

Appendices

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A. Installation of plastic slide rail and support rail

About slide rail

The slide rail is attached to the sides of the conveyor beam to reduce chain friction where the chain would otherwise be in direct contact with the beam profile. It is very important that the slide rail is installed correctly so that the chain can run without disruption.

When the conveyor is to be mounted high above ground level, it might be easier to mount the slide rail onto a conveyor section while the conveyor beam is still on the floor. If doing so, leave an extra end, approximately 300 mm longer than the beam, so that it can be cut off and adjusted when the beam is finally installed.

Characteristics

Slide rails are available in several materials, each with different characteristics:

The coefficient of friction is normally closer to the lower value at startup of a new conveyor. It will increase as the contact surfaces are wearing in. Lubricants will reduce the coefficient of friction.

Considerations when selecting slide rail

Each of the slide rails has its own characteristics and is suitable for different types of applications.

Slide rails made of HDPE or PA-PE are suitable for most standard applications. PA-PE has higher wear resistance but should not be used in wet environments.

In environments where high resistance to chemicals is important, PVDF slide rails are recommended.

Hardened steel slide rails in combination with PVDF slide rails in bends can be a good combination where larger particles such as chip occur.

UHMW-PE has the highest wear resistance and can be recommended in applications with accumulation, transport of heavy parts, high speed, abrasive particles or requirements on low dust generation.

Plain bends

The contact pressure between the chain and the slide rail is very high in the inner bend of plain bends. It is important to use the PVDF slide at this location if the speed is high as there will be increased temperatures that may cause melting of other slide rails. This, however, will result in somewhat higher wear on the chain.

A. Installation of plastic slide rail and support rail (continued)

Example of available slide rail types

Slide rail type	XSCR 25	XSCR 25 P	XSCR 25H	XSCR 25 U	XLCR 25 E	XLCR 3 TA	XLCR 3 TH
Material	HDPE High density polyethylene	PVDF Polyvinylidene fluoride	PA-PE Polyamide-polyethylene	UHMW-PE Ultra-high molecular weight polyethylene	UHMW-PE Carbon filled ultra-high molecular weight polyethylene	SS Stainless steel	-- Hardened steel
Friction coefficient	0,1–0,25	0,15–0,35	0,1–0,30	0,1–0,25	0,15–0,30	0,15–0,35	0,15–0,35
Application information	–40 to +60 °C Standard applications	–40 to +100 °C High resistance to chemicals (see table in the Product catalogue) Accumulation Transport of heavy parts High speed Abrasive particles	–40 to +80 °C Accumulation Transport of heavy parts High speed Abrasive non-metal particles	–40 to +60 °C High wear resistance Clean environment Low dust and particle generation	–40 to +60 °C Reduces static electricity Relatively low dust and particle generation	Abrasive particles High resistance to chemicals	Abrasive particles such as metal chips from milling and grinding processes
Advantages	Good standard Easy to mount	Chemical and heat resistant Low elongation More resistant to chemicals	Good wear and heat resistance	Easy to mount Low wear out Minimum of particles	High conductivity Fast discharge Easy to mount	No elongation High resistance to chemicals and abrasive particles. Heat resistant Low wear out	No elongation Very high resistance to abrasive particles Heat resistant Low wear out
Disadvantages	Poor resistance to solvents (petroleum, white spirit) Limited temperature range Wear out at heavy accumulation	Higher friction More difficult to mount	Should not be used in wet applications	Limited temperature range Higher elongation	Some particle generation may occur	Difficult to mount, with only straight lengths High friction Generates particles in dry environments	Special mounting procedure High friction Generates particles in dry environments
Colour	Black	Natural white	Grey	White	Black	Natural	Natural
Suitable application areas	All industries Medium speed Medium load	Greasy environments Water (washing machines) Chemicals High load Heat resistant	High speed High load	All types of clean production	Environments sensitive to static electricity	High load Heat/cold	Aggressive particles High load Heat/cold

