

# Hand Pumps

## Pneumatic/Hydraulic hand pump Product Guide

- Pneumatic hand pumps from -1 to 60 bar
- Hydraulic hand pumps from 0 to 1000 bar
- Controlled pressure release and adjustment
- Adjustable pressure limit
- Wide range of accessories and test kits



# Hand Pumps

## PV Hose Kit

### HK1

**1000 bar working pressure, for oil or water**  
 GE Druck have introduced a new High Pressure Hose Kit to augment its very successful Hydraulic Hand Pump range.  
 It offers a new, standard for those involved in high pressure 'on-site' calibration.

The HK1 offers the following:-

- Self-Sealing hose and adaptors - No drips ! Adaptors supplied:  
 1/4" BSP (male) to Hose self seal connection  
 1/4" BSP (female) to Hose self seal connection  
 1/4" BSP (male) to 1/4" and 1/8" BSP (male) adaptors  
 1/4" BSP (male) to 1/8" NPT (male) adaptor
- Easy finger tight connection.
- Very low volumetric expansion - Negligible pressure drop.
- Stainless Steel / Nylon construction - Suitable for Oil and water.  
**NO RUST !**

### Specification

Working Pressure	1000 bar
Min. Burst Pressure	2500 bar
Min. Bend Radius	60mm
Working Temperature	-30°C to +80°
Length	HK1-PV411 - 1/2 metre, HK1-PV212 - 1 Metre
Media	Water, Oil as standard, 'Skydrol' or brake fluid version available



### Pneumatic Hose Kit

#### Microbore hose

A light weight microbore high pressure flexible hose recommended for pneumatic and Low pressure hydraulic applications.

Hose is 1 m in length and is terminated at each end with 1/4 BSP female connections. Adaptors supplied are:

- 1/4" BSP (male) to 1/4" and 1/8" BSP (male) adaptors
- 1/4" BSP (male) to 1/8" NPT (male) adaptor

#### Specification

Working Pressure	300 bar
Min Burst Pressure	1950 bar
Working Temperature	-20°C to 120°C
Length	1 metre
Media	Most common gases, oil, water



#### Order Codes

HK1-PV212 - 1000 bar working pressure, for oil or water  
 HK1-PV411 - 1000 bar working pressure, for oil or water  
 PV411-105 - High pressure Microbore hose

## GE Druck Reference Instruments

### DPI 103 Digital Test Gauge

- Accuracy: 0.2% FS
- 5 ranges available between -1...1000 bar
- 6 selectable pressure units
- All stainless steel (316) welded pressure cavity for wet and aggressive media
- Resolution: 4 1/2 digits



### DPI 705/740 Series

Pressure/leak indicators with gauge absolute or differential pressure ranges and internal or remote sensors.

- 0.1% F.S. accuracy
- Ranges up to 700 bar
- 16 pressure units
- Barometric version accuracy to ±0.15mbar



### DPI 610/615 Series

Flexible, simple to operate calibrator. The task menu enables operating modes such as pressure transmitter or switch test to be configured at the touch of a button.

- Pressure ranges: 2.5mbar to 700 bar
- Field error calculation and PASS/FAIL report
- Over 20 dedicated tasks
- Stores over 40 test procedures



### Documenting

### DPI 800 Series

- 0.05% FS (over 0 to 50°C and for 1 year)
- 22 pressure ranges gauge/diff and absolute
- Single or dual internal sensors
- Ranges from 25 mbar to 700 bar
- Optional 0.01% FS accuracy
- mA measure and 24V loop power
- Switch test and Hart resistor



### UPS Series

A series of Smart loop testers which simplify everyday maintenance tasks. Easy to use menu operation selects linear, flow or valve stroke options.

- Auto step/ramp
- Powers/reads 2 wire TX
- Sources/reads 0/4 - 24mA
- Displays mA or %span



### TRX II Series

This rugged and reliable multifunction calibrator improves data quality and saves time by using a PCMCIA interface.

- No docking required
- 1 Mbyte memory card
- Calibrates and simulates
- Remote pressure sensors



### Documenting

# Hand Pumps

## PV411 Multi-Functional Hand Pump

'-0.95 bar vacuum, 60 bar pneumatic and 700 bar hydraulic

The revolutionary PV 411 (4 In 1) multi-function pressure generator is a remarkable hand pump for generating vacuum, gas and hydraulic pressures from a few mbar up to 700 bar. It has the versatility to replace four conventional hand pumps

The PV 411 is the ideal field tool for applying test and calibration pressures to sensors, gauges, switches, indicators and recorders. It is also a low cost pressure source for workshops and laboratories. This wide capability removes the need to carry several hand pumps.

