

CMV

Needle Valves

- ❑ Ultra-low flow ranges from 0-20 cm³ min⁻¹ to 0-3 litre min⁻¹ air FS @ 1bar
- ❑ Stainless Steel construction with Perlast seals
- ❑ Helium Mass Spec. Leak Test to 10⁻⁸ mblsec⁻¹
- ❑ Smooth opening, 6 turns to 2sccm, No.1
- ❑ 1/16", 1/8", 1/4", 6mm, VCR or KF10 fittings



The finest needle valve ever produced!

The Mechanism range of stainless steel needle valves, developed by Chell Instruments, provide the finest gas flow control over typical ranges of 0-20, 0-1000 & 0-3000 std.cm³min⁻¹ air at 1bar differential pressure.

Designed for use in pressure or vacuum applications, they are ideal for use in gas analysers, chromatographs and mass spectrometers – in addition to any application where fine gas flow control is required.

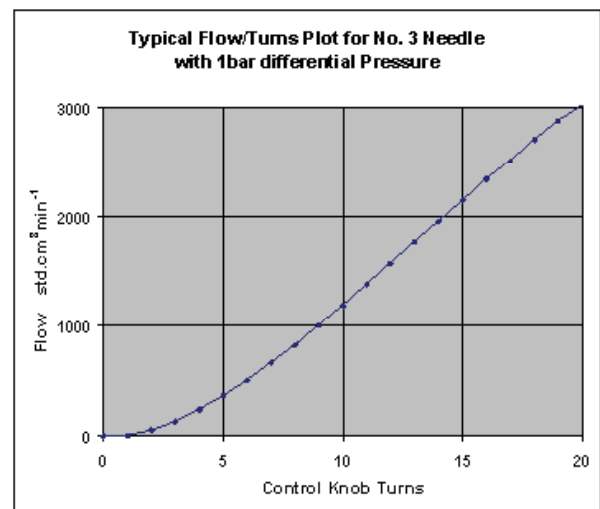
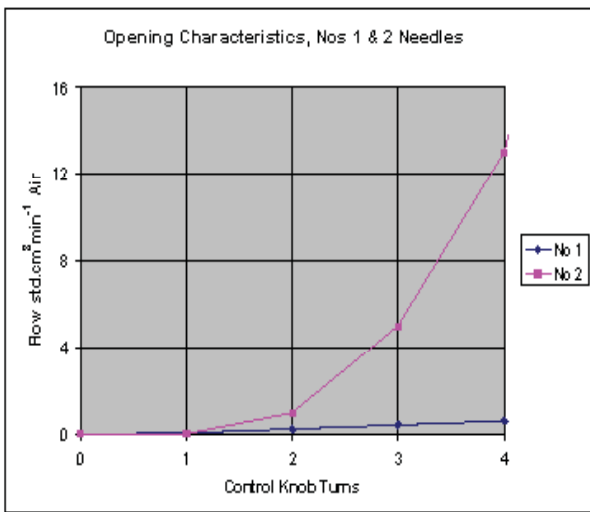
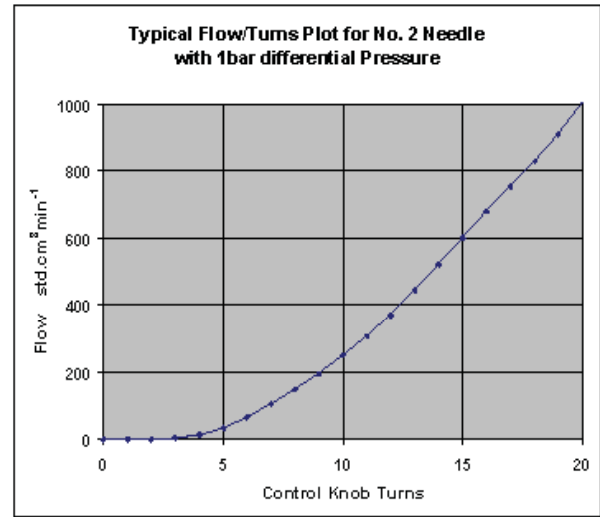
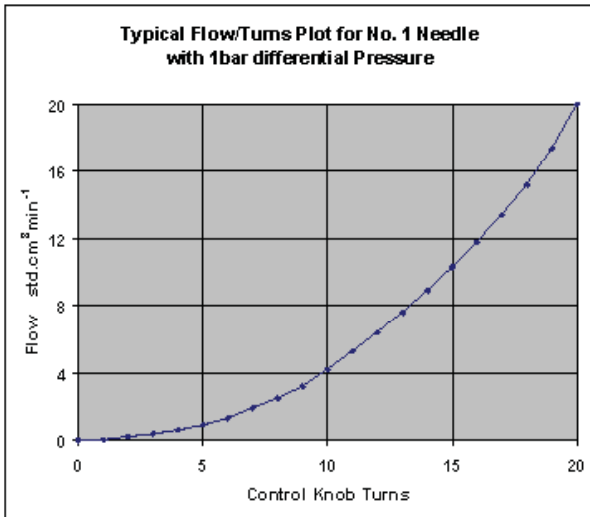
The valve's opening characteristics are extremely smooth, preventing bursts of gas which would disturb delicate or Ultra-High Vacuum instrumentation.

Construction is in Stainless Steel, with Perlast[®] perfluoroelastomer body seals and a Fluorosint[®] orifice seal, for the best corrosion resistance.

