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strength through engineering

# STRETCH_LINE

OVERVIEW CONVEYOR SYSTEMS,
TECHNICAL INFORMATION,
MAINTENANCE & PERFORMANCE

WWW.NECC.PL

# INDEX CS CONVEYOR SYSTEMS

2020/10

# ICON OVERVIEW

## GENERAL


Note Caution


Weight


Fabrication


Packaging unit


Tools


Mounting


Material


Cutting profile to length

Energy Efficiency


Colour

Left-hand version LS/
right-hand version RS


Surface


Type/Version

## SYSTEM RELATED


Chain Type


Drive motor


Effective chain length

Maximum permissible
chain pulling force


Conveyor chain material


Effective chain length -
inside curve

Maximum conveying speed


Profile series


Effective chain length -
outside curve


Maximum permissable
line length

## DIMENSIONS


Sizes, dimensions


Thread

Drive pitch diameter

Width

Idler radius

Length

Idler angle

# CONVEYOR SYSTEMS | APPLICATIONS FROM EVERYDAY PRACTICE

The innovative solutions provided by CS Conveyor systems guarantee a rational flow of materials in production – also where high demands are placed on speed, noise emissions, servicing and maintenance.

Take advantage of our expertise that has grown over many years. We are your innovative developer and reliable supplier of standardised and customised applications.

Chemical industry: Filling, FS CS090SL

Cosmetics industry: Filling, FS CS065SL

Beverage industry: Filling, FS CS065/FS CS090SL

Food industry: Packaging, FS CS090SL

Food industry: FS CS090SL

Consumer goods industry: Packaging, FS CS065SL

# CS SL OVERVIEW | CS SL - THE CHAIN CONVEYOR SYSTEM FOR MAXIMUM LINE AVAILABILITY

The new CS SL (Conveyor System STRETCH_LINE) chain conveyor system is the innovative solution for conveying unit loads, such as bottles, cans, cardboard boxes and machine parts.

The unique designed conveyor chain produces the "STRETCH_LINE" effect which compensates for operation-related chain elongation. This obviates the need for the work-intensive process of shortening the chain. Result: Greater production-line availability and reliability, increasing overallproductivity. Conveyorefficiencyisadditionallyenhancedasaresult of reduced friction losses in the run of the line.

The patented chain design principle also permits very high conveying speeds with minimum noise emission.
Upshot: CS SL – the conveyor system of the future.

## CUSTOMER BENEFITS BY CHOOSING STRETCH_LINE CONVEYOR:

- FS Solutions uses high-quality, modular elements, each system can be compiled to requirement.
- Proven in thousends applications and varius industries.
- Overall widths of 65, 90 and 200 mm - for selection to suit application.
- Variable line configuration - to serve any point in the room.
- Small idler radius - minimising space required in production.
- The conveyor chain's patented design compensates for operation-related elongation, reducing down times to the minimum.
- High operational reliability: reduced risk of crushing injury as a result of closed chains with very narrow gaps in drives and idlers.
- Clip-on sliding strips ensure quiet, low-friction operation, even at full load.
- High chain pulling forces - load loading capacity of up to 200 kg.
- High guide profile rigidity - wide support intervals.
- Conveying speed up to 80 m/min.
- Recommended temperature range from -20 to +80°C.
- Maintenance work kept to a minimum:
  - no need to lubricate the chain.
  - wear parts can be changed with ease.
- Good resistance to chemicals as well as to liquids with a pH value of 4.5 to 9 (list on request).
- small chain pitch

**FS CS065SL**

**FS CS090SL**

**FS CS200SL**

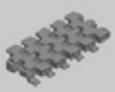
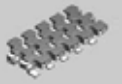
**CS RAILING**

**CS LEG PROFILES**

## | FS SOLUTIONS WILL SUPPORT IN DESIGNING YOUR INDIDUAL CONVEYOR SOLUTION

| | | | FS CS065SL | FS CS090SL | FS CS200SL |
|---|---|---|---|---|---|
| | | |  | | |
| Technical specifications | Overall width/Chain width | mm | 65 / 62 | 90 / 87 | 200 / 194 |
| | Product width | mm | 15 - 140 | 20 - 200 | 100 - 400 |
| | Max. product weight horizontal/vertical conveyance | kg | 10 / 5 | 10 / 5 | 15 / 5 |
| | Maximum load Conveyor system/Chain links | kg | 150 / 1,5 | 150 / 1,5 | 200 / 1,5 |
| | Max. conveying speed | m/min | 120 | 120 | 90 |
| | Max. conveyor length | m | 30 | 30 | 30 |

# CS SL OVERVIEW | CHAIN TYPES CS SL

| | | FS CS065SL | FS CS090SL | FS CS200SL |
|---|---|---|---|---|
| | |  |  |  |
|  | Standard chain | ● | ● | ● |
|  | Chain with reinforced tab | ○ | ● | ○ |
|  | Catch-plate chain | ● | ● | ● |
|  | Chain with round product support | ● | ○ | ○ |
|  | Chain with friction lining | ● | ● | ● |
|  | Antistatic chain | ● | ● | ● |
|  | Chain with flocked surface | ● | ● | ● |
|  | Universal chain | ● | ● | ● |
|  | Universal chain with catch roller | ● | ● | ● |
|  | Accumulating-roller chain | ● | ● | ○ |
|  | Gripper chain | ● | ● | ○ |

# CS SL GENERAL INFORMATION

## | GENERAL OPERATING CONDITIONS

### DESCRIPTION

The conveyor system is a chain conveyor for handling unit loads. The aluminium guide profile accommodates a curve-going conveyor chain made of plastic. Clip-on sliding strips minimise sliding friction between chain and profile.

### PLASTIC CHAINS

The plastic chains required for operation are made of POM or PA. The chains exhibit a good level of resistance to chemicals as well as liquids with a pH value of 4.5 to 9 (list on request).

### AMBIENT CONDITIONS

Permissible operating temperature range from -20 to +80°C.

### CONVEYOR CHAIN LUBRICATION

Conveyor systems can in general be operated without lubrication. This is made possible by the excellent material properties of the sliding strip. If permitted by the particular application, the conveyor system should be lubricated in order to reduce noise emission and wear.

## | GENERAL TECHNICAL CONDITIONS

### LINE LENGTH

Maximum line length is governed by line configuration, power of the drive unit and weight carried bythe conveyor system.

### CONVEYING SPEED

Maximum conveying speed is governed by line configuration, power of the drive unit and weight carried by the conveyor system.

### WIDTH OF CONVEYED ITEM

The maximum width of conveyed items is governed by their shape and the position of their gravitational centre.

### WEIGHT OF CONVEYED ITEM

**Horizontal conveyance:**

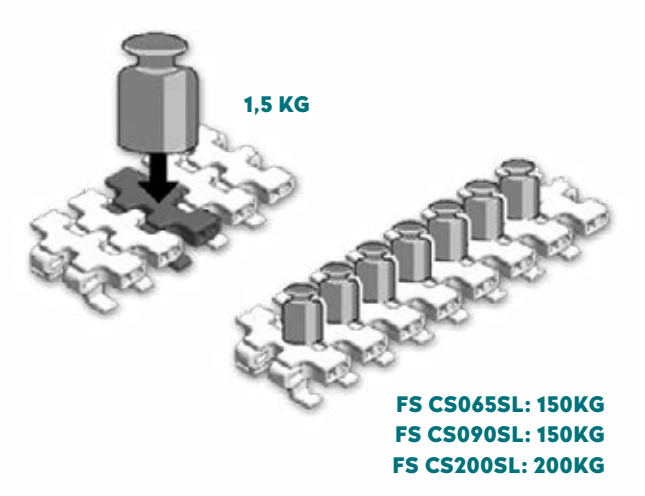
The maximum weight of individual conveyed items is limited by sliding-strip wear and chain pulling force.

**Vertical conveyance:**

The maximum weight of individual conveyed items is governed by the strength of the catch plates.

### MAXIMUM CONVEYOR SYSTEM LOAD

The conveyor's maximum loading capacity is governed by the power of the drive unit and pulling force in the chain. The maximum load per chain link is 1.5 kg.

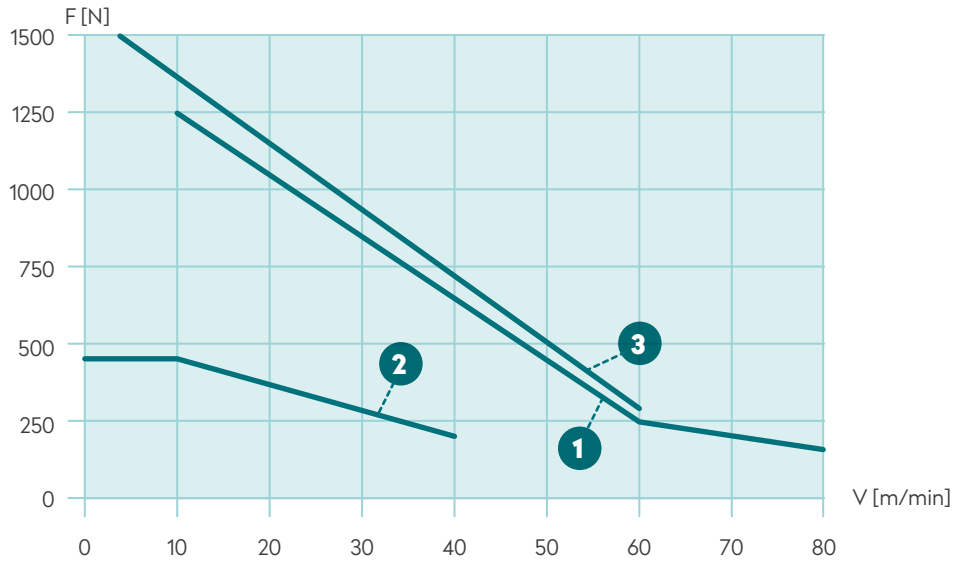


The maximum permissible chain tension depends on conveying speed and line length. Values can be read from the diagrams on the right. The lower value is authoritative.
FS Solutions engineers will support you in choosing the best matching conveyor.

If the calculated chain tension is too high, you may select one of the following options:

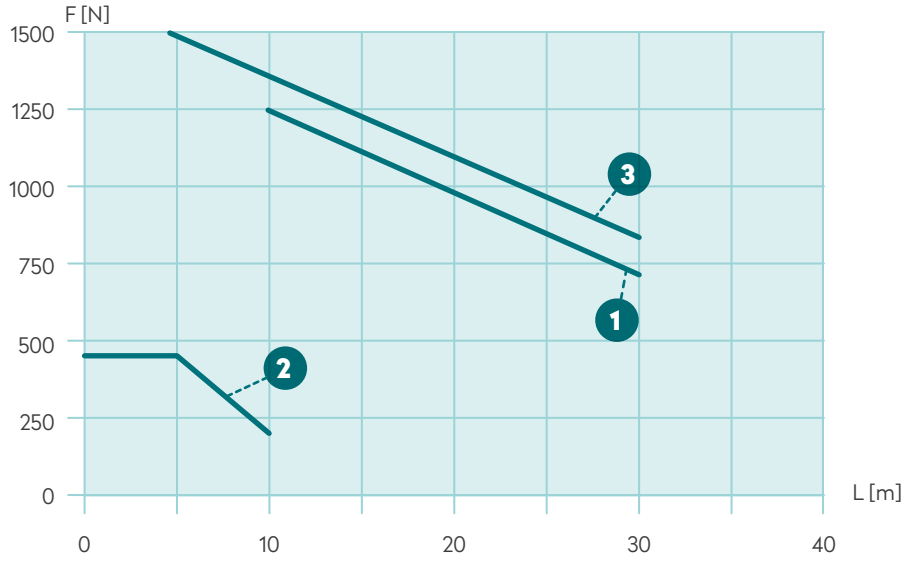
- Divide up system into shorter sections.
- Replace horizontal sliding curves with horizontal curves with disk.

### PERMISSIBLE CHAIN TENSION F AS A FUNCTION OF CONVEYING SPEED V




1 FS CS065/FS CS090SL (without centre drives) 2 FS CS090SL centre drives 3 FS CS200SL

### PERMISSIBLE CHAIN TENSION F AS A FUNCTION OF CONVEYOR LINE LENGTH L



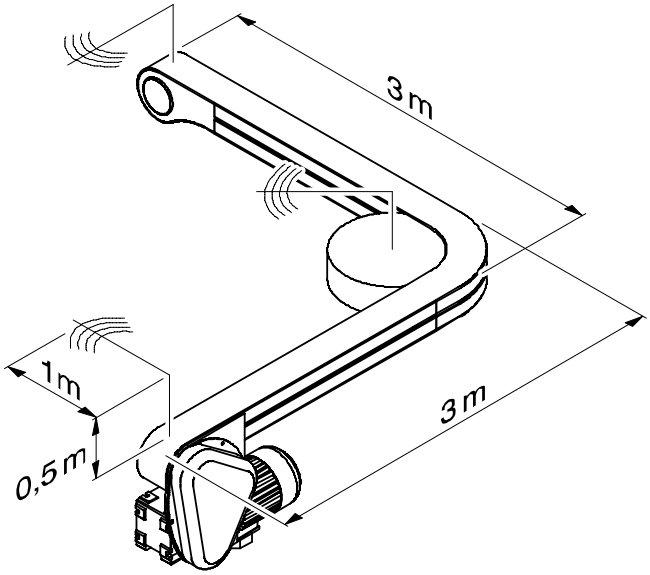

1 FS CS065/FS CS090SL (without centre drives) 2 FS CS090SL centre drives 3 FS CS200SL

Under applicable regulations on health and work safety as well as environmental protection, the noise emitted from a conveyor system must not exceed a maximum level of 75 dB(A).

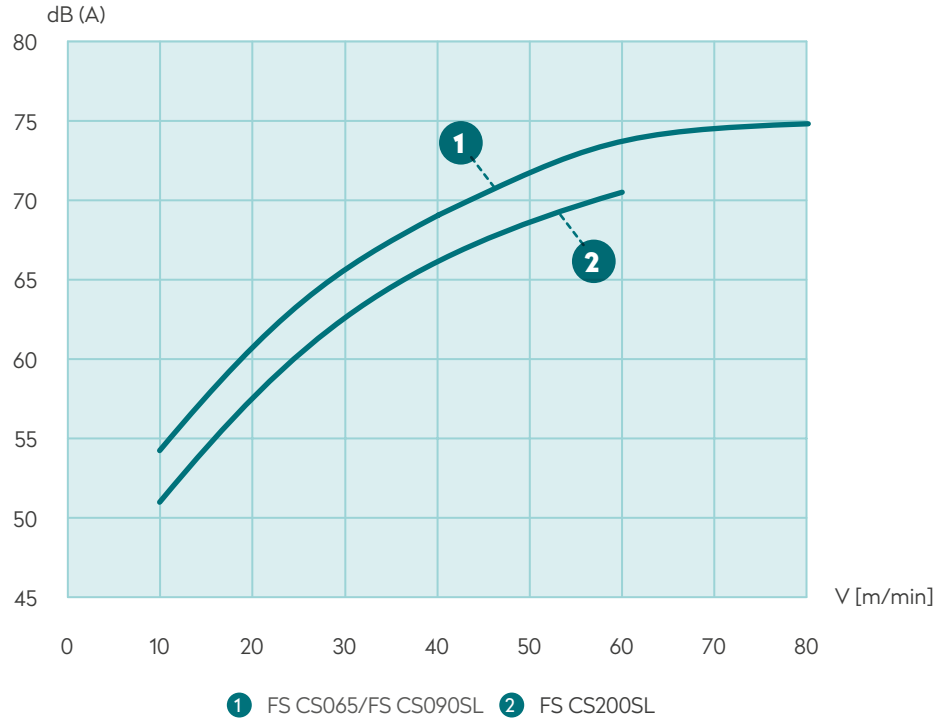
The reference line is set up at a height of 1.0 m above the floor. The measuring points for drive, curve and idler are positioned at:

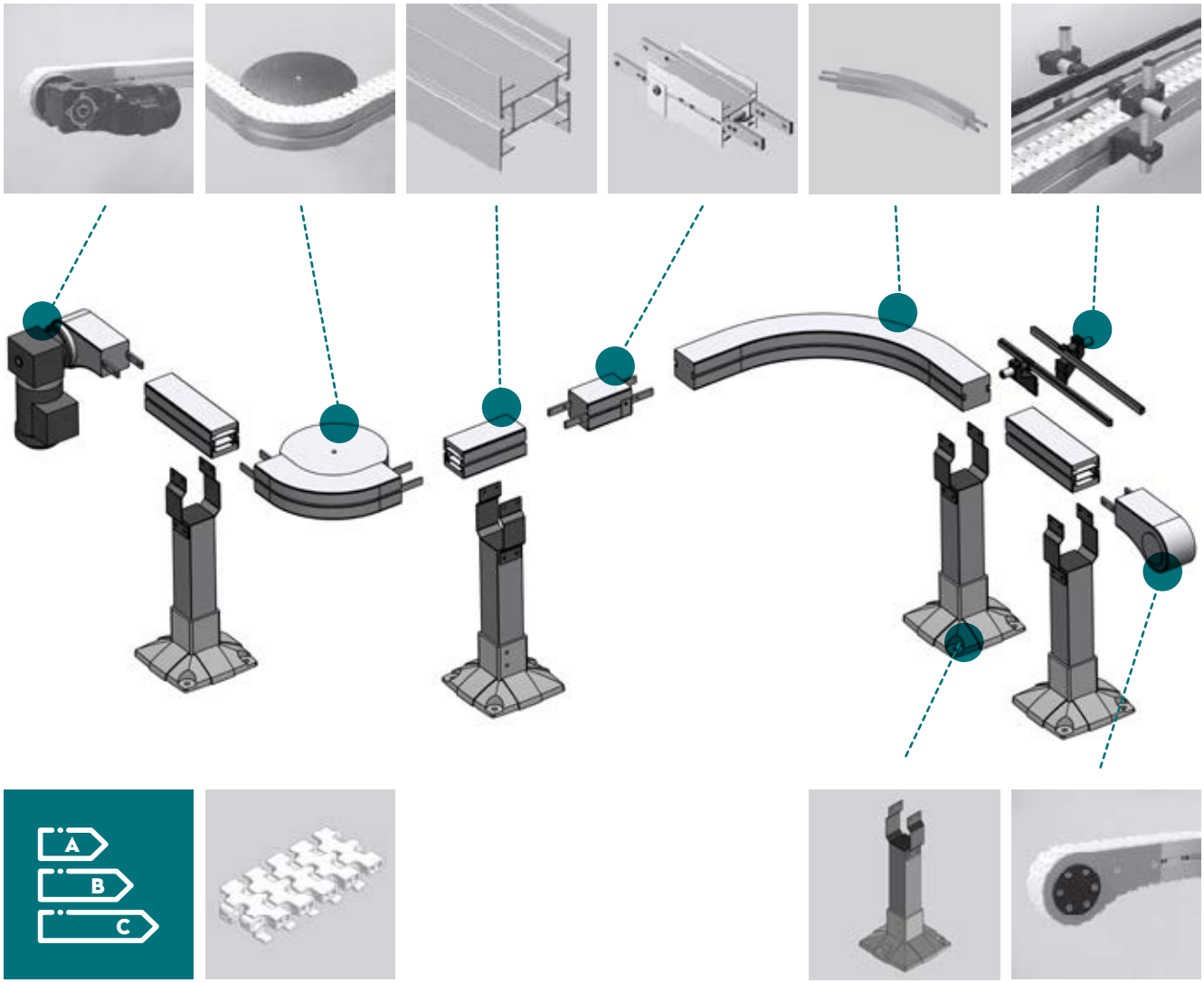
- 0.5 m above and
- 1.0 m to the side of the line.

### REFERENCE LINE SET-UP




### NOISE EMISSION IN DB (A) AS A FUNCTION OF CONVEYING SPEED V

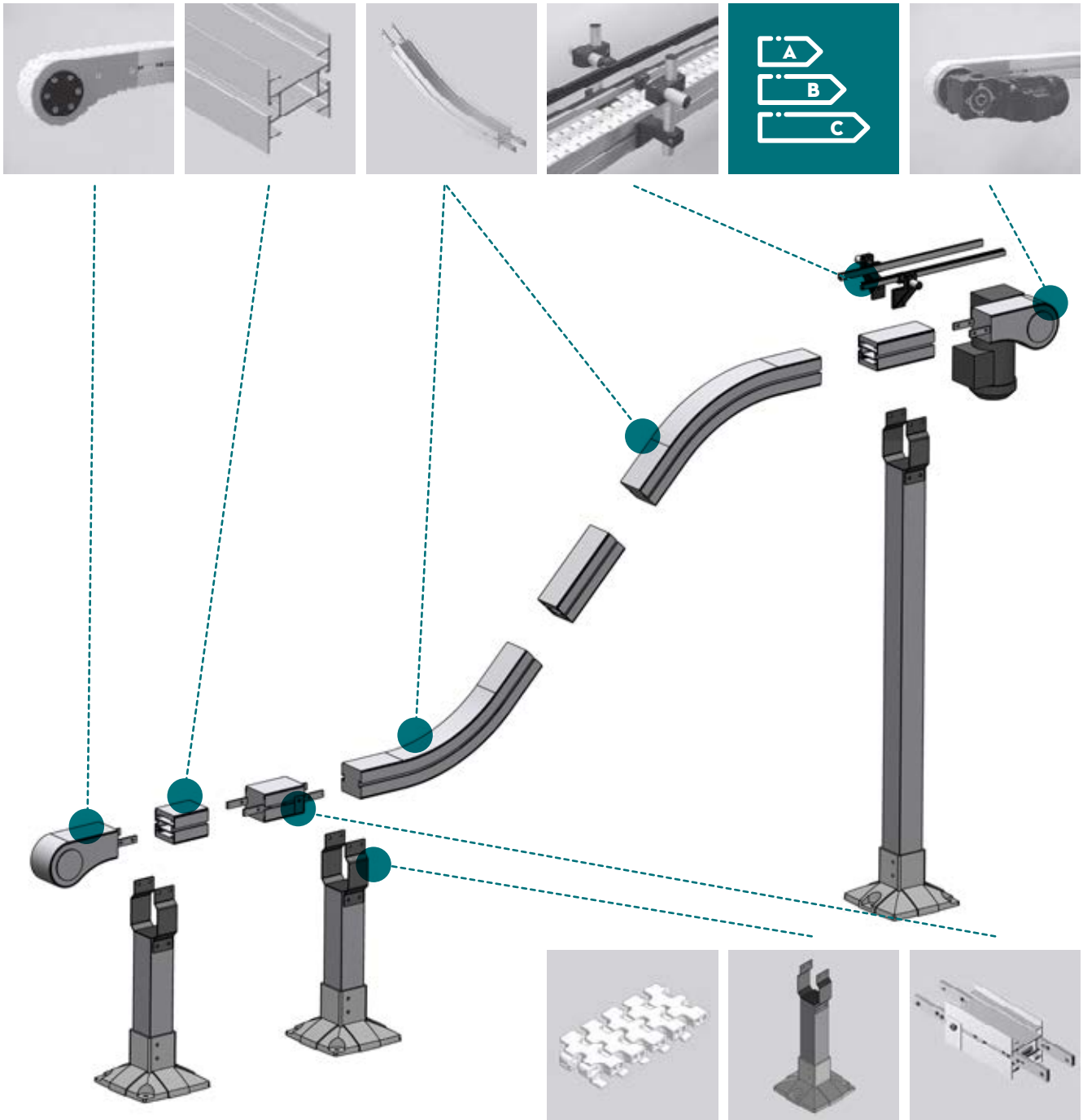





**CUSTOMISED DESIGNS:**

All of the components described below are available in customised designs.

# CS SL COMPONENTS | LINE WITH VERTICAL CURVES



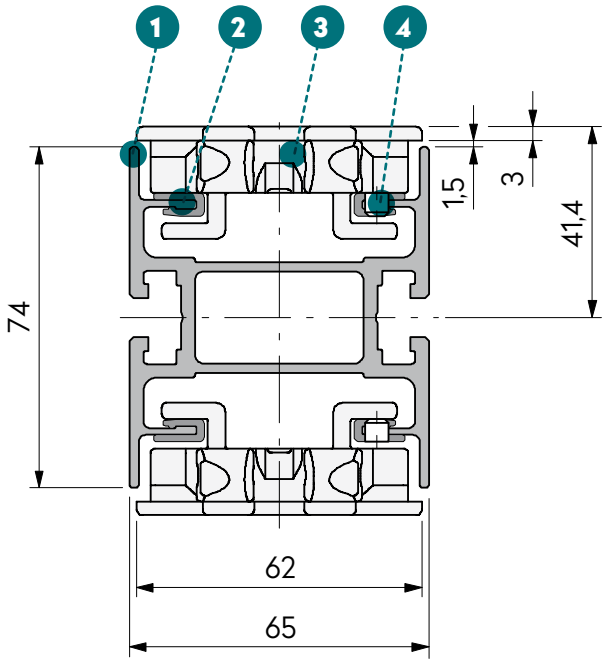
# FS CS065SL

## Conveyor system

# FS CS065SL OVERVIEW

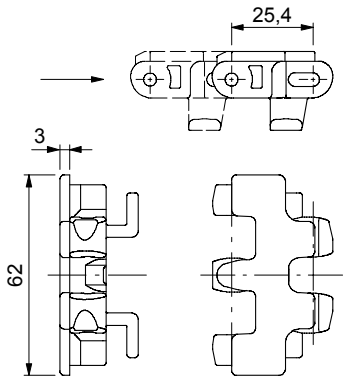
## Feeding, filling, packaging individual items

- Overall width 65 mm
- Chain width 62 mm
- Product width 15 - 140 mm
- Max. product weight for conveying direction:
  - Horizontal 10 kg
  - Vertical 5 kg
- Maximum load:
  - Conveyor system 150 kg
  - Chain link 1.5 kg
- Max. conveying length 30 m (8 m for vertical clamp conveyors)
- Max. conveying speed 120 m/min
- Available drives:
  - Vertical drives
  - Direct drives
  - Centre drives
  - Vertical centre drives
  - Direct centre drives
- Compatible with railing system:
  - Variable guide width 15 - 200 mm
  - Variable guide height 15 - 350 mm

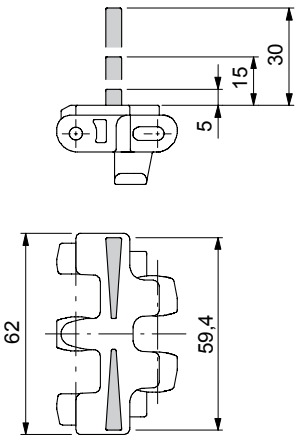



1. Guide profile
2. Sliding strip
3. Conveyor chain
4. Grub screw

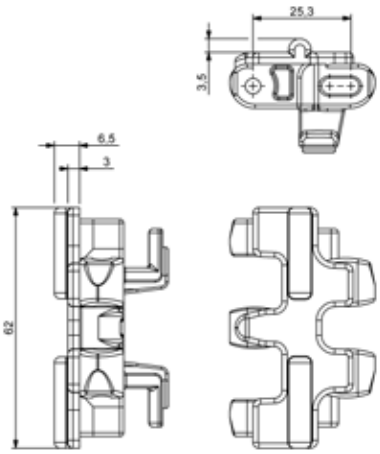
### FS CS065SL STANDARD CHAIN



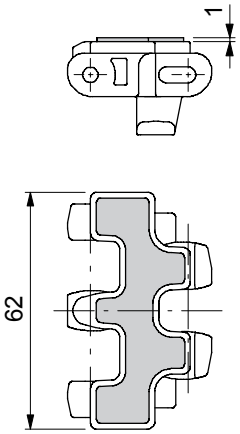

### FS CS065SL CHAIN WITH CATCH PLATES



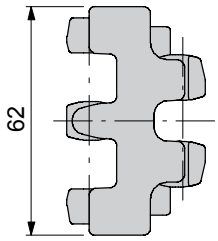

### FS CS065SL CHAIN WITH ROUND PRODUCT SUPPORT (R2,5MM)



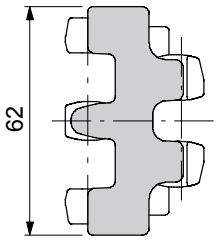

### FS CS065SL CHAIN WITH FRICTION LINING



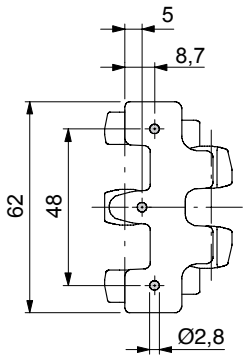

### FS CS065SL ANTISTATIC CHAIN



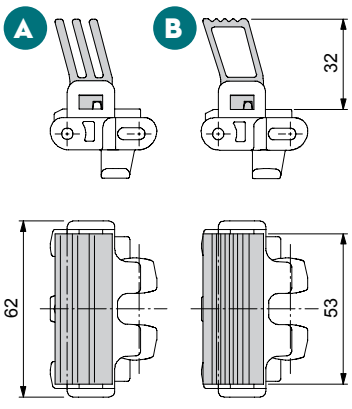

### FS CS065SL CHAIN WITH FLOCKED SURFACE



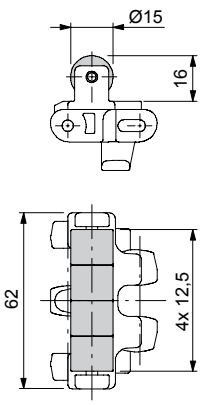

### FS CS065SL UNIVERSAL CHAIN



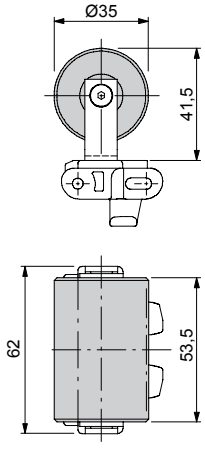

### FS CS065SL CHAIN WITH GRIPPER



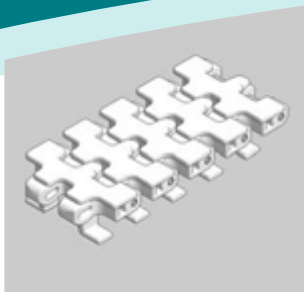

### FS CS065SL CHAIN WITH ACCUMULATING ROLLERS




### FS CS065SL CHAIN WITH CATCH ROLLER

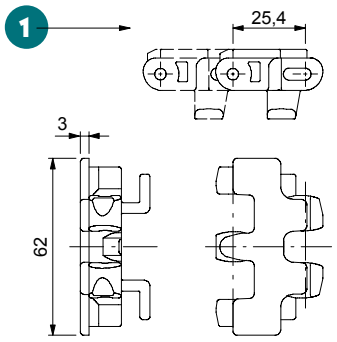


# FS CS065SL LINE COMPONENTS



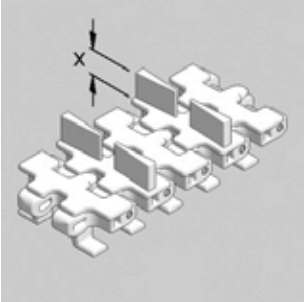
## | CHAIN CS065SL STANDARD

- Standard chain for horizontal conveyance.
- Suitable for accumulating conveyor mode.
- Pin-hinged chain links.




1 Direction of travel

| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain CS065SL, standard | J534 550 | 4,0 m | POM | white | 1,0 kg/m | | 1250 N |
| Chain link, individual | J534 567 | 10 | POM | white | | | 1250 N |
| Chain pin, individual | J534 011 | 100 | Stainless steel | grey | | J537 131<br>Split-pin driver | |

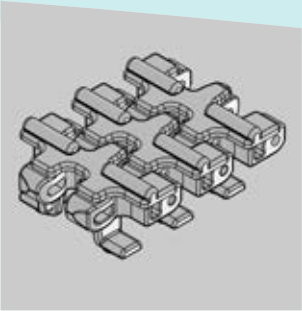



## | CHAIN FS CS065SL WITH CATCH PLATES

- Chain for vertical conveyance.
- Chain links with catch plates are inserted in the standard chain at recurrent intervals.
- Catch plate heights of 5, 15 and 30 mm.

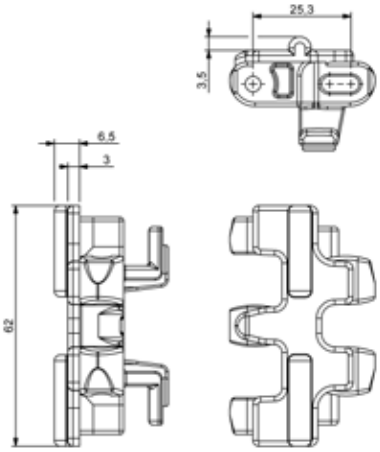
| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain link, individual,<br>catch plate height 5mm | J534 013 | 10 | POM | white | 1,1 kg/m* | | 1250 N |
| Chain link, individual,<br>catch plate height 15 mm | J534 014 | 10 | POM | white | 1,1 kg/m* | | 1250 N |
| Chain link, individual,<br>catch plate height 30 mm | J534 015 | 10 | POM | white | 1,1 kg/m* | | 1250 N |
| Chain pin, individual | J534 011 | 100 | Stainless steel | grey | | J537 131<br>split-pin driver | |

* catch plate every 10th chain link

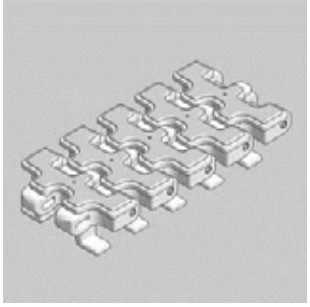


## | CHAIN CS065SL WITH ROUND PRODUCT SUPPORT

- Chain with round halfmoon product support R=2,5mm




| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain CS065SL, with round product support | J400013 | 4,0m | POM | white | 1,0 kg/m | | 1250 N |

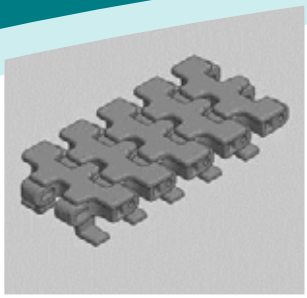


## | CHAIN FS CS065SL WITH FRICTION LINING

- Chain with anti-slip coating to increase adhesion on inclines.
- Well suited for conveying smooth-surfaced items.
- Friction lining in wear-resistant rubber.
- Not suitable for accumulating conveyors.

| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain CS065SL, with friction lining | J534 553 | 4,0 m | PA | white | 0,9 kg/m | | 500 N |
| Chain link, individual | J534 053 | 10 | PA | white | | | 500 N |
| Chain pin, individual | J534 011 | 100 | stainless steel | grey | | J537 131 Split-pin driver | |

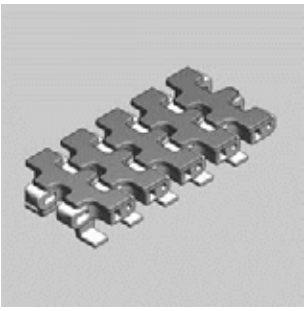
# FS CS065SL LINE COMPONENTS



## | CHAIN FS CS065SL ANTISTATIC

- Standard chain in antistatic finish.
- For use only in conjunction with antistatic sliding strip and drive unit.

| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain CS065SL, antistatic | J534 551 | 4,0 m | POM | black | 1,0 kg/m | | 950 N |
| Chain link, individual | J534 568 | 10 | POM | black | | | 950 N |
| Chain pin, individual | J534 011 | 100 | Stainless steel | grey | | J537 131<br>Split-pin driver | |

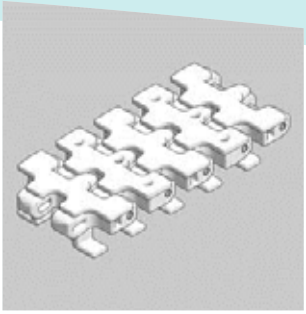


## | CHAIN FS CS065SL WITH FLOCKED SURFACE

- Standard chain with grey flocked surface.
- The soft surface protects the items being conveyed.

| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain CS065SL,<br>with flocked surface | J400 038 | 4,0 m | POM | white | 1,0 kg/m | | 1250 N |
| Chain pin, individual | J534 011 | 100 | Stainless steel | grey | | J537 131<br>Split-pin driver | |

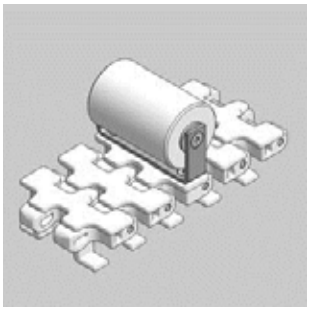
# FS CS065SL LINE COMPONENTS



## | CHAIN FS CS065SL UNIVERSAL

- Universal chain links are inserted in the standard chain at recurrent intervals.
- Chain for universal application with drill holes in the base plate.
- Capability of fitting various conveyor components (e.g. catch plates, rollers) using Ø3.9 mm self-tapping bolts.

| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain link, individual | J534 059 | 10 | POM | white | 1,0 kg/m | | 1250 N |
| Chain pin, individual | J534 011 | 100 | stainless steel | grey | | J537 131 | |

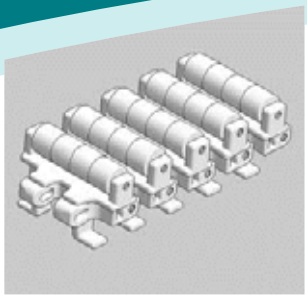


## | CHAIN FS CS065SL WITH CATCH ROLLERS

- Chain links with catch rollers are inserted in the standard chain at recurrent intervals.
- At least one standard link must be inserted between two catch rollers.

| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain link, individual | J534 060 | 10 | POM | white | 1,4 kg/m* | | 1250 N |
| Chain pin, individual | J534 011 | 100 | stainless steel | grey | | J537 131<br>split-pin driver | |

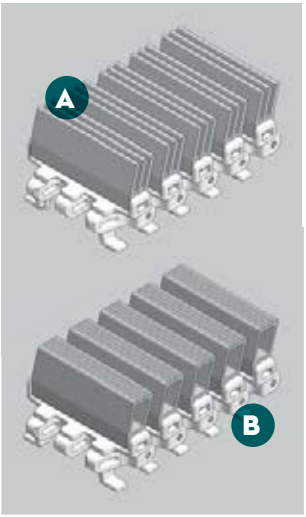
# FS CS065SL LINE COMPONENTS



## | CHAIN FS CS065SL WITH ACCUMULATING ROLLERS

- Chain with rollers to minimise friction in accumulating conveyor mode.

| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain CS065SL, with accumulating rollers | J534 558 | 2,0 m | POM | white | 1,7 kg/m | | 1250 N |
| Chain link, individual | J534 056 | 10 | POM | white | | | 1250 N |
| Chain pin, individual | J534 011 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

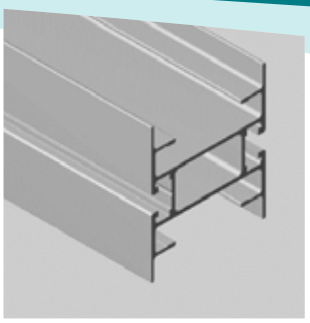



## | CHAIN FS CS065SL WITH GRIPPER

- Chain with surface-mounted gripper element (flexible catches).
- Used in vertical clamp conveyors.
- Gripper element in EPDM.
- Use shape A:
  - small lightweight unit loads
  - products with irregular surface.
- Use shape B:
  - larger-type unit loads
  - item weight up to 10 kg.

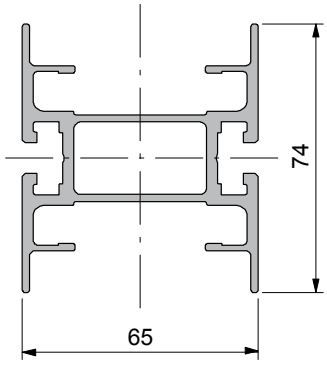

| | | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|---|
| Chain CS065SL, with gripper | A | J534 588 | 2,0 m | POM | white | 1,6 kg/m | | 750 N |
| | B | J534 557 | 2,0 m | | | 1,5 kg/m | | |
| Chain link, individual | A | J534 589 | 10 | POM | white | | | 750 N |
| | B | J534 054 | 10 | | | | | |
| Gripper element, individual | A | J534 268 | 10 | EPDM | grey | | | |
| | B | J400 001 | 10 | | | | | |
| Chain pin, individual | | J534 011 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

# FS CS065SL LINE COMPONENTS



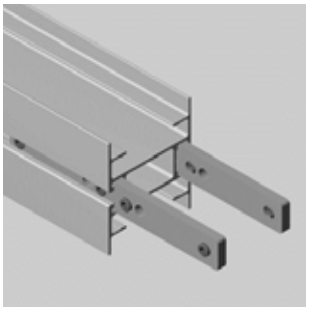
## | GUIDE PROFILE FS CS065SL

- Line lengths over 6000 mm can be produced by using joints.



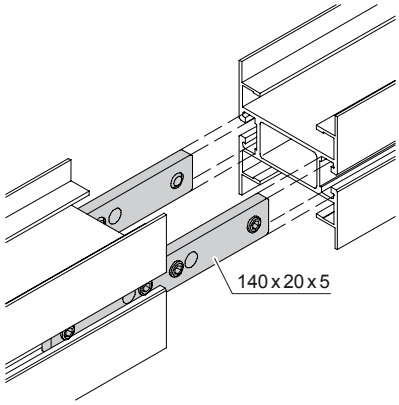

CROSS SECTION

| | PROD.NO. | | | |
|---|---|---|---|---|
| Guide profile CS065SL | J924 172 | 6,0 m | EN AW-6063 T66 | E6/EV1 anodised finish |
| Cutting to length | J924 969 | 1 | | |



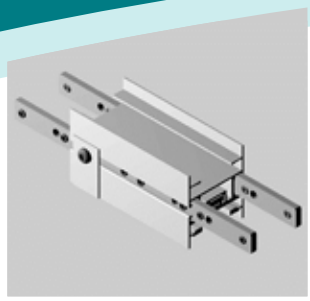
## | LINE JOINT CS SL

- Joints are pushed into the profile groove and fixed in place with the premounted inserts.
- No additional work to the profile is necessary.



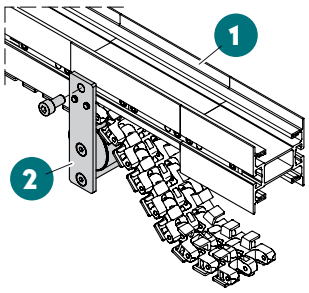

| | PROD.NO. | | | |
|---|---|---|---|---|
| Line joint | J927 803 | 2 | steel | galvanised |

# FS CS065SL LINE COMPONENTS | CHAIN FS CS065SL ASSEMBLY UNIT

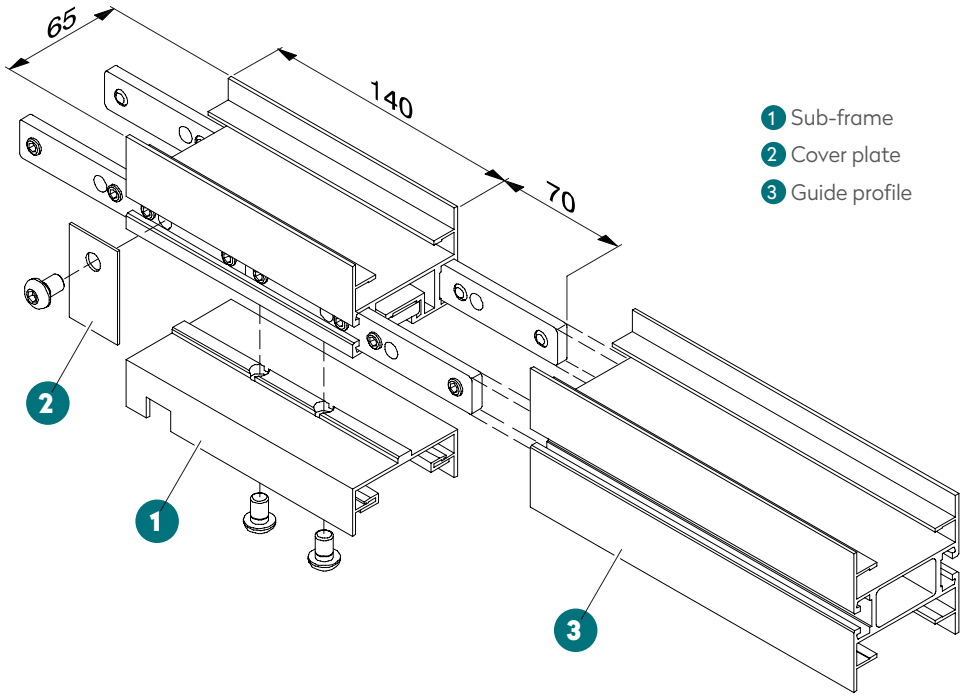


- The chain assembly unit allows to feed the chain into the assembled line.
- Can be fitted at any point within the line.
- Line joints are included.
- The sub-frame must be removed for feeding the conveyor chain into the line.
- After fitting the chain pin, the opening in the sub-frame must be closed off with the cover plate.
- The optional chain assembly aid facilitates feeding the conveyor chain into the line. It is attached to the lower side of the assembly unit after removing the cover plates and the sub-frame.

## USING THE CHAIN ASSEMBLY AID



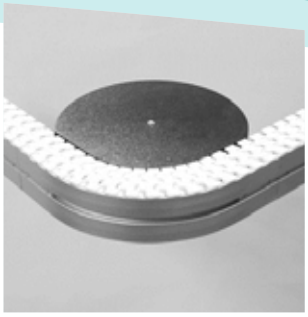

1 Assembly unit
2 Assembly aid




1 Sub-frame
2 Cover plate
3 Guide profile

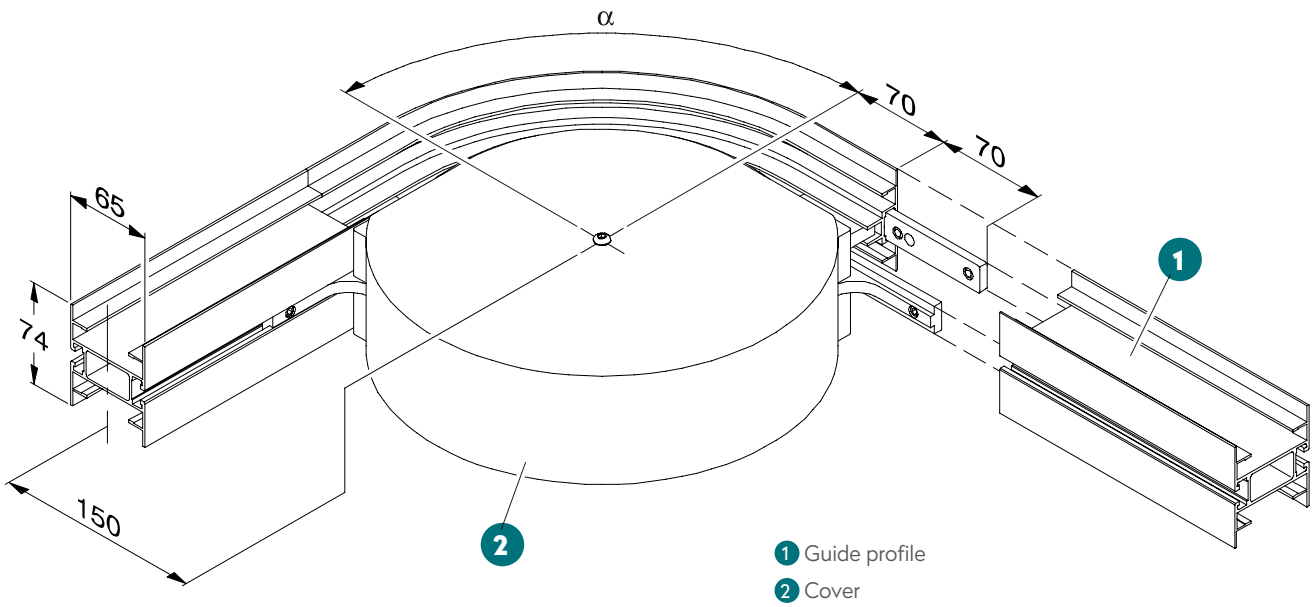
| | PROD.NO. | |
|---|---|---|
| Chain assembly unit CS065SL | J927 702 | 1 |
| Assembly aid | J927 823 | 1 |
| Split-pin driver | J537 131 | 1 |

# FS CS065SL LINE COMPONENTS | HORIZONTAL CURVES WITH DISK FS CS065SL

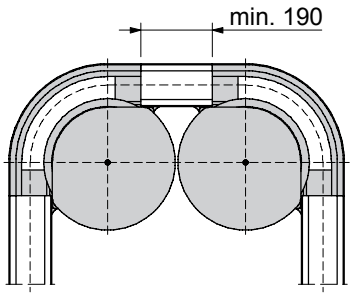


- Small idler radius: 150 mm.
- The idler radius is based on the line centre.
- It is installed in the conveyor line without the need for any work to the joints.
- Antistatic version on request.

