Operating Manual

PGS-40 **PGS-60**

Calibration Test Pumps

Content:

Tips
This symbol provides you with tips, information and notes.

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

1. Safety Instructions

STOP Read this manual carefully prior to operating the calibration test pump PGS-40 or PGS-60. The pressure inside the pump can be extremly high. Ensure that all pressure connections have been established correctly.

2. Product Description

The calibration test pump is used to generate pressure and vacuum for checking, adjusting and calibrating mechanical and electronic pressure measuring instruments by comparative measurements. These pressure tests may be carried out in laboratories, workshop or on site at the measuring point.

If the instrument to be tested and a sufficiently accurate reference measuring instrument are connected up to the test pump, the same pressure is applied to the two measuring instruments when the pump is operated.
By comparing the two measure values 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 is easy to operate and allows for 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 generation of high pressure and precise adjustment of pressures. The reference instrument is screwed directly on the top of the pump and the unit under test is connected by means of the connection tube incorporating an adapter 1/4" BSP female thread, contained in the scope of delivery.

(1) = pressure connector for reference instrument
(2) = high pressure generation and fine adjustment valve
(3) = pressure relief valve
(4) = change-over switch for pressure / vacuum
(5) = handles
(6) = adjustable knurled nut for the adjustment of the delivery rate of the pump
(7) = pressure port for test specimen
(8) = test tube, length approx. 0.5 m

3. Mounting Instructions

The reference instrument is fitted to the upper side of the calibration pump. Fingertight fastening of the reference instrument with the knurled nut is sufficient. The reference instrument is sealed by the integral O-ring sealing gasket.

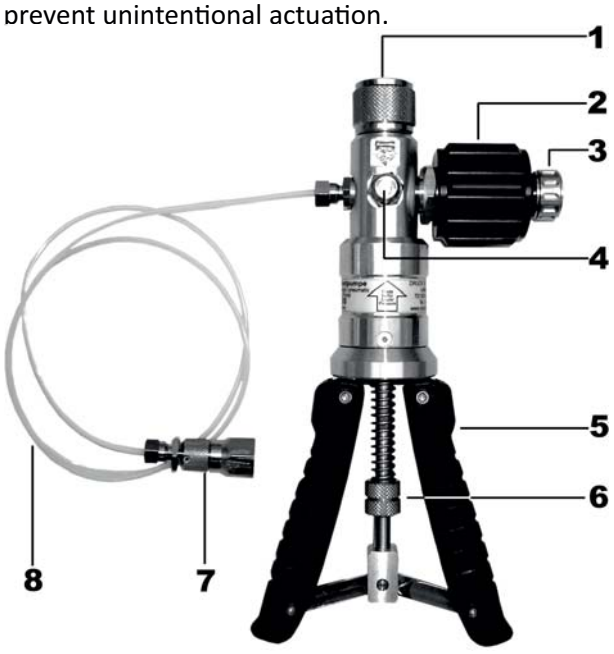
The unit under test is mounted to the end of the flexible tube. Fingertight fastening of the unit under test is sufficient. The unit under test is sealed by the integral O-ring sealing gasket.
In order to adapt different connection threads of units under test, use adaptors of the several adapter sets with integral O-ring sealing gaskets, available as accessory for the calibration pump.

STOP Do not use Teflon tapes, this may damage your test pump.

You can unsrew the tube and also directly attach the unit under test to the pump body, using a suitable thread adapter. This decreases the volume of the calibration circuit and makes operation of the test pump more easy.

4. Operation (pressure)

First, check wether 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.



STOP 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 (3) is open.

Make sure that the pressure relief valve (3) is not closed completely.

Turn the fine adjustment valve (2) anticlockwise 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 (or bushing) above the nut has some clearance, if the handles (5) are pressed together.

Carefully turn the pressure relief valve (3) until the valve closes. You will not notify any „hard stop“.

