

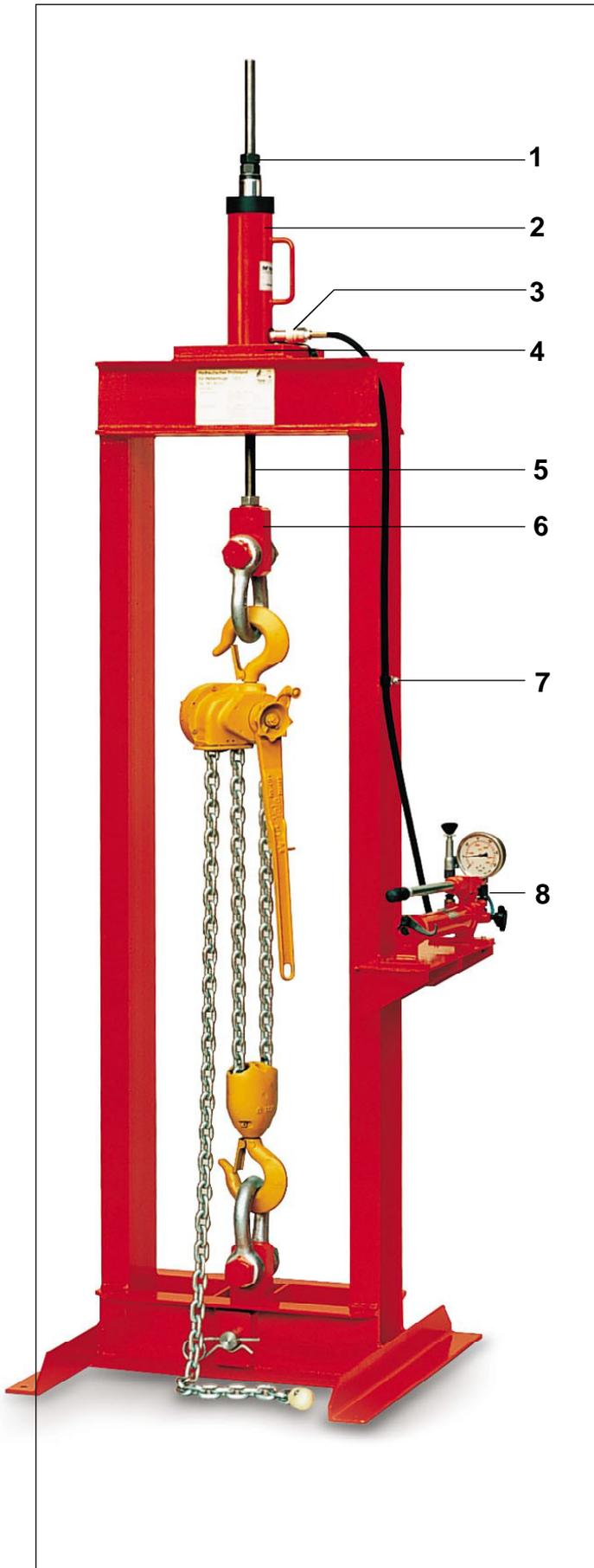
**Please cut out this "strap" and place it  
at the beginning of the Operating Manual.**

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**Attention:**

**The testing of hoists  
resp. lifting appliances and  
similar devices may lead to  
dangerous situations.  
Be sure to observe operating,  
safety and maintenance  
instructions of the  
corresponding manufacturer.**

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## 1. Erection

Place Test Rig to appropriate location and fasten the frame to the ground.

## 2. Assembly of the hollow hydraulic cylinder

- Take out the cylinder from packing material.
- Take off the hexagon nuts (1) from the threaded rod (5) and pull out the threaded rod out of the hollow cylinder.
- Place the cylinder (2) onto the steel plate (4) of the frame and fasten the cylinder by use of the two attached screws at the bottom. Coupler (3) must show to pump label side.
- Place threaded rod (4) from below through the steel plate (4) and hollow cylinder (2) and lock the rod with the two hexagon nuts (1) at appropriate location. Make sure that the shackle block (6) can move at least 200 mm to the top. Counterlock the two nuts (1).

