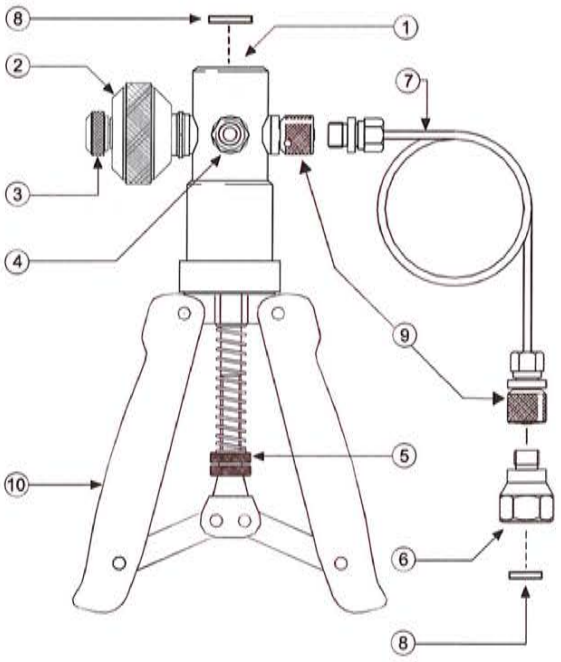
OPERATING INSTRUCTIONS - Druck PV211 PNEUMATIC HAND PUMP

Key:

1. Pressure port - 3/8" BSP Parallel female connection.
2. Fine adjustment valve.
3. Pressure release valve.
4. Pressure / Vacuum selector
5. Adjustable stroke for varying maximum pressure output (over pressure protection).
6. BSP or NPT adaptor set
7. Flexible hose to item under test.
8. Nylon seals for BSP adaptors (see seal kit provided) **DO NOT use 'PTFE' tape for sealing with parallel threads**
9. Knurled 'quick-fit' connectors
10. Pump Handles



Specification:

Output pressure:	0 to 40 bar / 0 to 600 psi (Adjustable)
Output Vacuum:	0 to -960 mbar / 0 to -29 inHg
Materials:	Bright nickel plated brass, clear anodised aluminium, Nylon.
Adjustment:	Fine volumetric pressure / vacuum adjuster
Dimensions:	220mm (L) x 105mm (W) X 63mm (D)
Weight:	650 grams.

The system is a portable dual source of vacuum and pressure. Each system incorporates a vacuum / pressure selector, a volume control for fine adjustment and adjustable stroke to provide over pressure protection.

REFERENCE INSTRUMENTS AVAILABLE TO SUIT PV211	**Accuracy FS:**
DPI 800 Series Pressure Indicator / Calibrator	up to 0.01 %
PC6-IDOS Pressure Calibrator	0.025%
DPI 104 Digital Test Gauge	0.05%
DPI 705 Series Pressure Indicator	0.1 %

Please refer to product data sheets for further information and ordering codes.

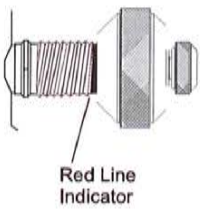
HOSE / ADAPTORS
The hoses (7) and adaptors (6) are fitted by simply screwing them into the connectors (9) by turning the knurled knut on the connector fully anti-clockwise.

RELEASE VALVE (3)
This can be used to reduce or release the pressure in the system. The rate of pressure reduction is dependent upon the degree of rotation when opening the valve. Minimal force is required to seal the system.

VOLUME CONTROL (2)
The pressure generated can be finely adjusted by turning the fine adjustment valve (2) either clockwise or anticlockwise to increase or decrease pressure accordingly.

OVER PRESSURE PROTECTION (5)
To adjust the maximum output pressure of the system turn the nuts (5) to increase or decrease the stroke length.

IMPORTANT
Under no circumstances should the fine adjustment valve (2) be wound back beyond the red line indicator on the body. Should this occur, then the pressure must be released from the system before attempting to re-engage the fine adjustment valve.



PRESSURE/VACUUM SELECTION (4)
Press the selector (4) as indicated on the label to engage the desired mode. Ensure that the release valve (3) is open before changing mode.

NOTE
The system should only be used for pressurising small volumes due to its small displacement.
If the system has not been used for a period of time, it could be difficult to operate on the first stroke.
The cylinder has been lightly greased on assembly but, if additional lubrication should ever be required, then apply a minimal amount to the inside of the cylinder.
Access is via the three retaining screws located under the black collar.

