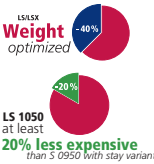
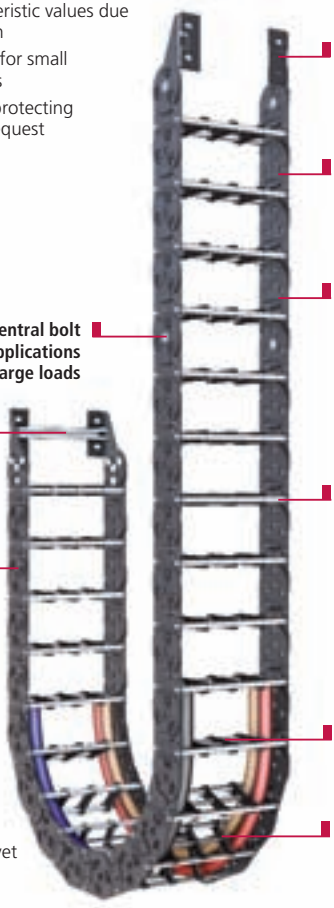

LS/LSX Series
The power to innovate

LS/LSX Series

Cost-effective steel chains with light design

- Improved dynamic characteristic values due to weight-optimized design
- Long unsupported lengths for small to medium additional loads
- Cover with steel band for protecting the cables is available on request





End connectors for different connection variants

Favorable ratio of inner to outer width – no peripheral divider necessary

Weight-optimized chain bands – specially coated or stainless steel

STEEL SPECIAL COATED

STAINLESS STEEL RUST-FREE

Different stay variants available in 1 mm width sections

WIDTH SECTIONS 1 mm

Optional central bolt for applications with large loads

C-rail for strain relief elements

Strokes are integrated in the chain link plate – no additional bolts are needed

Dividers made of plastic or steel

Various cable separation options

The design

The chains are very light and yet very stable due to the weight-optimized link plate design. The unsupported length for the LS series is significantly higher as compared with plastic chains of the same size.

Weight-optimized link plates only consist of one plate – the stroke system is integrated

Light sidebands without additional bolts – special coating or stainless steel

Optional: Central bolt and locking ring for applications involving large loads

Optional: C-Rail for strain relief elements fixed in the connection

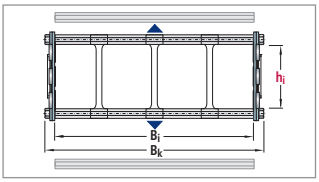
Type LS/LSX 1050

- **Type LS:**
  Chain bands made of specially coated steel
  Type LSX:
  High-grade stainless steel chainbands
- **Available in 1 mm width sections**

WIDTHSECTIONS 1 mm

Type	h_i	B_k	Maximum travel length[A] in m	Dynamics of unsupported arrangement	
				Travel speed[B] v_{max} in m/s	Travel acceleration a_{max} in m/s²
LS/LSX 1050	58	100-600	10	5[C]	10

Dimensions in mm



The values h_i and B_k are dependent on the stay variant.

[A] Values LS versions;
LSX versions see load diagram

[B] Values for LSX versions reduced by 0.5 m/s

[C] Maximum value

Design guidelines for central bolts and stay arrangement:
– Chain length > 4 m:
central bolts **or** stay arrangement on every chain link necessary
– Chain width B_{St} > 400 mm:
central bolts **or** stay arrangement on every chain link necessary
– Travel speed > 2,5 m/s:
Central bolt **or** fully-stayed arrangement necessary
– Use of support rollers:
central bolts **and** stay arrangement on every chain link necessary

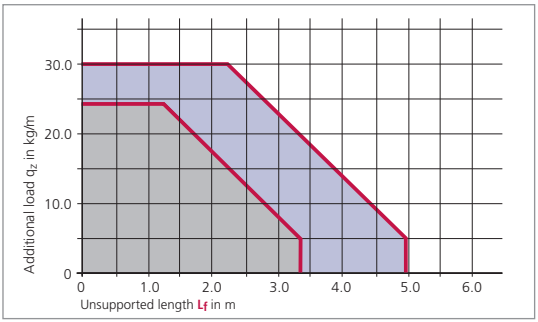
Bend radius and pitch

Type	Bend radii KR mm								
LS/LSX 1050	105	125	155	195	260	295	325	365	430

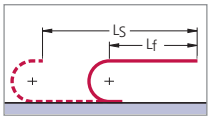
Pitch: t = 105 mm

Load diagram

for unsupported length L_f depending on the additional load*



Unsupported length L_f



Determining the length of the cable carrier see page 38.

