

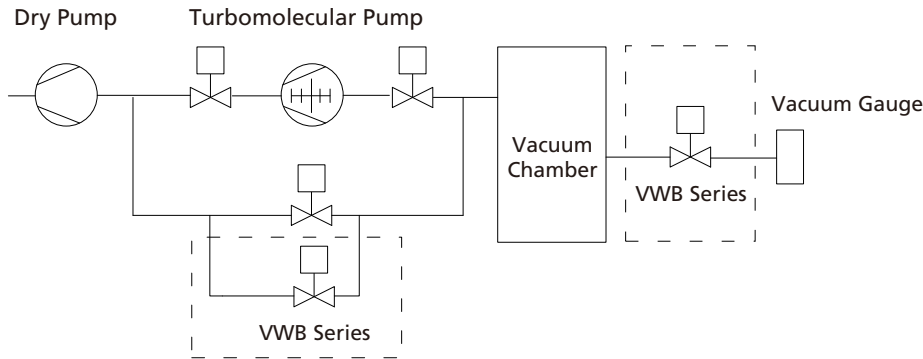
Compact Vacuum Bellows-Sealed Valves

VWB Series



Introduction

VWB Series Compact Vacuum Bellows-Sealed Valves are designed for instrument and line isolation in vacuum systems. They can also function as venting, bypass, or roughing valves.



When instruments are used to control vacuum system pressure, the small internal valve volume of the VWB Series helps shorten instrument response time.

During venting of the vacuum system to atmosphere, the VWB Series can isolate the sensor from the system chamber, preventing overpressure damage to the diaphragm of a capacitance diaphragm gauge.

When monitoring system pressure, the VWB Series isolates the instrument from the process, preventing contamination of the pressure gauge by process gases.

For soft start-up of a vacuum system, installing a VWB Series valve with low conductance in a bypass line allows the system pressure to decrease gradually from atmospheric pressure to the desired vacuum level, thereby preventing particle entrainment within the vacuum chamber.

Features

- ⦿ Compact design with a small internal valve volume
- ⦿ Formed 316L stainless steel bellows for reduced particle generation and particle entrapment
- ⦿ Bodies welded using Tungsten Inert Gas (TIG) welding to reduce internal dead space and ensure high cleanliness
- ⦿ Pneumatic Model: cycle life up to 1,000,000 cycles in clean, room-temperature environments
- ⦿ Optional angle or inline configurations and mountable in any orientation
- ⦿ Variety of connection sizes and types available
- ⦿ Pneumatic or manual actuators available

Technical Data

Pneumatic Valve Type		Normally Closed	Normally Open
Pressure Range		1.0×10 ⁻⁹ Torr to 760 Torr	
Actuator Port		M5 (Compatible with 10-32 UNF)	
Pneumatic Actuator Operating Pressure		60 ~ 120 psig (4.2 ~ 8.2 bar)	
Pneumatic Actuator Working Volume		1.52 cm ³	
Actuator Response Time	Opening	60 ms	-
	Closing	100 ms	-

Notes:

1. If the gas medium flowing through the valve may produce deposits upon cooling, the body should be heated to prevent deposition.
2. During installation, the exhaust side may be oriented in any direction; however, orienting the seat toward the vacuum chamber is recommended.

Bakeout Temperature and Leak Rate

Body Sealing Material	Maximum Bakeout Temperature (Body) °F (°C)	Operating Temperature °F (°C)	Leak Rate (Helium), std-cm ³ /s	
			Internal	External
FKM	≤399 (204)	≤302 (150)	≤1×10 ⁻⁹	≤1×10 ⁻⁹
FFKM	≤428 (220)	≤338 (170)	≤1×10 ⁻⁸	≤1×10 ⁻⁸

Test Conditions: Tested at ambient temperature, excluding helium permeation effects. For other sealing materials, please contact FITOK or an authorized distributor.

