

PFV Miniature Proportional Valves



Low hysteresis and a consistent lift-off current make the PFV series of 2-way proportional valves ideal for OEM liquid and gas applications where repeatable, accurate performance is key. Featuring stainless steel construction and an IP67 rating, these valves are top-in-class for both performance and construction.

Features

- Optimized Onboard Drive Electronics Available
- Low Hysteresis
- Stainless Steel Construction
- Consistent Lift-Off Current
- Individually Calibrated
- Laser-Marked Traceable Serial Number
- Low Power Consumption
- 6 Available Flow Rates
- Handles Liquids & Gases

Applications

- Gas Chromatography
- Respiratory Care
- Mass Flow Control
- Air Analysis & Monitoring
- Pressure Control
- Diagnostics
- Mass Spectrometry
- Oxygen Handling
- Dispensing and Dosing

Industries

- Life Sciences
- Medical Equipment
- Industrial Automation
- Semiconductor
- Pharmaceutical

Mechanical Specifications:

Valve Type:

2-Way Proportional Normally Closed

Gating Element:

Poppet Seat Valve

Environmental Protection Class:

IP67

Ports:

Concentric Porting with 10-32 Male Stud or 1/8" NPT Ports

Connector:

Wire Leads - 22 Gauge, 491mm length

Mounting:

10-32 UNC Male Stud or 2x 10-24 UNC

Operating Temperature:

-20...50C (-4...122F)

Filtration:

5 um Particulate

Media:

Neutral Gases, Oxygen, Liquids
Other Compatibilities Available

Diameter:

26.0 mm (1.02 in)

Height:

62.5 to 76.0 mm (2.46 to 3.0 in)

Burst Pressure:

35 bar (500 psi)

Leak Rate:

< 0.2 sccm

Electrical Specifications

(for valves with onboard electronics):

Power Requirement:

12 or 24 VDC options available

Command Input:

0...5VDC, 0...10VDC or 0...20mA options available

Electrical Specifications

(for valves without onboard electronics):

Nominal Coil Resistance:

16.6Ω or 65Ω

Maximum Coil Voltage:

12VDC or 24VDC

Current for Full Open:

350mA or 175mA

Nominal Maximum Power Consumption:

2.1W

Performance Specifications:

Orifice Sizes Available:

Ø0.12 mm, Ø0.50 mm, Ø0.75 mm,
Ø1.00 mm, Ø1.25 mm, Ø1.50 mm,
Ø1.75 mm

Hysteresis:

±5% of full current (max)

Response Time:

<30 ms

Wetted Material Specifications:

Body:

316 Series Stainless Steel

Seals:

FKM, FFKM or EPDM - other materials available on request

Moving Elements:

430 Series Stainless Steel

302 Series Stainless Steel

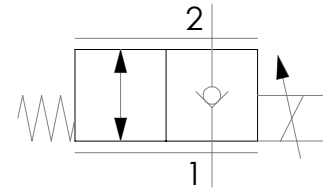
304 Series Stainless Steel



PFV Miniature Proportional Valves



Valve Design: With its unique, patented triple spring technology (balance - guide - control), the PFV series of valves produces highly linear flow curves that can be calibrated to the ideal inlet air pressure based on the flow required. This ensures consistent current liftoff from valve to valve and application to application.

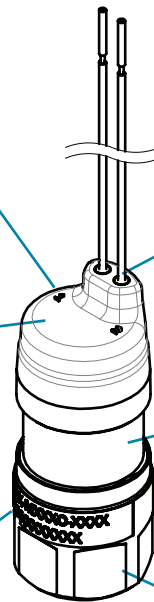


Design features

Onboard electronics available for optimized control, consistent performance and quick set up

Wire numbering on cap makes consistent wiring in OEM applications easy

Each valve is laser marked at end-of-line with date and time traceable serial number



Fully-sealed wire leads help maintain the valve's IP67 ingress protection rating

Body made from 300 and 400 series stainless steel for maximum chemical and media capability

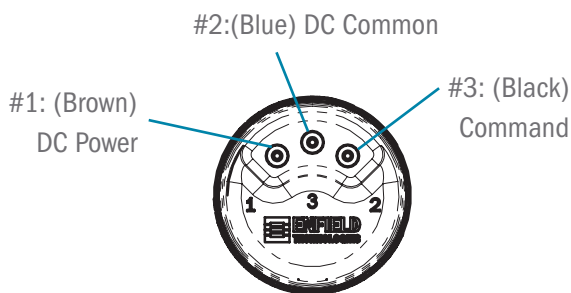
24mm hex flats allow for easy mounting and tightening of valve to the correct torque specification

