NPP30 - User Handbook

PRESSURE CALIBRATION

Operating Handbook

Calibration Test Pump Type NPP30

OPERATING HANDBOOK

Contents:

Suggerimenti
This symbol provides non mandatory tips, informations and notes.

Warning!
This symbol warns you against actions that can cause damages to persons or to the instrument.

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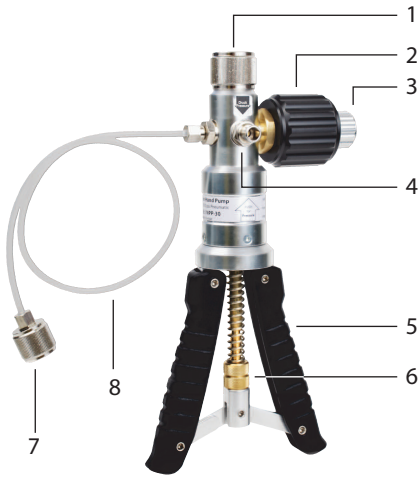
1. Safety Instructions

Read these operating instructions carefully prior to operate the pneumatic calibration test pump NPP30. The pressure inside the pump can be extremly high. Ensure that all pressure connections have been established correctly.

2. Product Description

The NPP30 calibration test pump is employed to generate pressure and vacuum to check, adjust and calibrate mechanical and electronic pressure measuring instruments by comparative measures. These pressure tests may be carried out in laboratories, workshops or on site wherever the measure is required. If the instrument to be tested and a fairly accurate reference measuring instrument are connected to the test pump, the same pressure is applied to the two instruments when the pump is operated.
By comparing the two measures at random pressure values, the accuracy can be verified or the instrument under test can be adjusted. Despite its compact dimensions, the calibration test pump NPP30 is easy to operate and allows the exact generation of the required test pressures; a change-over switch enables the generation of vacuum as well. The pump is fitted with a fine adjustment valve for the precise adjustment of pressure. The reference instrument is screwed directly on the top of the pump and the unit under test is connected to the pump by the connection hose incorporating an adapter 1/4" BSP female thread, supplied in the scope of delivery.



(1) Rotating pressure connector for reference instrument 1/2" BSP female
(2) Fine adjustment valve
(3) Pressure relief valve
(4) Change-over switch for pressure/vacuum generation
(5) Handles
(6) Adjustable knurled nut for the pump pressure discharge rate (overpressure protection)
(7) Pressure connection for test specimen, 1/4" BSP female
(8) Test tube, length app. 0.5m (20")

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3. Mounting Instructions

- The reference instrument is fitted to the upper side of the calibration test pump NPP30. Fingertight fastening of the reference instrument with the knurled nut is enough. The reference instrument is sealed by the integrated O-ring sealing gasket.
- The unit under test is mounted to the end of the flexible hose. Please use a suitable sealing gasket from the optional accessories set or another nylon gasket. Tighten to the connector to prevent any leaks to a maximum torque of 15 Nm (11 lbf ft).

In order to adapt the different connection threads of the unit under test, the test tube can be fitted with different adapters from the optional set of adapters.

Do not use teflon tape, it may damage your test pump.

You can unscrew the tube and directly attach the test specimen with the same adapter to the pump (to minimize volume of your test system, for easier operations of NPP30 test pump).

4. Operation - Pressure

- First, check if the change-over valve (4) has to be actuated (see sticker on the device). For this purpose use a pen or a small screwdriver. The encasement of the switch is intended to help prevent unintentional actuation.

Never actuate the change-over valve (4)when the test pump is under pressure or vacuum! Actuate the change-over valve only when the relief valve is open.

- Please make sure that the pressure relief valve (3) is not completely closed.
- Turn the fine adjustment valve (2) counter-clockwise up to the end (smooth “stop” can be felt).
- Make sure that the adjustable knurled nut (6) is in such a position, that the visible spring above the nut has some clearance when the handles (5) are pressed together.
- Carefully turn in the pressure relief valve (3) until the valve closes.
- Operate the hand pump (5) until the approximate pressure has been reached, but max. to 20 - 25 bar (290 - 365 psi).
- Turn in the fine adjustment valve (2) to increase the pressure. If you have previously reached a pressure of about 20 -25 bar (290 - 365 psi), with the fine adjustment valve (2) pressure can be rised now to 35 bar (510 psi) (up to 40 bar / 580 psi, depending on the volume of the measuring circuit). Turn the fine adjustment valve (2) clockwise to increase the pressure or counter-clockwise to decrease the pressure until the requested test pressure has been reached precisely (to be read on the reference instrument).

NOTE: After increasing the pressure, the reading may slightly drop for about 30 seconds, due to thermodynamic effects, the hose and the sealing gaskets. If the pressure drop doesn’t come to a standstill, check the measuring circuit for thightness. Due to the low volume of each compression stroke of the test pump, only small volume test specimens should be tested.

