

HYDROPNEU - Instructions

Operating and maintenance instructions for hydraulic cylinders

1. general information
2. safety instructions
3. installation
4. placing into operation
5. maintenance
6. storage

1. General information

Before placing into operation of hydraulic cylinders the following instructions as well as the additional operating instructions in the product data sheets must be followed by all means. Attention should be paid to additional information (e.g. hydraulic media, temperature) on the data sheets or the corresponding drawing.

2. Safety instructions

HYDROPNEU hydraulic cylinders are dimensioned to withstand the strains caused by operation with the specified operation pressure with a sufficient safety coefficient.

Single rod double rod and telescopic cylinders are intended for the use in hydraulic systems. A hydraulic cylinder is to be seen as a motion element with that in process under load high pressure energy is transformed into kinetic energy!

This means that the following rules have to be obeyed in any case:

- The installation must be done by an expert for hydraulics only.
- The operating pressure must be limited by a safety valve (pressure relief valve).
- The maximal loads concerning forces, temperatures, etc. listed in the product documents may in any case not be exceeded.
- The safety-technical standard DIN EN 982 for hydraulic systems must be followed.
- The contents of the standard EN 1050 (new EN ISO 14121-1) for risk assessment have to be respected.

Assembling the cylinder in a system there is especially to take care for that there arises no danger of bruises through mounted components on the piston rod!

3. Installation

By their compact structure and their different designs the hydraulic cylinders are made for all kinds of applications.

Hydraulic cylinders are operation elements and no leading elements. They have to be installed in a way so that the piston rod and the cylinder body are not braced. A load of the piston rod caused by lateral forces is to be avoided. The alignment of the guide way of the part set into motion by the cylinder and of the cylinder axis must be ensured with the installation and the operation.

The dust-proof seals in the pressure ports must be removed in time in order to avoid negative pressure when moving the piston.

Please note: Generally the piston may not be moved while the pressure ports are closed, because the negative pressure caused by this can distort certain kinds of seals and so cause leakage.

The permissible operating pressure must also not be exceeded locally.

During the control of single rod cylinders the possible pressure transmission due to the area ratios has to be considered. With cylinders with end position damping the load caused by the forces applied by mass must not be higher than the static value which results from the maximum operating pressure.

4. Placing into operation

Pressure medium

The allowed hydraulic media for the cylinder is documented on the corresponding drawing or on the data sheet. If on these documents no additional information mentioned, are the cylinders made for the operation with hydraulic media based on mineral oil. Hydraulic media of the type HL and/or HLP, according to DIN 51524 part 1 and/or part 2 are recommended. Depending on the operating pressure, the viscosity range should be between 20 cSt and 150 cSt.

Other hydraulic media can be used with the installation of appropriate sealing elements and the use of appropriate materials. However, a consultation is necessary in these cases.

When placed into operation the permissible pressure and the permissible operating temperature must be considered. Furthermore the permissible max. piston velocity for the installed seals must not be exceeded.

Temperature

The allowed operating temperature for the cylinder is documented on the corresponding drawing or the data sheet. If on these documents no additional information mentioned is the temperature range of the pressure media is between -20°C and +80°C taken the permissible viscosity into account.

Air bleed

The entire line system and the cylinder have to be **air bled carefully**.

Perfect bleeding is possible with the bleed screw positions at the highest point of the cylinder. The air bleed is performed with movements of the cylinder without load. At cylinders with bleed valves / bleed screws, these valves / screws have to be opened and if only pure oil without air bubbles is bleeding, these screws have to be closed (to maintain the fluid rubber hoses can be connected to ports with bleed valves).

On demand we give you a separate guidance to perform the air bleed.

In some cases of disadvantageous installation positions the procedure may be repeated several times after several strokes, also when the cylinder was not moved during a long period of time.

Adjustable end position cushioning

At hydraulic cylinders with adjustable end position cushioning the particular setting screw is located either on the piston- or the piston rod-side normally in the axial position of the hydraulic connection, with special designs the position is shown on the dimension sheet.

WARNING: End position cushionings are made for the protection of the hydraulic cylinder by operation with high piston velocities; they are no construction elements in order to absorb high loads!

The end position cushionings are adjusted by the factory to a medium value. An exact adjustment only can be achieved with the hydraulic cylinder built in with its designated function and load. An appropriate accessibility of the adjustment screws has to be taken into consideration.

A modification of the cushioning can be undertaken by turning the setting screw. Depending on the model installed, a screwdriver for a slotted screw or a hexagonal socket screw is necessary. Turning to the right means to increase the cushioning, turning to the left means to decrease the cushioning.

The correct adjustment has to be defined by obeying the resulting deceleration while the piston rod reaches the end position.

Filtration

For a long life-span of the hydraulic cylinders it is absolutely necessary to keep the pressure medium clean by suitable, reliable filtration.

5. Maintenance

Hydraulic cylinders are generally maintenance-free; the greasing of bearings like rotary and swivel bearings is to be considered.

Seals

Motion seals are wearing parts. If the outside or internal leakage exceeds the permissible limit the seals must be replaced. As a precaution always the complete seal kits should be replaced.

With the suitable HYDROPNEU seal kits this can be done by you. In case of any doubts we recommend to send the cylinders to our factory since then with the replacement of the seals the complete cylinder will be controlled.

Pressure-proof proximity switches

If the hydraulic cylinder is equipped with pressure-proof proximity switches the following has to be considered: In order to ensure the accurate switching function the proximity switches are adjusted very exactly. A change of the switch adjustment must not be performed without consulting HYDROPNEU.

6. Storage

Hydraulic cylinders should be stored in a dry, dust-free area. The connections must be locked dust-proof during storage and transport. If hydraulic cylinders are stored for a longer period the filling with mineral oil alternatively a suitable media for corrosion prevention is recommended. Here attention should also be paid to the information on the corresponding drawing or data sheet.