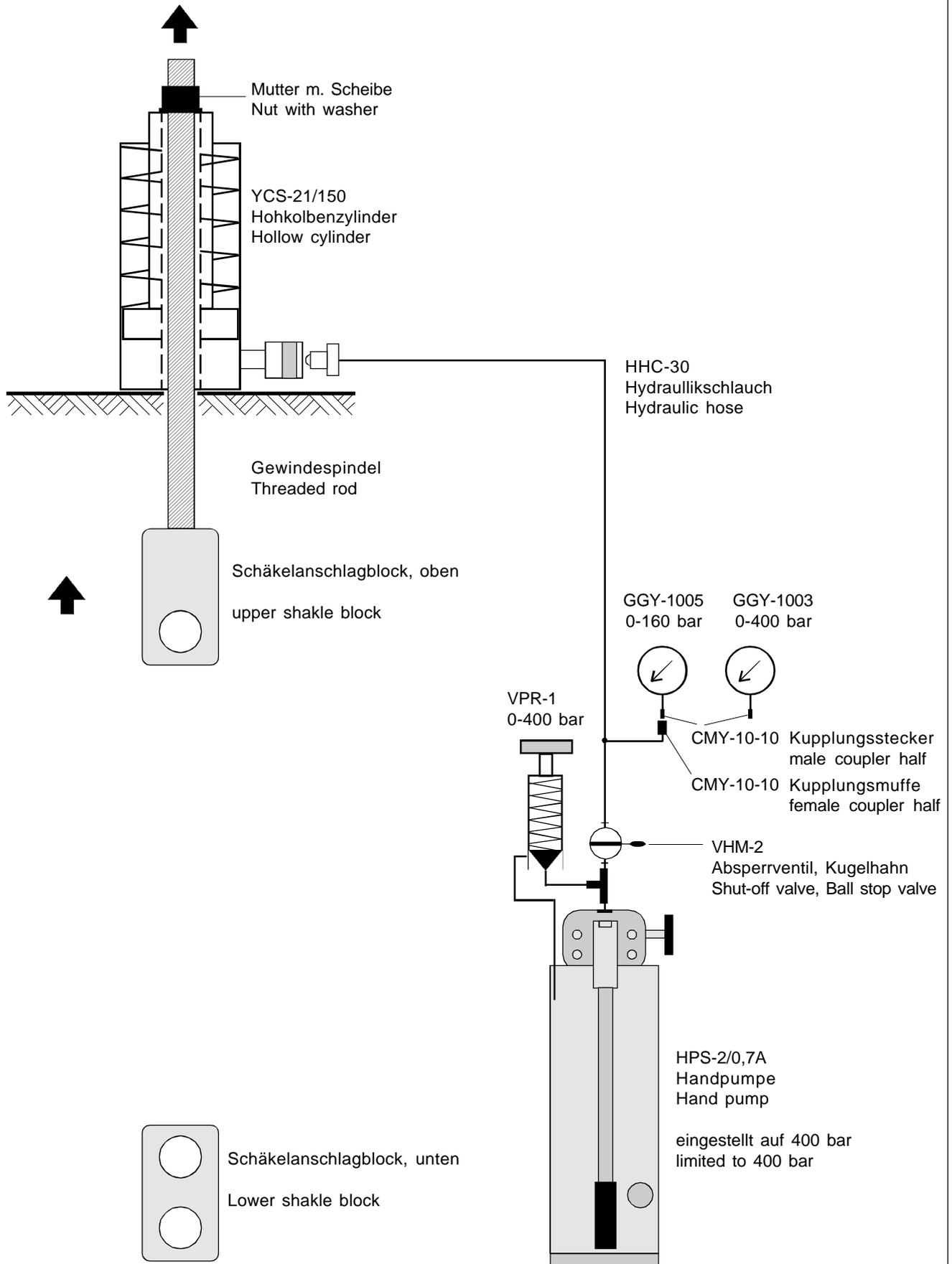
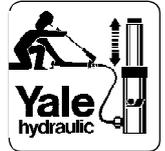
## 3. Assembly of the hand pump.

- Take out the preassembled hand pump (8) plus "pressure set unit" from packing material carefully.
- Place hand pump on pump table and fasten the pump by use of the attached screws.
- Connect hydraulic hose by coupling the male coupler half into the female counter part (3) completely (!), fasten the sleeve nut handtight.
- Fasten hydraulic hose to frame by means of the attached clamp (7).
- Put one of the attached pressure gauges into the female coupler half of the pressure set unit.

