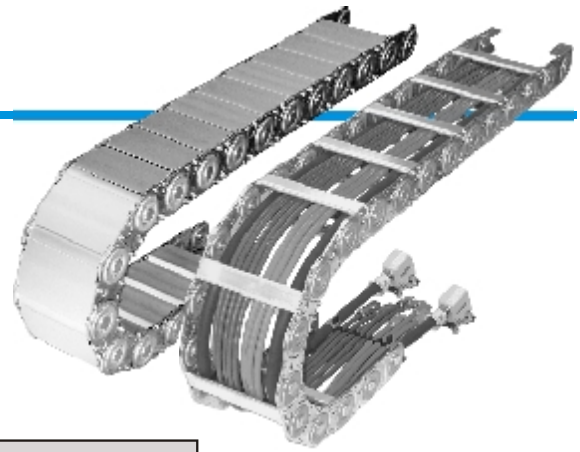


SLE Energy chains

individual solutions
large dimensions
simple handling



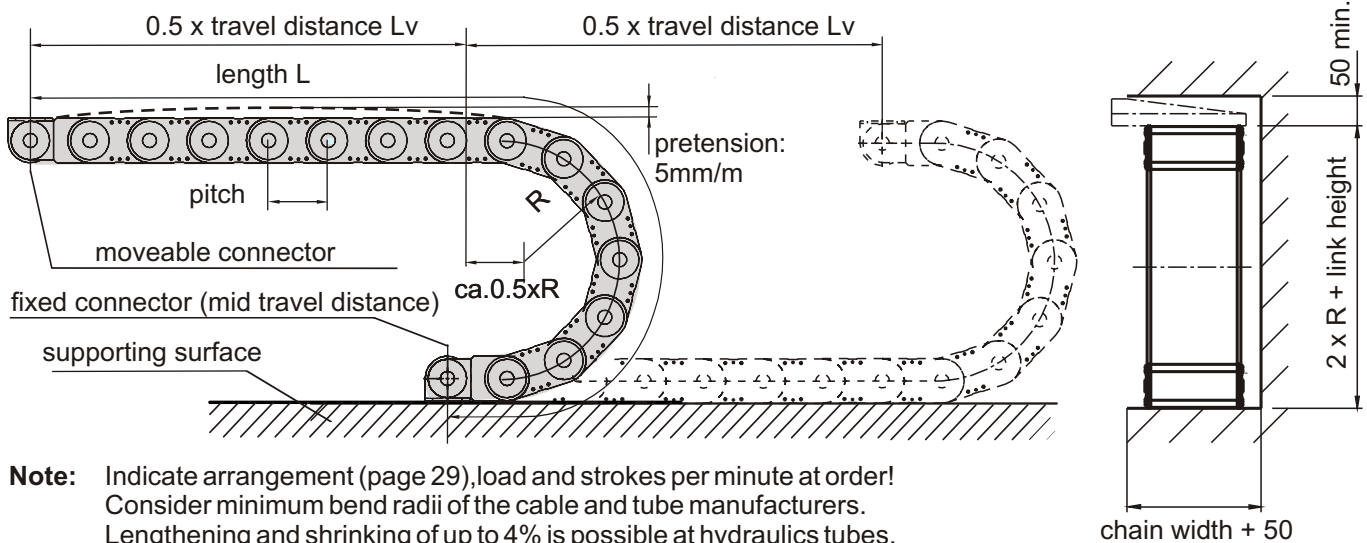
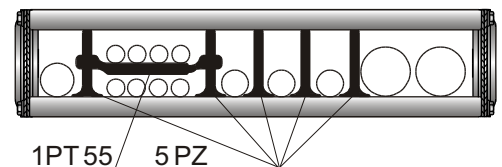
The order for a steel chain SLE should contain the following data:

Type / Radius x Length / Width - Connector "Arrangement"; Separator arrangement

- ① **Type** selection is in accordance with the construction and with diameter and quantity of the lines to be installed. A clearance of at least 10 % for cables and 20 % for hoses should be available.
- ② The **R(adius)** is also dependent on the lines to be installed. Comply with the statements of the manufacturer. Normally the chain bend radius should be 10 times the largest cable diameter.
- ③ The **Length** of the chain depends on the travel distance and can be calculated with the following formula:
 $L = \text{travel distance} / 2 + 4 \times \text{radius}$ (rounded up to link pitch)
- ④ The **Width** of the chain (stay length+2d) depends on the number and cross section of the cables to be installed. With slow applications cables can be installed on top of one another, creating extra space (see separator options).
- ⑤ The **Connectors** depend on the application in question. Where required the connection angle can be slightly modified.
- ⑥ The **Arrangement** is only to be stated in special cases. (see page 29)
- ⑦ The **Separator arrangements** depend on the application (see order example or separator options).

Example: travel distance 3 m, bend radius 200 mm, cables: 1x15 mm, 8 x 8 mm, 3 x 12 mm, 2 x 22 mm;
the chain is hanging (see page 29)

SLP 220 / 200 x 2325 / 200 - D/E "h"; 5 PZ, 1 PT55



Note: Indicate arrangement (page 29), load and strokes per minute at order!
Consider minimum bend radii of the cable and tube manufacturers.
Lengthening and shrinking of up to 4% is possible at hydraulics tubes.

