



Chain Drive
Notes on Use and Installation

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Please read these notes thoroughly before attempting installation, since each step is based on the previous ones. Depending on the specific application, operations referred to later in the instructions may need to be performed earlier.

General remarks

item Chain Drives are conveyor systems that are characterised by their particularly compact design. Since the chain is completely enclosed within the groove of the Line 8 profiles, forces can be transmitted safely and the system is protected against damage or interference.

The Chain Drive offers numerous applications in conjunction with the MB Building Kit System:

- as a drive unit for conveyor rollers (powered conveyor roller),
- as a transfer system for friction-conveyed workpiece carriers and products,
- as a traction device for linear slides.

The following basic articles are required for any item chain drive application:

- ½" chain with a Locking Link
- 2 x Line 8 80 Chain Reverse Units
- Line 8 chain guide profile

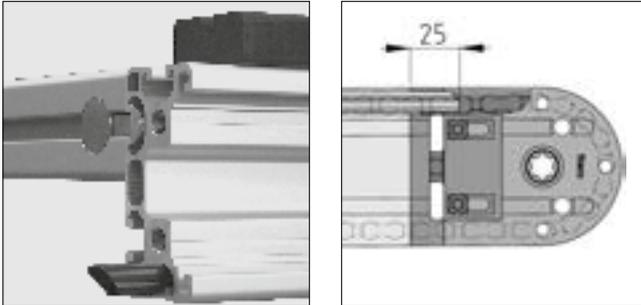
Depending on the application, other components will be required:

- Line 8 Chain Counter-Reverse Unit, for transferring the motor mounting position to any convenient position (see page 5)
- sets of bearings, sets of bearing blocks and housing profiles for powered Conveyor Roller Tracks (see page 7)
- Slide Strips with End Ramps, for Chain Transfer Tracks (see page 9)
- Chain Carrier Blocks, for driving linear axes (see page 10)

The frame profiles from Line 8 and Line 8 light grade with a height of 80 mm are suitable as frame profiles for a chain drive system.

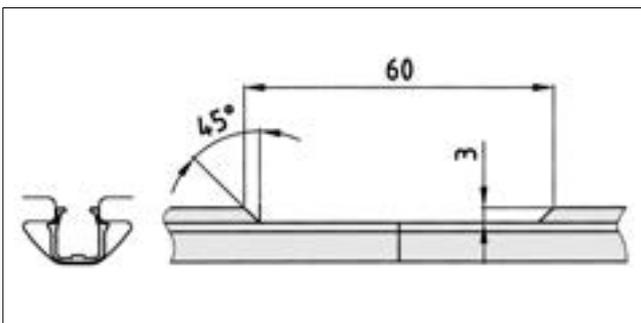
Example of basic Chain Drive construction - fitting the Chain Reverse Unit

Before the Chain Reverse Units are attached to the frame profiles, the Line 8 Chain Guide Profiles have to be inserted in the profile grooves.



The length of the Line 8 Chain Guide Profiles has to be calculated in such a way that the sides extend by at least 25 mm beyond the frame profile. This overhang is used to guide the chain into the Chain Reverse Unit.

A length of 60 mm of the chain guide profile must be machined in accordance with the illustration below: at this point, the chain is fed into the guide and the locking link applied. To facilitate these actions, the opening is on the top of the chain guide.



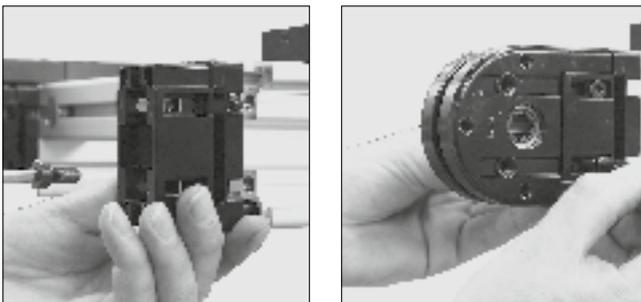
If the chain drive is to include a Chain Counter-Reverse Unit, the chain guide profile has to be interrupted around the Counter-Reverse Unit (see page 5).

The chain wheels for the Chain Reverse Unit are available with Multi-Spline Shaft Hub VK14 or with a hole to allow individual adaptation.

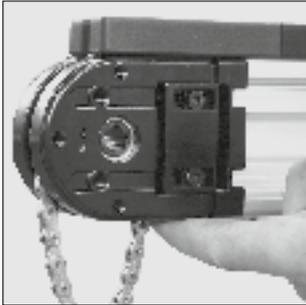
The subassembly only needs to be further dismantled if the drilled Chain Wheel hub needs additional machining.