Test rig is now ready for use.

Please note the separate operating instructions for RPYS-1215.

# Hydraulikschema: RPYS-1215



**Technical Datas:**

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**Test Rig Model** : RPYS - 1215  
 • max. test load : 120 kN (12 tonnes)  
 • stroke : 150 mm  
 • max. pressure : 400 bar

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 Hydraulic Cylinder Model : YCS - 21/150  
 • capacity at 400 bar : 120 kN (12 tonnes)

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 Hand Pump Model : HPS - 2/0,7 A  
 • operating pressure set to : 400 bar  
 • displacement, 1. stage : 11,0 cm<sup>3</sup>  
 displacement, 2. stage : 2,0 cm<sup>3</sup>  
 • reservoir : 0,7 l

**1. Application**

The Test Rig is used for functional testing of hoisting, tensioning and pulling equipment, after repair or annual inspection, as required by the local safety authorities. The Test Rig is not a measuring device.

**2. Two possible test procedures:**

- 2.1 The test load is produced by the hoist to be tested acting against the advanced hydraulic cylinder. The load applied can be determined by reading the pressure on the gauge and cross-referencing to the pressure chart.
- 2.2 The test load is produced by the cylinder (and pump) acting against the tensioned hoist. The load applied can also be determined by reading the pressure on the gauge and cross-referencing to the pressure chart.

**3. Generation of the test load**

The test force is generated by the hydraulic cylinder. A high tensile threaded bar which is inserted through the hollow cylinder, transfers the pulling force of the hoist into a pushing force, which acts upon the cylinder piston.

The oil pressure which is produced by the hydraulic cylinder can be read off the pressure gauges and be converted into a force by using the pressure chart. The oil pressure can be adjusted at the pressure relief valve, thus restricting the applied load.

**4. Testing the pulling force of the hoist**

- 4.1 Adjusting the hydraulic components:  
 The hydraulic cylinder must be advanced to its maximum stroke end, when the maximum stroke is reached. The pressure relief valve must be adjusted to the maximum possible pressure, whilst pumping the hand lever of hand pump e.g.:  
 If a 5 ton hoist is to be tested at the working load limit (i.e...5 tons), the hydraulic system has to be adjusted to 165 bar.  
 If the unit is tested with 25 % overload, the system has to be adjusted to 206 bar.

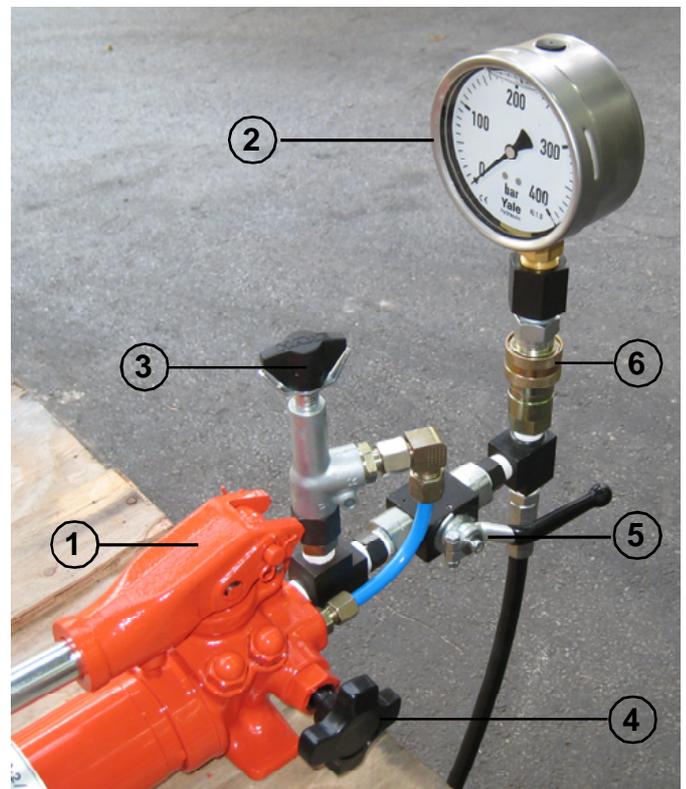
**4.2 Testing of the hoist**

- 4.3 The hoist has to be fixed into shackles of the test rig.