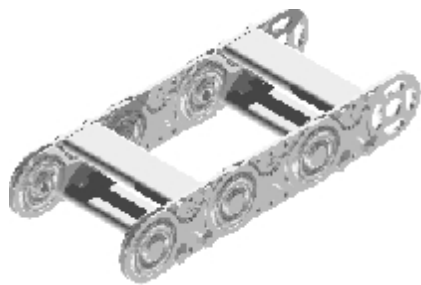
Material:

Energy guideway chain SLE is supplied as standard in steel. For aggressive environments the chain can be executed in stainless steel (e.g. off-shore). The use of hardened chains with large bend radii is necessary for high travel speeds (>1m/s) and accelerations (>4m/s²).

SLE Separator options and dimensions

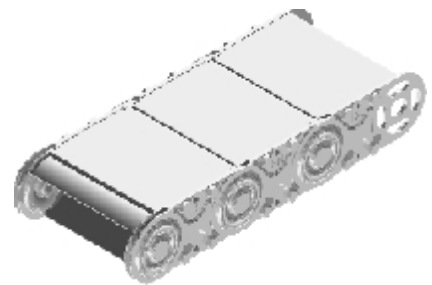
standard types

SLE 120
SLE 220
SLE 320
SLE 520
SLE 620



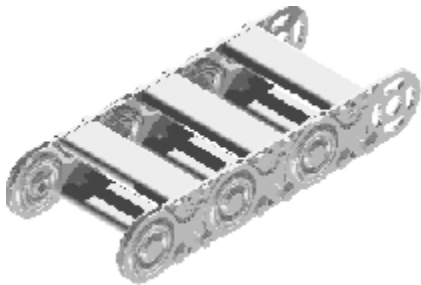
closed types

SLE 225
SLE 325
SLE 525
SLE 625



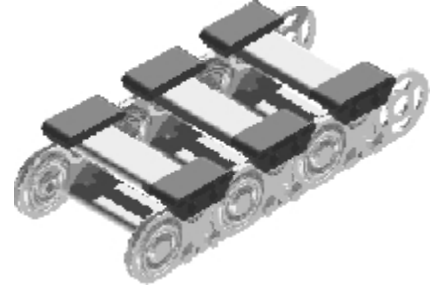
stay in each link

SLE 121
SLE 221
SLE 321
SLE 521
SLE 621



option with sliders

SLE 128
SLE 228
SLE 328
SLE 528
SLE 628

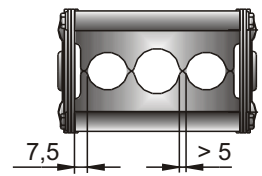
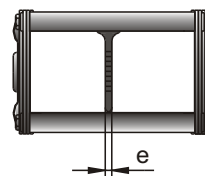
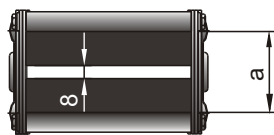
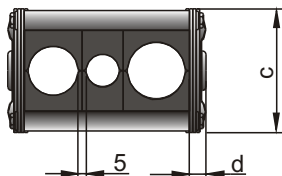


SLE (stay with plastic inserts)

SLS (foam stay)

SLP (plastic intermediate divider)

SLA (aluminium stay)



| | bend radius R (other radii on request) | pitch | a | c | d | e | f | g | h | k | weight [kg/m] (stay 100) |
|--|---|-------|-----|-----|-----|---|-----|-----|----|-----|----------------------------------|
| SLP 120 | 60 / 100 / 150 / 250 | 50 | 20 | 35 | 5,5 | 3 | 20 | 7,5 | 7 | 9,5 | 2,30 |
| SLE 220 SLS 220 SLP 220 SLA 220 | 100 / 150 / 200 250 / 300 | 75 | 31 | 50 | 8 | 4 | 30 | 12 | 9 | 15 | 5,00 4,90 4,80 5,50 |
| SLE 320 SLS 320 SLP 320 SLA 320 | 150 / 200 / 250 300 / 400 | 100 | 49 | 75 | 10 | 4 | 50 | 17 | 11 | 21 | 9,30 9,10 9,10 10,00 |
| SLE 520 SLS 520 SLP 520 SLA 520 | 200 / 250 / 300 400 / 500 | 125 | 68 | 100 | 14 | 4 | 70 | 22 | 13 | 28 | 18,40 18,10 18,10 19,30 |
| SLP 620 | 250 / 300 / 400 | 175 | 118 | 150 | 14 | 8 | 115 | 26 | 13 | 32 | 25,00 |