## HORIZONTAL CURVE WITH DISK FS CS065SL, R150/90°




1 Guide profile
2 Cover

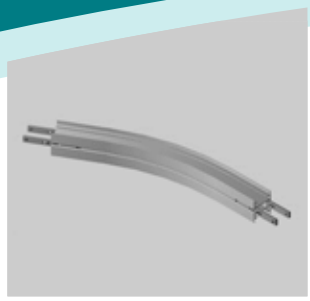



**NOTE**
When installing two horizontal curves with disk, they must be separated by a straight line section of at least 190 mm in length.

| | R | α | PROD. NO. | | |
|---|---|---|---|---|---|
| Horizontal curve with disk | 150 mm | 45° | J927 788 | 1 | 2x 0,27 m |
| | | 60° | J927 769 | | 2x 0,31 m |
| | | 90° | J927 720 | | 2x 0,40 m |
| | | 180° | J927 721 | | 2x 0,67 m |

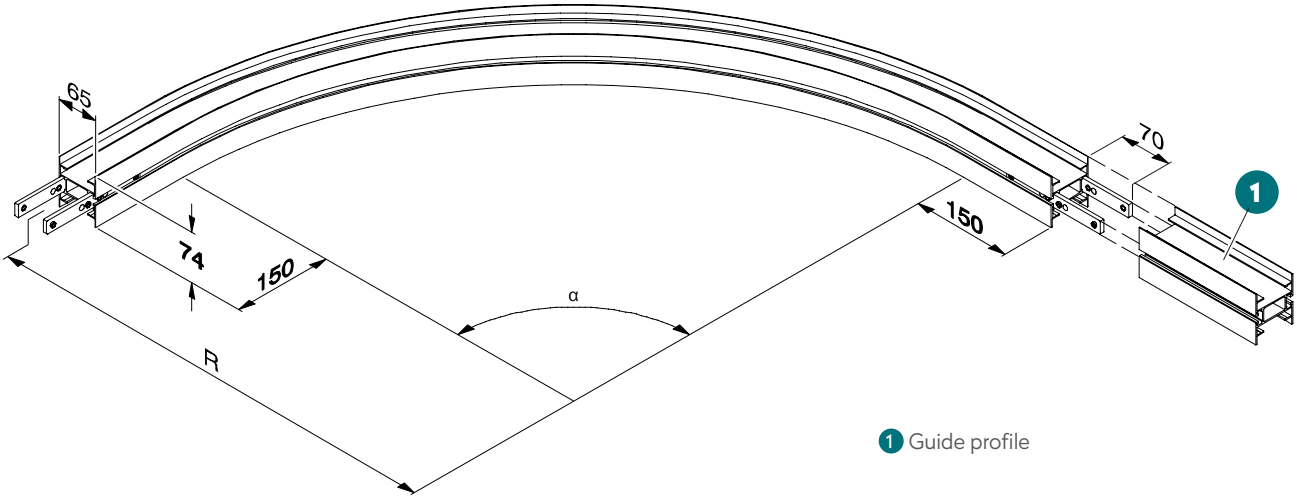
Different angles on request

# FS CS065SL LINE COMPONENTS | HORIZONTAL SLIDING CURVES FS CS065SL



- Horizontal sliding curve.
- Various angles available. The radius is based on the line centre.
- Min. radius: 250 mm.

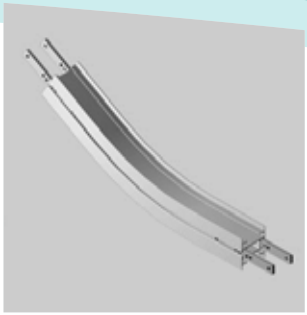
## HORIZONTAL SLIDING CURVE FS CS065SL, R700/90°




1 Guide profile

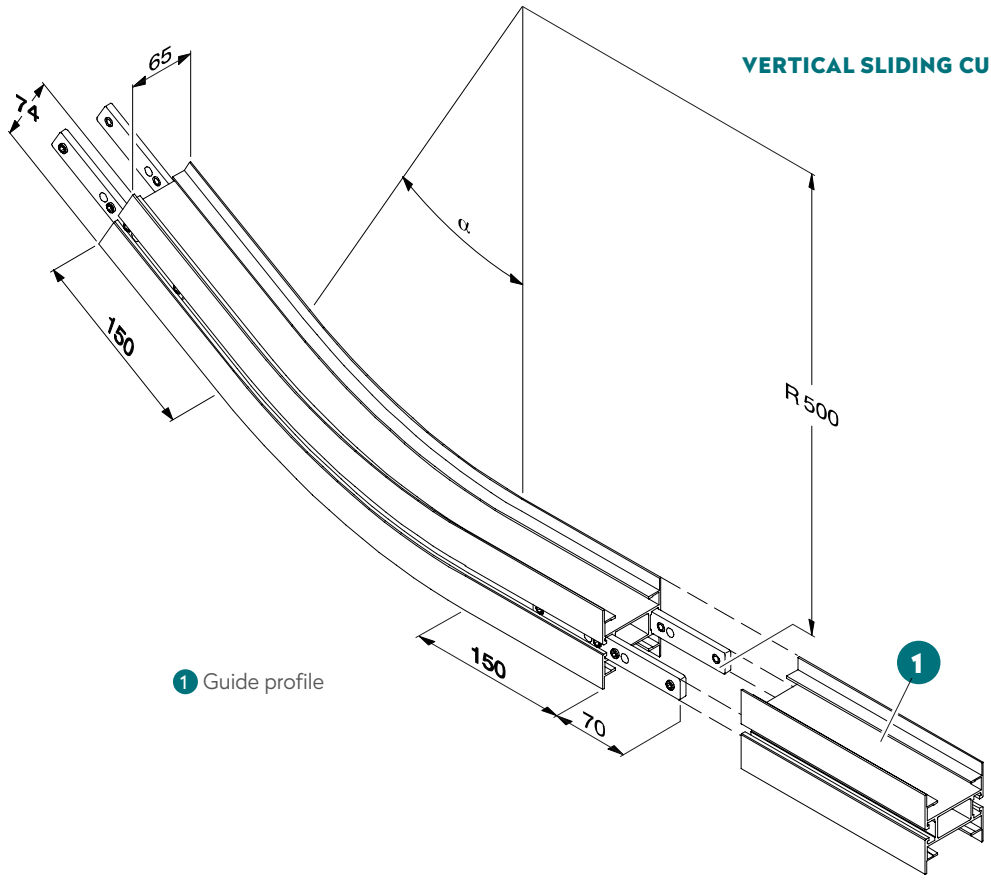
| | R | α | PROD.NO. | | |
|---|---|---|---|---|---|
| Horizontal sliding curve | 400 mm | 15° | J927 842 | 1 | 2x 0,41 m |
| | | 30° | J927 805 | | 2x 0,52 m |
| | | 45° | J927 806 | | 2x 0,63 m |
| | | 60° | J927 807 | | 2x 0,74 m |
| | | 90° | J927 808 | | 2x 0,96 m |
| | 700 mm | 30° | J927 722 | 1 | 2x 0,68 m |
| | | 45° | J927 723 | | 2x 0,87 m |
| | | 60° | J927 724 | | 2x 1,05 m |
| | | 90° | J927 725 | | 2x 1,43 m |

Different radius or angles on request



- Vertical sliding curves for conveyor lines with inclines.
- Various angles available. The radius is based on the line centre.
- Min. radius: 500 mm.
- Can be used as outside and inside curve.

## VERTICAL SLIDING CURVE FS CS065SL, R500/30°



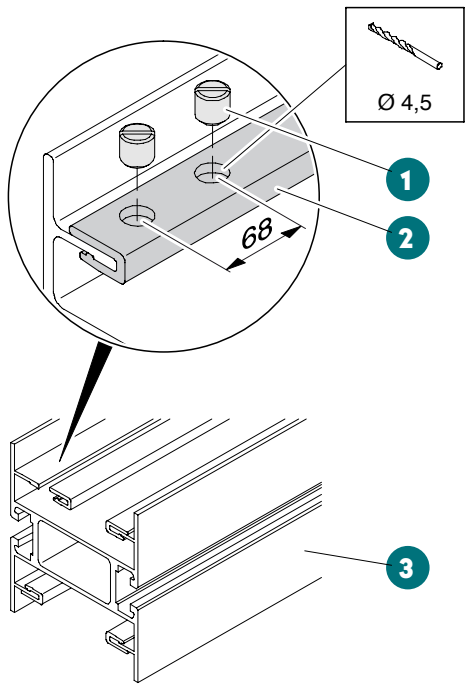

1 Guide profile

| | R | α | PROD.NO. | | | | |
|---|---|---|---|---|---|---|---|
| Vertical sliding curve | 500 mm | 5° | J927 726 | 1 | 0,34 m | 0,35 m | 0,69 m |
| | | 7° | J927 727 | | 0,36 m | 0,37 m | 0,73 m |
| | | 10° | J927 728 | | 0,38 m | 0,39 m | 0,77 m |
| | | 15° | J927 729 | | 0,42 m | 0,44 m | 0,86 m |
| | | 20° | J927 730 | | 0,46 m | 0,49 m | 0,95 m |
| | | 30° | J927 731 | | 0,54 m | 0,58 m | 1,12 m |
| | | 45° | J927 732 | | 0,67 m | 0,72 m | 1,39 m |
| | | 60° | J927 733 | | 0,79 m | 0,86 m | 1,65 m |
| | | 90° | J927 734 | | 1,03 m | 1,14 m | 2,17 m |

Different radius or angles on request

# FS CS065SL LINE COMPONENTS | SLIDING STRIP CS SL

- Sliding strip for minimising friction between chain and profile.
- Properties:
  - Outstanding sliding behaviour
  - Extremely hard surface for minimum wear
  - Suitable for high conveyor speeds.
- The sliding strip is clipped on and fixed in place after assembling the line. Joints in the guide profile should not coincide with joints in the sliding strip.
- Worn sliding strips are easy to remove and renew.

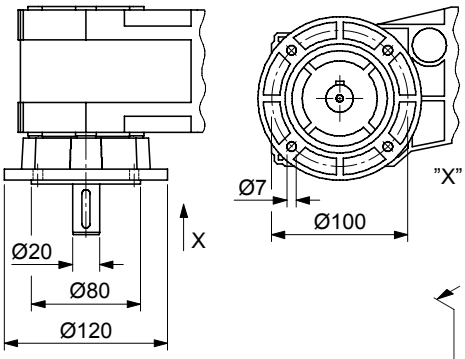



1 Grub screw
2 Sliding strip
3 Guide profile

| | PROD.NO. | | | |
|---|---|---|---|---|
| Sliding strip, standard | J537 015 | 25,0 m | PA-modified | grey |
| Sliding strip, antistatic | J537 016 | 25,0 m | PE 500 | black |
| Sliding strip | J537 017 | 25,0 m | PA-modified | blue |
| Sliding strip, ultra low friction | J537 020 | 25,0 m | LubX CV | Naturel |
| Grub screw M5 x 5 | J535 380 | 25 | POM | white |
| Drilling jig | J927 786 | 1 | | |
| Assembly mandrel | J537 135 | 1 | | |

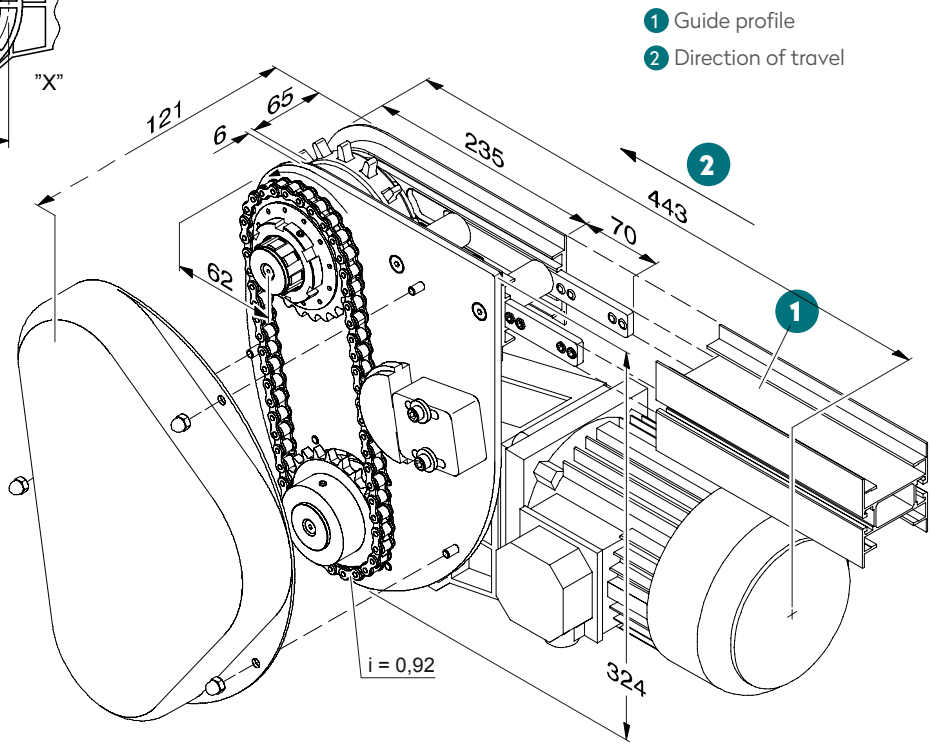
- The drive motor is suspended below the guide profile.
- Left-hand or right-hand version, either with or without motor.
- Slip clutch is included.
- Chain transmission ratio i = 0.92.
- Antistatic version on request.

## CONNECTING DIMENSIONS FOR MOTOR




**NOTE**
Observe rating and servicing details in "Basic technical information".

## VERTICAL DRIVE FS CS065SL, LEFT-HAND VERSION



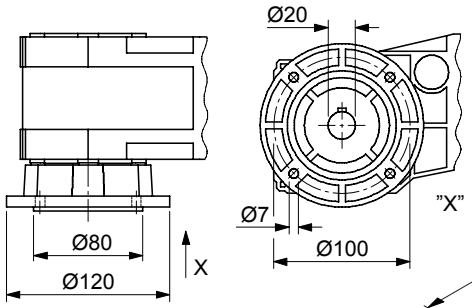

| | | | m/min | PROD.NO. | | m | N | mm | m |
|---|---|---|---|---|---|---|---|---|---|
| Vertical drive | LS | ○ | 60 | J927 706 | 1 | 30 | 800 | 118,5 | 0,55 |
| | | ● | | ■ on request | | | | | |
| | RS | ○ | | J927 719 | | | | | |
| | | ● | | ■ on request | | | | | |

LS/RS left-hand/right-hand version ● / ○ with/without motor ■ specify conveyor speed

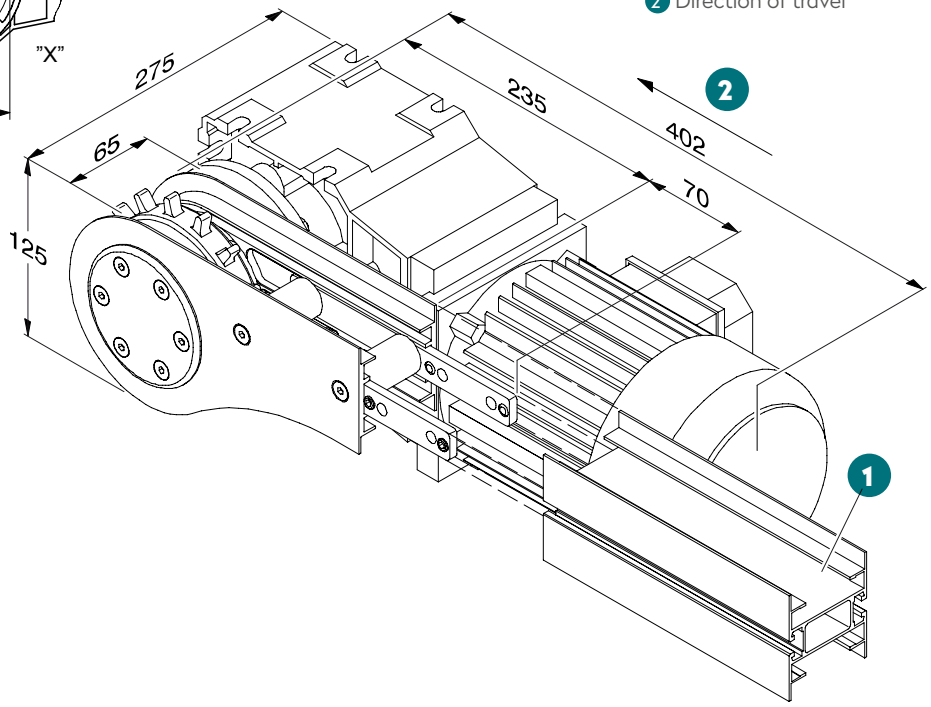
# FS CS065SL DRIVES | DIRECT DRIVES FS CS065SL

- Compact design.
- The drive motor is positioned at the side of the guide profile - left or right.
- Either with or without motor.
- Antistatic version on request.

## CONNECTING DIMENSIONS FOR MOTOR




## DIRECT DRIVE FS CS065SL, RIGHT-HAND DRIVE MOTOR




**NOTE**
Observe rating and servicing details in "Basic technical information".

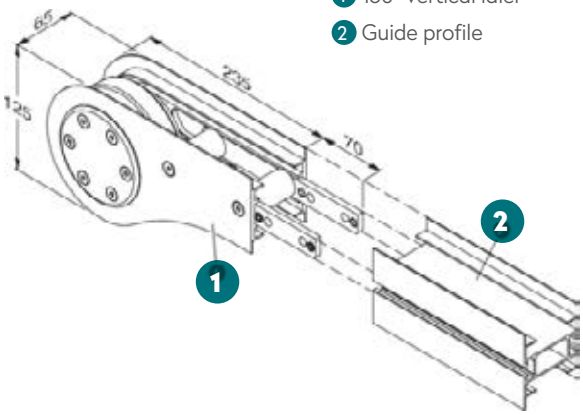
| | RS LS | | PROD.NO. | | m | N | m/min | mm | m |
|---|---|---|---|---|---|---|---|---|---|
| Vertical drive | LS | ○ | J927 715 | 1 | 30 | 1250 | 80 | 118,5 | 0,55 |
| | | ● | ■ on request | | | | | | |
| | RS | ○ | J927 717 | | | | | | |
| | | ● | ■ on request | | | | | | |

LS/RS left-hand/right-hand version ● / ○ with/without motor ■ specify conveyor speed

# FS CS065SL IDLERS

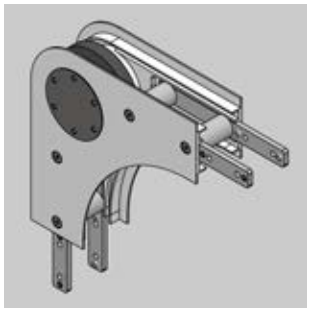
## | VERTICAL IDLER FS CS065SL, 180°

- 180° vertical idler is installed at the end of the conveyor for return of the chain.



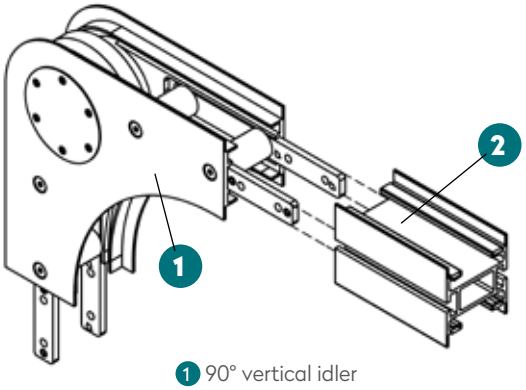

1 180° vertical idler
2 Guide profile

| | α | PROD.NO. | | |
|---|---|---|---|---|
| Vertical idler CS065SL, 180 | 180° | J927 804 | 1 | 0,55 m |



## | VERTICAL IDLER FS CS065SL, 90°

- 90° vertical idler is installed at the end of the conveyor for return of the chain.



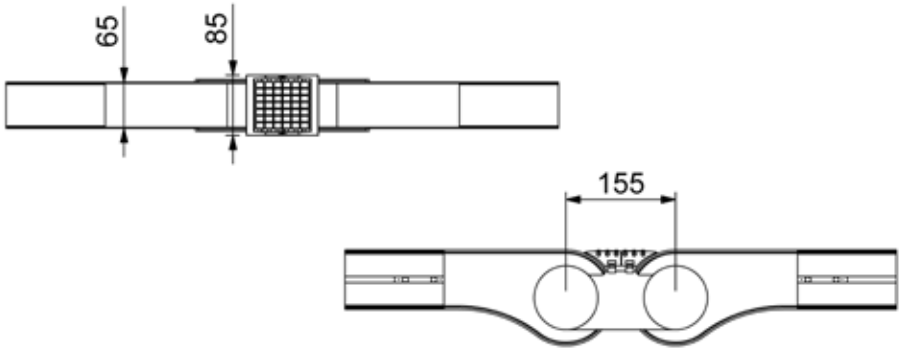

1 90° vertical idler
2 Guide profile

| | α | PROD.NO. | | |
|---|---|---|---|---|
| Vertical idler CS065SL, 90 | 90° | J927 791 | 1 | 0,55 m |

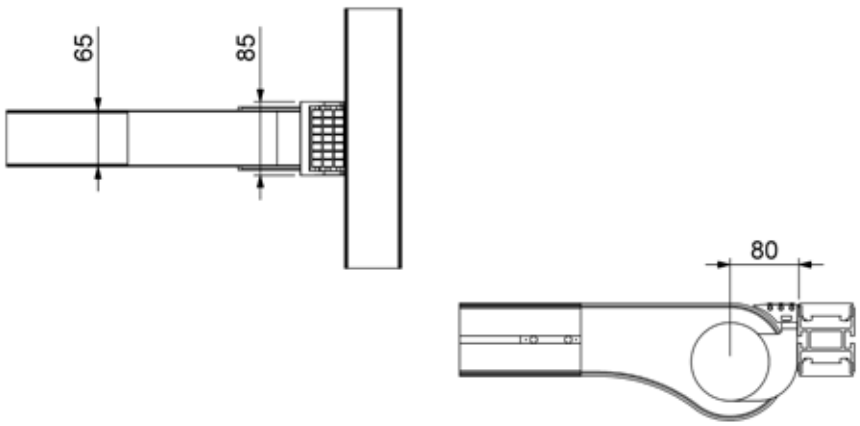
# FS CS065 SL ACCESSORIES | NON-DRIVEN ROLL TRANSFER CS SL

- Passive roll transfer
- Assembly accessories for 90° and 180° line transitions
- Not suitable for chains with catch plates, catch/accumulating rollers or grippers
- Ø11 mm Rollers at a 12,6mm pitch

## 180° LINE TRANSITION




## 90° LINE TRANSITION

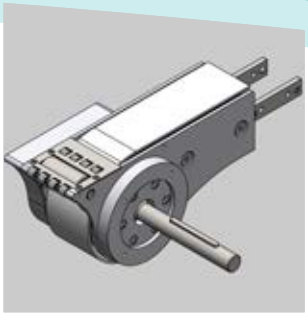



**CAUTION!**
Short conveyed items can be left behind at the point of transfer

| | | | PROD.NO. | | |
|---|---|---|---|---|---|
| Non-driven roll transfer incl. assembly accessoiries | FS CS065SL | 90 ° | 883833-900 | 1 | stainless steel/ plastic |
| | | 180° | 883833-910 | | |

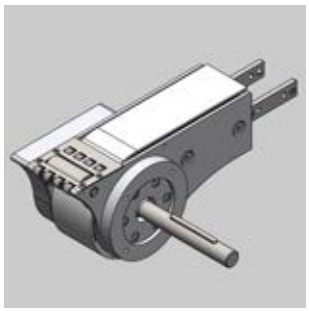
other non-driven roll transfer on request

# FS CS065 SL ACCESSORIES | DRIVEN ROLL TRANSFER CS SL

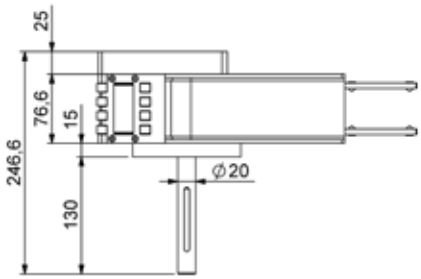


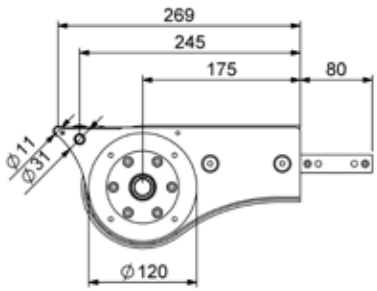
- Driven roll transfer. Available as left and right hand version
- Including assembly accessoiries for 180° line transitions
- Not suitable for chains with catch plates, catch/accumulating rollers or grippers
- Transmission by multiple round belts to minimize maintenance and production stops

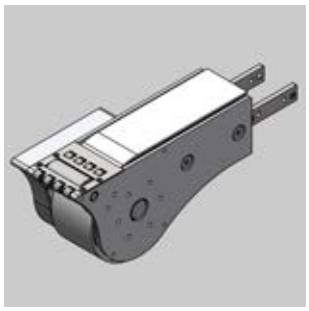
## 180° LINE TRANSITION



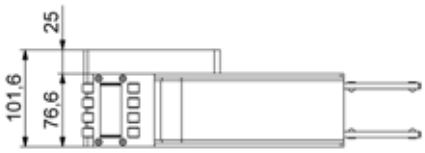
DRIVE SECTION

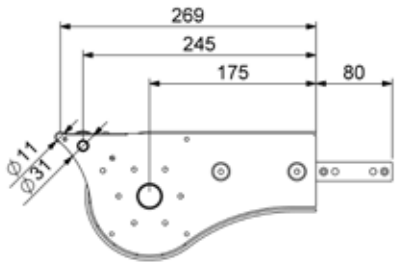


IDLER UNIT




| | | RS LS | PROD.NO. | | | |
|---|---|---|---|---|---|---|
| Driven roll transfer - drive section | FS CS065SL | LS | 880130-001 | 1 | stainless steel/ aluminium | 0,55m |
| | | RS | 880130-002 | | | |
| Driven roll transfer - idler section | | LS | 880130-003 | | | |
| | | RS | 880130-004 | | | |

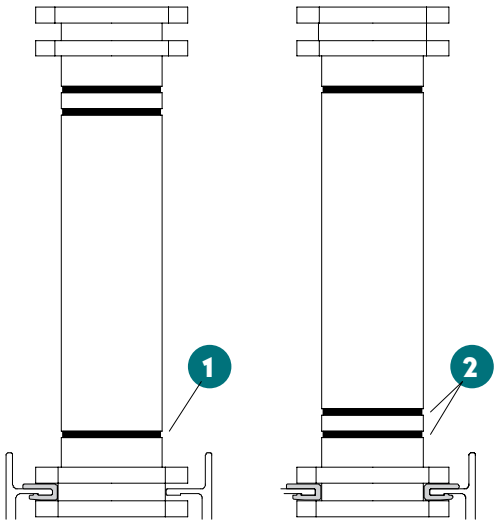
Rubberized drive roller on request

LS/RS left-hand/right-hand version

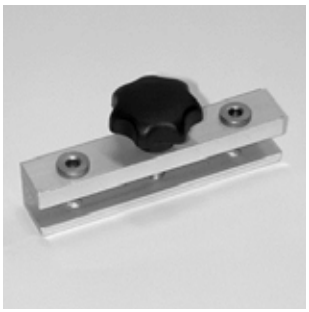
## | ASSEMBLY MANDREL

- Assembly tool for clipping the sliding strip on.
- Installing 1st sliding strip: Use the side of assembly mandrel marked with one ring.
- Installing 2nd sliding strip: Use the side of assembly mandrel marked with two rings.

| | | PROD.NO. | |
|---|---|---|---|
| Assembly mandrel | FS CS065SL | J537 135 | 1 |

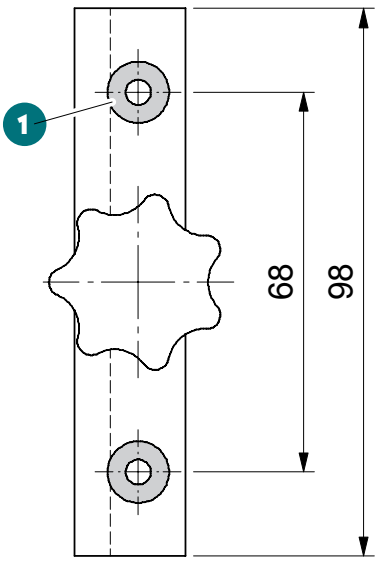



1 Installing 1st sliding strip
2 Installing 2nd sliding strip



## | DRILLING JIG

- The sliding strips are fixed to the guide profile with plastic grub screws to absorb axial displacement forces.
- The drilling jig serves as an aid for drilling the holes required.



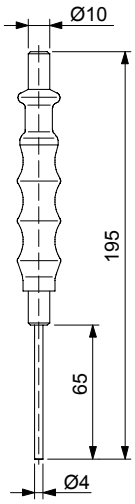

1 4.5 mm dia. drilling bush

| | PROD.NO. | |
|---|---|---|
| Drilling jig | J927 786 | 1 |

## | SPLIT-PIN DRIVER, 4 MM DIA.

- Tool for removing pin out of chain.
- Systems: FS CS065SL / FS CS090SL
- Cushioned safety grip.
- Material: hardened steel.

| | PROD.NO. | |
|---|---|---|
| Split-pin driver | J537 131 | 1 |

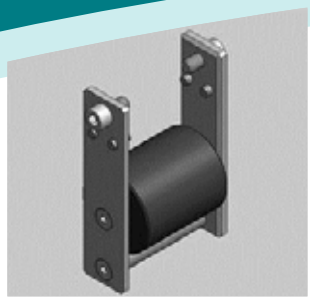



## | CUTTING PLIERS

- For precise cutting of sliding strips

| | PROD.NO. | |
|---|---|---|
| Cutting pliers | J537 130 | 1 |

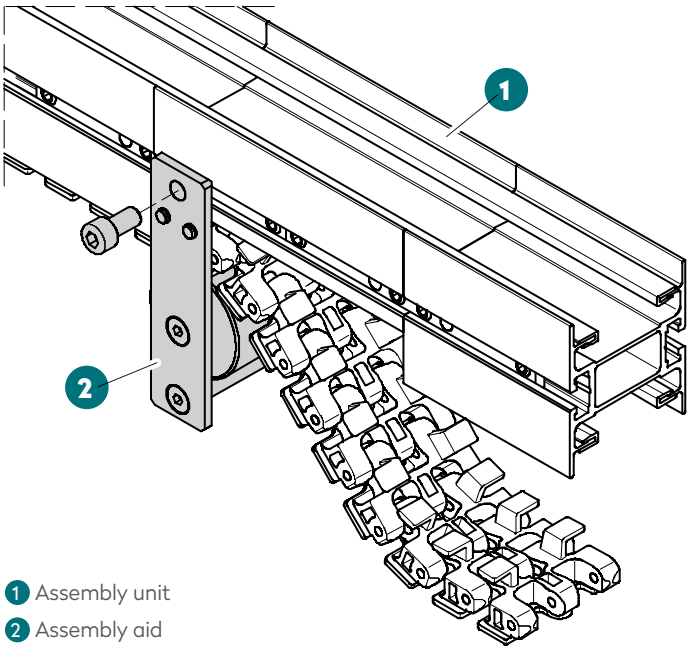
# FS CS065SL TOOLS



## | CHAIN ASSEMBLY AID

- Facilitates feeding the conveyor chain into the line.
- It is attached to the lower side of the chain assembly unit after removing the cover plate and sub-frame.
- Not suitable for chains with catch plates, catch/accumulating rollers or grippers.

| | | PROD.NO. | |
|---|---|---|---|
| Assembly aid | FS CS065SL | J927 823 | 1 |




1 Assembly unit
2 Assembly aid

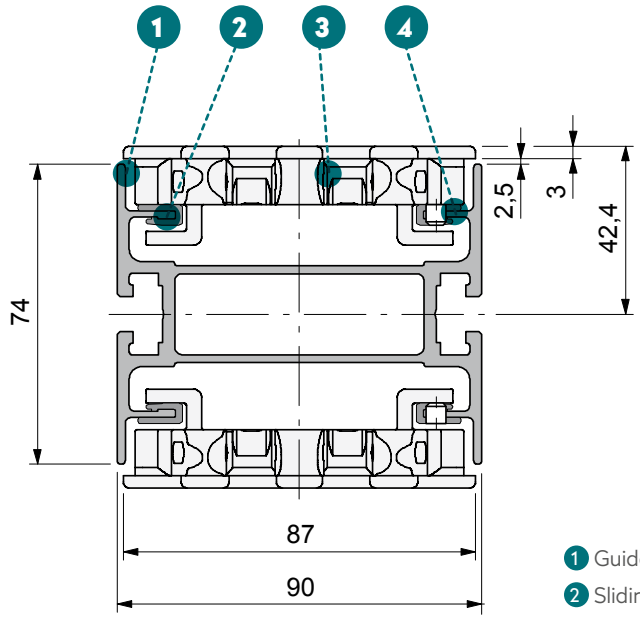
# FS CS090SL

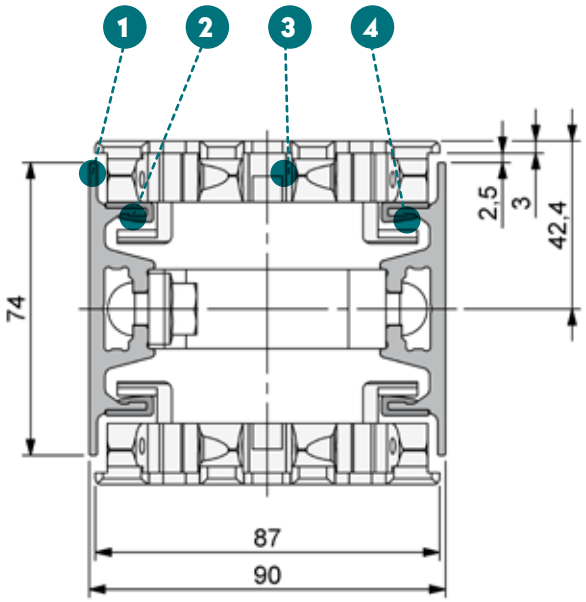
Conveyor system

# FS CS090SL OVERVIEW

## Feeding, filling, packaging individual items

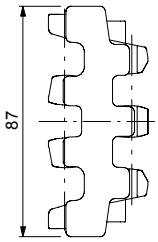
- Overall width 90 mm
- Chain width 87 mm
- Product width 20 - 200 mm
- Max. product weight for conveying direction:
  - Horizontal 10 kg
  - Vertical 5 kg
- Maximum load:
  - Conveyor system 150 kg
  - Chain link 1.5 kg
- Max. conveying length 30 m (8 m for vertical clamp conveyors)
- Max. conveying speed 120 m/min
- Available drives:
  - Vertical drives
  - Direct drives
  - Centre drives
  - Vertical centre drives
  - Direct centre drives
- Compatible with railing system:
  - Variable guide width 20 - 250 mm
  - Variable guide height 15 - 350 mm
- Available for open and closed system



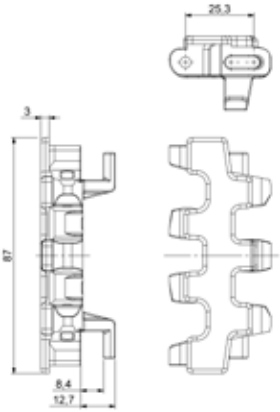




1. Guide profile
2. Sliding strip
3. Conveyor chain
4. Grub screw

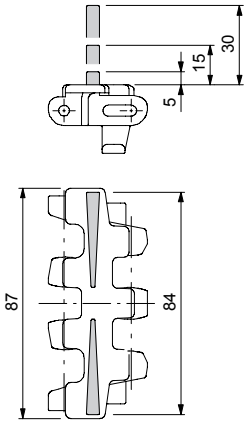
### FS CS090SL STANDARD CHAIN



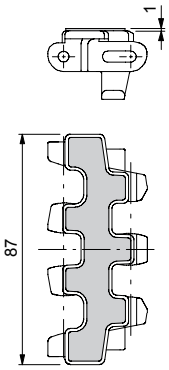

### FS CS090SL CHAIN WITH REINFORCED TAB



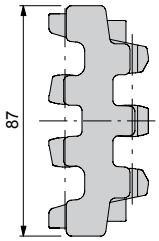

### FS CS090SL CHAIN WITH CATCH PLATES



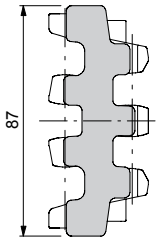

### FS CS090SL CHAIN WITH FRICTION LINING



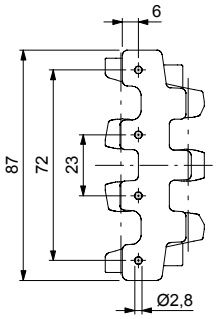

### FS CS090SL ANTISTATIC CHAIN



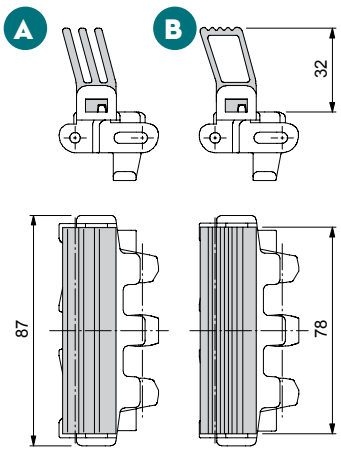

### FS CS090SL CHAIN WITH FLOCKED SURFACE



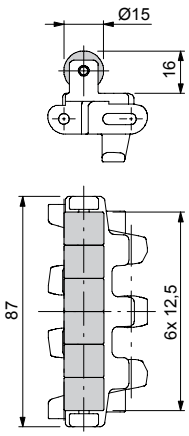

### FS CS090SL UNIVERSAL CHAIN



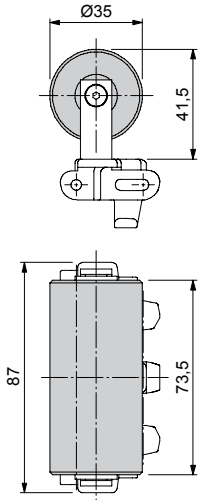

### FS CS090SL CHAIN WITH GRIPPER




### FS CS090SL CHAIN WITH ACCUMULATING ROLLERS

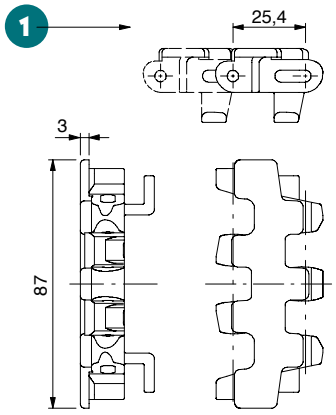



### FS CS090SL CHAIN WITH CATCH ROLLER



## | CHAIN FS CS090SL STANDARD

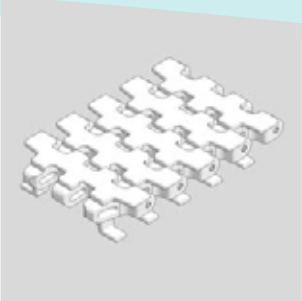
- Standard chain for horizontal conveyance.
- Suitable for accumulating conveyor mode.
- Pin-hinged chain links.




1 Direction of travel

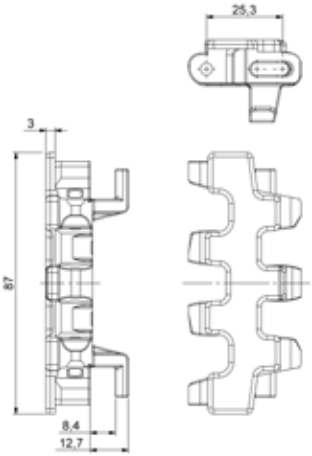
| | PROD.NO. | | | | | | |
|---|---|---|---|---|---|---|---|
| Chain CS090SL, standard | J534 068 | 4,0 m | POM | white | 1,4 kg/m | | 1250 N |
| Chain CS090SL, standard blue | J534 068.101 | 4,0 m | POM | blue | 1,4 kg/m | | 1250 N |
| Chain link, individual | J534 069 | 10 | POM | white | | | 1250 N |
| Chain pin, individual | J534 071 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

# FS CS090SL LINE COMPONENTS



## | CHAIN FS CS090SL WITH REINFORCED TAB

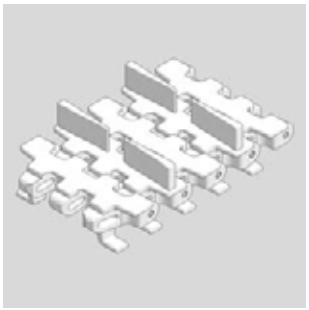
- Chain especially for abrasive environment
- Suitable for e.g. tobacco industry
- The tab has more thickness for longer lifetime




**NOTE**
This chain can only be used in combination with sliding strip J537 397

**NOTE**
Please be aware that if you want to use the reinforced chain and sliding strip; you have to order the special drive- and idler unit.

| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain CS090SL, with reinforced tab | J537398 | 4,0m | PBT | natural | 1,4 kg/m | | 1250 N |



## | CHAIN FS CS090SL WITH CATCH PLATES

- Chain for vertical conveyance.
- Chain links with catch plates are inserted in the standard chain at recurrent intervals.
- Catch plate heights of 5, 15 and 30 mm.

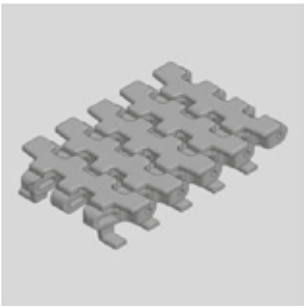
| | PROD.NO. | | | | | | F |
|---|---|---|---|---|---|---|---|
| Chain link, individual, catch plate height 5 mm | J534 076 | 10 | POM | white | 1,5 kg/m | | 1250 N |
| Chain link, individual, catch plate height 15 mm | J534 078 | 10 | POM | white | 1,5 kg/m | | 1250 N |
| Chain link, individual, catch plate height 30 mm | J534 079 | 10 | POM | white | 1,5 kg/m | | 1250 N |
| Chain pin, individual | J534 071 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

# FS CS090SL LINE COMPONENTS

## | CHAIN FS CS090SL WITH FRICTION LINING

- Chain with anti-slip coating to increase adhesion on inclines.
- Well suited to conveying smooth-surfaced items.
- Friction lining in wear-resistant rubber.
- Not suitable for accumulating conveyor.

| | PROD.NO. | | | | | | |
|---|---|---|---|---|---|---|---|
| Chain CS090SL, with friction lining | J400 014 | 4,0 m | POM | white | 1,4 kg/m | | 1250 N |
| Chain link, individual | J400 015 | 10 | POM | white | | | 1250 N |
| Chain pin, individual | J534 071 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

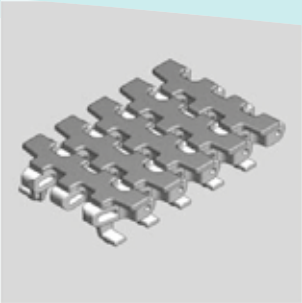


## | CHAIN FS CS090SL ANTISTATIC

- Standard chain with antistatic finish.
- For use only in conjunction with antistatic sliding strip and drive unit.

| | PROD.NO. | | | | | | |
|---|---|---|---|---|---|---|---|
| Chain CS090SL, antistatic | J534 072 | 4,0 m | POM | black | 1,4 kg/m | | 950 N |
| Chain link, individual | J534 073 | 10 | POM | black | | | 950 N |
| Chain pin, individual | J534 071 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

# FS CS090SL LINE COMPONENTS



## | CHAIN FS CS090SL WITH FLOCKED SURFACE

- Standard chain with grey flocked surface.
- The soft surface protects the items being conveyed.

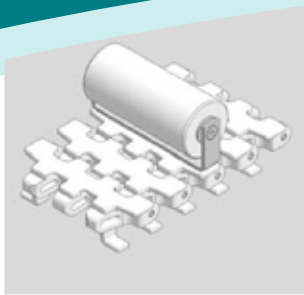
| | PROD.NO. | | | | | | |
|---|---|---|---|---|---|---|---|
| Chain CS090SL, with flocked surface | J400 008 | 4,0 m | POM | white | 1,4 kg/m | | 1250 N |
| Chain pin, individual | J534 071 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

## | CHAIN FS CS090SL UNIVERSAL

- Universal chain links are inserted in the standard chain at recurrent intervals.
- Chain for universal application with drill holes in the base plate.
- Capability of fitting various conveyor components (e.g. catch plates, rollers) using Ø3.9 mm self-tapping bolts.

| | PROD.NO. | | | | | | |
|---|---|---|---|---|---|---|---|
| Chain link, individual | J534 088 | 10 | POM | white | 1,4 kg/m | | 1250 N |
| Chain pin, individual | J534 071 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

# FS CS090SL LINE COMPONENTS



## | CHAIN FS CS090SL WITH CATCH ROLLERS

- Chain links with catch rollers are inserted in the standard chain at recurrent intervals.
- At least one standard link must be inserted between two catch rollers.

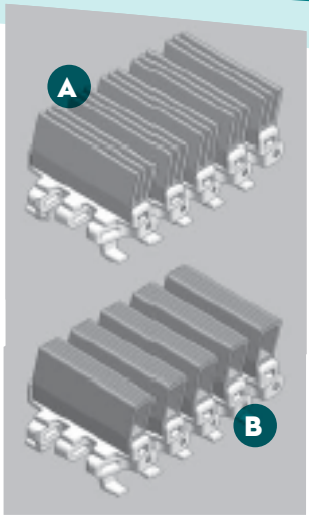
| | PROD.NO. | | | | | | |
|---|---|---|---|---|---|---|---|
| Chain link, individual | J534 089 | 10 | POM | white | | | 1250 N |
| Chain pin, individual | J534 071 | 100 | Stainless steel | grey | | J537 131<br>Split-pin driver | |

## | CHAIN FS CS090SL WITH ACCUMULATING ROLLERS

- Chain with rollers to minimise friction in accumulating conveyors.

| | PROD.NO. | | | | | | |
|---|---|---|---|---|---|---|---|
| Chain CS090SL,<br>with accumulating rollers | J534 085 | 2,0 m | POM | white | 2,2 kg/m | | 1250 N |
| Chain link, individual | J534 086 | 10 | POM | white | | | 1250 N |
| Chain pin, individual | J534 071 | 100 | Stainless steel | grey | | J537 131<br>Split-pin driver | |

# FS CS090SL LINE COMPONENTS

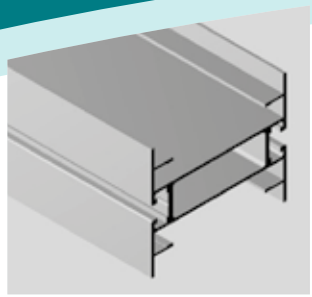



## | CHAIN FS CS090SL WITH GRIPPER

- Chain with surface-mounted gripper element (flexible catches).
- Used in vertical clamp conveyors.
- Gripper element in EPDM.
- Use shape A:
  - small lightweight unit loads
  - products with irregular surface.
- Use shape B:
  - larger-type unit loads
  - item weight up to 10 kg.


| | | PROD.NO. | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Chain CS090SL, with gripper | A | J534 590 | 2,0 m | POM | white | 2,3 kg/m | | 750 N |
| | B | J534 081 | 2,0 m | | | 2,2 kg/m | | |
| Chain link, individual | A | J534 591 | 10 | POM | white | | | 750 N |
| | B | J534 082 | 10 | | | | | |
| Gripper element, individual | A | J400 002 | 10 | EPDM | grey | | | |
| | B | J534 083 | 10 | | | | | |
| Chain pin, individual | | J534 071 | 100 | Stainless steel | grey | | J537 131 Split-pin driver | |

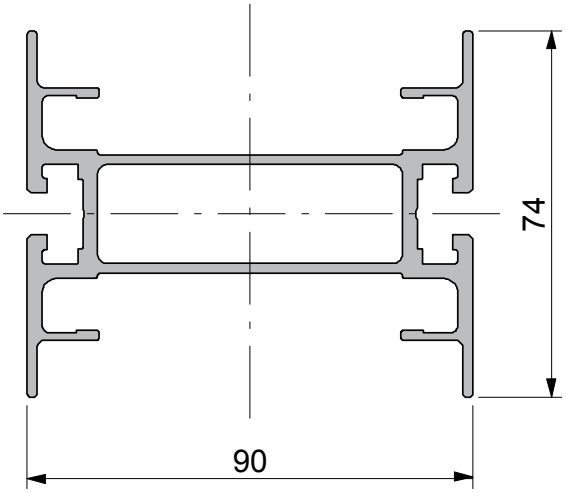
# FS CS090SL LINE COMPONENTS



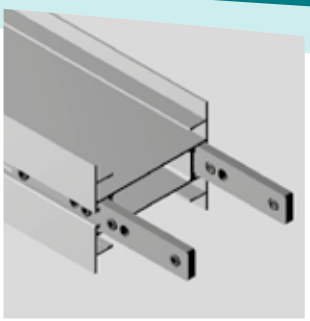
## | GUIDE PROFILE FS CS090SL

- Line lengths over 6000 mm can be produced by using joints.

### CROSSED SECTION

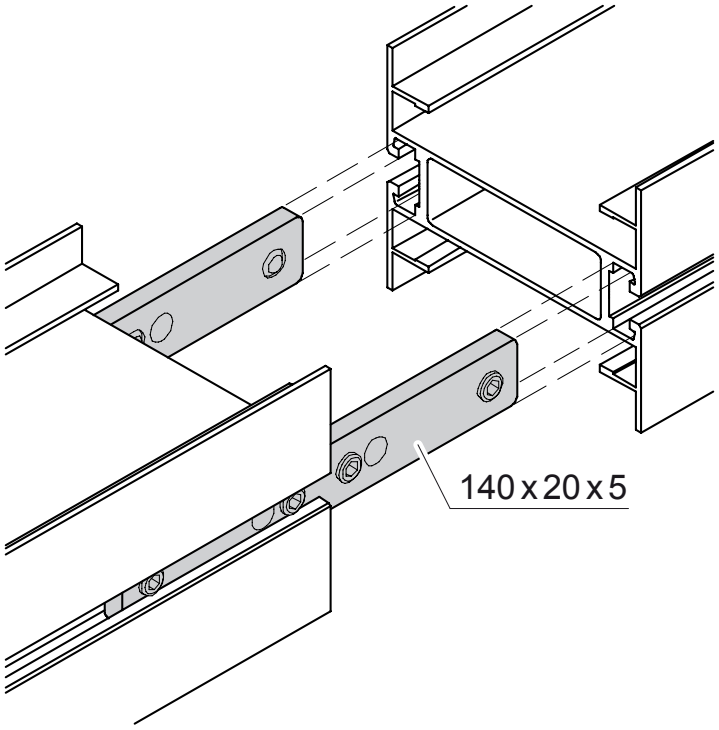



| | PROD.NO. | | | |
|---|---|---|---|---|
| Guide profile CS090SL | J924 173 | 6,0 m | EN AW-6063 T66 | E6/EV1 anodised finish |
| Cutting to length | J924 969 | 1 | | |



## | LINE JOINT CS SL

- Joints are pushed into the profile groove and fixed in place with the premounted grub screws.
- No additional work to the profile is necessary.

