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Multi-function Hand Pump

- Multi-function "4 In 1" handpump
- 60 bar pneumatic, 700 bar hydraulic
- Generates vacuum to 95%
- Vacuum priming for hydraulic systems
- Excellent low pressure control
- Adjustable overpressure protection



Multi-function Hand Pump

The revolutionary PV 411 (4 In 1) multi-function pressure generator is a remarkable new hand pump for generating vacuum, gas and hydraulic pressures from a few mbar up to 700 bar. It replaces four conventional hand pumps and sets the following new standards of performance:

Vacuum:	to 95%
Low pressure (gas):	0.1 mbar resolution
Medium pressure (gas):	to 60 bar
High pressure (hydraulic):	to 700 bar

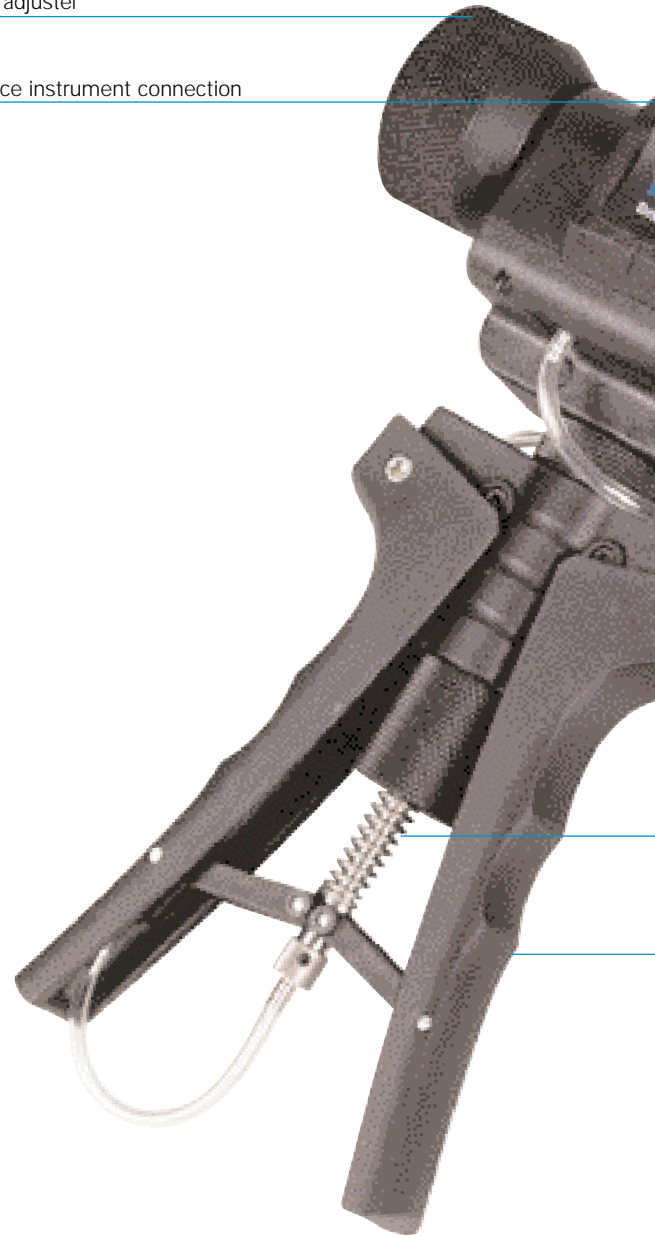
For many years Druck have produced pneumatic and hydraulic pressure generation systems for a wide range of portable pressure calibrators. This experience has resulted in the PV 411, which combines four common pressure generation requirements into a single, easy to use unit. The PV 411 standard features include:

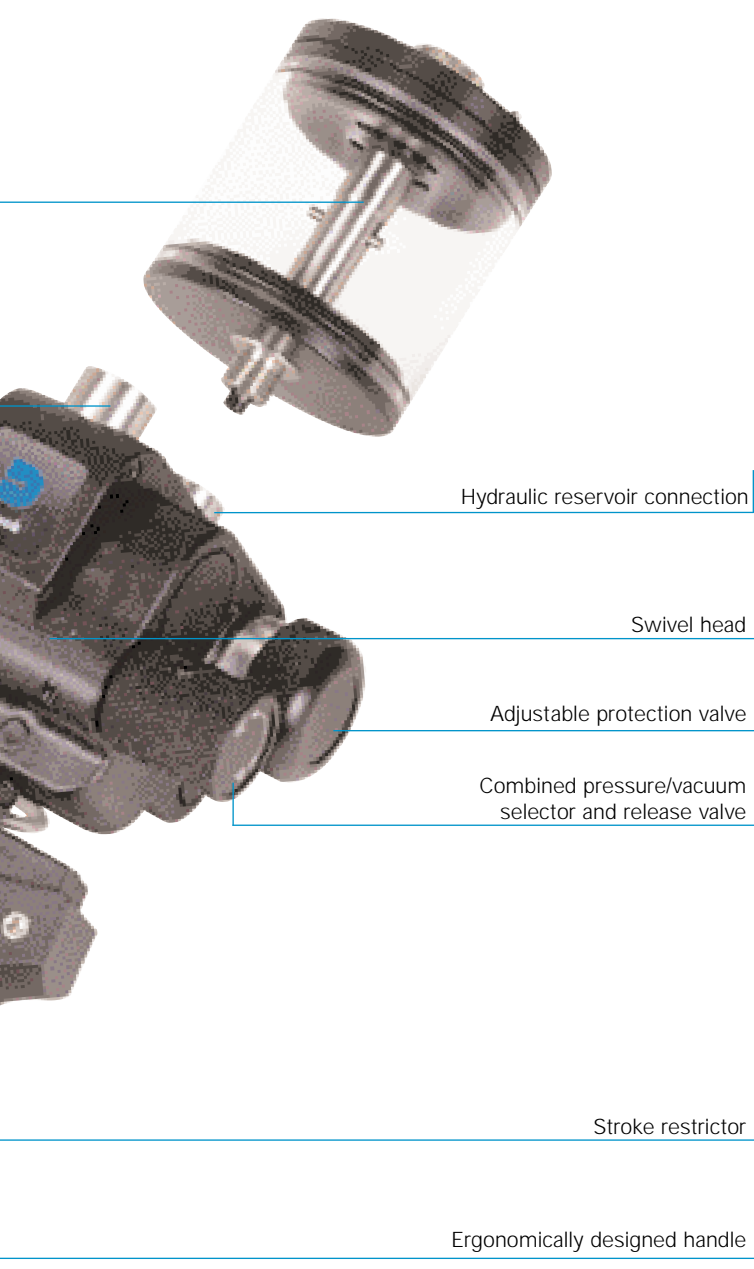
Large volume (pressure) adjuster:	Easy to turn for accurate pressure/vacuum setting
Pressure/vacuum valve:	Pressure/vacuum selection and fine control release
Stroke restrictor:	Limits the pressure generated per stroke
Adjustable protection valve:	Adjustable overpressure protection from 30 to 700 bar
Swivel head:	Provides optimum viewing angle for reference indicators
Ergonomically designed:	Comfortable grip for frequent single or two handed operation
Teflon anodised parts:	Reduces friction and wear on moving parts
Multi-axis G¹/₄ ports:	Convenient connection of gauges, hoses and reservoir
Compact and lightweight:	26 cm x 13.5 cm x 9.5 cm, weight 1kg nominal

Hydraulic reservoir (optional)

Volume adjuster

Reference instrument connection





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.

