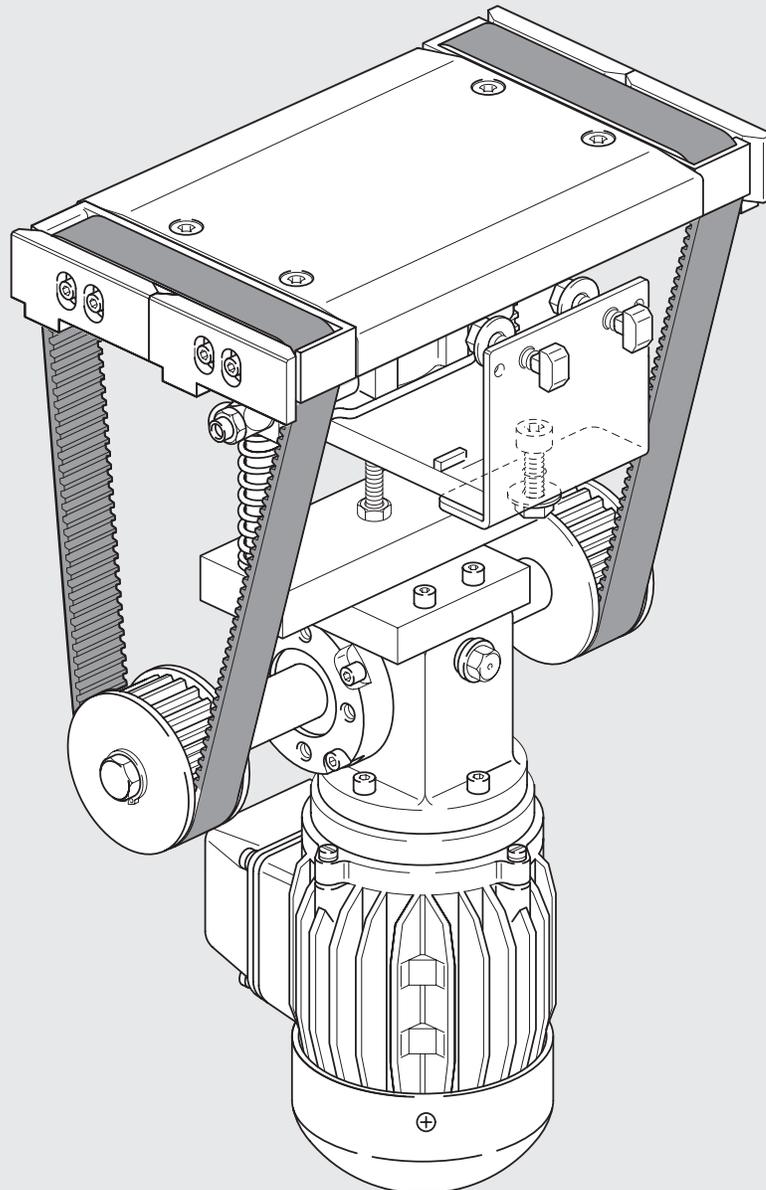


# TS*plus* Modular Transfer Systems Lift-Transfer Unit Model EQ2/U

Publication Number:  
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Installation, Operation and Maintenance



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## Module Warranty

BOSCH REXROTH CORPORATION warrants to the original purchaser the modules manufactured by us to be free from defects in materials and workmanship under normal use and service. Our obligation under this warranty shall be limited to the repair or exchange of any part or parts which may thus prove defective under normal use and service within one (1) year from date of installation by the original purchaser. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTY OF MERCHANTABILITY OR FITNESS FOR USE, AND WE NEITHER MAKE NOR AUTHORIZE ANY OTHER PERSON TO MAKE FOR US, ANY WARRANTY IN CONNECTION WITH THE SALE.

This warranty shall not apply to the modules or any part thereof that has been subject to accident, negligence, alteration, disassembly, abuse, or misuse after delivery by us. The term "Original Purchaser", as used in this warranty, shall be deemed to mean the customer to whom the modules were originally sold.

Our obligation under this warranty is limited to the modules only, and excludes wear items, such as belts, etc., and we may not be responsible for system concept, design, engineering, or function beyond this.

## Liability

In no event can the manufacturer accept warranty claims or liability claims for damages resulting from improper use or misuse of the equipment or as a result of changes made to the equipment other than those authorized by the manufacturer. The manufacturer will accept no claim in which non-original spare parts have been used.

## Environmental Protection

Always dispose of worn, damaged or obsolete parts in a responsible manner. Some components, such as gearboxes, contain lubricating oil which can pollute the environment. It is the user's responsibility to dispose of all hazardous material within the components following all local, state and federal guidelines.

All rights are held by ROBERT BOSCH GMBH and BOSCH REXROTH CORPORATION, also regarding patent claims. We retain all powers of disposition, such as for copying and/or for passing-on to third parties. **We reserve the right to make technical changes at any time without notice.** Errors and omissions excepted.

# Important Safety Information!

**IMPORTANT:** This manual must be reviewed with all equipment operators as part of your operator training program!

## SAFETY FIRST!

Important safety information is contained throughout this manual to alert you to potentially dangerous situations and help prevent accidental injury and property damage.



The safety warning symbol above has been included to warn you of hazards that can hurt or kill you and others, and/or cause serious damage to the equipment and other property. In addition, the following safety alert words are used:

### DANGER

Means that you or others will be seriously or fatally injured if instructions are not followed.

### WARNING!

Means that you or others may be seriously or fatally injured if instructions are not followed.

### CAUTION!

Means that you or others may be injured if instructions are not followed.

### Material Hazards:

Some components, such as gearboxes, contain lubricants or other materials that can represent a potential health hazard if handled, stored, or disposed of improperly.

Please contact Bosch for copies of the Material Safety Data Sheets (MSDS) for the lubricating oil used in gearboxes and other potentially hazardous materials.

### Review All Safety Information:

Please review the safety information included on this page and throughout this manual with all installers, operators, and maintenance personnel of this equipment.

## WARNING!

Please read all assembly, and maintenance instructions carefully before beginning set-up of the components in this document. Where appropriate, warning symbols  have been included in this publication to alert you of potential or impending danger.

- Be sure to read and observe all safety warnings in this document as well as those attached to the individual modules. Failure to do so could result in potential risks to your health and safety as well as those around you.
- Covers and guards have been designed to eliminate pinch points and exposure to moving chains and gears. **DO NOT** operate the conveyor or any of the other components in the system with the guards removed. Serious injury may result!
- All set-up maintenance and repair work should be performed only by properly trained, qualified personnel. All operators must be properly trained in the use of this equipment.
- A qualified electrician must make all electrical connections when wiring the components installed in the TSplus system. Be sure to follow all local, state and federal regulations when installing electrical devices of any type. The customer assumes responsibility for the control system, and must provide an EMERGENCY-OFF SWITCH or switches for all workstation operators to meet all applicable industry and OSHA requirements. In general, emergency-off switches must be present at easily accessible locations for all operators of the installed TSplus conveyor system.
- All power supplies must be LOCKED OUT before beginning maintenance or repair work of any type on the conveyor system. Proper LOCK OUT procedures include the identification of the locked out power supply with a tag to prevent the accidental restoration of power.
- TSplus pneumatic components are designed to operate in a range of 4–6 Bar (58–87 psi). It is the users responsibility to install a filtered, regulated air supply to limit the pressure to that recommended by the manufacturer. Before beginning any maintenance or repair, bleed off the pressure lines to all components to prevent unexpected or accidental movement of a system component which could result in personal injury.
- TSplus drives, returns and conveyor sections and components are designed to transport Bosch WT2, WT2/A, WT2/A-H workpiece pallets. Proper usage is defined as the transport and positioning of parts and assemblies via the workpiece pallet and fixture during the assembly process. In no instances should the pallet payload, the downward force applied to the pallet, or the total load carrying capacity of the entire system be exceeded. Exceeding published specifications will result in premature wear or system failure and may cause damage to the motor, gearbox, roller chain, seals and other components.
- **CAUTION!** Do not operate or work near mechanical equipment when wearing loose clothing. Moving components such as roller chain, drive belts, drive shafts and pallets can snag long belts, scarves, ties and other loose fitting garments, pull the worker into the equipment and cause serious, or in extreme cases, life threatening injury.
- **CAUTION!** Operators having long hair must wear appropriate head protection (hair nets, hats, and hair caps) to minimize the risk associated with working near moving machinery. Hanging hair can get caught in moving components such as roller chain, drive belts, drive shafts and pallets, pull the worker into the equipment and cause serious, or in extreme cases, life threatening injury.

**SAVE THESE INSTRUCTIONS**

# Introduction

Like all Bosch flexible assembly systems, TSplus is constructed solely from standardized modules that are precisely matched to each other. One important benefit of this modular design is that you can interlink manual and automatic work stations freely, making TSplus suitable for virtually any assembly task. The EQ2/U Lift Transfer Unit (LTU) module allows you to transfer pallets laterally off of the main conveyor line.

**NOTE:** Accumulation is not permitted on the EQ2/U Lift Transfer Unit!

## About this manual

The manual is divided into the following sections to make it easier to use:

- **Design and Detailed Description**  
Supplies an overview of the components that make up the EQ2/U. This section will familiarize you with the module.
- **Application and Function**  
Gives general information about the EQ2/U Lift Transfer Unit.
- **Technical Data**  
Provides the most important technical specifications.
- **Assembly**  
Lists step-by-step instruction for installing the EQ2/U.
- **Initial Start-up**  
Describes the final procedures for getting the EQ2/U up and running.
- **Maintenance**  
Provides information on preventive maintenance.
- **Repair**  
Gives step-by-step procedures for replacing any parts subjected to wear.