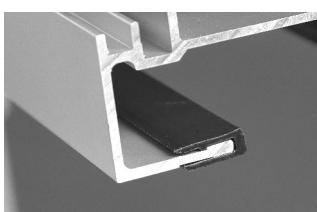
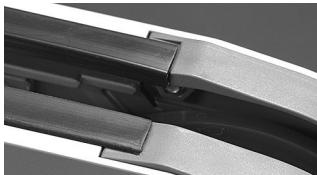
Attaching the slide rail in straight sections**Tools required**

Slide rail installation tool:

XS-X65	X85, X180/X300	XM	XH	XK
XLMR 140	XBMR 170	XMMR 140	XHMR 200	XKMR 200

Procedure

- 1 Start at an idler end unit. Separate the top and bottom flange of the slide rail at the end of the rail and press it into place.
- 2 Make sure that you mount the slide rail so that it snaps on to the beam. The different types of slide rail do not look alike, so check which flange should be on top.
- 3 Use the slide rail mounting tool to press the slide rail into place. One end of the tool is used when slide rail is mounted onto only one side of the beam, and the other end is used when you mount slide rail onto the second side.
- 4 Do not forget to mount slide rails both underneath and on the upper side of the beam (unless top running chain only)

**Joining slide rails****Tools required**

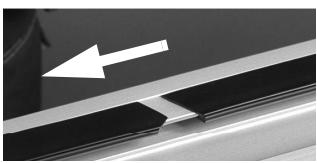
Cutting pliers

Procedure

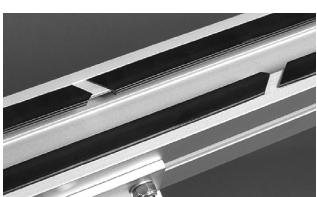
- 1 Cut both slide rail ends in a 45° angle. The beginning of a new slide rail section (in the direction of travel) must be cut back a small angle.



- 2 Allow a space of approximately 10 mm between two slide rail ends. The arrow indicates travel direction.



- 3 Do not place two slide rail joints opposite each other. Make sure there is a distance of at least 100 mm between them to make the chain run smoother.



This does not apply to slide rail that begins by an idler unit or after a drive unit, where joints are always parallel.

Comments

- Try to let the slide rail run in as many continuous lengths as possible, except in circumstances stated below:
- It is recommended to use short slide rails (2–3 m) where chemicals may have an effect on the slide rail composition.
- It is important to cut the slide rail and allow for elongation in high load areas. Cutting is required in wheel bends (see below), by idler units and where the conveyor will be heavily loaded, especially by the drive units. This prevents the slide rail from stretching out and entering into the drive unit, which may block the chain.
- Never join slide rail in horizontal or vertical bends, since forces are higher on the slide rail in these sections. Instead, place the joint before the bend.
- Avoid joining slide rails on top of conveyor beam joints.

A. Installation of plastic slide rail and support rail (continued)

Mounting slide rail in wheel bends

Tools required

Cutting pliers

Before wheel bend

- 1 Cut the slide rail end at a 45° angle.

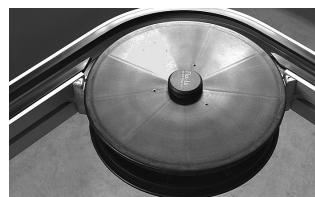


- 2 The slide rail must be longer than the conveyor beam itself, and there should be a 10 mm distance between the slide rail and the wheel of the bend. Make sure that the end of the slide rail is not bent up or down.



After wheel bend

- 3 Cut the slide rail at a 45° angle with a short back cut. The slide rail must be longer than the conveyor beam itself, and there should be a 2 mm distance between the slide rail and the wheel of the bend.
- 4 In the outer bend, make sure that the slide rail is properly connected to the conveyor beam profile.



Plain bends

In plain bends with small radii, the slide rail for the inner bend should be cut so that it is only 10 mm wide in the bend. This is to prevent an uneven slide rail surface. Stretch the rail while mounting.

