

Process Interface Valves for Reduced Fugitive Emissions



VB05 Series

- Meets fugitive emission requirements including Shell MESC SPE 77/300 Tightness Class B
- Stainless steel, carbon steel, and duplex stainless steel materials
- Pressure ratings in accordance with ASME B16.5
- Flanged connections compatible with ASME B16.5

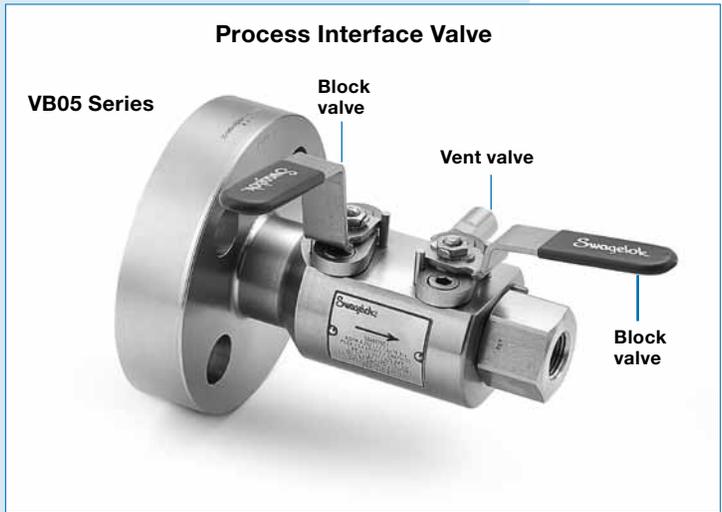
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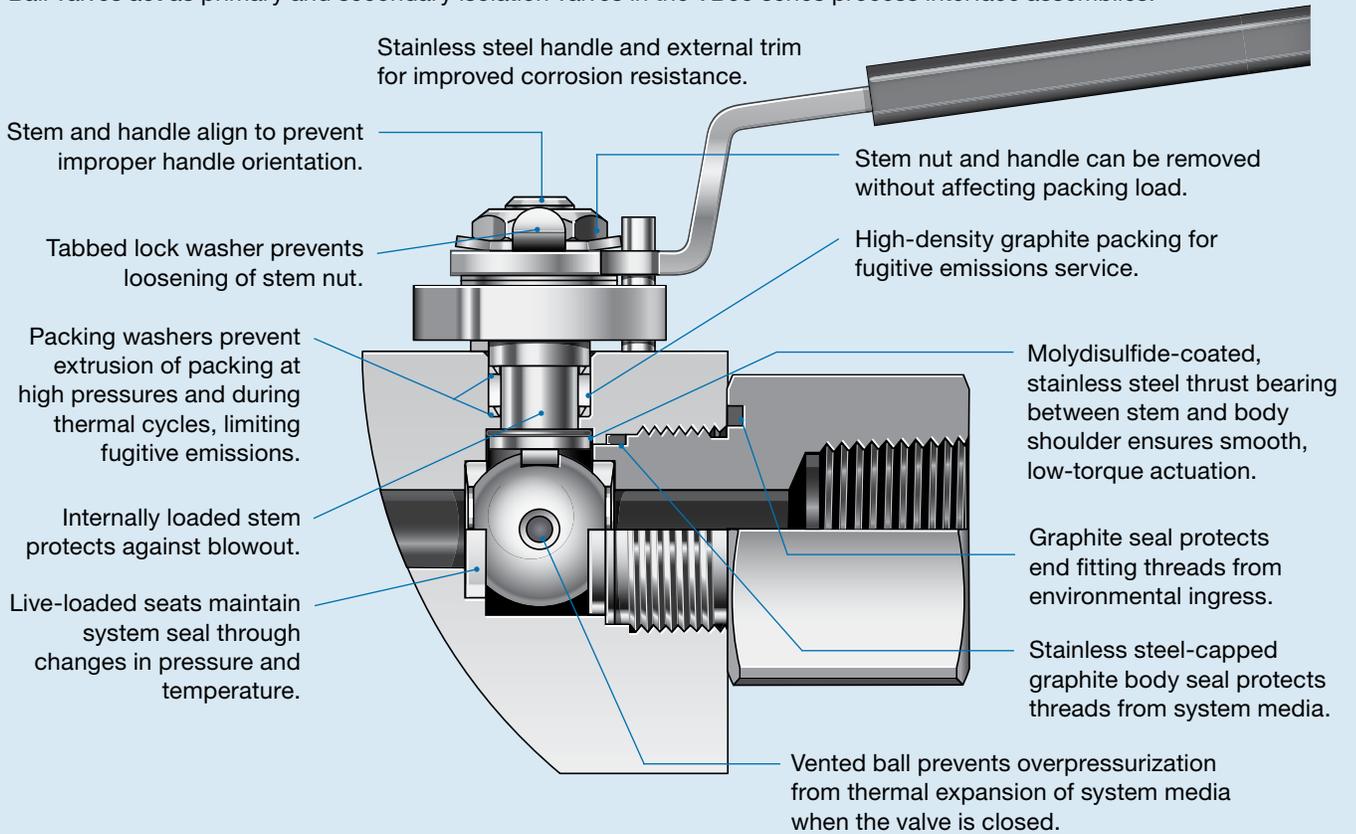
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Process Interface Valve, VB05 Series