This manual describes the primary components that make up the EQ2/U Lift Transfer Unit (refer to page 5 for a description of primary components and their functions).

Other TSplus modules are available and vary according to the configuration of the system. These modules are described in separate manuals and include the following:

- Transverse Conveyor Sections
- Drives, Returns, and Conveyor Sections
- Cushioned and Standard Stop Gates, Rockers
- Proximity Switch Mounting Kits
- Accumulation Control Kits
- Lift-Position Units
- Lift-Rotate Units
- Curve Modules
- Vertical Transfer Units

Contact Rexroth for information on these and any other modules for flexible assembly.

If this module was ordered as CE compliant, please contact our applications engineering department for a copy of the latest manufacturer's CE declaration if required.

# Design and Detailed Description

The EQ2/U includes a drive motor to power the toothed belts, one spring centered 3-position pneumatic cylinder, stop bar/guide bar, protective covers, pneumatic connections and mounting hardware.

A proximity switch mounting bracket is also included. Due to the stroke, all three positions may not be sensed, as three proximity switches will not fit into the space available. It is recommended that the center "pallet stop position" be sensed and the signal lost on the up and down strokes. The proximity switch mounting bracket can also be ordered separately under part number: 3842 311 894.

In the EQ2/U (1 on Fig. 1), the motor and gearbox power the toothed belt conveyor via the belt drive gears. A double acting pneumatic cylinder on the LTU may be configured to lower the toothed belt conveyors below the transport surface to allow pallet pass-through, or raise the pallet on the toothed belt conveyors above the transport surface. In the raised position, the toothed belts transfer the pallet across a track roller section or transverse conveyor onto the receiving LTU. The pneumatic cylinders on the receiving LTU then exhaust and lower the pallet to the transport surface of the parallel line. A protective cover (2) protects the mechanism of the LTU from dirt and damage and helps prevent accidental injury. Proximity switches may be mounted to detect raised or lowered status of the LTU. The EQ2/U includes all mounting hardware and a pneumatic installation kit (3) which includes flow control valves, push-lock connectors, and a muffler.

**⚠ CAUTION!** DO NOT operate the EQ2/U with any of the protective covers removed! Serious injury may result if the EQ2/U is operated without guards!

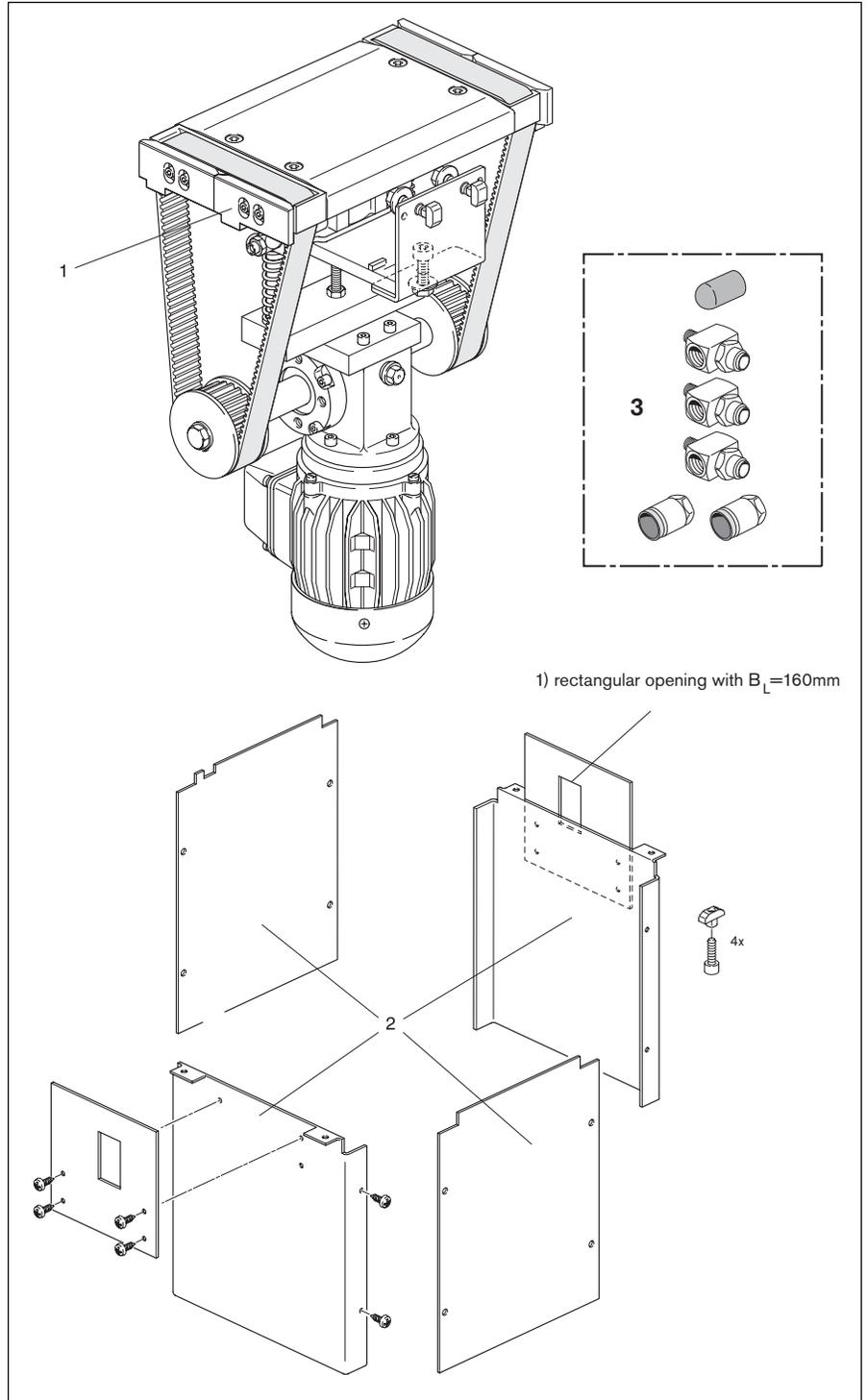


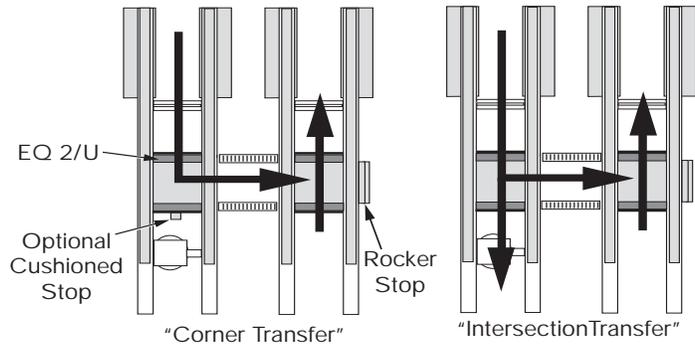
Figure 1

# Application and Function

The EQ2/U Lift Transfer Unit (LTU) is used to transfer pallets perpendicularly off the conveyor. It is used primarily at “corners” and “intersections”, but can also be used for pallet routing changes.

“Corner Transfer” requires LTU operation in the “Pallet Stop” and “Transfer” positions as shown.

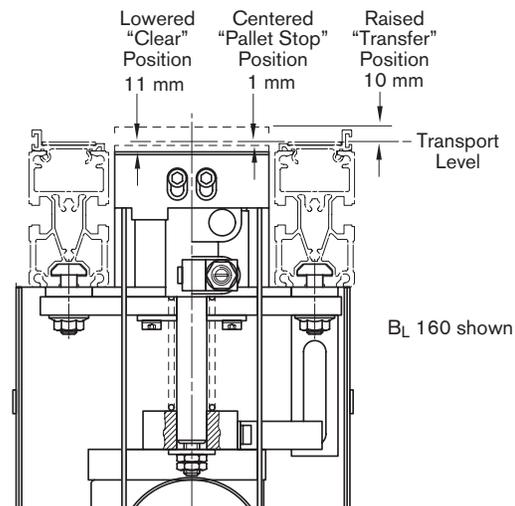
“Intersection Transfer” requires LTU operations in the “Pallet Stop”, “Transfer” and “Clear” positions as shown. Intersection Transfer permits the pallet to be directed off the main line or allows the pallet to pass through depending on the process requirement.



The LTU lift plate is powered up and down by a pneumatic cylinder. In the spring centered, “Pallet Stop” position, the LTU belts are located 1 mm below the bottom of the pallet. A stop bar mounted to the lift plate may be used to stop pallets on the LTU, or inverted so pallets pass through freely. An optional cushioned stop may be installed when pallet payloads exceed 30 kg or with transport speeds of 12 m/min or greater.

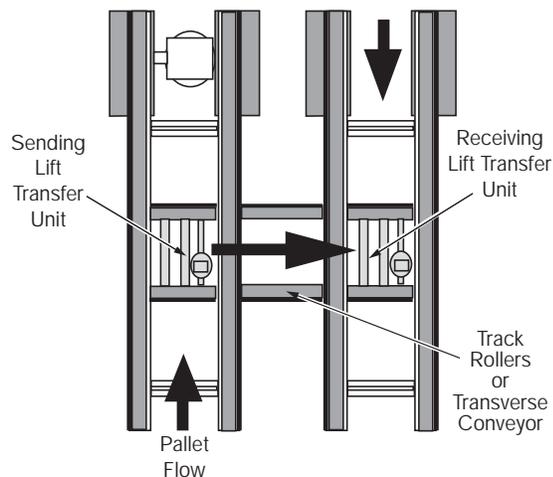
The LTU is raised to the “Transfer Position” by applying air pressure to the bottom of the cylinder. This lifts the LTU to a position 10 mm above the nominal conveyor height. As the LTU rises, the LTU belts engage the pallet and directs (or accepts) the pallet.