### Vacuum

Applying vacuum to absolute, negative gauge and differential field instruments is no longer a problem. With just a few strokes, the PV 411 generates up to 95% vacuum (-950 mbar at 1000 mbar ambient).

### Low Pressure (pneumatic)

For sensitive low pressure applications, the PV 411 volume adjuster alone generates 300 mbar to within 0.1 mbar. The stroke restrictor varies the pressure generated and prevents accidental overpressure.

### Medium Pressure (pneumatic)

The PV 411 generates gas pressure up to 60 bar, exceeding conventional hand pumps by more than 30 bar. This extended capability enables many new applications to be addressed.

### High Pressure (hydraulic)

The PV 411 solves the problems of priming hydraulic systems; eliminating airlocks and fluid leakage. This is achieved with a unique vacuum priming facility. The volume adjuster is used to quickly and accurately generate pressure up to 700 bar.

### FEATURES

<b>Large volume (pressure) adjuster:</b>	Easy to turn for accurate pressure/vacuum setting
<b>Pressure/vacuum valve:</b>	Pressure/vacuum selection and fine control release
<b>Stroke restrictor:</b>	Limits the pressure generated per stroke
<b>Adjustable protection valve:</b>	Adjustable overpressure protection from 30 to 700 bar
<b>Swivel head:</b>	Provides optimum viewing angle for reference indicators
<b>Ergonomically designed:</b>	Comfortable grip for frequent single or two handed operation
<b>PTFE anodised parts:</b>	Reduces friction and wear on moving parts
<b>Multi-axis G1/4 ports</b>	Convenient connection of gauges, hoses and reservoir

### SPECIFICATION

Pressure range: 0.95 bar vacuum, 60 bar pneumatic and 700 bar hydraulic  
Pressure media: Pneumatic - Most common gases Hydraulic mineral Oil and De-mineralised water  
Pressure connections: 2 x 1/4" BSP female test ports  
Dimensions: L 260mm x W 135mm x D 95mm  
Weight: approx. 1 kg Nominal

### ORDER CODES

PV411	Multi-function pressure generator and user manual
PV411-100	A Rigid lightweight transit case for the PV411 and accessories
PV411-105	A 50cm length of Pneumatic flexible hose terminated in 1/4 BSP 300 bar rated
PV411-110	A Set of stainless steel BSP test pint adaptors
PV411-115	A 100cc Hydraulic reservoir that fits directly into the PV411
PV411-120	A Set of stainless steel NPT test point adaptors
PV411-125	A Set of stainless steel Metric test point adaptors
PV411-130	A Set of Bonded seals
PV411-HP	Hydraulic test kit (Pump, Transit case, Hydraulic resevoir, BSP adaptors, HK1-PV411 hose and seal kit)
PV411-P	Pneumatic test kit (Pump, Transit case, BSP adaptors, PV411-105 hose and seal kit)
PV411-SK	Service Kit
HK1-PV411	A 50cm Flexible Hose 1000 bar



# PV212 Hydraulic high Pressure Hand Pump 0 to 1000 bar

PV212 Hydraulic hand pump is lightweight, easy to use and can generate pressures up to 1000 bar. The PV212 is well suited for calibrating pressure transmitters, pressure transducers, pressure switches and pressure gauges.

PV212 can be used as a Portable Pressure Comparator in conjunction with various pressure indicating devices.

The system offers adjustable over pressure protection, fine control, and a unique selector switch to move from priming to high pressure generation.

## FEATURES

- Hydraulic Pressure up to 1000 bar / 15,000 psi !
- Stainless Steel Sealed Construction - NO LEAKS ! NO RUST !
- Lightweight, hand held and easy to use.
- Optional over pressure protection system (via adjustable relief valve )
- Quick priming and pressure generation using scissor action pump.
- High pressure / priming selector.
- Fine adjustment control.
- Pressure release valve.
- Large see-through reservoir with a capacity of over 100cc.
- Compatible with most liquids. e.g. mineral oil, distilled water. ('Skydrol' / Brake fluid option also available ).
- Supplied with carrying case.
- Optional accessories include a set of adaptors and a flexible hose with quick fit connectors suitable for many applications.