Process Specification

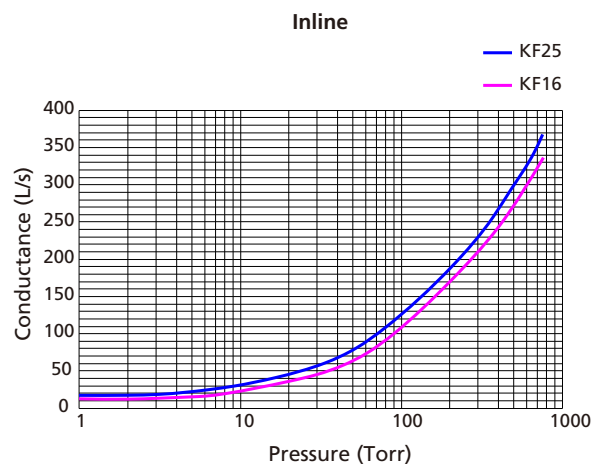
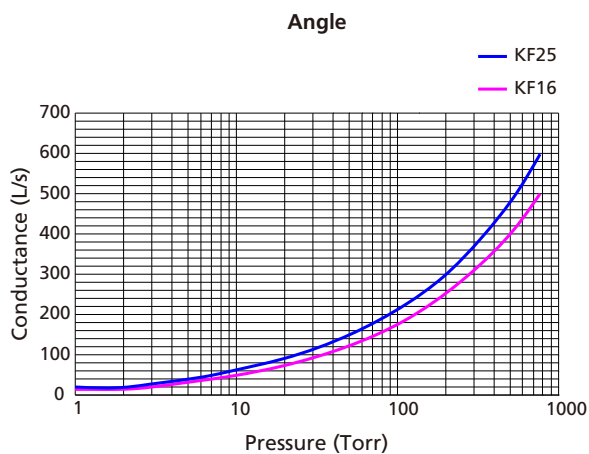
Item	Process Specification
	Special Cleaning and Packaging Process (FC-02)
Material	316L SS
Polishing Process	Machine finished
Assembly Environment	In specially cleaned areas
Packaging	Double bagged

Conductance

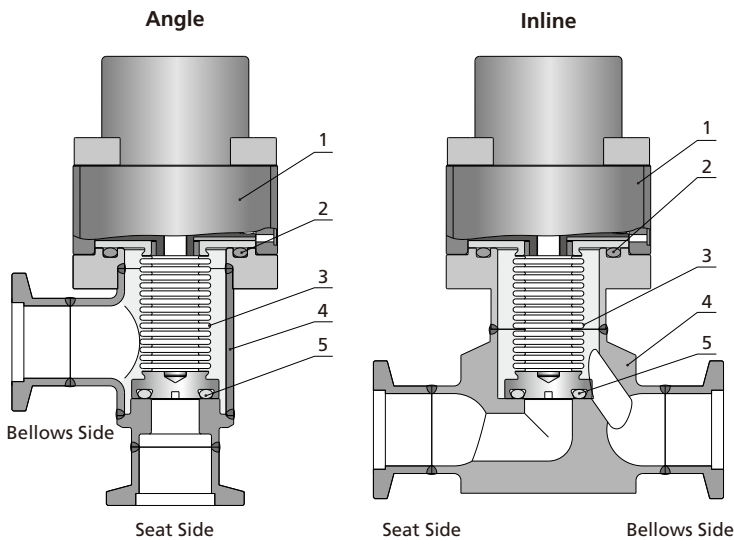
The theoretical molecular flow conductance values listed in the table below are calculated using the transmission probability method for air at 20 °C. All values are approximate.

Body Configuration	Connection Type	
	KF16	KF25
	Molecular Flow Conductance, L/s	
Inline	1.41	1.60
Angle	1.58	2.12

The theoretical viscous flow conductance values shown in the chart below are calculated using the formula $U = Q/(P_{in} - P_{out})$ for air at 20 °C. All values are approximate.