The LTU is lowered to the “Clear Position” by applying air pressure to the top of the cylinder. This pushes the LTU down to a position 11 mm below the nominal conveyor height. Use the lowered position when it is required to allow pallet pass through on the main conveyor at spur lines and test stations for example.

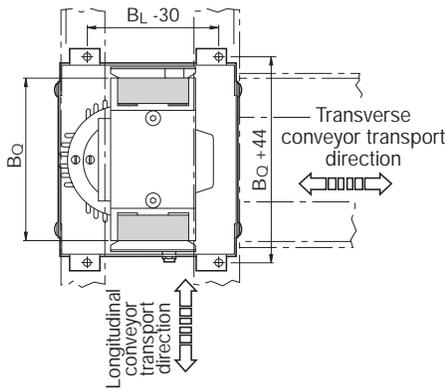


In operation, a pallet transferring from one parallel line to an adjacent line requires the use of a sending EQ2/U and a receiving EQ2/U located at each end of a set of track rollers or a transverse conveyor.

The sending LTU waits in “Pallet Stop” mode below the transport surface level until a pallet passes over the LTU and is stopped by the stop rail or a cushioned stop triggering a proximity sensor that activates the LTU. The pneumatic cylinders in the LTU then energize, lifting the pallet off the main line, across the non-powered track rollers or powered transverse conveyor, and onto the waiting LTU. The waiting LTU then lowers the pallet back to the transport surface of the parallel line.

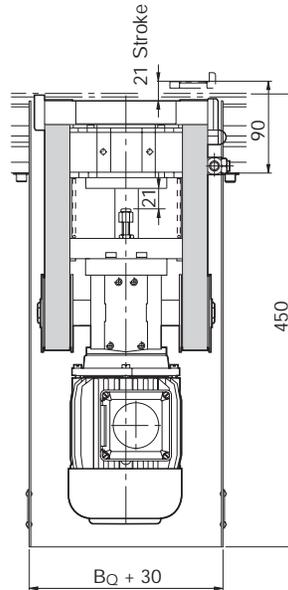
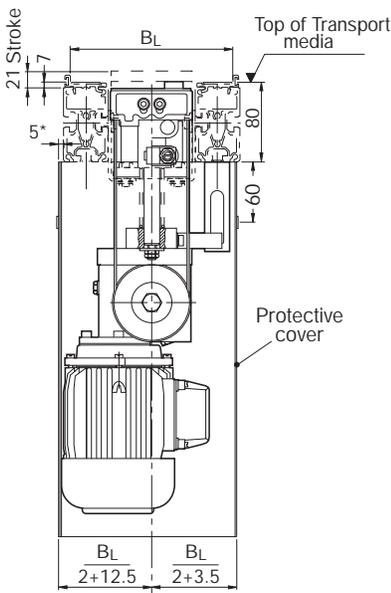


# Technical Data



Nom. M/min	Actual Speed		HP	Full Load Amps @					
	50 Hz	60 Hz		208/60	240/60	380/50	415/50	480/60	575/60
6	5.6	6.8	.12	.58	.58	.43	.38	.25	.34
9	8.3	10.1	.12	.58	.58	.43	.38	.25	.34
12	10.5	12.7	.12	.58	.58	.43	.38	.25	.34
18	21.0	19.1	.12	.58	.58	.43	.38	.25	.34

**NOTE:** Electrical data for reference only. Refer to motor data plate for actual amperage ratings



- Nominal belt speed = 6, 9, 12, or 18 m/min
- Load Capacity = 30 kg
- Motor rated power = .12 HP
- Motor RPM @ 50 Hz = 1400
- Motor RPM @ 60 Hz = 1700
- Motor electrical specifications = see motor data plate
- Air pressure = 4-8 bar
- Cylinder diameter = 50 mm
- Cylinder stroke = 21 mm
- Air fittings = 8 mm (5/16 ) push-lock

EQ2/U Available Sizes					
Transfer Length, B <sub>L</sub>	Transfer Width, B <sub>Q</sub>				
	160	240	320	400	480
160	•	•	•	•	•
240	•	•	•	•	•
320	•	•	•	•	•
400	•	•	•	•	N/A

## Module Installation

### Using T-Bolts and T-Nuts

The EQ2/U, like virtually all Bosch conveyor modules, attaches to T-slots in the conveyor profile with T-bolt or T-nut fasteners. (Fig. 3). Simply insert the T-bolt into slot (A), and tighten down the hex nut. As it tightens, it will turn the T-bolt 90° in the slot (B), creating a friction lock (C). The same principle applies to T-nuts. The maximum allowable torque is 25 Nm (18.5 ft-lbs).

**ASSEMBLY TIP:** T-Bolts also have a mark on the end of the threaded shaft that will be perpendicular to the T-slot when the T-Bolt is in its locked position.

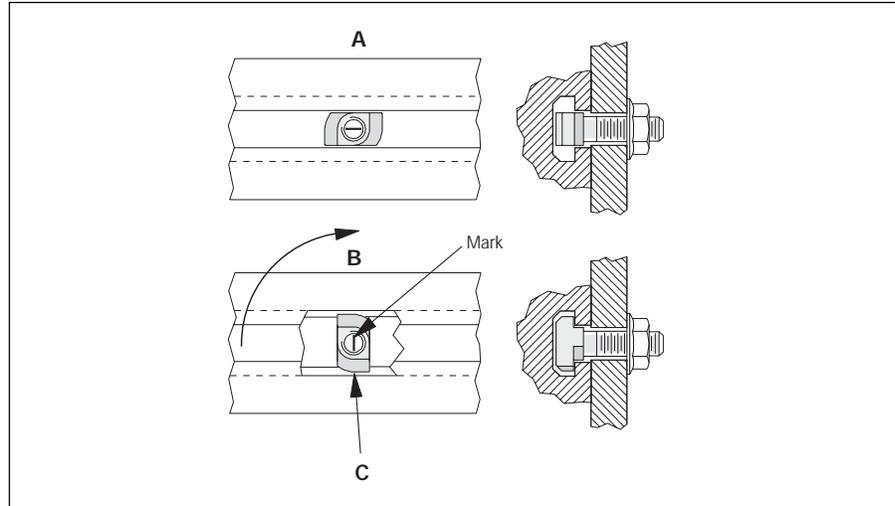


Figure 3

### Attach LTU to Conveyor Section (Fig. 4 and 5)

- 1 Mark the location on the conveyor line where the LTU is to be installed.
- 2 Remove center plate guard cover.
- 3 Loosely mount the LTU mounting brackets to the inside T-slots on the conveyor line using T-bolts and flange nuts on units with  $B_L=240$  or greater.
- 4 Lower EQ2/U from above onto the two mounting brackets.
- 5 Secure the LTU to the mounting bracket with 2 socket head cap screws and 2 flange nuts.

**NOTE:** On units with  $B_L=160$ , mount the base plate of the LTU to the bottom of the conveyor profile using T-bolts and flange nuts.

- 6 Check LTU alignment (Fig. 5), and adjust position in conveyor system as required.
- 7 Refer to Fig. 4 and tighten the M8 flange nuts in the mounting brackets and mounting plate to 25 Nm (19 lb-ft).
- 8 Reinstall the center plate guard cover.

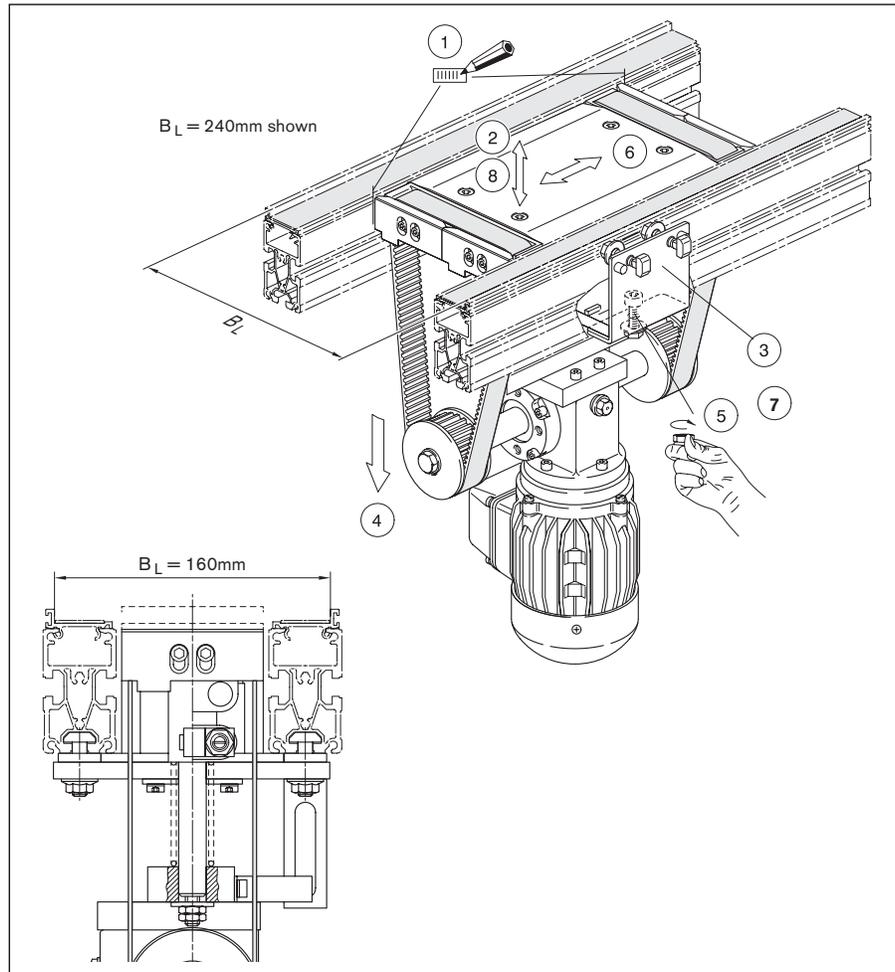


Figure 4

## Module Installation

**NOTE:** Use a straightedge to be sure that the Lift Transfer Units and track rollers are in perfect alignment from side-to-side, as shown in Fig. 5. This is critical for pallet transfer.

