

# Operating Instructions for Hydraulic Cylinders and Hand Pumps



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## 1. Unpacking:

Check all unpacked Yale - hydraulic units for any possible transport damage. Report any damage to the forwarding agent immediately, since they are not covered by the Yale guarantee conditions.

## 2. Initial Operation:

Yale-hydraulic cylinders come ready to use together with female coupler half; all Yale hand pumps are filled with hydraulic oil. Check oil level before initial operation.

## 3. Air bleeding:

Prior to the initial operation of new hydraulic components the system should be de-aerated. To this end, the cylinder should be extended and retracted several times, holding it with the coupler connection upright while retracting the cylinder. This leads to a concentration of air in the area of the oil port, and the air is transported to the reservoir with the returning hydraulic oil.

## 4. Advance of hydraulic cylinder:

Connect the hydraulic hose by **completely** closing the sleeve of the female coupler half. Any incompletely closed coupler causes the flow to be blocked by the inner balls. The couplers are self-sealing and should therefore only be screwed together finger-tight. Open the air-bleeding plug on the reservoir by approx. 1/2 turn and close the relief valve (hand wheel). The cylinder may now be extended.

## 5. Correct application:

Yale hydraulic equipments with their extremely robust construction offer a long service life. Nevertheless, the following points should be observed for your own safety:

- Never exceed the maximum capacity of the hydraulic cylinders.
- Avoid any eccentric loading of the hydraulic cylinder.
- Never stay below lifted loads, unless they are supported additionally.
- Keep hydraulic units away from heat (welding etc.).
- Protect hydraulic hoses against damage; avoid excessive bending and tensioning.

## 6. Off-center load:

To guarantee a long service life the Yale-700 bar-Hydraulic-cylinder Series **YS, YLG, YFG, YLS, YFS, YCS, YCH, YH** and **YPL** are made of Chromium-Molybdenum-Steel. The cylinder housing and plunger are specially heat-treated and provided with two bronze bearings. Hydraulic cylinders in general should not be side loaded. This can lead to a reduction of the service life. Some applications in practice, however, may require an off-center loading.

In those cases, only 50 % of the max. operating pressure and stroke of the cylinder should be utilized.

Be sure always to have the load resting on the total surface of the saddle and / or piston head. In addition, the total surface of the cylinder base shall rest on solid ground.

**This especially applies to flat cylinders!**

## 7. Oil level / Oil change:

Oil change is required, however at least once a year. This perfect condition of the hydraulic oil is one of the decisive factors for the service life of your hydraulic components. Under adverse conditions (e.g. dust, humidity etc.) the oil should be changed at shorter intervals, if required. Be sure to use Yale-Hydraulic Oil exclusively, in order to maintain your guarantee rights. Check the oil level regularly.

**Please be eco-friendly -  
dispose your waste oil as instructed!**

## 8. Maintenance:

All moving parts should be greased at certain intervals (e.g. hand lever at the pump head). Oil change see under para. 7 "oil change". Depending on their specific application conditions, all parts should be regularly checked for damage. Any damaged parts should be exchanged immediately.

## 9. Repairs:

Repair and maintenance should only be performed by expert personnel; be sure to use original spare parts only.

## 10. Cleanliness:

Keep your hydraulic system clean and avoid any contamination and humidity. This applies in particular to coupler connections (rinse with cleaner's naptha, if required).

## 11. Hydraulic connections with 3/8-NPT:

For a simple sealing of hydraulic fittings, hoses, gauge adaptors etc. with 3/8 NPT, wrap the male thread tightly with approx. 2 layers of Teflon tape, leaving the first 2 threads uncovered. Then tighten parts together well finger-tight and check for leakage.

## 12. Working safety:

All parts in the Yale hydraulic programme have been designed for a max. operating pressure of 700 bar (10.000 psi) exception: 2000 bar programme. Pressure relief valves are set to their individual permissible operating pressure and must never be adjusted to a higher value. The max. operating pressure of 700 bar must never be exceeded. The built-in pressure relief valves discharge the excessive pressure to the reservoir, as soon the max. pressure has been achieved. Any external loads must not exceed the max. capacities of the connected hydraulic cylinder.

## 13. Trouble shooting:

If there is slightly leaking oil at the piston that does not have to mean that there is a damaged seal, it may be remaining oil from the piston which has gathered during the operation of the cylinder in the upper chamber. This is absolutely irrelevant to the function of the cylinder.

### 13.1 Pump does not built up a pressure:

- Check if the release valve handle is closed
- Check oil level of the reservoir
- Check if ventilation plug of reservoir is opened
- Check if there is dirt in ball seats
- Decouple the cylinder and build up a slight pressure against the male coupling

### 13.2 Pump builds up pressure, however, the hydraulic cylinder does not advance:

First check oil level of the reservoir. If the pump is working correctly and the pressure is being built up, then:

- the force to operate the hand lever of the hand pump will increase
- the hydraulic hoses will stiffen

If possible, use a pressure gauges during test procedure. A temporary decoupling of all actuators facilitates the checking process.

### 13.3 If the pump builds up pressure, however, the hydraulic cylinder still does not advance:

- Check couplers for complete closure
- Check hydraulic system for any leakage (fittings, seals, etc.)
- Check hydraulic cylinder for leakage
- Check if ventilation plug of reservoir is opened correctly
- For double acting cylinders you should check if a damaged seal causes leaking of oil from one chamber into the other oil chamber of the cylinder  
Therefore the piston has to be advanced completely and the hydraulic hose piston sided has to be decoupled, a pressure gauges has to be mounted at the decoupled port of the cylinder and the advancing side of the cylinder has to be pressurized. If the gauges is indicating a pressure, the seal of the advancing side is damaged.

### 13.4 Hydraulic cylinder does not retract:

For single acting cylinders with spring return, "one hose connection"

- Check if couplings are closed completely, otherwise the oil flow is cut off.
- Check if cylinder is equipped with spring return (YEL, YEGA, YEGAS, YLG and YFG do have "gravity return". To be retracted by external weight.

For double acting cylinders, two hose connections

Check if the oil flow in retracting direction is closed, e.g. a not completely closed coupler

### 13.5 System does not hold the pressure:

Hydraulic pump actually builds up pressure, but pressure drops again quickly:

- Release valve (hand wheel) closed properly?
- Check hydraulic system and cylinder for any leakage.
- Repair of pump is required. (Dirt in ball seat?)

### Air venting:

All reservoirs of Yale hand pumps are equipped with an "air venting / filler plug".

The advantage is, that the capacity of the oil reservoir can be used completely, the pumps have an excellent suction performance.

### Important:

Be sure to close the air vent plug of the reservoir after use. This avoids any possible loss of hydraulic oil in case the hand pump is turned over.