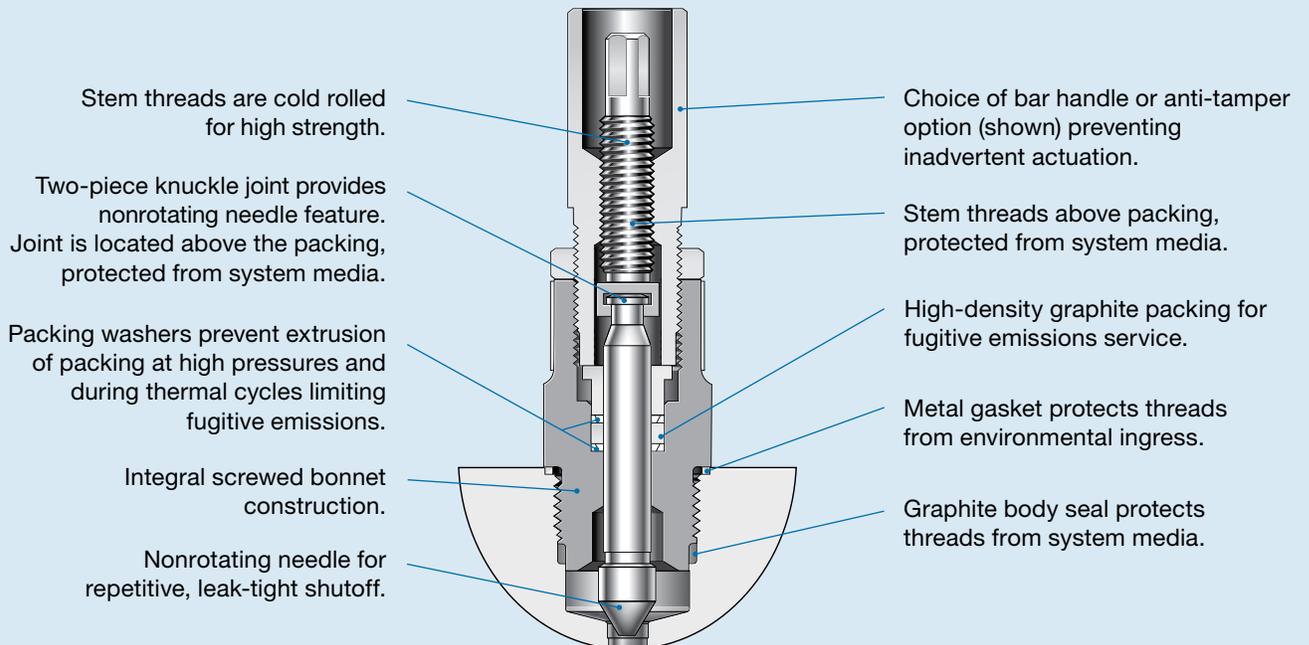
Ball Valve Module Advantages

Ball valves act as primary and secondary isolation valves in the VB05 series process interface assemblies.



