

# BT 800-OX Operating Manual



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INSTRUCTION MANUAL

**BT 800**

REV.

01

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VALID FROM LOT ...N° 17/97...



## 4.1 - Operation description

The **BT800** comparison test pump is composed by an high pressure cylinder filled up with the hydraulic liquid. This liquid can be compressed by turning clockwise the hand-wheel (5) mounted on the trapezoidal screw.

The high pressure piston compress the liquid in the two manometers trough the high pressure body and the two pipes tap (2).

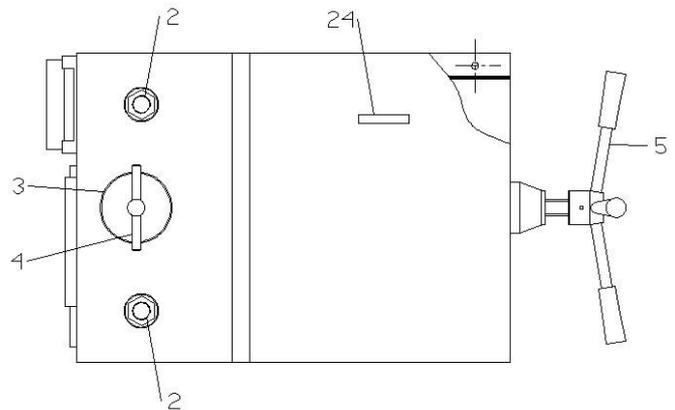
## 4.2 - Start up instructions

The BT800 pump make it possible to generate hydraulic pressure up to 800 bar necessary for the comparision calibrator of manometers, pressure switches and transducers with standard gauges.

The suitable liquid can be water .

### Operative procedure:

- Mount the instrument on the work table. Screw the 3<sup>rd</sup> spoke (6)
- Turn fully clockwise the hand-wheel (5).
- Fill the reservoir (3) with the fluid. **For models BT800-OX to use the water as filling liquid.**
- Open the valve (4) and the tap (24).
- Close the plugs (2) with screw plugs.
- Turn fully anticlockwise the hand-wheel (5) to fill the cylinder.
- Close the valve (4).
- Remove the screw plugs; mount the standard manometer and the instrument to calibrate.
- Turn clockwise the hand-wheel (5) to generate pressure.



Note: for low pressure (max. 50 bar), or for instrument with low capacity it is necessary fill only one time the cylinder.

For high pressure (max. 800bar), or for instruments with big capacity, follow these instructions:

- Follow the first part of the instructions.
- Turn clockwise the hand-wheel (5) until the manometers shows the pressure of 50bar (the valve 24 must be open).
- Close the valve (24); the pressure on the manometer mounted on the right plug don't change.
- Turn fully anticlockwise the hand-wheel (5) to discharge the pressure on the cylinder.
- Open the valve (4).
- Turn fully clockwise the hand-wheel. If necessary fill the reservoir (3) with the fluid.
- Turn fully anticlockwise the hand-wheel to fill the cylinder.
- Close the valve (4) open the tap (24) (the pressure on the manometer indicate 0 bar)
- Turn clockwise the hand-wheel (5) to increase the pressure.
- If necessary repeat these operations more time until the installation is fully filled and ready to use.

**ATTENTION:** don't open the valve (24) when the pump is on high pressure.

## 5 - Operational maintenance

**BT800-OX** model:

for models suitable for oxygen pressure gauges: to grease the trapezoidal screw (7) and the internal seal using special grease model DU PONT- KRYTOX LC025 B05

## 6 - Typical faults and ways for their removal

N°	FAULT DESCRIPTION	FAULTY COMPONENT OR FUNCTION	METHOD FOR REMOVAL
1	Turning clockwise the hand-wheel (5) the level of the liquid in the reservoir crease.	The OR2021 (15) is broken.	Change the o-ring (15).
2	Turning clockwise the hand-wheel (5) the liquid goes out from one of the manometers connections.	The OR3037 (16) is broken.	Change the o-ring (16).
3	Turning clockwise the hand-wheel (5) the liquid goes out from one of two pipes tap.	The OR106 (17) is broken.	Change the o-ring broken
4	Turning clockwise the hand-wheel (5) the water goes out from the high pressure cylinder.	One or more gaskets of cylinder (19) or piston (10) are broken.	Check the gaskets of the piston and cylinder: OR3087 (18); teflon ring (23); EDWR 25/2 (21); OR (20). Change the ones that are broken.