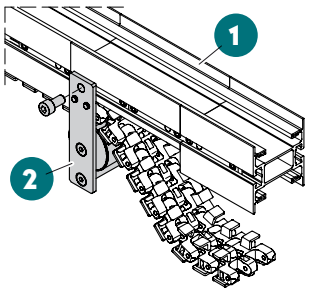



| | PROD.NO. | | | |
|---|---|---|---|---|
| Line joint | J927 803 | 2 | steel | galvanised |

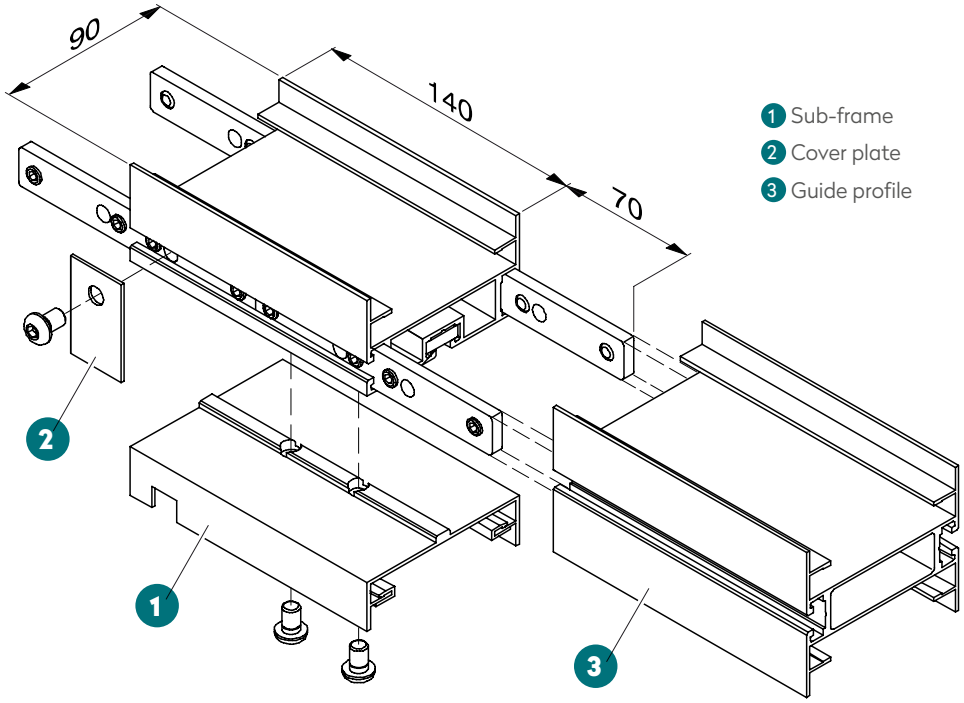
# FS CS090SL LINE COMPONENTS | CHAIN ASSEMBLY UNIT FS CS090SL

- The chain assembly unit allows you to feed the chain into the assembled line.
- Can be fitted at any point within the line.
- Line joints are included.
- The sub-frame must be removed for feeding the conveyor chain into the line.
- After fitting the chain pin, the opening in the sub-frame must be closed off with the cover plate.
- The optional chain assembly aid facilitates feeding the conveyor chain into the line. It is attached to the lower side of the assembly unit after removing cover plates and sub-frames.

## USING THE CHAIN ASSEMBLY AID



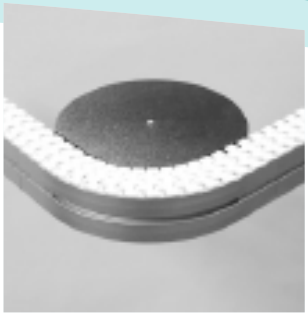

1 Assembly unit
2 Assembly aid




1 Sub-frame
2 Cover plate
3 Guide profile

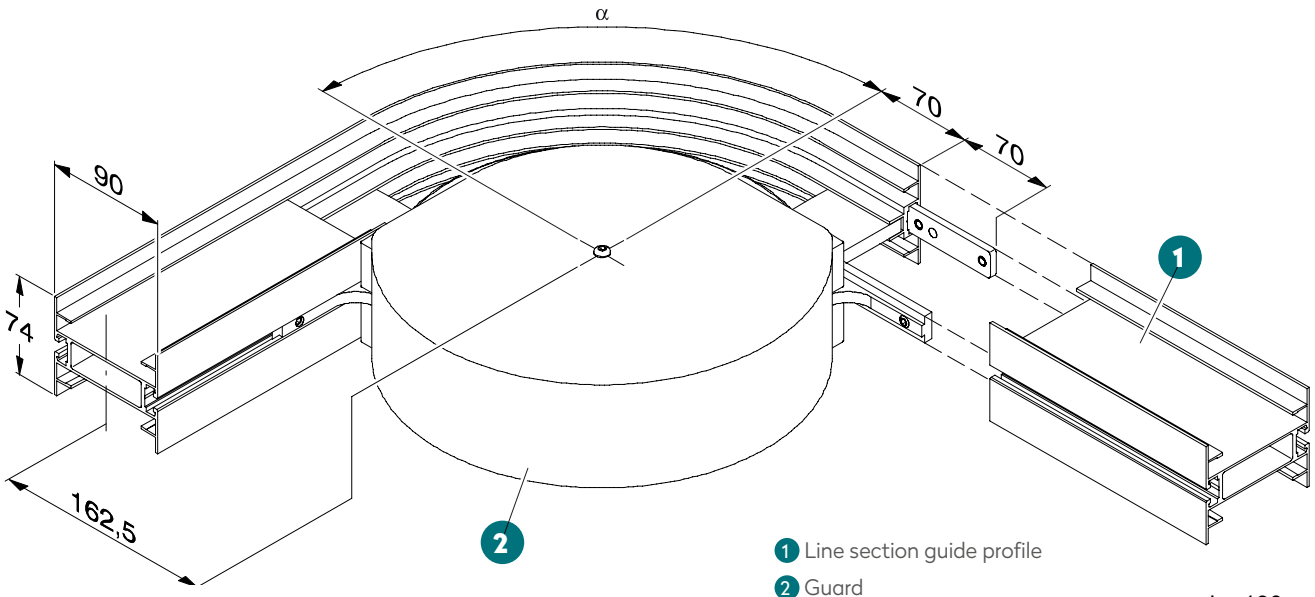
| | PROD.NO. | |
|---|---|---|
| Chain assembly unit CS090SL | J927 768 | 1 |
| Assembly aid | J927 824 | 1 |
| Split-pin driver | J537 131 | 1 |

# FS CS090SL LINE COMPONENTS | HORIZONTAL CURVES WITH DISK FS CS090SL

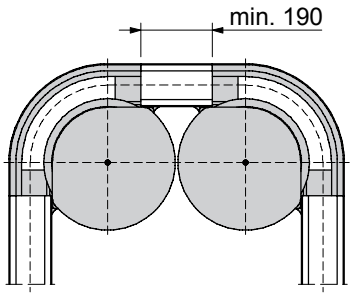


- Small idler radius: 162.5 mm.
- The idler radius is based on the line centre.
- It is installed in the conveyor line without the need for any work to the joints.
- Antistatic version on request.

## HORIZONTAL CURVE WITH DISK FS CS090SL, R162.5/90°



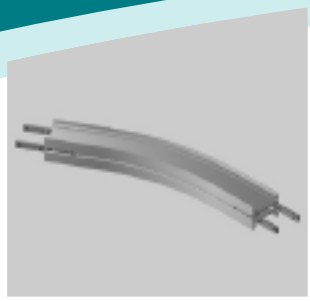

1 Line section guide profile
2 Guard




**NOTE**
When installing two horizontal curves with disk, they must be separated by a straight line section of at least 190 mm in length.

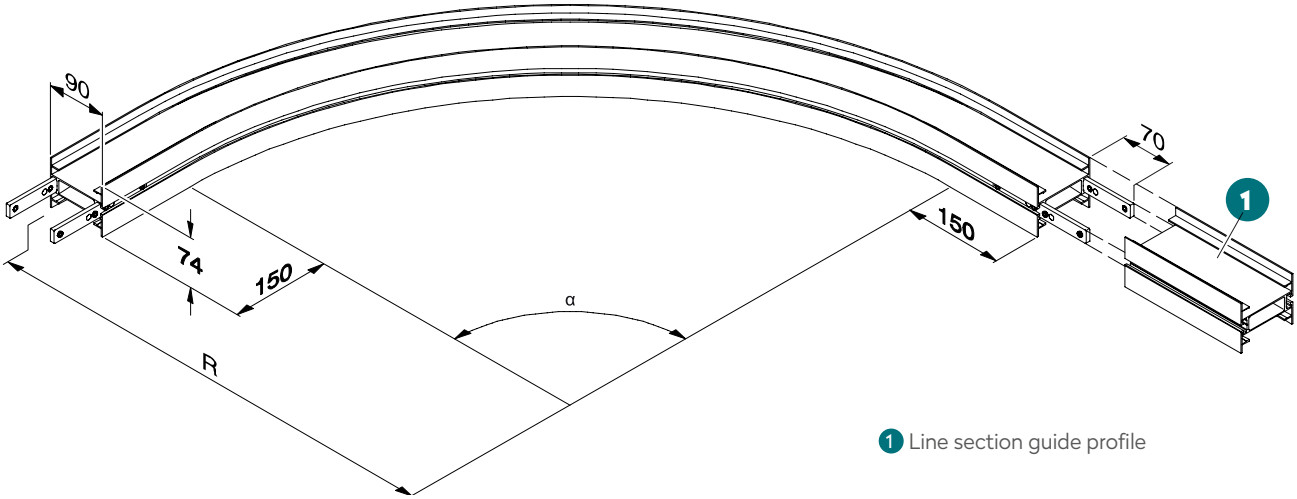
| | PROD.NO. | R | α | | |
|---|---|---|---|---|---|
| Horizontal curve with disk CS090SL | 162,5 mm | 45° | J927 770 | 1 | 2x 0,28 m |
| | | 60° | J927 771 | | 2x 0,34 m |
| | | 90° | J927 751 | | 2x 0,44 m |
| | | 180° | J927 752 | | 2x 0,74 m |

Different angles on request



- Horizontal sliding curve.
- Various angles available. The radius specified is based on the line centre.
- Min. radius: 250 mm.

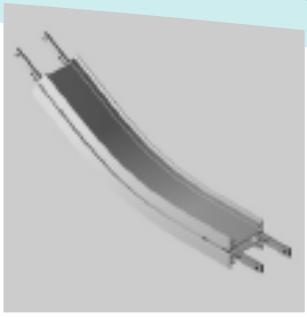
### HORIZONTAL SLIDING CURVE FS CS090SL, R700/90°




1 Line section guide profile

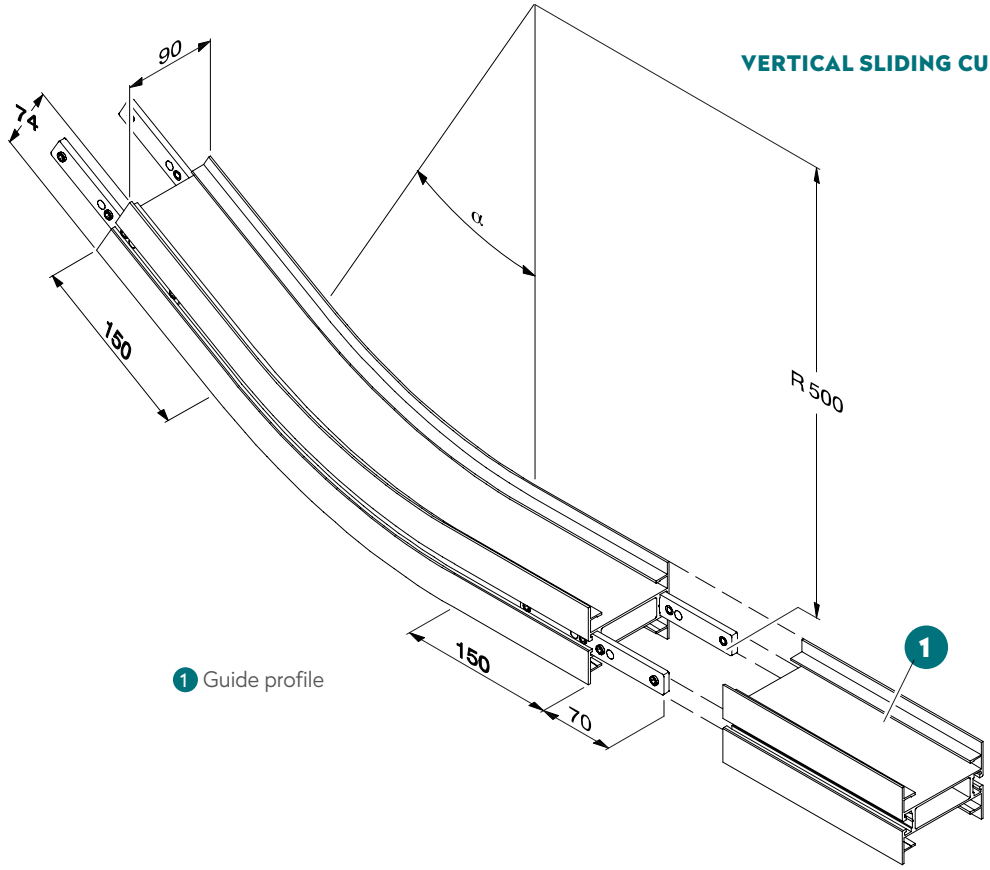
| | R | α | PROD.NO. | | |
|---|---|---|---|---|---|
| Horizontal sliding curve | 400 mm | 15° | J927 818 | 1 | 2x 0,41 m |
| | | 30° | J927 809 | | 2x 0,52 m |
| | | 45° | J927 810 | | 2x 0,64 m |
| | | 60° | J927 811 | | 2x 0,75 m |
| | | 90° | J927 812 | | 2x 0,97 m |
| | 700 mm | 30° | J927 753 | 1 | 2x 0,68 m |
| | | 45° | J927 754 | | 2x 0,87 m |
| | | 60° | J927 755 | | 2x 1,06 m |
| | | 90° | J927 756 | | 2x 1,44 m |

Different radius or angles on request



- Vertical sliding curves for conveyor lines with inclines.
- Various angles available. The radius specified is based on the line centre.
- Min. radius: 500 mm.
- Can be used as outside and inside curve.

## VERTICAL SLIDING CURVE FS CS090SL, R500/30°



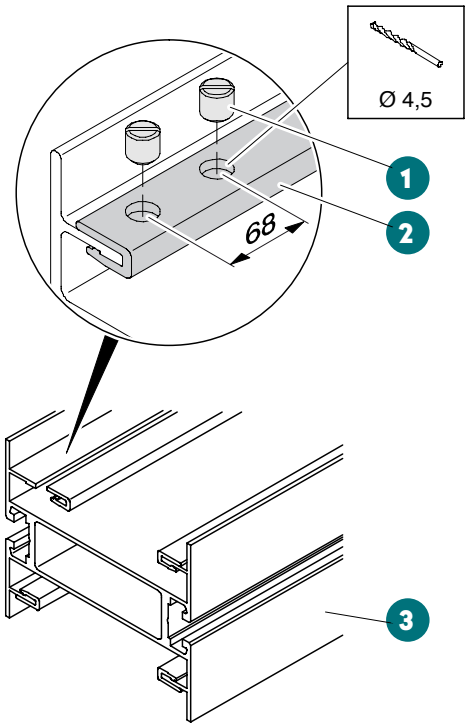

1 Guide profile

| | R | α | PROD.NO. | | | | |
|---|---|---|---|---|---|---|---|
| Vertical sliding curve | 500 mm | 5° | J927 757 | 1 | 0,34 m | 0,35 m | 0,69 m |
| | | 7° | J927 758 | | 0,36 m | 0,37 m | 0,73 m |
| | | 10° | J927 759 | | 0,38 m | 0,39 m | 0,77 m |
| | | 15° | J927 760 | | 0,42 m | 0,44 m | 0,86 m |
| | | 20° | J927 761 | | 0,46 m | 0,49 m | 0,95 m |
| | | 30° | J927 762 | | 0,54 m | 0,58 m | 1,12 m |
| | | 45° | J927 763 | | 0,67 m | 0,72 m | 1,39 m |
| | | 60° | J927 764 | | 0,79 m | 0,86 m | 1,65 m |
| | | 90° | J927 765 | | 1,03 m | 1,14 m | 2,17 m |

Other radius or angles on request

# FS CS090SL LINE COMPONENTS | SLIDING STRIP CS SL

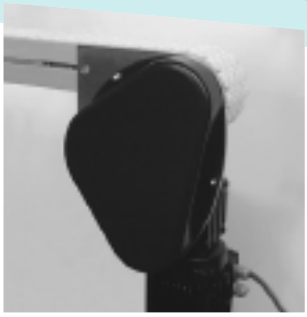
- Sliding strip for minimising friction between chain and profile.
- Properties:
  - Outstanding sliding behaviour
  - Extremely hard surface for minimum wear
  - Suitable for higher-type conveyor speeds.
- The sliding strip is clipped on and fixed in place after assembling the line. Joints in the guide profile should not coincide with joints in the sliding strip.
- Worn sliding strips are easy to remove and renew.




1 Grub screw
2 Sliding strip
3 Guide profile

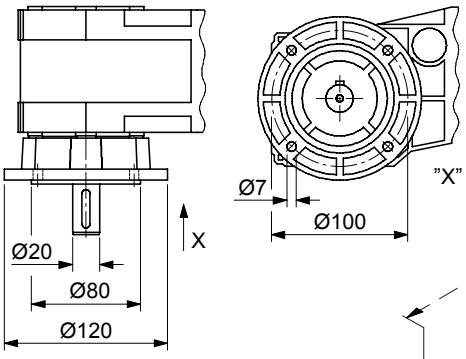
| | PROD.NO. | | | |
|---|---|---|---|---|
| Sliding strip, standard | J537 015 | 25,0 m | PA-modified | grey |
| Sliding strip, antistatic | J537 016 | 25,0 m | PE 500 | black |
| Sliding strip, blue | J537017 | 25,0 m | PA-modified | blue |
| Sliding strip, ultra low friction | J537 020 | 25,0 m | LubX CV | Naturel |
| Sliding strip, reinforced* | J537397 | 25,0 m | PA-modified | white |
| Grub screw m5 x 5 | J535 380 | 25 | POM | white |
| Drilling jig | J927 786 | 1 | | |
| Assembly mandrel | J537 146 | 1 | | |

*This sliding strips can only be used in combination with chain J537398



- The drive motor is suspended below the guide profile.
- Left-hand or right-hand version, either with or without motor.
- Slip clutch is included.
- Chain transmission ratio i = 0.92.
- Antistatic version on request.

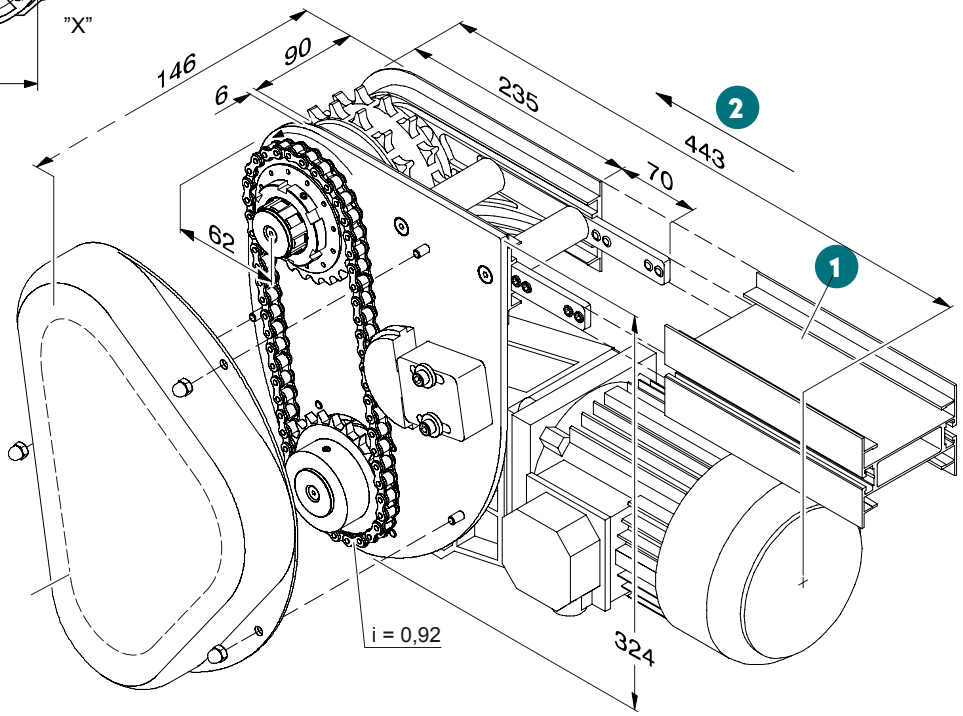
## CONNECTING DIMENSIONS FOR MOTOR




**NOTE**

Observe rating and servicing details in "Basic technical information".

## VERTICAL DRIVE FS CS090SL, LEFT-HAND VERSION

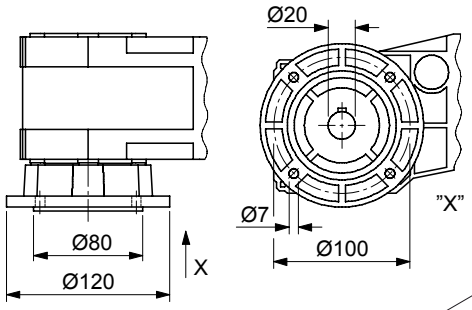



| | | | m/min | PROD.NO. | | m | N | mm | m |
|---|---|---|---|---|---|---|---|---|---|
| Vertical drive | LS | ○ | 60 | J927 736 | 1 | 30 | 800 | 118,5 | 0,55 |
| | | ● | | ■ on request | | | | | |
| | RS | ○ | | J927 738 | | | | | |
| | | ● | | ■ on request | | | | | |

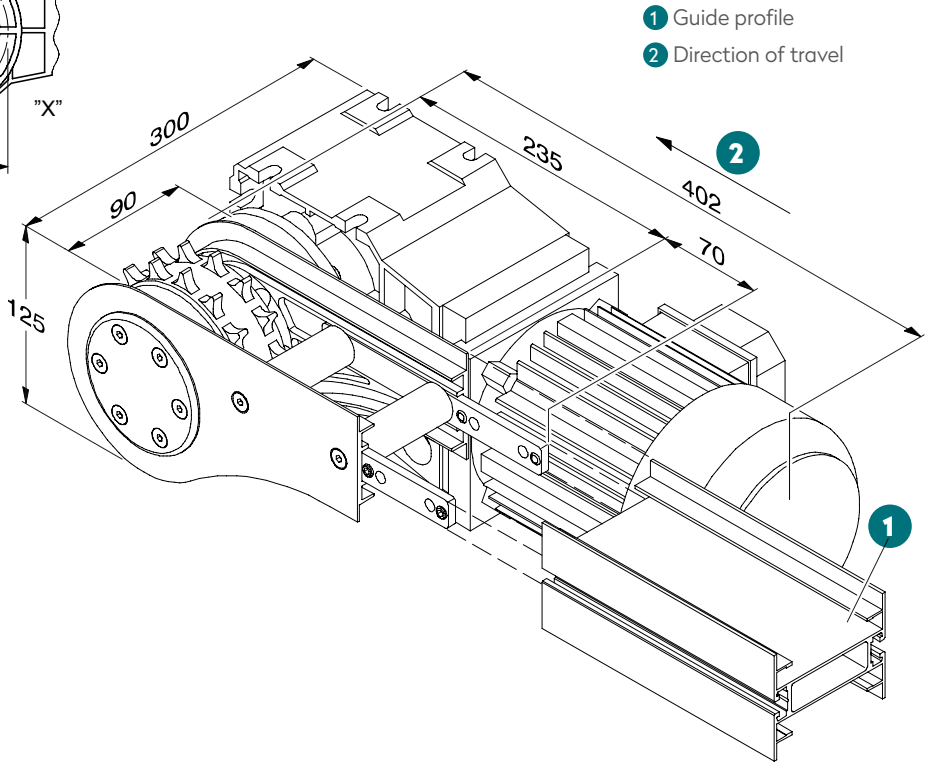
LS/RS Left-hand/right-hand version ● / ○ With/without motor ■ Specify conveyor speed

- Compact design.
- The drive motor is positioned at the side of the guide profile - left or right.
- Either with or without motor.
- Antistatic version on request.

## CONNECTING DIMENSIONS FOR MOTOR




## DIRECT DRIVE FS CS090SL, RIGHT-HAND DRIVE MOTOR




**NOTE**
Observe rating and servicing details in "Basic technical information".

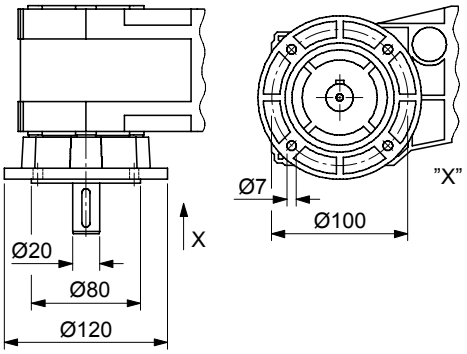
| | RS LS | | PROD.NO. | | m | N | m/min | mm | m |
|---|---|---|---|---|---|---|---|---|---|
| Direct drive | LS | ○ | J927 740 | 1 | 30 | 1250 | 80 | 118,5 | 0,55 |
| | | ● | ■ on request | | | | | | |
| | RS | ○ | J927 743 | | | | | | |
| | | ● | ■ on request | | | | | | |

LS/RS Left-hand/right-hand version ● / ○ With/without motor ■ Specify conveyor speed

# FS CS090SL DRIVES | CENTRE DRIVES FS CS090SL, WITH CHAIN TRANSMISSION

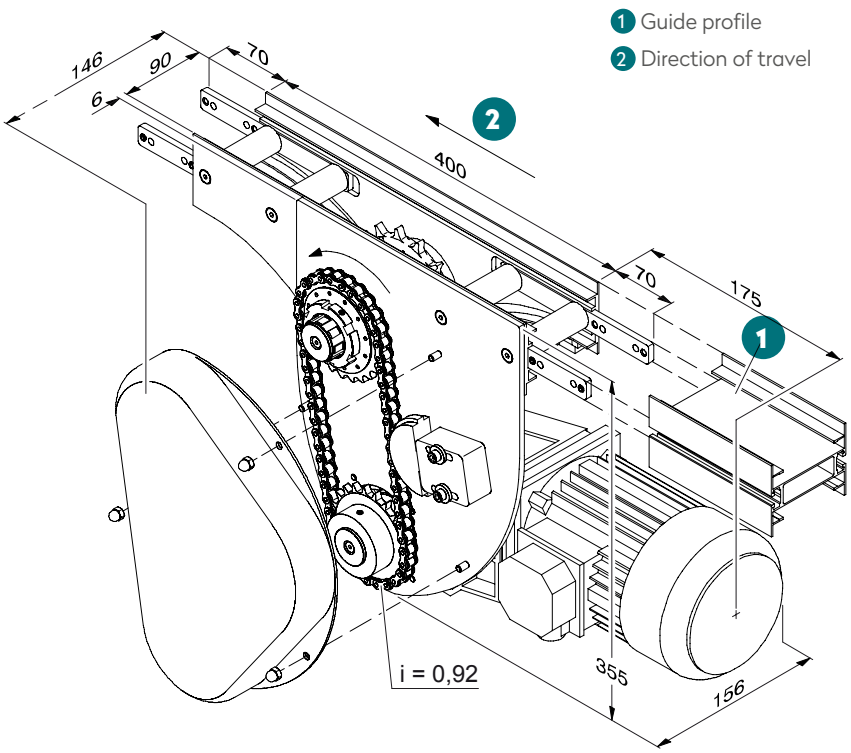
- The transmission gear assembly can be positioned on the left or right.
- Slip clutch is included.
- Either with or without motor.
- Chain-gear transmission ratio i = 0.92.
- For smooth chain circulation and minimum wear, the drive should be positioned as close as possible to the idler at the end of the line.
- Antistatic version on request.

## CONNECTING DIMENSIONS FOR MOTOR




**NOTE**
Observe rating and servicing details in "Basic technical information".

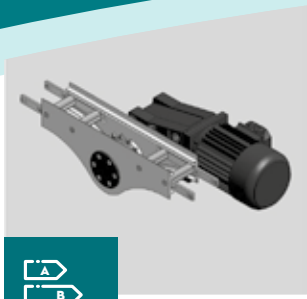
## CENTRE DRIVE FS CS090SL, LEFT-HAND VERSION




| | | RS LS | | m/min | PROD.NO. | | m | N | mm | m |
|---|---|---|---|---|---|---|---|---|---|---|
| Direct drive | Standard | LS | ○ | 40 | J929 015 | 1 | 10 | 400 | 118,5 | 0,83 |
| | | | ● | | ■ on request | | | | | |
| | | RS | ○ | | J929 017 | | | | | |
| | | | ● | | ■ on request | | | | | |
| | Others | LS | ○ | 40 | J927 813 | 1 | 10 | 200 | 118,5 | 0,83 |
| | | | ● | | ■ on request | | | | | |
| | | RS | ○ | | J927 816 | | | | | |
| | | | ● | | ■ on request | | | | | |

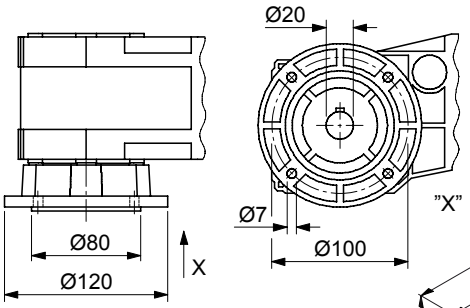
LS/RS Left-hand/right-hand version ● / ○ With/without motor ■ Specify conveyor speed

# FS CS090SL DRIVES | DIRECT CENTRE DRIVES FS CS090SL

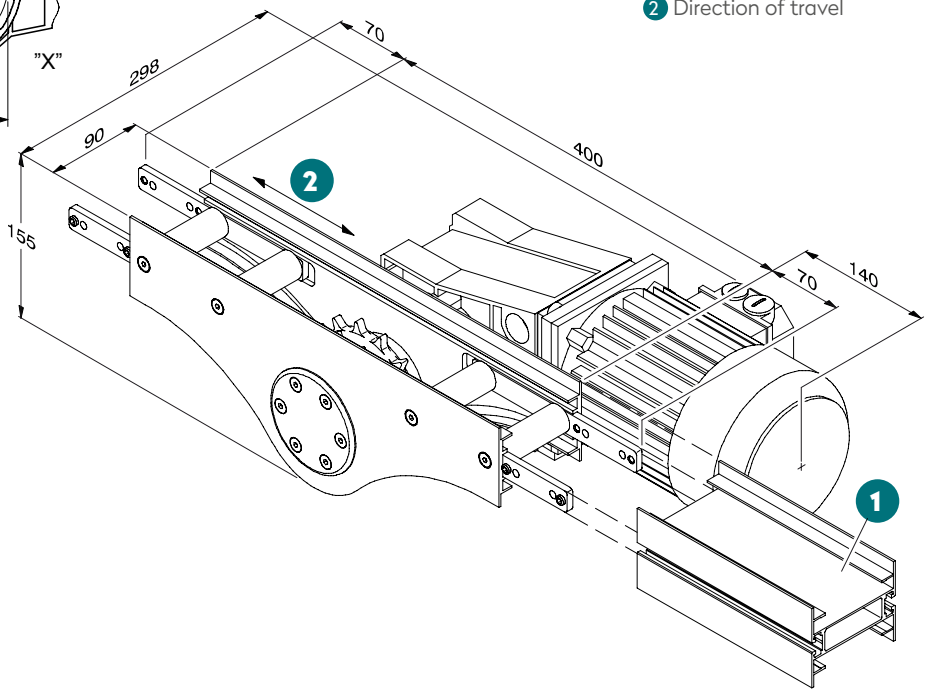


- Compact design.
- The drive motor is positioned at the side of the guide profile - left or right.
- For smooth chain circulation and minimum wear, the drive should be positioned as close as possible to the idler at the end of the line.
- Conveying direction can be reversed during operation.
- Antistatic version on request.

## CONNECTING DIMENSIONS FOR MOTOR




## DIRECT CENTRE DRIVE FS CS090SL

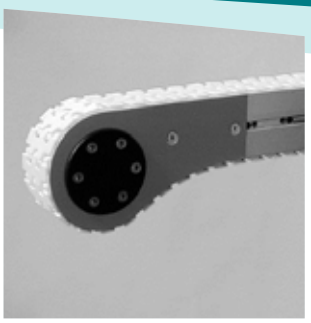



**NOTE**

Observe rating and servicing details in "Basic technical information". The unit can be used as a left-hand version by turning it in the line.

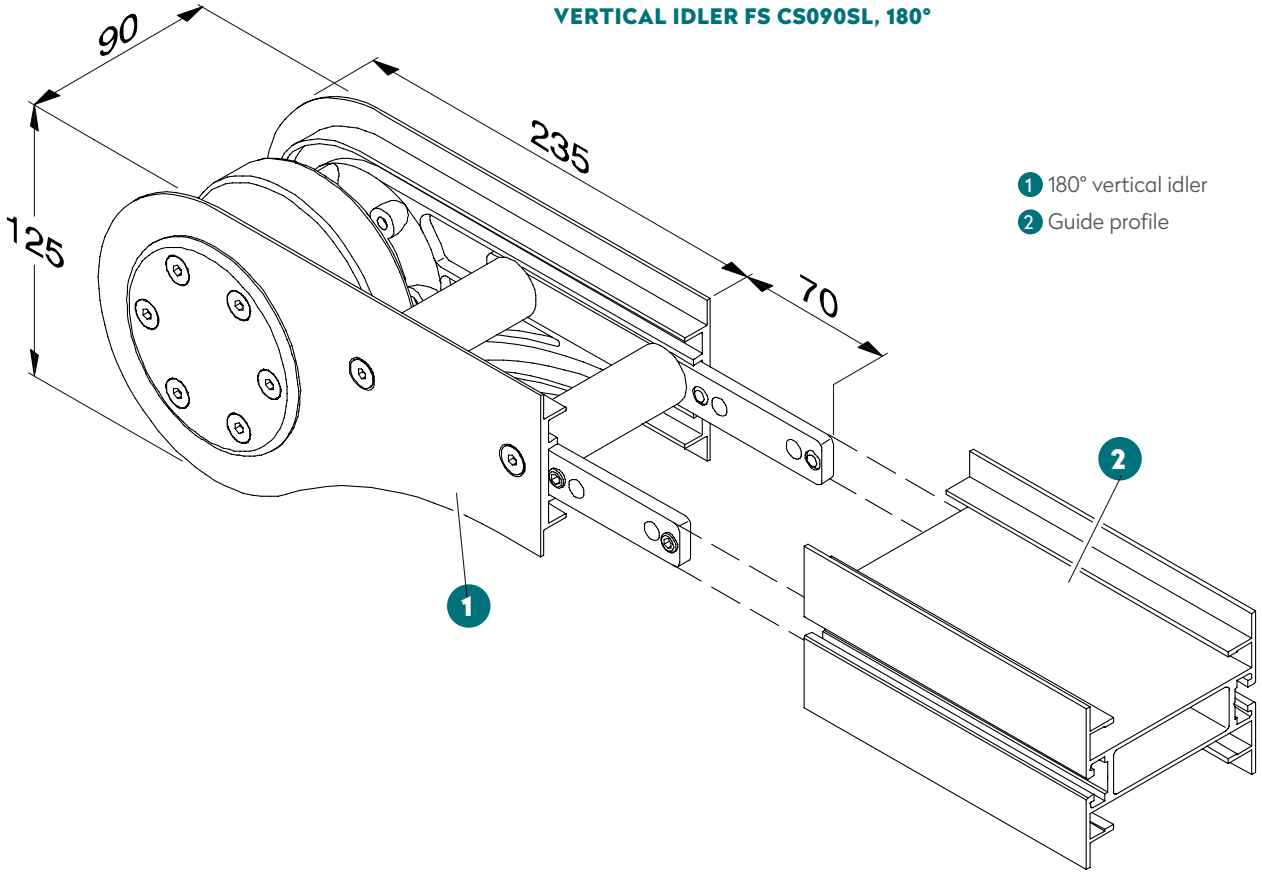
| | | RS LS | | VMAX m/min | PROD.NO. | | m | F N | mm | m |
|---|---|---|---|---|---|---|---|---|---|---|
| Direct centre drive | Standard | LS/RS | ○ | 40 | J929 019 | 1 | 10 | 400 | 118,5 | 0,83 |
| | | | ● | | ■ on request | | | | | |
| | Others | LS/RS | ○ | 40 | J927 819 | 1 | 10 | 200 | 118,5 | 0,83 |
| | | | ● | | ■ on request | | | | | |

LS/RS Left-hand/right-hand version ● / ○ With/without motor ■ Specify conveyor speed



- 180° vertical idler is installed at the end of the conveyor line for return chain travel underneath the line.

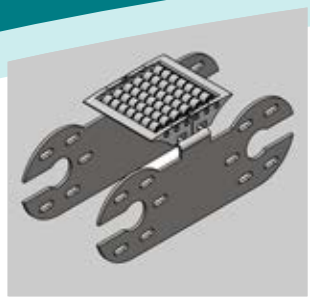
## VERTICAL IDLER FS CS090SL, 180°




1 180° vertical idler
2 Guide profile

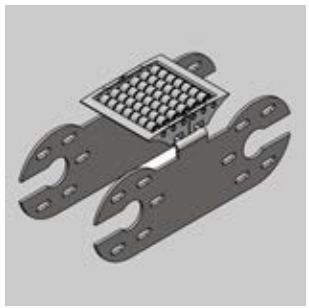
| | α | PROD.NO. | | |
|---|---|---|---|---|
| Vertical idler CS090SL, 180° | 180° | J927 749 | 1 | 0,55m |

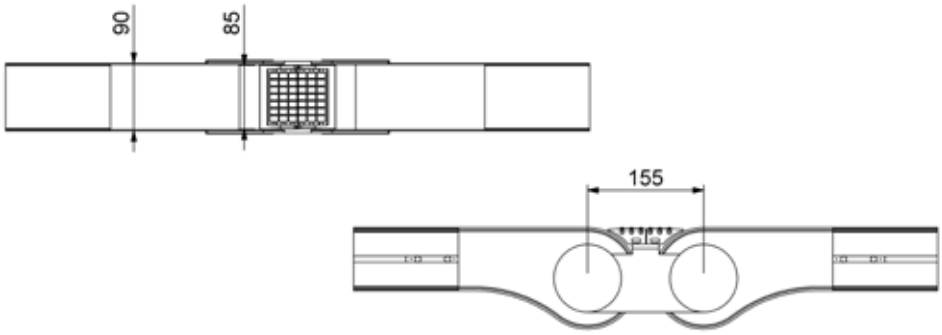
# FS CS090SL ACCESSORIES | NON DRIVEN ROLL TRANSFER CS SL



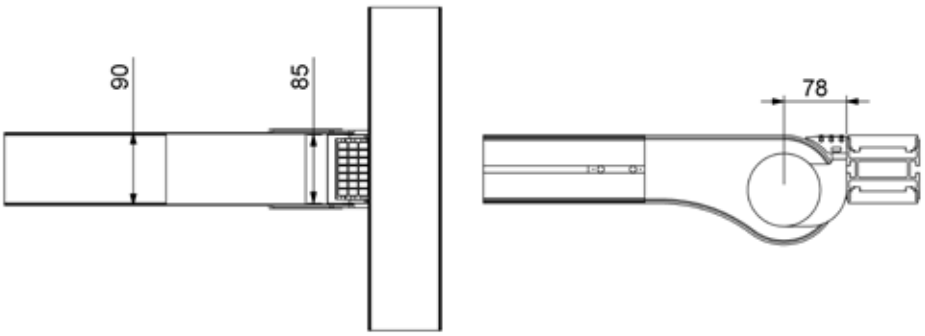
- Passive roll transfer
- Assembly accessories for 90° and 180° line transitions
- Not suitable for chains with catch plates, catch/ accumulating rollers or grippers
- Ø11 mm Rollers at a 12,6mm pitch

## 180° LINE TRANSITION






## 90° LINE TRANSITION

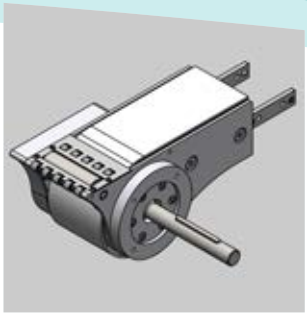



**CAUTION!**
Short conveyed items can be left behind at the point of transfer

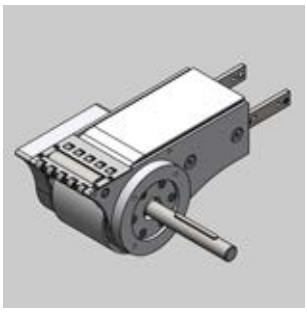
| | | | PROD.NO. | | |
|---|---|---|---|---|---|
| Non-driven roll transfer incl. assembly accessoiries | FS CS 090 SL | 90 ° | 883610-900 | 1 | stainless steel/plastic |
| | | 180 ° | 883610-910 | | |

other non-driven roll transfer on request

# FS CS090SL ACCESSORIES | DRIVEN ROLL TRANSFER CS SL



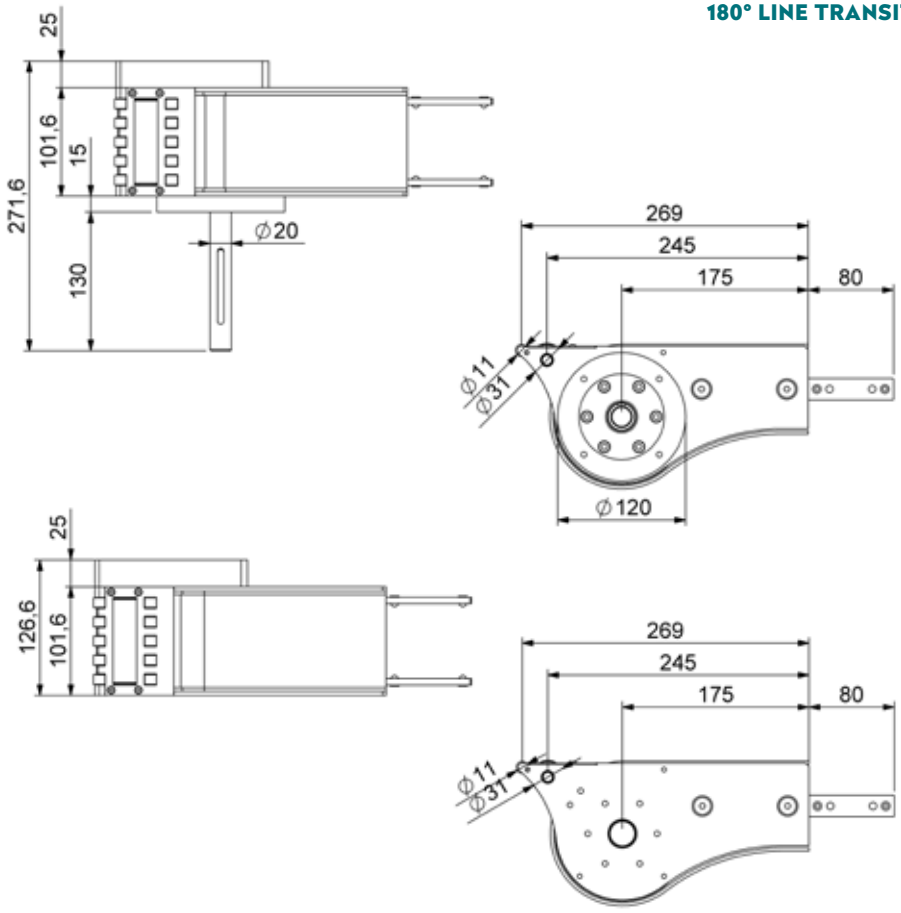
- Driven roll transfer. Available as left and right hand version
- Including assembly accessoiries for 180° line transitions
- Not suitable for chains with catch plates, catch/accumulating rollers or grippers
- Transmission by multiple round belts to minimize maintenance and production stops



**DRIVE SECTION**

**IDLER UNIT**

**180° LINE TRANSITION**




| | | RS LS | PROD.NO. | | | |
|---|---|---|---|---|---|---|
| driven roll transfer - drive section | FS CS090SL | LS | 880102-001 | 1 | stainless steel/ aluminium | 0,55m |
| | | RS | 880102-002 | | | |
| driven roll transfer - idler unit | | LS | 880102-003 | | | |
| | | RS | 880102-004 | | | |

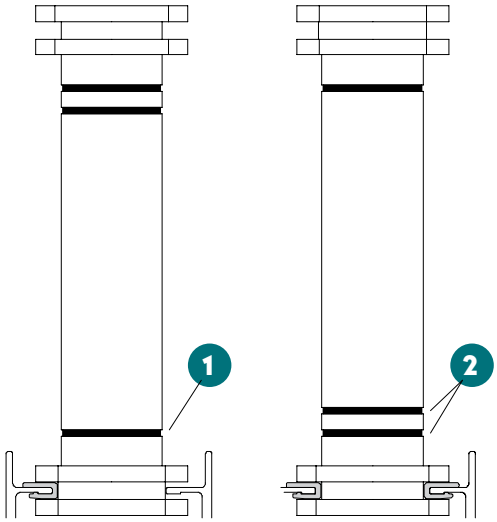
Rubberized drive roller on request LS/RS left-hand/right-hand version

# FS CS090SL TOOLS

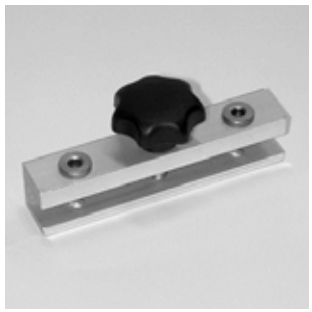
## | ASSEMBLY MANDREL

- Assembly tool for clipping the sliding strip on.
- Installing 1st sliding strip: Use the side of assembly mandrel marked with one ring.
- Installing 2nd sliding strip: Use the side of assembly mandrel marked with two rings.

| | | PROD.NO. | |
|---|---|---|---|
| Assembly mandrel | FS CS090SL | J537 146 | 1 |

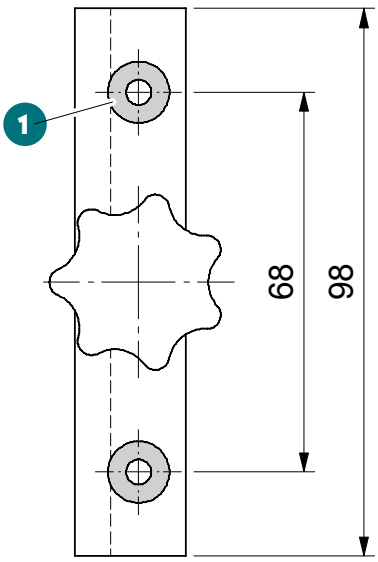



1 Installing 1st sliding strip
2 Installing 2nd sliding strip



## | DRILLING JIG

- The sliding strips are fixed to the guide profile with plastic grub screws to absorb axial displacement forces.
- The drilling jig serves as an aid for drilling the required holes.



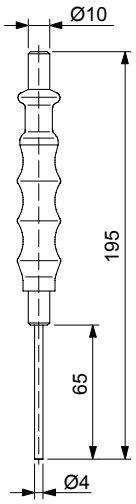

| | PROD.NO. | |
|---|---|---|
| Drilling jig | J927 786 | 1 |

1 4.5 mm dia. drilling bush

## | SPLIT-PIN DRIVER, 4 MM DIA.

- Tool for driving out the chain pen.
- Systems: FS CS065SL / FS CS090SL
- Cushioned safety grip.
- Material: hardened steel.

| | PROD.NO. | |
|---|---|---|
| Split-pin driver | J537 131 | 1 |

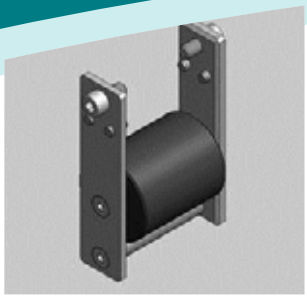



## | CUTTING PLIERS

- For precise cutting of the sliding strips

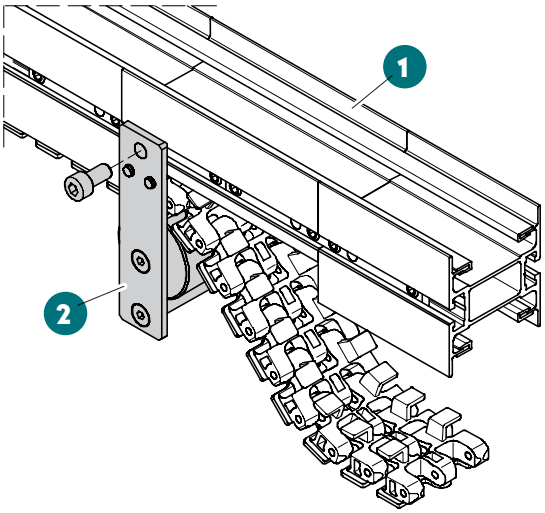
| | PROD.NO. | |
|---|---|---|
| Cutting pliers | J537 130 | 1 |

# FS CS090SL TOOLS



## | CHAIN ASSEMBLY AID

- Facilitates feeding the conveyor chain into the line.
- It is attached to the lower side of the chain assembly unit after removing the cover plate.
- Not suitable for chains with catch plates, catch/accumulating rollers or grippers.



