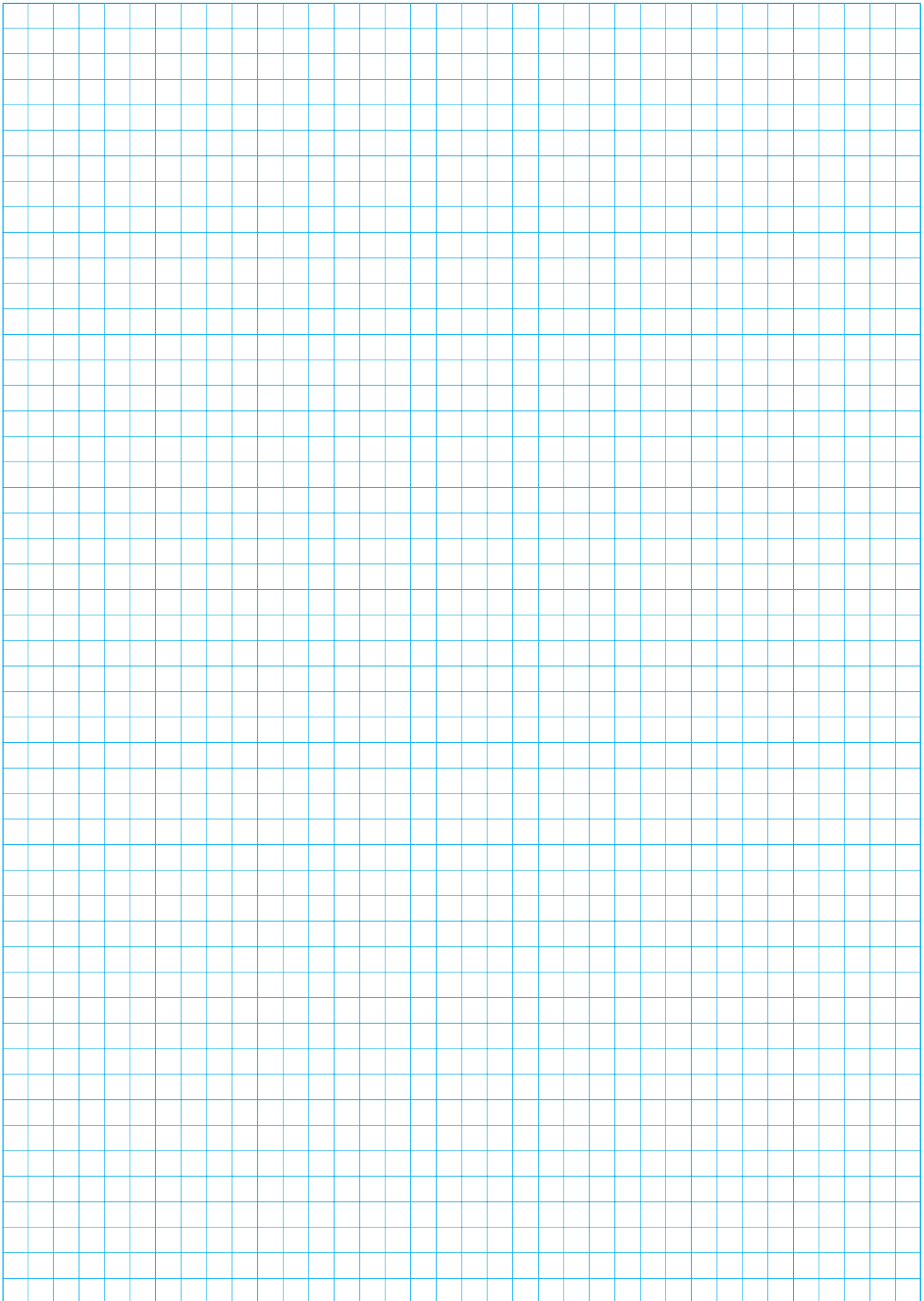
Terms:



2.00 Supply cables/hoses

Type of cables and hoses				Number of cables	Cable cross section (e.g. 4x6 mm ²)	diameter in mm	Hose diameter at operating pressure in mm	Number of pressure oscillations per hour	Weight in kg/m	Minimum bend radius in mm	Cables with fixed plugs or terminal fittings
electric.	pneum.	hydr.	Fibre-optic cables								

3.00 Supplementary information:



Fax Order Form

For steel cable carriers



Fax No.: +49-271/5801-220

To KABELSCHLEPP GMBH

Postfach 100654
D-57006 Siegen

Marienborner Straße 75
D-57074 Siegen

Phone: +49-271-5801-0

Date: _____ Page No.: _____ No. of pages: _____

From:

Company: _____

Contact: _____ Department: _____

Phone: _____ Extension: _____

Telefax: _____ Telex/Email: _____

We hereby order the following products:

ORDER No.: _____

KABELSCHLEPP Quotation
_____ dated _____

Item-No.	KABELSCHLEPP Item No. Order description	Number	Unit Price before tax

Continued, see page _____

Requested delivery date: _____

_____ Seal, signature

Fax Order Form

For steel cable carriers



Fax No.: +49-271/5801-220

Date: _____ Page No.: _____ No. of pages: _____

Item No.	KABELSCHLEPP Item No. Order description	Number	Unit Price before tax

Comments:

Continued, see page _____

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