Important

Plain bends with small radii should be avoided, if at all possible. Always consult FlexLink Systems for design assistance.

Mounting support rail in plain bends

The friction in plain bends can be significantly reduced by using support rails in the inner beam profile.

Tools required

Soft hammer
Knife
Drill 4,2 mm
Clamp
Screwdriver
Sheet metal screws ISO 7049 4,2x9,5

Procedure

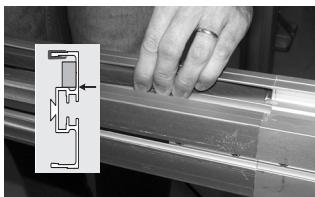
- 1 Drill two holes (4,2 mm) in the beam at the entry and exit of the bend. Drill additional holes every 200–300 mm.



- 2 Cut both ends of the rail at a 45° angle.



- 3 Press the support rail into place at one end of the bend. It is important that it is mounted against the bottom flange of the beam.



- 4 Make sure that the rail starts exactly at the joint between the bend and the straight conveyor beam.



- 5 Press the rest of the support rail in place.



- 6 Clamp the rail.



- 7 Fix with ISO 7049 4,2x9,5 sheet metal screws See "Support rail for plain bends XH" on page 232. (never use screws longer than 9,5 mm).

**Anchoring the slide rail**

The beginning of each slide rail section must be fixed to the beam, since the chain will cause the slide rail to be pushed forward. Slide rail which moves into a wheel bend or a drive unit can block the chain completely.

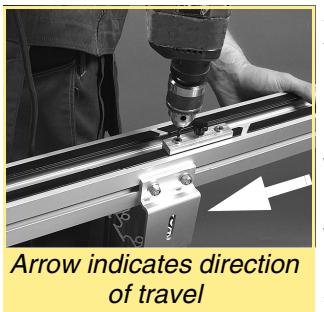
There are two different methods for fixing slide rail to the conveyor beam, using *aluminium rivets* or *plastic screws*. Either method can be used, but the riveting method is more secure if the conveyor will run with high operational speed or be heavily loaded.

Tools required

Hand drill	XKP
Drill fixture for slide rail: Part #3924774 (drill diameter 3,2 mm): XS*Part #3920500 (drill diameter 4,2 mm): XS**-X65-X85/XM-XH-XK-X180/X300	X180
* Rivet method only	X300
** Plastic screw method only	GR

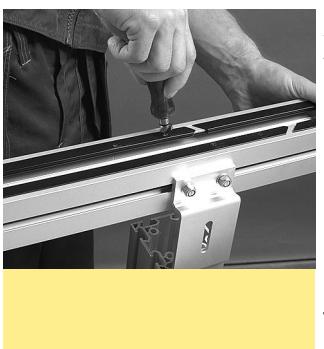
Countersink**Procedure – drilling**

- 1 Drill two holes near the beginning of each slide rail section. Use the drill fixture to ensure clean-cut holes and the correct location of the holes.



Arrow indicates direction of travel

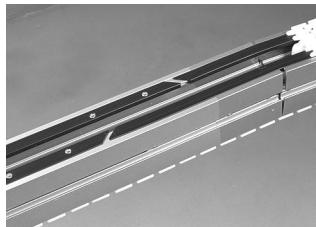
- 2 Use a countersink to deburr and countersink the holes. Also make sure that there are no metal filings left underneath the slide rail.



A. Installation of plastic slide rail and support rail (continued)

Slide rail in conveyor beam section XLCH 5 V

- When using articulated beam section XLCH 5 V, the slide rail must be mounted across the entire beam section, and cut off at the beginning of the following beam section.