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• A pressure reduction is achieved by turning the fine adjustment valve (2) counter-clockwise or by carefully opening the relief valve (3).

Remove the reference instrument or the test specimen only when the relief valve (3) is open and there is no pressure in the test pump any more.

5. Operation - Vacuum

• First, check if the change-over valve (4) has to be actuated (see sticker on the device). For this purpose use a pen or a small screw-driver. The encasement of the switch is intended to help prevent unintentional actuation.

Never actuate the change-over valve (4)when the test pump is under pressure or vacuum! Actuate the change-over valve only when the relief valve is open.

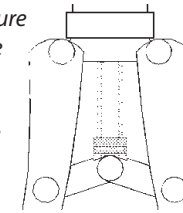
• Please make sure that the pressure relief valve (3) is not completely closed.
• Make sure that the adjustable knurled nut (6) is in such a position that the visible spring above the nut has some clearance when the handles (5) are pressed together.
• Turn the fine adjustment valve (2) clockwise up to the end (a “stop” can be felt).
• Carefully turn in the pressure relief valve (3) until it closes.
• Operate the handles (5) smoothly and slowly until max. -0.9 bar (-26.5 in.Hg) of vacuum are reached.
• Turn the fine adjustment valve (2) counter-clockwise to increase vacuum up to -0.95 bar (-28 in.Hg). Turn this valve for fine-adjustment.

NOTE: After increasing the vacuum, the reading may slightly increase again for about 30 seconds, due to thermodynamic effects, the hose and the sealing gaskets. If the vacuum drop doesn’t come to a standstill, check the measuring circuit for thightness. Due to the low volume of each compression stroke of the test pump, only small volume test specimens should be tested.

• A vacuum reduction is achieved by turning the fine adjustment valve (2) clockwise or by carefully opening the relief valve (3).

Remove the reference instrument or the test specimen only when the relief valve (3) is open and there is no vacuum in the test pump any more.

For maximal performances of the NPP30 pump, please make sure that the adjustable knurled nut (6) is in such a position that the visible spring has some small clearance. If you operate with a reference or test gauges with small pressure ranges, you can reduce the performance of the pump by turning the adjustable knurled nut(6) clockwise (upwards). This reduces the pressure discharge you get by every handle-stroke.



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6. Maintenance Instructions

Before connecting the reference instrument and the test specimen to the pump, the sealing gaskets in the connectors should be checked for correct position and wear, and should be replaced, if and when necessary. A service kit (code NPP-GASKET), consisting of spare sealing gaskets and o-rings, is available as accessory.

The test pump NPP30 must not be soiled, and in particular it must not get into contact with fluid or aggressive media.

7. Troubleshooting

- If the pressure or vacuum cannot be generated correctly or if the set pressure or vacuum are not stable, this is likely to be caused by the wrong position or wrong choosed sealing gaskets. Please also check if any adapters used on the test specimen have been tightened enough to prevent leaks.
- Before assuming there is a leak in the calibration test pump, first of all, check if the relief valve (3) is closed and if the pressure / vacuum change-over switch (4) is correctly positioned and has not come in a “midway position”.
- If the test pump has not been used for a long time, the first stroke may be somewhat sluggish. This effect will disappear again during further operation.
- Do not apply any force to the operating elements of the calibration test pump.
- Never connect an external pressure supply system to the NPP30 pump.

8. Technical Data

Pressure range:	- 0.95 ... + 35 bar (- 28 in.Hg ... + 510 psi)
Medium:	Air
Pressure ports:	1/2" BSP female rotating for reference gauge
	1/4" BSP female for gauge under test
Fine adjustment:	fine adjustment valve
Overpressure:	overpressure protection by adjustable knurled nut
Materials:	anodized aluminium, brass, ABS
Dimensions:	220 (L) x 120 (W) x 65 (D) mm - 8.66" (L) x 4.72" (W) x 2.56" (D)
Standard supply:	test hose ~ 0.5 m (20")

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9. Order codes / Accessories

	Description	Order Code
NPP30	Standard Calibraion Test Pump 1/4" BSP reference gauge connection 3/8" BSP reference gauge connection	NPP30 NPP30-G14 NPP30-G38
Case	Carrying case with foams and space for NPP30 plus set of adapters space plus reference instrument space	NPK-CASE
BSP Adapters	Set of stainless steel adapters for test hose 1/8", 3/8", 1/2" BSP threads	NPK-ADAPTER-BSP
NPT Adapters	Set of stainless steel adapters for test hose 1/8", 1/4", 3/8", 1/2" NPT threads	NPK-ADAPTER-NPT
M Adapters	Set of stainless steel adapters for test hose M12x1.5, M20x1.5 metric threads	NPK-ADAPTER-M
Service Kit	Set of sealing gasket and O-Rings for NPP30	NPP-GASKET
Spare Parts	Test hose with 1/4"BSP connection Fine adjustment valve with pressure relief valve	NPP-HOSE NPP-VALVE

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