Coil Characteristics and Electrical Properties (without onboard electronics)

Coil Order Code	Resistance	Max Current	Max Voltage	Nominal Power Consumption
12	16.6Ω	350mA	12Vdc	2.1W
24	65Ω	175mA	24Vdc	2.1W

Electrical Properties (with onboard electronics)

The PFV comes with three available onboard driver options engineered to optimize the performance of the valve. These electronics were designed especially for the PFV, helping users avoid the expense and effort of characterizing valves and developing electronics. This is ideal for users who have tight project deadlines, want to get to market quickly and are looking for a plug-and-play device that can be up and running in a short amount of time. Additionally, since these electronics sit under the cap of the valve, the valve is able to maintain its IP67 rating that allows it to tackle more challenging applications.



Electrical connections see Part number key for specific voltage and signal levels

Wire	Function	Input & Impedance
1 (brown)	DC Power	12: 12 Vdc 24: 24 Vdc
2 (blue)	DC Common*	0Vdc
3 (black)	Command +	E01: 0...10Vdc (3.24k Ohm) E02: 0...20mA (280 Ohm) E05: 0...5Vdc (73.6k Ohm)

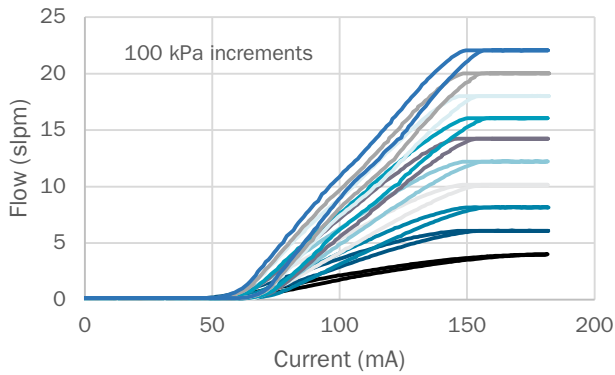
*Command (-) should be connected to this 0V source.

Features

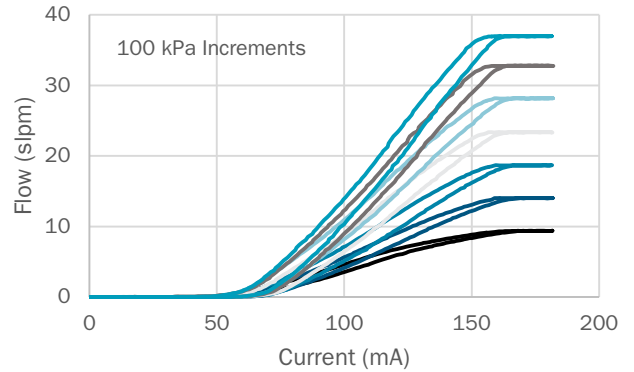
- Automatically Adjusts for Changes in Coil Resistance due to Temperature
- Reverse Polarity Protection
- Simplified 3-Wire Design (Power, Ground and Command)
- Onboard Power LED
- Closed Loop Current Design
- Wide Temperature Range
- Overvoltage Protection
- Designed for Continuous Use
- Low Power Consumption
- Compact Size - Fits Under Cap
- Maintains IP67 Rating
- Handles Power Supply Fluctuations
- Three Input Ranges (0...5V, 0...10V and 0...20mA)
- Protects Against Wiring Mistakes
- Plug & Play
- Designed and Optimized for PFV Series of Valves

