BS 2/ K Transverse Conveyor

for TSplus Conveyors

Installation and Maintenance Guide

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INTRODUCTION

The BS 2 transverse conveyors are used to link conveyor modules together, such as linking a longer straight section to a KE 2 series curve. They also can be used for transport over shorter distances, such as smaller parallel layouts and side branches. In instances where a lighter load capacity is acceptable, such as connecting workstations or "feed-in" lines, transverse conveyors provide a simple solution. By using a lift-transverse unit, BS 2 transverse conveyors allow pallets to be moved between parallel conveyor lines.

Under normal operating conditions, the BS 2 transverse conveyors have a maximum load capacity of 60 kg (132 lbs) per section. The maximum load capacity can decrease if, for example, the transverse conveyor is used to drive adjacent modules, such as curves or lift units. The anti-static toothed belt is driven at nominal speeds of 6, 9, 12, 15 or 18 meters per minute, depending on the system ordered. Other options include motor mounting position (outboard right or left, for bwt = 320 or more inboard right or left).

The BS 2/K transverse conveyor is designed for driving non-powered curves, such as the KE 2/90-O and KE 2/180-O. The return end of the transverse conveyor drives the curve through the use of a round belt connecting the two units.

Unlike other BS 2 transverse conveyors, the BS 2/K is uni-directional because of its connection to the non-reversible curves. This should be kept in mind when designing and installing the conveyor system.

The BS 2/K transverse conveyor is available in lengths up to 4900mm, and in a range of widths to accommodate pallets from 160mm to 1040 mm long. Left or right hand drive is available for all pallet sizes, and pallets 320mm or larger allow a mid-mounted motor version as well.

Accessories available for the BS 2 transverse conveyors that are needed in most standard installations include the LE 1 foundation bracket (Fig. 1) and the SZ 2 leg set (Fig. 2).

LE 1 foundation bracket (210 mm)
8981 003 224

Figure 1: Foundation Bracket

SZ 2 leg set
Refer to TSplus catalog for ordering information.

Figure 2: Leg Set
TECHNICAL DATA

Width range: 160mm - 1040mm

Note: Depending on mounting location, (b) may indicate pallet width or pallet length. Also, the maximum available curve size is 400 mm, such that a BS 2/K transverse conveyor will normally have a measurement "b" of 400 mm or less.

Maximum length: 4900mm (16.1 ft)

Maximum total load capacity:
  In forward direction: 60kg (132 lbs)

Note: Load capacity will decrease somewhat when the conveyor is being used to drive a KE 2 series curve.

Transport belt type: Toothed polyurethane belt with woven polyamide surface

Motor mounting position:
  b = 160mm - 800mm: Left or right side
  b = 320mm - 800mm: Left, right, middle

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<th>Full Load Amps @</th>
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Table 1: Motor Data
BS 2/K Transverse Conveyor

Figure 3: Dimensions
(all dimensions in mm)
The major components of the BS 2/K transverse conveyor (shipped assembled) are as follows (Fig. 4):

1. Polyurethane toothed belts
2. Drive motor
3. Gearbox
4. Bearing Housing
5. Return Bearing Housing
6. Auxiliary drive shaft (for KE 2/-O curves)
7. BS 2 mounting kit for connecting to TS plus conveyor systems
GENERAL INSTALLATION PROCEDURES

T-slot connectors (Fig. 5)

The BS 2/K transverse conveyor, like virtually all Bosch conveyor modules, is connected to the transfer system using the T-slot principle. For T-bolts, insert the T-bolt into the 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, which will be perpendicular to the T-slot when the bolt is in the locked position.

Figure 5: Using T-bolts and T-nuts
INSTALLING THE BS 2/K TRANSVERSE CONVEYOR

Attaching the BS 2/K transverse conveyor to a conveyor system (Fig. 7)

The BS 2/K transverse conveyor is designed to connect non-powered curves, such as the KE 2/90-O and KE 2/180-O to other conveyor modules and straight segments, such as the ST2/B. The drive end of the curve will mount on the return end of the BS 2/K. For instructions on how to connect the curve module to the BS 2/K, please refer to the manual supplied with the curve.

For all standard installations, the conveyor connects to other modules with the connector kits supplied. The connectors are designed to provide the proper transport surface height relative to connected modules.

1. When attaching the BS 2/K to a main conveyor line, note the direction of line flow:
   - If the BS 2/K transports the pallet towards the curve, attach the return end to the main conveyor.
   - If the pallet is transported away from the curve, attach the drive end to the main conveyor.

2. For TS plus 80mm belt conveyors (ST2/B and other BS2 conveyors), attach as shown in Fig. 7-A above, using two 20 mm T-bolt on the ST2/B profile and the BS 2/K. Use a 13 mm wrench to tighten the flange nuts to 25 Nm.

