

Usage Guide for Elevator Cylinders, Plunged type and Telescopic

The design of elevator cylinders, and the materials used in their construction, are such that, in general, they do not need any maintenance during their service life. However, an important qualification is that the following instructions for transportation, storage, installation and commissioning must be carefully followed.

1. Transportation

During transportation, handle cylinders carefully – do not allow them to fall, and avoid shocks and collisions with other

cylinders. The piston rods are factory-secured to prevent them coming out of the tube. Remove this transport protection after the cylinder has been installed. In the case of cylinders with a longer stroke (more than approx. 5 m), protective features are fitted inside the cylinder in order to prevent the piston rod from bumping against the cylinder casing. When the elevator travels to the top floor for the first time, these protective features snap into a permanent retaining space provided in the piston rod end-stop ring. Threaded ports are carefully sealed in the factory with plastic or steel closure plugs. Leave these plugs in place until shortly before connecting the hydraulic lines.

2. Storage

When the cylinder is delivered, make sure that it has not been damaged during shipment, and that the port closure plugs are in good condition. Replace any damaged plugs immediately. Since it is seldom the case that cylinders are installed into the lift system and commissioned immediately after delivery, they should normally be filled with the hydraulic fluid or a preservative oil in order to prevent corrosion of the cylinder wall and the piston rod. Cylinders can also be supplied pre-filled (order option). If the cylinder is to be stored for a long period, protect the thread and exposed end of the piston rod with a corrosion inhibiting grease. Cylinders should ideally be stored in a dry area at a temperature between 10° and 20° C.

3. Installing the cylinder

Be sure to mount the elevator cylinder perpendicularly and free of any strain or stresses, otherwise premature wear and operational problems may occur. If there is to be a long period between installation and commissioning, it is important to follow the storage instructions given above. In the retracted position, the piston rod is guided at its top and bottom ends and the tolerance with respect to the guide rails should not exceed 2 mm. A stroke of just 15 mm is sufficient to allow the bottom end of the rod to move radially again. For this reason, in 2:1 elevators be sure to mount and align the pulley and yoke with the cylinder in the retracted

position – this will prevent the piston rod from being pushed into a non-vertical attitude. In 1:1 elevators, when attaching the piston rod to the car do not outstroke the piston rod by more than 15 mm, otherwise the bottom end of the rod will no longer be guided and the rod could be pushed into a non-vertical attitude. This would lead to excessive additional friction. Do not use sealing agents such as hemp or Teflon tape when making hydraulic connections. Small pieces of such sealing agents can find their way into the hydraulic system and lead to system faults. Before installing pipes and hoses, use a suitable cleaning agent (e.g. for steel pipes, a pickling solution) to clean them thoroughly and remove all dirt, scale, saw swarf, etc. Then install the pipes without strain or stresses i.e. do not force them into position. Fit the air bleed screw and connect the leakage drain line.

4. Commissioning

For the hydraulic fluid, use only a good quality, mineral oil-based proprietary brand that conforms to DIN 51 524 and 51 525 . To ensure the highest possible operational reliability of the cylinder, as well as its longest possible service life, we recommend that the hydraulic fluid be filtered during filling procedures. Before commissioning the cylinder, check that there are no paint splashes on the piston rod, and that it has no defects caused by installation or construction work in the shaft, for example. Where necessary, clean the piston rod thoroughly.

Attention: if the cylinder has internal transport protection (see section 1., Transportation), operate it at a very low speed (max 0.05 m/sec) when extending it for the first time. The piston rod must be fully out-stroked to its end stop to ensure that the internal protective features snap into the permanent retaining space provided for them.

When commissioning the installation, bleed air from the cylinder several times. To do this, slacken the bleed screw and wait until the escaping hydraulic fluid is free of bubbles. Repeat this procedure if the cylinder develops a jerky motion (stick-slip effect) after it has been in service for just a short time. If this type of motion occurs at any other time, contact the supplier without delay and before undertaking more extensive corrective actions.

5. General advice

If the above instructions are carefully followed, the cylinder itself should not require any maintenance. The operating temperature of the fluid should be between 10° and 60°C. If the fluid temperature is above or below this range, it is essential that you consult the manufacturer.