## SPECIFICATION

Pressure range: 0 to 1000 bar max..  
 Pressure media: Mineral based Hydraulic Oil, Distilled water ('Skydrol' and brake fluid option available )  
 Pressure connection: 3/8" BSP female. (adaptors to 1/4 BSP male and female) 1/4" BSP female. (blanked off)  
 Dimensions: L 236mm x W 159mm x D 70mm  
 Weight: approx. 1.6kg

## ORDER CODES:

PV212 Hydraulic pressure generator and user guide  
 PV212-HP Hydraulic kit, (Pump, transit case, HK1-PV212 Hose, Set of BSP adaptors and seal kit)  
 PV212-S As PV212 but Skydrol compatible  
 PV212-TC PV212 Transit Case (Plastic carry case, closed cell foam seal kit and reservoir fill bottle)  
 HK1-PV212 Flexible Hose 1000 bar rated  
 HK1-PV212-S Flexible Hose Skydrol Compatible  
 PV212-SK PV212 Service kit  
 PV212-BSP Set of BSP adaptors for PV212 pumps  
 PV212-NPT Set of NPT adaptors for PV212 pumps

## Pressure Relief Valve

PV212 Pressure relief valve is simply screwed into the rear 1/4" BSP blanked off port which is reserved for the purpose. The valve can be supplied preset with the PV212 or can be quickly retrofitted to existing units using simple installation instructions.

## ORDER CODES

<u>PV212 Version</u>	<u>Pressure range</u>
PRV12-1-PV212	10 - 50 bar
PRV12-2-PV212	50 - 200 bar
PRV12-3-PV212	200 - 400 bar
PRV12-4-PV212	300 - 700 bar
PRV12-5-PV212	600 - 1000 bar



# PV211 Pneumatic Hand Pump

## -0.95 bar to 25 bar

The PV211 pneumatic hand pump has been introduced to complement an already extensive range of pressure calibration products and can be used for calibration checks on pressure transmitters, pressure switches, indicators, recorders and controllers.

Calibration checks can be carried out simply by temporarily shutting off line pressure, selecting the digital indicator or test gauge required and connecting the instrument via the flexible hose and swivel adaptor to the pressure measuring instrument to be checked. The range of adaptors enables connection to most gauge threads.

### FEATURES

- Dual source of pneumatic pressure and vacuum.
- Fully portable hand operated unit supplied as a complete kit.
- Generating over 25 bar pressure or 96% vacuum.
- Adjustable stroke to provide over pressure protection.
- Quick fit instruments are available to use with the system including electronic calibrators, digital indicators and analogue gauges.
- The PV211 is supplied in a light, high quality carrying case, with adaptorstors, a set of washers, seals and provision for additional instruments.

### SPECIFICATION

Output Pressure: 0 to 25 bar  
Output Vacuum: 96% (0 to -0.960 bar)  
Pressure connections: 3/8" BSP female (Adaptors to 1/4 BSP male and female) 1/4 BSP female (terminated on standard hose)  
Materials: Bright nickel plated brass, clear anodised aluminium, Nylon.  
Adjustment: Fine volumetric pressure / vacuum adjuster.  
Dimensions: L 220mm x W 105mm x D 63mm.  
Weight: 650 grams.

### ORDER CODES

PV211	Pneumatic pressure generator and user guide
PV211-P	PV211 Pump and pneumatic Kit (Pump, Transit case, BSP adaptors)
PV211-TC	PV211 Transit case (Plastic case, foam cell inserts and seal kit)
PV211-SK	PV211 Service seal Kit
PV211-HK	PV211 Complete hose assembly
PV-BSP	Set of BSP quick fit adaptors for PV210/211
PV-NPT	Set of NPT quick fit adaptors for PV210/211



# PV210 Pneumatic Hand Pump

## -0.9 bar to 3 bar

The PV210 is a combined vacuum and low pressure hand pump, which has the capability of generating pressures up to 3 bar down to 90 % vacuum. The PV 210 the ideal field tool for applying low pressures for test and calibration of sensors, gauges, switches, indicators and recorders. It is also a low cost low pressure source for workshops and laboratories.

**With unique variable maximum pressure feature !**

### FEATURES

- Dual source of pneumatic pressure and vacuum.
- Integral fine control and pressure release valve.
- Live volume thermally isolated.
- Fully portable hand operated unit.
- Generating up to 3000 mbar or -900 mbar.
- Adjustable Pressure Relief Valve for setting maximum output pressure.
- Quick fit instruments are available to use with the system including electronic calibrators, digital indicators and analogue gauges.
- The PV210 is supplied in a light, high quality plastic carrying case, with hoses, adaptors, seals and provision for additional instruments.