Anchoring slide rail using plastic screws

Tools required

Pliers/screwdriver

Knife

Hammer

Plastic screws:	XS-X65-X85/XM-XH-X180/X300:	XK: XWAG 5
	XLAG 5	

Anchoring slide rails using aluminium rivets

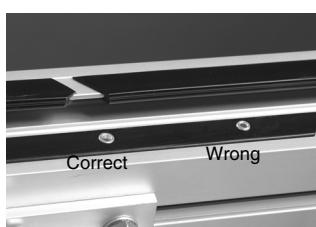
Tools required

Rivet crimping pliers
XS: Part #3924776,
X65-X85/XM-XH-XK-X180/X300: Part #5051395
or
Rivet crimping clamp
XS: Part #3924770
X65-X85/XM-XH-XK-X180/X300: Part #3923005

Aluminium rivets:
XS: XLAH 3x6
X65-XM-XH: XLAH 4x6
XK-X180/X300: XLAH 4x7 (brown colour)

Procedure

- Insert rivets in the holes, using rivet crimping pliers or a rivet crimping clamp. For type of rivet, see above.
- If working space is limited, the rivet crimping clamp might be easier to use. The two crimping tools perform the same task, but the pliers are more efficient and easier to use.
- Check that the rivets do not protrude over the surface of the slide rail. Check both top and underneath surface of slide rail for protruding metal.
- Keep a distance of approximately 30 mm between rivets and idler unit. This is in case the idler unit has to be removed after conveyor system assembly.



Procedure

- Press or screw the screws into the holes using a pair of pliers or a screwdriver.
- Cut off the screw heads by using a knife and a hammer. Cut should be made away from the joint, in the direction of chain travel.
- Make sure the slide rail surface is smooth and that screws do not protrude over the surface of the slide rail. If the surface should be uneven, file the edges smooth. Check both top and underneath surface of slide rail for protruding plastic or metal.
- Keep a distance of approximately 30 mm between screws and idler unit. This is in case the idler unit has to be removed after conveyor system assembly.



Slide rail installation – conveyor beam XKCB N

Conveyor beam Type XKCB N has additional flanges for slide rail "inside" the beam. Attaching slide rail to these flanges is slightly different from the standard procedure. This also applies to XK plain bends (see next page).

Tools required

Cutting pliers
Hammer
Screwdriver
Clamp
Knife
Drill 4,2 mm
Drill fixture Part #3920500
Plastic screws XWAG 5

- 7 Use a clamp to press the slide rail on to the beam flange where the type N beam begins.

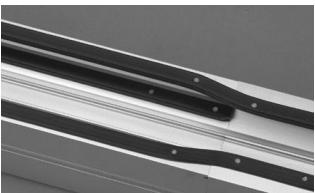


CC

X45

XS

- 8 Drill one additional hole in each slide rail at the beginning of the type N beam section.



X65

X65P

X85

- 9 Install the chain as shown in the picture.



X85P

XH

XK

Procedure

- 1 Cut the slide rail at a 45° angle.



XKP

X180

X300

- 2 Mount slide rail on the lower flange of the conveyor beam.



GR

CS

XT

- 3 Drill holes for plastic XWAG 5 screws.



HU

WL

WK

- 4 Use a screwdriver to insert the screws. Cut off the screw heads using a knife and a hammer. File off protruding edges.



XC

XF

XD

- 5 On the upper flange of the slide rail, use the drill fixture to drill two holes in the slide rail before it enters the XKCB N beam.



ELV

CTL

FST

- 6 Use a screwdriver to insert the screws. Cut off the screw heads using a knife and a hammer. File off protruding edges.



TR

APX

IDX

A. Installation of plastic slide rail and support rail (continued)

Installation of slide rail in XK plain bends

Plain bends increase the tension in the chain and cause higher stress on the slide rail. It is therefore recommended that slide rail be used on both the upper and lower flanges in XK Plain bends. Start by installing the lower slide rail.

Tools required

Cutting pliers

Knife

Hammer

Screw driver

Drill 4,2 mm

Drill fixture (Part #3920500)

Plastic screws XWAG 5

Installation of slide rail in X180/X300 plain bends

The centre beam in X180/X300 plain bends has an additional pair of flanges for slide rail inside the beam, similar to the XK beam type N. Installation is similar to that described for slide rail in XK plain bends.

