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PV 210

Low Pressure Pneumatic Hand-pump

Instruction Manual

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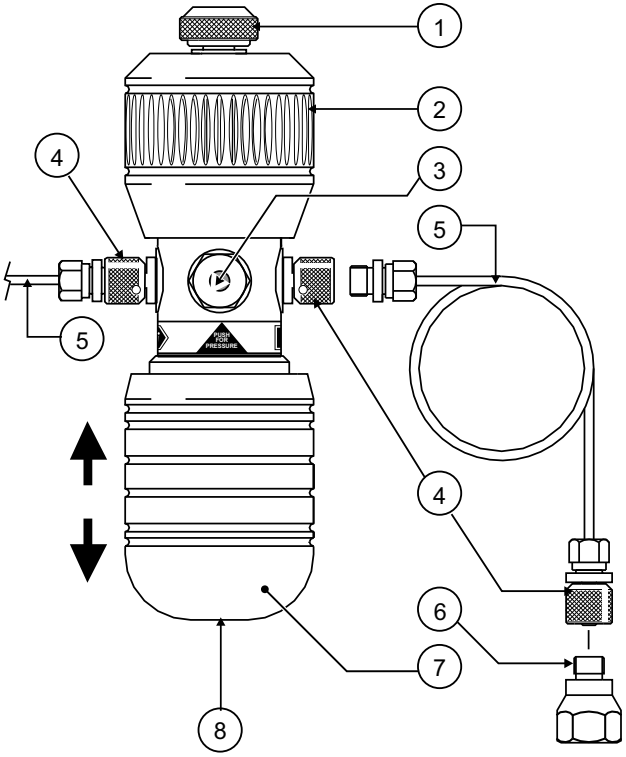
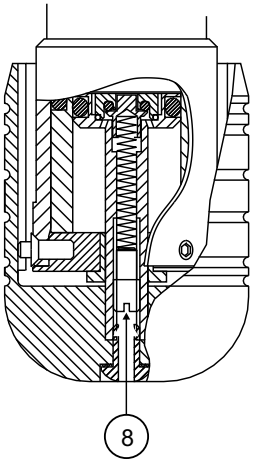


A1



A2

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Introduction

This manual provides operating instructions for the PV 210 Low Pressure Pneumatic hand-pump.

Safety

The manufacturer has designed this equipment to be safe when operated using the procedures detailed in this manual. The user must not use this equipment for any other purpose than that stated.

This manual contains safety and operating instructions that must be followed to make sure of safe operation and to keep the equipment in a safe condition. The safety instructions are either warnings or cautions issued to protect the user and the equipment from injury or damage.

Use suitably qualified technicians* and good engineering practice for all procedures in this manual.

Pressure

Do not apply pressure greater than the maximum safe working pressure stated in the specification.

Toxic Materials

There are no known toxic materials used in construction of this equipment.

Maintenance

The equipment must be maintained using the procedures in this publication. Further manufacturer's procedures should be done by an authorized service agents or the manufacturer's service departments.

Technical Advice

For technical advice contact the manufacturer or subsidiary.

Symbols

The following symbols mark this equipment:

Symbol	Description
	This symbol, on the equipment, indicates a warning and that the user should refer to the user manual. Ce symbole, sur l'appareil, est un avertissement qui indique que l'utilisateur doit consulter le manuel d'utilisation.
	Do not dispose of this product as household waste. Use an approved organization that collects and/or recycles waste electrical and electronic equipment. For more information, contact one of these: - Our customer service department: **Druck.com** - Your local government office.

Abbreviations

The following abbreviations are used in this publication.

Note: Abbreviations are the same in the singular and plural.

Abbreviation	Description
°C	degrees Celsius
BSP	British Standard Pipe thread
COSHH	Control of Substances Hazardous to Health regulations
°F	degrees Fahrenheit
ft lb	foot pound
inH_2O	inches of water
inHg	inches of mercury
lb	pounds
kg	kilogram
m	metre
mm	millimetre
MSDS	Material Safety Data Sheet
NPT	National Pipe Thread
psi	pounds per square inch
PTFE	polytetrafluoroethylene

* A qualified technician must have the necessary technical knowledge, documentation, special test equipment and tools to carry out the required work on this equipment.

1. Introduction

The PV 210 is a portable source of pressure and vacuum. Each pump includes a pressure/vacuum selector, a volume control for fine adjustment and an adjustable pressure relief valve to prevent damage to sensitive instruments.

2. Operation

WARNING Before applying pressure, make sure all connections are correct and equipment is internally clean and free from damage.

Make sure that all equipment is to the correct pressure rating.

Do not exceed the maximum operating pressure stated in the specification.

Observe the relevant health and safety precautions.

CAUTION If PTFE tape is used to seal NPT threads, ensure that only a sufficient amount is used to achieve pressure seal. If excess tape is used, particles can become loose during the connector mating process and enter the pump, potentially leading to loss of pump performance or pressure leaks.

INFORMATION Because the PV 210 only has a small displacement, only use the PV 210 to pressurize small volumes.

Note: Wherever possible, use o-ring seals in the BSP connection ports this is the recommended method of sealing.

Key to Figure A1

1. Pressure release valve.
2. Fine adjust vernier.
3. Pressure/Vacuum selector.
4. Quick-fit connectors.
5. 1 m (3.3 ft) x 3 mm (1/8") flexible nylon hose (x2).
6. 1/4" female BSP or NPT adaptor.
7. Pump handle.
8. Adjustable pressure relief valve.