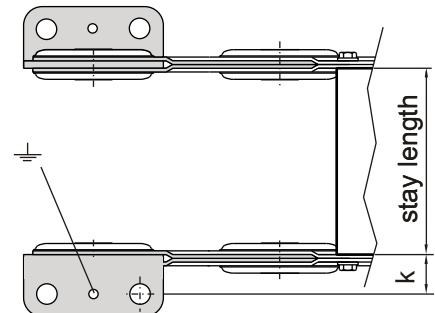
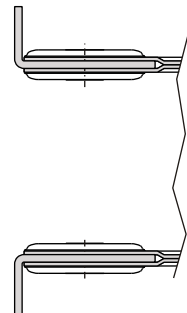
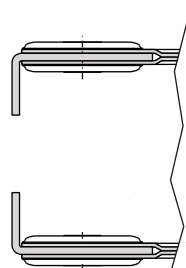
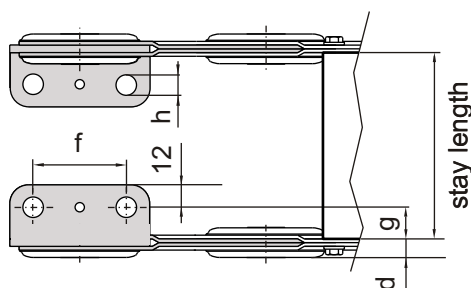
max. usable width = stay length - 15 mm; chain width = stay width + 2 x d

Normal connector in outer radius

connector A

connector B

connector C in outer radius



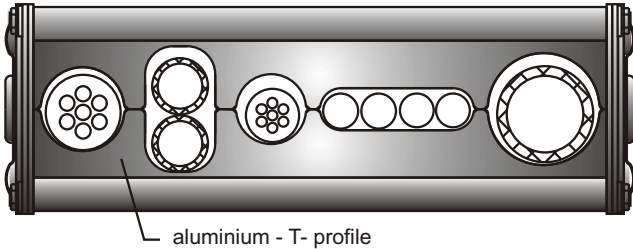
connector E in inner radius

connector D in inner radius

SLE Stay and Separator options

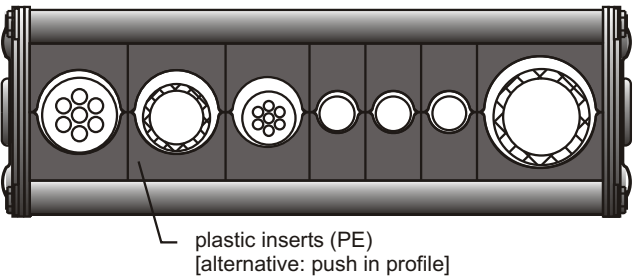
Compared to standard chains the **SLE** series is characterized by the fact that the sturdy aluminium profile can be steplessly adapted to the requirement. Stay length of up to 1500 mm can be realized. The subdivision of the interior satisfies every requirement and guarantees optimized cable protection, even at very high accelerations and travel speeds.

SLA with aluminium profile



SLA (SLE with aluminium profile) is an individual and sturdy energy chain which is specially chosen for use with large dimensions. The stays are created according to the users specifications.

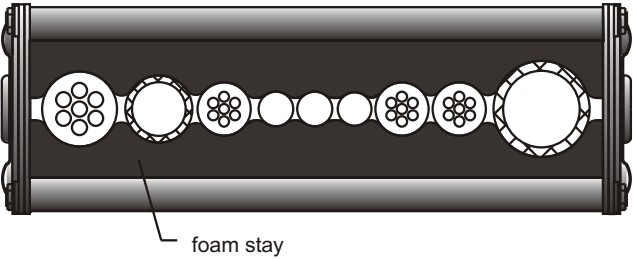
SLE with inserts



SLE (SLE with inserts) guarantees ideal guidance with high travel speeds and protects against ruling out errors when installing cables.

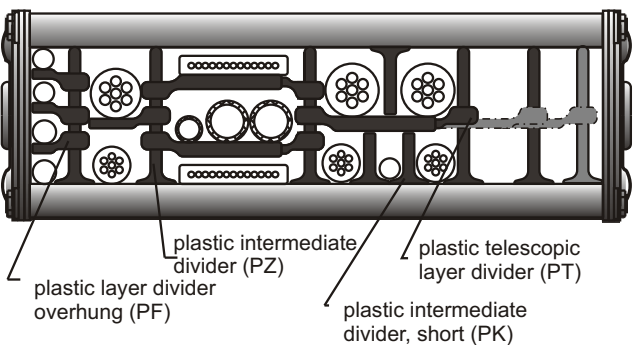
| SLE | available inserts Ø [mm] |
|-----|--|
| 220 | 10 15 20 25 30 |
| 320 | 10 15 20 25 30 35 40 45 50 |
| 520 | 10 15 20 25 30 35 40 45 50 55 60 65 70 |

SLS with foam



In the case of restricted installation space **SLS** (SLE with foam separator) should come in use. Here too, optimized guidance is guaranteed at high speeds and accelerations. Well known car manufacturers are using this version for many years with great success.

SLP with plastic intermediate separators (PZ)



Where this is not possible for reasons of space, the **SLP** (SLE with plastic intermediate separators PZ and additional distribution possibilities) can be selected. This low cost version permits the reliable guidance of large numbers of cables. The highly variable divider distribution possibility due to the small step of (3 mm) in the height setting range, plus the telescopic layer divider (PT) permit maximum distribution for all requirements, also in the case of retrospective changes.

plastic telescopic layer divider (PT)