* Load diagram for stay variant RS for medium carrier widths. The possible additional load for large carrier widths and heavy stay variants (e.g. RR) is smaller due to the increased intrinsic chain weight.

- With black special coating
- Material **ER 1**, **ER 1S** and **LS 1050** with galvanized surface

Example of ordering

Cable carrier							Divider system		Connection
LS 1050	. 180	- RS 2	- 125	- Sb	- 2415		TS 0	/ 4	FA/MA
Type	Stay width B_{St} in mm	Stay variant	Bend radius KR in mm	Chain band material	Chain length L_k in mm (without connection)		Divider system	Number of dividers n_T	Connection Fixed point/ Driver

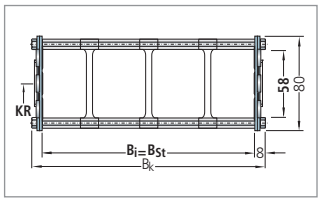
Chain band materials: Sb = Steel specially coated / ER 1 = Stainless steel / ER 1S = Stainless steel, sea water resistant. Please contact us for further information about the chain band materials.

Ordering divider systems: Please state the designation of the divider system (TS 0, TS 1 ...) and the number of dividers. Possibly attach a sketch with the dimensions.

Type LS/LSX 1050

Stay variant RS 2 – with bolted stays

- frame stay RS made of aluminium – standard design
- for lightweight to medium loads
- **Standard stay arrangement:** on every 2nd chain link. Stays can be fitted on every chain link, please specify when placing your order.
- bolted stays for maximum stability



Dimensions and intrinsic chain weight

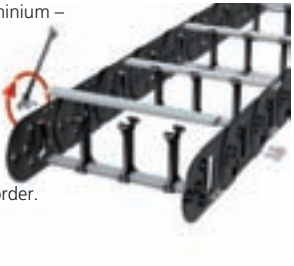
Type	Stay variant	h_i	h_G	B_k min	q_k min	B_k max	q_k max	B_i	B_{St}
LS/LSX 1050	RS 2	58	80	100	3.7	400	4.2	$B_k - 16$	$B_{St} = B_i$

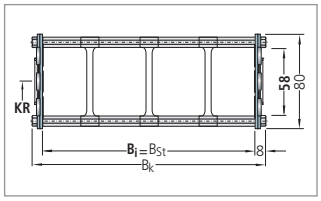
WIDTHSECTIONS 1 mm

Dimensions in mm/Weights in kg/m

Stay variant RV – frame stay, reinforced design

- frame stay RV made of aluminium – reinforced design
- for medium to heavy loads and for large chain width
- **Standard stay arrangement:** on every 2nd chain link. Stays can be fitted on every chain link, please specify when placing your order.
- bolted stays for maximum stability





Dimensions and intrinsic chain weight

Type	Stay variant	h_i	h_G	B_k min	q_k min	B_k max	q_k max	B_i	B_{St}
LS/LSX 1050	RV	58	80	100	4.0	600	5.9	$B_k - 16$	$B_{St} = B_i$

WIDTHSECTIONS 1 mm

Dimensions in mm/Weights in kg/m

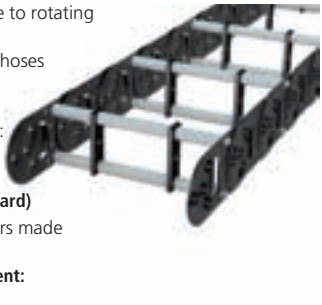
Inside height
58

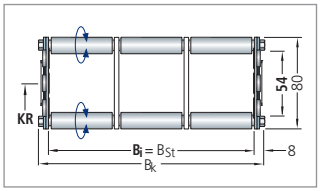
Chain widths
100 – 600

Type LS/LSX 1050

Stay variant RR – frame stay, tube design

- gentle cable support due to rotating metal tubes
- ideal when using media hoses with "soft" sheaths
- possible materials of the axles, tubes and dividers:
  - axles, tubes and dividers made of galvanized steel **(standard)**
  - axles, tubes and dividers made of stainless steel ER 1
- **Standard stay arrangement:** on every 2nd chain link. Stays can be fitted on every chain link, please specify when placing your order.
- bolted stays for maximum stability





Dimensions and intrinsic chain weight

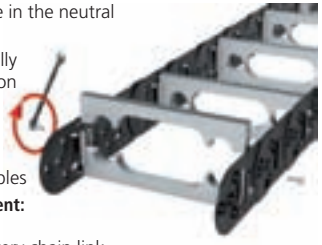
Type	Stay variant	h_i	h_G	B_k min	q_k min	B_k max	q_k max	B_i	B_{St}
LS/LSX 1050	RR	54	80	100	4.3	500	8.0	$B_k - 16$	$B_{St} = B_i$