Major Materials of Construction



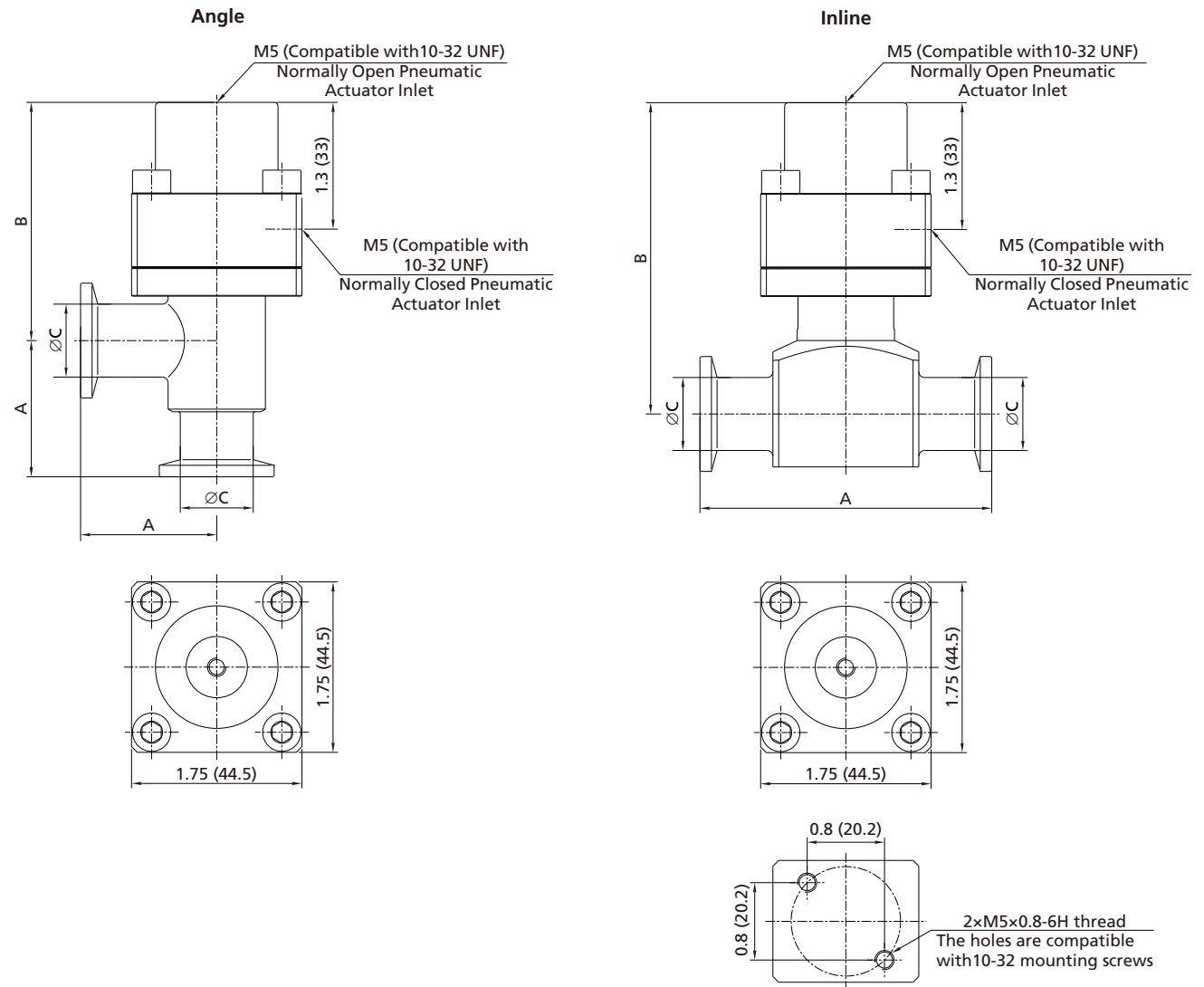
Item	Component	Material	Remark
1	Actuator Cylinder	Aluminium	-
2	Bonnet Seal	FKM	1, 2, 3
3	Bellows Assembly	316L SS	-
4	Body	316L SS	-
5	Plate Seal	FKM	1, 2, 3

Notes:
1. Other O-ring materials are available. Please contact FITOK or an authorized distributor.
2. Wetted components are listed in italics.
3. Refer to the Maintenance Spare Parts section for component replacement during maintenance.

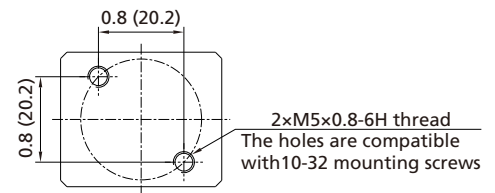
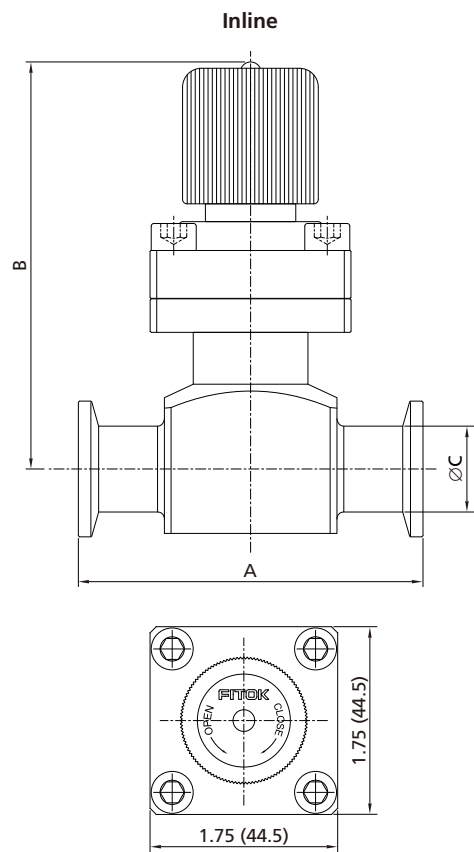
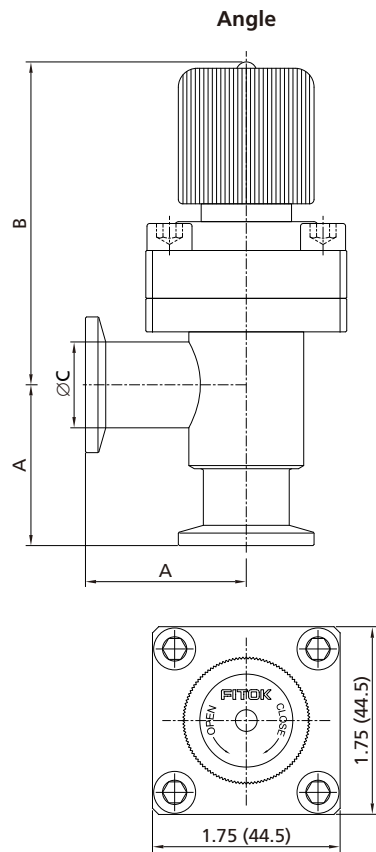
Dimensions and Ordering Information