Integral Screwed-Bonnet Needle Valve Module Advantages

Integral screwed bonnet needle valves act as the vent valves in the VB05 series process interface assemblies.



Swagelok process interface valves provide a unidirectional transition from process to instrumentation systems in a single, compact assembly. Benefits include fewer leak points and reduced size and weight compared to traditional systems.

Features

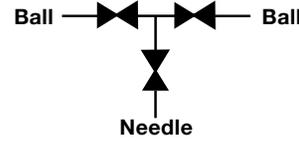
- Process interface in one compact ball/needle/ball valve assembly
- One-piece forged body construction
- Floating ball design with 3/8 in. (9.5 mm) bore size
- Blowout-proof valve stems and needles
- Pressure-temperature and wall thickness requirements in accordance with ANSI/ASME B16.34
- Ball and needle valves perform to Shell MESC SPE 77/300 Tightness Class B for reduced fugitive emissions service
- Graphite seals compliant with Shell MESC SPE 85/203
- Flange connections in accordance with ASME B16.5 RF; NPT connections based on the requirements of ASME B1.20.1; additional end connections available

Pressure-Temperature Ratings

Swagelok process interface valves carry the pressure-temperature ratings of their flange end connections, which meet ASME B16.5 dimensional specifications and pressure ratings in a range of flange sizes and pressure classes.

ASME Class	1500		
Material Group	2.2	1.1	2.8
Material Name	Stainless Steel	Carbon Steel	Duplex Stainless Steel
Temperature, °F (°C)	Working Pressure, psig (bar)		
-58 (-50) to -50 (-46)	3600 (248)	—	3750 (258)
-50 (-46) to 100 (37)	3600 (248)	3705 (255)	3750 (258)
200 (93)	3095 (213)	3395 (233)	3720 (256)
250 (121)	2945 (202)	3332 (229)	3527 (243)

ASME Class	2500		
Material Group	2.2	1.1	2.8
Material Name	Stainless Steel	Carbon Steel	Duplex Stainless Steel
Temperature, °F (°C)	Working Pressure, psig (bar)		
-58 (-50) to -50 (-46)	6000 (413)	—	6250 (430)
-50 (-46) to 100 (37)	6000 (413)	6170 (425)	6250 (430)
200 (93)	5160 (355)	5655 (389)	6200 (427)
250 (121)	4910 (338)	5552 (382)	5880 (405)



Shell Specifications Reference

- Shell MESC SPE 77/300, *Procedure and Technical Specification for Type Acceptance Testing (TAT) of Industrial Valves*
- Shell MESC SPE 85/203, *Graphitic Packing Material*
- Shell MESC SPE 77/312, *Fugitive Emissions Production Testing*

- ⚠ **A packing adjustment may be required periodically to increase service life and to prevent leakage.**
- ⚠ **Valves that have not been cycled for a period of time may have a higher initial actuation torque.**
- ⚠ **To increase service life, ensure proper needle valve performance, and prevent leakage, apply only as much torque as is required to achieve positive shutoff.**