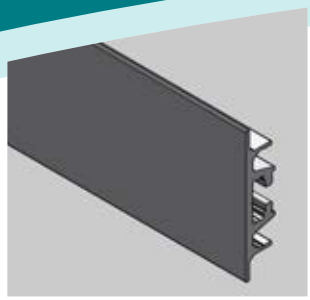

1 Assembly unit
2 Assembly aid

| | | PROD.NO. | |
|---|---|---|---|
| Assembly aid | FS CS090SL | J927 824 | 1 |

# FS CS090SL CLOSED

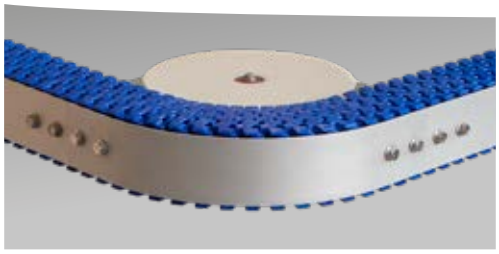
## Conveyor system

# FS CS090SL CLOSED SYSTEM

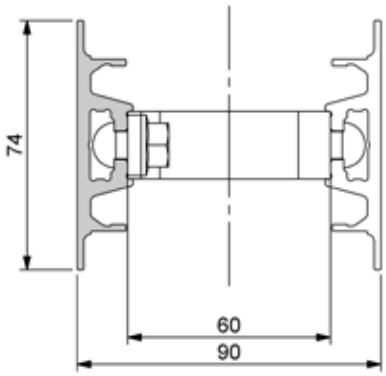


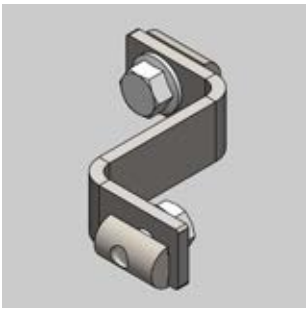
## | GUIDE PROFILE CLOSED

- Line lengths over 6000 mm
  can be produced by using joints



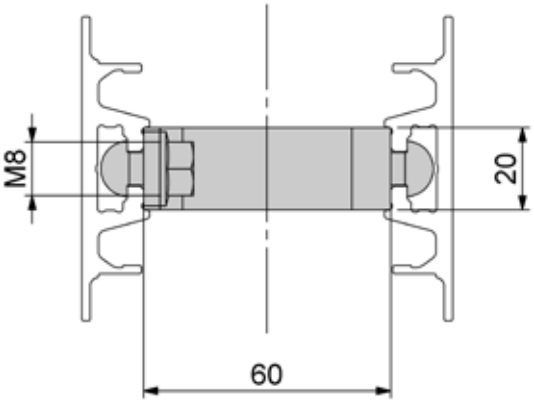
| | PROD.NO. | | | |
|---|---|---|---|---|
| Guide profile closed | J924171 | 6,0 m | EN AW-6063 T66 | E6/EV1 anodised finish |
| Cutting to length | J924969 | 1 | | |



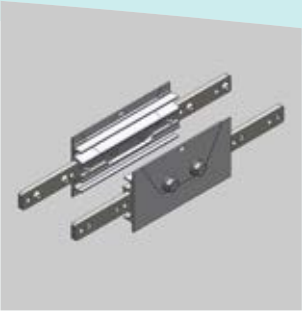



## | DISTANCE JOINT

- For the assembly of straight line sections
- Installed in intervals of maximal 600 mm.
- Including fixing material

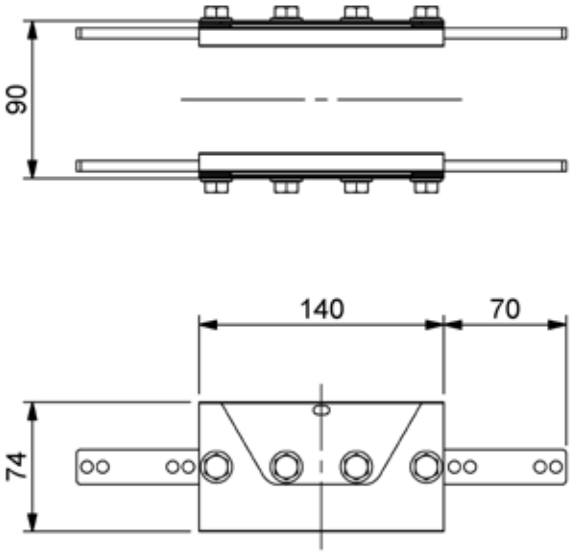



| | PROD.NO. | | |
|---|---|---|---|
| Spacer for CS090SL closed | J535934 | 1 | Stainless steel |



## | CHAIN ASSEMBLY UNIT FS CS090SL-C

- The chain assembly unit allows you to feed the chain into the assembled line.
- Can be fitted at any point within the line.
- Line joints are included.
- The sub-frame must be removed for feeding the conveyor chain into the line.
- After fitting the chain pin, the opening in the sub-frame must be closed off with the cover plate.
- The optional chain assembly aid facilitates feeding the conveyor chain into the line. It is attached to the lower side of the assembly unit after removing cover plates and sub-frames.



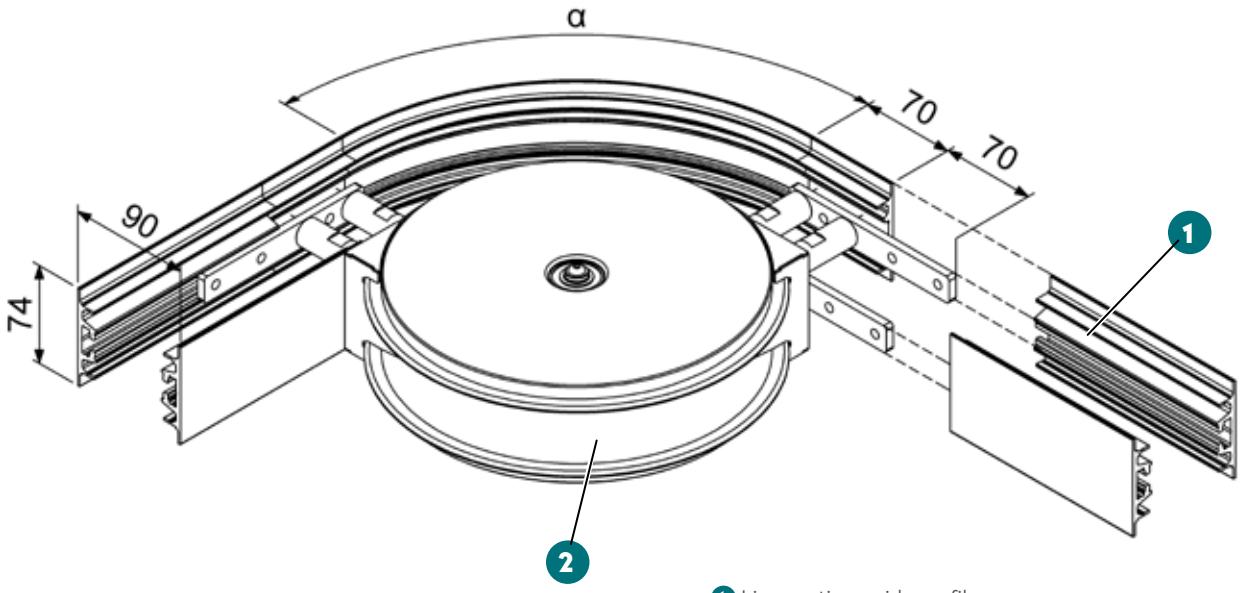

| | PROD.NO. | |
|---|---|---|
| Chain assembly untit, CS090SL-C | J927 968 | 1 |

# FS CS090SL CLOSED LINE COMPONENTS

## | HORIZONTAL SLIDING CURVES WITH DISK FS CS090SL-C

- Small radius: 162.5 mm.
- The radius is based on the line centre.
- It is installed in the conveyor line without the need for any work to the joints.
- Completely assembled sliding curve with dirk.

### HORIZONTAL SLIDING CURVE WITH DISK FS CS090SL-C, R162,5/90°




1 Line section guide profile
2 Hygienic disc (white)

**NOTE**
When installing two horizontal curves with disk, they must be separated by a straight line section of at least 190 mm in length.

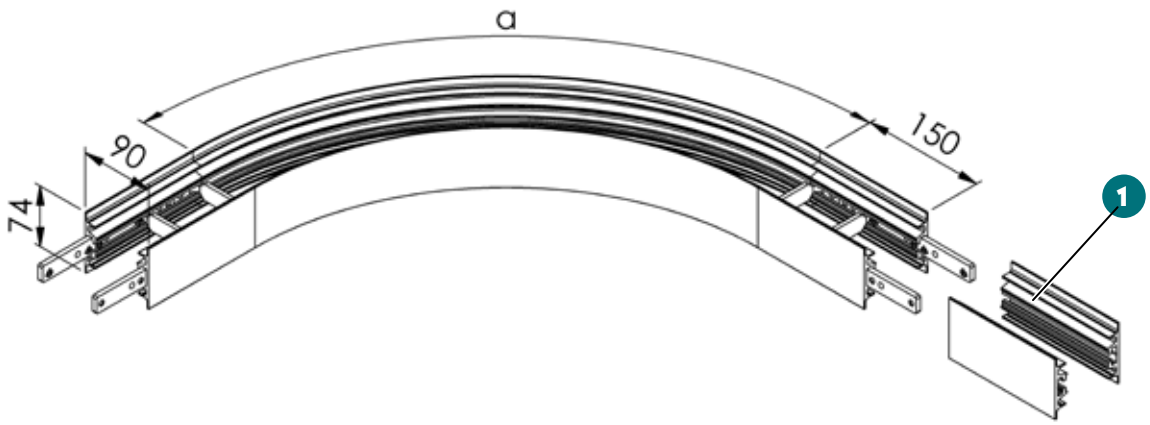
| | PROD.NO. | R | α | | |
|---|---|---|---|---|---|
| Horizontal sliding curve | J927951 | 162,5 mm | 90° | 1 | 2x 0,44 m |
| | J927952 | | 180° | 1 | 2x 0,74 m |

Other idler angles with multiple of 15° on request

## | HORIZONTAL SLIDING CURVES FS CS090SL-C

- Horizontal sliding curve.
- Various angles available. The radius specified is based on the line centre.
- Min. radius: 250 mm.

### HORIZONTAL SLIDING CURVE FS CS090SL-C, R700/90°

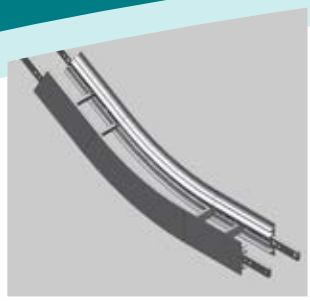



1 Line section guide profile

| | R | α | PROD.NO. | | |
|---|---|---|---|---|---|
| Horizontal sliding curve | 400 mm | 15° | J927 918 | 1 | 2x 0,41 m |
| | | 30° | J927 909 | | 2x 0,52 m |
| | | 45° | J927 910 | | 2x 0,64 m |
| | | 60° | J927 911 | | 2x 0,75 m |
| | | 90° | J927 912 | | 2x 0,97 m |
| | 700 mm | 30° | J927 953 | 1 | 2x 0,68 m |
| | | 45° | J927 954 | | 2x 0,87 m |
| | | 60° | J927 955 | | 2x 1,06 m |
| | | 90° | J927 956 | | 2x 1,44 m |

Other idler angles on request

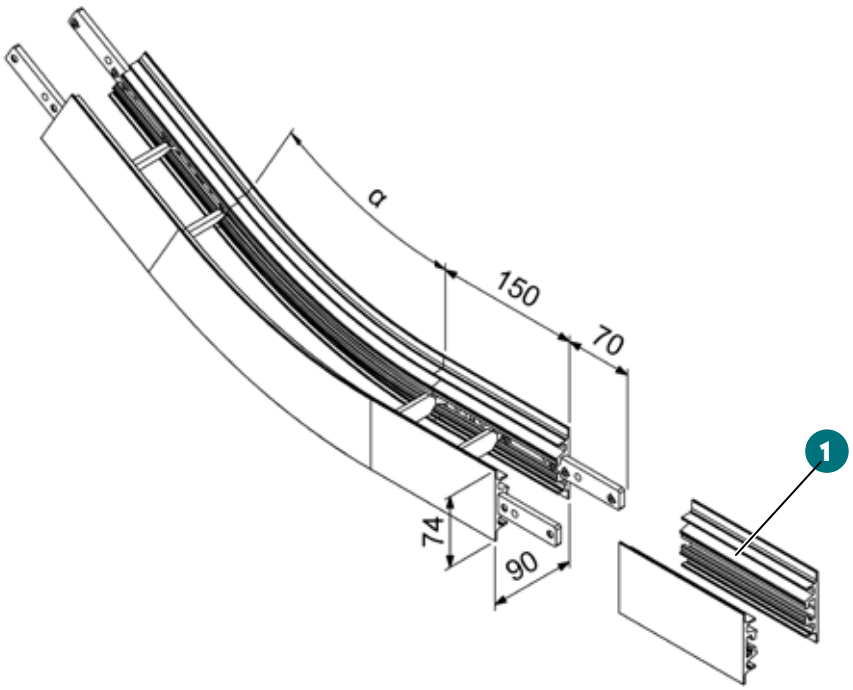
# FS CS090SL CLOSED LINE COMPONENTS



## | VERTICAL SLIDING CURVES FS CS090SL-C

- Vertical sliding curves for conveyor lines with inclines.
- Various angles available. The radius specified is based on the line centre.
- Min. radius: 500 mm.
- Can be used as outside and inside curve.

### VERTICAL SLIDING CURVE FS CS090SL-C, R500/30°

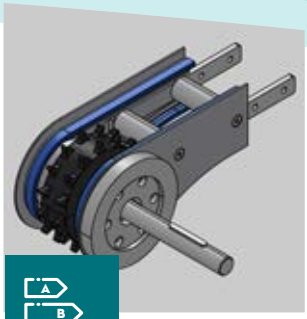



1 guide profile

| | R | α | PROD.NO. | | | | |
|---|---|---|---|---|---|---|---|
| Vertical sliding curve | 500 mm | 5° | J927 957 | 1 | 0,34 m | 0,35 m | 0,69 m |
| | | 7° | J927 958 | | 0,36 m | 0,37 m | 0,73 m |
| | | 10° | J927 959 | | 0,38 m | 0,39 m | 0,77 m |
| | | 15° | J927 960 | | 0,42 m | 0,44 m | 0,86 m |
| | | 20° | J927 961 | | 0,46 m | 0,49 m | 0,95 m |
| | | 30° | J927 962 | | 0,54 m | 0,58 m | 1,12 m |
| | | 45° | J927 963 | | 0,67 m | 0,72 m | 1,39 m |
| | | 60° | J927 965 | | 0,79 m | 0,86 m | 1,65 m |

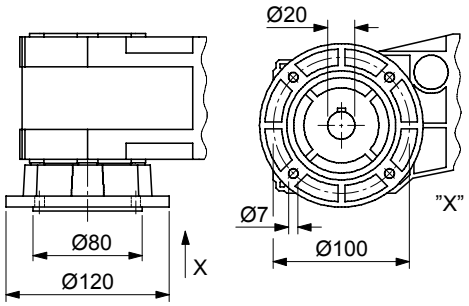
Other idler angles on request

# FS CS090SL CLOSED DRIVES | FS CS090SL CLOSED DIRECT DRIVE

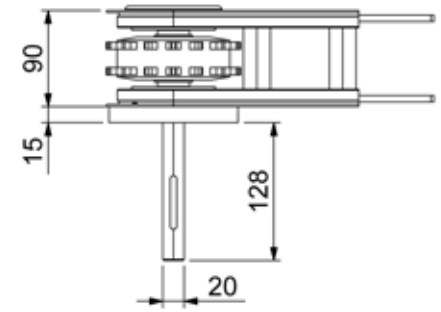


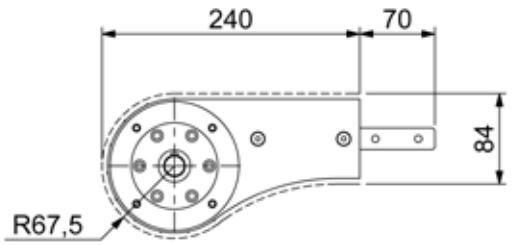
- Compact design
- The drive motor is positioned at the side of the guide profile - left or right.
- Either with or without motor
- Antistatic version on request.

## CONNECTING DIMENSIONS FOR MOTOR




## DIRECT DRIVE FS CS090SL, RIGHT-HAND DRIVE MOTOR



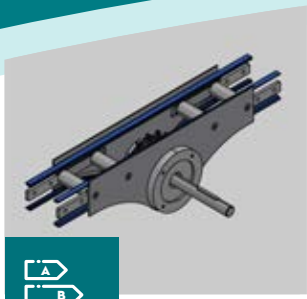

**NOTE**

Observe rating and servicing details in "Basic technical information".

| | RS LS | | PROD.NO. | | m | N | m/min | mm | m |
|---|---|---|---|---|---|---|---|---|---|
| Direct drive | LS | ○ | J927940 | 1 | 30 | 1250 | 80 | 118,5 | 0,55 |
| | | ● | ■ on request | | | | | | |
| | RS | ○ | J927943 | | | | | | |
| | | ● | ■ on request | | | | | | |

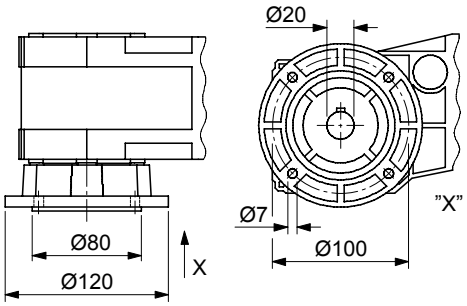
LS/RS Left-hand/right-hand version ● / ○ With/without motor ■ Specify conveyor speed

# FS CS090SL CLOSED DRIVES | FS CS090SL CLOSED CENTRE DRIVE



- The transmission gear assembly can be positioned on the left or right.
- Slip clutch is included
- Either with or without motor.
- Chain-gear transmission ratio i=0.92.
- For smooth chain circulation and minimum wear, the drive should be positioned as close as possible to the idler at the end of the line.
- Antistatic version on request.

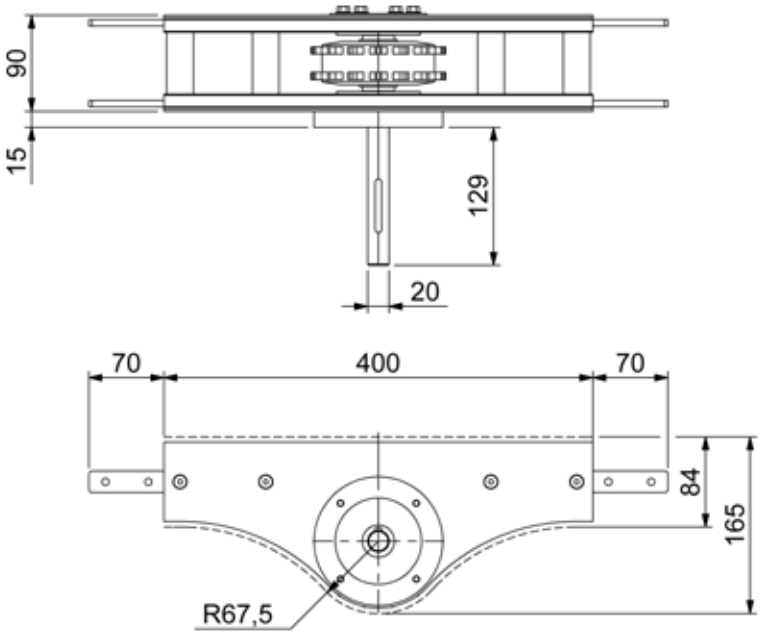
## CONNECTING DIMENSIONS FOR MOTOR




**NOTE**

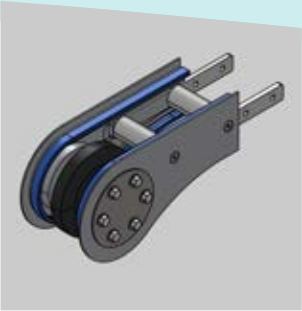
Observe rating and servicing details in "Basic technical information". The unit can be used as a left-hand version by turning it in the line.

## DIRECT CENTRE DRIVE FS CS090SL, RIGHT-HAND DRIVE MOTOR



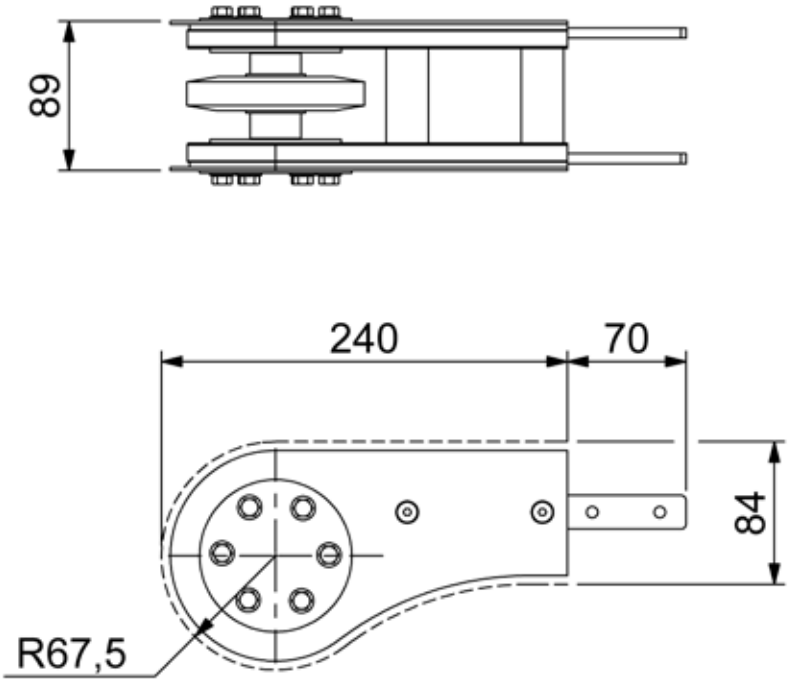

| | | | | m/min | PROD.NO. | | m | N | mm | m |
|---|---|---|---|---|---|---|---|---|---|---|
| Direct centre drive | J534 068.101 | LS/RS | ○ | 40 | J929 919 | 1 | 10 | 400 | 118,5 | 0,83 |
| | | | ● | | ■ on request | | | | | |
| | Others | LS/RS | ○ | 40 | J929 920 | 1 | 10 | 200 | 118,5 | 0,83 |
| | | | ● | | ■ on request | | | | | |

LS/RS Left-hand/right-hand version ● / ○ With/without motor ■ Specify conveyor speed



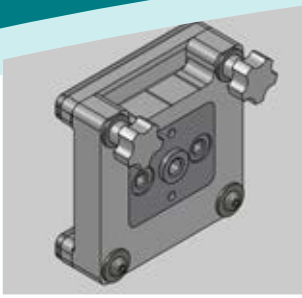
- 180° vertical idler is installed at the end of the conveyor for return chain travel underneath the line.

## VERTICAL IDLER FS CS090SL CLOSED, 180°

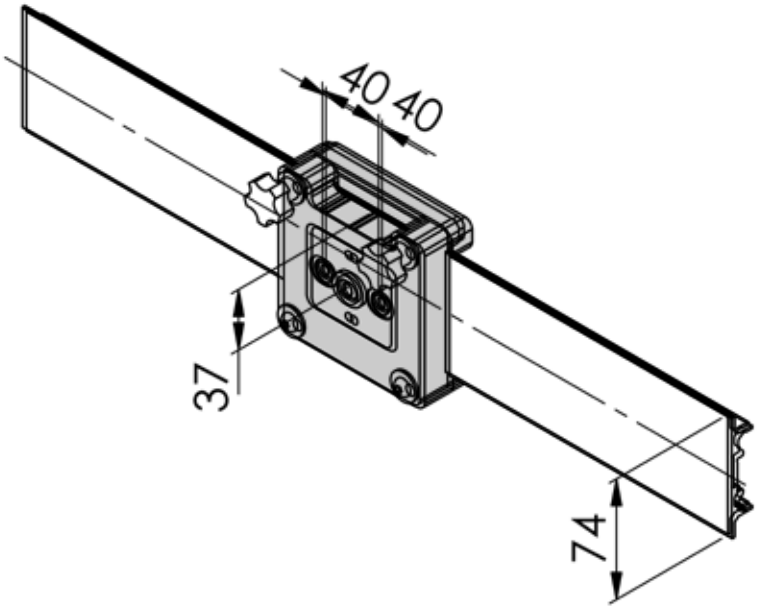



| | | PROD.NO. | | |
|---|---|---|---|---|
| Vertical idler CS090SL Closed, 180° | 180° | J927 949 | 1 | 0,55m |

# FS CS090SL CLOSED TOOLS | DRILLING JIG



- The drilling jig serves as an aid for drilling the holes required for legs and side guides in the center of the profile
- 2x Ø7mm, drilling bush
- 1x Ø8,5mm, drilling bush




| | PROD.NO. | |
|---|---|---|
| Drilling jig Closed profile | J927 986 | 1 |

**NOTE**
Drive- and idler section, chain and sliding strip are the same as the default CS090SL program

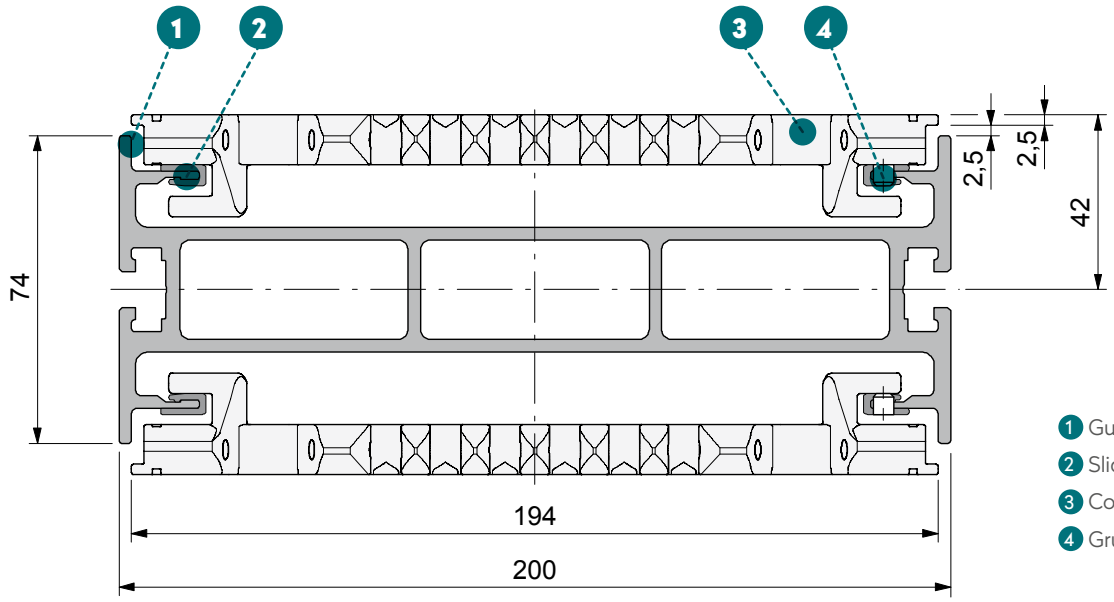
# FS CS200SL

## Conveyor system

# FS CS200SL OVERVIEW

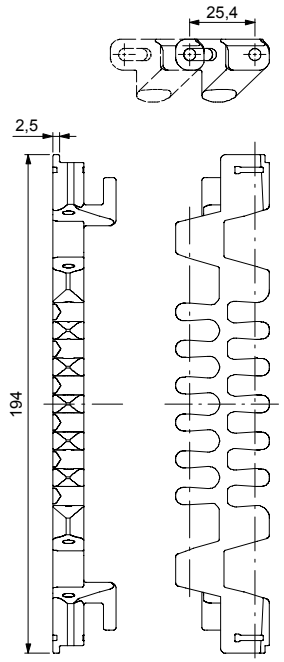
## Feeding, filling, packaging individual items and onward conveyance in bulk containers, cardboard boxes etc.

- Overall width 200 mm
- Chain width 194 mm
- Product/container width 100 - 400 mm
- Max. product weight 15 kg
- Maximum load 200 kg
- Max. conveying length 30 m
- Max. conveying speed 90 m/min
- Available drives:
  - Vertical drives
  - Direct drives
  - Center drives
- Compatible with railing system:
  - Variable guide width 100 - 450 mm
  - Variable guide height 15 - 400 mm

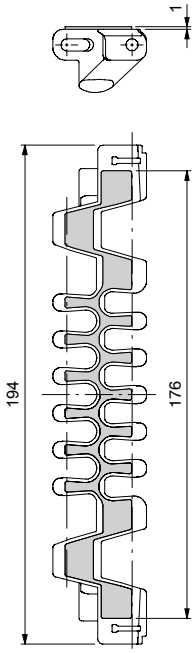



1 Guide profile
2 Sliding strip
3 Conveyor chain
4 Grub screw

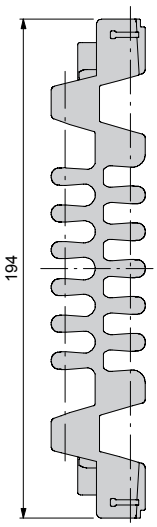
### FS CS200SL STANDARD CHAIN



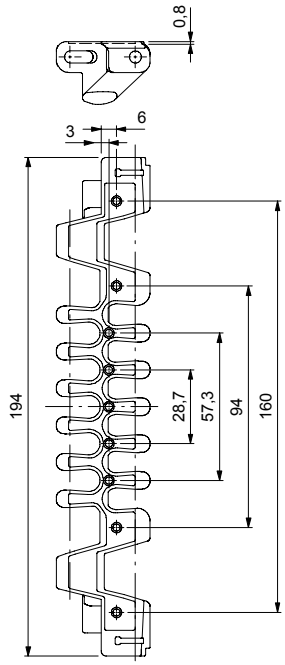

### FS CS200SL CHAIN WITH FRICTION LINING



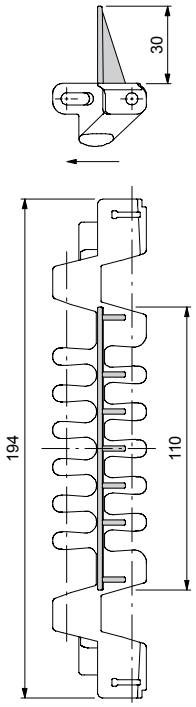

### FS CS200SL ANTISTATIC CHAIN



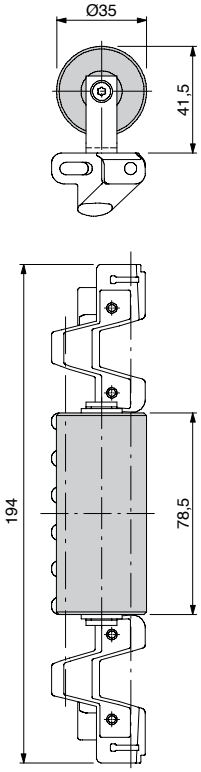

### FS CS200SL UNIVERSAL CHAIN



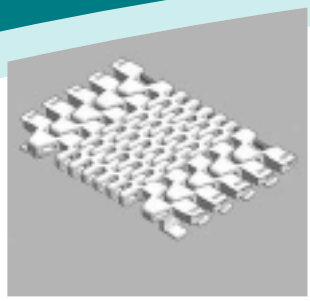

### FS CS200SL CHAIN WITH CATCH PLATE




### FS CS200SL CHAIN WITH CATCH ROLLERS

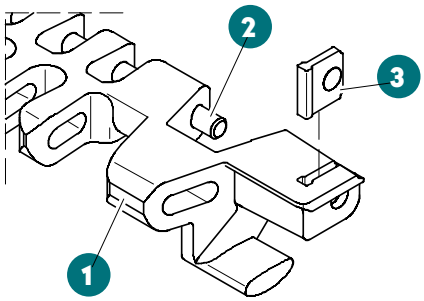


# FS CS200SL LINE COMPONENTS

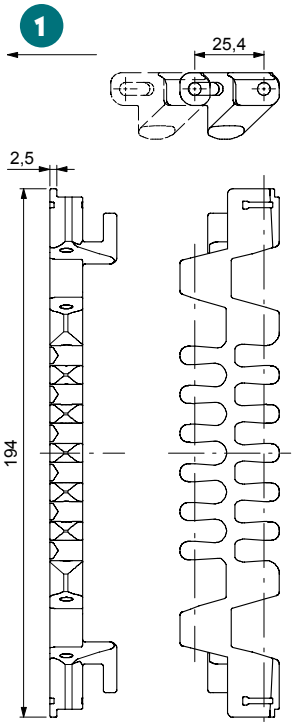


## | CHAIN FS CS200SL STANDARD

- Standard chain for horizontal conveyance.
- Suitable for accumulating conveyor mode.
- Pin-connected, articulating chain links.
- Lock for securing pin.



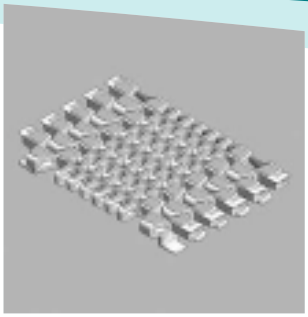

1 Chain link
2 Chain pin
3 Lock




1 Direction of travel

| | PROD.NO. | | | | | |
|---|---|---|---|---|---|---|
| Chain CS200SL, standard | J535 069 | 4,0 m | POM | white | 3,0 kg/m | 1500 N |
| Chain link, individual | J535 072 | 10 | POM | white | | 1500 N |
| Chain pin, individual | J534 012 | 20 | Stainless steel | grey | | |
| Chain CS200SL, standard blue | J535069.101 | 4,0 m | POM | blue | 3,0 kg/m | 1500 N |
| Lock, individual | J535 071 | 40 | POM | white | | |

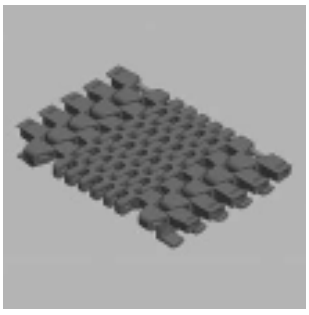
# FS CS200SL LINE COMPONENTS



## | CHAIN FS CS200SL WITH FRICTION LINING

- Chain with anti-slip coating to increase adhesion on inclines.
- Well suited to conveying smooth-surfaced items.
- Friction lining in wear-resistant rubber.
- Not suitable for accumulating conveyor mode.

| | PROD.NO. | | | | | |
|---|---|---|---|---|---|---|
| Chain CS200SL, with friction lining | J535 074 | 4,0 m | PA | white | 2,7 kg/m | 750 N |
| Chain link, individual | J535 075 | 10 | PA | white | | 750 N |
| Chain pin, individual | J534 012 | 20 | Stainless steel | grey | | |
| Lock, individual | J535 071 | 40 | POM | white | | |

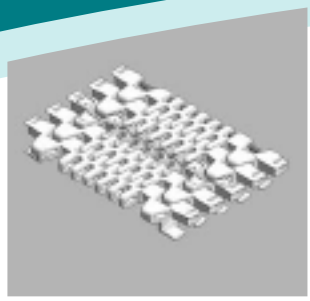


## | CHAIN FS CS200SL ANTISTATIC

- Standard chain in antistatic finish.
- For use only in conjunction with antistatic sliding strip and drive unit.

| | PROD.NO. | | | | | |
|---|---|---|---|---|---|---|
| Chain CS200SL, antistatic | J535 079 | 4,0 m | POM | black | 3 kg/m | 1200 N |
| Chain link, individual | J535 090 | 10 | POM | black | | 1200 N |
| Chain pin, individual | J534 012 | 20 | Stainless steel | grey | | |
| Lock, individual | J535 071 | 40 | POM | black | | |

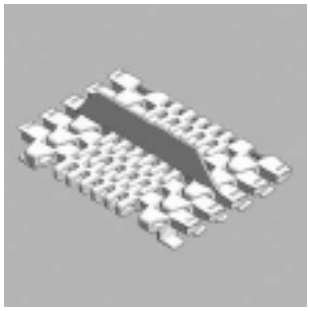
# FS CS200 SL LINE COMPONENTS



## | CHAIN CS200SL UNIVERSAL

- Universal chain links are inserted in the standard chain at recurrent intervals.
- Chain for universal application with drill holes in the base plate.
- Capability of fitting various conveyor components (e.g. catch plates, rollers) using Ø3.9 mm self-tapping bolts.

| | PROD.NO. | | | | | F |
|---|---|---|---|---|---|---|
| Chain link, individual | J535 076 | 10 | POM | white | 3,0kg/m | 1000 N |
| Chain pin, individual | J534 012 | 20 | Stainless steel | grey | | |
| Lock, individual | J535 071 | 40 | POM | white | | |

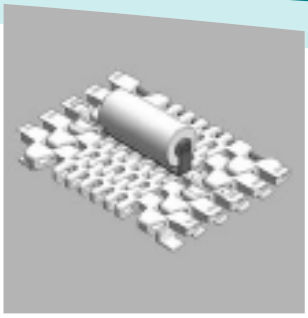


## | CHAIN CS200SL WITH CATCH PLATE

- Chain for vertical conveyance.
- Chain links with catch plates are inserted in the standard chain at recurrent intervals.
- Catch plate height 30 mm.

| | PROD.NO. | | | | | F |
|---|---|---|---|---|---|---|
| Chain link, individual | J535 073 | 10 | POM | white | 3,1kg/m * | 1500 N |
| Chain pin, individual | J534 012 | 20 | Stainless steel | grey | | |
| Lock, individual | J535 071 | 40 | POM | white | | |

# FS CS200 SL LINE COMPONENTS

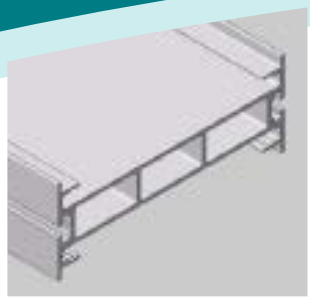


## | CHAIN FS CS200SL WITH CATCH ROLLERS

- Chain links with catch rollers are inserted in the standard chain at recurrent intervals.
- At least one standard link must be inserted between two catch rollers

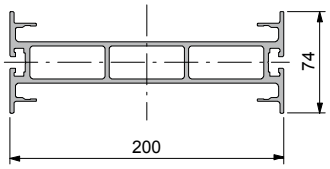
| | PROD.NO. | | | | | |
|---|---|---|---|---|---|---|
| Chain link, individual | J535 077 | 10 | POM | white | 3,6kg/m * | 1000 N |
| Chain pin, individual | J534 012 | 20 | Stainless steel | grey | | |
| Lock, individual | J535 071 | 40 | POM | white | | |

# FS CS200SL LINE COMPONENTS



## | GUIDE PROFILE FS CS200SL

- Line lengths over 6000 mm can be produced by using joints.

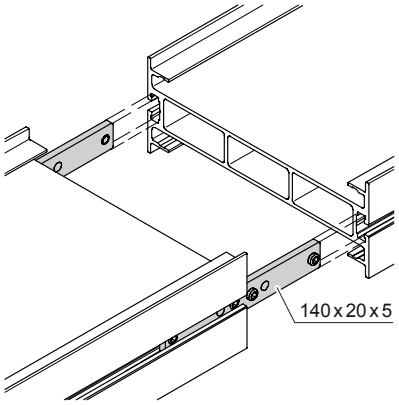



CROSS SECTION

| | PROD.NO. | | | |
|---|---|---|---|---|
| Guide profile CS200SL | J924 179 | 6,0 m | EN AW-6063 T66 | E6/EV1 anodised finish |
| Cutting to length | J924 969 | 1 | | |

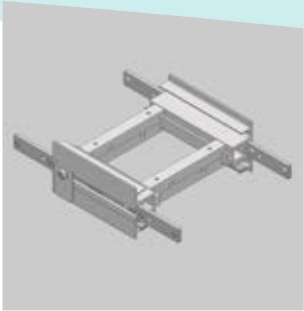
## | LINE JOINT CS SL

- Joints are pushed into the profile groove and fixed in place with the premounted grub screws.
- No additional work to the profile is necessary.




| | PROD.NO. | | | |
|---|---|---|---|---|
| Line joint | J927 803 | 2 | steel | galvanised |

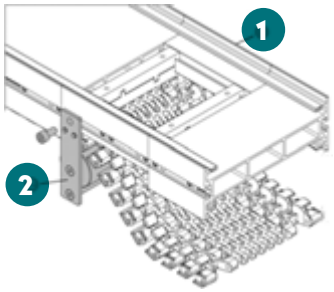
# FS CS200SL LINE COMPONENTS



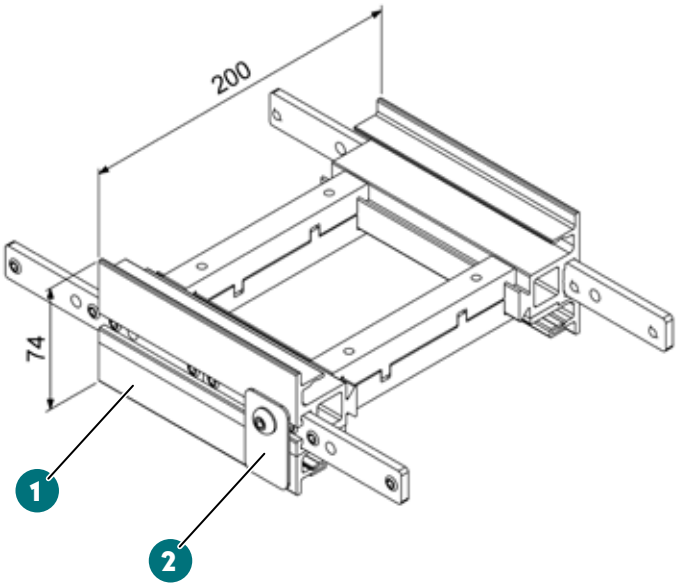
## | CHAIN ASSEMBLY UNIT FS CS200SL

- The chain assembly unit allows you to feed the chain into the assembled line.
- Can be fitted at any point within the line.
- Line joints are included in delivery.
- The sub-frames must be removed for feeding the conveyor chain into the line.
- After fitting the chain pin, the opening in the sub-frame must be closed off with the cover plate.
- The optional chain assembly aid facilitates feeding the conveyor chain into the line. It is attached to the lower side of the assembly unit after removing the cover plates and the sub-frames.

### USING THE CHAIN ASSEMBLY AID

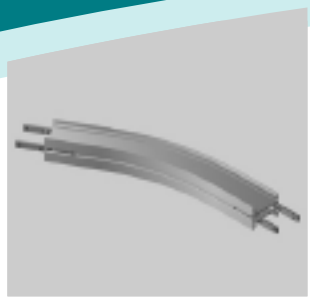



1 Assembly unit
2 Assembly aid



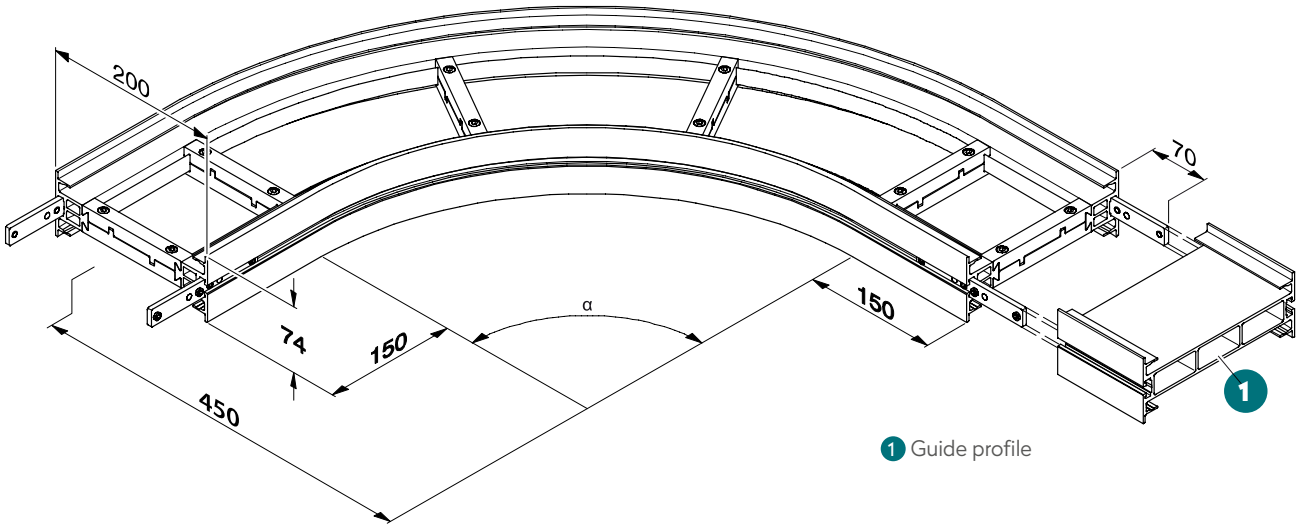

1 Sub-frame
2 Cover

| | PROD.NO. | |
|---|---|---|
| Chain assemblu unit CS200SL | J927 826 | 1 |
| Assembly aid | J927 821 | 1 |



- Horizontal sliding curve.
- Various angles available. The radius specified is based on the line centre.
- Min. radius: 450 mm.

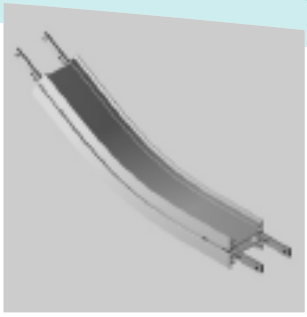
## HORIZONTAL SLIDING CURVE FS CS200SL, R450/90°




1 Guide profile

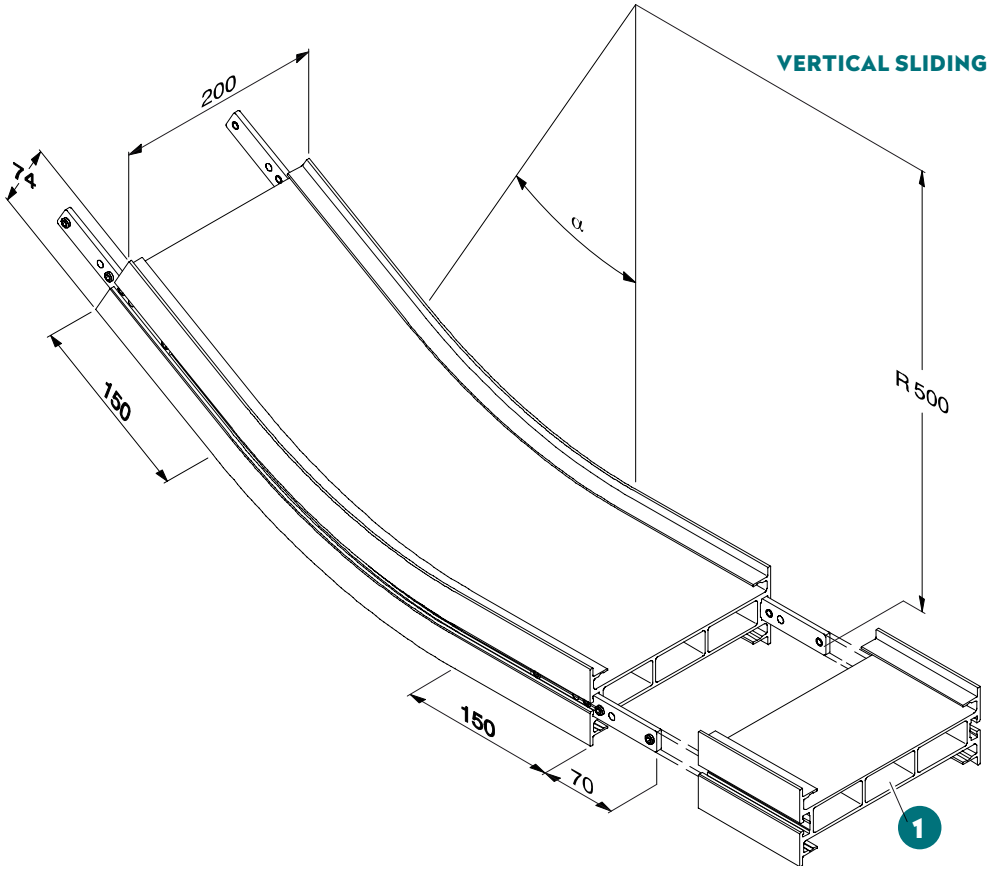
| | R | α | PROD.NO. | | |
|---|---|---|---|---|---|
| Horizontal sliding curve | 450 mm | 30° | J927 746 | 1 | 2x 0,57 m |
| | | 45° | J927 747 | | 2x 0,70 m |
| | | 60° | J927 748 | | 2x 0,84 m |
| | | 90° | J927 750 | | 2x 1,10 m |

Other idler angles on request



- Vertical sliding curves for conveyor lines with inclines.
- Various angles available. The radius specified is based on the line centre.
- Min. radius: 500 mm.
- Can be used as outside and inside curve.