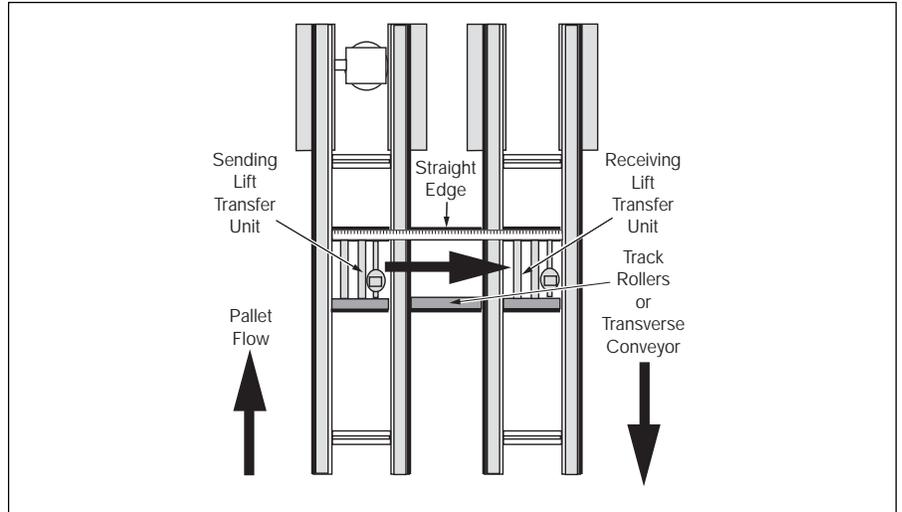


Figure 5

### Mounting Proximity Switch (Fig. 6)

**NOTE:** It is recommended that the center "pallet stop" position be sensed and the signal lost on the up and down stroke.

Refer to INSET "A" and install a proximity switch (not supplied) in the proximity switch mounting bracket. Adjust the sensing distance to 1mm.

Refer to Chapter 16 in the TSplus catalog for available proximity switches.

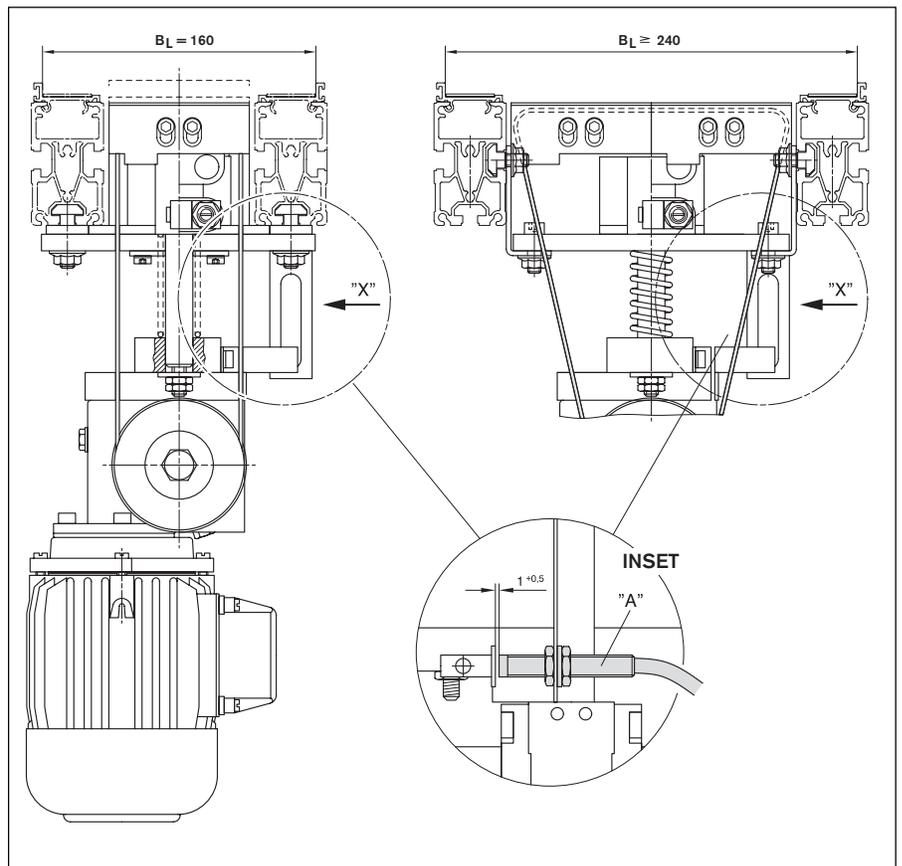


Figure 6

# Module Installation

## Set Belt Tension (Fig. 7)

**NOTE:** Incorrect toothed belt tension can lead to premature belt failure! Always check toothed belt tension prior to initial operation!

Check the tension by moving the plain flat washers (2) under the hex nuts on the guide rods. If the washers cannot be moved set the belt tension as described in the following steps.

Remove lock nuts (3). Turn hex nut (1) in or out until the plain flat washer (2) is just loose enough to turn around the guide shaft. Reinstall the lock nuts.

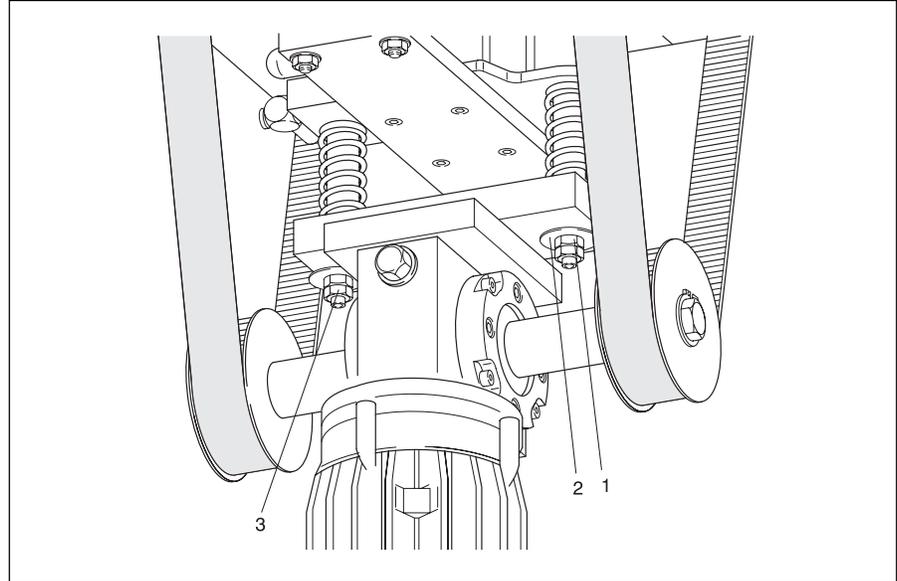


Figure 7

## Connect the Motor Wiring (Fig. 8)

For CE applications, refer to the next page for instructions on installing and connecting the terminal block.

**NOTE:** All electrical wiring must be connected by a qualified electrician.

Refer to the motor data plate and the schematic in Fig. 8 and connect the motor to a power supply.

To avoid damage to the connecting cable, position the terminal box cap so that the cable can be inserted (A) from the direction of the fan housing (B).

Briefly supply power to the motor to check for correct motor rotation. Reverse connections in terminal box to change rotation.

**NOTE:** The customer assumes responsibility for the control system and must provide an EMERGENCY OFF SWITCH for the EQ2/U.