**ATTENTION:** EVERY LEAK CAN BE NOTICED BY OBSERVING THAT THE PRESSURE VALUE INDICATED BY THE MANOMETER IS DECREASING.

## 7 - Thermodynamic effect with the pumps Bt400/800

The THERMODYNAMIC EFFECT is caused by the liquid that heats when the pressure increases. After the pressure cycle with the hand-wheel the liquid releases the heat to casting of the pump and cools; consequentially the liquid contracts and the pressure value drops.

Customer assumes that the pump is leaking. Pump is not "leaking" it is only a temperature problem. For example: during a test at 200bar with water the drop rate of the pressure is about 10mbar along 5 minutes.

The drop rate is higher after the first test (up to 10 or more bar) and reduces to 10 mbar after 4/5 tests; to obtain good results it is indispensable to repeat the test more times up to the pressure is stable. This depends from the air bubbles inside the pump and from the Thermodynamics effect.

To reduce the problem:

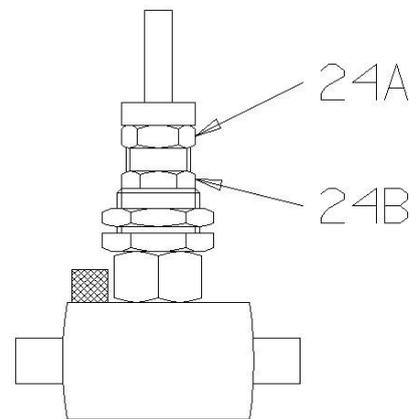
1. Pressurize the pump and reduce the pressure two or three time, as in the instruction manual, to discharge the air bubbles.
2. Pressurize to about 220bar, wait for some minutes then carefully adjust pressure to desired amount (200bar for example).
3. Repeat the operation 2 or 3 times until the pressure is stable.

The drop value with the oil is higher than with the water

## 8 - Note: interception needle valve (24):

In case of leakage on the valve (24) proceed as follow (reference to the drawing):

- Unscrew with 16mm spanner the stop nut 24-B
- Screw with 14mm spanner the rating nut 24-A.
- Block the nut 24-B.



## 9 - List of components

(Reference numbers relevant to the annexed drawing page 11)

POS.	DESCRIPTION	CODE
1	BT800 CARPENTRY	2DC546
2	½" GAS ROTATING CONNECTION	2DC945
3	RESERVOIR + VALVE	2DC938
4	VALVE	2DC507
5+6	HUB + SPOKE	2DC368 + 2ELSBL36612203
7	TRAPEZOIDAL SCREW	2DC898
8	INTERNAL THREAD	2DC906
9	CYLINDER	2DC974
10	PISTON FOR HIGH PRESSURE CYLINDER	2DC514
11	HIGH PRESSURE BODY	2DC512
12	GASKETS KIT	
13	27mm SPANNER	2FRG-KEY27
14	FEET	2MRN263503
15	VALVE O-RING	OR2021
16	O-RING FOR 1/2" CONNECTION	OR3043
17	O-RING FOR 1/2" & 3/8" CONNECTIONS	OR106
18	O-RING CYLINDER	OR3087
19	HIGH PRESSURE CYLINDER	2DC515
20	HIGH PRESSURE CYLINDER O-RING	5PLYSM106059-1
21	PISTON GASKET	EDWR-25-2
22	HIGH PRESSURE PISTON	2DC973
23	ES.46 CONNECTION + TEFLON RING	2DC975
24	INTERCEPTION VALVE	5SFLVALVEOD4MM