### KEY:

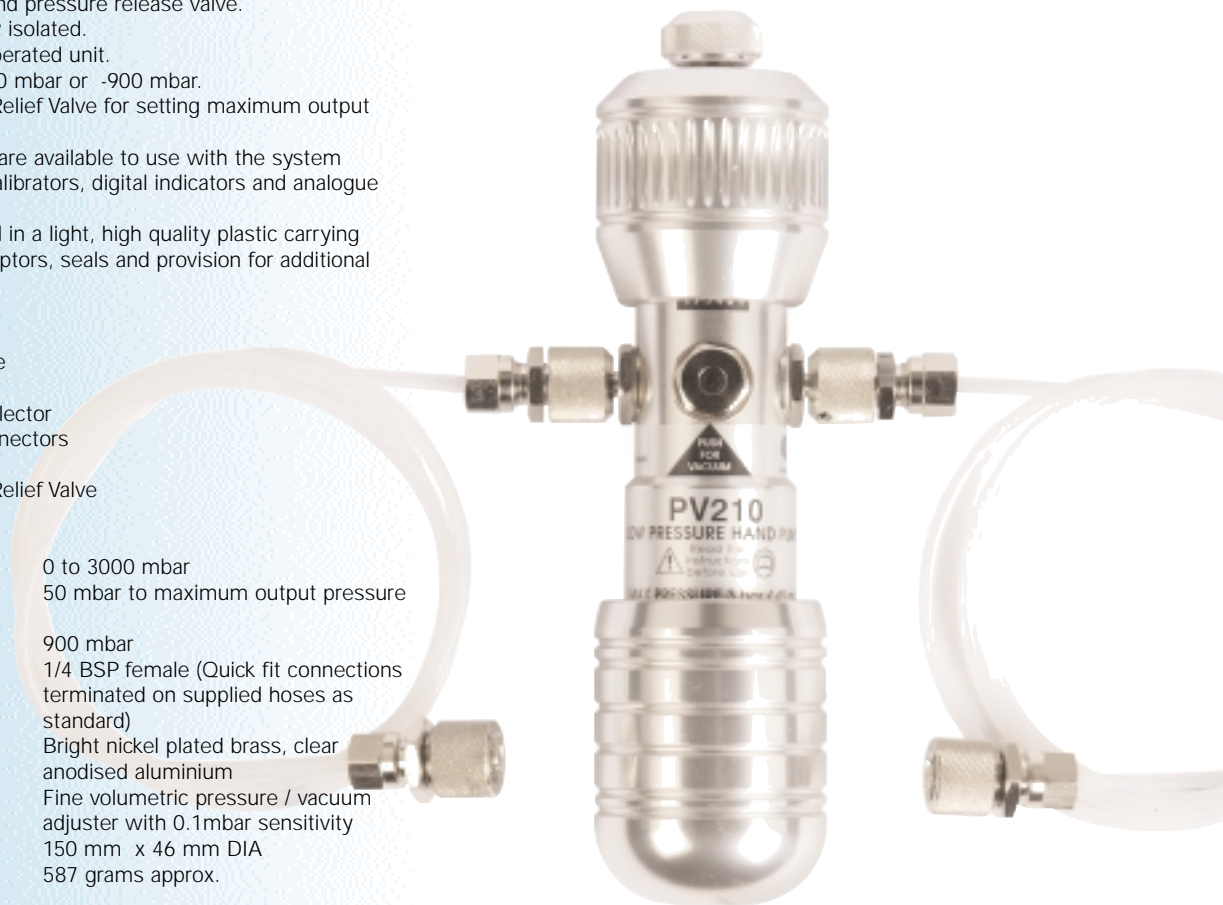
1. Pressure release valve
2. Fine adjustment valve
3. Pressure / Vacuum selector
4. Knurled 'quick-fit' connectors
5. Handle
6. Adjustable Pressure Relief Valve

### SPECIFICATION

Output Pressure:	0 to 3000 mbar
Relief Valve adjustment:	50 mbar to maximum output pressure
Output Vacuum:	900 mbar
Pressure connections:	1/4 BSP female (Quick fit connections terminated on supplied hoses as standard)
Materials:	Bright nickel plated brass, clear anodised aluminium
Adjustment:	Fine volumetric pressure / vacuum adjuster with 0.1mbar sensitivity
Dimensions:	150 mm x 46 mm DIA
Weight:	587 grams approx.