Specification Parameter	Pneumatic			Hydraulic
	Vacuum	Low Pressure	Medium Pressure	High Pressure
Range *	0 to 95%	0 to 60 bar		0 to 700 bar
Adjuster contribution *	200 mbar @ 0 bar	300 mbar @ 0 bar	8.5 bar @ 30 bar	0 to 700 bar
Adjuster sensitivity *	< 0.1 mbar	< 0.1 mbar	10 mbar @ 30 bar	1 bar @ 700 bar
Minimum strokes *	5 (0 - 90%)	2 @ 2 bar	30 @ 60 bar	N/A

* **Note:** specifications are based on minimum volumes

Hydraulic Pressure Media: Any fluid compatible with stainless steel, nitrile, teflon, nylon, polypropylene, acrylic. De-mineralised water or low viscosity mineral oil is recommended.

The hydraulic and pneumatic systems are common and therefore residual fluid could remain within the system.

Multi-function Hand Pump

TEST KITS

Complete test kits can be ordered or individual items, as below:

PV 411-P Pneumatic test kit includes:

- PV 411:** Multi-function pressure generator and user manual.
- PV-411-100:** A rigid lightweight transit case for the PV 411 and accessories. Size 36 cm x 34 cm x 13 cm.
- PV-411-105:** A 50 cm length of high pressure flexible hose terminated in 1/4" BSP (female), rated to 700 bar.
 - 1/4" BSP (male) to 1/4" and 1/8" BSP (male) adaptors
 - 1/4" BSP (male) to 1/8" NPT (male) adaptor
- PV-411-110:** A set of stainless steel BSP test point adaptors:
 - 1/4" BSP (male) to 1/4" BSP (female) swivel
 - 1/4" BSP (male) to 1/8", 3/8", and 1/2" BSP (female)
 - 1/4" BSP (male) to 1/4" BSP (male)
- PV-411-130:** Bonded seals for hose and adaptors. Includes spare 'O' ring seals for reservoir and swivel adaptors.



PV 411-HP: Pneumatic and hydraulic test kit also includes:

- PV-411-115:** A 100 cc hydraulic reservoir which fits directly onto the PV 411 input port. It is self sealing to prevent leakage when disconnected, but can be refilled in use. If accidentally connected to a high pressure gas source it will vent safely.



ACCESSORIES

In addition the following items can be ordered as accessories/spares:

- PV-411-120:** A set of stainless steel NPT test point adaptors:
 - 1/4" BSP (male) to 1/4" NPT (female) swivel
 - 1/4" BSP (male) to 1/8", 3/8", 1/4" and 1/2" NPT (female)
 - 1/4" BSP (male) to 1/4" BSP (male)
 - 1/4" BSP (male) to 1/4" NPT (male)
- PV-411-125:** A set of stainless steel metric test point adaptors:
 - 1/4" BSP (male) to M20 (female) swivel
 - 1/4" BSP (male) to M20 and M14 (female)
 - 1/4" BSP (male) to 1/4" BSP (male)

REFERENCE INSTRUMENTS

DPI 705 Reference pressure indicator

- Ranges 70 mbar to 700 bar
- 0.1% FS accuracy
- Rugged, lightweight handheld design
- Leak test, tare, max/min, filter, alarm
- °C and °F ambient temperature
- Intrinsically Safe version available



UPS-II Smart loop calibrator for mA

- Sources and reads 0 to 21.00 mA
- 0.05% FS accuracy
- Simulates/powers/reads 2-wire transmitters
- % flow scaling for dp-transmitters
- Auto-step, Auto-ramp, Valve stroking
- Intrinsically Safe version available



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

RELATED PRODUCTS

Druck manufacture a wide range of portable field calibrators, deadweight testers, pressure controllers and indicators for the laboratory/workshop. A wide range of pressure sensors are also available. A selection of these products are shown below.



ORDERING INFORMATION

Please state the code numbers shown in bold type e.g. **PV 411 - P**.

Continuing development sometimes necessitates specification changes without notice.