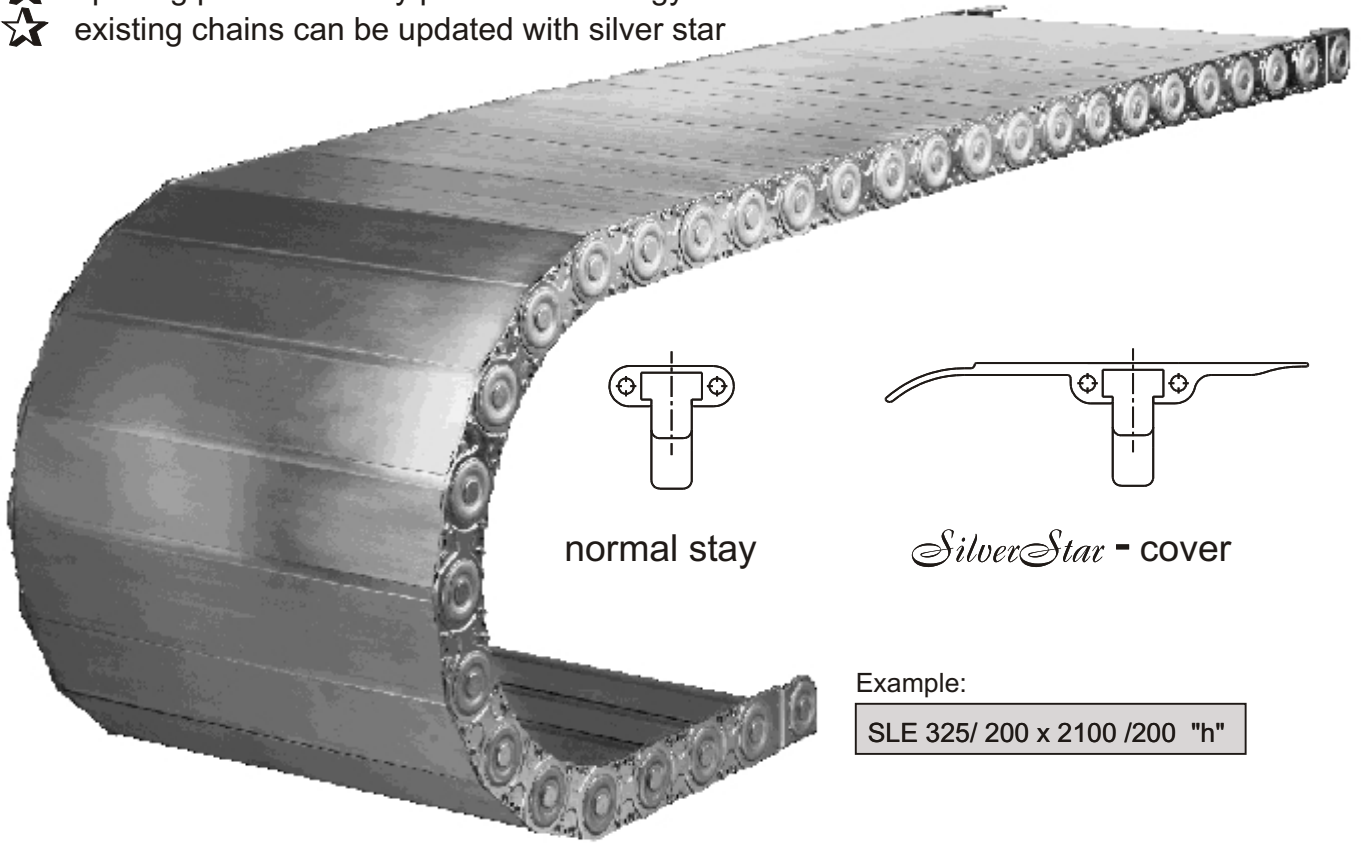
| | range in mm |
|-------|--------------|
| PT 55 | 55 up to 80 |
| PT 75 | 75 up to 100 |

The **SLA**, **SLE** or **SLS** variants should take preference for extreme applications, as these offer maximum guidance for the cables. Note that it is imperative to avoid multi-layer arrangement of the cables with high speeds and accelerations.

SLE Covers

- 5 Stars for the *SilverStar* - cover
- ☆ very good visual impression
- ☆ stay spacing which has proved its value for 25 years
- ☆ very rigid, solid cable protection up to 1.500 mm wide
- ☆ opening possible at any point of the energy chain
- ☆ existing chains can be updated with silver star

| SLE | up from R |
|-----|-----------|
| 225 | 100 |
| 325 | 150 |
| 525 | 200 |
| 625 | 300 |