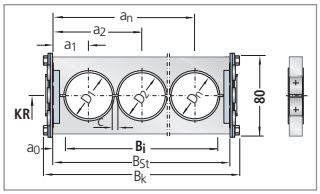
WIDTHSECTIONS 1 mm

Dimensions in mm/Weights in kg/m

Stay variant LG – hole stay made of aluminium, split design

- optimum cable guidance in the neutral bending line is possible
- drilling pattern individually adapted to the application
- high stability due to solid construction
- split design as standard for easy laying of the cables
- **Standard stay arrangement:** on every 2nd chain link. Stays can be fitted on every chain link, please specify when placing your order.
- bolted stays for maximum stability – also available not split





Dimensions and intrinsic chain weight

Type	Stay variant	D max	h_G	B_k min	q_k min*	B_k max	q_k max*	a_0 min	B_i	B_{St}
LS/LSX 1050	LG	48	80	100	4.1	600	8.1	14	$B_{St} - 2\ a_0$	$B_k - 18$

WIDTHSECTIONS 1 mm

* Listed weights assume that the hole area is approx. 50 % of the stay

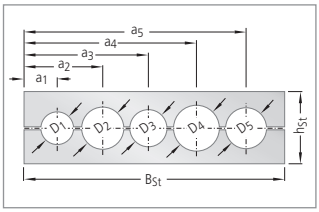
Dimensions in mm/Weights in kg/m

See next page for examples of hole patterns.

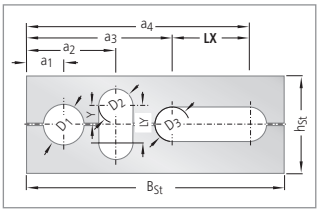
Type LS/LSX 1050

Examples of hole patterns:

Split hole stay with individual holes



Split hole stay with horizontal and vertical elongated holes*

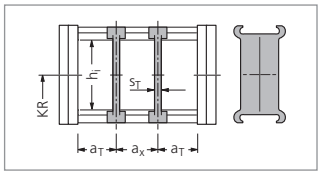


*) With an off-center arrangement of the holes, the cables are subject to a relative movement when the carrier is in motion.

Divider system TS 0 without height subdivision

Type	Stay variant	h_i mm	S_T mm	$a_{T\,min}$ mm	$a_{x\,min}$ mm
LS/LSX 1050	RS 2	58	4	7	14
LS/LSX 1050	RV	58	4	7	14
LS/LSX 1050	RR	54	4	20	20

The dividers can be moved in the cross section (not for stay variant RR).

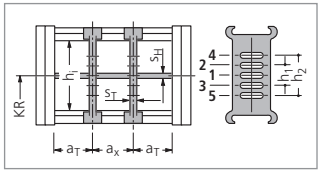


In the standard version, the divider systems are mounted on every second chain link.

Divider system TS 1 with continuous height subdivision made of aluminium

Type	Stay variant	h_i mm	S_T mm	$a_{T\,min}$ mm	$a_{x\,min}$ mm	S_H mm	h_1 mm	h_2 mm
LS/LSX 1050	RS 2	58	4	7	14	4	30	–
LS/LSX 1050	RV	58	4	7	14	4	15	30
LS/LSX 1050	RR	54	4	20	20	8	–	–

The dividers can be moved in the cross section (not for stay variant RR).

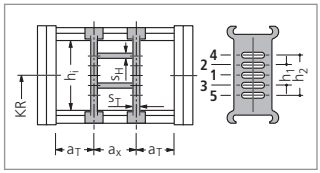


In the standard version, the divider systems are mounted on every second chain link.

Divider system TS 2 with grid subdivision made of aluminium (1 mm grid)

Type	Stay variant	h_i mm	S_T mm	$a_{T\,min}$ mm	$a_{x\,min}$ mm	S_H mm	h_1 mm	h_2 mm
LS/LSX 1050	RS 2	58	4	7	20	4	30	–
LS/LSX 1050	RV	58	6	7	20	4	15	30

The dividers can be moved in the cross section



In the standard version, the divider systems are mounted on every second chain link.

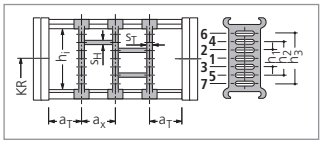
Type LS/LSX 1050

Divider system TS 3 with section subdivision, partitions made of plastic

Type	Stay variant	h_i mm	S_T mm	$a_{T\,min}$ mm	$a_{x\,min}$ mm	S_H mm	h_1 mm	h_2 mm	h_3 mm
LS/LSX 1050	RV	58	8	4	16*	4	14	28	42

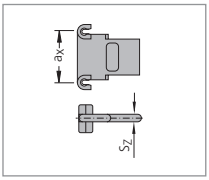
* When using plastic partitions

The dividers are fixed by the partitions, the complete divider system is movable.