### ORDER CODES









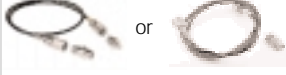









PV210	Low pressure Pneumatic pressure generator and user guide
PV210-P	PV210 Pneumatic Test case (Pump, transit case and BSP adaptors )
PV210-TC	PV210 Transit case (Plastic carrying case, cell foam inserts and seal kit)
PV210-SK	Service seal kit
PV-BSP	Set of BSP quick fit adaptors for PV210/PV211
PV-NPT	Set of NPT quick fit adaptors for PV210/PV211



# Hand Pumps

## Selection Guide

Order codes in **BOLD** text

Pumps	Vacuum, 60 bar pneumatic and 700 bar hydraulic  <b>PV411</b> Multi function <b>PV411-115</b> Hydraulic reservoir	1000 bar hydraulic  <b>PV212</b> Hydraulic	Vacuum to 25 bar pneumatic  <b>PV211</b> Pneumatic	Vacuum to 3 bar pneumatic  <b>PV210</b> Low pressure
Transit Cases	 <b>PV411-TC</b>	 <b>PV212-TC</b>	 <b>PV211-TC</b>	 <b>PV210-TC</b>
Hoses	Pneumatic      Hydraulic  <b>PV411-105</b> <b>HK1-PV411</b>	Hydraulic  <b>HK1-PV212</b>	1 Hose Supplied with pump  <b>PV211-HK</b> Complete hose assembly	2 Hose Supplied with pump  <b>PV-BSP</b> Set of BSP adaptors <b>PV-NPT</b> Set of NPT adaptors
Adaptors	<b>PV411-110</b> Set of BSP adaptors <b>PV411-120</b> Set of NPT adaptors <b>PV411-125</b> Set of 4 Metric adaptors	<b>PV212-BSP</b> Set of BSP adaptors <b>PV212-NPT</b> Set of NPT adaptors	<b>PV-BSP</b> Set of BSP adaptors <b>PV-NPT</b> Set of NPT adaptors	<b>PV-BSP</b> Set of BSP adaptors <b>PV-NPT</b> Set of NPT adaptors
Accessories	<b>PV411-130</b> Bonded seal kit	<b>421-206-39</b> Nylon Seal Kit <b>PRV12-X-PV212</b> Pressure relief valve	<b>421-206-39</b> Nylon Seal Kit	<b>421-206-39</b> Nylon Seal Kit
Recommended Complete Test Kits	 <b>PV411-P</b> Hydraulic Kit includes: PV411 95% vacuum, 60 bar pneumatic pump, PV hose, BSP adaptors, seal kit and transit case <b>PV411-HP</b> Pneumatic kit includes: PV411 95% vacuum, 60 bar pneumatic, 700bar hydraulic pump, hydraulic reservoir, HK1-PV411 hose, BSP adaptors, seal kit and transit case	 <b>PV212-HP</b> Hydraulic Kit includes: PV212 1000 bar hydraulic pump, HK1-PV212 hose, adaptors, seal kit and transit case	 <b>PV211-P</b> Pneumatic kit includes: PV211 25 bar pneumatic pump, hose, adaptors, seal kit and transit case	 <b>PV210-P</b> Pneumatic kit includes: PV210 3 bar pneumatic pump, hose, adaptors, seal kit and transit case
Recommended Reference Instruments	DPI 800 Series 25 mbar to 700 bar  $\pm 0.05\%FS$ Accuracy Option $\pm 0.01\%FS$ Accuracy	DPI 800 Series 25 mbar to 700 bar Switch test mA measure 24V loop power Hart Resistor  $\pm 0.05\%FS$ Accuracy Option $\pm 0.01\%FS$ Accuracy	DPI 705 Series 70 mbar to 700 bar  $\pm 0.1\%FS$ Accuracy	DPI 103 Series -1 to 1000 bar  $\pm 0.2\%FS$ Accuracy

Please refer to Reference instrument product datasheets for further information and ordering codes.

# Hand Pumps

## Pneumatic/Hydraulic Hand Pump Product guide

The GE Druck Group comprises fourteen subsidiary companies and a global agency network with development and manufacturing operations in Europe and the USA.

To address a wide range of applications and markets, Druck has four product marketing divisions. These groups are pressure sensors, portable calibrators, primary and secondary standards and Aviation Ground Support Equipment.

Some products from the divisions are shown. Refer to Druck for associated product guides and datasheets.



**Portable Field Calibrators Division**  
A wide range of precision battery powered instruments used to calibrate pressure, temperature and electrical parameters, often in remote locations.



**Pressure Sensors Division**  
A wide range of transducers and transmitters available in standard or customised designs to suit individual user applications.



**Primary & Secondary Standards Division**  
A wide range of calibration standards are available, including deadweight testers, electronic pressure controllers and pressure indicators manufactured by Druck and group companies Ruska and Pressurements.



**Aviation Ground Support Equipment Division**  
A wide range of advanced Air Data Test Sets, aeronautical indicators and primary standards are available for flightline and laboratory applications.



Group