Installation and operating instructions / Maintenance and lubrication

1.0 Accessories

These **installation and operating instructions** include the following:

1. 1 brochure
2. 1 general description of the unit
3. 1 electrical connection plan

which are attached to the drive in a protective envelope when supplied. The **documentation** is available in German, English and French.

ATTENTION!
Read all documents carefully before putting into operation and assembly. An appropriately skilled member of the customer's staff must perform installation and electrical connection work! Technical operating data and other important information is attached to the drive with adhesive film and must be followed.

2.0 Delivery condition and warranty

2.1 Warranty

All linear actuators undergo a detailed test run before delivery and are checked under load in accordance with the order data and marked with the CE sign. During the warranty period, the linear actuators may only be opened or changed with our approval, otherwise, we shall not be liable for warranty claims.

2.2 Repair
If repairs are necessary, we recommend that you send the unit to Messrs. Franz Morat KG or to the appropriate foreign representative. In urgent cases, a service technician from the manufacturer's works can be requested at short notice.

2.3 Lubrication
The linear actuators are filled with a synthetic lubricant ready for operation. The service life of this lubricant is the same as that of the unit under normal operating conditions. (Please refer also to point 4.0 maintenance and lubrication).

2.4 Connection cables
The standard linear actuators have a ready-to-connect connecting cable approx. 1 m long (other cable lengths or special cables are optionally available)

3.0 Installation and electrical start-up

3.1 Important notices for installation:

- For a long service life, it is important to observe the following:
- The force acting on the piston tube should act centrically and should center itself (radial forces on the piston tube are not admissible).
- The unit must be secured **without distortion** between the fixing points (independent of fixing version).
- The piston tube is not secured against distortion, which means that stroke force or axial movement does not occur until load is connected (the piston tube is retracted when delivered.
- In the case of stroke speeds of over 100 mm/s**, the switching time of a controller should not exceed 60 ms**, otherwise the drive runs up to the safety limit switch due to the excessive after-running (forced separator),. (see electrical start-up 3.2)

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3.2 Electrical start-up

The following always applies for the first electrical start-up:

- Connect **all** cables **in accordance with the circuit diagram**

- Ensure that the operating voltage is correct.

- Determine the **lifting direction** by using Jog mode.

- If necessary, reverse the lifting direction by swapping the supply lead phases.

Al linear actuators type Mini have built-in, non-adjustable operating limit switches to suit the ordered length. Except in the case of Mini 0, an additional safety limit switch (forced seperator conforming to VDE 0113) is installed at the slight distance (appr. 8 mm) downstream of these limit switches to protect the drive against destruction. If this limit switch is actuated by overrunning (which normally should not happen), the lifting rod should be unscrewed manually from this area so that the interrupted circuits is isolated again.
In case of actuators with helical potentiomter the lifting rod should be turned back manually with the same number of revolutions after having moved away from the final position by Jog mode.
All connecting cables have to be run in a way they can't be damaged by mechanical use.

4.0 Maintenance and lubrication

4.1 When delivered, the drives have long-term lubrication and do not have a relubrication opening for normal operation. A lubricating nipple on the fork head can only be provided if ordered for special applications like high number of switching actuation and vertical installation. In this case, the drive should be relubricated with approx. 3 to 10 grams (depending on type) of lubricant after approx. 5000 double lifting operations.

4.2 The piston tube should be cleaned from time to time with an oiled cloth because dirt and deposit on the piston tube can disturb the correct function of the limit switches.

4.3 If you notice wear on the trapezoidal thread spindle or spindle nut, it is recommended that these be replaced in the manufacturer's works. Since these parts are subjected to natural wear depending on stress and stroke speed, a replacement drive should be ordered in good time from the manufacturer or his represtantive for drives used for high production outputs.

5.0 Safety instructions

5.1 The piston tube must not rub up against the end or permanent stop (risk of destruction)

5.2 Condition of use:
It is a condition of sale that MORAT components shall not be used for the movement of loads whereby persons can be directly or indirectly endangered. The application of MORAT linear actuators in equipment which is intended for the transport of passengers is only permissable after prior written consultation and the agreement of the manufacturer MORAT ore their represantatives. We would refer users of actuators to safety rules, regulations and laws governing the protection of personnel working in the area of moving equipment and to the need for protective guards or barriers. Similarly-protective measures are required where suspended loads are involved.

5.3 Special safety instructions
It is possible to bring the linear actuators to a high safety standard by using the following options:

1. elastic connection head
2. force-dependant switch-off

Generally the gear size chosen should be sufficiently enough.

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6.0 Miscellaneous

As standard the drives are designed for an ambient temperature of 0 to +60°C. **Delayed start-up performance** must be expected with **minus temperatures**. **High temperature fluctuations** cause condensation to form inside the unit. We recommend that the unit be continuously heated which continues applying current to one motor-phase and which heats the drive up to service temperature whilst the unit is at a standstill (connection diagram availabe upon request). Furthermore we recommend to use a humidification seal coating for rotor and stator. Suitable connection cables must be used for low temperatures.

7.0 Lubrication

The following lubricant is used for the spindle and spindle nut:

Trapezoidal thread spindle: synthetic oil conforming to ISO-VG 680 or ISO-VG 1000, DIN 51519
Planetary gear: Type RENOPLEX GLP 1 (consistency 1, co. Fuchs)

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