Chain Reverse Unit clamping blocks are bolted on to the front of the frame profile. To do so, M8x16 threads will have to be cut into the core holes of the profile.

The Chain Reverse Unit is slid completely into place on the clamping block and loosely bolted in place using M6x35 clamping screws.



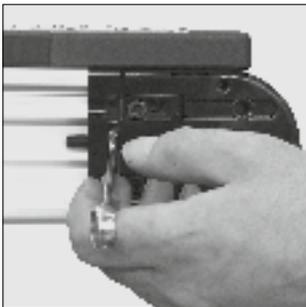
The chain is inserted into the chain guide profile at the prepared place. Use a fine punch to feed the first link through the Guide and into the Chain Reverse Unit.



Extract the two end links at the prepared place and join them using the Locking Link.

To hold the two end links in place while the Locking Link is inserted, use pointed pliers inserted between the rollers in the end links. The two-part Locking Link is inserted in the two end links and joined up.

Tension the chain using the SW13 Tensioning Nut between the clamping block and Chain Reverse Unit.



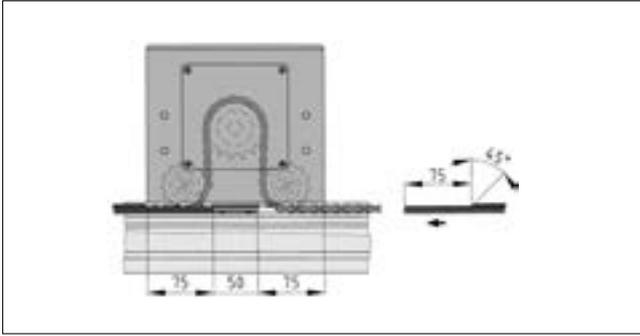
Tighten the two M6 clamping screws (MD = 10 Nm torque setting) to lock the Chain Reverse Unit in place.

Fitting the Chain Counter-Reverse Unit

The chain can be driven either at one of the Chain Reverse Units or the Chain Counter-Reverse Unit. To this end, the Chain Counter-Reverse Unit can be fitted at any point on the Support Profile. Within the Chain Counter-Reverse Unit, the chain is extracted from the Profile Groove and fed over the chain wheel which then drives it.

The chain wheel and adapter plate on the Chain Counter-Reverse Unit will need machining to fit the motor. The Chain Wheel hub can be drilled out up to \varnothing 24 mm or prepared for a \varnothing 20 mm shaft with a DIN 6885 key.

When threading the chain, leave the two Counter-Reverse Unit Wheels in the housing. The chain guide profile has to be interrupted within the Counter-Reverse Unit: In order to fit the T-Slot Nut it is necessary to completely cut out a 50 mm length and machine 75 mm of the ends of the Chain Guide Profile. Cut the upper edge of the Profile as shown in the illustration with a pair of scissors.



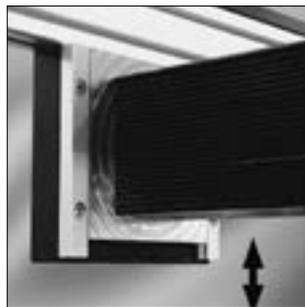
The twin T-Slot Nut is inserted in the Profile Groove of the Support Profile at the selected place and the Chain Counter-Reverse Unit bolted to it.



Ensure, however, that enough room is left to enable the motor to be slid into position.

Slide the chain wheel onto the shaft of the drive motor which also acts as its bearing.

The adapter plate has to be drilled with a through hole for the motor shaft and fixing holes as shown in the motor flange drilling template. Once the adapter plate has been bolted to the motor flange, it can be attached to the Chain Counter-Reverse Unit via the clamping elements. The chain can later be tensioned by adjusting the position of the adapter plate.