normal stay

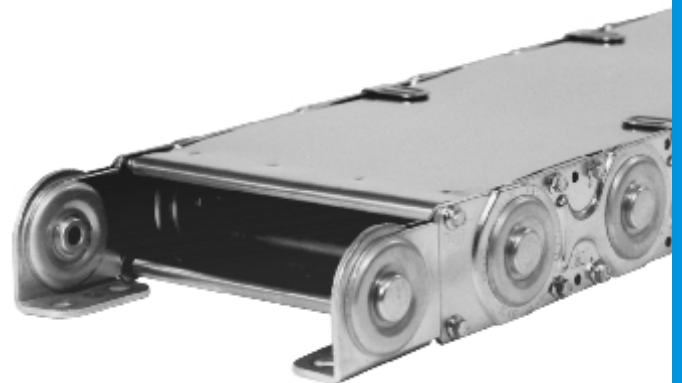
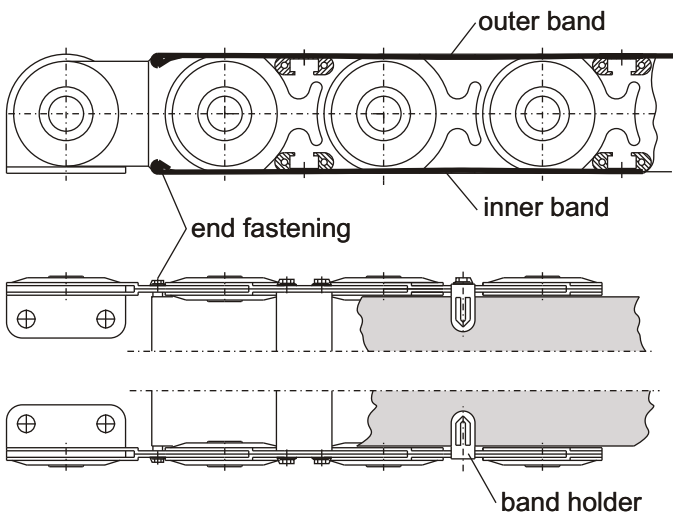
SilverStar - cover

Example:

SLE 325/ 200 x 2100 /200 "h"

Stainless steel cover:

For cable protection against outside damaging and against dust and sharp shavings spring steel bands can be placed inside and outside. The bands have rounded edges to prevent accidents.



Example:

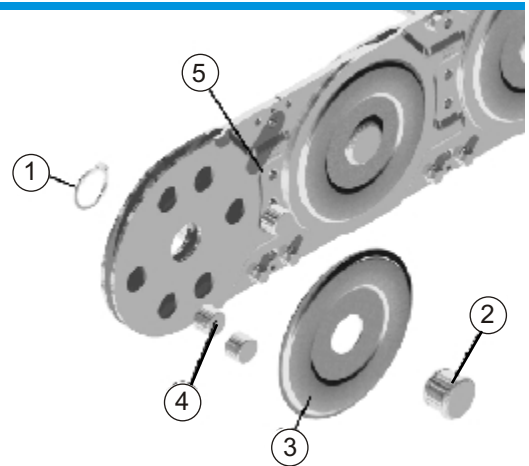
SLE 320/ 200 x 2100 /200 "h"
with stainless steel covers (inner and outer)

SLE Assembly information

Shortening or lengthening of the chain:

Remove the cir clips (1), take off the cover plates (3), remove the shoulder pin (2) and socket pins (4). Remove or add links (5) and stays.

Push the links together, insert the middle bolt (2), form radius by means of the socket pins (see table) and refit cover plates (3).

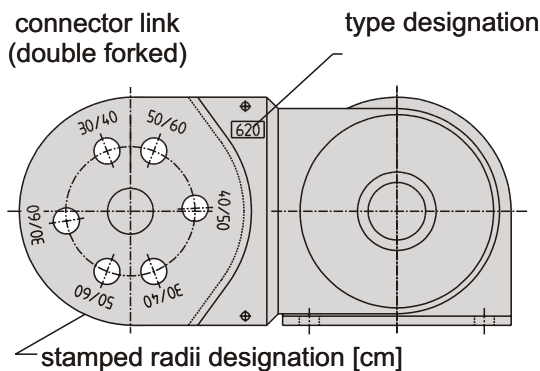


Changing the bend radius :

Remove the cir clips (1), take off the cover plates (3). Change over the socket pins (4) according to the table. Refit the cover plates (3).

Note:

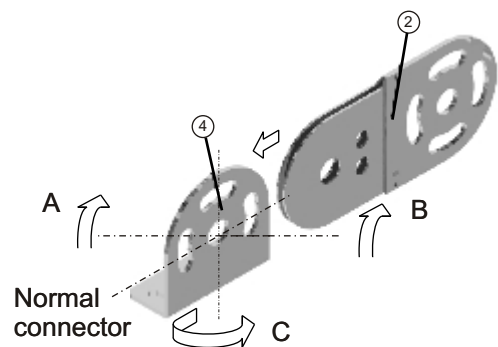
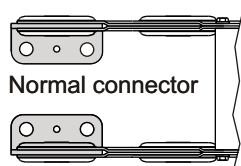
The assembly scheme for the different radii is stamped on the double end connector link.



| SLE | 120 | 220 | 320 | 520 | 620 |
|--------|-----|-----|-----|-----|-----|
| Radius | 60 | 100 | 150 | 200 | 250 |
| Radius | 100 | 150 | 200 | 250 | 300 |
| Radius | 150 | 200 | 250 | 300 | 400 |
| Radius | 250 | 250 | 300 | 400 | 500 |
| Radius | | 300 | 400 | 500 | 600 |

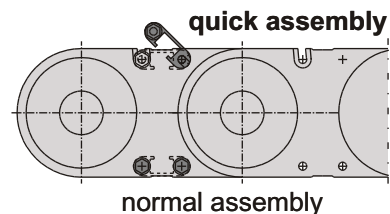
Repositioning connection angles:

The connection angle can be both inside and outside the chain in the inner and outer radius. Normally the connectors are inside the chain, facing the other radius. The connection angle can be brought to any position by removing the circlip (see above).