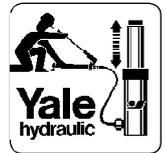
**Attention:**

**The red ring-loop can only be loaded with a maximum of 5 tons.**

- 4.4 The chain or rope must be tensioned.  
 4.5 The hoist then must be operated, when a pulling force is effected which can be read off the pressure gauge in form of an operating pressure. Tanking the example, the operating pressure will rise to 165 bar, corresponding to a load of 5 tons.  
 4.6 By further operation of the hoist, no higher operating pressure can be reached because the pressurized oil will be fed back to the reservoir via the pressure relief valve.  
 During the test, the hoist will retract the piston into the cylinder, allowing functional test of all components.



- |                                |            |
|--------------------------------|------------|
| (1) Handpump                   | HPS-2/0,7A |
| (2) Pressure gauge             | GGY-1005   |
| (3) Pressure set valve         | GGY-1003   |
| (4) Relieve valve (hand wheel) | VPR-1      |
| (5) Shut-off valve             | VHM-2      |
| (6) Coupler half (female)      | CFY-10-10  |



**5. Testing the brake during the lowering process**

- 5.1 Retract the piston of the hydraulic cylinder completely by operating the hydraulic pump.
- 5.2 Tension the chain of the hoist by hand and position the hoist to "lower".
- 5.3 Operate the hand pump. The hydraulic cylinder advances, loads the hoist and closing the brake.
- 5.4 Release the brake of the hoist by operating the hand lever of the hoist in lowering position.
- 5.5 Operate the hand pump and advance the cylinder against the brake of the hoist.

Repeat this procedure a few times.

In this way, the proper function of the brake can be tested. The cylinder stroke of 150 mm normally allows a full rotation of the load sheave of the hoist and can be used several times in succession.

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**6. Regulations**

German regulations require a test at working load limit. It can differ from country to country. Check national standards to ensure compliance with the law.

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**7. Pressure gauges**

For a better reading of the pressure (resp. force) the test rig is equipped with two pressure gauges:

1 pce. GGY-1005 (0-160 bar for hoists up to 4 ton)

1 pce. GGY-1003 (0-400 bar for hoists up to 12 ton)

Attention: Never overload the pressure gauges !

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**8. Shut-off valve VHM-2**

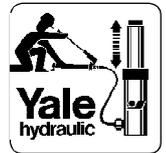
The VHM-2 can be used for hermetic shut-off the loaded piston in order to monitor exactly a possible pressure drop caused by a slipping hoist brake.

Attention: Never overload the pressure gauges while the VHM-2 is closed.

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Incidentally please note our "**Operating Instructions for Yale Hydraulic Cylinders and Pumps**"

# General Operating Instructions for Yale-Hydraulic Cylinders and Hand Pumps



Page 5

## 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-700bar-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 naphtha, if required).

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

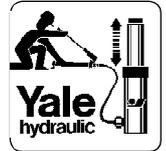
For a simple sealing of hydraulic fittings, hoses, gauge adaptors etc. with 3/8 NPT, wrap the male thread tightly with approx. 2 layers of Teflon tape, leaving the first 2 threads uncovered. Then tighten parts together well finger-tight and check for leakage.

## 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.

# General Operating Instructions for Yale-Hydraulic Cylinders and Hand Pumps



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## 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.

### 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
- Discouple the cylinder and build up a slight pressure against the male coupling

### 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.

### 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 discoupled, a pressure gauges has to be mounted at the discoupled port of the cylinder and the advancing side of the cylinder has to pressurized. If the gauges is indicating a pressure, the seal of the advancing side is damaged.

### 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 (YLL, YG, 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

### 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 dvantage 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.

# Pressure / Force

for Hydraulic Cylinder  
Model: YCS-21/150



<b>Operat. pressure bar</b>	<b>Force tonnes</b>
10	0,31
20	0,62
30	0,93
40	1,24
50	1,55
60	1,87
70	2,18
80	2,49
90	2,80
100	3,11
110	3,42
120	3,73
130	4,04
140	4,35
150	4,66
160	4,97
180	5,60
190	5,91
200	6,22
220	6,84
230	7,15
240	7,46
250	7,77
260	8,08
280	8,71
290	9,02
300	9,33
320	9,95
340	10,57
350	10,88
360	11,19
380	11,81
390	12,13
400	12,44