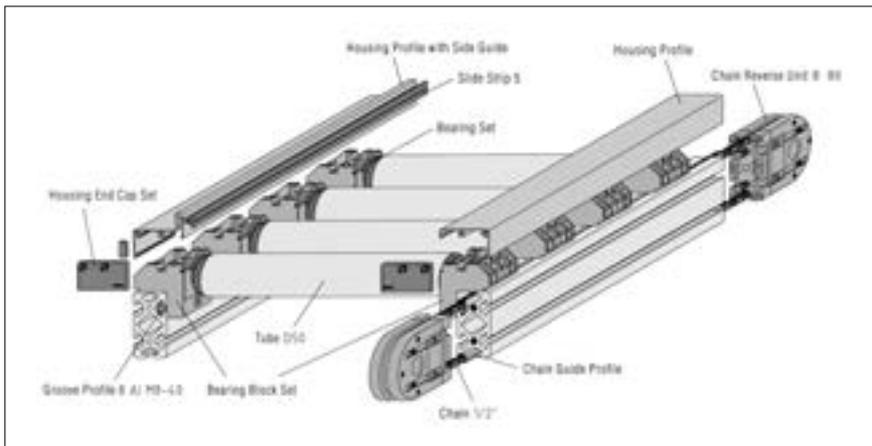


We recommend providing additional support for the drive motor, depending on the weight and torques involved.

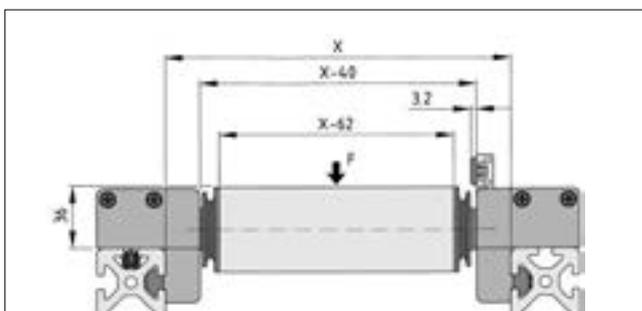


Within the Counter-Reverse Unit, the chain is accessible if the plastic Covers are removed. We recommend attaching the Locking Link through this maintenance aperture within the Chain Counter-Reverse Unit.

Constructing a conveyor system with powered conveyor rollers

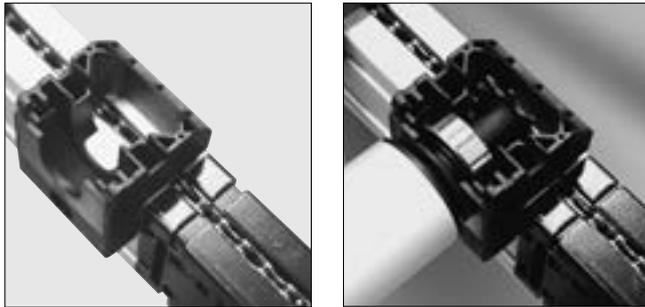


A powered conveyor system is constructed by mounting special conveyor rollers on a basic chain drive construction. The TRA 50 conveyor rollers can be made as long as required using D50 AI (max. 800 mm) or KU (max. 500 mm) Tubes. The Tubes are cut to length (X-63) and bearing sets force-fitted to them.



The bearing sets for Rollers are available as either powered versions with a chain wheel on one side or as freewheel versions for use as buffer zones in a powered conveyor system, for example.

A set of bearing blocks consists of a fixed bearing and a floating bearing, as marked on the cover of the bearing. The fixed bearing must be attached to the drive end. When attaching the bearing blocks to the frame profile, we recommend bolting to the Line 8 AI M8-40 groove profile, which provides constant axle pitch in the most simple manner. This groove profile can only be inserted in the lateral grooves from the front side of the profile, which means that it must be fitted before the Chain Reverse unit. The Rollers are inserted from above in the bearing blocks, which have already been bolted in place, and locked in place.



After the Rollers have been positioned, the bearing blocks are closed off via the housing profile which runs the length of the Roller Conveyor system. To do so, place the housing profile on the bearing blocks from the Roller side and lock in place by twisting (this can be released later by inserting a screwdriver and levering it up again).



If the housing profile is fitted with a side guide, the materials being transported can be laterally guided along the Roller Conveyor, where a Slide Strip 5 or some other guide element may be inserted and bolted in place in the integrated Groove 5 of the side guide.



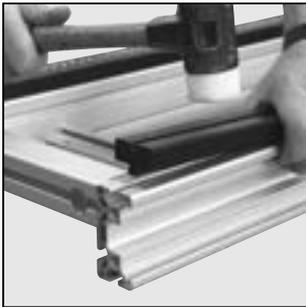
Close off the front sides of the housing profiles with Covers to prevent accidental contact with the chain wheels.