## VERTICAL SLIDING CURVE FS CS200SL, R500/30°



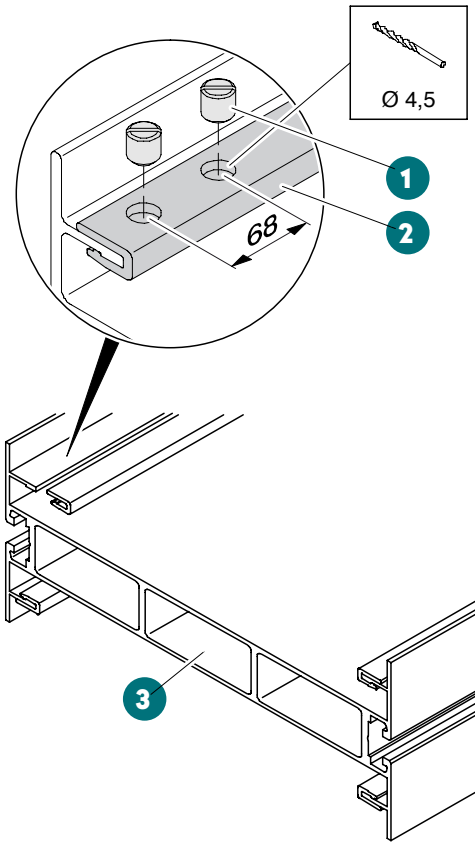

1 Line section guide profile

| | R | α | PROD.NO. | | | | |
|---|---|---|---|---|---|---|---|
| Vertical sliding curve | 500 mm | 5° | J927 745 | 1 | 0,34 m | 0,35 m | 0,69 m |
| | | 7° | J927 772 | | 0,36 m | 0,37 m | 0,73 m |
| | | 10° | J927 773 | | 0,38 m | 0,39 m | 0,77 m |
| | | 15° | J927 774 | | 0,42 m | 0,44 m | 0,86 m |
| | | 20° | J927 775 | | 0,46 m | 0,49 m | 0,95 m |
| | | 30° | J927 777 | | 0,54 m | 0,58 m | 1,12 m |
| | | 45° | J927 784 | | 0,67 m | 0,72 m | 1,39 m |
| | | 60° | J927 802 | | 0,79 m | 0,86 m | 1,65 m |
| | | 90° | J927 828 | | 1,03 m | 1,14 m | 2,17 m |

Other idler angles on request

# FS CS200SL LINE COMPONENTS | SLIDING STRIP CS SL

- Sliding strip for minimising friction between chain and profile.
- Properties:
  - Outstanding sliding behaviour
  - Extremely hard surface for minimum wear
  - Suitable for higher conveyor speeds.
- The sliding strip is clipped on and fixed in place after assembling the line. Joints in the guide profile should not coincide with joints in the sliding strip.
- Worn sliding strips are easy to remove and renew.

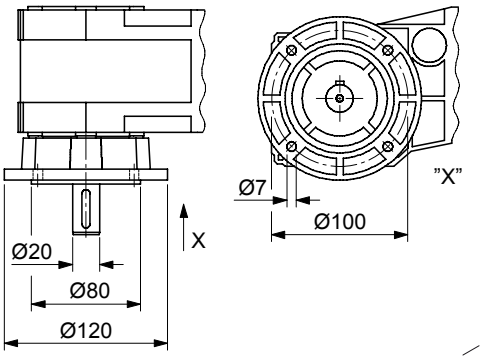



1 Grub screw
2 Sliding strip
3 Guide profile

| | PROD.NO. | | | |
|---|---|---|---|---|
| Sliding strip, standard | J537 015 | 25,0 m | PA-modified | grey |
| Sliding strip, antistatic | J537 016 | 25,0 m | PE 500 | black |
| Sliding strip | J537 017 | 25,0 m | PA-modified | blue |
| Sliding strip, ultra low friction | J537 020 | 25,0 m | LubX CV | Naturel |
| Grub screw m5 x 5 | J535 380 | 25 | POM | white |
| Drilling jig | J927 786 | 1 | | |

- The drive motor is suspended below the guide profile.
- Left-hand or right-hand version, either with or without motor.
- Slip clutch is included.
- Chain transmission ratio i = 0.92.
- Antistatic version on request.

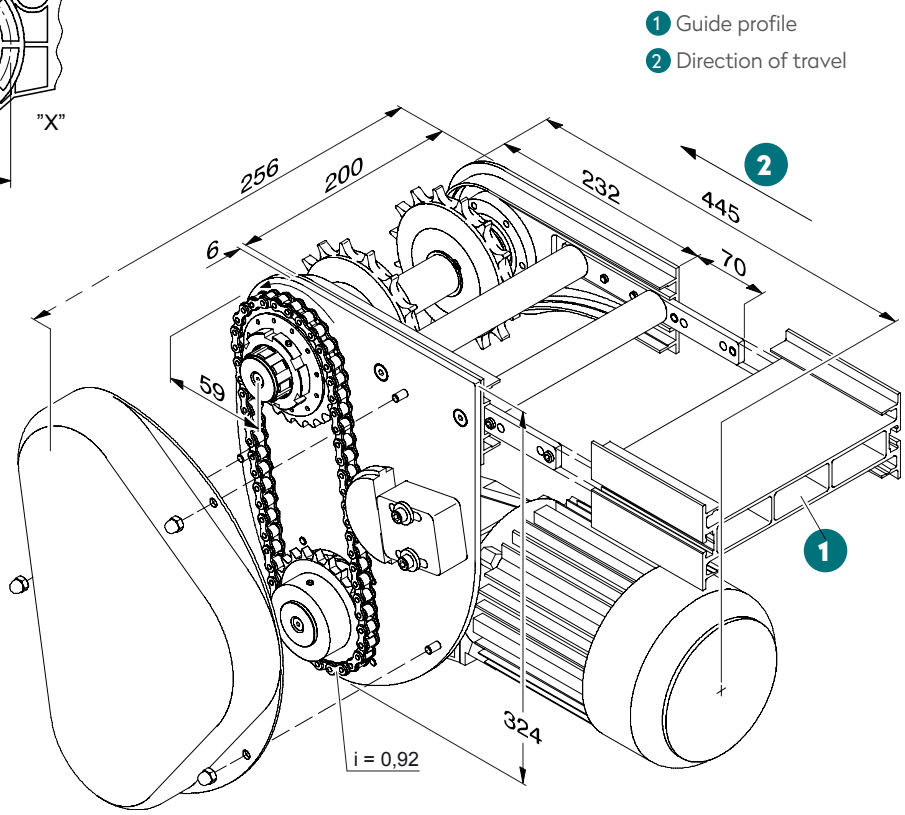
## CONNECTING DIMENSIONS FOR MOTOR




**NOTE**

Observe rating and servicing details in "Basic technical information".

## FS CS200SL VERTICAL DRIVE, LEFT-HAND VERSION

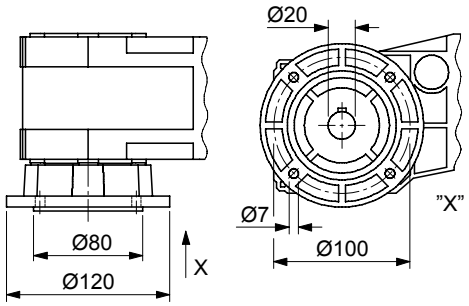



| | RS LS | | PROD.NO. | | m | N | m/min | mm | m |
|---|---|---|---|---|---|---|---|---|---|
| Vertical drive | LS | ○ | J927 797 | 1 | 30 | 800 | 60 | 118,5 | 0,55 |
| | RS | | J927 798 | | | | | | |
| | LS/RS | ● | ■ on request | | | | | | |

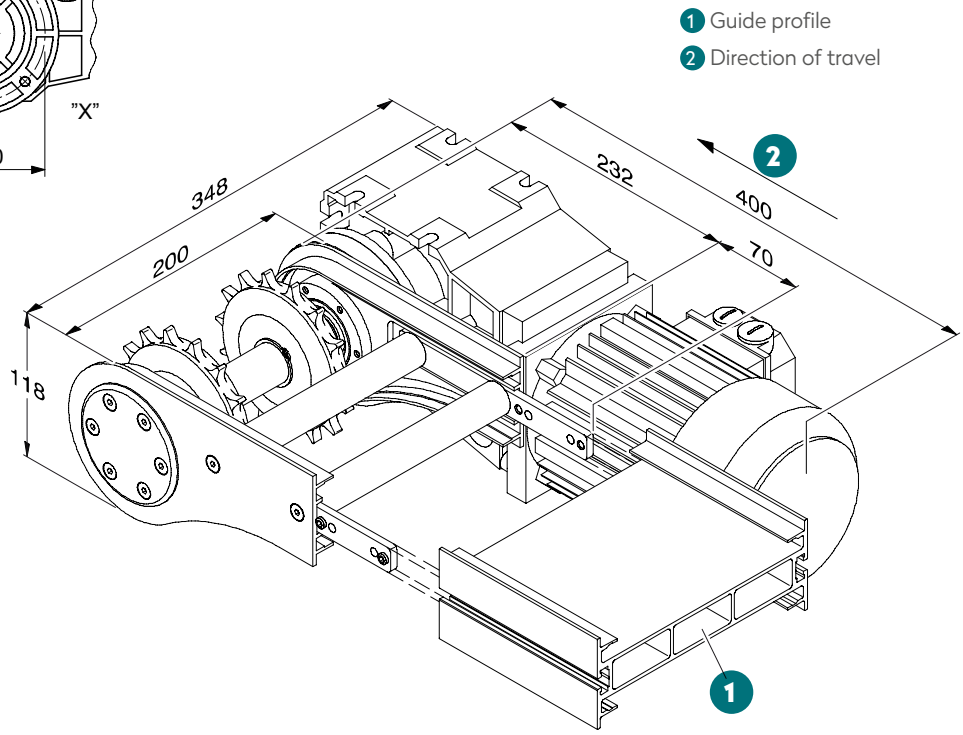
LS/RS Left-hand/right-hand version ● / ○ With/without motor ■ Specify conveyor speed

- Compact design.
- The drive motor is positioned at the side of the guide profile - left or right.
- Either with or without motor.
- Antistatic version on request.

## CONNECTING DIMENSIONS FOR MOTOR



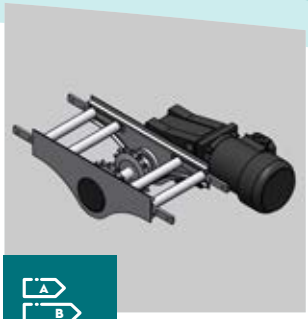

## FS CS200SL DIRECT DRIVE, RIGHT-HAND DRIVE MOTOR




**NOTE**
Observe rating and servicing details in "Basic technical information".

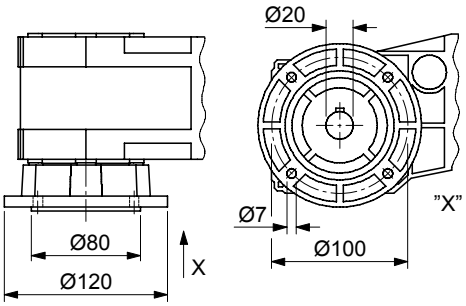
| | RS LS | | PROD.NO. | | m | N | m/min | mm | m |
|---|---|---|---|---|---|---|---|---|---|
| Direct drive | LS | ○ | J927 799 | 1 | 30 | 1250 | 60 | 118,5 | 0,55 |
| | RS | | J927 801 | | | | | | |
| | LS/RS | ● | ■ on request | | | | | | |

LS/RS Left-hand/right-hand version ● / ○ With/without motor ■ Specify conveyor speed



- Compact design.
- The drive motor is positioned at the side of the guide profile - left or right.
- For smooth chain circulation and minimum wear, the drive should be positioned as close as possible to the idler at the end of the line.
- Conveying direction can be reversed during operation.
- Antistatic version on request.

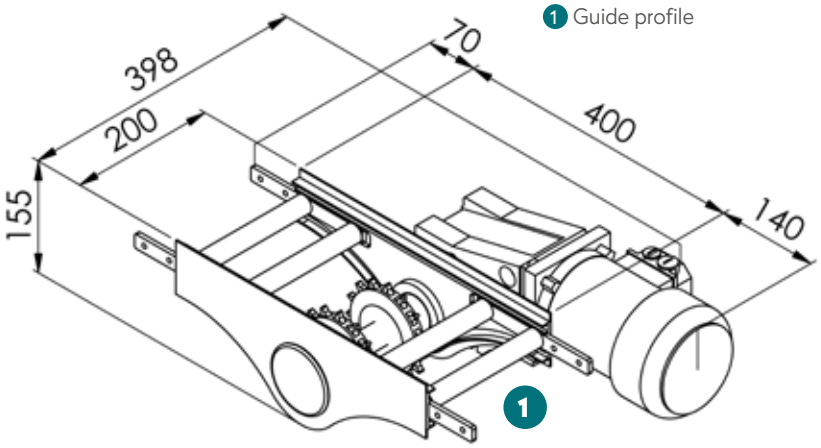
## CONNECTING DIMENSIONS FOR MOTOR




**NOTE**

Observe rating and servicing details in "Basic technical information". The unit can be used as a left-hand version by turning it in the line.

## DIRECT CENTRE DRIVE FS CS200SL, RIGHT-HAND DRIVE MOTOR



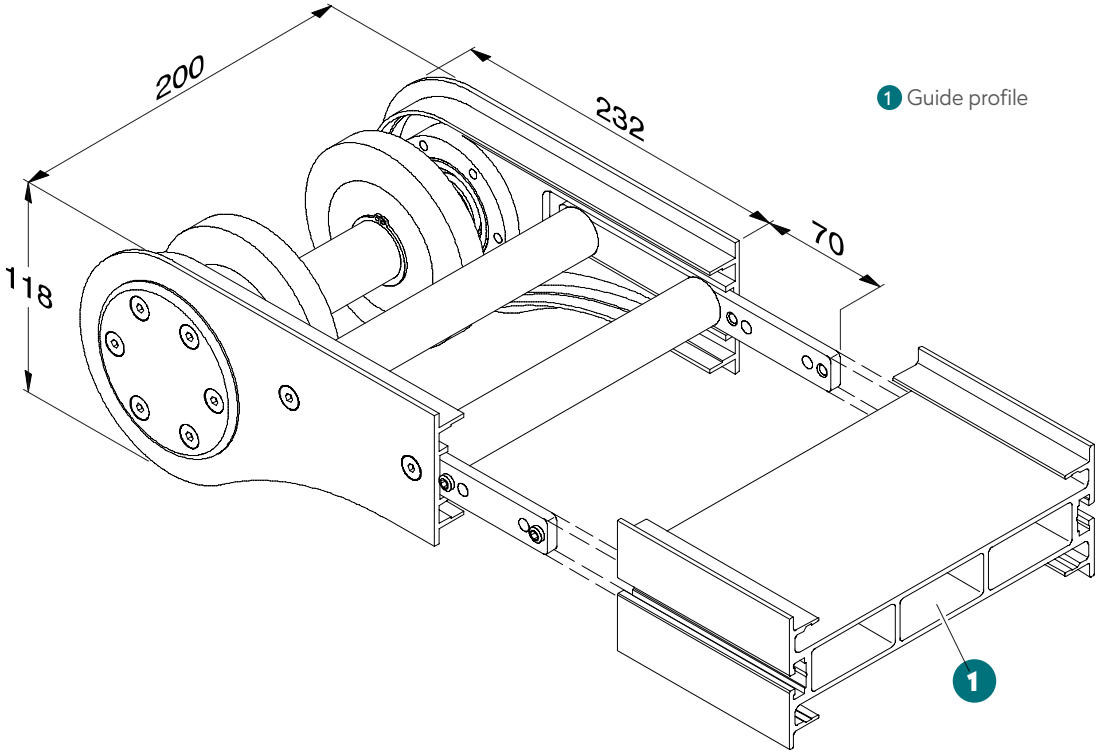

| | RS LS | | VMAX m/min | PROD.NO. | | m | F N | mm | m |
|---|---|---|---|---|---|---|---|---|---|
| Direct centre drive | LS/RS | ○ | 40 | J927800 | 1 | 10 | 400 | 118,5 | 0,83 |
| | | ● | | ■ On request | | | | | |

LS/RS Left-hand/right-hand version ●/○ With/without motor ■ Specify conveyor speed

# FS CS200SL IDLERS | VERTICAL IDLER FS CS200SL

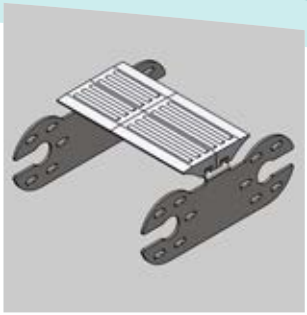
- Vertical idler for installing at the end of the conveyor line.
- Idler and guide profile are of equal width, line transitions can be created without a gap.

## FS CS200SL VERTICAL IDLER, 180°



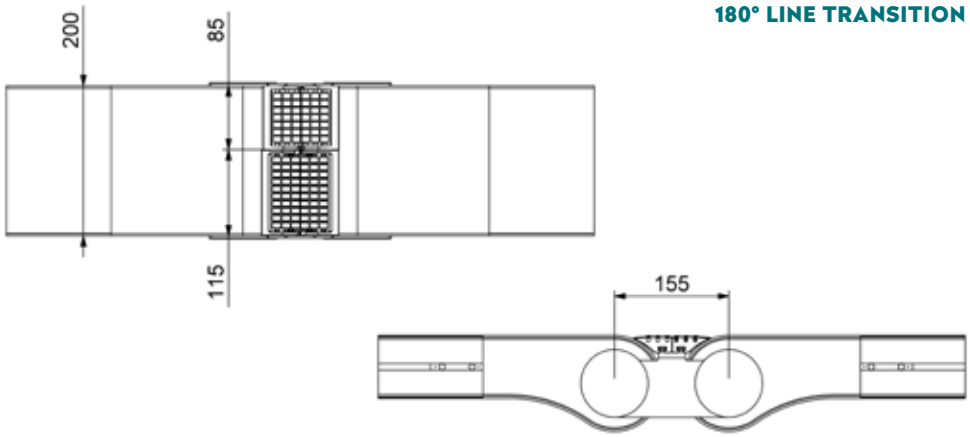

| | RS LS | PROD.NO. | | |
|---|---|---|---|---|
| Vertical idler CS200SL, 180 (grad) | 180° | J927 827 | 1 | 0,55 m |

# FS CS200SL ACCESSORIES | NON-DRIVEN ROLL TRANSFER CS SL

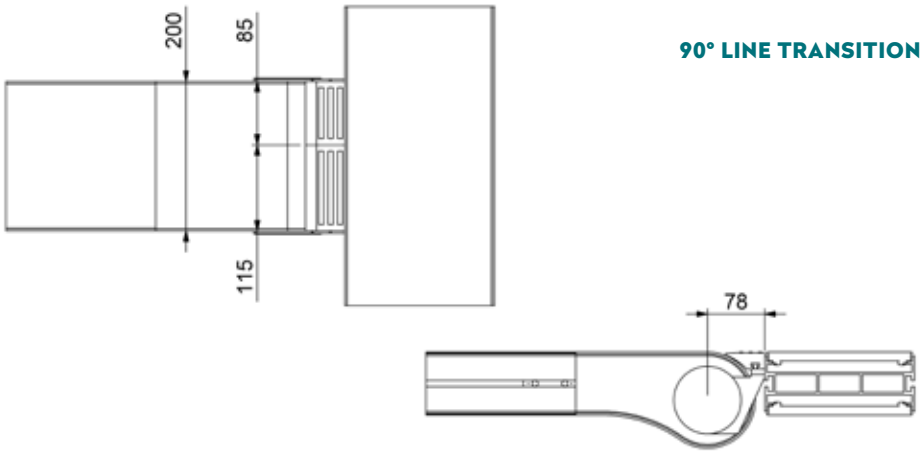


- Passive roll transfer
- Including assembly accessoires for 90° and 180° line transitions
- Not suitable for chains with catch plates, catch/accumulating rollers or grippers
- Ø11 mm Rollers at a 12,6mm pitch

## 180° LINE TRANSITION




## 90° LINE TRANSITION

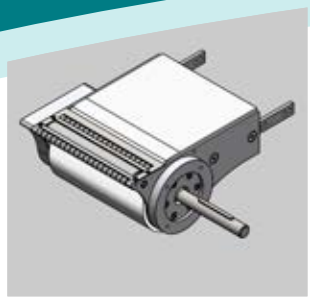



**CAUTION!**
Short conveyed items can be left behind at the point of transfer

| | | | PROD.NO. | | |
|---|---|---|---|---|---|
| Non driven transfer | FS CS200SL | 90° | 883603-900 | 1 | stainless steel/ plastic |
| | | 180° | 883603-910 | | |

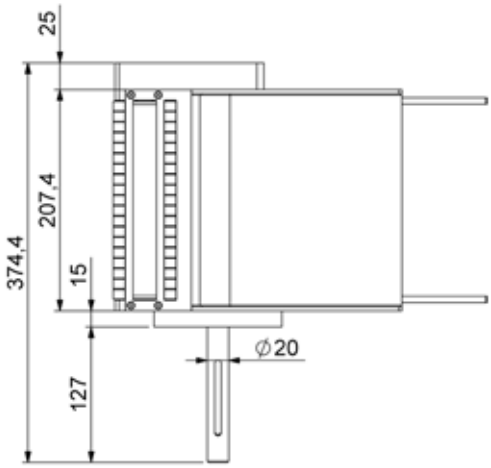
other non-driven roll transfer on request

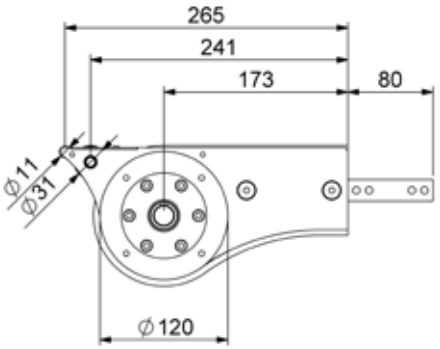
# FS CS200SL ACCESSORIES | DRIVEN ROLL TRANSFER CS SL



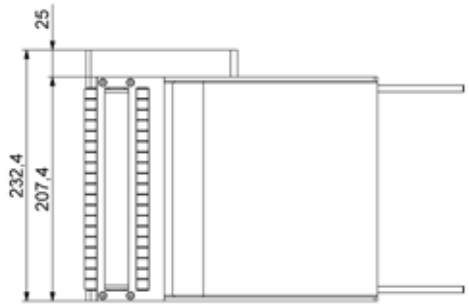
- Driven roll transfer. Available as left and right handed version
- Including assembly accessories for 180° line transitions
- Not suitable for chains with catch plates, catch/accumulating rollers or grippers
- Transmission by multiple round belts to minimize maintenance and production stops

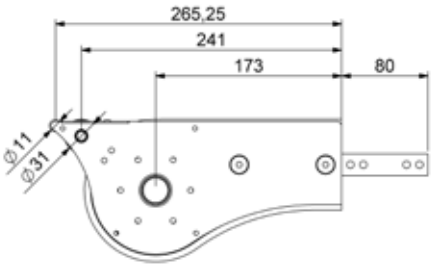
**DRIVE SECTION**




**IDLER UNIT**



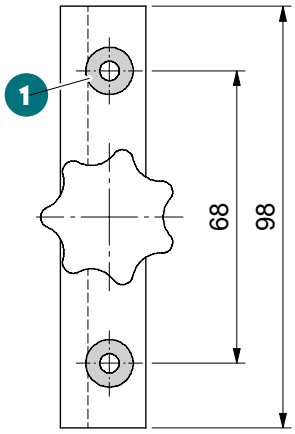

| | | RS LS | PROD.NO. | | | |
|---|---|---|---|---|---|---|
| driven roll transfer - drive section | FS CS200SL | LS | 880120-001 | 1 | stainless steel/ aluminium | 0,55m |
| | | RS | 880120-002 | | | |
| driven roll transfer - idler unit | | LS | 880120-003 | | | |
| | | RS | 880120-004 | | | |

Rubberized drive roller on request LS/RS left-hand/right-hand version

## | DRILLING JIG

- The sliding strips are fixed to the guide profile with plastic grub screws to absorb axial displacement forces.
- The drilling jig serves as an aid for drilling the holes required.

| | PROD.NO. | |
|---|---|---|
| Drilling jig | J927 786 | 1 |




1 4.5 mm dia. drilling bush

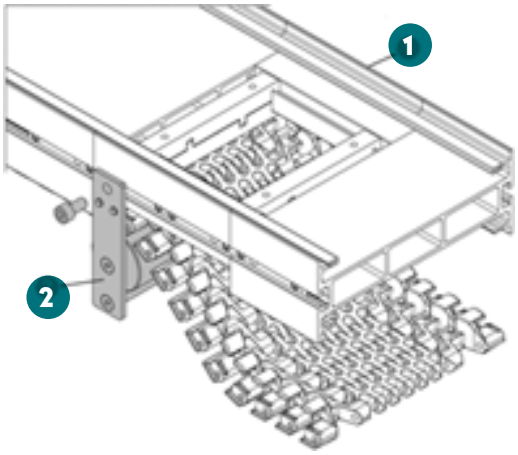
## | CUTTING PLIERS

- For cutting of sliding strips

| | PROD.NO. | |
|---|---|---|
| Cutting pliers | J537 130 | 1 |

## | CHAIN ASSEMBLY AID

- Facilitates feeding the conveyor chain into the line.
- It is attached to the lower side of the chain assembly unit after removing the cover plate.
- Not suitable for chains with catch plates, catch/accumulating rollers or grippers.




1 Assembly unit
2 Assembly aid

| | | PROD.NO. | |
|---|---|---|---|
| Assembly aid | FS CS200SL | J927 821 | 1 |



# CS Energy efficiency

## Saving energy from innovations

Energy costs are growing from year to year – the heating-oil bill or a visit to the filling station are constant reminders. Whether greenhouse effect, global warming or scare resources: Everything suggests that the environmental aspect too will keep the price spiral turning – and no end is in sight.

These reasons make it necessary to reduce the consumption of resources by looking for alternative ways of generating energy and, at the same time, by using energy much more efficiently. Only this way will it be possible to reduce the impacts on the environment while maintaining the levels of production and prosperity that have been reached. All industrialised nations have therefore set themselves ambitious targets for reducing CO2 emission.

The energy balance of each and every individual will ultimately determine how long resources will last. This is why everyone should examine ways of adapting their production practices and consumption behaviour to comply with the changed conditions.

You will find further information on the Internet at www.fssolutions.nl

# CS ENERGY EFFICIENCY | WAYS OF IMPROVING ENERGY EFFICIENCY IN CONVEYOR SYSTEMS

## FS SOLUTIONS CONVEYOR SYSTEMS WITH OPTIMISED ENERGY EFFICIENCY

The CS (Conveyor systems) range from FS Solutions is setting new standards in energy-saving material flows –- also in complex solutions. Developing our Conveyor systems, we focused our attention on the following goals:

- Reducing drive power
- Cutting friction
- Reducing wear
- Increasing useful life
- Cutting noise emission
- High level of reliability
- Maximising system availability.

## PROBLEMS IN CONVEYING

Today, the unwanted high level of friction in Conveyor systems leads to the following problems:

- the pulling medium (chain) is exposed to extreme levels of stress
- the sliding components build up high levels of heat.

This necessitates a high level of drive power.
The energy efficiency of the drive components is governed by:

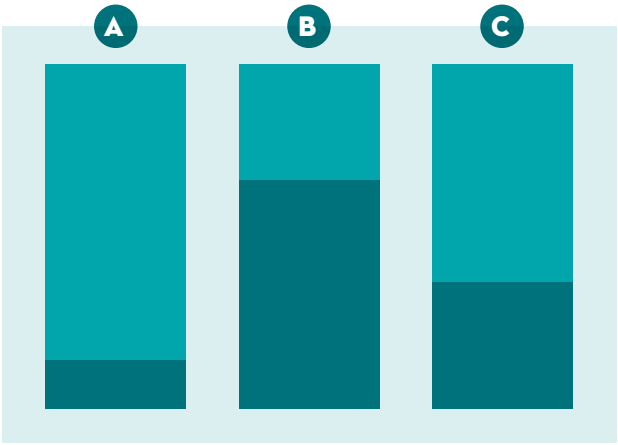
- the efficiency of the drive components
- the energy efficiency class of the motors used.

## ENERGY-EFFICIENT CONVEYOR SYSTEMS

There are many different parameters that determine the energy efficiency of Conveyor systems. The possible approaches to improving energy efficiency are equally as numerous. But not every measure produces a balanced trade-off between input and results. Only after analysing the mechanical process and the energy it demands is it possible to identify which measures make sense in each specific case.

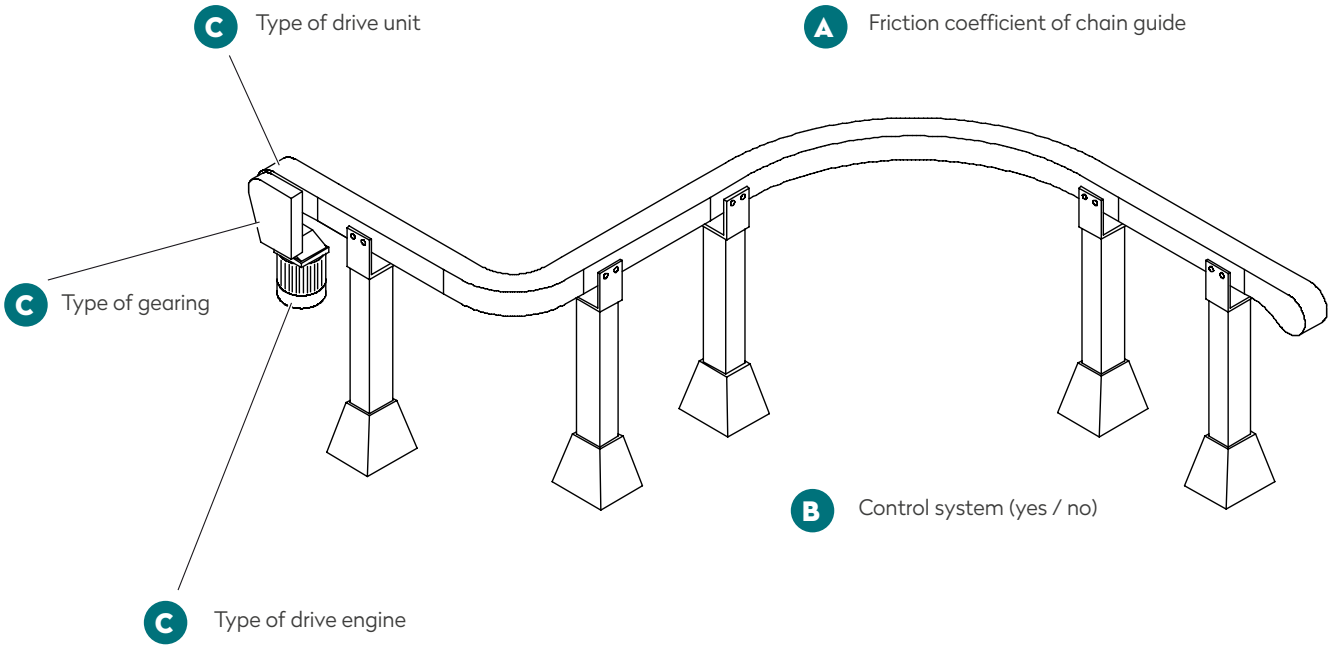
## POTENTIAL OPTIONS FOR IMPROVING EFFICIENCY:

A Optimise tribological properties
B Use electrical energy intelligently
C Convert energy with a high degree of efficiency



## ANALYSIS OF THE OVERALL SYSTEM

The following example of a conveyor system demonstrates the potential savings.




## POTENTIAL OPTIONS FOR IMPROVING EFFICIENCY:

- A Optimise tribological properties
- B Use electrical energy intelligently
- C Convert energy with a high degree of efficiency

### TRIBOLOGICAL PROPERTIES OF THE SYSTEM

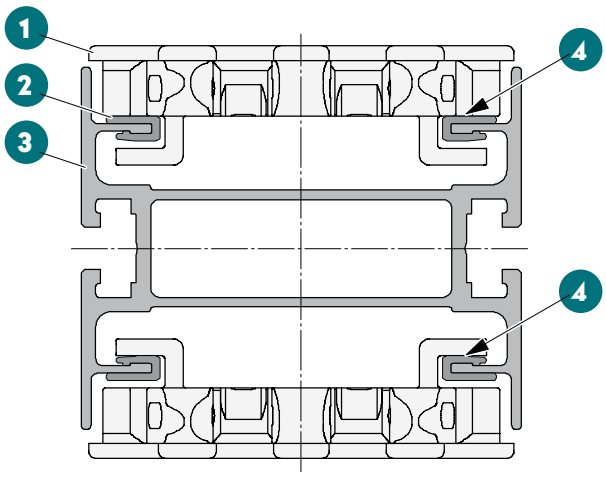
The coefficient of friction is influenced by the material properties of individual components.
The friction generated between sliding strip and slat-band chain has a direct influence on the level of chain tension, thereby determining the amount of drive power a conveyor system needs.

### FRICTION-OPTIMISED MATERIALS

Working together with Universities of Technology and well-know testing institutes, FS Solutions has managed to continue optimising the tribological properties of individual components.

Using cutting-edge materials and production technologies, we now have slat-band chains and sliding strips with exceptionally good material properties. The friction coefficients achieved in this way provide an energy saving of about 15%.

This vastly reduces sliding friction. As a result, less chain pulling force is required, leading to a reduction on the number and size of motors required.




1 Conveyor chain
2 Sliding strip
3 Guide profile
4 Friction surfaces

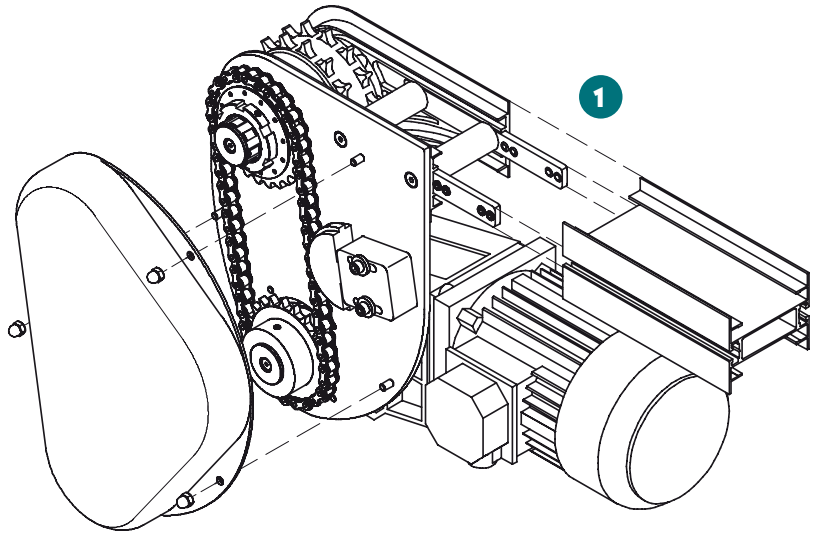
### EFFICIENCY OF GEAR UNITS

The energy required can only be used effectively if the drive components employed operate with a high level of efficiency.

Direct drives provide the highest level of efficiency as the drive motor works without any gear unit. However, drive units with chain gears are in many cases indispensable because a safety clutch is integrated in them.

### NEW DRIVE UNITS WITH BELT TRANSMISSION

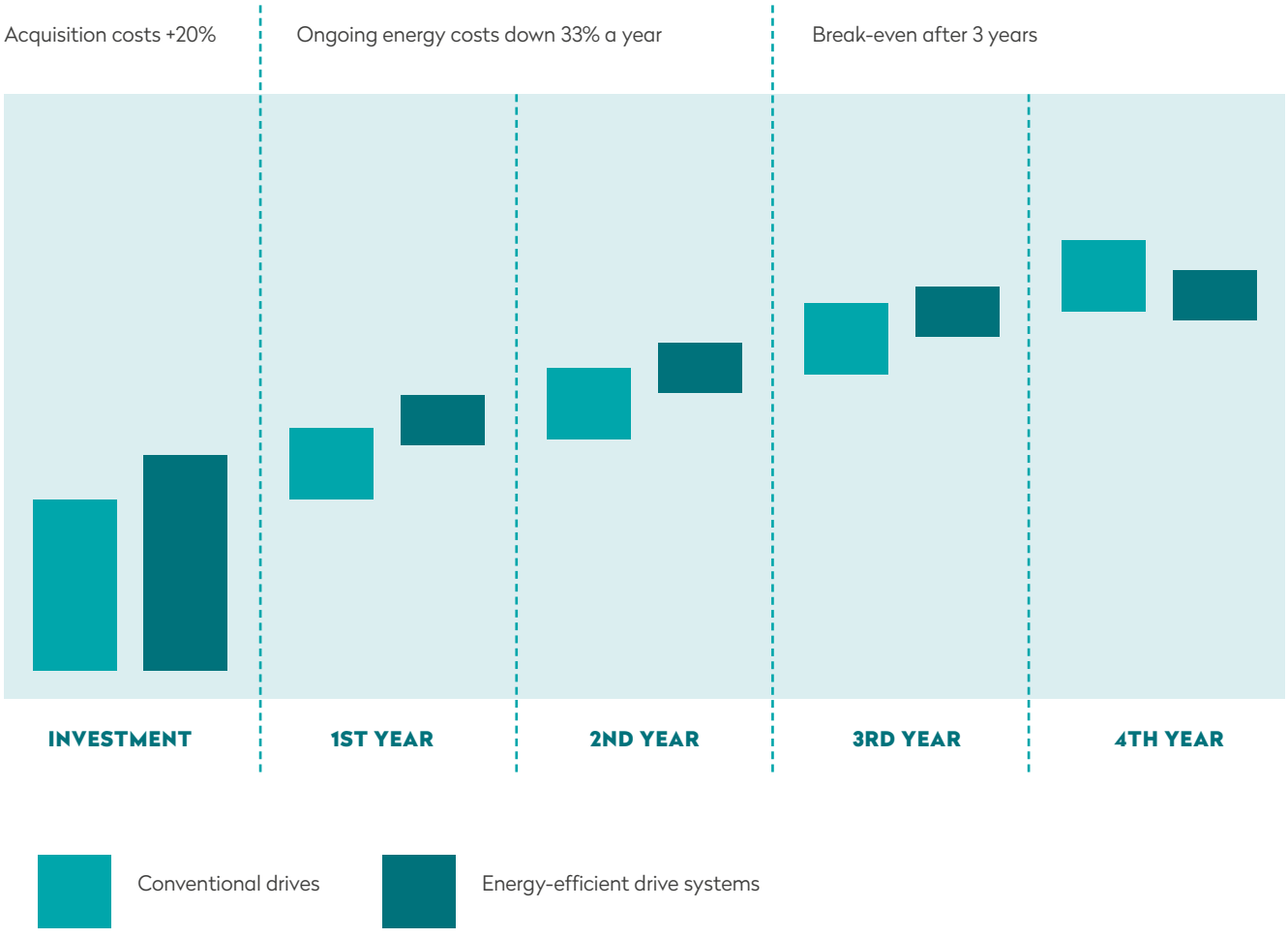
FS Solutions satisfies these requirements exactly by using the new drive units with belt transmission. Developed specifically for this application in collaboration with a wellknown supplier of drive components, the flat toothed belt significantly enhances efficiency. The new drive units with belt transmission are also maintenance-free and considerably quieter than standard drive units with chain gear.




1 Drive unit with chain transmission

In the case of drive systems, the energy costs are often as high as the acquisition costs after just a few years. Energy-efficient drive systems are often more expensive to buy than conventional drives. However, the extra costs are in most cases paid back in the space of a few years from the energy savings that are made.

Therefore, the cost efficiency of the drive system can only be assessed within the scope of life-cycle cost analysis (Life-Cycle Costs).






# CS Railing Overview

## Made-to-measure railing systems

FS Solutions railing systems offer a high degree of flexibility which makes them suitable for many different applications.

**THE PRINCIPAL ADVANTAGES ARE:**

- FS Solutions uses high-quality, modular elements, each system can be compiled to requirement.
- Compact design.
- Quick and easy to install - even without bending device.
- Flexible width and height adjustment.

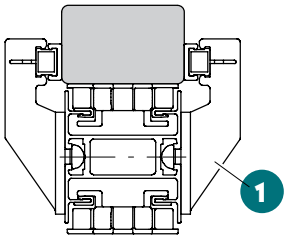
**COMPONENTS**

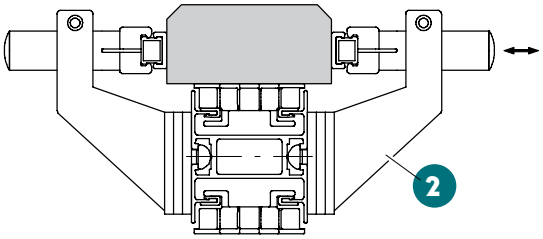
The selection ranges from simple metal guide plates to railing profiles in plastic or aluminium. Added to these are various holders, guide clamps, end and connecting plugs.

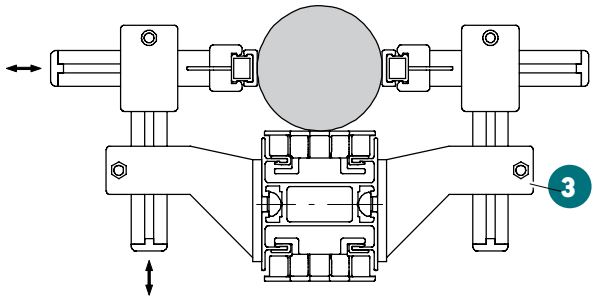
**SCOPE OF SYSTEM**

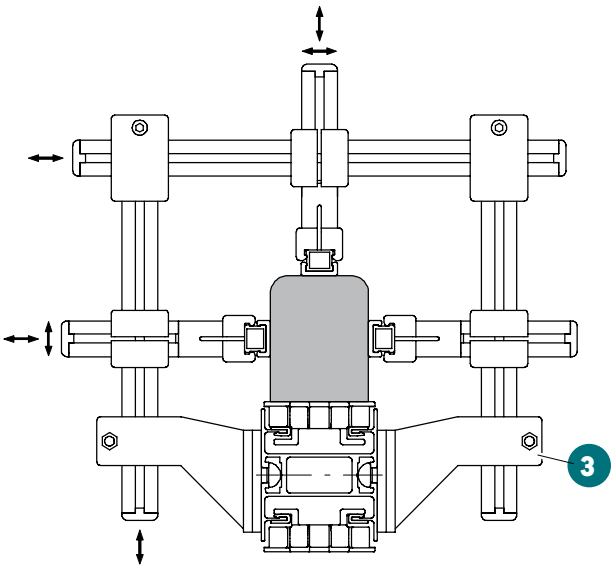
The railing components illustrated provide the basis. If you require further components for your particular application, we can supply them on request.

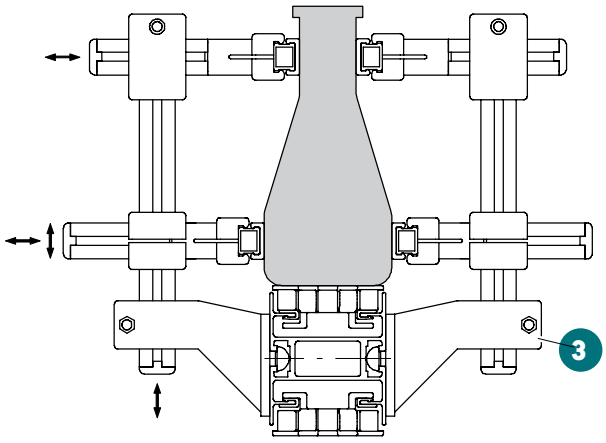
The diagrams show examples of the way in which different railing components can be combined. Arrow indicate adjustment capabilities.



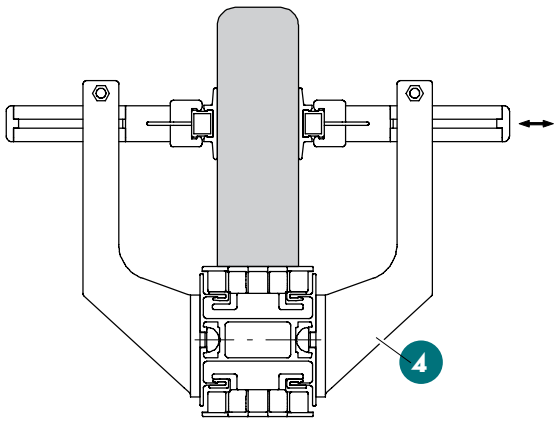



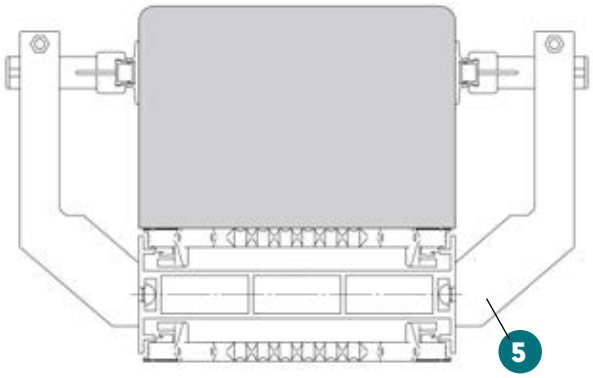



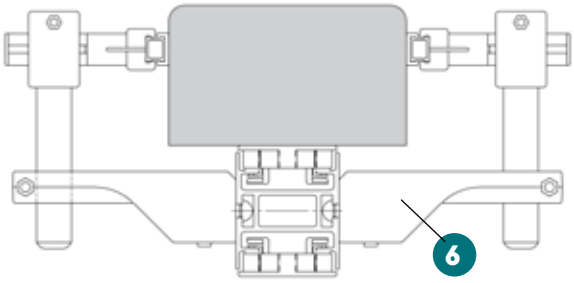



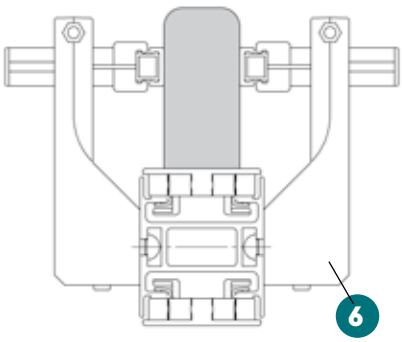

1 Type 1 lateral holder
2 Type 2 lateral holder
3 Type 3 lateral holder

The diagrams show examples of the way in which different railing components can be combined. Arrow indicate adjustment capabilities.




4 Type 4 lateral holder
5 Type 5 lateral holder
6 Type 6 lateral holder

### RAILING PROFILES

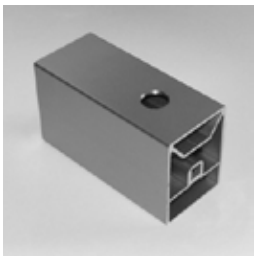
Railing profiles

Joint

### LATERAL HOLDERS

Lateral holder

Profiles/accessories



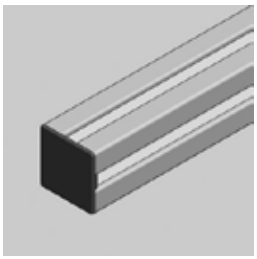
### CLAMPS

Assembled profile clamps

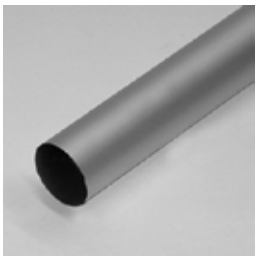
Head clamp

### PROFILES

MS 20+ L - 20x20 profile



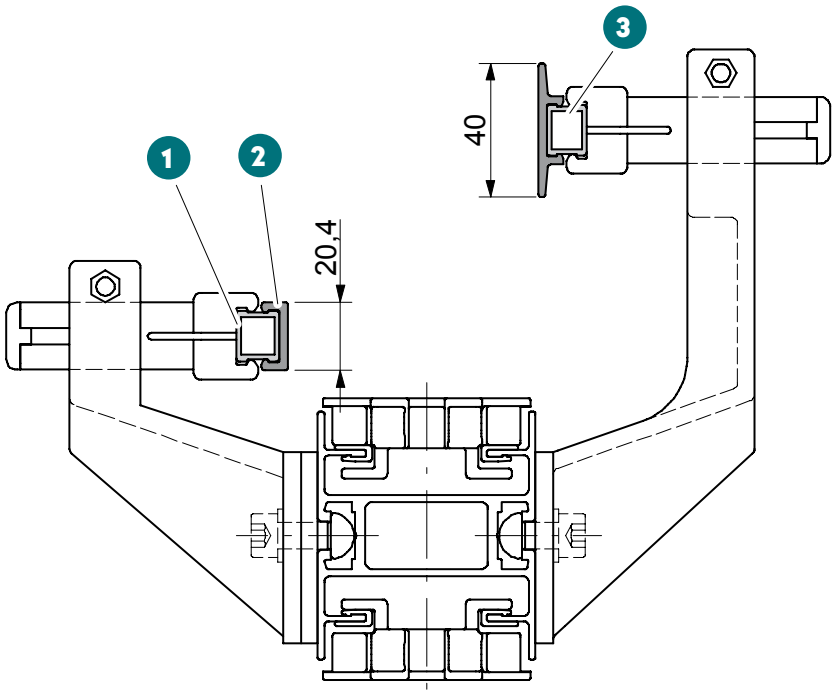
Ø22x1.5 M5 profile



### ACCESSORIES

Clamping lever/star grip

- Railing profiles for lateral guidance of the item being conveyed.
- Push-on strip in two widths for minimising friction between railing and item conveyed.
- Push on strips overlap the Aluminium railing profile.
- When accumilating products in horizontal curves we suggest round 22 Aluminium as bare minimum.