Air Flow vs Current: Each Orifice Size and Calibration Pressure

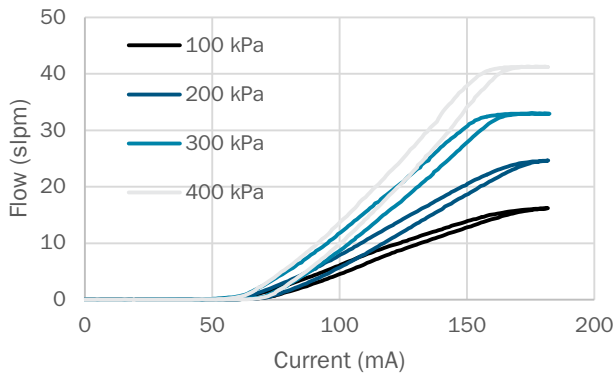
Ø0.50 mm Orifice



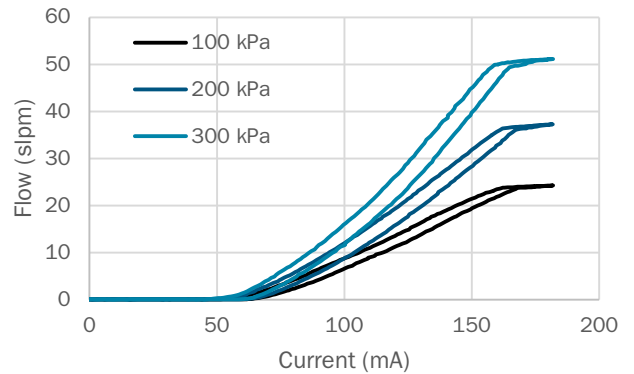
Ø0.75 mm Orifice



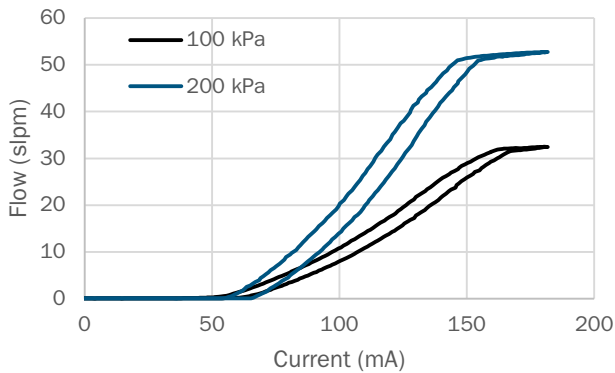
Ø1.00 mm Orifice



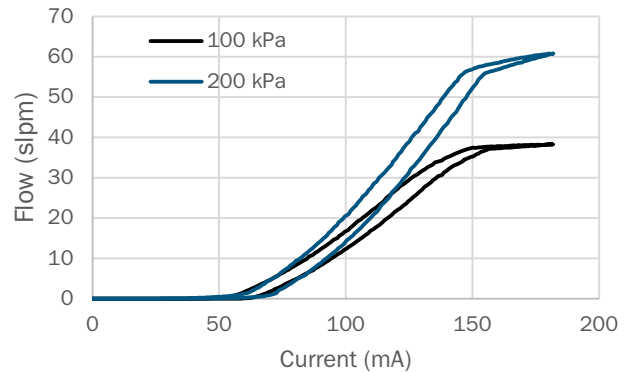
Ø1.25 mm Orifice



Ø1.50 mm Orifice

