INSTRUCTION FOR USE AND MAINTENANCE

TLM 2000

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1. Important remarks

The following instructions serve as technical documentation for the manufacturer of the final product. TLM company is the supplier of the transfer system subset TLM 2000. The manufacturer of the final product is responsible for ensuring that all safety equipments are fitted and working, that regularly checks are carried out, that any danger due to moving machine parts (pinching, jamming) is monitored and the documentation is complete. The machine in which the subset is incorporated may not be commissioned until all terms and conditions laid down by 98/37/EU directive have been implemented.

2. Intended purposes

The linear transfer elements TLM 2000 are used to move and position workpiece carriers following the requested configuration for the final customer. They are intended to be incorporated in the complete line of the customer.

3. Technical data

- Maximum weight per workpiece carrier: 10 kg
- Maximum weight in accumulation per conveyor: 100 kg
- Rated voltage of motors: 380V Three-phase
- Motor power: 
  \( V = \text{belt speed} \)
  - \( V_9 \text{m/mn} = 0.25 \text{ Kw} \)
  - \( V_{15} \text{m/mn} = 0.37 \text{ Kw} \)
  - \( V_{20} \text{m/mn} = 0.55 \text{ Kw} \)

Compressed-air supply = 5 to 6 bars

⚠️ All pneumatic cylinders must be equipped with flow rate controllers.

- Sound emission: < 80 dB
- Weight of elements: see catalogue « Linear modular transfer »

⚠️ Any overweight can cause a premature wear of the belts or other elements.

4. Conditions of use

The transfer system elements TLM 2000 can be used in a normal industrial environment like an assembling workshop or equivalent in a dry environment.

Operating temperature : 0°C / +60°C
## 5. Installation

### 5.1 Delivery of the goods

Check if the packing and the material are not damaged at the time of receipt.

### 5.2 Transfer elements

At the time of handling the elements, be careful to prevent shocks, especially on the motor.

1. Join the sections of the transfer according to the layout of the line with the delivered fastening elements.
2. Level the conveyor components perfectly, while verifying that the belt touches the sliding profile.
3. Ensure the system is perfectly stable. For this, according to the layout of the line, you may make a floor fixing.
4. Control the protective circuit breakers on each motor.
5. Control the direction of the belts on the unloaded conveyor.
6. Adjust the cams and the selectors using a workpiece carrier.
7. Start the transfer with all workpiece carriers.

### 5.3 Stopper

1. Center the stopper in relation to the two transfer profiles.
2. Adjust sensors of workpiece carriers.
3. Control the lubrication of the shaft (see maintenance).
4. Adjust flow rate controllers.

### 5.4 Positioning unit

1. Center the positioning unit in relation to the two transfer profiles.
2. Adjust sensors of workpiece carriers.
3. Control the lubrication of the shaft (see maintenance).
4. Adjust flow rate controllers.

**Nota**: For heavy positioning units, control that the sliding cam is sufficiently greased. (See « maintenance »).
All different kinds of positioning unit have moving elements which are piloted by pneumatic cylinders, consequently they will be correctly protected on the final machine to prevent pinching or jamming.

5.5 Workpiece carrier

1. Control the perfect function of pins.
2. Control that nothing exceeds the lower part of the workpiece carrier.

6. Safety

The pneumatic and electric connections will be done by skilled persons.

Check the voltage of connection and the motor protection.
Ensure the perfect stability when setting up the system and fixing transfer elements. For this, according to the layout of the line, it may be necessary to do a fixing to the floor.

⚠️ All different kinds of positioning unit have moving elements which are piloted by pneumatic cylinders, consequently, they will be correctly protected on the final machine to prevent pinching or crusching.
Follow the maintenance recommendations mentioned in this instruction #7.
Switch off the machine before maintenance.

7. Maintenance

7.1 Transfer elements

After 100 hours:

- Grease the chain.
  - Use the grease, ref. 800 00 006 (Kluber Structovis BHD spray).
- For direct drive without chain, no greasing necessary

Every 200 hours:

- Remove dust from the line.
  - Use the product, ref. 800 00 003 (plastic polish Air Industry 2101).
Every 500 hours:

- Grease the chain.
- Visual control of the wear of the belts.
- For direct drive without chain, no greasing necessary

7.2 STOPPER

Every 1000 hours:

- Grease the stopper shaft, ref. 120 23 011 (operate).
  - Use the grease, ref. 800 00 002 (Crown ref. 7041 aerosol).

7.3 POSITIONING UNIT

All types except the heavy positioning unit.