Stay disassembly:

The stays are very simple to remove by unscrewing the four hexagon screws. Quick-assembly is an alternative possibility where only two screws have to be removed. Stays with quick-assembly may be ordered according to drawing 4-2288.



SLE Support brackets and support rollers

Support rollers enable longer travel distances and offer optimal guidance of the energy chain. They can be used whenever the travel distance exceeds twice of the the unsupported free carrying length of the chain.

The order for a support roller **SR** should contain the following data:

SR width of supp. surface [cm] / Ø100 x height

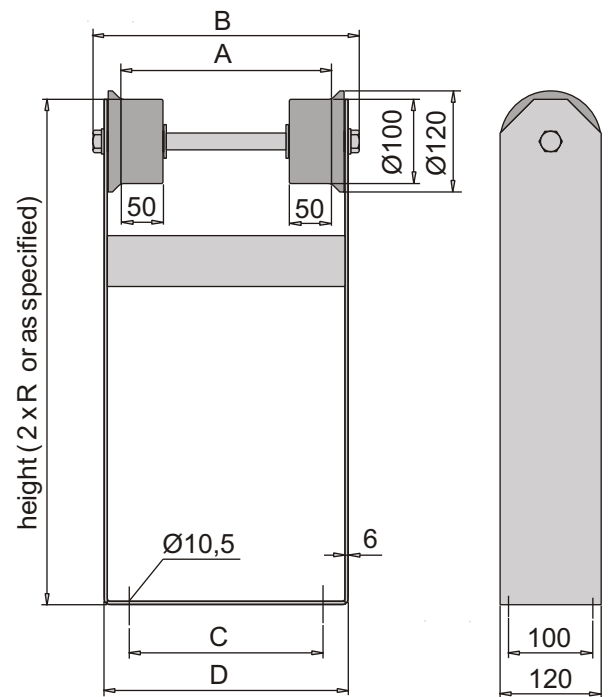
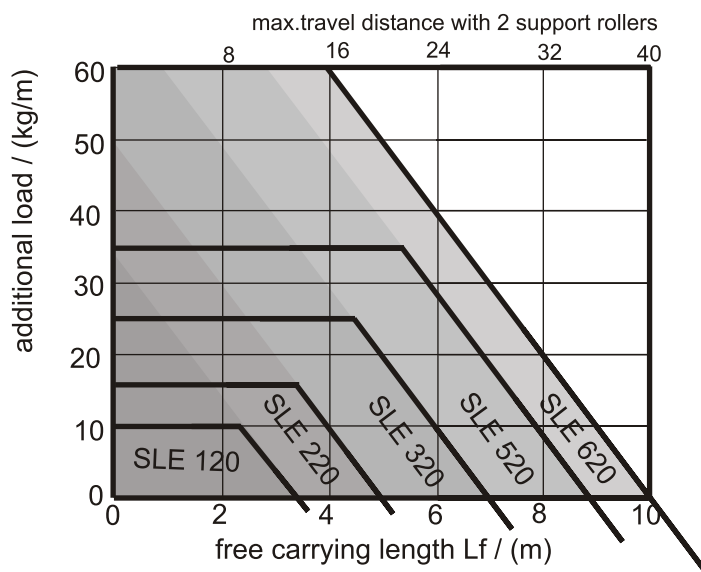
- ① The **width of the supporting surface (A)** depends on the stay width of the steel chain in use (see table).
- ② The **height (H)** of the support bracket depends on the radius of bend of the steel chain in use.

Example: bend radius 150mm, stay length 115mm

SR 15 / Ø 100 x 300

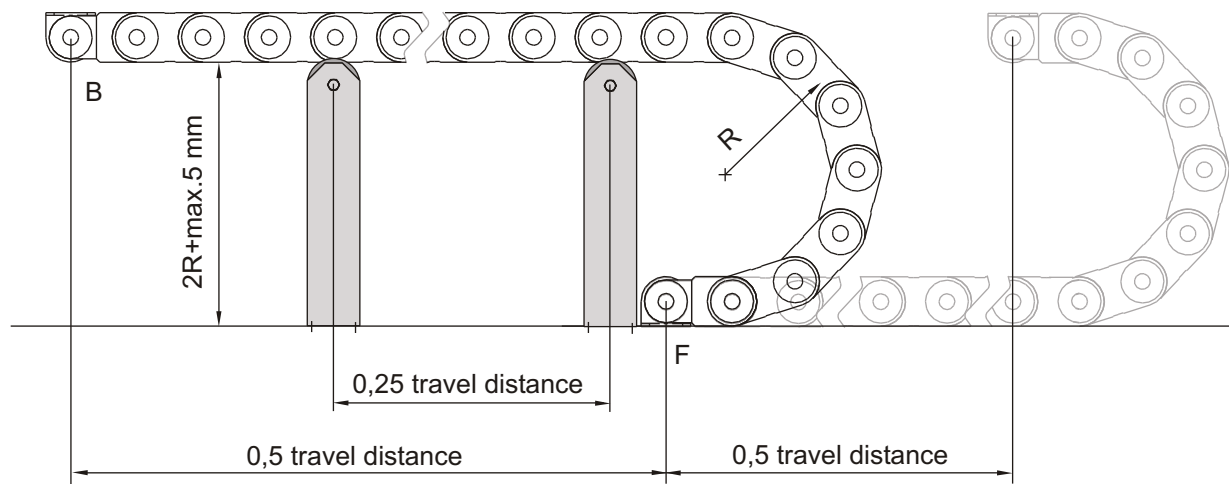
| SR | A other sizes on request | B | C | D | max. stay length |
|----|-----------------------------|-----|-----|-----|---------------------|
| 10 | 100 | 166 | 80 | 140 | 65 |
| 15 | 150 | 216 | 130 | 190 | 115 |
| 20 | 200 | 266 | 180 | 240 | 165 |
| 25 | 250 | 316 | 230 | 290 | 215 |
| 30 | 300 | 366 | 280 | 340 | 265 |
| 35 | 350 | 416 | 330 | 390 | 315 |
| 40 | 400 | 466 | 380 | 440 | 365 |
| 45 | 450 | 516 | 430 | 490 | 415 |
| 50 | 500 | 566 | 480 | 540 | 465 |
| 55 | 550 | 616 | 530 | 590 | 515 |
| 60 | 600 | 666 | 580 | 640 | 565 |
| 65 | 650 | 716 | 630 | 690 | 615 |
| 70 | 700 | 766 | 680 | 740 | 665 |
| 75 | 750 | 816 | 730 | 790 | 715 |