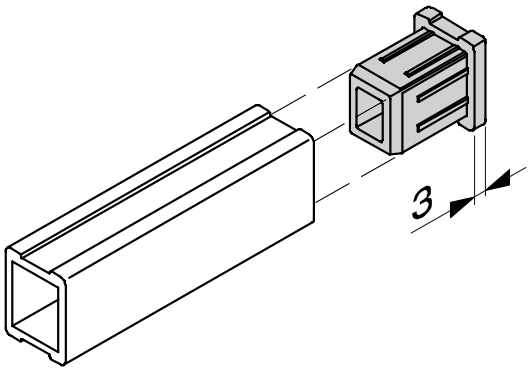

1 Railing profile
2 Push-on strip 20
3 Push-on strip 40

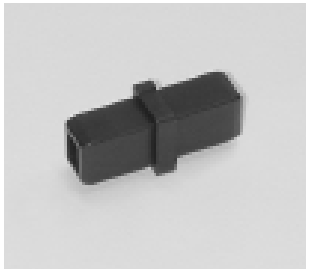
| | PROD.NO. | | | |
|---|---|---|---|---|
| Railing profile, aluminium | J924 166 | 6,0 | EN AW-6060 T68 | E6/EV1 anodised finish |
| Railing profile, aluminium Ø22x1,5 | 794001 | 6,0 | EN AW-6060 T68 | E6/EV1 anodised finish |
| Railing profile, plastic | J650 008 | 6,0 | PE 500 | grey |
| Push-on strip 20, antistatic | J650 006 | 6,0 | PE 500 | black |
| Push-on strip 40, antistatic | J650 033 | 6,0 | PE 500 | black |

## | COVER CAP

- Cover cap for standard square Aluminium and plastic railing profiles: J924166(alu) - J650008 (Plastic).

| | PROD.NO. | | | |
|---|---|---|---|---|
| Square railing cover cap | J537 083 | 10 | PP | black |

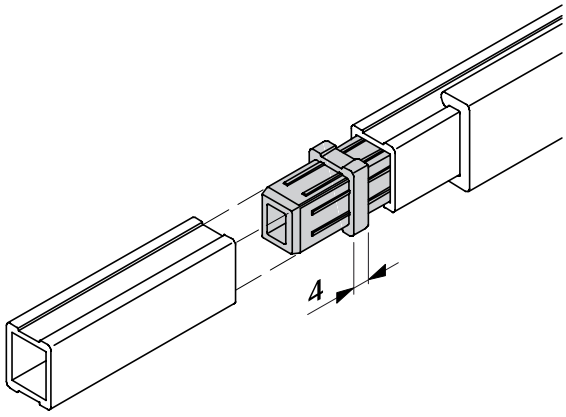


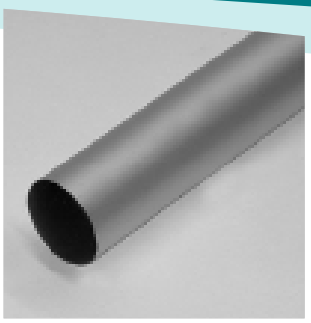



## | JOINT

- Connecting joint for square railing profiles.

| | PROD.NO. | | | |
|---|---|---|---|---|
| Joint square railing profile | J537 115 | 10 | PP | black |

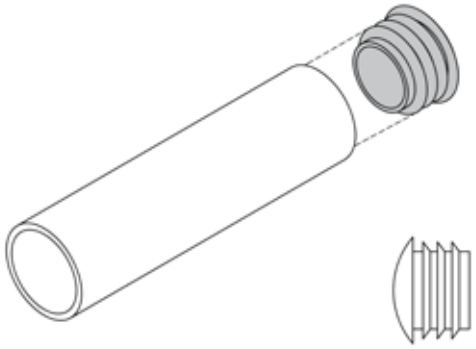




## | COVER CAP

- Connecting joint for standard round 22 Aluminium railing profile 794001.

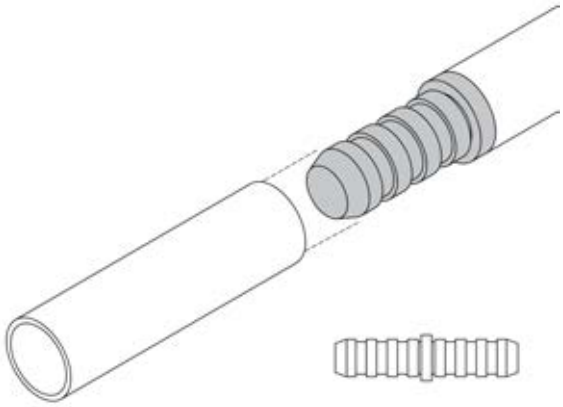
| | PROD.NO. | | | |
|---|---|---|---|---|
| Cover cap Ø22 | J927 785 | 20 | PA-GF | black |



## | CONNECTING JOINT FOR SQUARE RAILING PROFILES

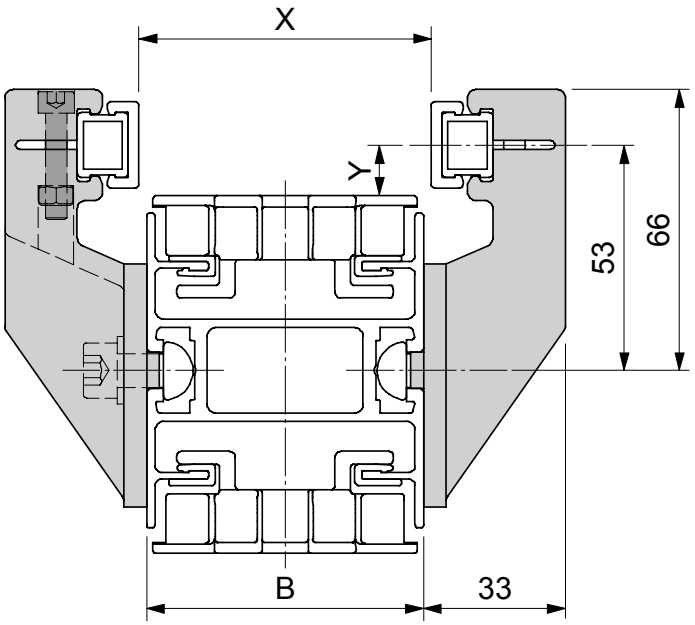
- Connecting joint for standard round 22 Aluminium railing profiles.

| | PROD.NO. | | | |
|---|---|---|---|---|
| Round 22 railing connector | 793002 | 10 | PP | black |



# CS RAILING LATERAL HOLDERS | TYPE 1

- Lateral holder with fixed guide width and height.
- Grooved pegs for simple alignment on guide profiles.
- Seating for square railing profiles.

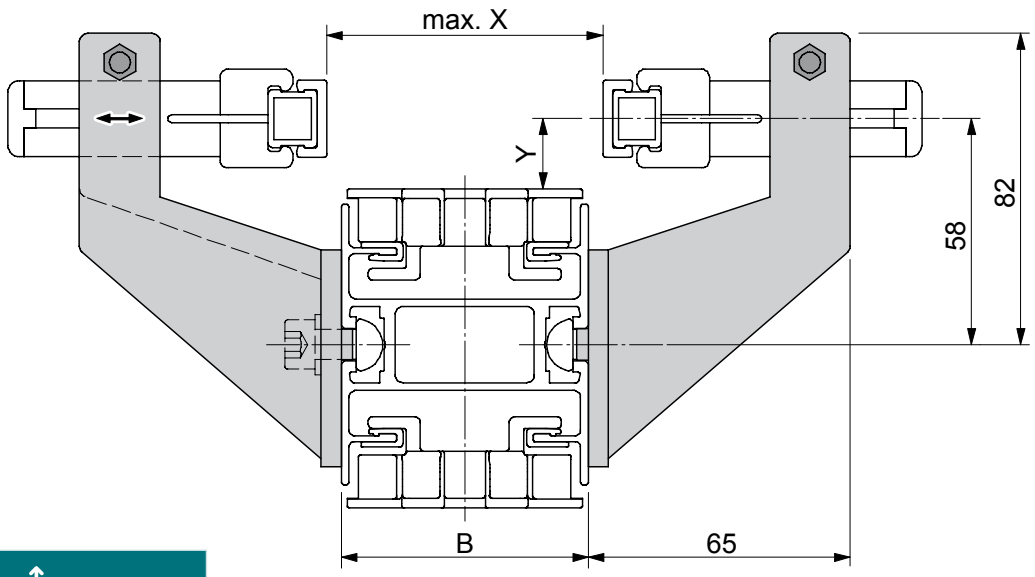



| | B [mm] | X [mm] | Y [mm] |
|---|---|---|---|
| FS CS065SL | 65 | 64 | 12 |
| FS CS090SL | 90 | 89 | 11 |
| FS CS200SL | 200 | 199 | 11 |

| | PROD.NO. | | | |
|---|---|---|---|---|
| Lateral holder Type 1 | J537 079 | 1 | PA-GF | black |

# CS RAILING LATERAL HOLDERS | TYPE 2

- Lateral holder with variable guide width.
- Grooved pegs for simple alignment on guide profile.
- Seating for 20x20 mm square profile and Ø22 mm round profile.

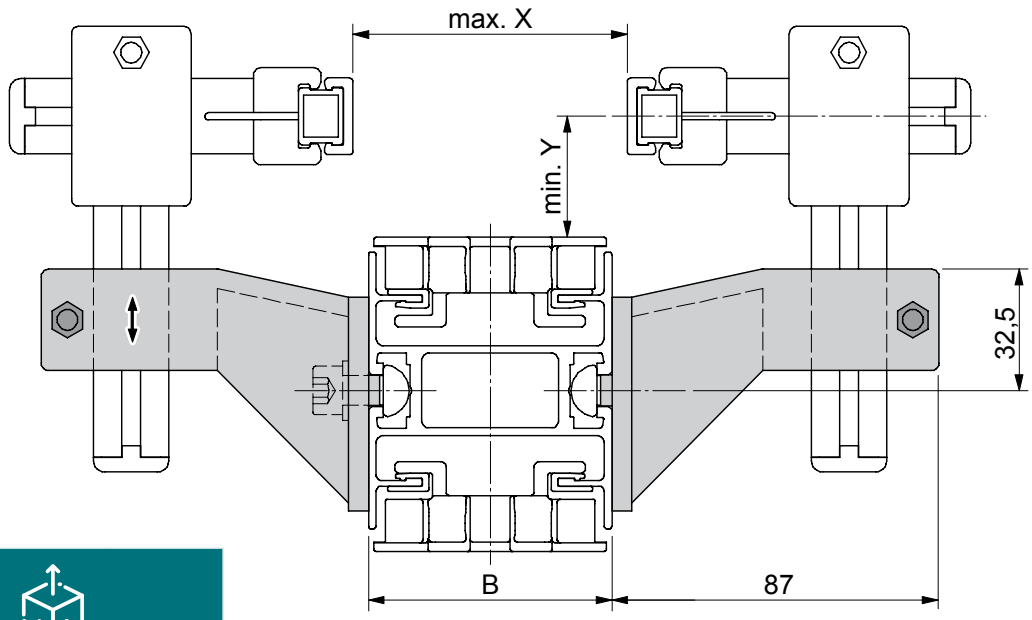



| | B [mm] | X [mm] | Y [mm] |
|---|---|---|---|
| FS CS065SL | 65 | 106 | 17 |
| FS CS090SL | 90 | 131 | 16 |
| FS CS200SL | 200 | 241 | 16 |

| | PROD.NO. | | | |
|---|---|---|---|---|
| Lateral holder Type 2 | J537 080 | 1 | PA-GF | black |

# CS RAILING LATERAL HOLDERS | TYPE 3

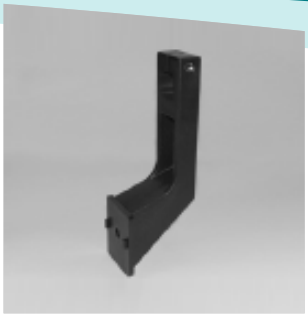
- Lateral holder for variable guide height.
- Grooved pegs for simple alignment on guide profile.
- Seating for 20x20 mm square profile and Ø22 mm round profile.



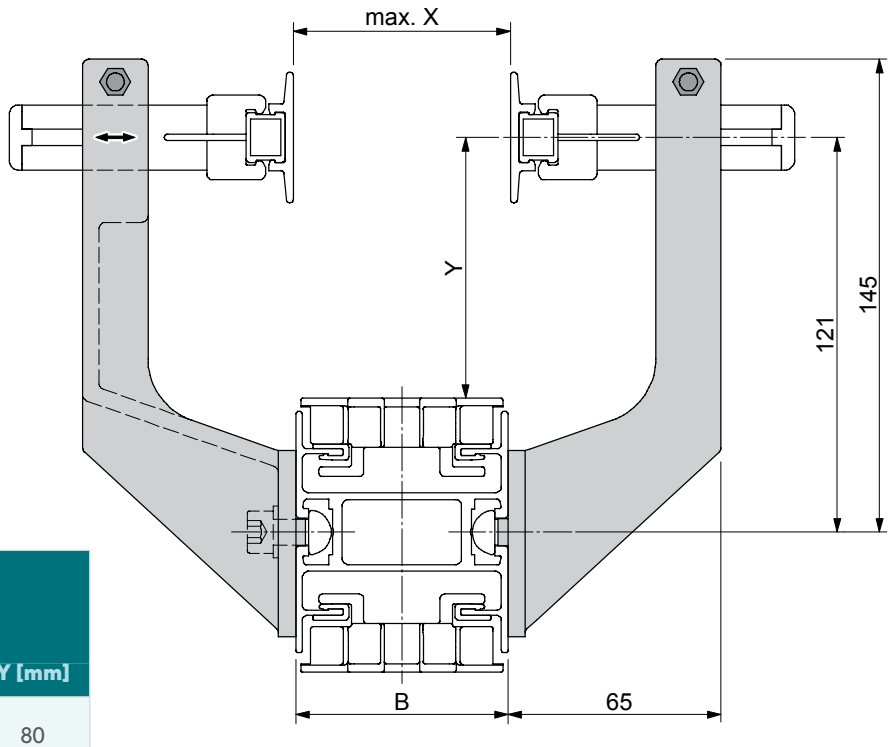

| | B [mm] | X [mm] | Y [mm] |
|---|---|---|---|
| FS CS065SL | 65 | 102 | 15 |
| FS CS090SL | 90 | 127 | 14 |
| FS CS200SL | 200 | 237 | 15 |

| | PROD.NO. | | | |
|---|---|---|---|---|
| Lateral holder Type 3 | J537 081 | 1 | PA-GF | black |

# CS RAILING LATERAL HOLDERS | TYPE 4



- Lateral holder with variable guide height.
- Grooved pegs for simple alignment on guide profile.
- Seating for 20x20 mm square profile and Ø22 mm round profile.

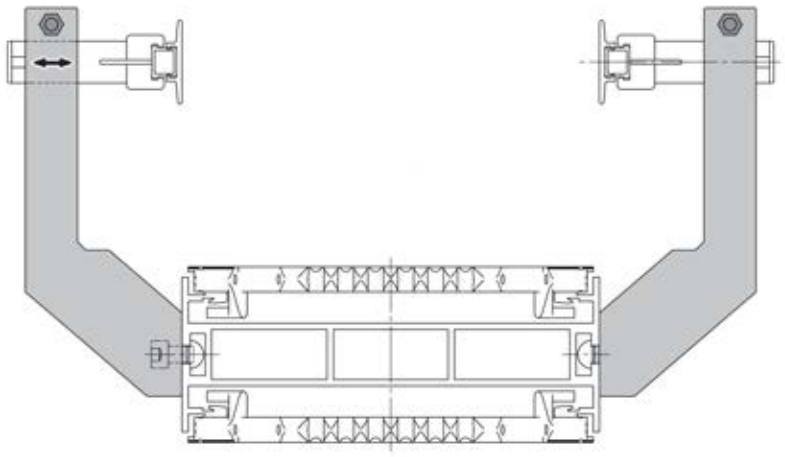



| | B [mm] | X [mm] | Y [mm] |
|---|---|---|---|
| FS CS065SL | 65 | 102 | 80 |
| FS CS090SL | 90 | 127 | 79 |
| FS CS200SL | 200 | 237 | 79 |

| | PROD.NO. | | | |
|---|---|---|---|---|
| Lateral holder Type 4 | J537 089 | 1 | PA-GF | black |

# CS RAILING LATERAL HOLDERS | TYPE 5

- Lateral holder with variable guide height.
- Grooved pegs for simple alignment on guide profile.
- Suitable for 20x20 mm square profile and Ø22 mm round profile.
- Possibility to integrate photocell and reflector

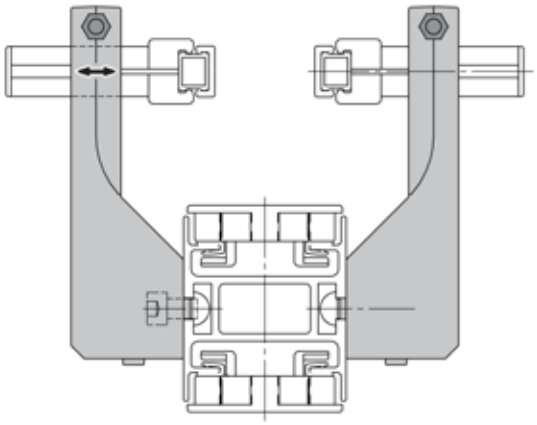


| | B [mm] | X [mm] | Y [mm] |
|---|---|---|---|
| FS CS065SL | 65 | 112 | 99 |
| FS CS090SL | 90 | 137 | 99 |
| FS CS200SL | 200 | 247 | 99 |

| | PROD.NO. | | | |
|---|---|---|---|---|
| Lateral holder Type 5 | 791001 | 1 | PA-GF | black |

# CS RAILING LATERAL HOLDERS | TYPE 6

- Lateral holder with variable guide height.
- Grooved pegs for simple alignment on guide profile.
- Suitable for 20x20 mm square profile and Ø22 mm round profile.
- Can be mounted horizontally as well as vertically

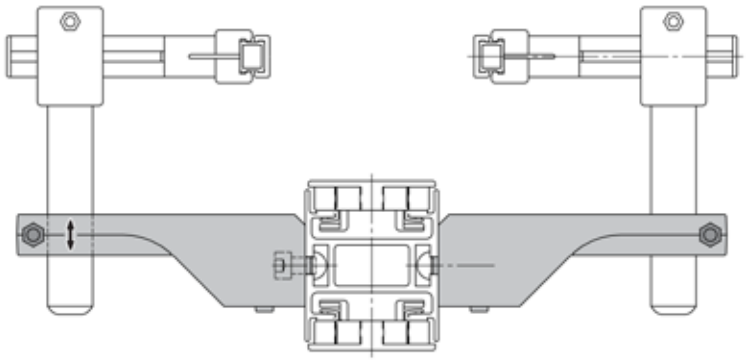


## VERTICAL

| | B [mm] | X [mm] | Y [mm] |
|---|---|---|---|
| FS CS065SL | 65 | 62 | 54 |
| FS CS090SL | 90 | 87 | 54 |
| FS CS200SL | 200 | 197 | 54 |

## HORIZONTAL

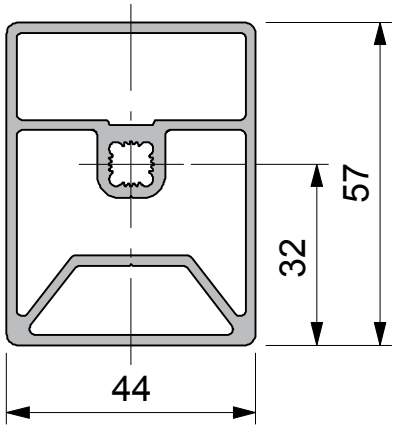
| | B [mm] | X [mm] | Y [mm] |
|---|---|---|---|
| FS CS065SL | 65 | 210 | 0 |
| FS CS090SL | 90 | 235 | 0 |
| FS CS200SL | 200 | 345 | 0 |

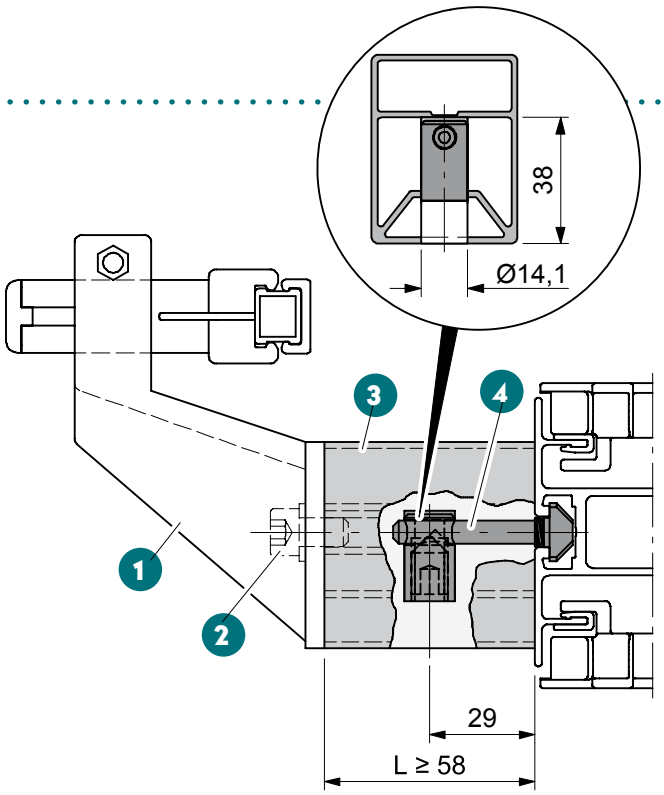



| | PROD.NO. | | | |
|---|---|---|---|---|
| Lateral holder Type 6 | 791011 | 1 | PA-GF | black |

# CS RAILING LATERAL HOLDERS | SPACER PROFILES

- Spacer profiles for expanding guide width.
- Suitable for latteral holders, type 1, 2, 3, 4. Other types use 40x40 L profile open/closed.
- Two fixed lengths or customised assembly from the profile.
- Mounted by means of fixing kit comprising (4 each):
  - M6x20 socket head cap bolts
  - M6 washer
  - central joint, outside joint




| | | PROD.NO. | |
|---|---|---|---|
| Spacer profile, fully assembled | 58 mm | J927 416 | 1 |
| | 100 mm | J927 417 | |

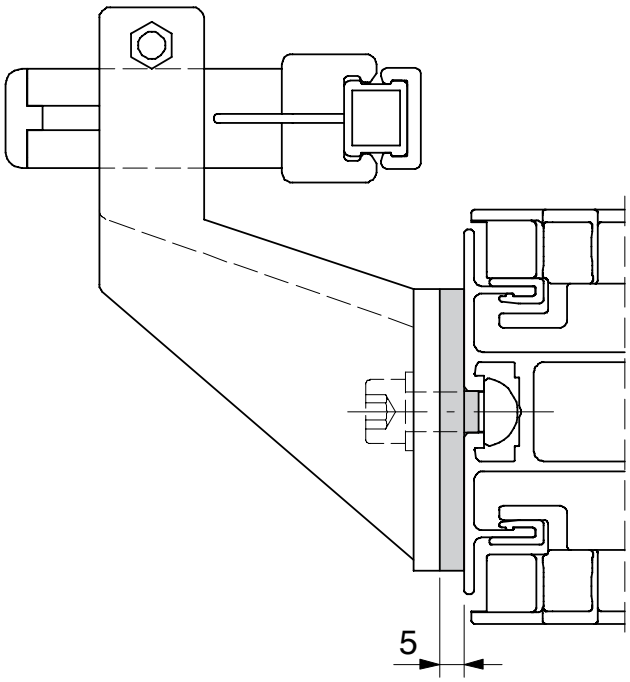
**ATTENTION**
Type 6 lateral holder has a 40x40L spacer profile

1. Lateral holder
2. Socket head cap bolt
3. Spacer profile
4. Central joint

| | PROD.NO. | | | |
|---|---|---|---|---|
| Spacer profile | J924 178 | 6,0 m | EN AW-6060 T68 | E6/EV1 anodised finish |
| Cutting to length | J924 968 | 1 | | |
| Fixing kit | J927 783 | 4 | steel | galvanised |

# CS RAILING LATERAL HOLDERS | SPACER

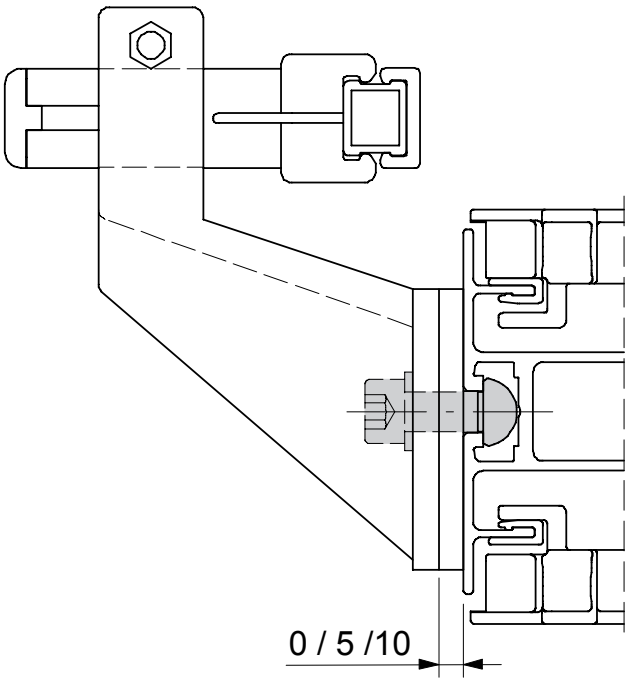
- Spacer for expanding guide width.
- Suitable for lateral holders type 1, 2, 3, 4 MS+.
- Grooved pegs for easy installation.
- Spacer plates can be stacked



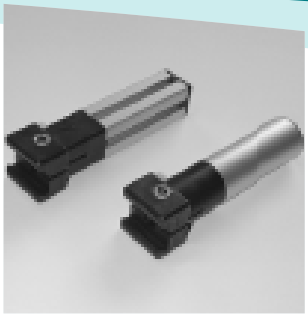

| | PROD.NO. | | | |
|---|---|---|---|---|
| Spacer plate, 5 mm | J537 082 | 1 | PA-GF | black |

# CS RAILING LATERAL HOLDERS | FIXING KITS

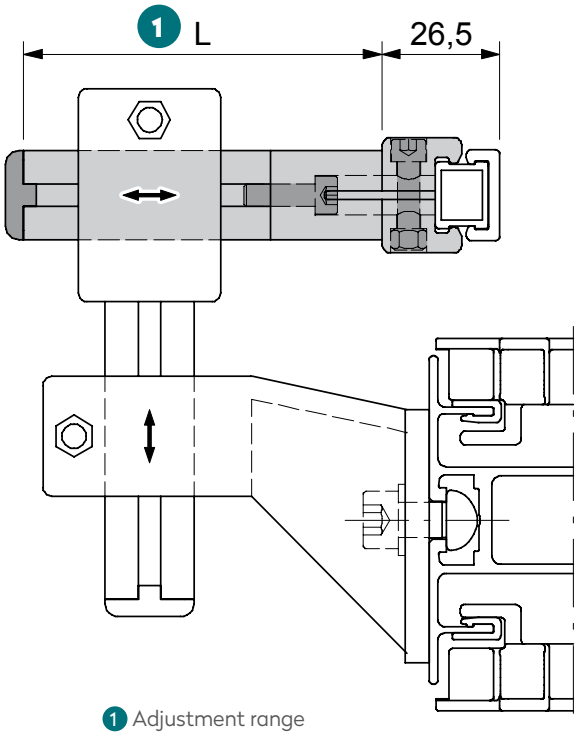
- Fixing kit for mounting lateral holders to the guide profile.
- Select kit according to number of spacers used.
- Includes:
  - 10x M8 socket head cap bolts
  - 10x plain M8 washers
  - 10x M8 steel T-slot blocks



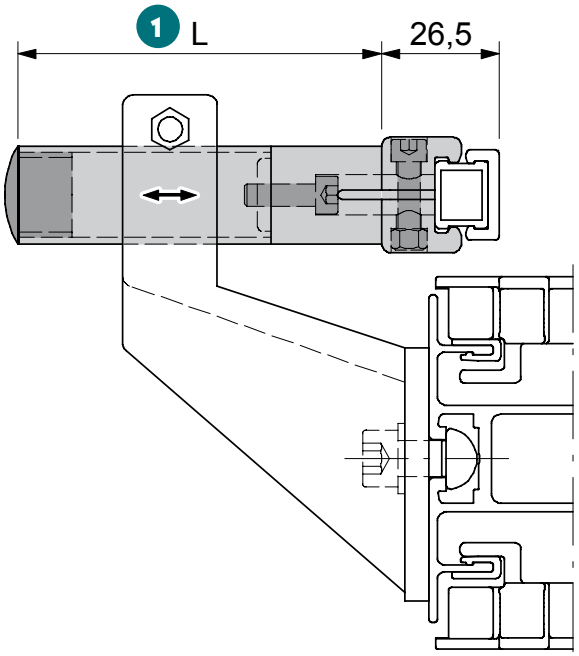

| | PROD.NO. | | | |
|---|---|---|---|---|
| Fixing kit, standard (0 mm) | J927 780 | 10 | steel | galvanised |
| Fixing kit, 5 mm | J927 781 | 10 | steel | galvanised |
| Fixing kit, 10 mm | J927 782 | 10 | steel | galvanised |
| M6 T-slot nut | TCAN 6 Q100 | 10 | steel | galvanised |
| M8 T-slot nut | TCAN 8 Q100 | 10 | steel | galvanised |



- Assembled profile clamp for the railing profile.
- Two types:
  - 20x20 mm square profile: System grooves provides the means to install accessories.
  - Ø22x1.5 mm round profile: Closed design reduces dirt accumulation.
- Adjustment range: 55, 100 or 150 mm.
- The components used to make up the assembled profile clamps are also available on their own.
- Including pre-mounted M5 fixing materials



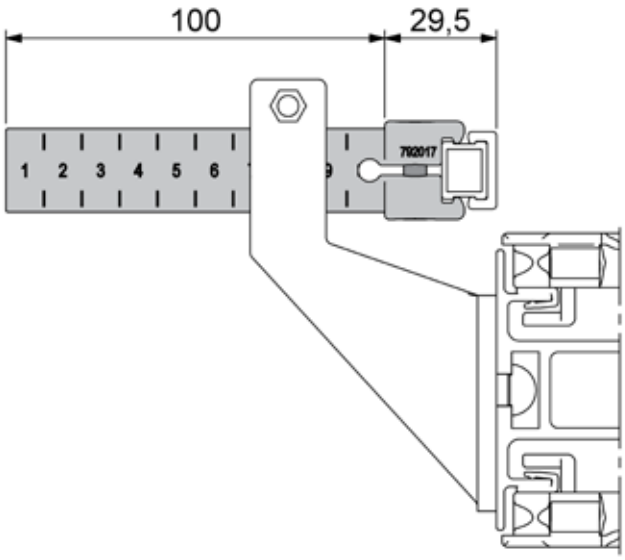

1 Adjustment range




1 Adjustment range

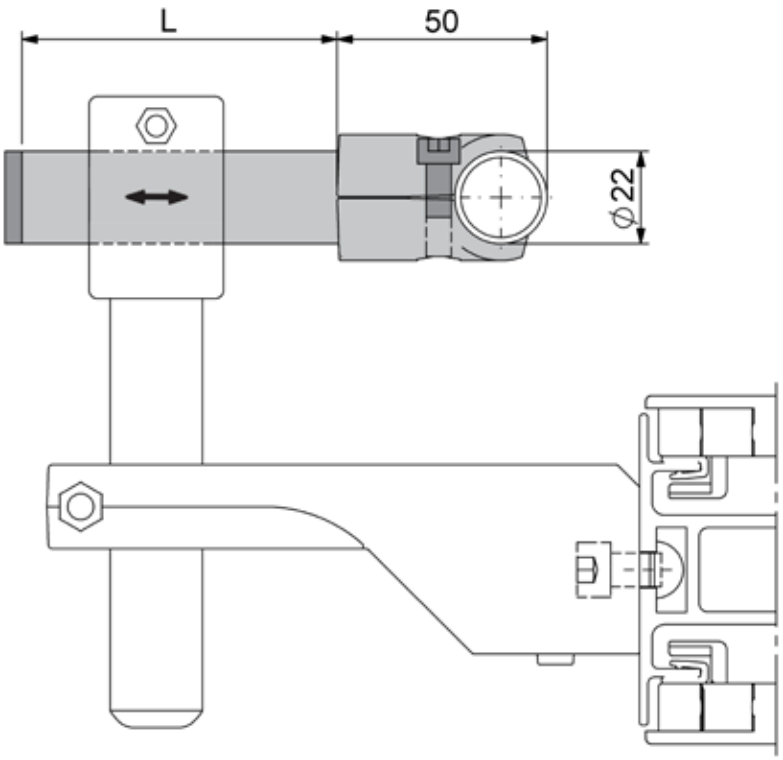
| | | | PROD.NO. | |
|---|---|---|---|---|
| Profile clamp, fully assembled | 20x20 square profile | 55 mm | J927 686 | 2 |
| | | 100 mm | J927 688 | |
| | | 150 mm | J929 323 | |
| | Ø22x1.5 round profile | 55 mm | J927 689 | 2 |
| | | 100 mm | J927 691 | |
| | | 150 mm | J929 324 | |

- Solid profile clamp for the railing profile
- Including pre-mounted m6 fastening materials




| | PROD.NO. | | | | |
|---|---|---|---|---|---|
| Profile clamp | 792017 | 1 | 100 mm | PA-GF | black |

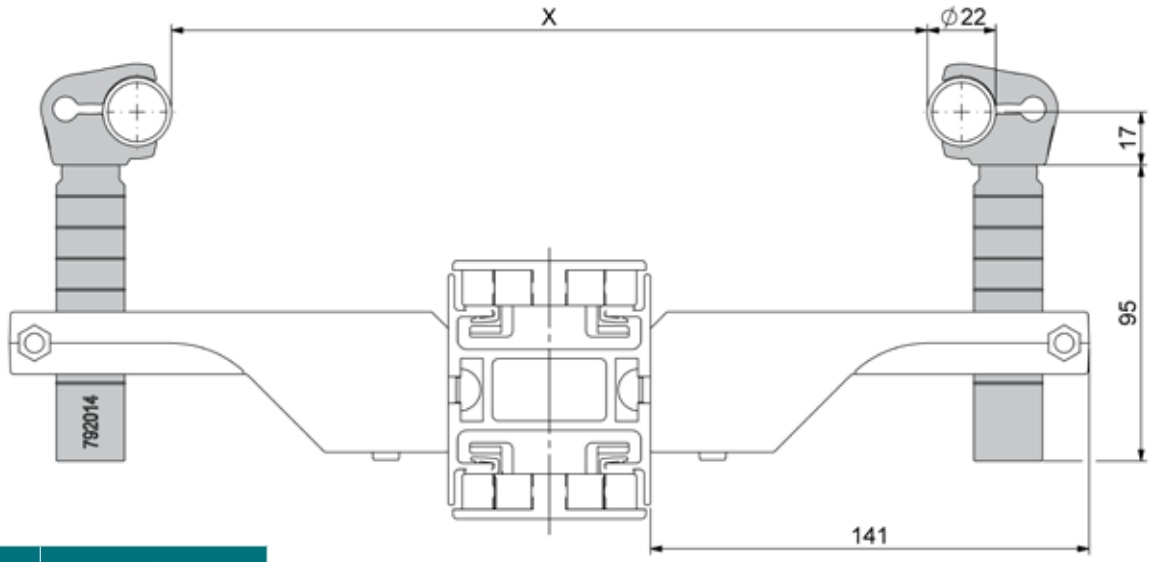
- Assembled profile clamp for the railing profile.
- Two types:
  - 20x20 mm square profile: System grooves provides the means to install accessories.
  - Ø22x1.5 mm round profile: Closed design reduces dirt accumulation.
- Adjustment range: 75, 100 or 125 mm.
- The components used to make up the assembled profile clamps are also available on their own.
- Including pre-mounted M5 fixing materials




| | | | PROD.NO. | |
|---|---|---|---|---|
| Profile clamp, fully assembled | Ø22x1,5 | 75 mm | 792003 | 1 |
| | | 100 mm | 792004 | |
| | | 125 mm | 792005 | |

* Custom lengths on request

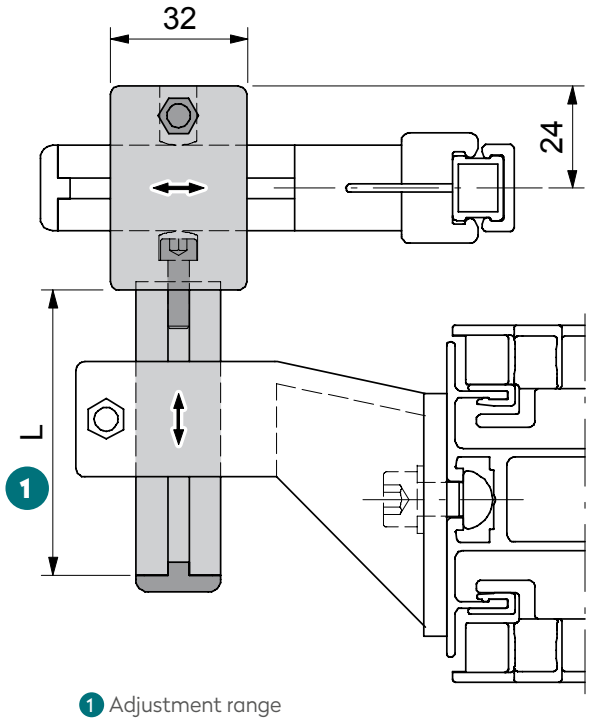
- Solid profile clamp for round 22 Alu railing profile (794001)
- Ø22x1.5 mm round profile: Closed design reduces dirt accumulation.
- Including pre-mounted M6 fastening materials



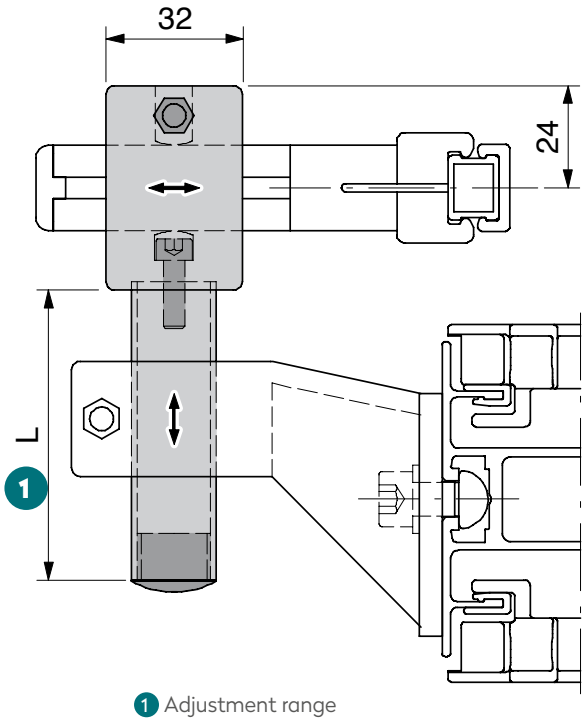

| | B [mm] | X [mm] |
|---|---|---|
| FS CS065SL | 65 | 243 |
| FS CS090SL | 90 | 268 |
| FS CS200SL | 200 | 378 |

| | PROD.NO. | | | | |
|---|---|---|---|---|---|
| Profile clamp, Ø22 | 792014 | 1 | 95 mm | PA-GF | black |

- Assembled profile clamp for the railing profile.
- Available types:
  - 20x20 mm square profile: System grooves provides the means to install accessories.
  - Ø22x1.5 mm round profile: Closed design reduces dirt accumulation.
- Adjustment range: 100 or 200 mm.
- The components used to make up the assembled profile clamps are also available individually.
- Including pre-mounted M5 fixing materials.



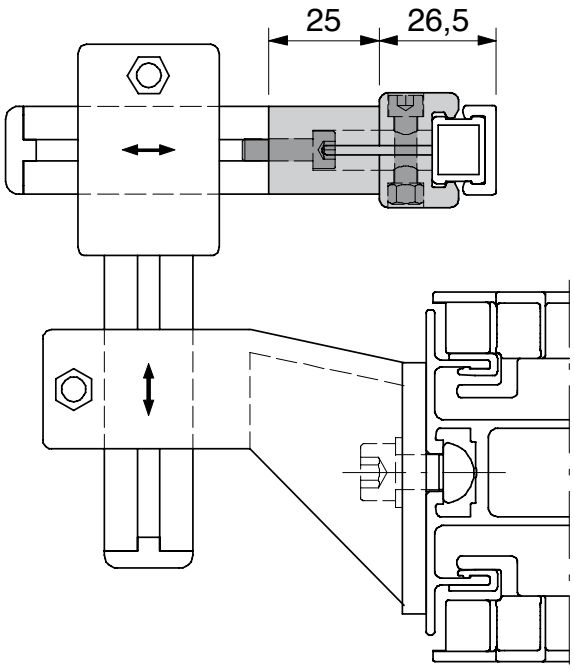

1 Adjustment range




1 Adjustment range

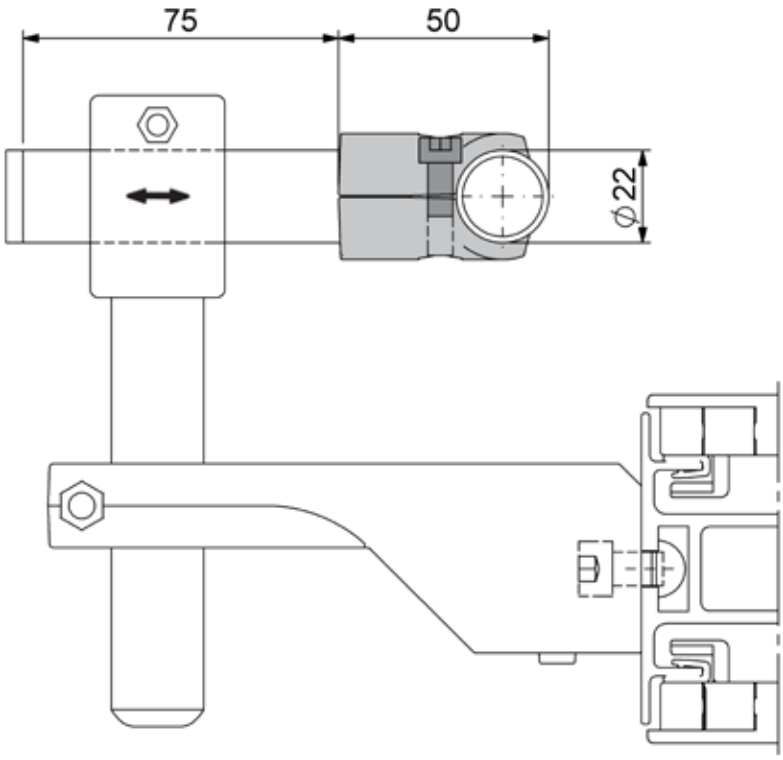
| | | | PROD.NO. | |
|---|---|---|---|---|
| Head clamp, fully assembled | 20x20 square profile | 100 mm | J927 694 | 2 |
| | | 200 mm | J927 695 | |
| | Ø22x1.5 round profile | 100 mm | J927 692 | 2 |
| | | 200 mm | J927 693 | |

- Profile clamp for the railing profile.
- Two types with seating for:
  - 20x20 mm square profile: System grooves provides the means to install accessories.
  - Ø22x1.5 mm round profile: Closed design reduces dirt accumulation.
- Clamp is fastened to the profile with pre-mounted M5 bolt.
- Grooved pegs prevent the clamp from turning.



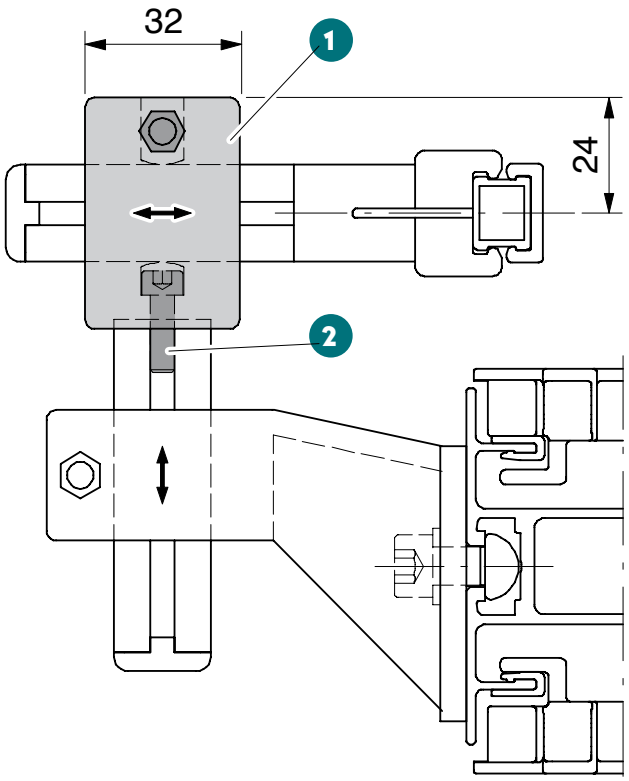

| | PROD.NO. | | | | |
|---|---|---|---|---|---|
| Head clamp | J537076 | 20x20 square profile | 1 | PA-GF | black |
| | J537098 | Ø22x1.5 round profile | 1 | PA-GF | black |

- Profile clamp for the railing profile.
- Two types with seating for:
  - 20x20 mm square profile: System grooves provides the means to install accessories.
  - Ø22x1.5 mm round profile: Closed design reduces dirt accumulation.
- Clamp is fastened to the profile with the pre-mounted M5 bolt.
- Grooved pegs prevent clamp from turning.




| | PROD.NO. | | | |
|---|---|---|---|---|
| Head clamp | 792 002 | 1 | PA-GF | black |

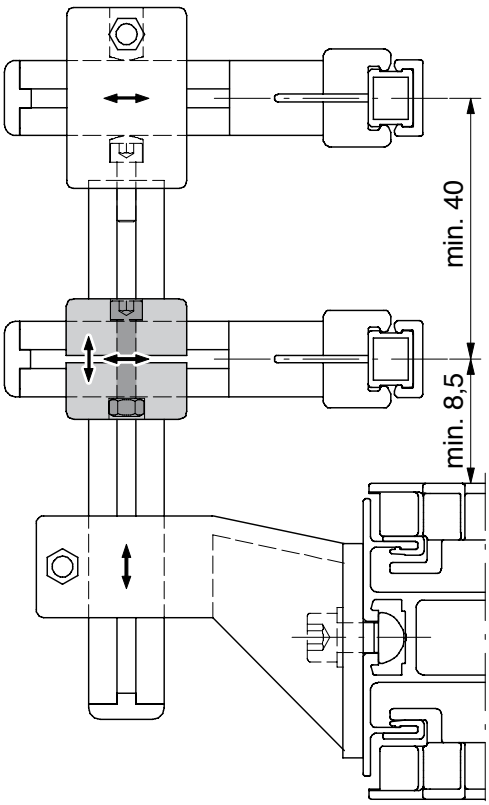
- Assembled profile clamp for the railing profile.
- Available types:
  - 20x20 mm square profile: System grooves provides the means to install accessories.
  - Ø22x1.5 mm round profile: Closed design reduces dirt accumulation.
- Adjustment range: 100 or 200 mm.
- The components used to make up the assembled head clamps are also available individually.
- Including pre-mounted M5 fixing materials




1 Head clamp
2 M5 bolt

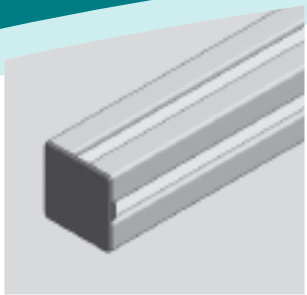
| | PROD.NO. | | | |
|---|---|---|---|---|
| Head clamp | J537 078 | 1 | PA-GF | black |

- Cross clamp create a second railing level.
- Suitable for 20x20 square profile or Ø22x1.5 round profile.
- Can be positioned at any point on the vertical profile (height adjustment).
- Width adjustment: the horizontal profile is adjusted and clamped in place.
- Including pre-mounted M5 fixing materials.