Vacuum rated valves are leak tested on a helium mass spectrometer to <1x 10⁻⁸ mblsec⁻¹ and their shut-off achieves the same specification.

Valves are available with 1/16in single ferrule or 1/8in, 1/4in or 6mm twin ferrule compression fittings and additionally, vacuum models may be selected with NW10KF fittings. VCR fittings are also available and custom fitting types (including all welded) can also be accommodated.

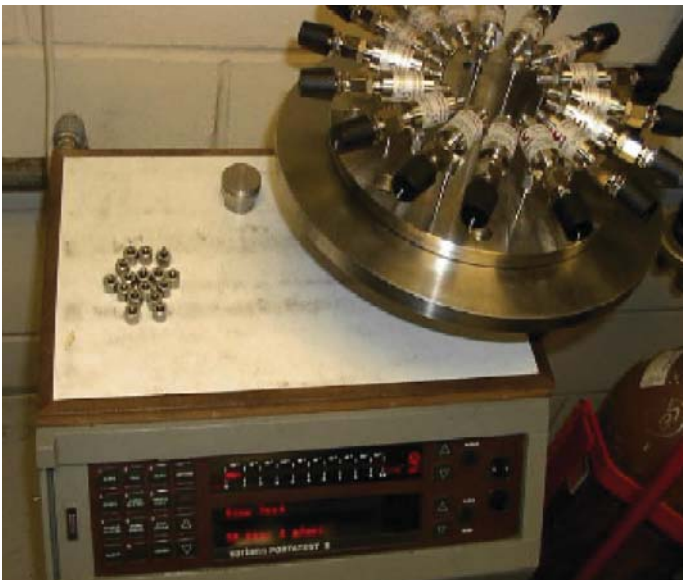
The Mechanism Valve was developed specifically for mass spectrometry inlet service, probably the most critical application for such a valve but is eminently suitable for many other demanding applications where long-term stability is required.



TOTALLY SMOOTH OPENING CHARACTERISTICS

The valves have been designed to provide totally smooth opening characteristics so that the user may guarantee that no gas will burst onto his process. Many needle valve designs ignore this feature, which renders them unusable for inlet control to, for example, Ultra-High Vacuum applications.

Helium Mass Spectrometer Leak Testing for Vacuum Valves (VFM)



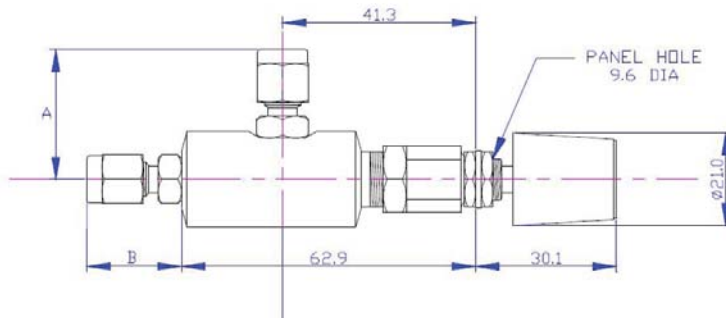
UHV Leak Testing

Seal design has been optimised to provide excellent sealing for both pressure and Ultra-High Vacuum applications.

All vacuum specification valves conform to a helium Mass spectrometer test to $1 \times 10^{-8} \text{ mblsec}^{-1}$, which far exceeds the leak tightness of ordinary, commercial, needle valves.

The photograph (left) shows 16 valves being leak tested, mounted on a custom UHV manifold. They are tested with vacuum applied to the outlet port, as they would be used in service. The inlet port is blanked and the valve is then closed and opened so that both the external seals and the valve shut-off may be tested.

Dimensions



6MM FITTING



A = 34.0MM
B = 24.6MM

KF10 FLANGE



A = 26.0MM
B = 16.6MM

1/16" FITTING



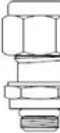
A = 26.7MM
B = 17.3MM

1/8" FITTING



A = 29.6MM
B = 20.2MM

1/4" FITTING



A = 34.0MM
B = 24.6MM

Specifications

Parameter	CMV
Flow Ranges, Air @ 1bar diff. pressure	Typically 20, 1000 and 3000 std.cm ³ min ⁻¹
Pressure Range	Vacuum to 18bar
Wetted materials	316SS, 303SS, Fluorosint and Perlast
Vacuum (VFM) Valve Leak Test	Valve open and closed : <math> < 1 \times 10^{-9}</math> mbarl/sec
Dimensions	See Drawing
Weight	175g
Operating temperature range	+5 to +50°C
Storage temperature range	-20 to +70°C

CMV Order Codes

PFM - Pressure valve
VFM - Vacuum valve

CMV-VFM-1-P-11

- 1 - Ultra Fine Flow (0-20 sccm)
- 2 - Fine Flow (0-1000 sccm)
- 3 - Medium Flow (0-3000 sccm)

P - Perlast® Seals

Outlet Fitting

- 1 - for 1/16 inch single ferrule fitting
- 2 - for 1/8 inch double ferrule fitting
- 3 - for 6mm double ferrule fittings
- 4 - for 1/4 inch double ferrule fittings
- K - for NW10KF fittings (vacuum only)
- V - 1/4VCR fitting

Inlet Fitting

- 1 - for 1/16 inch single ferrule fitting
- 2 - for 1/8 inch double ferrule fitting
- 3 - for 6mm double ferrule fittings
- 4 - for 1/4 inch double ferrule fittings
- K - for NW10KF fittings (vacuum only)
- V - 1/4VCR fitting