LOAD DIAGRAM SLE



energy chain SLE with two support rollers and support brackets:

maximum travel distance = 4 x free carrying length

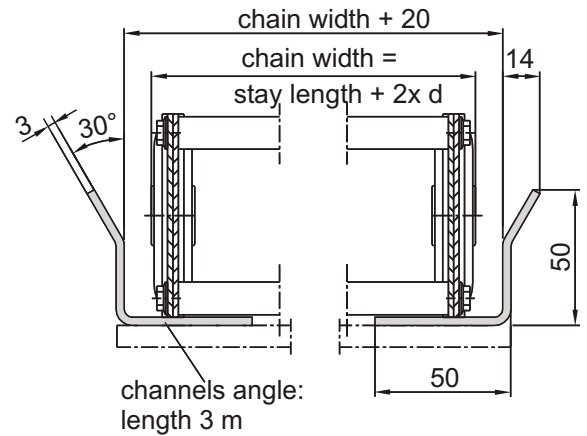


SLE Accessories

Support channels:

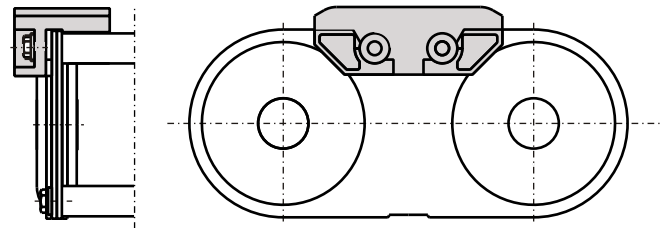
Support channels comprise as standard 2 angular channels in 3 m length. They are used where precise guidance of steel chains is required.

Important for assembly: Weld channels together smoothly without offset, clean off the welds. There must be no projections over the entire chain support area (e.g. screw heads, nuts, pins etc.).



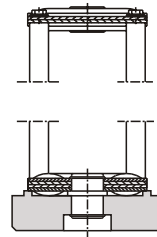
Sliders:

Sliders are combined with types 128, 228, 328, 528, and 628 at long travel distances when the upper part of the chain moves on the lower part. The sliders are assembled in the inner radius. The slider surface is extremely smooth (friction coefficient $\mu=0,2$ up to $0,25$). After lifetime the sliders can be exchanged and the energy chain can be used furthermore.



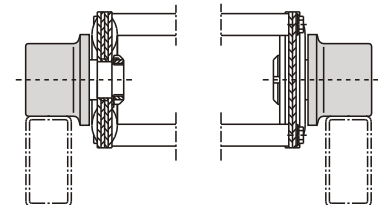
Slide plates:

Slide plates are used with steel chains in "w" arrangement (laying horizontally on the side) for long travel distances and "k" arrangement (circular). The slide plates are made of high grade, highly abrasive resistance plastic (or other materials upon request). Guidance is necessary with both arrangements.



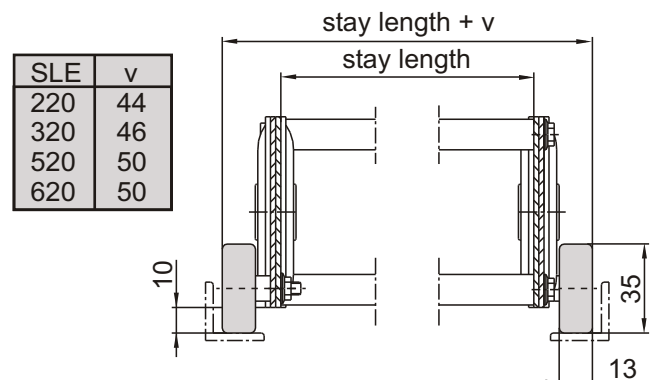
Shouldered guide rollers:

The shouldered guide rollers are used with overlong chains with support rails in combination with support rollers and support brackets (*drawing 1-1717*).