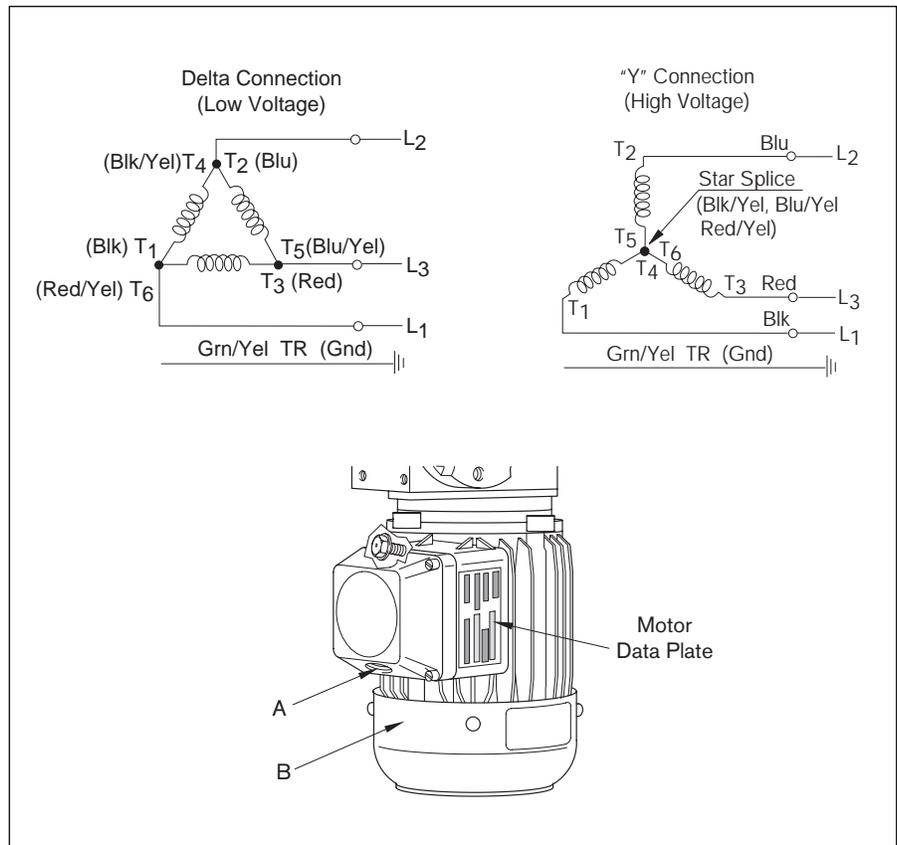


Figure 8

## Module Installation

### Electrical Connections for CE Applications

The optional terminal block (Fig. 9) is included when the EQ2/U is ordered as a CE compliant unit. Refer to the terminal box mounting instructions included with the terminal box and the following steps for CE compliant applications only.

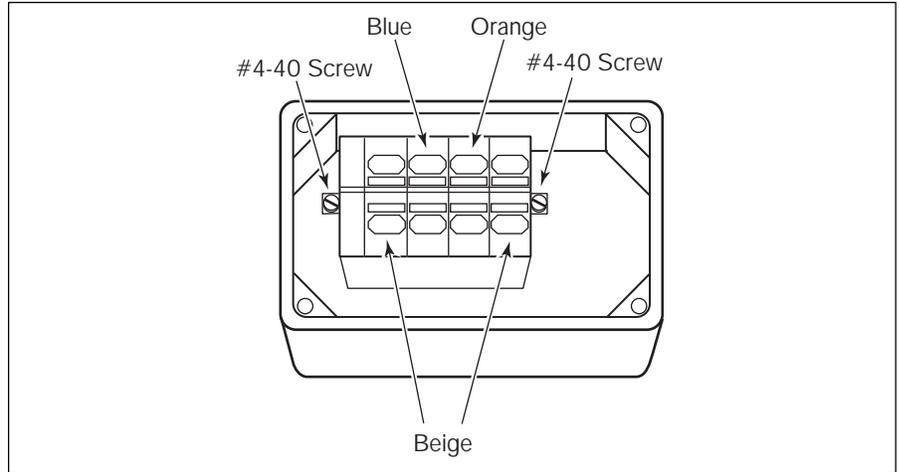


Figure 9

### Terminal Block Assembly Instructions

- 1 Attach the terminal box to the motor according to the mounting instructions included with the terminal box. See Fig. 9.
- 2 Assemble the terminal block components to produce an assembly having the following order: support block, beige middle, blue middle block, orange block and beige end block. See Fig. 9.
- 3 Secure the terminal block assembly to the terminal box using two #4-40 screws in the position shown. Tighten in the range 3 to 5 lb-in.
- 5 For a "DELTA" connection, terminate the motor and line leads as follows:
  - a Insert the red-yellow motor lead, the black motor lead and a line lead into the blue middle block.
  - b Insert the black-yellow motor lead, the blue motor lead and a line lead into the orange middle block.
  - c Insert the blue-yellow motor lead, the red motor lead and a line lead into the beige end block near the motor lead exit.
- 6 For a "Y" connection, terminate the motor and line leads as follows:
  - a Insert the black-yellow, and blue-yellow and red-yellow motor leads into the beige middle block opposite the motor lead exit.
  - b Insert the black motor lead and a line lead into the blue middle block.
  - c Insert the blue motor lead and a line lead into the orange middle block.
  - d Insert the red motor lead and a line lead into the beige end block near the motor lead exit.

# Module Installation

## Pneumatic Connections (Fig. 10 and Fig. 11)

**NOTE:** Use a 5/3 way open center position control valve (not included) to direct airflow to the module. A 2-way valve will not work because the center position is lost and the upward flow cannot be controlled.

The EQ2/U Lift Transfer Unit must be supplied with a filtered, regulated compressed air supply of 4–6 bar (58–87 psi). The customer must provide any necessary air preparation equipment.

- 1 Refer to the schematics in Fig. 10 to connect the lift cylinder for single acting "Lift Only" operation or double acting "Lift and Lower" operation.

**NOTE:** In end of line configurations where pallets do not need to pass through the LTU, the EQ2/U can be set up for Lift Only operation. The springs in the cylinders will return the LTU to the centered or "home" position.

**CAUTION!** Carefully check the diagram on the flow control valves against the pneumatic schematic to maintain proper air flow and module operation.

- 2 Remove the two plastic plugs from the lift cylinder on the EQ2/U. Connect the "A" and "B" flow controls and push-lock connectors as shown in Fig. 11 to the lower cylinder fitting.
- 3 Connect the "C" flow control and muffler (pushlock connector for double act-

ing) to the upper cylinder fitting. Make the required compressed air connections using 8mm (5/16") tubing to the push-lock connectors.

**NOTE:** If a different air line size is used, the customer is responsible for installing the necessary fittings.

- 4 Adjust the flow controls A, B, and C as described in Fig. 10 to regulate lift and lower operation as determined by pallet payload.