Note

For the slide rail inside the beam (inner bend only), plastic screws must be used for anchoring.

Plastic screw XLAG 5 or aluminium rivet XLAH 4x7 can be used for the upper slide rails.

Procedure

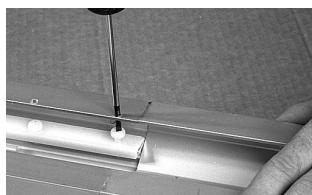
- 1 Mount slide rail on the lower flange of the conveyor beam. Cut the slide rail at a slight angle, to ensure a smooth entry of the chain.



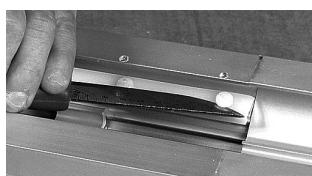
- 2 Temporarily install a piece of upper slide rail. Use the drill fixture to drill holes in the slide rail on the upper and lower flange. Use a drill bit that is long enough to drill through both flanges.



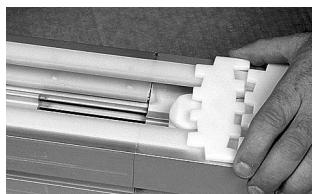
- 3 Anchor the lower slide rail to the beam using XWAG 5 plastic screws.



- 4 Cut off all screw heads. File off protruding edges.



- 5 Remove and discard the temporary piece of upper slide rail and install the full length of upper slide rail. Test the chain track.



B. Installation of slide rail in hardened steel

Installation of hardened steel slide rail – XK, XH, X65

Tools required

Locking pliers	
Knife	
Drill	
Drill bit	Ø4,2 mm
Angle grinder	
Slide rail fixture	5056186 (see picture)
Hydraulic pump for riveting	See picture
Rivets	5056167



Slide rail fixtures



Hydraulic pump for riveting

Mounting at drive unit/idler ends

- 1 Cut off the flanges on the plastic guides.



Mounting in straight sections

- 2 Cut the slide rail. If necessary, drill a hole in the slide rail (See step 9).
- 3 Drill through the aluminium beam with a 4,2 mm drill bit.
- 4 Place a rivet in the hole and fasten (See step 12).
- 5 Polish all sharp edges.



- 8 Round off the corner and polish all sharp edges.



Mounting at wheel bends

- 6 Place the slide rail on the beam. Mark the beam edge on the slide rail, add 50 mm and cut.
- 7 Cut the slide rail at an angle.



- 9 If necessary, drill and countersink a new hole 40 mm from the edge.



- 10 Place the slide rail at the correct distance by using the fixtures. Fix the slide rail with locking pliers. Drill through the aluminium beam with a 4,2 mm drill bit.



- 11 Place the bend slide rail/rails on the wheel bend. Make sure the distance to the disc is 51–53 mm. Fix the slide rail with locking pliers. Drill through the aluminium beam.



- 12 Place the rivet in the hole, make sure the plunger hits the whole rivet and press. Note. Use maximum pressure of 200 bar.
- 13 Grind down the rivets with a grinding wheel until you have a smooth surface.



C. Slip clutch adjustment

Introduction

The slip clutch on the drive unit is a safety device which allows the chain to stop if the load becomes excessive. It has two purposes:

- Prevent damage to products on conveyor
- Prevent damage to conveyor

Note

The slip clutch is not a personal safety device. It is primarily intended to protect the equipment.

Where a slip clutch is fitted, it must be adjusted so that it does not slip whenever the drive unit is started under full load. The installation is carried out as follows:

Preparations for adjustment

- 1 Stop the conveyor.
- 2 Ensure that the conveyor cannot be started accidentally. For example: unplug the electric power plug.
- 3 Remove any load on the conveyor.

Caution

If you try to adjust the slip clutch when there is still load on the conveyor, the accumulated tension in the chain can cause severe injuries when you release the clutch.