Operate the hand pump (5) until the max. priming pressure is achieved:

PGS-40:	approx. 20 - 25 bar
PGS-60:	approx. 35 - 40 bar

Turn the fine adjustment valve (2) clockwise to increase the pressure to maximum

PGS-40:	approx. 40 bar
PGS-60:	approx. 60 bar.

The max. pressure value depends on the volume of the calibration circuit.
Move the fine adjustment valve (2) until the requested test pressure has been reached precisely (to be read on the reference instrument).

After increasing the pressure, the reading may slightly drop again for about 30 sec. This is caused by thermodynamic effects, the tube connection and the sealing gaskets. If the pressure drop does not come to a standstill, check the measuring circuit for tightness.
Due to the low volume of each compression stroke of the test pump, only small volume test specimen should be tested.

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

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

5. Operatin (vacuum)

First, check wether 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.

STOP 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 (3) is open.

Make sure that the pressure relief valve (3) is not closed completely.

Make sure, that the adjustable knurled nut (6) is in such a position, that the visible spring (or bushing) above the nut has some clearance, if the handles (5) are pressed together.

Turn the fine adjustment valve (2) clockwise up to the end (“stop“ can be felt).

Carefully turn the pressure relieve valve (3) until the valve closes. You will not noticy any „hard stop“.
Operate the handles (5) smoothly and slowly until approx. -0.9 bar of vacuum are reached.

Turn the fine adjustment valve (2) anti-clockwise to increase vacuum up to -0.95 bar. Turn this valve for fine-adjustment.

After increasing the vacuum, the reading may slightly drop again for about 30 sec. This is caused by thermodynamic effects, the tube connection and the sealing gaskets. If the vaccum drop does not come to a standstill, check the measuring circuit for tightness. Due to the low volume of each compression stroke of the test pump, only small volume test specimen should be tested.

A vacuum reduction is achieved by carefully opening the relief valve (3).

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

For a maximal performance of the test pump, please make sure that the adjustable knurled nut is adjusted to a position that the visible spring (or bushing) get some clearance. If you operate with a reference or test item with small pressure range, you can reduce the performance of the pump by turning the nut (6) upwards. This reduces the volume per stroke.

6. Maintenance Instructions

Prior to connecting the reference instrument and the test specimen, the sealing gaskets in the two connectors should be checked for correct position and wear, and should be replaced, if and when necessary. A service kit, consisting of spare sealing gaskets and o-rings, is available as an accessory.

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

7. Case of Fault

If the pressure or vacuum cannot be generated correctly or if the set pressure or vacuum does not stay stable, this is likely to be caused by the incorrectly positioned or selected sealing gaskets. Please also check wether any adapters used on the test specimen have been tightened sufficiently to eliminate leaks.

Before assuming there is a leak in the 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 to test in a „centre position“.

If the test pump has not been used for a longer period of time, the first lift may be somewhat sluggish. This effect will disappear again during further operation.

By no means apply any force to the operating elements of the test pump.

STOP Never connect an external pressure supply system to the PGS-40 / PGS-60 test pump.

8. Technical Data

Pressure range:

PGS-40	PGS-60
-0.95...+40 bar	-0.95...+60 bar

Medium: air

Pressure ports (standard version):
1/2" BSP female rotating for reference instrument
1/4" BSP female rotating for test specimen

High pressure generation and Fine adjustment:
Fine adjustment valve

Overpressure:
Adjustable by means of knurled nut.

Material: Aluminium, brass, ABS, NBR

Dimensions:

PGS-40	PGS-60
220 x 120 x 65 mm	290 x 185 x 65 mm

Standard supply:
connection tube, length approx. 0.5 m

9. Available Accessories / Spare Parts

- Sets of adapters for test specimen
  - BSP threads (1/8", 3/8", 1/2", 1/2" male)
  - NPT threads (1/8", 1/4", 3/8", 1/2")
  - Metric (M12x1.5, M20x1.5, Minimess 1620)
- Transit case with custom foams
- Service kit
- Spare part: hose assembly
- Spare part: volume control with relief valve