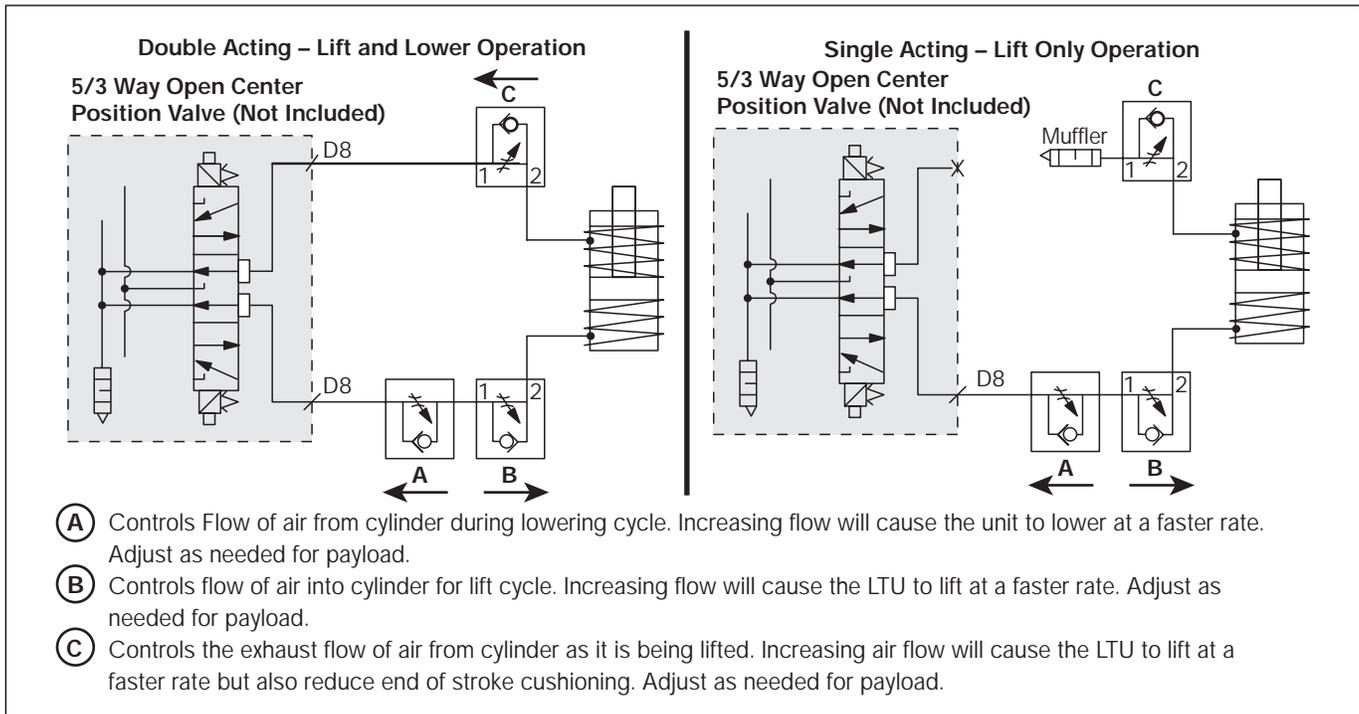


Figure 10

# Module Installation

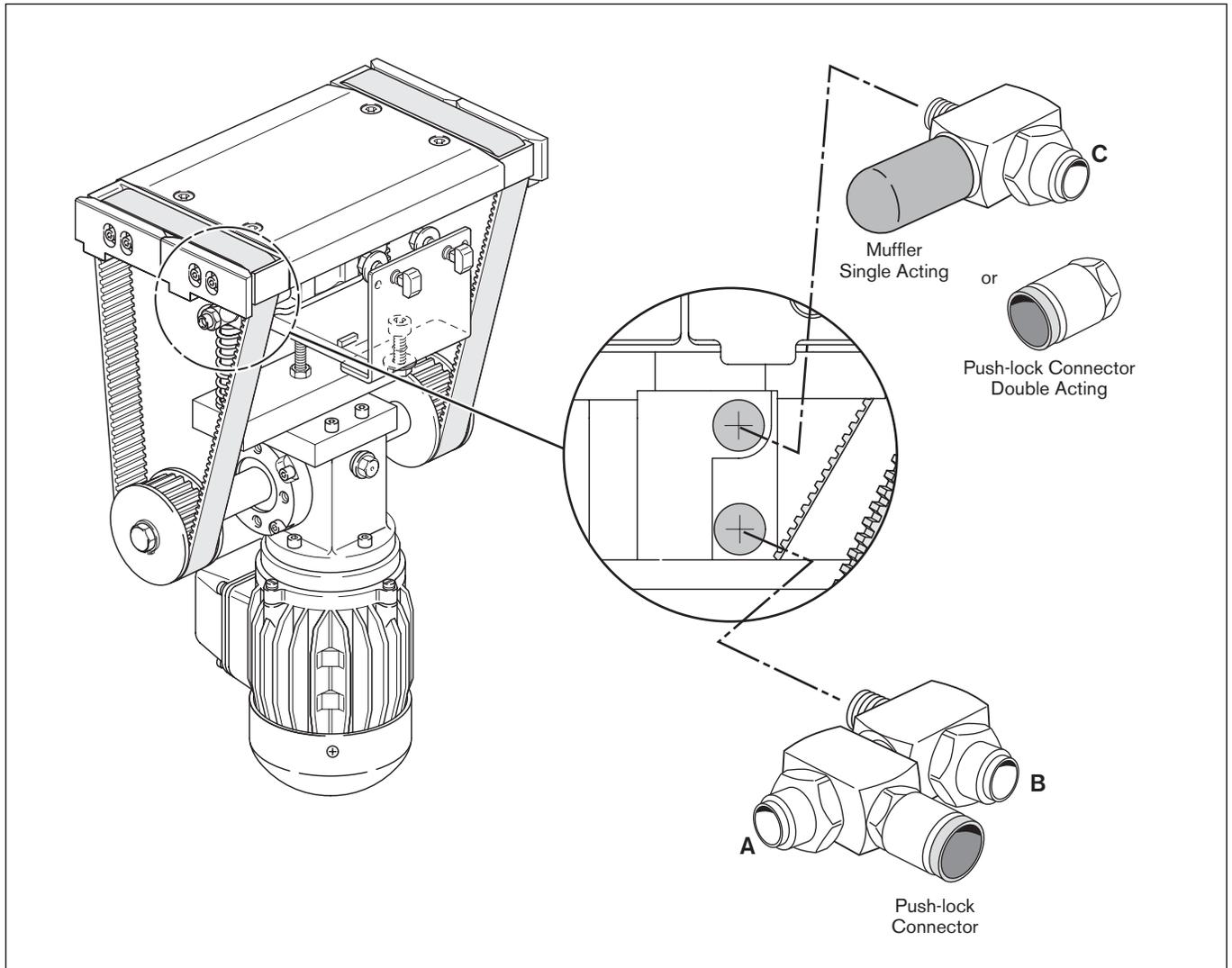


Figure 11

# Module Installation

## Lower Guard Installation

**⚠ CAUTION!** The lower guard must be installed after all installation work has been completed. Never operate the EQ2/U with any of the guards removed.

- 1 Using the sheet metal screws included with the guarding, pre-assemble the six individual sheet metal guards as shown in Fig. 12.

**NOTE:** Use the upper bore holes on the cover plate for 80 mm conveyor profiles. Use the lower bore holes for 100 mm conveyor profiles.

- 2 Loosely install a T-nut and socket head cap screw in each of the 4 corner mounting tab holes.

- 3 Lift the guard into position as shown in Fig. 13 making sure that no wires or pneumatic hoses are being pinched.

- 4 Attach the guard to the bottom T-slot in the conveyor profile using the 4 T-nuts in the mounting tab holes

- 5 For EQ2/U units with a  $B_L = 160\text{mm}$ , fasten the pneumatic hose to the guard using a 3mm diameter hole and a commercial hose clamp, Fig. 14. This will prevent damage to the hose caused by the operation of the toothed belts.

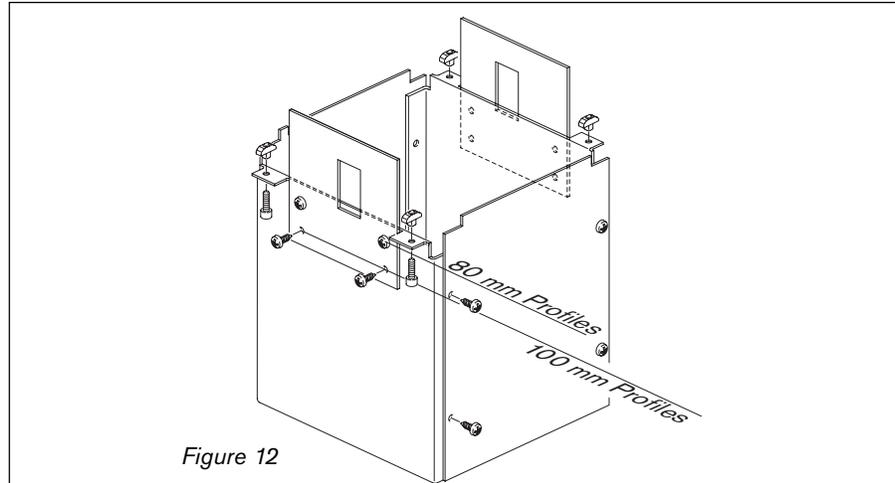


Figure 12

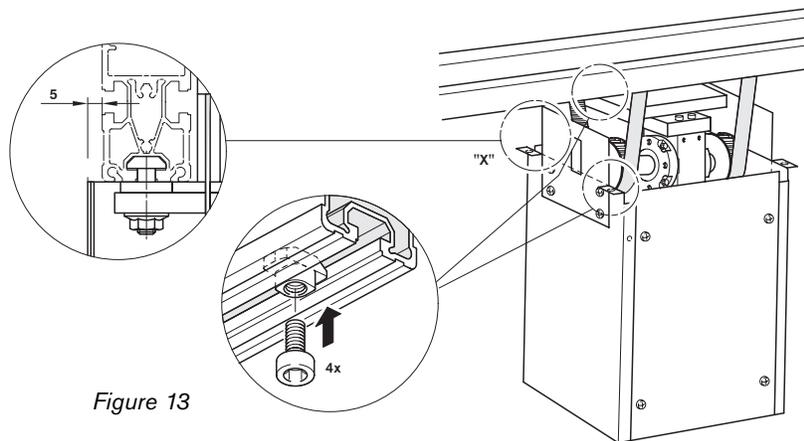


Figure 13

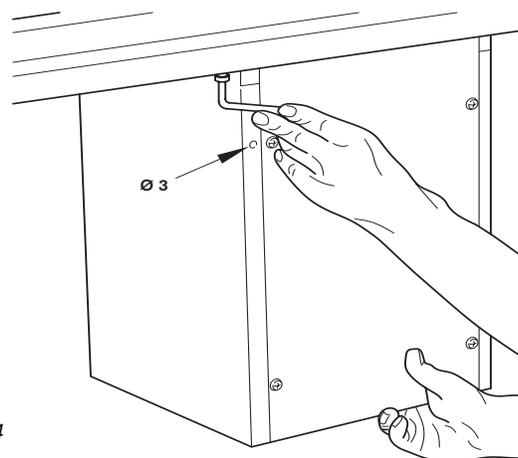


Figure 14

# Operating Instructions

The *TSplus* conveyor and EQ2/U Lift Transfer Unit is designed to transport Rexroth WT2 workpiece pallets or WT2 workpiece pallet frames with integrated fixtures built into the pallet design. Since the conveyor is modular in design and part of a larger operating assembly system, it is the responsibility of the integrator or end user to provide a control system and operating procedures. For your safety, please observe the following guidelines when operating the conveyor:

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## ⚠ WARNING!

- Use a qualified technician who is familiar with the control system during the initial start-up.
- In case of control system failure, **DO NOT** attempt to catch or in any way prevent a pallet from falling from the end of the conveyor. Use the emergency stop switch to halt conveyor movement!

- **KEEP HANDS CLEAR** of moving conveyors and pallets. Pallet accumulation creates a crush hazard between pallets, stop gates, and guide rails. A crush and pinch hazard exists between Lift Position Units, Lift Transfer Units, and Lift Rotate Units. Assembly operations should be performed **ONLY** when the workpiece pallet has come to a complete stop.

- **DO NOT** perform pressing operations on a workpiece pallet without the use of a Lift Position Unit.

- **DO NOT** operate the conveyor or any other components in the system with the guards removed. It is the operator's responsibility to make sure that all guards, covers, and other safety equipment is in place before the system is put into operation.

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## ⚠ CAUTION!

- Do not operate or work near mechanical equipment when wearing loose clothing. Moving components such as roller chain, drive belts, drive shafts and pallets can snag long belts, scarves, ties and other loose fitting garments, pull the worker into the equipment and cause serious, or in extreme cases, life threatening injury.