3. For 100mm conveyor sections, use two spacer blocks, provided in the mounting kit, as shown in Fig. 7-B. Attach using a 20 mm T-bolt on the ST2/C profile and a 50 mm T-bolt on the BS 2/K. Use a 13 mm wrench to tighten the flange nuts to 25 Nm.
Installing leg sets SZ 2 (Fig. 8)

1. The number of leg sets used is determined by the length of the transverse conveyor. One set should be installed under each end, and additional leg sets should be installed under cross connectors as needed. Any span greater than 2000mm should have at least one leg set installed mid-length.

2. The gussets on the leg sets are attached to the T-slots on the bottom of the conveyor rails with T-bolts. End leg sets will have gussets on only one side (facing away from the ends). Middle leg sets will have gussets on both sides.
Leveling and securing the conveyor system (Fig. 9)

1. Starting at the drive end, use a level to verify that the conveyor is properly aligned, first from side to side, then lengthwise. Recheck both directions after making any adjustments. The length should be checked at no more than two meter intervals between and at leg sets.

2. If any adjustment is needed, use a wrench to turn the spindles of the leveling feet (inset) accordingly.

3. Once the legs are adjusted to the proper height (the conveyor is level and all feet are in firm contact with the floor), tighten the counter-nut "A" to lock the feet at their proper height.

4. Check the conveyor for straightness along its length using an alignment cord.
Installing foundation brackets LE 1 (Fig. 10)

1. Attach the brackets to the support legs using the included T-bolts and flange nuts.

2. Secure the brackets to the floor using foundation anchors.

3. Additional measures may be required in areas where high seismic loads are encountered.
BS 2/K TRANSVERSE CONVEYOR MOTOR CONNECTIONS

Important! All electrical wiring must be connected by a qualified electrician and in accordance with local electrical codes!

Note: The customer assumes all responsibility for the control system, and must provide an EMERGENCY-OFF SWITCH for the BS 2/K transverse conveyor.

Before starting up the conveyor for the first time, recheck all mounting hardware for tightness.

Locate the data tag on the motor and determine the wiring connection used (Y or Delta) by referring to the Voltage information box on the data tag, then follow the appropriate connection schematic at left.

Note: The rotation marks in Figures 11b and 11c apply to the rotor shaft only. To reverse the direction of rotation, transpose any two or two pairs of leads.

To avoid damage to the power cables, make sure that the cables are long enough to reach the cable input on the terminal box (Figure 11d) without stretching, and secured in such a way as to prevent them from interfering with other objects.
REGULAR MAINTENANCE

CAUTION! Lock out all power supplies before beginning maintenance work of any type!

The following cleaning and adjustment procedures will help keep your conveyor in optimal condition if performed on a regular basis.

1 The sealed gearbox is maintenance free. It should, however, be inspected regularly for damage or oil leakage caused by excessive wear.

2 To ensure that the motor remains cool enough, remove all dirt and dust from the motor surface, intake opening, fan hood, and between the cooling fins at least once per week.

3 Check the toothed belt for wear and damage, especially at the arrow shaped weld joint. Wipe the conveyor clean of any excess grease, dirt, and any foreign substances regularly. Replace any parts showing signs of excess wear.

Regularly check that all connectors and fasteners are properly tightened and re-tighten to their proper torque as needed.
REPAIR PROCEDURES

Replacing the toothed belt (Fig. 13)

NOTE: Before removing the old toothed belt, verify that the replacement belt is of the proper length! An improperly sized belt will cause poor performance and may cause damage to the conveyor system.

CAUTION! Lock out all power supplies before beginning repair work of any type!

1. Loosen the four M5 x 30 socket head cap screws on each side of the drive assembly.

CAUTION! If the drive and return units are not kept level when removing or installing them, they may cause damage to the unit by bending or twisting the components. Also, the two sides may separate and fall, potentially damaging the unit and causing personal injury!

2. Carefully lift the drive unit upwards, keeping it level!

3. "A" If the motor is mounted in the center of the conveyor, remove the old toothed belt sideways over the belt guides. "B" If the motor is side mounted, separate the two halves of the drive unit at the hexagon shaft. Remove the old toothed belt by sliding it sideways over the belt guides.

4. Loosen the four M5 x 30 socket head cap screws on each side of the return assembly.

5. Carefully lift the return unit upwards, keeping it level!

6. Slide off the old toothed belt sideways over the belt guides.

7. Carefully remove the belt guide profile by pulling up on the outside edge. It may be necessary to pry it out by carefully inserting a screwdriver into the end of the belt profile and pulling up gently on the outer edge of the guide profile.

8. Slide the belt guide blocks (4x) out the ends of the profiles. Note that it may be necessary to remove the inner set of rollers from the lower drive and return assemblies.

8. Remove the old toothed belt.

Installing the new belt:

To install the new belt, reverse the steps above, making sure to:

1. Verify that the new toothed belt is properly lubricated. Oil the toothed surface of the belt with a high quality spindle oil, if necessary.

2. Make sure that the pointed end of the arrow shaped weld is pointing in the direction of movement, i.e. towards the drive unit.

3. Carefully lower the drive and return assemblies into place, keeping them level! Secure with socket head cap screws, alternating between sides and diagonally opposite corners on the assemblies.
Figure 13: Toothed belt Replacement