For seal replacement, refer to service kit PV211-SK instructions.

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⚠ **WARNING: DO NOT CONNECT PV211 TO EXTERNAL PRESSURE SOURCE.**

Guidelines for use:

1. Calibration / Comparison against Calibration Reference

1.1 Connect the pump to the Calibration Reference Instrument.

1.2 Connect the instrument under test to the pump.
Note: adaptors tightened to a maximum torque of 15 Nm.

1.3 Screw fine adjustment valve (2) fully clockwise.

1.4 Screw fine adjustment valve (2) 4 - 6 full turns anticlockwise.

1.5 Screw pressure release valve (3) fully clockwise, tightening to ensure good seal.

1.6 Operate handles (10) until the pressure is close to that finally required. **Ensure handles are fully squeezed together on each stroke to achieve maximum pressure output.**

1.7 Wind the fine adjustment valve (2) clockwise to increase pressure or anticlockwise to decrease pressure until required pressure is reached.
Note: The pressure may settle for up to 30 seconds after increasing pressure due to thermodynamic effects, settling of seals and expansion of the flexible hose.
Caution: NEVER screw the fine adjustment valve (2) beyond the red line indicator.

1.8 Reductions in pressure can also be achieved by careful use of the pressure release valve (3).

1.9 Vacuum is achieved using the above procedure and having the changeover valve (4) pushed completely towards the vacuum position. **Note: release pressure before changing mode.**

2. Use With High Resolution Pressure Calibrators
When used with instruments such as the DPI 800 the connections and use are as for gauges above, however the higher resolution available will amplify the visibility of the thermodynamic effects as mentioned in paragraph 1.7. These will settle to useable values within one minute of pressurisation.
Note: On very high resolutions such as 1mbar or 0.1 inches of water, small movements of the pipe may result in noticeable pressure changes.

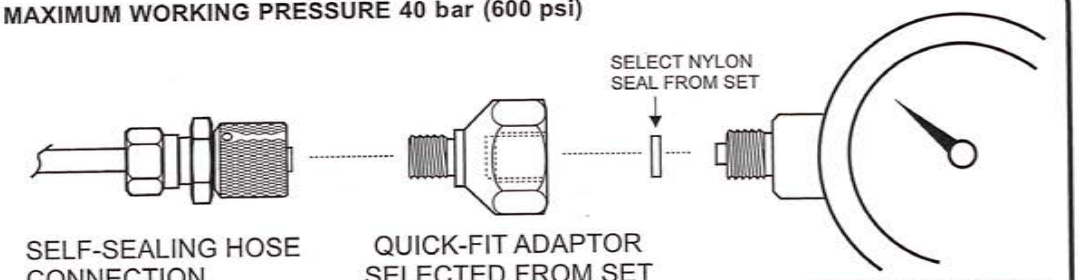
3. Fault Investigation.
In the event that the system appears to lose pressure then the procedure above should be repeated ensuring new seals are used, adaptors are tightened sufficiently and the pressure release valve (3) is tightened firmly.
Note: The connections to the hand held test system are sealed with 'o' ring or bonded seals and should not leak. The pipe to body connection can be checked but tightened no more than 2 Nm.
DO NOT attempt to tighten the other fittings to the test system as this could lead to damage of sealed joints.
When testing for leaks it may be noticed that air is drawn in or expelled from around the changeover valve.
This is normal and should cause no concern.

Ordering Codes.

PV211	**40** bar Pneumatic Hand Pump (includes hose assembly)
PV211-P	**40** bar Pneumatic Test Kit (includes pump, transit case, BSP adaptors, seals and hose)
PV-BSP	Set of 8 BSP Quick-Fit adaptors
PV-NPT	Set of 8 NPT Quick Fit adaptors
PV211-TC	Transit case (Plastic case, Foam inserts and Seal kit)
PV211-HK	1metre long flexible hose assembly
PV211-SK	Service kit
421-206-39	Adaptor seal kit

PV-BSP-QF ADAPTOR SET
FITTING INSTRUCTIONS FOR BSP THREADS

MAXIMUM WORKING PRESSURE 40 bar (600 psi)



SELF-SEALING HOSE
CONNECTION
e.g. FROM PUMP

QUICK-FIT ADAPTOR
SELECTED FROM SET

ITEM UNDER TEST

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