Thermal-Immersion Diaphragm Valves

DH Series

Normally closed pneumatic actuation
Capable of valve opening or closing time of less than 5 ms

Manual actuation with a lock-out handle

Fully contained high-purity grade PFA seat provides:
- Broad range of chemical compatibility
- Excellent resistance to swelling and contamination

Fully swept flow path:
- Minimizes entrapment areas
- Facilitates purging
- Maximizes flow capacity

Valve and actuator fully immersible in a heated chamber

An increasing number of applications today require high precursor temperatures, often up to 220°C (428°F), with very tight temperature controls. System designers may specify an oven enclosure for the entire gas system to precisely control these high temperatures. This demands a valve that can be entirely situated within the high-temperature environment, including the body and actuator.

Swagelok® thermal-immersion diaphragm valves offer high-speed actuation, flow coefficients up to 0.60, and are designed for optimum performance at 220°C (428°F) for high-temperature processes including atomic layer deposition (ALD) and precursor delivery applications. They are offered in both pneumatically actuated and manual models with a variety of 1/4 and 3/8 in. end connections.

Swagelok

Technical Data

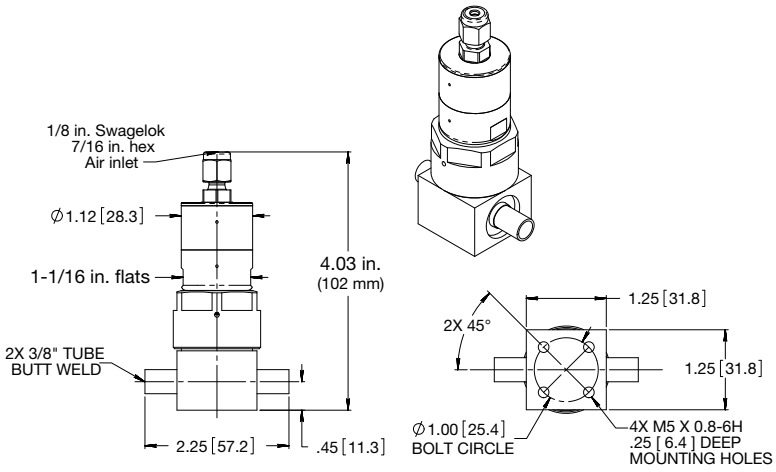
Working Pressure	Vacuum to 70 psig (4.8 bar)
Burst Pressure	> 3200 psig (220 bar)
Actuation Pressure	60 to 90 psig (4.1 to 6.2 bar)
Temperature	20 to 220°C (70 to 428°F)
Flow Coefficient (Cv) **"H" type VCR® connections**	0.60 at 20°C (70°F); 0.40 at 220°C (428°F)
VCR and all other connections	0.30 at 20°C (70°F); 0.21 at 220°C (428°F)
Modular surface-mount body	0.25 at 20°C (70°F); 0.21 at 220°C (428°F)
Body Material	316L VIM-VAR stainless steel
Diaphragm Material	Cobalt-based superalloy

End Connections

Type	VCR® and "H" type VCR metal gasket face seal fittings, tube butt weld; modular surface mount (MSM)
Size	1/4 and 3/8 in. 1.125 and 1.5 in. MSM

Dimensions

Dimensions, in inches (millimeters), are for reference only. Dimensions shown are for ordering number 6LVV-DH6BW6-P-C-29938.



Process Specifications

Ultrahigh-purity, P process: Ultrahigh-Purity Process Specification (SC-01)

- Ultrahigh-purity cleaning with a continuously monitored, deionized water, ultrasonic cleaning system
- Performed in ISO Class 4 work areas; valves are double bagged and vacuum sealed in cleanroom bags
- Wetted surface roughness (R_a): electropolished and finished to an average of 5 µin. (0.13 µm)

Testing

- 1 × 10 –9 std cm3/s envelope leak rate
- 1 × 10 –6 std cm3/s seat leak rate at 220°C (428°F)

Configurations

Valve with Modular Surface-Mount Platform

- Two-port straight and elbow configurations

2-Port Valve

- Two-, three-, and four- port multiport and multivalve manifolds

Multiport/Manifold

- Two- and three-port modular surface mount in 1.125 and 1.5 in. platforms

Additional configurations available on request

Safe Product Selection
When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.