Every 1000 hours:

- Deposit a grease film on the locating pins.
  - Use the grease, ref. 800 00 002 (Crown ref. 7041 aerosol).
  - Control the lubrication of the guide columns.

- Change the pins (Locating/centering).
  - Remove the old pins from the press.
  - Place the new pins in the press, using a positioning unit guide bush ref. 120 03 006 as support (insert the pin into the guide bush and position everything on the positioning unit plate).

7.4 HEAVY POSITIONING UNIT

Every 1000 hours:

- Lubrication of the sliding cam ref. 120 08 010 (grease Gulf Crown EP2).

- Deposit a grease film on the locating pins.
  - Use the grease, ref. 800 00 002 (Crown réfé. 7041 aerosol).
• Change the pins (Locating/centering).
  - Remove the old pins from the press.
  - Place the new pins in the press, using a positioning unit guide bush ref. 120 03 006 as support (insert the pin into the guide bush and position everything on the positioning unit plate).

7.5 OTHER TRANSFER COMPONENTS

The other components do not require any maintenance.

8. Dismantling

8.1 DRIVING UNIT

Gearmotor replacement (driving with chain)

• Pull the shaft 120 02 019 out of the gearmotor on the side of the drive sprocket.
• Remove the chain adjuster 120 02 027 and the spring 120 02 209.
• Unscrew the 4 motor fixations screws 120 02 025.
• Unscrew the chain case 120 02 026 and fasten it on the new motor.
• To reassemble, execute the operations in reverse order, making sure to grease the shaft 120 02 019.
• Grease the chain (see maintenance).

Gearmotor replacement (driving without chain)

• Dismantling
  • Remove the screw Chc M5x30 which keeps blocking axis 120 11 007.
  • Remove the motor and the plate (120 11 002 or 120 11 003) of the motor shaft 120 11 011.
  • Remove the plate 120 11 002 or 120 11 003 while unscrewing the 4 screws Fhc M6x12.
• Reassembling.
- Grease the shaft 120 11 011
- Fix the plate (120 11 012 or 120 11 013) on the motor with 4 screws Fhc M6x12.
- Put the motor on the motor shaft 120 11 011.
- Position the groove of blocking axis 120 11 007 in the notch of the plate (120 11 012 or 120 11 013).
- Slide them to position the blocking axis in the countersink of the plate (120 11 005 or 120 11 012)
- Tighten the screw Chc M5x30 which keeps the blocking axis 120 11 007.

**Chain replacement**

- Dismantling the protective chain 120 02 015.
- Pull the shaft 120 02 019 out of the gearmotor on the side of the drive sprocket.
- Remove the chain adjuster 120 02 027 and the spring 120 02 209.
- Cut the chain.
- Reassemble a new chain with connecting link 120 02 204 (be careful to the way of mounting of the connecting link)
- To reassemble, execute the operations in reverse order.
- Grease the chain (see maintenance).

**Belt replacement**

- Bevel the two ends of the belt with the same bevelling devise.
- Place the belt on the transfer.
- Tighten the belt until the two bevels are juxtaposed.
- Clean the two ends of the belt with alcohol.
- Put glue on the two bevels. (Expiry date of glue = 1 month after opening, write the opening date on the bottle). (Do not keep expired bottles of glue).
- Place the press straight in relation to the belts.
- Fix the belt to the press.
- Use 2 pieces of belt to align the bevels correctly.
- Close the press and heat the bevels during 35 minutes at 120°.
- Let the press cool down during 30 min.
- Remove the surplus of glue with an abrasive cloth.
- Release the belt.
**Length of the belt:**

- Please refer to the technical user guide corresponding to the chosen unit.
- Take into account the length of the bevelling.
- Do not modify the length of belts. Use the belt welding kit ref. 900 00 002.

### 8.2 LIFT POSITIONING UNIT

- Use the tool 800 23 001 to center the columns on the plate.
- Grease after reassembling (see maintenance).

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**9. Liability**

TLM company cannot be held liable for damage or injury resulting from unauthorised modifications to various elements and especially safety equipment.

Only original spare parts can be used for the maintenance and repair work.

Elcom cannot be held liable for any malfunctioning if spare parts not given prior approval by Elcom have been used.

TLM reserves the right to make improvements and technical modifications without notice.

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## List of Spare Parts

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<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Motor 9 m/min</th>
<th>Motor 15 m/min</th>
<th>Motor 19 m/min</th>
<th>Chain</th>
<th>Belt</th>
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