Materials of Construction

Component	Valve Body Materials		
	Stainless Steel	Carbon Steel	Duplex Stainless Steel
	Material Grade/ASTM Specification		
<i>Body</i>	<i>Stainless steel/ A182 F316, F316L SS</i>	<i>Carbon steel/ A350 LF2</i>	<i>Duplex stainless steel/ A182 F51</i>
<i>End fitting, flange end fitting, outer packing washers, ball valve ball and stem, needle valve bonnet</i>	316 SS, 316L SS/A479		S31803/ A479
<i>Ball valve seat, inner packing washers</i>	Reinforced PEEK		
<i>Ball valve stem bearing</i>	S31803/A479 with molydisulfide coating		
<i>Needle</i>	S17400 SS/A564 condition H1150D		S31803/A479
<i>Environmental seal for flange end fitting</i>	Silver-plated 316 SS/A240		
<i>Body seals</i>	Stainless steel-capped graphite		
<i>Valve packings, needle valve body seal</i>	Graphite		
<i>Environmental seal for needle valve</i>	Silver-plated 316 SS/A240		
<i>Environmental seal for end fitting</i>	Graphite		
<i>Gland bolts</i>	B8M/A193		
<i>Gland flange</i>	S17400 SS/A564		
<i>All other components</i>	316 SS		

Wetted components listed in *italics*.

Testing

Every process interface valve is factory tested hydrostatically to a requirement of no visible leakage. A shell test is performed at 1.5 times the working pressure and a seat test is performed at 1.1 times the working pressure, in accordance with BS EN 12266-1 and API 598. A low-pressure gas seat test is performed in accordance with BS EN 12266-1 and API 598.

In addition, a percentage of the order is fugitive emissions tested with helium in accordance with Shell MESC SPE 77/312 at the working pressure to a requirement of Leakage Class B.

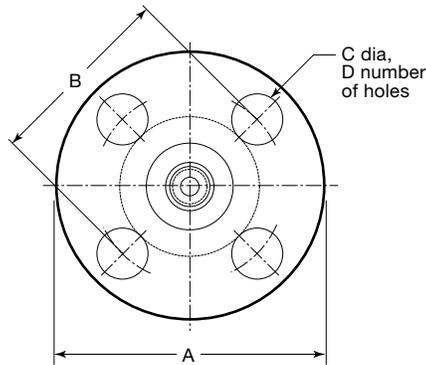
- Hydrostatic test certificates complete with full chemical and physical material certifications are available.

Sour Gas Service

Process interface valves for sour gas service are available. Materials are selected in accordance with NACE MR0175/ISO 15156. To order, contact your authorized Swagelok representative.

Flange Dimensions

Dimensions are for reference only and are subject to change.



Class 900/Class 1500

Nominal Flange Size in.	Dimensions in. (mm)			Mounting Holes
	A	B	C	
1/2	4.75 (121)	3.25 (82.6)	0.88 (22.4)	4
3/4	5.13 (130)	3.50 (88.9)	0.88 (22.4)	4
1	5.88 (149)	4.00 (102)	1.00 (25.4)	4
1 1/2	7.00 (178)	4.88 (124)	1.13 (28.7)	4
2	8.50 (216)	6.50 (165)	1.00 (25.4)	8