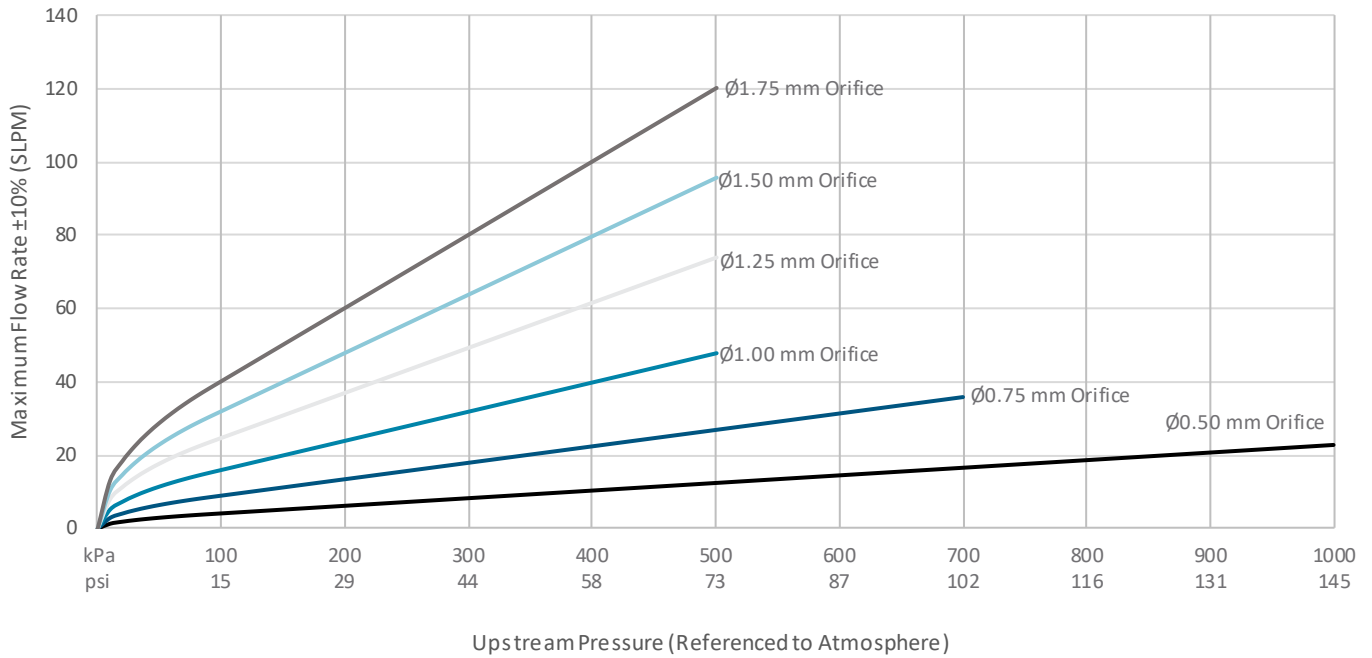


Ø1.75 mm Orifice

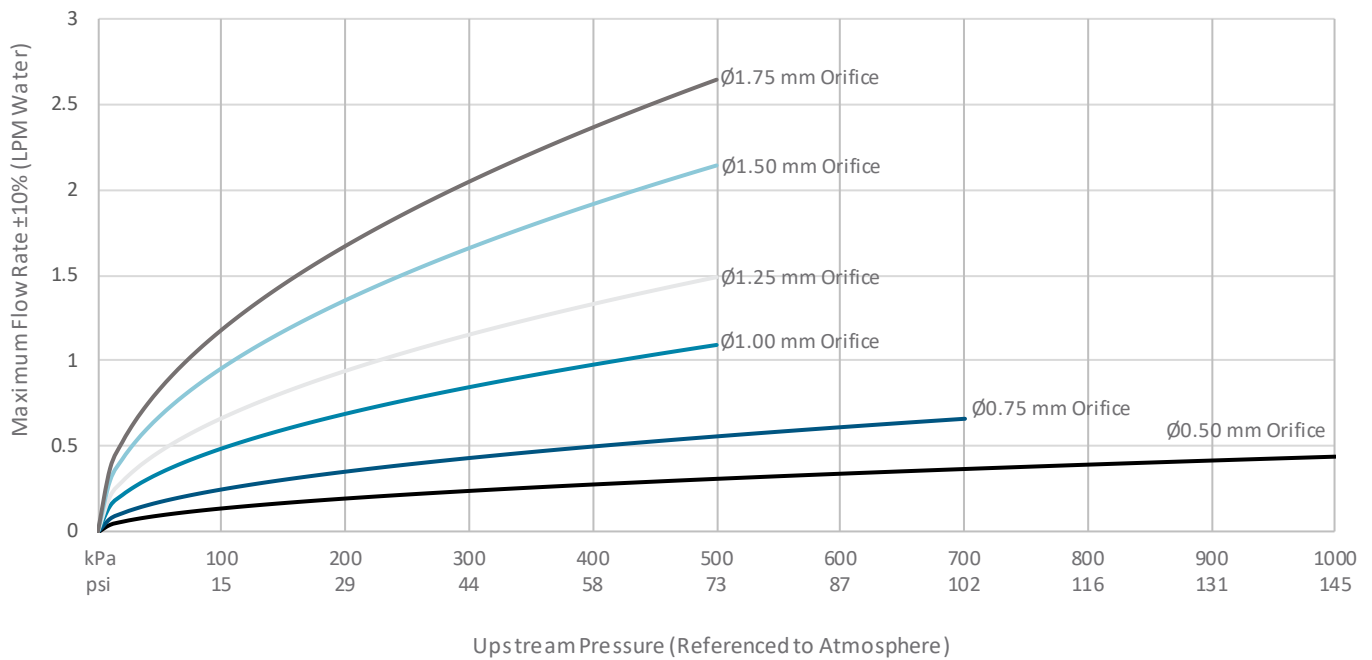


Note: Based on test results from typical setup: 24Vdc coil, 20C ambient temperature and 100 kPa increases in calibration pressure (port 1) flowing to atmosphere (port 2). Figures are to be used for general guidance only.