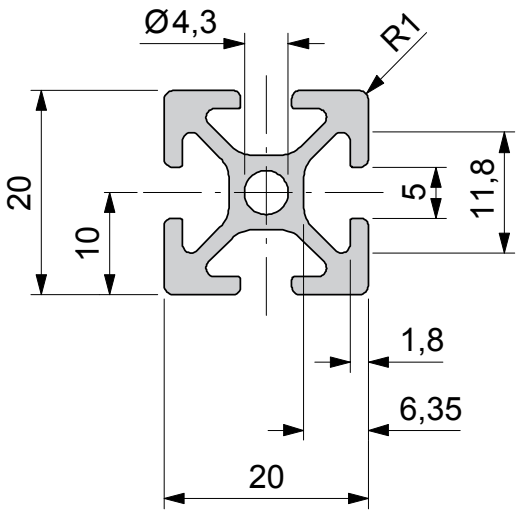

| | PROD.NO. | | | |
|---|---|---|---|---|
| Cross clamp | J537 077 | 1 | PA-GF | black |

# CS RAILING CLAMP PROFILES | MS 20+ L - 20X20 PROFILE

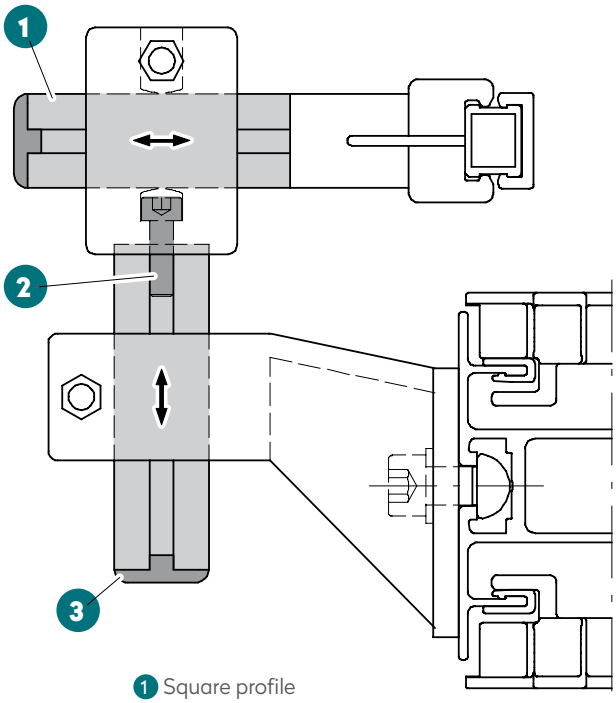


- Used for width and height adjustment.
- System grooves provides the means to install accessories.
- Profile is clamped in place or fastened to the clamp with the pre-mounted M5 bolt.
- Push-on cover cap, 2 mm high.

## CROSS SECTION



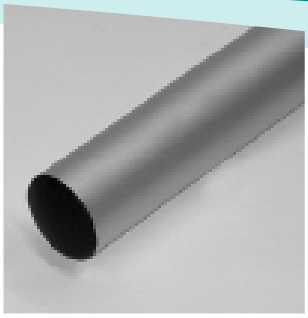

## EXAMPLE APPLICATION




1 Square profile
2 M5 bolt
3 Cover cap

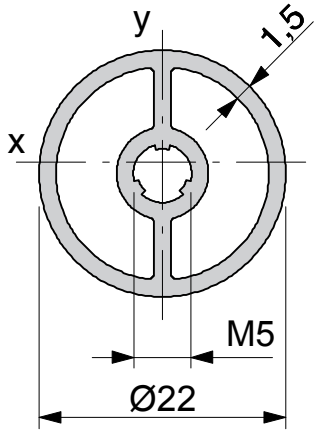
| | | PROD.NO. | | | |
|---|---|---|---|---|---|
| | Profile, MS 20+ L - 20 x 20 | J924 017 | 6,0 m | EN AW-6060 T68 | E6/EV1 anodised finish |
| | Cover cap, MS 20+ - 20 x 20 | J537 416 | 10 | PA6-GB30 | black (similar to RAL 9005) |
| | Cutting to length | J924 968 | 1 | | |

# CS RAILING CLAMP PROFILES | Ø22X1.5 M5 PROFILE

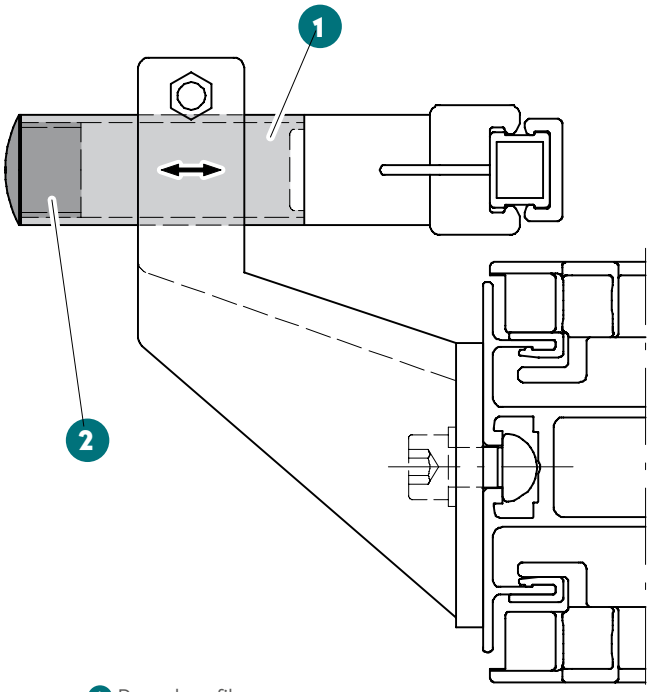


- Used for width and height adjustment.
- Closed design reduces dirt accumulation.
- Profile is clamped in place or fastened to the clamp with the pre-mounted M5 bolt.
- Push-on cover cap, 3 mm high.

## CROSS SECTION




## EXAMPLE APPLICATION

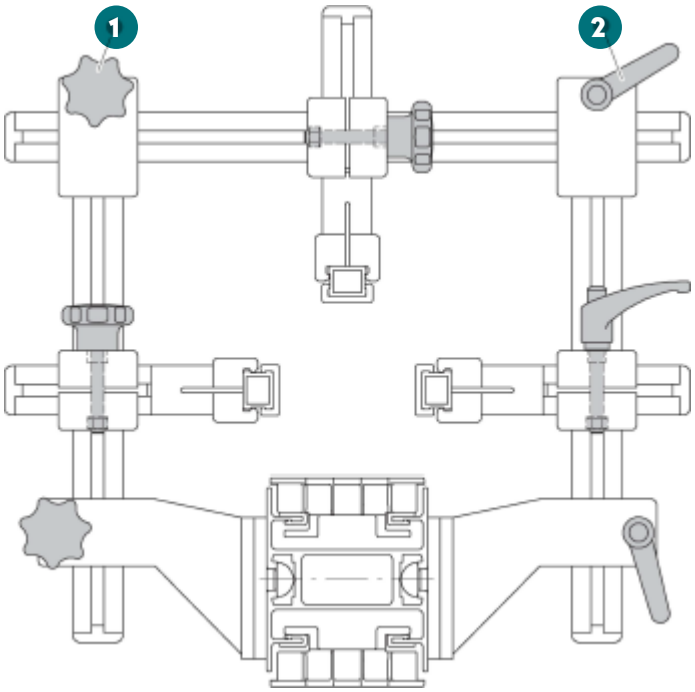



1 Round profile
2 Cover cap

| | | PROD.NO. | | | |
|---|---|---|---|---|---|
| | Profile, Ø22 x 1.5 | J924 176 | 6,0 m | EN AW-6060 T68 | E6/EV1 anodised finish |
| | Cover cap, Ø22 | J927 785 | 20 | PA-GF | black |
| | Cutting to length | J924 968 | 1 | | |

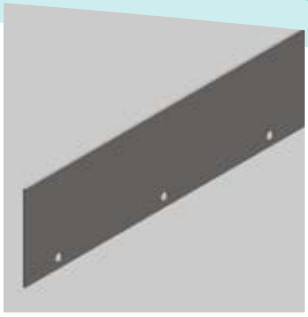
## | CLAMPING LEVER/STAR GRIP

- Clamping lever and star grip for easy railing adjustment without the need for tools.
- Can be used for all lateral holders and clamps. Clamping lever not suitable for type 4 lateral holders.
- Mounting: the pre-mounted socket head cap bolt is simply exchanged for the clamping lever or star grip.



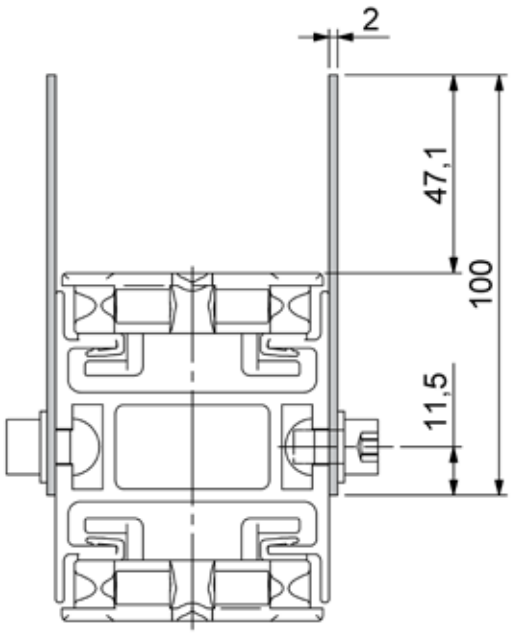

1 Star grip
2 Clamping lever

| | PROD.NO. | |
|---|---|---|
| Clamping lever M5 | J537 151 | 1 |
| Star grip M5 | J537 152 | 1 |



## | SIDE GUIDE PLATES

- Low-cost guide option
- Fixing holes: Ø7 mm spaced apart at 100 mm intervals
- Mount to the guide profile through lateral profile groove using socket head cap screws and T-slot blocks
- Fastening material not included




| | PROD.NO. | | | |
|---|---|---|---|---|
| Side guide plate | J924 859 | 4x 2,5 m | stainless steel | natural |
| M8 screwed joint, 12 mm | TCSJ 8 A | 10 | steel, galvanised | |



# CS Leg sets overview

## CS Leg sets – substructure for all conveyor systems

FS Solutions railing systems offer a high degree of flexibility which makes them suitable for many different applications – also beyond the limits of FS Solutions Conveyor systems.

**THE PRINCIPAL ADVANTAGES ARE:**

- Compact design.
- Quick and easy to install - even without bending device.
- Flexible width and height adjustment.

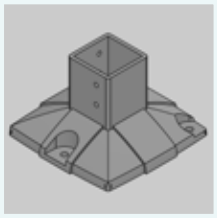
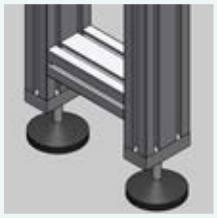
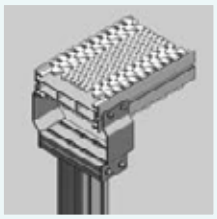
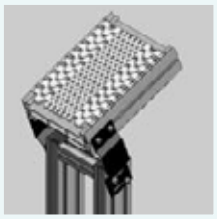
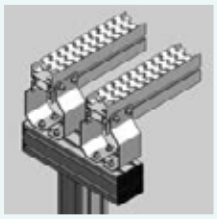
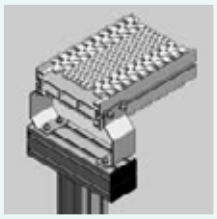
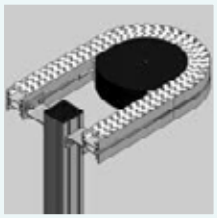
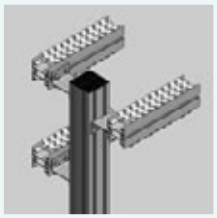
**COMPONENTS**

The selection ranges from simple metal guide plates to railing profiles in plastic or aluminium. Added to these are various holders, guide clamps, end and connecting plugs.

**SCOPE OF SYSTEM**

The railing components illustrated provide the basis. If you require further components for your particular application, we can supply them on request.

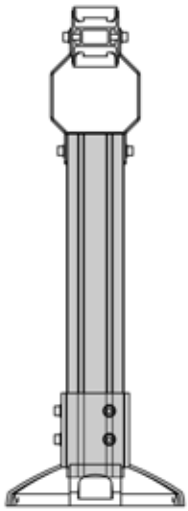
# CS LEG SETS OVERVIEW | LEG SETS FOR CS CONVEYOR SYSTEMS

| | | | | | FS CS065SL | FS CS090SL | FS CS200SL |
|---|---|---|---|---|---|---|---|
| Feet / Profiles |  |  | 80x80 | Hygienic floor connection bracket | ● | ● | ● |
| |  |  | 40x80 | Leg pair | ○ | ○ | ● |
| | |  | 80x80 | | | | |
| Leg joint |  |  | | standard | ● | ● | ● |
| |  |  | | variable | ● | ● | ● |
| |  |  | | Horizontal strut | ● | ● | ● |
| |  |  | | Vertical strut | ● | ● | ○ |

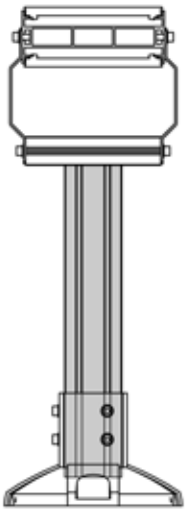
● / ○ applicable / not applicable

The pictures show the leg-mounted versions for various Conveyor systems.

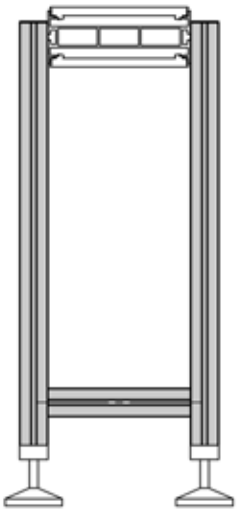
CS SL



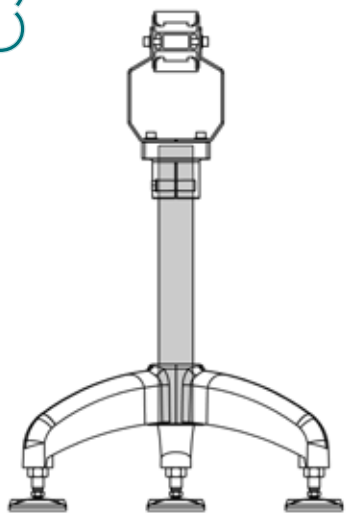
**FS CS065SL**
**FS CS090SL**



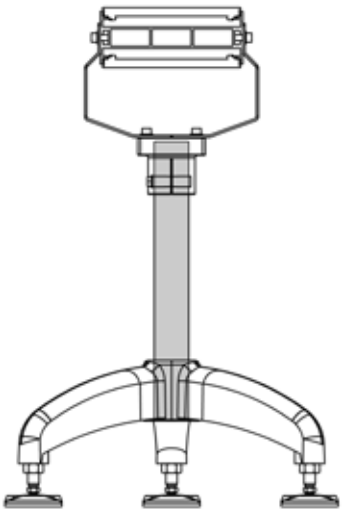
**FS CS200SL**



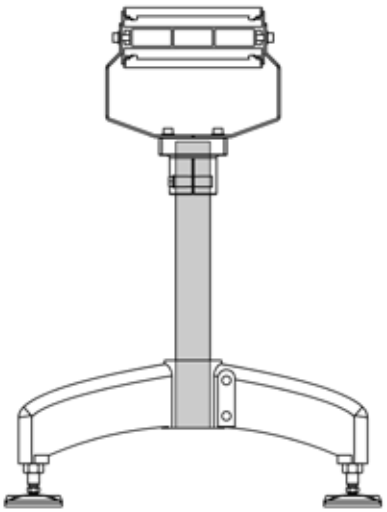
**FS CS200SL**



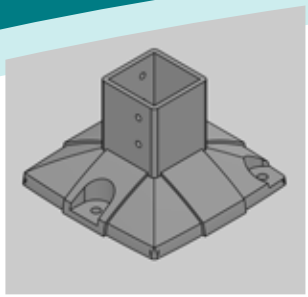
**FS CS065SL**
**FS CS090SL**
**FS CS200SL**



**FS CS065SL**
**FS CS090SL**
**FS CS200SL**



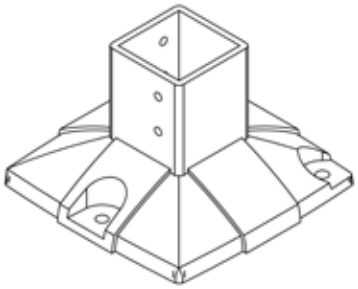
**FS CS065SL**
**FS CS090SL**
**FS CS200SL**



## | HYGIENIC FLOOR CONNECTION BRACKET

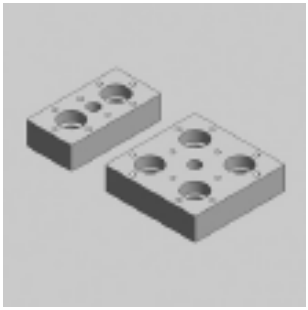
- Floor connection bracket for fixing profile 80 x 80 Basic to the floor.
- Suitable for high loads.
- Suitable for high vertical loads in conjunction with adjustable foot.
- Includes fastening material for mounting profiles.
- Please make a separate order for floormounting fixing material.
- Hole for floor connection round 13mm

**FS CS065SL**
**FS CS090SL**
**FS CS200SL**



| | PROD.NO. | | | |
|---|---|---|---|---|
| Floor connection bracket | TCFF 80x250 | 1 | cast aluminium | silver |

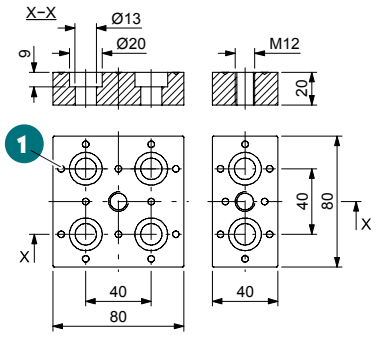




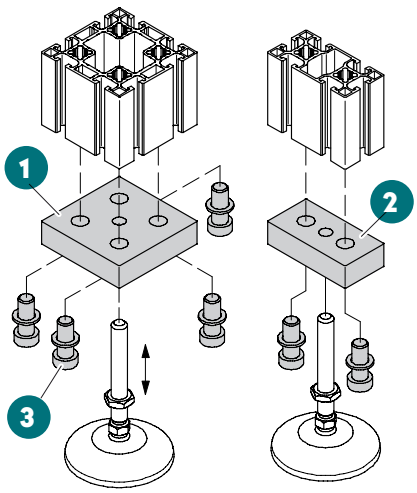
## | FIXING PLATES

- Floor connection bracket for fixing profile 80 x 80 Basic to the floor.
- Suitable for high loads.
- Suitable for high vertical loads in conjunction with adjustable foot.
- Includes fastening material for mounting profiles.
- Please make a separate order for floormounting fixing material.

1 Drill centring device for opening profile slot/ void

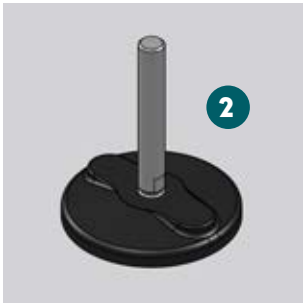



1 Fixing plate, 40x80 mm
2 Fixing plate, 80x80 mm
3 Socket head cap bolt, M12x30 / Washer M12



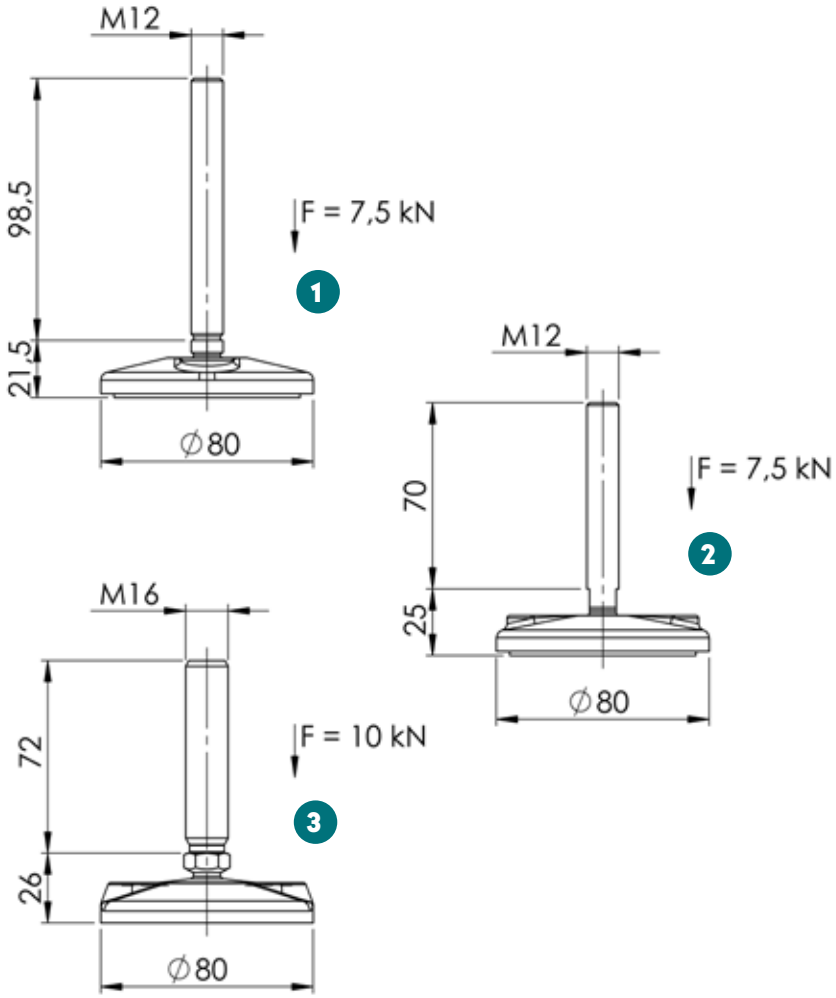

| | | PROD.NO. | | | |
|---|---|---|---|---|---|
| Fixing plate inc. fixing material | 40x80 | TCFE 40x80 M12 | 1 | Aluminium | E6/EV1 anodised finish |
| | 80x80 | TCFE 80 M12 | 1 | | |

# CS LEG SETS FEETS | ADJUSTABLE FEET MS 40



- Adjustable feet, infinitely variable in height.
- Cost-effective, fast assembly directly in the profile using bolt channel or in combination with fixing plates.
- Moving foot plate with damper for stability on uneven surfaces.
- Accessories: Fixing plates and materials.




- **FS CS065SL**
- **FS CS090SL**
- **FS CS200SL**

| | | PROD.NO. | | | | |
|---|---|---|---|---|---|---|
| Adjustable foot, 80 mm dia., M12 x 100 | 1 | J534890 | M12 | 1 | steel | galvanised |
| Adjustable foot, 80 mm dia., M12 x 70 | 2 | J534891 | M12 | 1 | stainless steel | black (similar to RAL 9005) |
| Adjustable foot, 80 mm dia., M16 x 70 | 3 | J534892 | M16 | 1 | stainless steel | |

# CS LEG SETS FEETS | ANCHOR BOLT

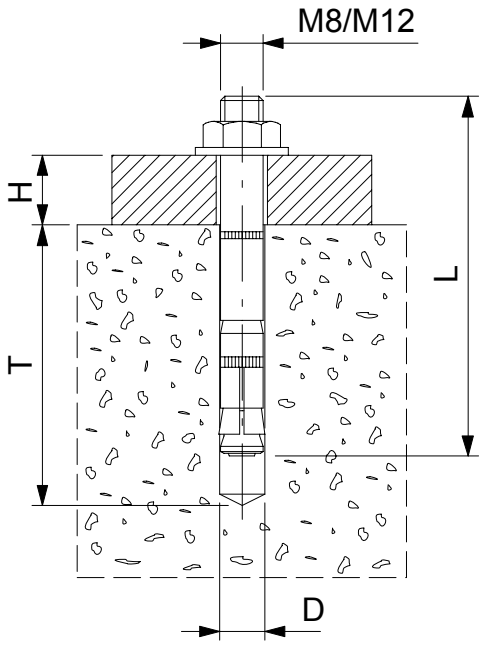
- Anchor for fastening the floor connection bracket or clamping strap to the floor.
- Push-through assembly possible.
- Properties:
  - Thread size M12 for secondary fixings. Suitable for concrete, solid brick, thickwalled hollow brick.
  - Thread size M8 for fixing relevant to safety. Suitable for cracked and uncracked concrete, hard grey stone.

- **FS CS065SL**
- **FS CS090SL**
- **FS CS200SL**

**NOTE**
The fastening elements must be matched to the static requirements and structural situation (edge spacings).

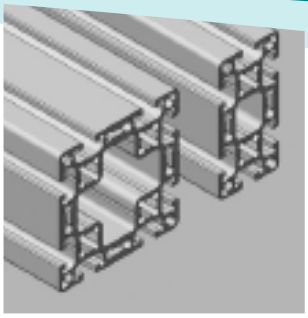
| | | M8 | M12 |
|---|---|---|---|
| Max. pulling force | F [kN ] | 1,6 | 2 |
| Tightening torque | M [Nm ] | 25 | 40 |
| Thread | | M8 | M12 |
| Height | H [mm ] | 30 | 62 |
| Length | L [mm ] | 95 | 110 |
| Diameter | D [mm ] | 8 | 12 |
| Min. hole depth | T [mm ] | 65 | 56 |

**DIMENSIONS**




| | | PROD.NO. | | |
|---|---|---|---|---|
| Anchor bolt | M8 | J535 525 | 1 | steel, galvanised |
| | M12 | J535 526 | | |

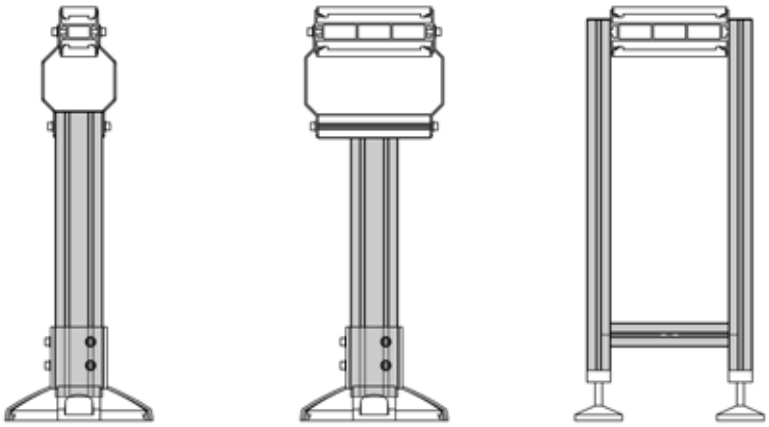
# CS LEG PROFILES | PROFILES FOR LEGS CS SL



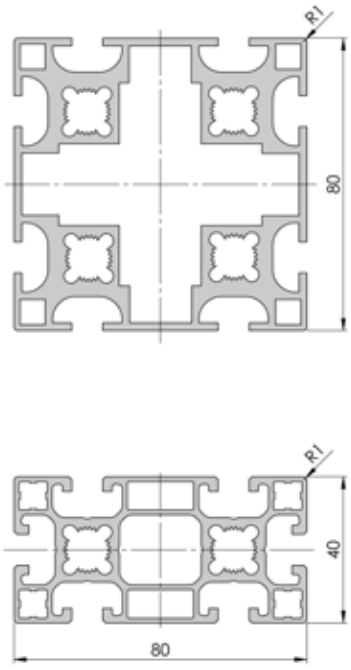
- System profiles for assembling legs.
- Self-forming M12 bolt channels.

- **FS CS065SL**
- **FS CS090SL**
- **FS CS200SL**

## DETERMINE CUTTING LENGTHS

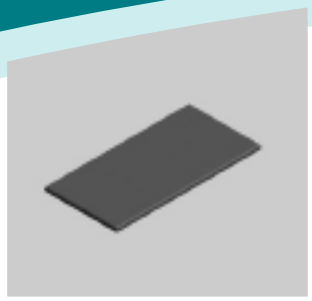


## DIMENSIONS

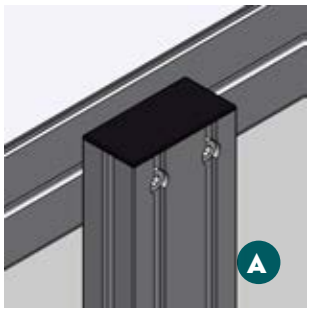


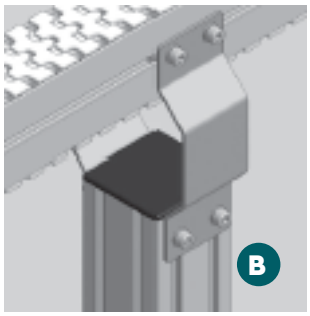

| | PROD.NO. | | | | |
|---|---|---|---|---|---|
| Profile B, 80x80 | TCBB 6X80 | 6,0 m | EN AW-6060 T68 | E6/EV1 anodised finish | J924 969 |
| Profile Closed, 80x80 | TCBB 6X80 C | 6,0 m | EN AW-6060 T68 | E6/EV1 anodised finish | J924 968 |
| Profile L, 40x80 | TCBL 6X40X80 | 24,0 m | | | |
| Profile Closed, 40x80 | TCBB 6X40X80 C | 108,0 m | | | |

# CS LEG PROFILES | COVER CAPS



- Cover caps:
  - close off profile end faces.
  - prevent ingress of dirt.
  - prevent cuts.
- Aesthetically pleasing design: Rounded cover caps in shallow, flat geometry.
- No need to debur cut surface.
- Caps press/ knock into the bolt channels



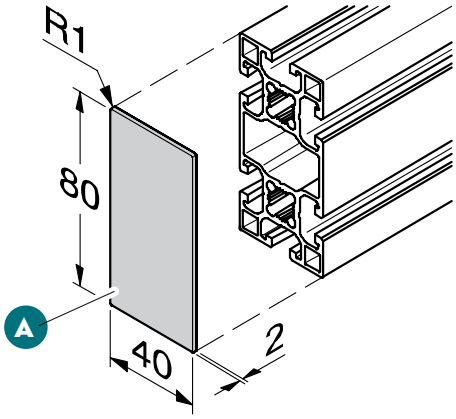



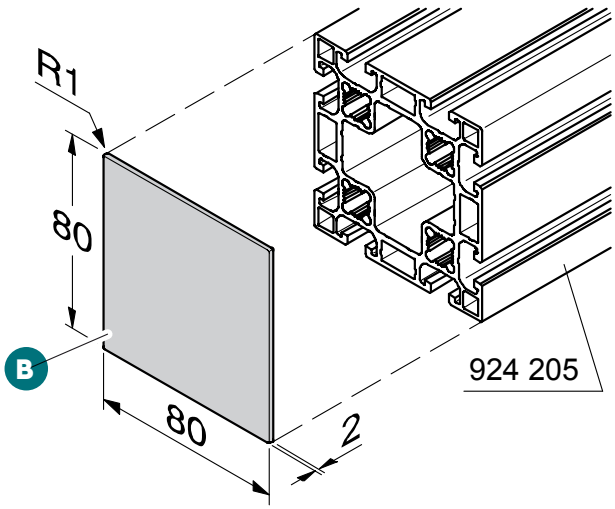

- **FS CS065SL**
- **FS CS090SL**
- **FS CS200SL**

## PARTS LIST

A Cover cap, 40 x 80 mm Basic
B Cover cap, 80 x 80 mm Basic

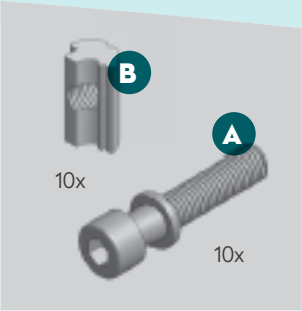
## DIMENSIONS



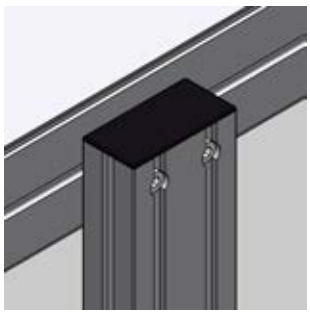




| | | | PROD.NO. | | | |
|---|---|---|---|---|---|---|
| Cover cap | A | 40 x 80 | TCBE 40x80 G NLOGO | 10 | PA6-GB30 | silver grey (similar to RAL 7001) |
| | | | TCBE 40x80 B NLOGO | 10 | | black (similar to RAL 9005) |
| | B | 80 x 80 | TCBE 80 G NLOGO | 10 | | silver grey (similar to RAL 7001) |
| | | | TCBE 80 B NLOGO | 10 | | black (similar to RAL 9005) |

# CS LEG PROFILES | M8 BOLT CONNECTION, WITH T-SLOT BLOCK

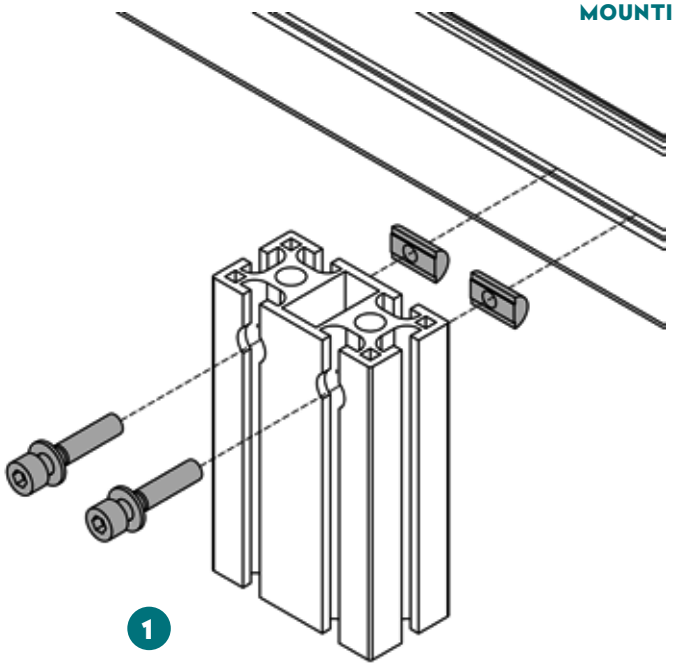



- For right-angled profile joints.
- Unilateral flexible positioning.
- Medium flexural strength.
- Profile machining necessary.



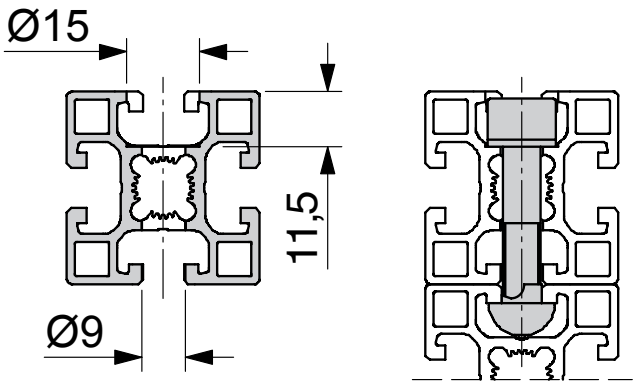
- **FS CS065SL**
- **FS CS090SL**
- **FS CS200SL**

## MOUNTING



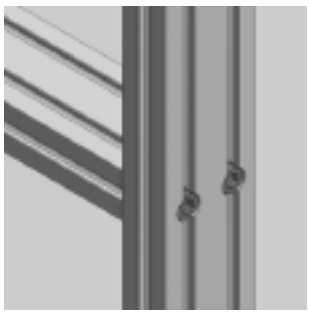

1 Socket head cap bolt, M8x40 / Washer M8

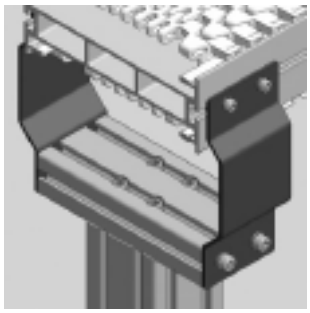
## MACHINING




| | | X [mm] | PROD.NO. | | |
|---|---|---|---|---|---|
| | M8 bolted joint | 40 | TCSJ 8 E | 10 | steel, galvanised |
| | | 80 | TCSJ 8 F | 10 | |
| | Drilling work | 40 | J924 976 | 1 | |
| | | 80 | J924 977 | 1 | |
| | Drilling jig | | J924 705 | 1 | |
| | Step drill 9/15 | | TTCS 9x15 | 1 | |

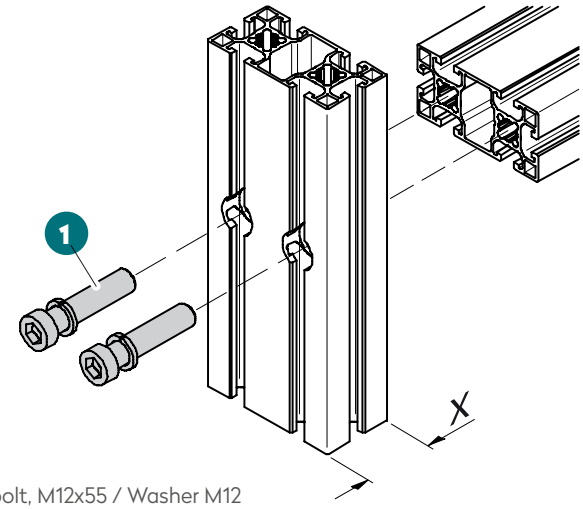
# CS LEG PROFILES | M12 BOLTED JOINT





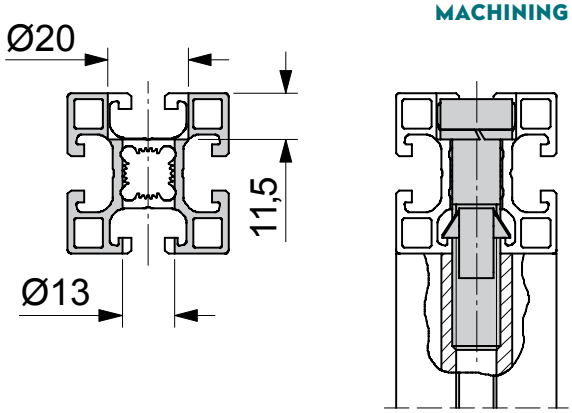
- For right-angled profile joints.
- High flexural strength.
- Profile machining necessary.

**MOUNTING**




1 Socket head cap bolt, M12x55 / Washer M12

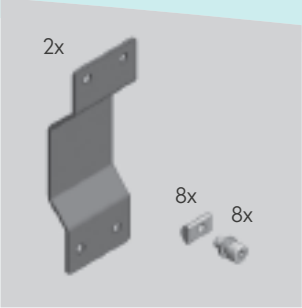
**MACHINING**




○ **FS CS065SL**
○ **FS CS090SL**
● **FS CS200SL**

| | | X [mm] | PROD.NO. | | | |
|---|---|---|---|---|---|---|
| | M12 bolted joint | 40 | TCSJ 12X40 | 10 | steel | galvanised |
| | | 80 | TCSJ 12X80 | 10 | | |
| | Drilling work | 40 | J924 976 | 1 | | |
| | | 80 | J924 977 | 1 | | |
| | Drilling jig | | J924 705 | 1 | | |
| | Step drill 13/20 | | TTCS 13x20 | 1 | | |

# CS LEG JOINTS | FS CS065/FS CS090SL, STANDARD




- Leg joint for mounting the horizontal conveyor line on individual legs constructed from 80 x 80 mm system profile
- Material thickness 3 m.
- Includes fixing material.

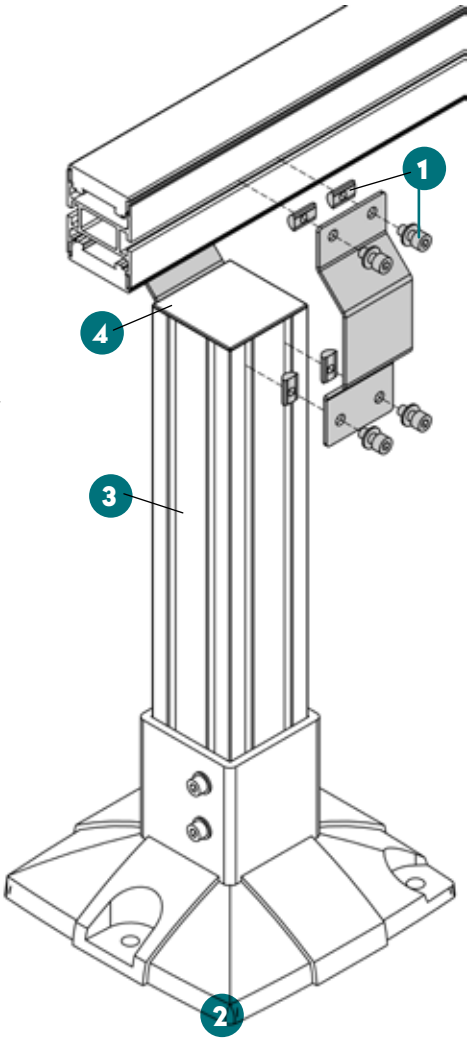
● **FS CS065SL**
● **FS CS090SL**
○ **FS CS200SL**

**NOTE**
The fastening elements must be matched to the static requirements and structural situation (edge spacings).

## PARTS LIST

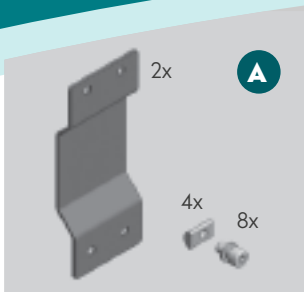
1. Leg joints / socket head cap bolt M8x14 / Washer M8 / steel T-slot block M8
2. Floor connection bracket
3. Profile, 80 x 80 B
4. Cover cap, 80 x 80 B

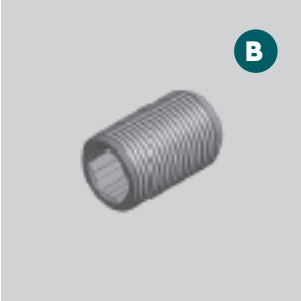
## MOUNTING




| | | PROD.NO. | | | |
|---|---|---|---|---|---|
| Leg joint, standard | FS CS065SL | J927 735 | 2 | steel | black |
| | FS CS090SL | J927 766 | 2 | | |

# CS LEG JOINTS | FS CS200SL, STANDARD




- Leg joint for mounting the horizontal conveyor line on individual legs with cross beam constructed from 80x80mm and 40x80mm system profiles.
- Material thickness 3 mm.
- Includes fixing material.

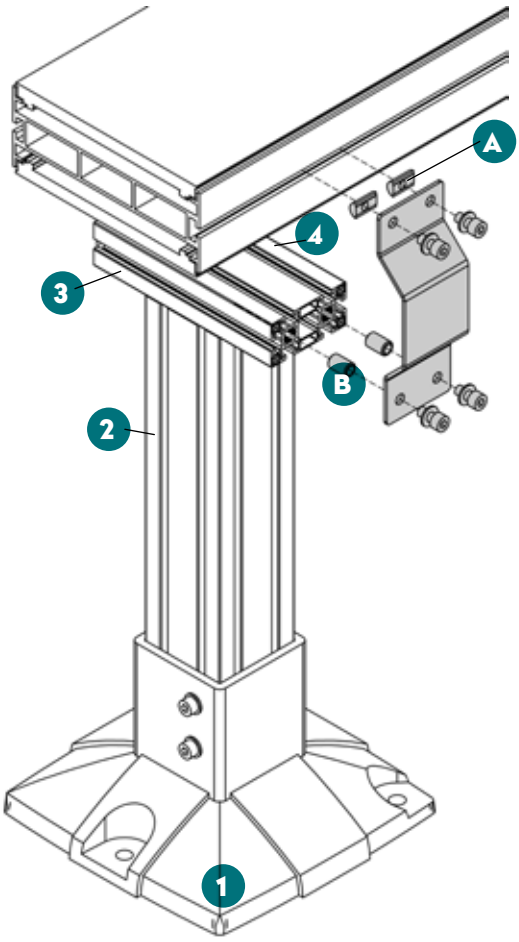
○ **FS CS065SL**
○ **FS CS090SL**
● **FS CS200SL**

**NOTE**
The fastening elements must be matched to the static requirements and structural situation (edge spacings).

## PARTS LIST

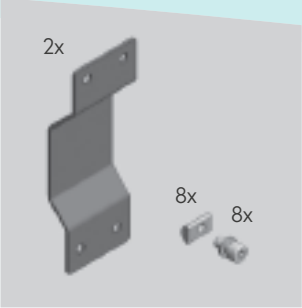
- A Leg joints / socket head cap bolt M8x14 / Washer M8 / steel T-slot block M8
- B M12/M8 reducing sleeve
- 1 Floor connection bracket
- 2 Profile, 80 x 80 B
- 3 Profile, 40 x 80 B
- 4 M12 bolted joint

## MOUNTING




| | | PROD.NO. | | | |
|---|---|---|---|---|---|
| Leg joint, standard | A | J927 831 | 2 | steel | black |
| M12 / M8 reducing sleeve | B | J534 125 | 10 | steel, galvanised | |

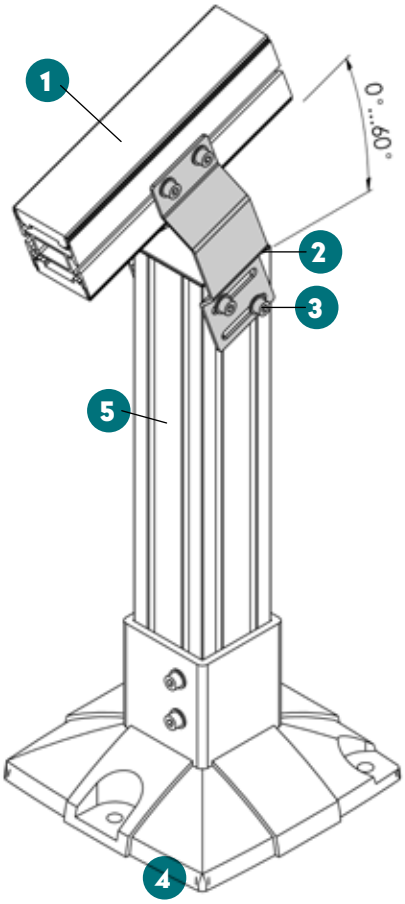
# CS LEG JOINTS | FS CS065/FS CS090SL, VARIABLE




- Leg joint for mounting the inclined conveyor line on individual legs constructed from 80 x 80 mm system profile.
- Material thickness 3 mm.
- Includes fixing material.

● **FS CS065SL**
● **FS CS090SL**
○ **FS CS200SL**

**MOUNTING**



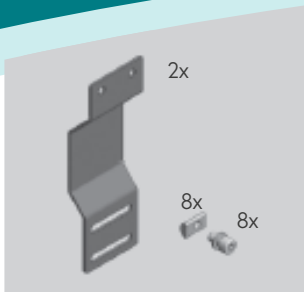

**NOTE**
The fastening elements must be matched to the static requirements and structural situation (edge spacings).

**PARTS LIST**

1. Guide profile
2. Cover cap, 80 x 80 B
3. Leg joints / socket head cap bolt M8x14 / Washer M8 / steel T-slot block M8
4. Floor connection bracket
5. Profile, 80 x 80 B

| | | PROD.NO. | | | |
|---|---|---|---|---|---|
| Leg joint, variable | FS CS065SL | J927 776 | 2 | steel | black |
| | FS CS090SL | J927 767 | 2 | | |

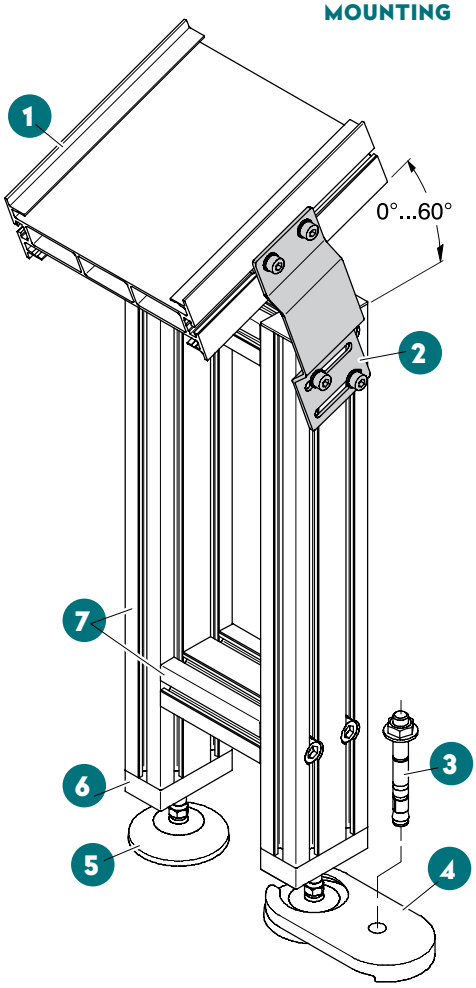
# CS LEG JOINTS | FS CS200SL, VARIABLE




- Leg joint for mounting the inclined conveyor line on a pair of legs constructed from 40 x 80 mm system profiles.
- Material thickness 3 m.
- Includes fixing material.

○ **FS CS065SL**
○ **FS CS090SL**
● **FS CS200SL**

**MOUNTING**



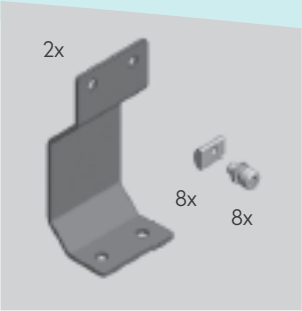

**NOTE**
The fastening elements must be matched to the static requirements and structural situation (edge spacings).

**PARTS LIST**

1. Guide profile
2. Leg joints / socket head cap bolt M8x14 / Washer M8 / steel T-slot block M8
3. Anchor bolt
4. Clamping strap
5. Adjustment foot
6. Fixing plate 40x80 mm / socket head cap bolt M12x30 / Washer M12
7. Profile, 40 x 80 B

| | PROD.NO. | | | |
|---|---|---|---|---|
| Leg joint, variable | J927 767 | 2 | steel | black |

# CS LEG JOINTS | VERTICAL STRUT




- Leg joint for mounting several parallel conveyor lines common cross strut.
- Material thickness 3 m.
- Includes fixing material.