2.1 Hose/Adaptors (Figure A1)

To attach a hose (5) and adapter (6) to a connector (4), turn the knurled nut on the connector counterclockwise.

2.2 Pressure Release Valve (Figure A1)

Use this (1) to reduce or release the pressure in the system. The amount of turn sets the rate to release the pressure. Only minimum force is necessary to seal the system.

2.3 Fine Adjust Vernier (Figure A1)

INFORMATION To prevent damage, when the top of the pump body comes into view, DO NOT use force to turn the fine adjust vernier (2) farther out.

To make accurate adjustments to the pressure, turn the fine adjust vernier (2) clockwise to increase the pressure or counterclockwise to decrease the pressure.

2.4 Pressure/Vacuum Selector (Figure A1)

Before you change the mode, make sure that the pressure release valve (1) is open. To change the mode, use an applicable tool to push the selector (3) to the side specified on the label.

2.5 Adjustable Pressure Relief Valve (Figure A2)

Use this (8) to prevent damage to sensitive instruments. To adjust the maximum output pressure, turn the screw in the bottom of the pump handle.

3. Operation

WARNING DO NOT ignore the maximum operating pressure specified on the pump label.

Before you connect a pressure component to the PV 210, make sure that it is isolated from the pressure supply and release the internal pressure slowly. DO NOT connect the pump to an external pressure source.

3.1 Calibration/Comparison against an Analog Gauge

1. Connect a reference instrument with a hose (5)/adaptor (6) to a connector (4).
2. Use the same procedure to connect the instrument under test to the other connector (4).

   Note: The maximum torque for the adaptors is 15 Nm (11 ft lb).
3. Set the fine adjust vernier (2) to the midpoint of its travel:

   Turn it fully clockwise, then four to six turns counterclockwise.
4. Close the pressure release valve (1):

   Turn it fully clockwise, and tighten to seal.
5. To set a maximum output pressure, use a screwdriver to adjust the pressure relief valve (8):

   Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure.
6. Operate the pump handle (7) until the pressure is almost correct.
7. To adjust the pressure to the correct value, turn the fine adjust vernier (2) clockwise to increase the pressure or counterclockwise to decrease the pressure.

   INFORMATION To prevent damage, when the top of the pump body comes into view, DO NOT use force to turn the fine adjust vernier (2) farther out.

   Note: Initially, small pressure changes can occur (thermodynamic effects, the seals settle, the hoses expand). The pressure will stabilize after a short time.
8. You can also decrease the pressure by careful operation of the pressure release valve (1).
9. To get a vacuum, set the pressure/vacuum selector (3) to the vacuum position (as indicated on the pump label) then use the same procedure as above.

   Note: Before you change the mode, release the pressure.

3.2 Operation with a High-Resolution Pressure Calibrator

Because the resolution is better, it is possible you will see more of the small pressure changes identified in step 7 above.

Note: On very high resolutions such as 1 mbar or 0.1 inH_2O, small movement of the hose may result in noticeable pressure changes.

4. Fault Finding

1. If the system appears to lose pressure, repeat the above procedure. Make sure: there is no damage to the seals, the adapters are tightened sufficiently, the pressure release valve (1) is tightened sufficiently to seal.
2. Do not try to tighten other connections on the pump. These are factory set and changes can cause damage to the sealed joints.
3. During leak tests, small air movements (in or out) are possible around the pressure/vacuum selector (3). This is normal.
4. If the PV 210 has not been used for a period of time, it can be difficult to operate on the first stroke. It will become free after this.
5. For seal replacement refer to the service kit instructions.

If, for any reason, a fault occurs within the pump, it is recommended that the equipment be returned to an appointed agent.

5. General Specification

INFORMATION **Pneumatic gases must be compatible with stainless steel, bright nickel plated brass, anodized aluminum, phosphor bronze, nitrile rubber seals and nylon.**

Item	Specification
Pneumatic Pressure Range	0 to 3 bar (0 to 45 psi)
Vacuum Pressure Range	0 to -0.9 bar[a] (0 to -27 inHg)[a]
Relief Valve	Adjustable from 50 mbar (20 inH_2O) to maximum pressure.
Dimensions (Length x Width x Depth)	150 mm (6.7”) x 46 mm (1.8”) x 46 mm (1.8”)
Weight (approximate)	0.6 kg (1.3 lb)

a. This value assumes atmospheric pressure at 1 bar (14.5 psi) and varies depending on atmospheric pressure.

6. Returned Goods Procedure

If the unit requires calibration or is unserviceable, return it to the nearest Druck Service Centre listed at: **Druck.com**

Contact the Service Department to obtain a Return Authorization (Worldwide excluding USA).

In the USA, obtain a Return Material Authorization [RMA].

Provide the following information on either a RGA or RMA:

- Product (i.e. PV 210)
- Serial number
- Details of defect/work to be undertaken
- Operating conditions

6.1 Safety Precautions

INFORMATION **Service by unauthorized sources will affect the warranty and may not guarantee further performance.**

You must inform Druck if the product has been in contact with any hazardous or toxic substance.

The relevant COSHH or in the USA, MSDS, references and precautions to be taken when handling.

6.2 Approved Service Agents

For the list of service centers:

Druck.com

Office Locations

Headquarters
Leicester, UK
+44 (0) 116 2317233
gb.sensing.sales@bakerhughes.com

Australia
North Sydney
1300 171 502
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K0407 Revision C | Multilingual

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