Adjustment procedure (see Figure 1)

- 1 Remove the drive unit protection cover.
- 2 Use an Allen key, 3 mm, to loosen the screw (1) on the slip clutch so that the adjustment nut (2) can be freely rotated.
- 3 Turn the adjustment nut (2) clockwise with a hook spanner (see Figure 2) until the arrow on the nut is aligned with the desired Fmax value (3). See Table 1 and Table 2 for correct values.
Note: On delivery, the clutch is always set to "0".
- 4 Tighten the screw (1).

Re-install the drive unit protection cover.

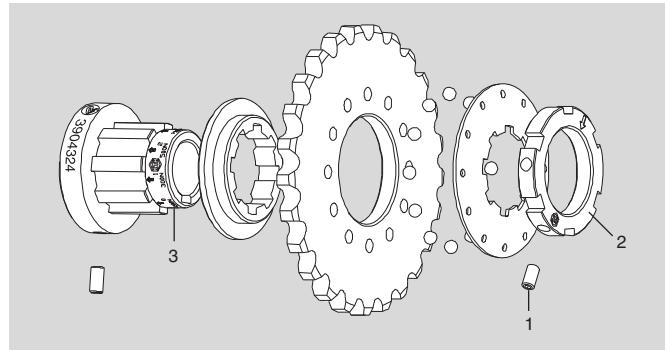


Figure 1. Slip clutch (exploded view)



Figure 2. Hook spanner 5053980

Table 1. Adjustment of slip clutch for End drive units

No.	Traction force, Fmax (N)			
	XS X65	X85/XM, XH, XK, X180/X300	XT	XK H
0	300	300	300	600
1	400	400	400	800
2	500	500	500	1000
3		700	700	1150
4		800	800	1300
5		1050	1050	1550
6		1250	1250	1700
7			1400	2000
8			1500	2200
9			1650	2400
10				2500

Note!
Standard and direct drives 1/2":
Slip clutches marked 3904324,
5052769, 3925774, 5052827

Standard drives 5/8":
Slip clutches marked
3925071, 5052772

Table 2. Adjustment of slip clutch for Wheel bend drive units

No.	Traction force, Fmax (N)		
	XS, X65	X85/XM, XH	XK
0	135	120	105
1	180	160	140
2		200	175

Note!
Standard and direct drives 1/2":
Slip clutches marked 3904324, 5052769, 3925774, 5052827

Joining chain ends

Assemble the chain by inserting the steel pin that comes with each chain link, into the opposite end of another link.

Tools required

Pliers

Chain tool

Procedure

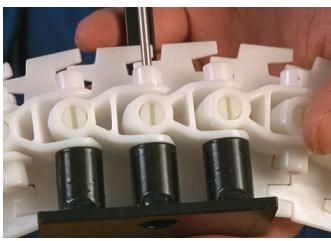
- 1 Insert the plastic pivot with the slot facing outward.



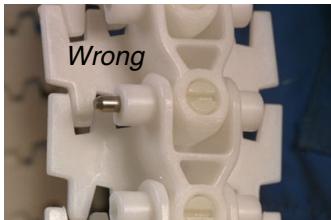
- 2 Insert the steel pin half-way, using a pair of pliers. Always use new steel pins and plastic pivots when joining chain ends.



- 3 Line the chain tool up with the pin. Slowly depress the trigger until the pin seats.



- 4 Check that the chain is flexible in the joint, and that the pin does not stick out or go through the other side.



Taking the chain apart:

- 1 Line the chain tool up with the pin.
- 2 Depress the trigger until the pin pops out.
- 3 Depress lever, pull insertion pin out.
- 4 Pull chain apart.

Preparations for chain installation

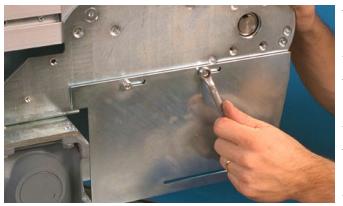
- 1 Remove the drive unit transmission cover.