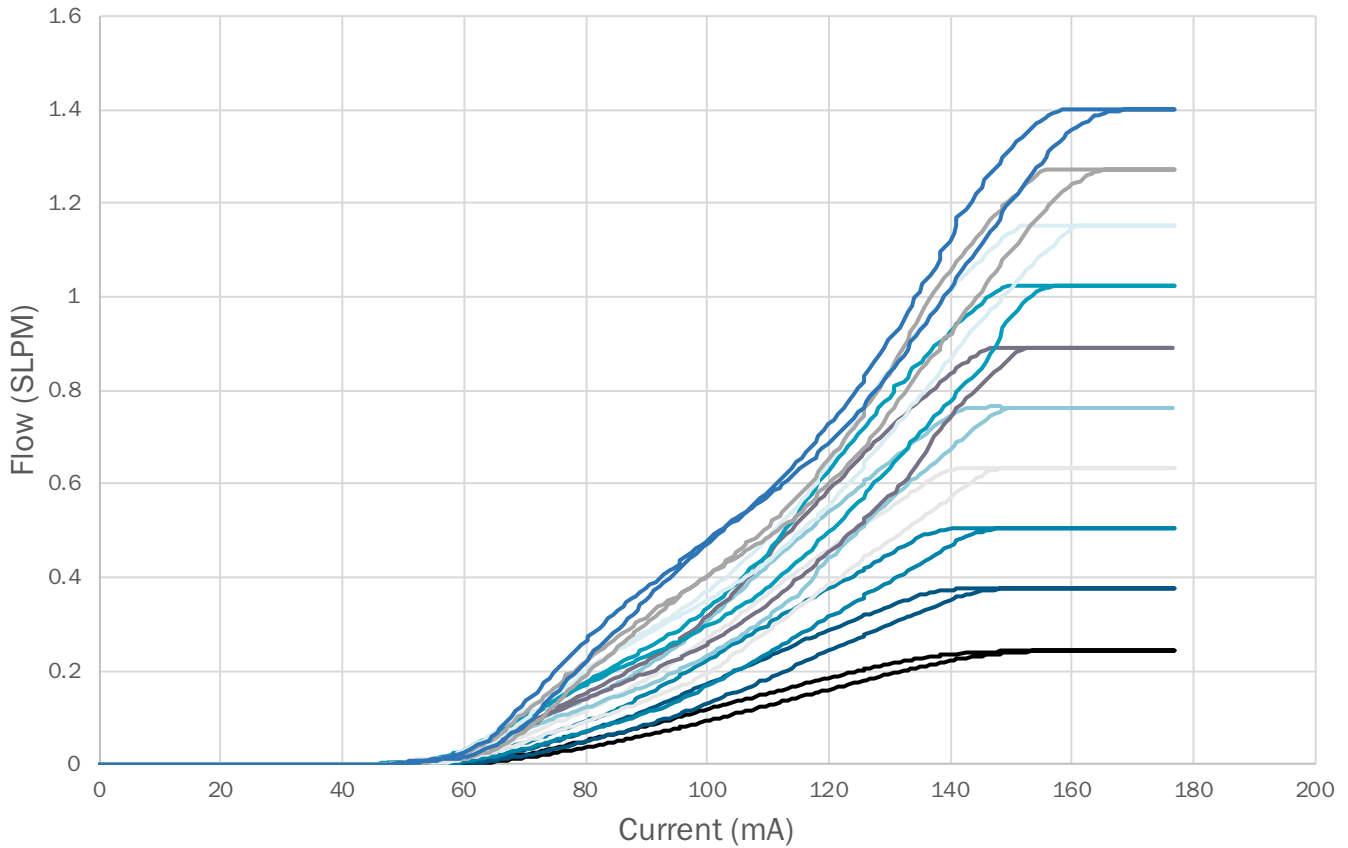
Maximum Flow Rate vs. Upstream Pressure - Air



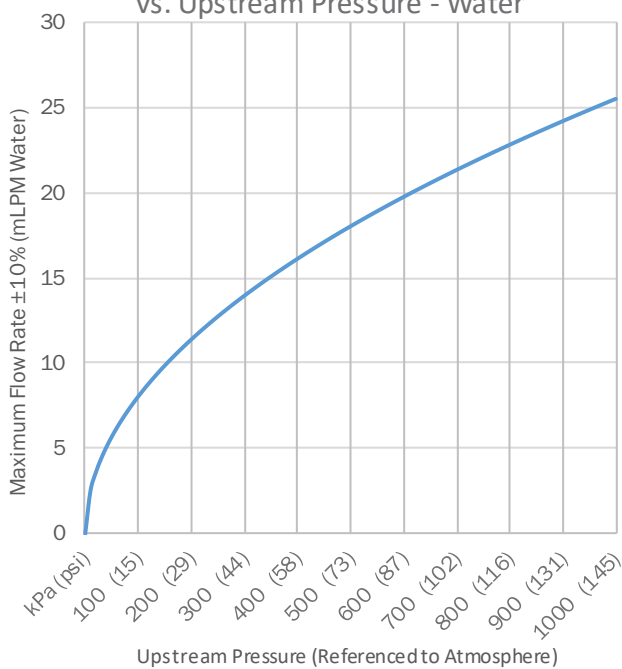
Maximum Flow Rate vs. Upstream Pressure - Water