- Operators having long hair must wear appropriate head protection (hair nets, hats, and hair caps) to minimize the risk associated with working near moving machinery. Hanging hair can get caught in moving components such as roller chain, drive belts, drive shafts and pallets, pull the worker into the equipment and cause serious, or in extreme cases, life threatening injury.

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# Maintenance

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**⚠ WARNING!** LOCK OUT all power supplies and release pressure from compressed air lines before beginning maintenance work of any type.

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The gearbox and motor used in the *TSplus* conveyor are maintenance-free. The following cleaning and adjustment procedures, however, will help keep your conveyor in almost new condition if performed on a regular basis.

- 1 **Remove all dirt & grease.** Wipe the conveyor clean of any excess grease, dirt or any foreign substances every month, and at the same time check the conveyor unit for wear. Replace any parts showing signs of excess wear (see section titled "Repair.")
- 2 **Retighten all fasteners.** Check all fastening elements for tightness, and retighten to 18 lb-ft (25 Nm), if necessary.
- 3 **Lubricate the toothed belts.** If the application permits, apply a thin coat of No. 10 machine oil to the toothed belts on a monthly basis to help prolong belt life.

- 4 **Check adjacent components.** Make sure that idler rollers turn freely, that all components are properly aligned and that there are no obstructions.

- 5 **Check the toothed belts and guides for wear.** The toothed belts and guides should be checked for excessive wear. If belts have stretched or worn to the point where they do not fit tightly to the pulleys, or show tears, cracks, or other visible damage, they should be replaced. If guides are worn or damaged, they should be replaced. See page 10 to adjust toothed belt tension.

# Repair

## Replacing the Toothed Belt (Fig. 15)

**⚠ WARNING!** LOCK OUT all power supplies and release pressure from compressed air lines before beginning maintenance work of any type.

Toothed belts can be changed without removing the EQ2/U from the conveyor system. Always replace toothed belts in pairs to maintain smooth pallet flow. Always use genuine replacement belts from Bosch Rexroth

- 1 Remove the socket head cap screws, lockwashers and pallet guide from the side of the LTU as shown in Fig. 15.
- 2 Lift up on the gearmotor to reduce belt tension.
- 3 Slide the toothed belt off the drive pulley and upper guide rollers.
- 4 Follow steps 1, 2 and 3 above and remove the belt from the other side.
- 5 Apply a thin coat of No. 10 Machine oil to the new toothed belts.
- 6 Follow steps 3, 2, and 1 above and install the new belts on the LTU. Tighten the socket head cap screws to 4Nm.
- 7 Follow the instructions on Page 10 and tension the new belts

**⚠ CAUTION!** Replace the Lower Guard if you removed it to gain access to the gearmotor.

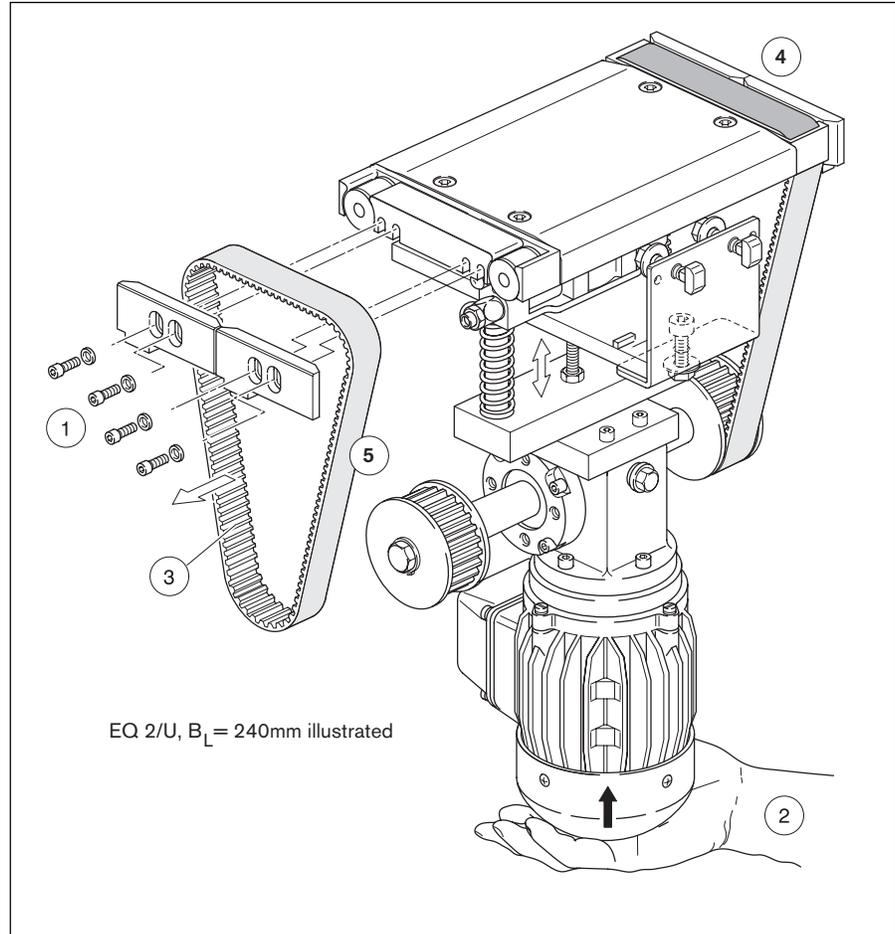


Figure 15

## Replacing the Toothed Belt Drive Pulley (Fig. 16)

**⚠ WARNING!** LOCK OUT all power supplies and release pressure from compressed air lines before beginning maintenance work of any type.

Toothed belt pulleys can be changed without removing the EQ2/U from the conveyor system. Always use genuine replacement parts from Bosch Rexroth

- 1 Lift up on the gearmotor as shown in Fig. 16. In the following steps do not let the gearmotor drop or the module may be damaged.
- 2 Remove the toothed belt from the drive pulley.
- 3 Remove the snap ring from end of the drive shaft.
- 4 Slide the drive pulley off the drive shaft. Install the new drive pulley and reverse the steps above to complete installation.

**NOTE:** Follow the steps on Page 10 and check the belt tension after replacing the drive pulley

**⚠ CAUTION!** Replace the Lower Guard if you removed it to gain access to the gearmotor.

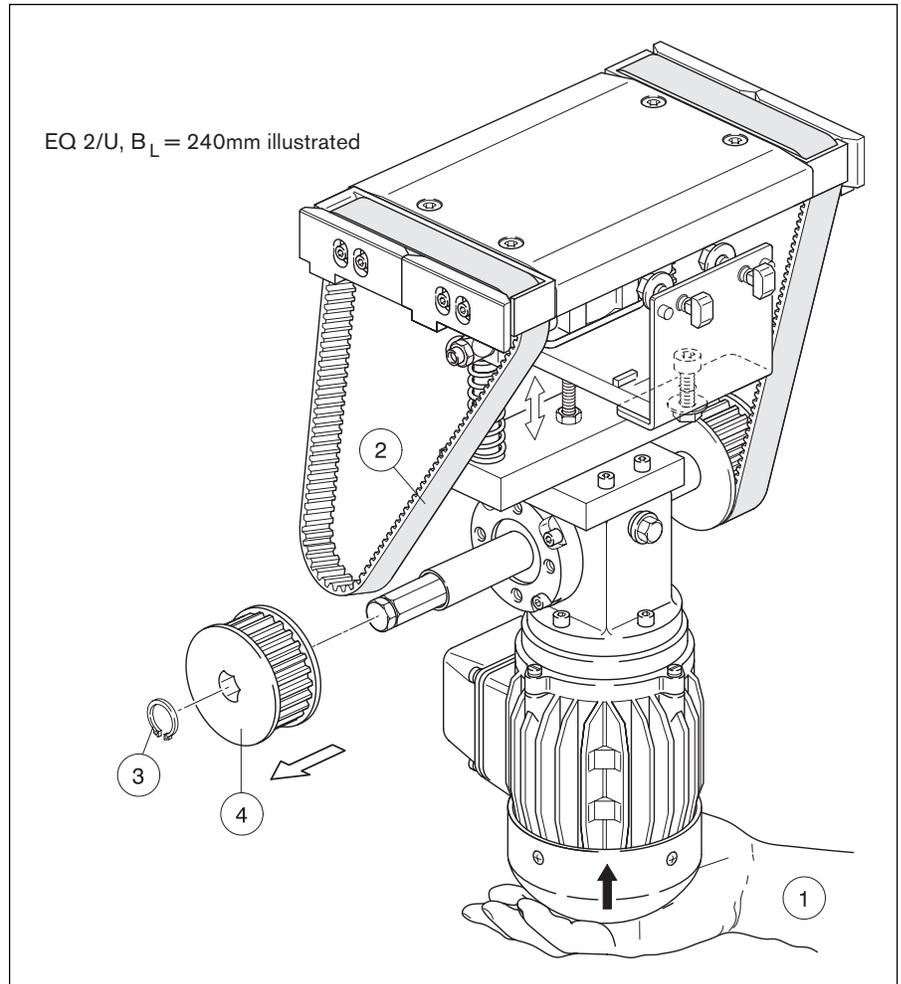


Figure 16

# Repair

## Replacing the Motor (Fig. 17)

**⚠ WARNING!** LOCK OUT all power supplies and release pressure from compressed air lines before beginning maintenance work of any type.

The motor can be changed without removing the EQ2/U from the conveyor system. Always use genuine replacement parts from Bosch Rexroth.