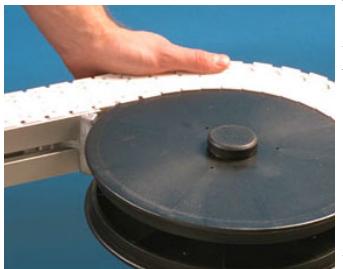
- 2 Release the slip clutch so that the drive shaft is free to turn.



- 3 Remove the side plate on the drive unit.



- 4 Before mounting, run a short piece of chain (1 m) through the conveyor to ensure a smooth running system. If any obstructions are found, they should be removed and the checking process repeated.



Chain installation

Make sure that the slip clutch is released allowing the drive shaft to turn freely. See page 532.

Tools required

Pin insertion tool

X..MJ

Procedure

- 1 Insert the chain into the underside of the drive unit. Make sure the chain will be moving in the correct direction, as indicated by the arrow located at the side of all chain links.



- 2 Feed the chain along the conveyor by pulling it through the idler unit and back to the drive unit.



D. Chain installation (continued)

- 3 Join 5 meter lengths of chain when necessary.



- 4 Remove links if necessary, so that the chain will exhibit some slack at the drive unit. Length adjustment, see page 534.

Join the chain ends.
See page 533.



Using a beam section for chain installation

The beam section X_CC 160/XKCC 200 is used to permit chain installation anywhere along the conveyor.

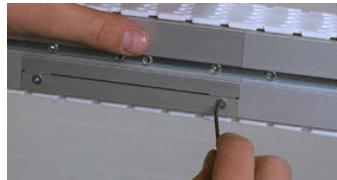
Tools required

Allen key
Pin insertion tool
Clamp

X..MJ

Procedure

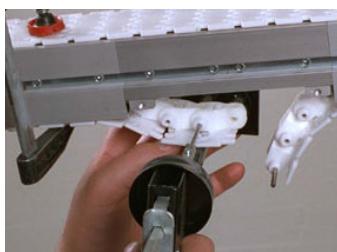
- 1 Loosen the screws on the beam section flanges



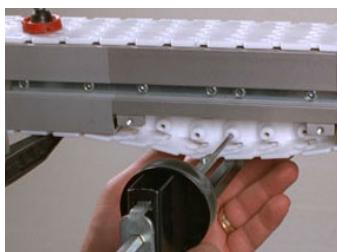
- 2 Remove the flange so that the chain becomes accessible.



- 3 Clamp the chain to the beam profile. Use the chain tool to remove a steel pin from the chain, so that two links are separated.



- 4 Remove excess links and use the chain tool to join the chain ends.



Length adjustment of the conveyor chain

End drive, intermediate drive and catenary drive units

- 1 Adjustment of the conveyor chain is carried out at the drive end of the conveyor.
- 2 Remove catenary protection plates to allow easy access for the pin insertion tool.
- 3 The conveyor chain should be tensioned within the conveyor system by pulling down the conveyor chain at the chain catenary in the underside of the drive unit. Clamp across the conveyor chain to trap the chain onto the beam profile. The clamp should be placed over the edges of the drive unit to reduce the risk of damage to the aluminium profile.
- 4 Remove all slack links from the conveyor chain using the pin insertion tool.
- 5 Rejoin the conveyor chain.
- 6 Remove the chain clamp and reinstall the catenary protection plates. The conveyor is now ready for operation.

Bend drive units

In a wheel bend drive, the outer aluminium profile can be removed by slackening the set screws in the beam connecting strips. The slide rail must be fitted to allow the removal of this section. A slide rail fastened with rivets must not be longer than the outer bend section.

- 1 After removal of the outer aluminium profile, the conveyor chain can be pulled out of the wheel bend disc. Lift the chain upwards.
- 2 Remove chain links using the pin insertion tool.
- 3 Rejoin the chain ends.
- 4 The tensioned chain can now be pulled back into position on the bend guide disc, and the outer profile put into place.