In the standard version, the divider systems are mounted on every second chain link.

Dimensions of the plastic partitions for TS 3



Aluminium partitions in 1 mm width sections are also available.

S_Z	a_x (center-to-center distance, dividers)									
4	16	18	23	28	32	33	38	43	48	58
	64	68	78	80	88	96	112	**128**	**144**	**160**
	176	**192**	**208**	–	–	–	–	–	–	–

Dimensions in mm

When using **partitions with a_x > 112 mm**, there should be an additional central support with a **twin divider** (S_T = 4 mm).

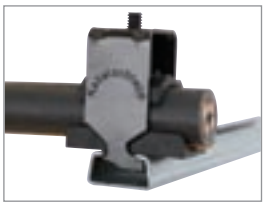
Twin dividers are designed for subsequent fitting in the partition system.

Strain relief devices

The C-Rails are fixed together with the end connectors and thus do not have to be bolted separately.

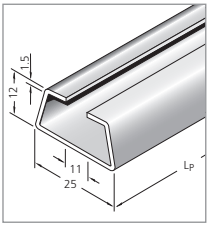
Length of the C-Rail L_P:
Fixed point: $L_P = B_i$
Driver: $L_P = B_i + 4$ mm

■ C-rail fixed in the end connector.



■ Linefix bracket clamp in C-rail

Integratable C-Rail



Suitable for all commercially available brackets (slot width 11 mm)

Material	Item-No.
Steel	3934

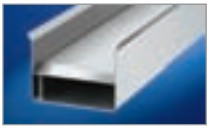
See also Accessories chapter, page 281.


■ Inserting the C-rail in the end connector.

Guide channels
➤ from page 282

Strain relief devices
➤ from page 288

Cables for cable carrier systems
➤ from page 330

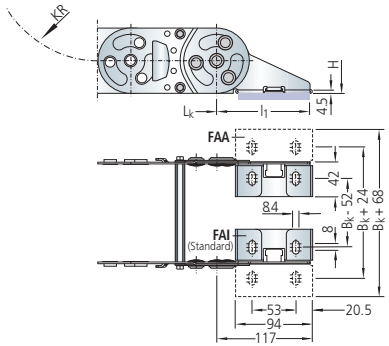


Type LS/LSX 1050

End connectors

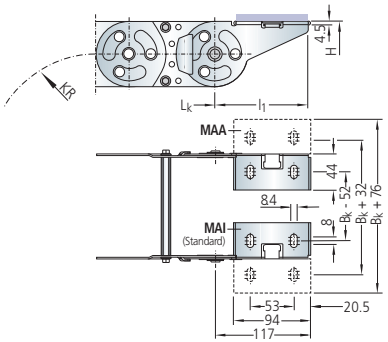
Fixed point connection

Connection variant FA

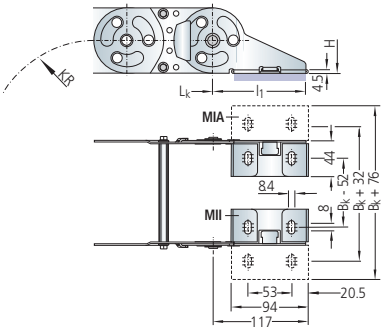


Driver connection

Connection variant MA



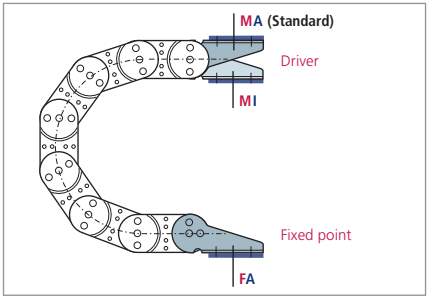
Connection variant MI

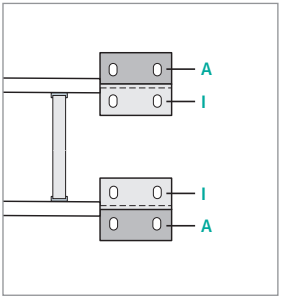


Different connection variants for fixed point and driver are possible according to the drawing information. Different end connectors are needed for different connection variants.

Please state the desired connection variant according to the ordering key.

Connection variants





Connection point

M – Driver

F – Fixed point

Connecting surface

I – Connecting surface inside (< B_k)

A – Connecting surface outside (> B_k)

Connection type

A – Threaded joint outside (standard)

I – Threaded joint, inside