- **FS CS065SL**
- **FS CS090SL**
- **FS CS200SL**

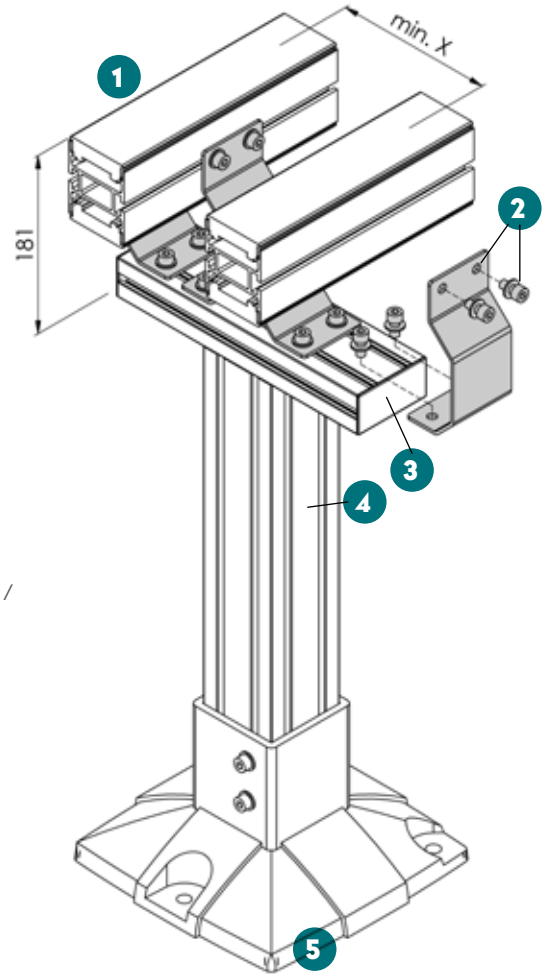
| | B [mm] | X [mm] |
|---|---|---|
| FS CS065SL | 65 | 125 |
| FS CS090SL | 90 | 150 |
| FS CS200SL | 200 | 260 |

**NOTE**
The fastening elements must be matched to the static requirements and structural situation (edge spacings).

## PARTS LIST

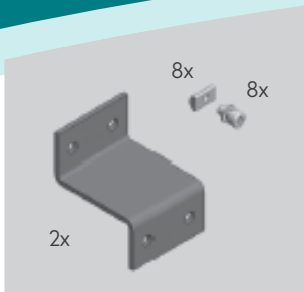
1. Guide profile
2. Leg joints / socket head cap bolt M8x14 / Washer M8 / steel T-slot block M8
3. Cover cap, 40 x 80 B
4. Profile, 80 x 80 B
5. Floor connection bracket

## MOUNTING




| | PROD.NO. | | | |
|---|---|---|---|---|
| Leg joint, horizontal strut | J927 778 | 2 | steel | black |

# CS LEG JOINTS | VERTICAL STRUT




- Leg joint for configuring a spiral conveyor. Project can be planned by FS Solutions.
- FS CS065/FS CS090SL systems only: The 180° horizontal curve with disk can be used when mounted to a vertical strut made from 80 x 80 system profile.
- Material thickness 3 m.
- Includes fixing material.

● **FS CS065SL**
● **FS CS090SL**
○ **FS CS200SL**

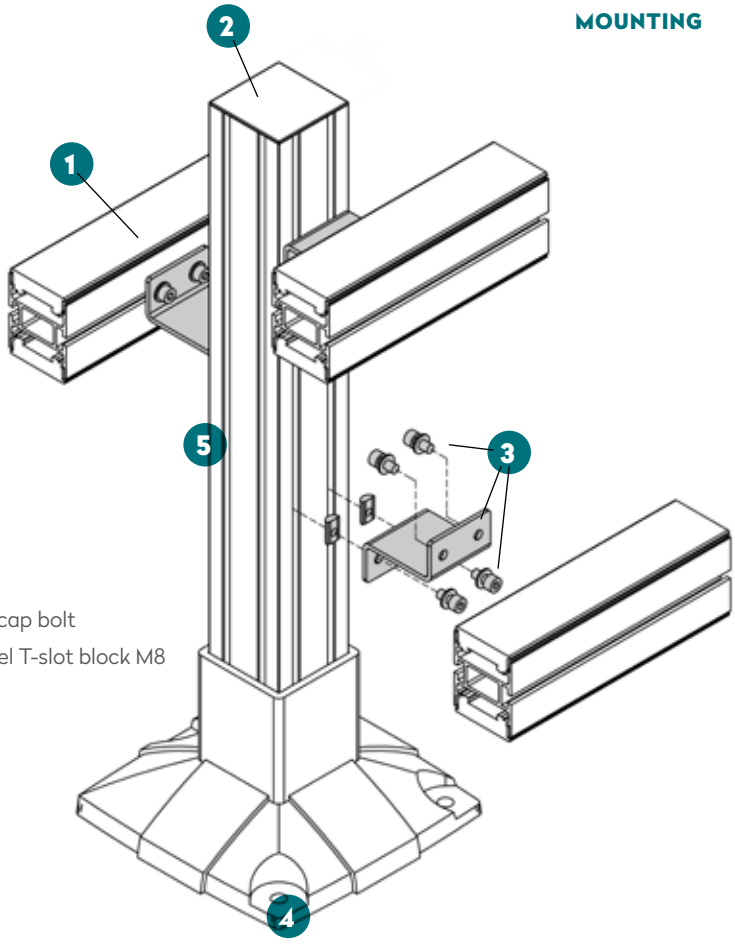
| | B [mm] | X [mm] |
|---|---|---|
| FS CS065SL | 65 | 300 |
| FS CS090SL | 90 | 325 |

**NOTE**
The fastening elements must be matched to the static requirements and structural situation (edge spacings).

## PARTS LIST

1. Guide profile
2. Cover cap, 80 x 80 B
3. Leg joints / socket head cap bolt M8x14 / Washer M8 / steel T-slot block M8
4. Floor connection bracket
5. Profile, 80 x 80 B

## MOUNTING




| | PROD.NO. | | | |
|---|---|---|---|---|
| Leg joint, vertical strut | J927 779 | 2 | steel | black |

# HYGIENIC TUBE LEGS

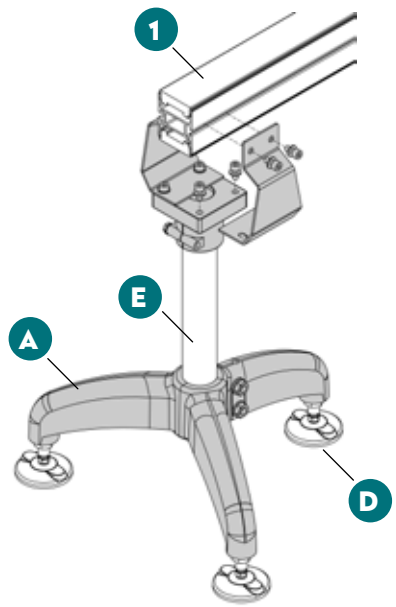
## | TUBE LEGS

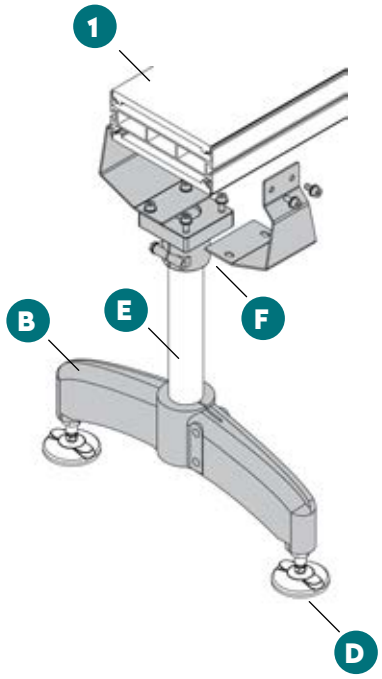
- Legs for mounting on guide profile.
- Different versions:
  - Single tripod or bipod leg
  - Twin bipod leg and tubular connector.
- Leg joint for horizontal and inclined conveyor lines.
- Fixing material included.
- Adjustable foot with threaded rod from stainless steel, foot plate (plastic, black) with knock-out holes for floor mounting.

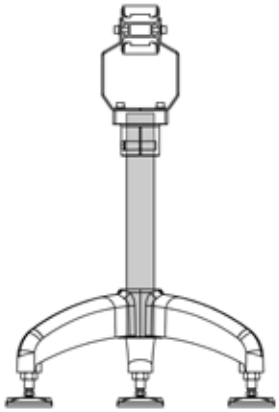
| | | | PROD.NO. | | | | |
|---|---|---|---|---|---|---|---|
| Tripod | A | | J534 471 | 1 | PA-GF | black (similar to RAL 9005) | |
| Bipod | B | | J534 472 | 1 | | | |
| Bipod for twin leg (with side connection) | C | | J534 473 | 1 | | | |
| J534 892 Adjustable foot, 80 mm dia., M16 x 70 | D | | J534 481 | 1 | plastic | | |
| Round tube 48.3 mm dia. x 1,6 mm | E | | 482420-483 | 6,0 m | stainless steel | | J924 968 |
| Leg joint, standard inc. assembly kit for round tube | F | FS CS065SL | J927580 | 1 | steel / plastic | black | |
| | | FS CS090SL | J927581 | | | | |
| | | FS CS200SL | J927582 | | | | |

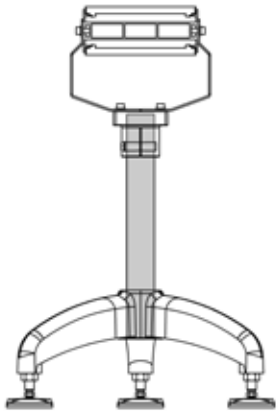
# HYGIENIC TUBE LEGS

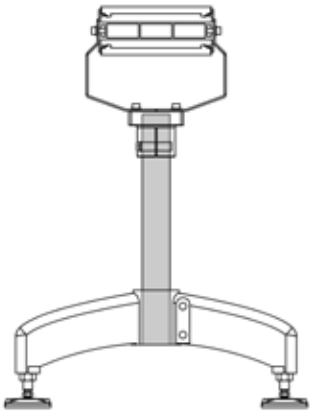


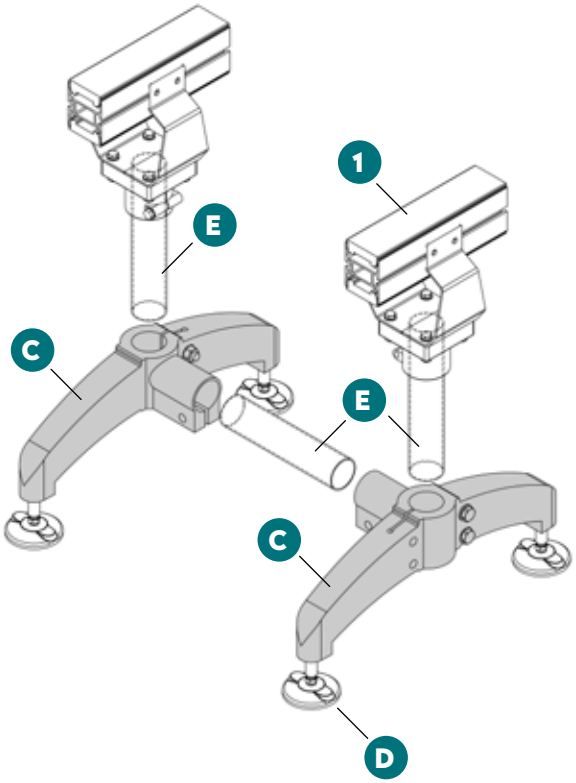






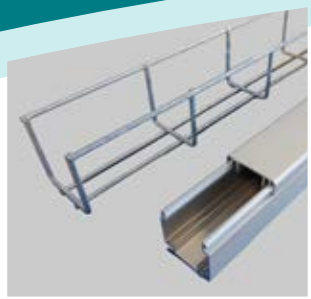


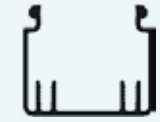
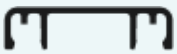

## PARTS LIST

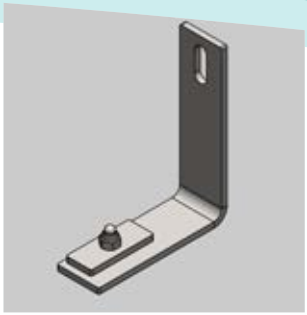
- A Tripod
- B Bipod
- C Bipod for twin leg
- D Adjustable foot
- E Round tube
- F Leg joint, standard
- 1 Guide profile

# CS Accessories

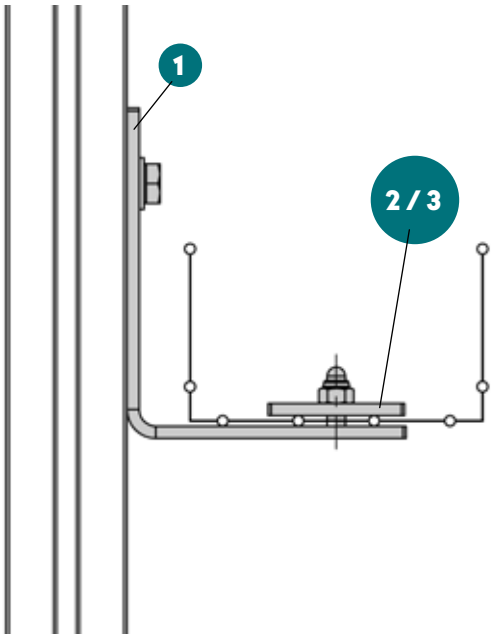
For all conveyor systems

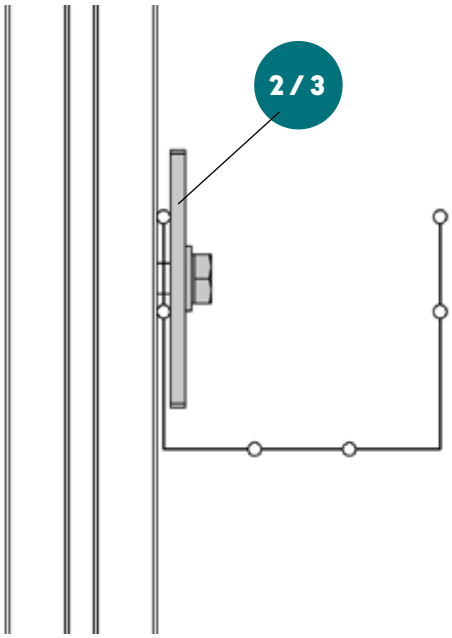


| | | B M | PROD.NO. | | | | |
|---|---|---|---|---|---|---|---|
|  | Cable duct, closed profile 40x40 | 6 | 400 023 | 924 968 | EN AW-6060 T68 | E6/EV1 anodised finish | 0,7 |
|  | Cable duct, closed profile 40x80 | 6 | 400 024 | 924 968 | EN AW-6060 T68 | E6/EV1 anodised finish | 0,9 |
|  | Cable duct cover Profile 40x40 | 6 | 400 029 | 924 968 | EN AW-6060 T68 | E6/EV1 anodised finish | 0,3 |
|  | Cable duct cover Profile 40x80 | 6 | 400 030 | 924 968 | EN AW-6060 T68 | E6/EV1 anodised finish | 0,5 |
|  | Wire tray 54x70 | 3 | 400 040 | 924 968 | steel | galvanised | 0.5 |
|  | Wire tray 60x60 | 3 | 400 041 | 924 968 | steel | galvanised | 0.7 |

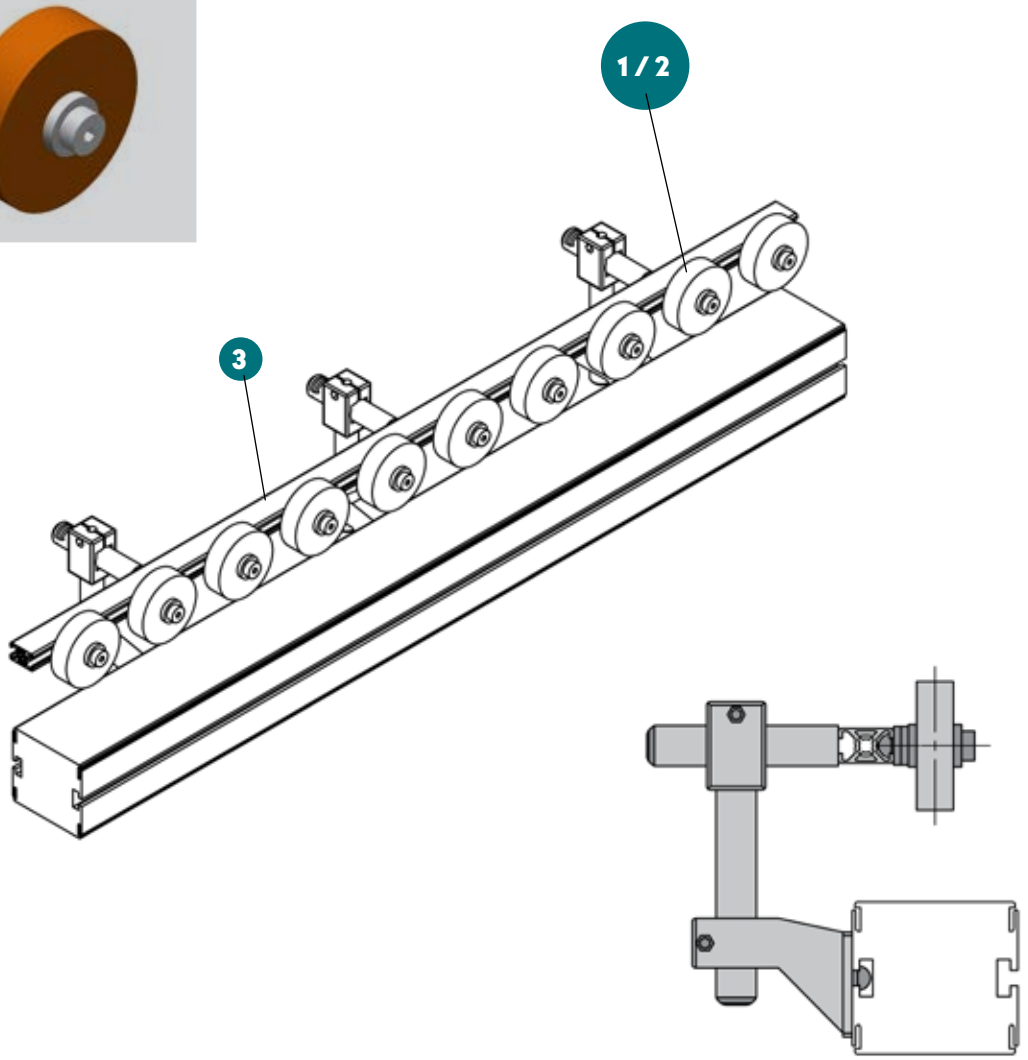



- Including fastening materials.
- Various types of brackets for different mounting situations.




| | | PROD.NO. | | | |
|---|---|---|---|---|---|
| 1 | Wire tray mounting bracket | 884480-011 | 1 | - | stainless steel |
| 2 | Locking plate wire tray long | 884480-013 | 1 | 55 | stainless steel |
| 3 | Locking plate wire tray | 884480-014 | 1 | 68 | stainless steel |
| 4 | Wire tray universal connector | 884480-021 | 1 | - | stainless steel |




| | | PROD.NO. | | | |
|---|---|---|---|---|---|
| 1 | Sponge roller 'hard' foam set (incl mounting materials) | 884220-103 | 1 | black | hard foam |
| 2 | Sponge roller 'soft' foam set (incl. mounting materials) | 884220-102 | 1 | orange | soft foam |
| 3 * | Profile ALU 30x19 | J924151 | 3m | anodised finish | EN AW-6063 T66 E6/EV1 |

* For curve going conveyors, profile ALU 30x19 can be customly bended on request



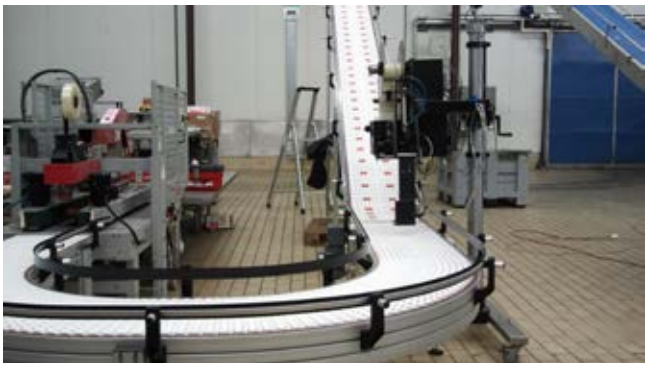

# Other FS Solutions conveyor systems

Including standard components, application solutions and aluminium profile systems

# OTHER FS SOLUTIONS CONVEYOR SYSTEMS

### MAT-TOP CONVEYOR ALUMINIUM OR INOX, STRAIGHT TRANSPORT

- Chain widths from 160 up to 1200 mm
- Different designs: horizontal-, incline and/or decline Z-shaped
- Small chain pitch

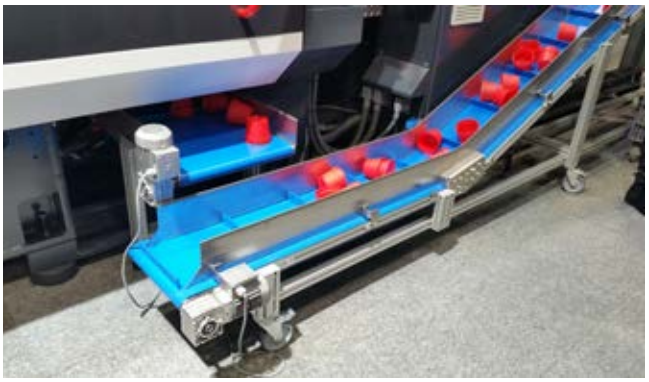


### MAT-TOP CONVEYOR ALUMINIUM OR INOX, STRAIGHT AND CURVED TRANSPORT

- Chain widths from 232 up to 631 mm
- 3-dimensional transport
- Low maintenance

### STRETCH_LINE CONVEYOR

- Chain widths from 65 up to 200 mm
- 3-dimensional transport
- Low maintenance

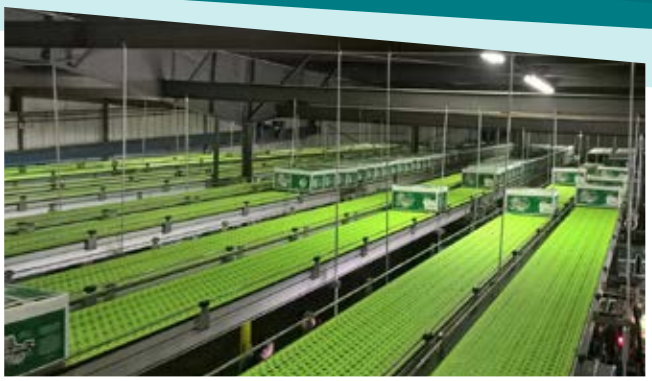


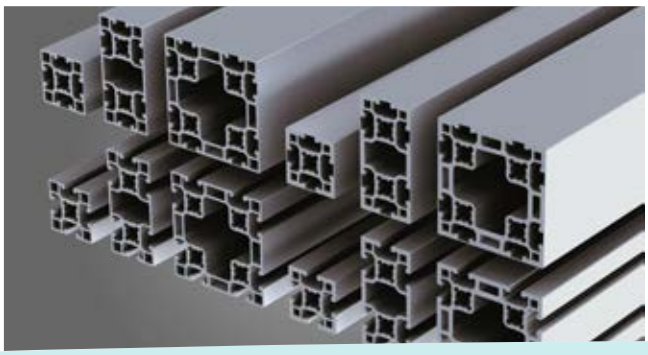
### BELT CONVEYOR ALUMINIUM OR INOX, STRAIGHT TRANSPORT

- Belt widths from 80 up to 1200 mm
- Direct or center drive
- Drum- or drive motor

### CHAIN CONVEYOR CS VC INOX

- Chain width 82 and 114 mm
- Direct- or center drive
- Suited for high hygiene requirements





### HEAVY XLBP MAT-TOP CONVEYOR ALUMINIUM

- Chain widths from 255 up to 765 mm
- Very low friction between chain and product (less damage to products)
- Low tension in the chain ensures a clear energy saving

### MAT-TOP CONVEYOR ALUMINIUM, STRAIGHT TRANSPORT NOSE BAR

- Chain widths from 152 up to 1066 mm
- Small nose transition
- Transition band: easy to deploy between 2 systems
- Chain pitch 8 mm

### STANDARD COMPONENTS

- Pusher, cross-over, divider
- Transitions between conveyors
- Puck handling, shielding etc.

### APPLICATION SOLUTIONS

- Buffer tables
- Vertical transport systems, gripper systems
- Sorter systems, Flow Splitters etc.

### ALUMINIUM PROFILE SYSTEM

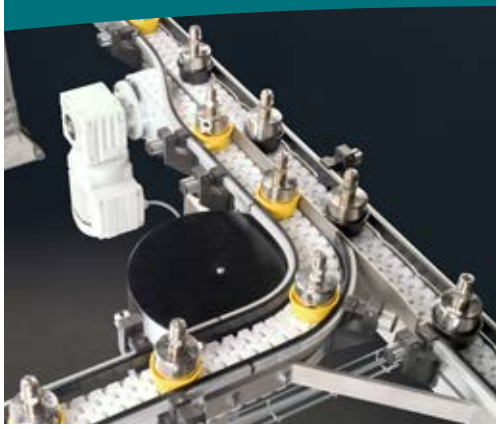
- Wide assortiment
- Robust and corrosion resistant
- Simple and flexible assembly

# CONVEYOR SYSTEMS | APPLICATIONS FROM EVERYDAY PRACTICE

The innovative solutions provided by CS Conveyor systems guarantee a rational flow of materials in production – also where high demands are placed on speed, noise emissions, servicing and maintenance.

Take advantage of our expertise that has grown over many years. We are your innovative developer and reliable supplier of standardised and customised applications.

Automotive industry, FS CS065SL



Food industry, FS CS090SL

Cosmetics industry, FS CS090SL

Automotive industry, FS CS200SL

Pharma industry, FS CS065SL

Food industry, FS CS200SL

# Basic technical information

Rating principles

Maintenance, cleaning and servicing

Safety precautions

Information on curved profiles

# CHAIN PULLING FORCE

## FIELD OF APPLICATION

The method described below for calculating chain pulling force can be applied to the CS SL Conveyor systems.

## ACCUMULATION MODE

The accumulation of conveyed items exerts heavy strain on the chain. Steel-lined chains should be used if the items being conveyed have a rough surface and sharp edges. Avoid item accumulation before and inside curves.

## SUM OF IDLER ANGLES

The multiple use of horizontal and vertical sliding curves in a line run increases strain on the chain.

The sum of idler angles ∂ for horizontal and vertical sliding curves in a line run must not exceed the maximum values given in Table 1. If you reach higher values when planning your line, FS Solutions can check your line layout for you.

Table 1: Sum of idler angles ∂ of sliding curves per line section

| | MAX. Σ OF IDLER ANGLES ∂ (HORIZONTAL/VERTICAL) |
|---|---|
| FS CS065SL | 360° |
| FS CS090SL | 360° |
| FS CS200SL | 270° |

## RATING PRINCIPLES

Chain pulling force F is the sum of all frictional resistances that occur. Calculation is performed as follows:

- Divide systems into several sections (straights, horizontal and vertical curves).
- Determine the pulling force required for each section. Start with the section furthest away from the drive.
- Horizontal/vertical sliding curves: the pulling forces for the previous sections are added to the sliding curve section and then multiplied by the curve factor (see calculation examples).
- The force resulting from individual line sections corresponds to the total pulling force that the system's drive unit is required to deliver.
- The total pulling force calculated must not exceed the chain's maximum permissible pulling force. The maximum chain pulling force is governed by the conveying system selected, chain type, conveying speed, line length, ambient temperature and number of starting events per hour.

# CHAIN PULLING FORCE

## CALCULATION FORMULAE

Horizontal straight sections without accumulation

$$F = L \cdot (mg + 2 \cdot mk) \cdot \mu 1 \cdot g$$

Horizontal straight sections with accumulation

$$F = \{ L \cdot (mg + 2 \cdot mk) \cdot \mu 1 + LS \cdot mg \cdot \mu 2 \} \cdot g$$

Curve sections without accumulation

$$F = LB \cdot (mg + 2 \cdot mk) \cdot \mu 1 \cdot g \cdot CK$$

Curve sections with accumulation

$$F = \{ LB \cdot (mg + 2 \cdot mk) \cdot \mu 1 + LS \cdot mg \cdot \mu 2 \} \cdot g \cdot CK$$

Straight sections with ascending +/descending gradient (-) without accumulation

$$F = L \cdot (mg + 2 \cdot mk) \cdot (\mu 1 \cdot \cos \partial \pm \sin \partial) \cdot g$$

Straight sections with ascending +/descending gradient (-) with accumulation

$$F = \{ L \cdot (mg + 2 \cdot mk) \cdot (\mu 1 \cdot \cos \partial \pm \sin \partial) + LS \cdot mg \cdot (\mu 2 \cdot \cos \partial \pm \sin \partial) \} \cdot g$$

Permissible chain pulling force

$$Fzul = F \cdot CB \cdot CT$$

## THE PERMISSIBLE CHAIN PULLING FORCE CAN BE DETERMINED USING THE TABLES BELOW

| | | |
|---|---|---|
| F | [ N ] | Chain pulling force |
| Fzul | [ N ] | Permissible chain pulling force |
| L | [ m ] | Length of line section |
| LB | [ m ] | Curve length in section |
| LS | [ m ] | Accumulation length in section |
| mg | [ kg/m ] | Weight of conveyed items per metre |
| mk | [ kg/m ] | Chain weight per metre |
| μ1 | [ - ] | Coefficient of sliding friction for chain/sliding strip |
| μ2 | [ - ] | Coefficient of sliding friction for chain/conveyed items |
| ∂ | [ ° ] | Idler angle |
| g | [ m/s2 ] | Acceleration due to gravity |
| CK | [ - ] | Curve factor |
| CB | [ - ] | Operating factor |
| CT | [ - ] | Temperature factor (for plastic chains only) |

# CHAIN PULLING FORCE

## COEFFICIENT OF SLIDING FRICTION BETWEEN SLIDING STRIP AND CHAIN

The coefficient of sliding friction is heavily dependent on the condition of the chain. It increases with running time. The figure shown are average values.
Regular chain lubrication can significantly reduce frictional resistance.

**Table 2: Coefficient of sliding friction μ1 between chain and sliding strip**

| | LUBRICANT | μ1 |
|---|---|---|
| POM | niet | 0,28 |
| PA | niet | 0,35 |
| antistatic (POM) | niet | 0,35 |
| stainless steel | niet | 0,25 |
| stainless steel | wel | 0,22 |

## COEFFICIENT OF SLIDING FRICTION BETWEEN CHAIN AND CONVEYED ITEMS

The coefficient of sliding friction is largely governed by the surface of the items being conveyed. Product-specific figures for an exact rating must be determined by trial and error.

**Table 3: Coefficient of sliding friction μ2 between chain and conveyed item**

| CHAIN MATERIAL | LUBRICANT | μ2 | | | |
|---|---|---|---|---|---|
| | | CONVEYED ITEM MATERIAL | | | |
| | | GLASS | METAL | PLASTIC | CARDBOARD |
| POM | niet | 0,18 | 0,24 | 0,22 | 0,27 |
| stainless steel | niet | 0,2 | 0,2 | 0,16 | - |
| stainless steel | wel | 0,15 | 0,15 | 0,1 | - |

# CHAIN PULLING FORCE

## OPERATING FACTOR

The permissible chain pulling force is governed by the number of starting events per hour. In the intermittent mode, the chain is subject to much higher levels of strain than in the continuous mode. Strain can be reduced by using a motor control system (e.g., frequency converter) for gentle start-up and deceleration. We always recommend the use of a motor control unit as from a speed of 60 m/min.

For gentle start-up and deceleration in line runs with many curves and/or heavy loads, a motor control system may also be advisable at speeds below 60 m/min.

**Table 4: Operating factor CB**

| | STARTING EVENTS/H | CB |
|---|---|---|
| ≤ 60 m/min | 0 – 1 | 1,0 |
| ≤ 60 m/min | 2 – 10 | 0,83 |
| ≤ 60 m/min | 11 – 30 | 0,71 |
| > 60 m/min | > 30 | 0,62 |

## CURVE FACTOR

Sliding curves in the line run increases strain on the chain. The frictional forces occurring are dependent on idle angle and are covered by the curve factor.

The multiple use of horizontal and vertical sliding curves in a line run should be avoided wherever possible.If possible, use horizontal curves with disk.The sum of idler angles ∂ for horizontal and vertical sliding curves in a line run must not exceed the maximum values given in Table 1.

**Table 5: Curve factor CK**

| | CK |
|---|---|
| 5° | 1,05 |
| 15° | 1,1 |
| 30° | 1,2 |
| 45° | 1,3 |
| 60° | 1,4 |
| 90° | 1,6 |

## TEMPERATURE FACTOR

The strength of the plastic chain made of POM or PA depends on ambient temperature. The permissible operating temperature ranges from -20 to +80°C.

The material's visco-elastic behaviour is covered by the temperature factor. The temperature factor must only be used for conveyor lines with curves or with conveyed-item accumulation.

**Table 6: Temperature factor CT**

| | CT |
|---|---|
| -20° | on request |
| 0° | 1 |
| 20° | 1 |
| 40° | 0,96 |
| 60° | 0,94 |
| 80° | on request |

## EXAMPLE CALCULATIONS

The example calculations at the end of the this section are approximations only.

To obtain values of a more accurate nature, allowance must also be made for the effect of chain return underneath the guide profile. This effect can be neglected in most cases.

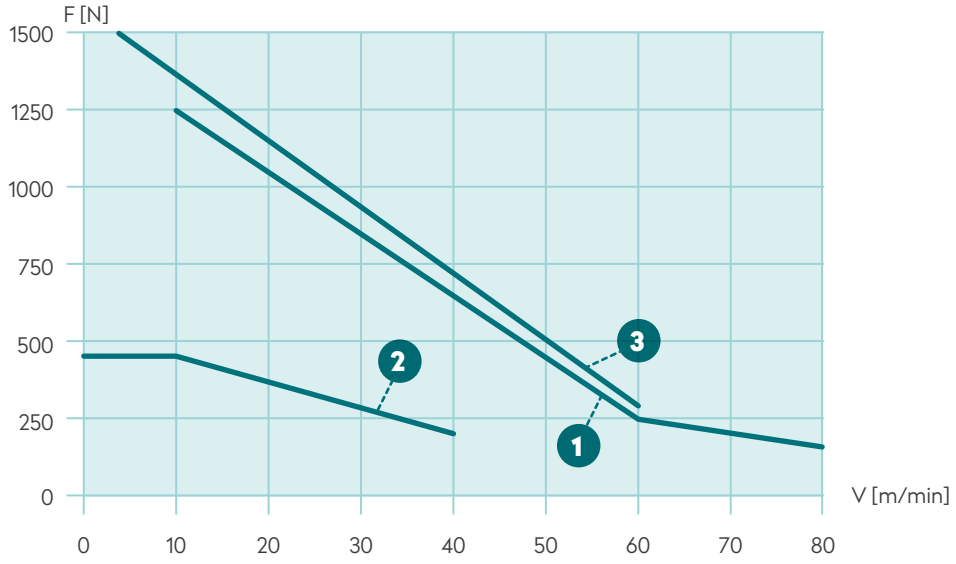
Full calculation is only necessary if the conveyor is configured with several sliding curves. When conducting a full calculation, please start at the underside of the drive unit.

# CHAIN PULLING FORCE

## PERMISSIBLE CHAIN PULLING FORCE

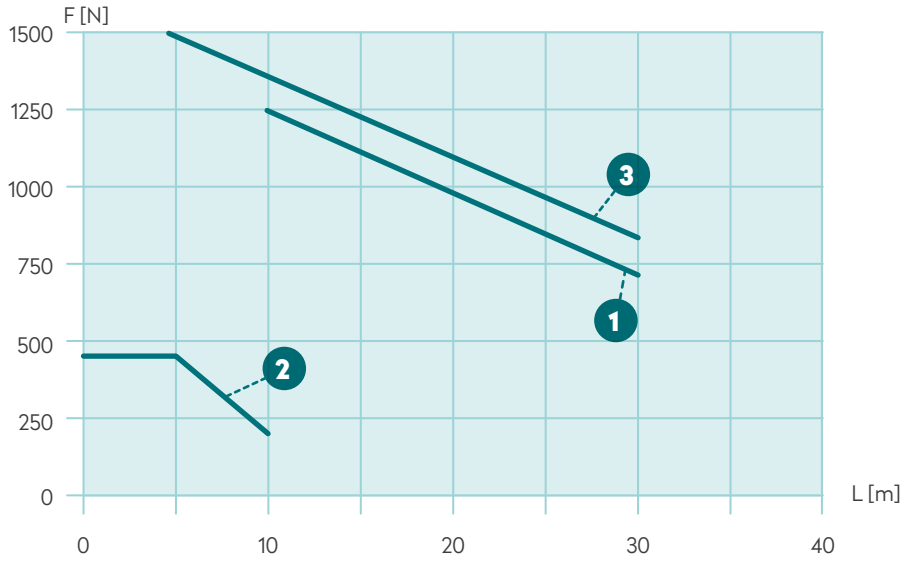
The maximum permissible chain pulling force depends on conveying speed and line length. Values can be read from the diagrams on the right. The lower value is authoritative.

**Table 7: Permissible chain pulling force F as a function of conveying speed v**




1 FS CS065/FS CS090SL (without centre drives) 2 FS CS090SL centre drives 3 FS CS200SL

**Table 8: Permissible chain pulling force F as a function of line length L**




1 FS CS065/FS CS090SL (without centre drives) 2 FS CS090SL centre drives 3 FS CS200SL

### CHAIN WEIGHT PER METRE

The table shows the weight of the chain per metre for the different chain types.

**Table 9: Chain weight mk**

| | KG/M | | |
|---|---|---|---|
| | CS 065 SL | CS 090 SL | FS CS200SL |
| Standard chain | 1 | 1,4 | 3 |
| Catch-plate chain | 1,1 | 1,5 | 3,1 |
| Chain with friction lining | 0,9 | 1,4 | 2,7 |
| Antistatic chain finish | 1 | 1,4 | 3 |
| Chain with flocked surface | 1 | 1,4 | - |
| Universal chain | 1 | 1,4 | 3 |
| Steel-lined chain | 1,6 | 2,1 | - |
| Universal chain with catch roller | 1,4 | 2 | 3,6 |
| Accumulating-roller chain | 1,7 | 2,2 | - |
| Gripper chain | 1,5 | 2,2 | - |

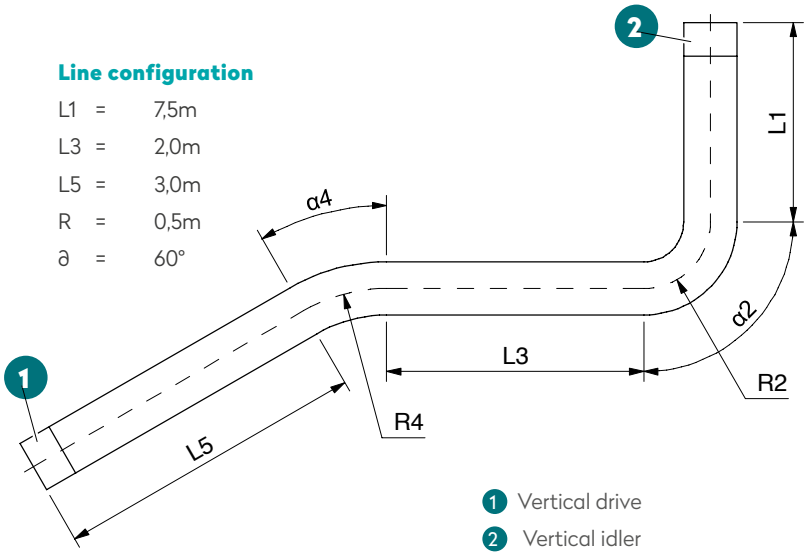
# EXAMPLE CALCULATIONS | LINE WITH HORIZONTAL CURVES

## SPECIFICATIONS

- System CS 065 SL
- Standard chain CS 065 SL (POM)
- Chain is dry-running
- Continuous operation
- Accumulation in section 5
- Temperature +20°C
- Conveyed items: Glass bottles, mg = 10 kg/m
- Conveying speed v = 50 m/min

## Line configuration

L1 = 7,5m
L3 = 2,0m
L5 = 3,0m
R = 0,5m
∂ = 60°




## TABLE VALUES

- Friction factor
  μ1 = 0,28 (Tab. 2)
  μ2 = 0,18 (Tab. 3)
- Curve factor
  CK2 = 1,6 (Tab. 5)
  CK4 = 1,2 (Tab. 5)
- Perm. chain pulling force
  L = Σ Li = 7,65 m
  F(v) = 450 N (Tab. 7)
  F(L) = 1250 N (Tab. 8)
  Fzul = F • CB • CT
  Fzul = 450 • 1,0 • 1,0 = 450 N
- Chain weight
  mk = 1,0 kg/m (Tab. 9)
- Operating factor
  CB = 1,0 (Tab. 4)
- Temperature factor
  CT = 1,0 (Tab. 6)

## DETERMINING CHAIN FORCE

F1 = L1 • ( mg + 2 • mk ) • μ1 • g
F1 = 0,6 • ( 10 + 2 • 1 ) • 0,28 • 9,81 = 19,8 N

F2 = [ F1 + LB2 • ( mg + 2 • mk ) • μ1 • g ] • CK2
F2 = [ 19,8 + 0,785 • ( 10 + 2 • 1 ) • 0,28 • 9,81 ] • 1,6 = 73,1 N

F3 = F2 + L3 • ( mg + 2 • mk ) • μ1 • g
F3 = 73,1 + 2,0 • ( 10 + 2 • 1 ) • 0,28 • 9,81 = 139,1 N

F4 = [ F3 + LB4 • ( mg + 2 • mk ) • μ1 • g ] • CK4
F4 = [ 139,1 + 0,262 • ( 10 + 2 • 1 ) • 0,28 • 9,81 ] • 1,2 = 177,3 N

F5 = F4 + [ L5 • ( mg + 2 • mk ) • μ1 + LS5 • mg • μ2 ] • g
F5 = 177,3 + [ 4,0 • ( 10 + 2 • 1 ) • 0,28 + 4,0 • 10 • 0, 18] • 9,81 = 379,8 N

## CHECKING PERM. CHAIN PULLING FORCE

F5 < Fzul → 379,8 N < 450 N

## CALCULATING CURVE LENGTH

$$LB = \frac{\pi \cdot R \cdot \partial}{180°}$$

$$LB2 = \frac{\pi \cdot 0{,}5\ m \cdot 90°}{180°} = 0{,}785\ m$$

$$LB4 = \frac{\pi \cdot 0{,}5\ m \cdot 30°}{180°} = 0{,}262\ m$$

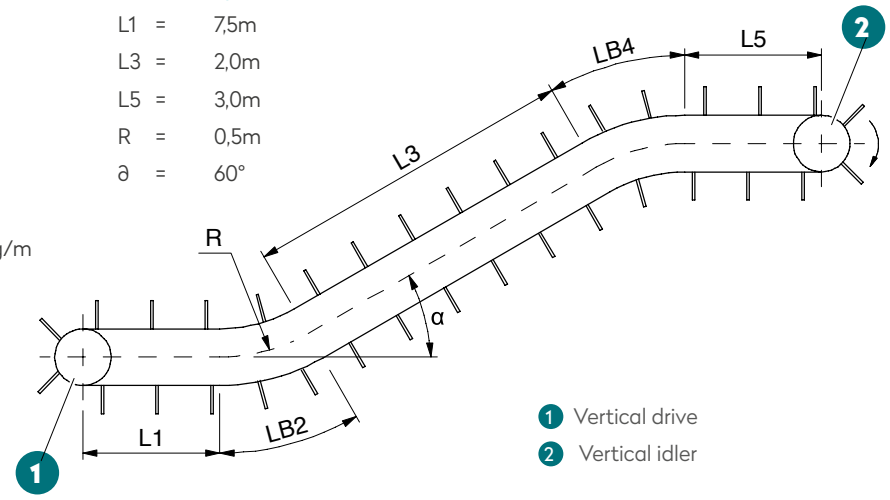
# EXAMPLE CALCULATIONS | LINE WITH VERTICAL CURVES

## SPECIFICATIONS

- System FS CS200SL
- Chain FS CS200SL with catch plates (POM)
- Chain is dry-running
- Up to 20 starting events/h
- No accumulation
- Temperature +40°C
- Conveyed items: Metal enclosures, mg = 6 kg/m
- Conveying speed v = 20 m/min

## Line configuration

L1 = 7,5m
L3 = 2,0m
L5 = 3,0m
R = 0,5m
∂ = 60°




## TABLE VALUES

- Friction factor
  μ1 = 0,28 (Tab. 2)
- Curve factor
  CK = 1,4 (Tab. 5)
- Perm. chain pulling force
  F(v) = 1160 N (Tab. 7)
  F(L) = 1280 N (Tab. 8)
  Fzul = F • CB • CT
  Fzul = 1160 • 0,71 • 0,96 = 790 N
- Chain weight
  mk = 3,1 kg/m (Tab. 9)
- Operating factor
  CB = 0,71 (Tab. 4)
- Temperature factor
  CT = 0,96 (Tab. 6)

## DETERMINING CHAIN FORCE

F1 = L1 • ( mg + 2 • mk ) • μ1 • g
F1 = 7,5 • ( 6 + 2 • 3,1 ) • 0,28 • 9,81 = 251,3 N

F2 = [ F1 + LB2 • ( mg + 2 • mk ) • μ1 • g ] • CK
F2 = [ 251,3 + 0,524 • ( 6 + 2 • 3,1 ) • 0,28 • 9,81 ] • 1,4 = 376,4 N

F3 = F2 + L3 • ( mg + 2 • mk ) • μ1 • g
F3 = 376,4 + 2,0 • ( 6 + 2 • 3,1 ) • 0,28 • 9,81 = 443,4 N

F4 = [ F3 + LB4 • ( mg + 2 • mk ) • μ1 • g ] • CK
F4 = [ 443,4 + 0,524 • ( 6 + 2 • 3,1 ) • 0,28 • 9,81 ] • 1,4 = 645,3 N

F5 = F4 + [ L5 • ( mg + 2 • mk ) • μ1] • g
F5 = 645,3 + [ 3,0 • ( 6 + 2 • 3,1 ) • 0,28 • 9,81 ] = 745,8 N

## CHECKING PERM. CHAIN PULLING FORCE

F5 < Fzul → 745,8 N < 790 N

## CALCULATING CURVE LENGTH

$$LB = \frac{\pi \cdot R \cdot \partial}{180°}$$

$$LB2 = LB4 \quad \frac{\pi \cdot 0{,}5\ m \cdot 90°}{180°} = 0{,}524\ m$$

# MAINTENANCE

## GENERAL INFORMATION

The entire conveyor system must be checked at regular intervals to ensure trouble-free, quiet operation. The servicing and maintenance work listed below is intended to contribute towards extending the system's useful life under high-capacity use and help prevent accidents.

**ATTENTION!**

Only perform this work if you are qualified to do so. Before commencing this servicing and maintenance work, read the "Safety precautions" section in the operating instructions supplied with each conveyor system.

## SYSTEM-RELATED INFORMATION

### Slat band chain conveyor

Depending on the length of conveyor run and loads carried by the conveyor system, servicing must be carried out at intervals of 250 to a maximum of 500 operating hours.

**The following work must be carried out at regular intervals:**

- The entire conveyor system must be protected from dirt.
- In particular, keep chain and sliding strips free from dirt, broken glass, sand etc.
- Regularly clean off dirt with steam, water or soapy water. Cleaning agents may be used with a pH value of between 4.5 and 9.0. Due to their caustic effect, cleaners containing solvent must not be used on chain and sliding strips.
- Irregularities on guides and sliding strips must be eliminated to ensure that the chain runs smoothly.
- Lubricants may be used for reducing friction between chain and sliding strip (in particular prod. no. 180 003).
- Check conveyor chain for damage, wear and stretching.
- Check the points at which the sliding strips are bolted down.
- Lubricate roller chain on the drive units (with chain transmission gear assembly): On fast-running Conveyor systems (conveying at speeds over 60 m/min), the drive-unit roller chain must be lubricated with a suitable lubricant (prod. no. 180 003) at intervals of no more than 250 hours of operation. High-performance drives with longer servicing intervals are available if required.
- Check all wear parts (conveyor chain, chain wheels, chain guides, bearings, idler wheels etc.) for proper working order.

# SAFETY PRECAUTIONS

**ATTENTION!**
Before starting up a conveyor system, it is imperative to ensure that the overall system containing components supplied by FS Solutions conforms to the provisions of EC Machine Directive 2006/42/EC and the statutory provisions translated into national law.

## GUARDS

All areas of the conveyor system presenting a hazard to persons must be secured by means of suitable guards.

Applicable international standards as well as national regulations on safety and accident prevention must bet met.

**This can be done in the following ways:**

- Potential hazards zones must be separated off by guards and made inaccessible to persons. Protective fences can be installed around the system or protective enclosures can be fitted directly at the point of danger.
- If hazard zones cannot be separated off by guards, points of danger must be marked with warning signs.

**ATTENTION!**
Before starting up a conveyor system, it is imperative to ensure that the overall system containing components supplied by FS Solutions conforms to the provisions of EC Machine Directive 2006/42/EC and the statutory provisions translated into national law.

## OVERHEAD INSTALLATION

If Conveyor systems are installed above a headroom height of approx. 1.8 m (overhead installation), the danger zone below the conveyor must be marked and, if necessary, segregated by means of suitable guards.

Loads could fall from the conveyor. If traffic routes cross the danger zone, safe passages must be created on site by the owner.

While an overhead conveyor is in operation, keep obstacles out of the area below the conveyor so as to avoid collisions.

**ATTENTION!**
The safety clutch does not protect persons from crushing or shearing hazards.

## DRIVES

The safety clutch on drive units with chain gear is a slip clutch that protects the conveyor system from damage by limiting the level of drive torque transferred.

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