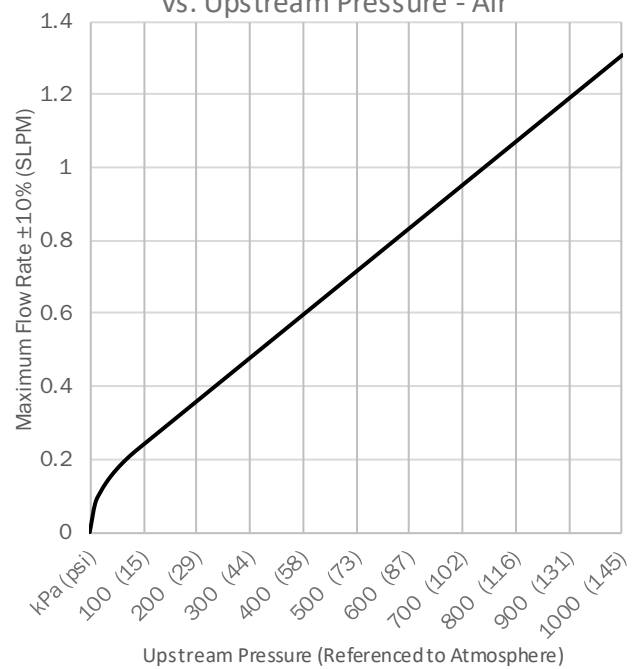
Ø0.12 mm (0.005") Orifice Flow vs. Current



Ø0.12 mm Orifice Maximum Flow Rate vs. Upstream Pressure - Water



Ø0.12 mm Orifice Maximum Flow Rate vs. Upstream Pressure - Air



PFV Miniature Proportional Valve



The **PFV Miniature Proportional Valves** simplify design and installation for makers of medical, life science, semiconductor and other OEM equipment by providing repeatable, accurate flow in response to input current. With seven available orifice sizes ranging from Ø0.12 mm to Ø1.75 mm, choosing a valve based on inlet air pressure and required flow becomes easy. Each valve and orifice combination is then individually calibrated to maximize linearity and minimize hysteresis, providing top of the line performance in a small package size.

PFV - W24 E05 - M175 C - 0100

Order Code	Max Coil Voltage
12	12Vdc
24	24Vdc

Order Code	Body
M	10-32 Stud
P	1/8 NPT

Order Code	Electronics
Blank	No Electronics
E01	0...10V Input
E02	0...20mA Input
E05	0...5V Input

Order Code	Orifice Diameter
012	Ø0.12 mm
050	Ø0.50 mm
075	Ø0.75 mm
100	Ø1.00 mm
125	Ø1.25 mm
150	Ø1.50 mm
175	Ø1.75 mm

Order Code	Seals
C	FKM
E	EPDM
K	FFKM

Calibration Pressure
 Select the maximum pressure that the valve will operate at.
 Example: A valve with order code 0100 is calibrated for use with 100kPa (14.5psi) max inlet pressure.
 Increments of 100 kPa can be specified.

Enfield Technologies
 50 Waterview Drive
 Shelton, CT 06484 USA

+1 203 375 3100

enfieldtech.com

Enfield Technologies is an expert in high performance proportional control systems. Our standard product line focuses on pneumatics. With custom products and engineering services, we also apply our expertise in other areas of fluid power, electromechanical systems, and control electronics. New developments in pneumatic technology are opening doors for design engineers to create unique, market leading products and systems.

Enfield Technologies is leading this innovation. Our control valves and electronics solve many of the challenges posed by compressible fluids. The additional functionality and performance from Enfield Technologies helps our customers create breakthrough applications and enhance existing systems. Simply put, we make pneumatics do things that others declare impossible.



Enfield Technologies
50 Waterview Drive
Shelton, CT 06484 USA

+1 203 375 3100

enfieldtech.com