Guide rollers:

Instead of a steel chain with support rollers, guide rollers can be mounted in the steel chain. In that case the guide rollers rest on a supporting rail. (*Note: Supporting rail length min. 1/4 travel distance*).

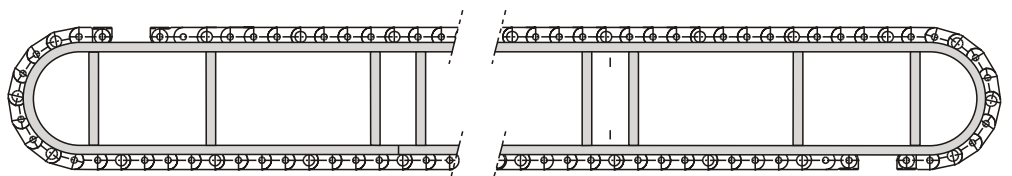


Support carriage:

Steel chains with support carriages are employed with long travel distance and very high additional weights as "contra running" chain configurations. The chains rest on the support carriage with laterally mounted shouldered guide rollers.

Technical characteristics:

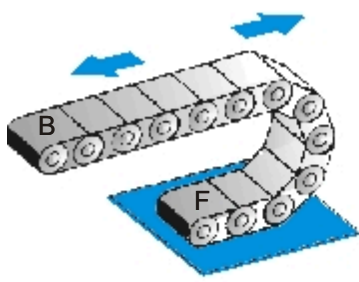
- only tensile forces
- long travel distances
- extreme additional loads
- easy running, long life



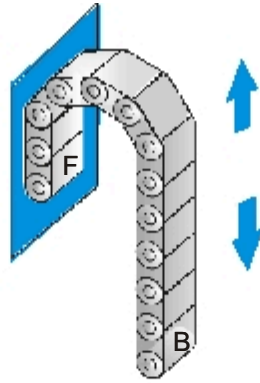
Arrangements

B = moved connector

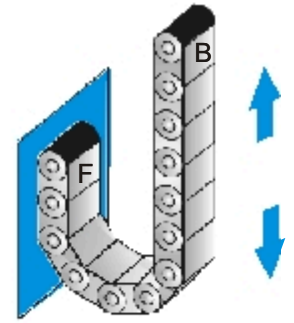
F = fixed connector (mid of travel)



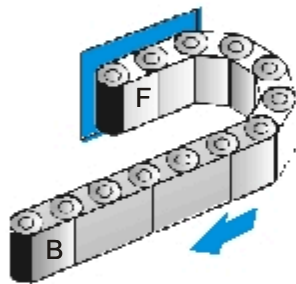
normal (no order comment)



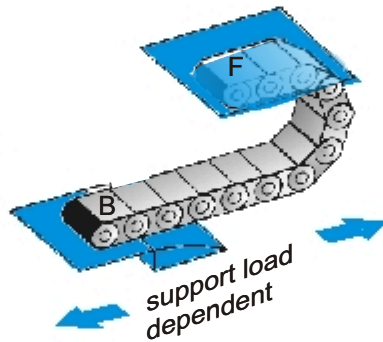
"s" standing (without pretension)



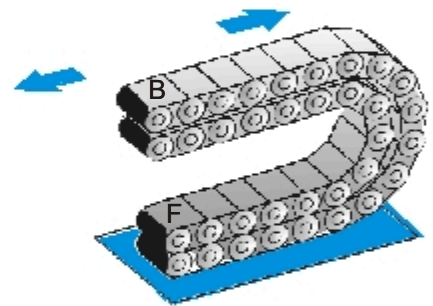
"h" hanging (without pretension)



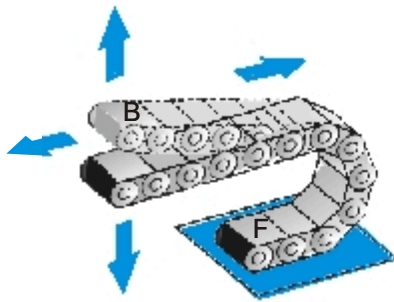
"w" horizontal, laying on side (without pretension)



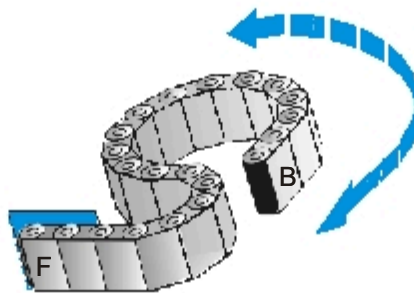
"u" moved end downside



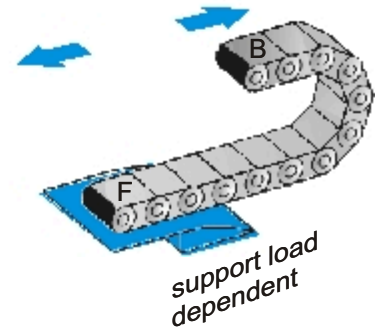
"i" into each other



"m" multiaxial



"k" circular, laying on side



"f" free overhung

There are basic drawings for CAD users in different file formats, which can be imported in existing drawings.

Please request or download.

3D-CAD files will be offered on request:

ekd-gelenkrohr@t-online.de

www.ekd-gelenkrohr.de

