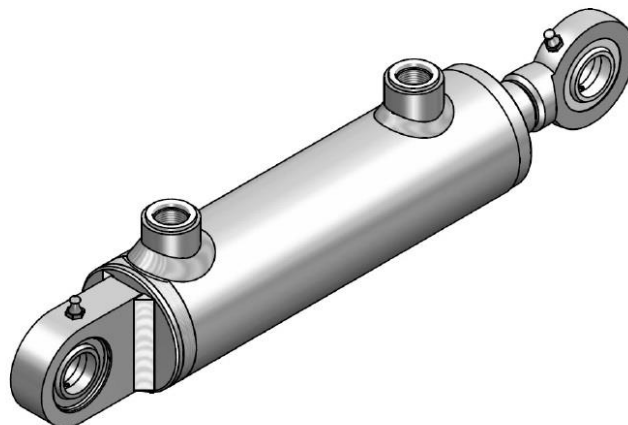


Operating Instructions for Double-Acting Cylinders according to the technical data sheets of our catalogue

1. TECHNICAL DESCRIPTION	2
2. SERVICE PRESSURE	2
3. OPERATION TEMPERATURE	2
4. PROTECTION AGAINST CORROSION	2
5. TRANSPORT	2
6. STORAGE AND CONSERVATION	2
7. ASSEMBLY AND START-UP	3
8. MAINTENANCE	3
9. OPERATING TROUBLES	4
10. SAFETY INSTRUCTIONS	4
11. ASSEMBLY AND DISASSEMBLY	4
12. ADDITIONAL INSTRUCTIONS	5



1. Technical Description

Contarini double-acting cylinders in a combined plug and weld design may be applied in all mobile or industrial plants being subject to heavy strain. Fixation of the cylinder according to the chosen design, the oil ports are on the cylinder body. The piston seals consist of a compact seal. The piston rod is being guided by a screw connection in cast material with seals and wiper.

2. Service Pressure

The cylinders are designed for a service pressure according with the chosen series of 200 bar. or 250 bar or 350 bar.

3. Operation temperature

The cylinders are designed for temperatures ranging from - 30° C up to + 80° C. but it's possible also mounting special seal that can make the cylinder suitable to work at - 250°C. or + 200°C.

4. Protection against corrosion

To protect the piston rod from wear and corrosion, they are provided with hard-chromium layer or different material according with the drawing choosen.

The cylinders are delivered with or without painting according with the customer needed.

5. Transport

The cylinders have to be transported in suitable packing. The piston rods have to be retracted and secured against involuntary extension.

6. Storage and Conservation

Hydraulic cylinders should be stored in a dry place at a preferably constant ambient temperature of 15° C – 25° C. In any case the storage place has to be free from vapours or corrosives.

During storage the piston rods of the cylinder have to be entirely retracted and the ports be plugged with protective caps. In case the piston rod may not be retracted for technical reasons, it has to be preserved with acid-free greas

If the cylinders are being stored longer than 6 months in enclosed rooms or 3 months in open air they have to be filled with oil in order to prevent them from condensation and hence corrosion.

Every 3 months, the cylinders will then have to be turned by 90°.

Please mind to respect a temperature of - 10° C up to max. +40° C when storing cylinders filled with oil (when filling the cylinders, the temperature should not be lower than 15° C). Due to



pressure increase caused by temperature differences the max. service pressure must not be exceeded – per temperature increase of 1° C the pressure within an enclosed system is increased by approx. 10 bar.

As a consequence hydraulic cylinders being stored in open air imperatively have to be protected from direct exposure to sun.

When the cylinders are stored for a longer period - both in open air and in enclosed rooms – make sure that blank parts like bushes, trunnions, threads and borings are protected with acid-free grease or alike.

Cylinders being stored in open air should be protected against any weather condition (e.g. wetness or exposure to sunlight). Cylinders without finish paint are not suited for an open air storage.

7. Assembly and Start-up

Assembly and start-up of the cylinder may only be executed by authorized skilled staff. Before mounting the cylinder, any preserving agents will have to be removed from functional surfaces and the protective covers removed right before connecting the cylinder with the hydraulic system.

During connection one has to prevent the piston rod from any uncontrolled extension. The cylinder will have to be fixed on its mounting position (please avoid misalignments).

When doing welding work around the cylinder one has to make sure that the latter is thoroughly covered and protected from welding beads and sparks (Attention! during welding the earth cable must be located right next to the parts to be welded since otherwise there is danger of contact welding within the cylinder).

The hydraulic cylinders are laid out for an operation with hydraulic oil on mineral basis (HL, HLP or HLPD) according to DIN 51524 T.1-T3. The appropriate viscosity class will have to be chosen following the recommendations of the oil producers. Any special fluids may only be used upon prior consultation of Contarini Leopoldo S.r.l.

Before start-up the cylinders have to be filled and thoroughly bled. If valves are being used (e.g. load holding valves or check valves) the transmission ratio has to be respected.

8. Maintenance

The tightening torque of the screw connections has to be checked in regular intervals. Sealings have to be checked in view of any visible leakages.

Safety valves - if any - must be examined regularly with regard to leakage and proper functioning.

The bearing zones will have to be lubricated via the greasers once a week. In case of multi-shift operation, the lubrication intervals will have to be increased.

A regular cleaning and lubrication of blank parts will help to increase life time of the product. In any case, do not use aggressive cleaning agents.

In case of longer standstills piston rods being possibly extended will have to be treated with suitable preservatives.



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9. Operating troubles

Leakages on piston and rod seals which are dynamically stressed may be due to normal wear of the sealing elements. In general, they appear after a certain time only. Life time of the seals is also highly influenced by the service pressure, temperature, hydraulic fluid as well as the length of the stroke.

Moreover, the following points may have a negative influence on the life time of the seals:

- Damages to the piston rod;
- air being enclosed in the system;
- physical influence like cavitation, Diesel effect, etc.;
- seals non compatible with the hydraulic fluid;
- high thermal load;
- contamination of the hydraulic system;
- signs of aging, e.g. following longer stand stills;

In case of important leakages - or if the lifting force is not sufficient or the load is sagging despite a closed oil return, the reason has to be found and remedied immediately.

10. Safety instructions

Caution!

Before working on the hydraulic cylinder make sure that both the cylinder and the supply lines are pressure-less. Before removing the hydraulic lines the piston rod has to be secured against any involuntary extension and/or retraction.

Bleeding will have to be done only while the cylinder is under low pressure or without load in order to avoid any risk by bleeding ports being under pressure.

11. Assembly and Disassembly

Any work on a hydraulic system will have to be carried out by authorized and skilled staff observing the applicable safety regulations; the same applies to the safety regulations of the manufacturer of the corresponding machine and/or installation into which the hydraulic cylinder will be mounted.

Preferably, the hydraulic cylinder is to be mounted horizontally. If this is not possible, the piston rod of the cylinder must be secured against involuntary extension. Only suitable lifting appliances in perfect condition are to be used. The fitter must make sure that the lifting appliance is properly fixed.

During assembly and disassembly mind that there is no oil leaking from the hydraulic system.

Cylinder ports and hydraulic lines are to be plugged.

For all assembly work mind the cleanness in order to avoid any pollution of the system.

Only use original spare parts - please learn details from the spare parts list.

12. Additional instructions

- ISO 4413 “Hydraulic fluid power - General rules and safety requirements for systems and their components;
- “Bleeding of hydraulic components“;
- “Instructions for dismounting and assembly of double-acting cylinders”.



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