- Be sure electrical supply is locked out and disconnect motor wiring.
- To remove the Electric Motor, remove the four M5 socket head cap screws that attach the motor to the gearbox. Slowly lower the motor from the gearbox once the screws have been removed.
- Apply anti-sieze compound to the new motor shaft and attach the motor to the gearbox with the screws you removed earlier. Reconnect electrical wiring.

**NOTE:** Check motor for correct rotation before putting the conveyor system back into operation.

**⚠ CAUTION!** Replace the Lower Guard if you removed it to gain access to the gearmotor.

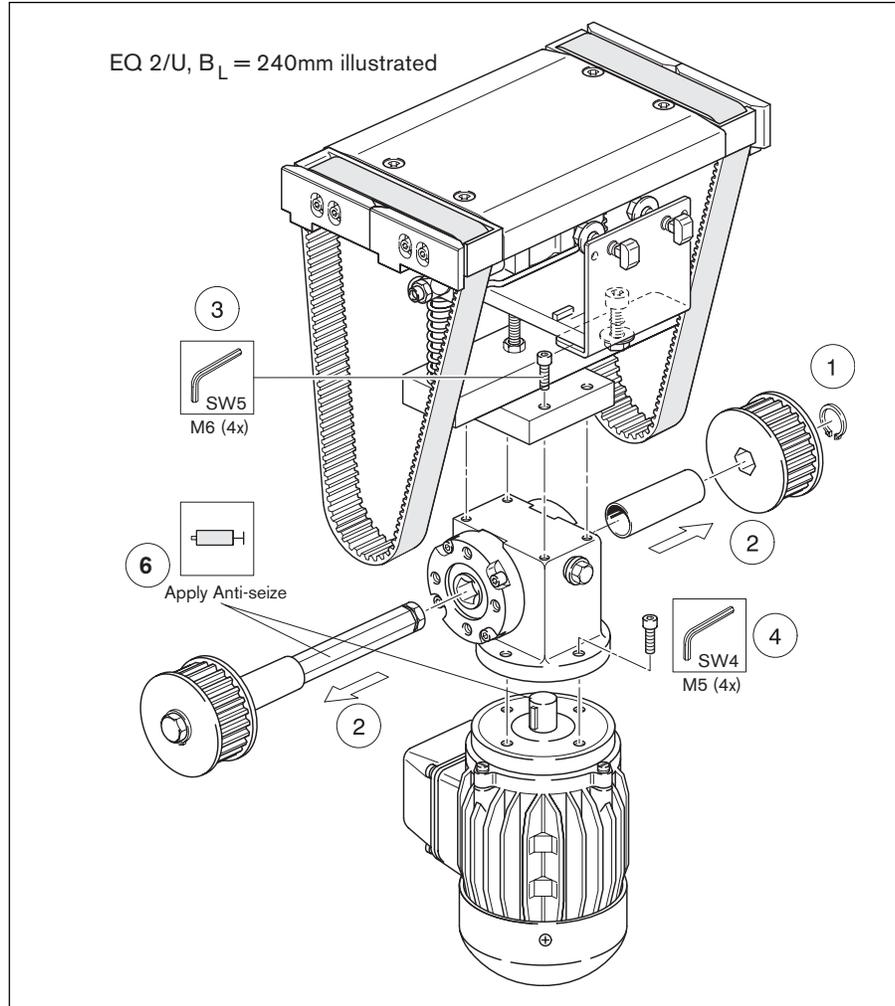


Figure 17

## Replacing the Gearbox (Fig. 17)

**⚠ WARNING!** LOCK OUT all power supplies and release pressure from compressed air lines before beginning maintenance work of any type.

The gearbox can be changed without removing the EQ2/U from the conveyor system. Always use genuine replacement parts from Bosch Rexroth.

- 1 Be sure electrical supply is locked out and disconnect motor wiring. Remove the snap ring from the end of the drive shaft.

- 2 On the opposite end, slide the drive shaft and pulley out of the gearbox.
- 3 Remove the four socket head cap screws that hold the gearbox to the Lift Transfer Unit. Slowly lower the gearbox and motor out of the LTU.
- 4 Remove the 4 socket head cap screws that attach the motor to the gearbox if changing just the gearbox.
- 5 Apply anti-sieze compound to the motor shaft and drive shaft and attach the new gearbox to the motor.

- 6 Reverse steps 4, 3, 2, and 1 to install the new gearmotor assembly into the EQ2/U.

**NOTE:** Check motor for correct rotation before putting the conveyor system back into operation.

**⚠ CAUTION!** Replace the Lower Guard if you removed it to gain access to the gearmotor.

# Repair

## Replacing the Pneumatic Lift Cylinder (Fig. 18)

**⚠ WARNING!** LOCK OUT all power supplies and release pressure from compressed air lines before beginning maintenance work of any type.

The pneumatic cylinder block should only be replaced as a unit. Always use genuine replacement parts from Bosch Rexroth.

- 1 Be sure electrical supply is locked out and disconnect motor wiring and pneumatic connections. Remove the EQ2/ U from the conveyor system. Position the unit on a bench as shown and remove the 4 socket head cap screws that hold the gearmotor assembly to the mounting plate. Remove the gearmotor.
- 2 Remove the 4 hex nuts and lift off the gearmotor mounting plate and springs.
- 3 Turn the unit over as shown and remove the cover plate.
- 4 Remove the snap ring and flat washer from the end of the lift cylinder.
- 5 Turn the unit over as shown and remove the socket head cap screws that hold the mounting plate to the pneumatic cylinder.
- 6 Carefully remove the springs and washers from the lift cylinder.
- 7 Install the new cylinder by reversing steps 6 to 1 above.

**NOTE:** Check motor for correct rotation before putting the conveyor system back into operation.

**⚠ CAUTION!** Replace the Lower Guard if you removed it to gain access to the gearmotor.

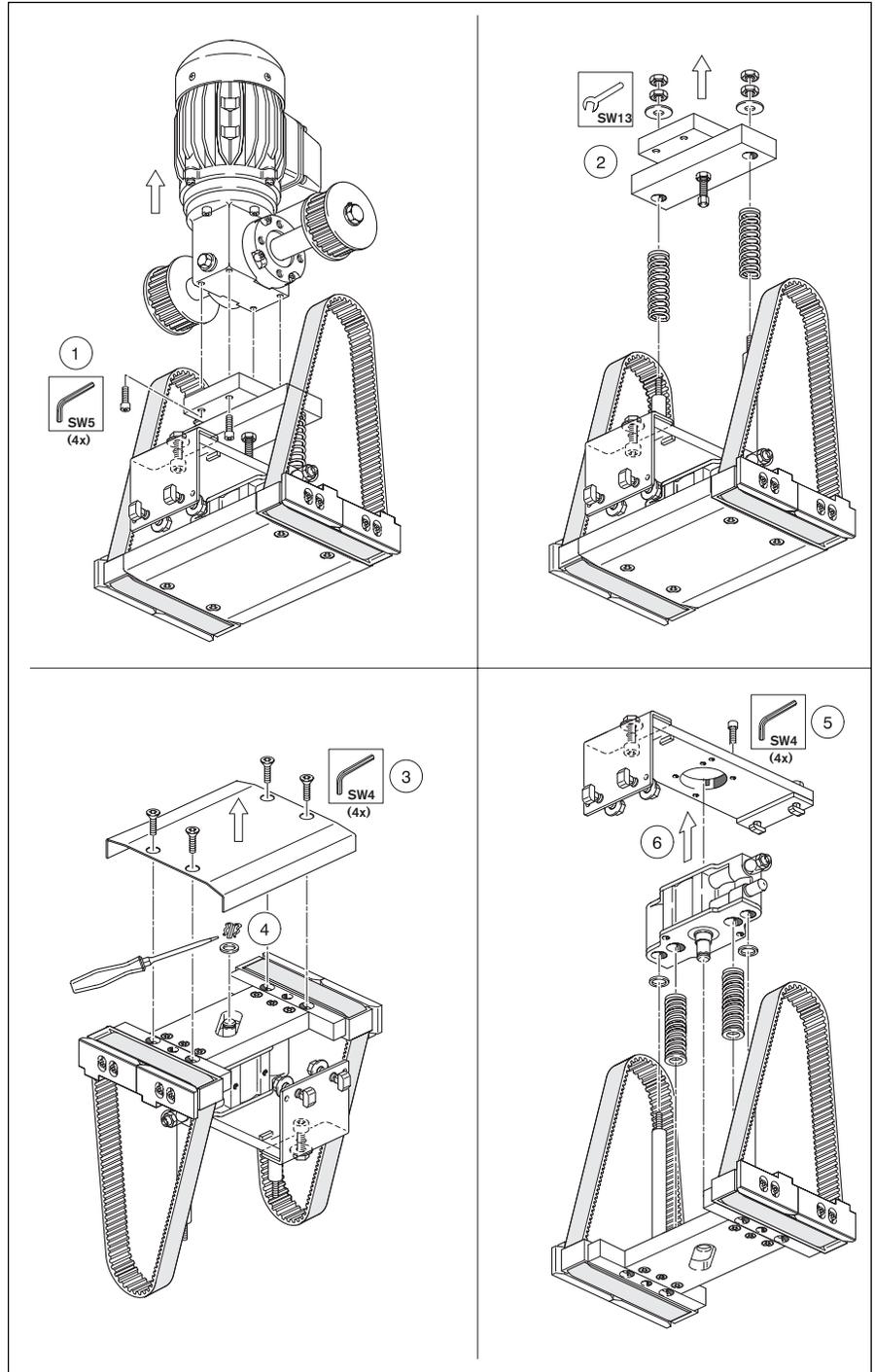


Figure 18