Construction of a Chain Transfer Track

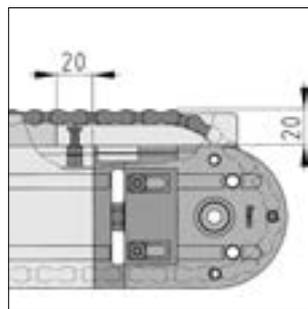
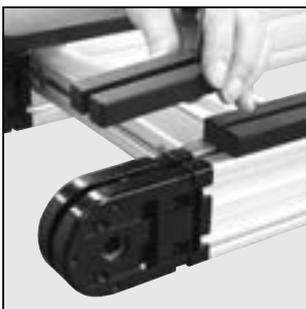
A chain transfer system consists of at least two chain drives on parallel frame profiles. In this case, the chains are extracted from the Profile Groove and guided across specially designed chain transfer Slide Strips. The materials being transported or specifically designed workpiece carriers are placed directly onto the chains.



A chain conveyor system is constructed in the same way as the basic chain drive construction except that the chain transfer Slide Strip is fitted to the transfer side.



Position the Slide Strip exactly 20 mm from the profile edge to ensure that the chain is fed across the End Ramps into the Chain Reverse Unit as illustrated. The End Ramps have to be bolted securely into the Profile Groove.



The chain is returned within the opposing Profile Groove in a Line 8 Chain Guide Profile.

In order to ensure that the drive chains of the Transfer Conveyor run in unison, a synchronising shaft is installed between the Chain Reverse Units.

Construction of a Chain Drive for linear axes

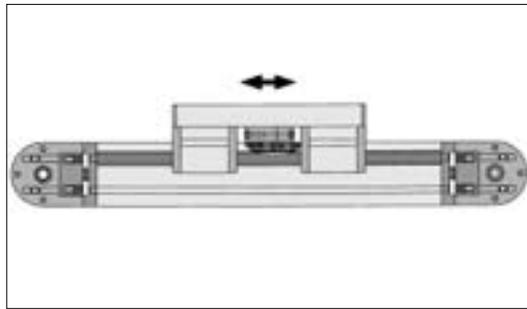
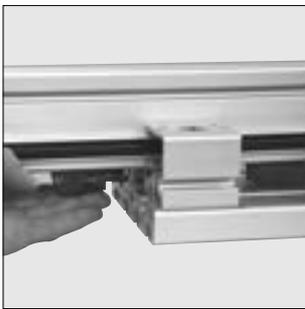
The Chain Drive can be combined with all item Linear Guides.

In this case, the Support Profiles to which the Guide Shafts or Rails are attached are also used to house the chain in a groove.

Note: The compact design of the Chain Drive and Linear Guide systems means that many of the grooves in the Support Profile are in use and should not be used for attaching to the basic elements. This fact must be taken into account when designing the Basic Rack.

Ensure the linear guide is constructed in accordance with the corresponding fitting instructions. After this, fit the Chain Drive base construction (with the Chain Counter-Reverse Unit in place) to the Support Profile.

The Chain Carrier forms a rigid connection between the Drive Chain and the Slide. First, bolt the Connecting Block to the underside of the Slide and insert the Chain Carrier at the required position in the Chain. Next, move the Slide so that it is above the Chain Carrier and bolt them together.



Maintenance and Repair

In order to ensure fault-free operation of the Chain Drive, it is essential to service it at regular intervals:

1. Lubrication

Once installation is complete, the Chain must be lubricated. As a rule, both oil and grease can be used to lubricate the chain, depending on the speeds of travel of the chain in the Chain Reverse Unit, ambient conditions and expected loads. Note that, if the chain is used as a chain transfer system, the materials being transported will also come into contact with the chain lubricant.

Depending on how the chain is used, inspect the chain regularly to ensure adequate lubrication. The chain must never be allowed to run dry.

2. Chain tension and play

Chains are traction devices and need a certain amount of play to allow them to be deflected. Set the correct amount of tension by adjusting the Chain Tensioners on the Reverse Units or by adjusting the position of the adapter plate on the Chain Counter-Reverse Unit.

After 100 hours' use, retension the chains.

The chain tension should be checked and adjusted regularly, e.g. after lubrication.

3. Chain expansion and wear

After hard wear and continuous use, the links of the chain will tend to become slightly stretched and the contact surfaces will show signs of friction-induced wear. Once the full length of the chain has increased by 3%, it must be considered worn and will need completely replacing. When changing the chain, inspect the drive wheels and, where appropriate, the chain wheels of the powered conveyor rollers for wear. If the contours of the teeth appear worn, these components must also be changed.

Product development and documentation

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item Industrietechnik GmbH
Friedenstrasse 107-109
42699 Solingen
Germany
+49 212 6580 0
info@item24.com
item24.com