Dimensions, in inches (millimeters), are for reference only and are subject to change.

Pneumatic



Manual-Round Handle



Body Configuration	Ordering Number	Dimension, in. (mm)		
		A	B	C
Pneumatic	VWB6L-KF16-A-CF2	1.40 (35.6)	2.45 (62.2)	0.75 (19.05)
	VWB6L-KF25-A-CF2	1.40 (35.6)	2.60 (66.0)	1.00 (25.4)
	VWB6L-KF16-L-CF2	3.00 (76.2)	3.20 (81.3)	0.75 (19.05)
	VWB6L-KF25-L-CF2	3.00 (76.2)	3.20 (81.3)	1.00 (25.4)
Manual-Round Handle	VWB6L-KF16-A-RF2	1.40 (35.6)	2.82 (71.5)	0.75 (19.05)
	VWB6L-KF25-A-RF2	1.40 (35.6)	2.84 (74.5)	1.00 (25.4)
	VWB6L-KF16-L-RF2	3.00 (76.2)	3.57 (90.5)	0.75 (19.05)
	VWB6L-KF25-L-RF2	3.00 (76.2)	3.57 (90.5)	1.00 (25.4)

Maintenance Spare Parts

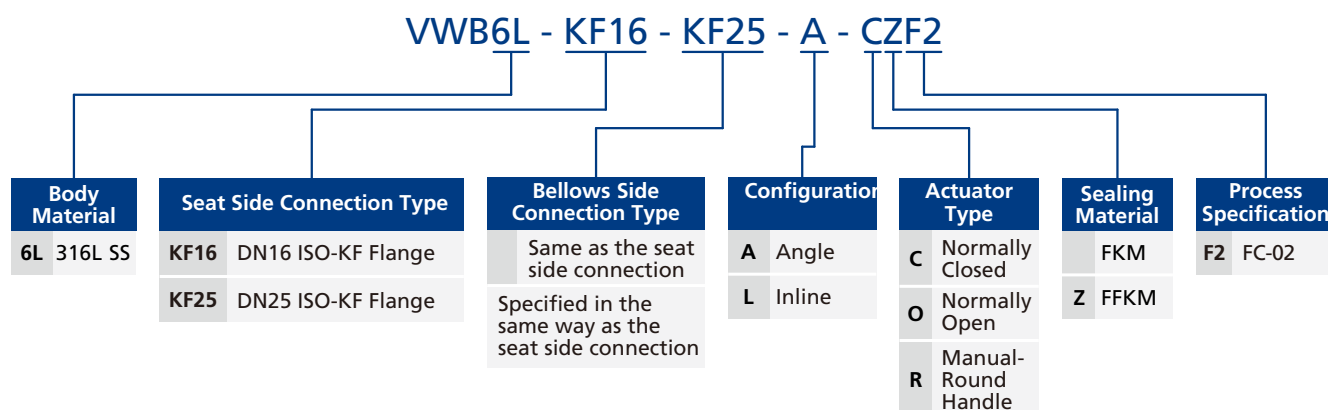
External Seals and Plate Seals:

Ordering Number	Part Number	Description	Remark
VWB6L-VS-RK-V	2#	Bonnet Seal	FKM
	5#	Plate Seal	
VWB6L-VS-RK-Z	2#	Bonnet Seal	FFKM
	5#	Plate Seal	

Notes:

1. Refer to the configuration-part numbering.
2. For other O-ring materials, please contact FITOK or an authorized distributor.

Ordering Number Description



Note: "Ordering Number Description" is a reference to understand the combination rules of FITOK product part number.

Not all combinations are available. Should you have any questions, please contact FITOK Group or an authorized distributor.