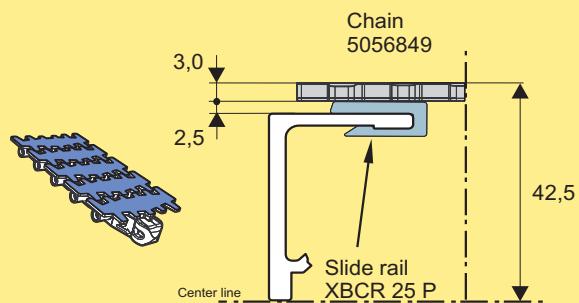
Guided drive units

Drive unit types X_EB HLG/HRG, X_EB HLGP/HRGP.

- 1 Adjustment of the conveyor chain is carried out at the idler end unit.
- 2 Undo the screws on one side plate and remove it.
- 3 Undo the screw holding the shaft. Remove the idler wheel together with the shaft.
- 4 Remove the required number of links.
- 5 Reinstall the idler wheel and shaft together with the chain. Tighten the screw that holds the shaft.
- 6 Reinstall the side plates, make sure that the slide rails are properly installed. Tighten the screws.

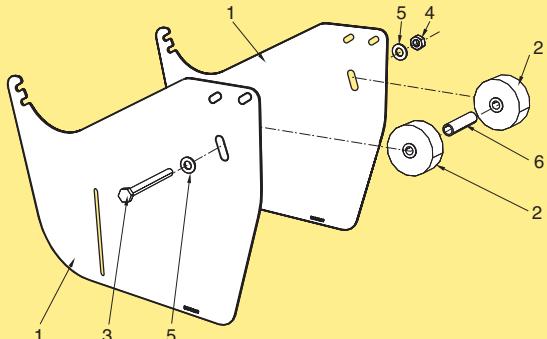
Mounting instruction for X85 system, for corresponding information concerning XM system, see instruction on FlexLink web site, Steel chain XM.

Dimensions



As an alternative, slide rail XBCR 25 PB can be used.

Rebuilding kit for end drive unit, direct drive, 5058269

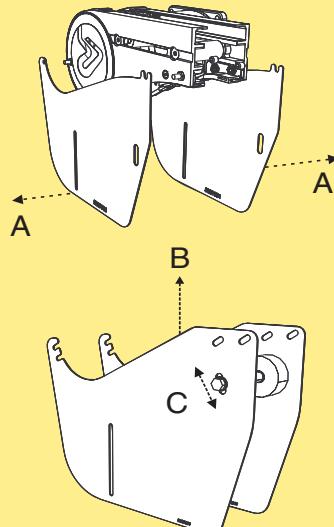


Rebuilding kit for end drive unit, direct drive

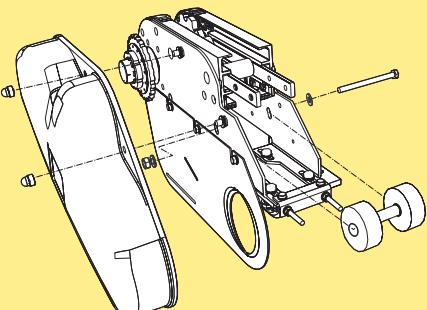
5058269

Item	Qty	Id no	Name	Item no
1	2	5058267	Slack protection	5058267
2	2	5057414	Wheel 1153-0-HPI-50 NK/K	5057414
3	1	5054359	Screw	M6S M8x100 H 8
4	1	5046629	Nut	5046629
5	2	5046416	Washer	BRB 8.4x16x1.6
6	1	5058266	Distance piece	5058266

Procedure:



Procedure:



Use existing holes in the drive unit side plates and mount the material in the rebuilding kit according to the pictures above. After mounting, adjust position of the rollers.

Existing slack protections (A) have to be removed and replaced with the new items (B), included in the rebuilding kit. After mounting, adjust position of the rollers (C).