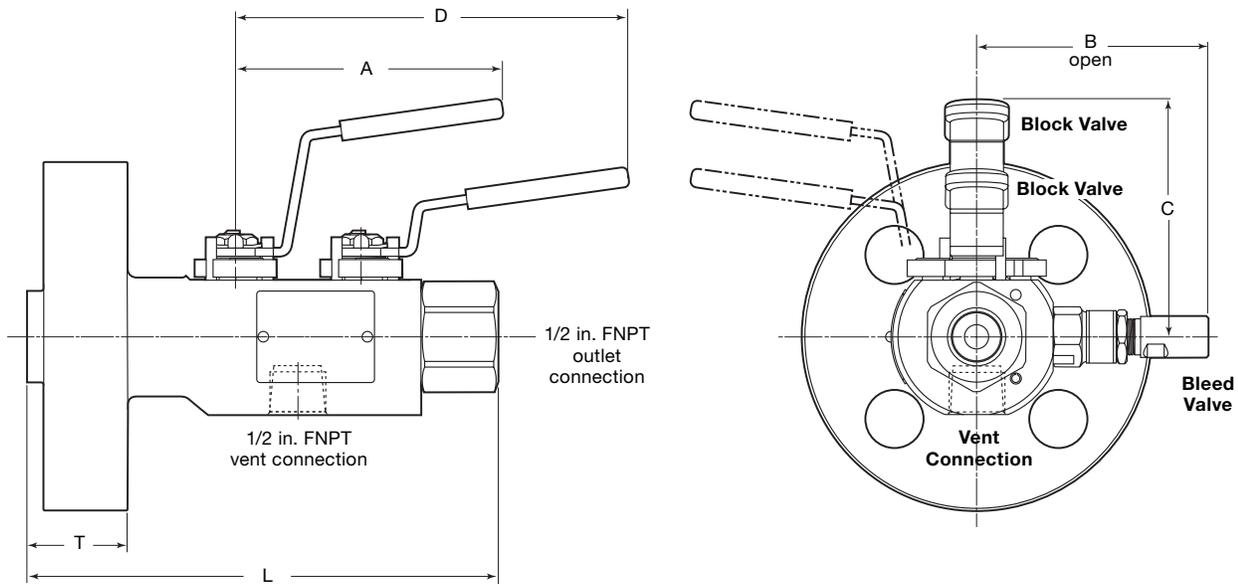
Class 2500

Nominal Flange Size in.	Dimensions in. (mm)			Mounting Holes
	A	B	C	
1/2	5.25 (134)	3.50 (88.9)	0.88 (22.4)	4
3/4	5.50 (140)	3.75 (95.2)	0.88 (22.4)	4
1	6.25 (159)	4.25 (108)	1.00 (25.4)	4
1 1/2	8.00 (203)	5.75 (156)	1.25 (31.8)	4
2	9.25 (235)	6.75 (171)	1.13 (28.7)	8

Valve Dimensions

Dimensions are for reference only and are subject to change.

**Raised-Face (RF) Flange Process Connection,
1/2 in. Female NPT Outlet Connection
3/8 in. (9.5 mm) Bore Size**



3/8 in. (9.5 mm) Bore

Flange Size in.	ASME Class	Dimensions, in. (mm)				Flange/NPT L	RF Flange T	Weight lb (kg)
		A	B	C	D			
1/2 (DN 15)	900/1500	4.03 (102)	3.53 (89.7)	3.59 (91.2)	5.93 (151)	7.11 (181)	1.21 (30.7)	10.6 (4.8)
	2500						1.52 (38.6)	13.1 (5.9)
3/4 (DN 20)	900/1500					7.11 (181)	1.33 (33.8)	12.0 (5.4)
	2500						1.58 (40.1)	13.8 (6.3)
1 (DN 25)	900/1500					7.46 (190)	1.45 (36.8)	14.8 (6.7)
	2500						1.71 (43.4)	18.3 (8.3)
1 1/2 (DN 40)	900/1500					8.05 (205)	1.58 (40.1)	21.3 (9.7)
	2500						2.08 (52.9)	31.3 (14.2)
2 (DN 50)	900/1500	8.05 (205)	1.83 (46.5)	31.1 (14.1)				
	2500		2.33 (59.2)	43.1 (19.5)				

Ordering Information

Build a VB05 series process interface valve ordering number by combining the designators as shown below.

A B C D E F G H J
 VB05 01 SA D 5 D 1 C C A

A Configuration

**Standard (ball/needle/ball
[block/bleed/block])**

01 = 3/8 in. (9.5 mm) bore (all
process connection sizes)

B Materials

SA = 316 stainless steel

CA = Carbon steel

DL = Duplex stainless steel

C Seats, Body Seals, Stem Seals

D = Reinforced PEEK, graphite

D ASME Class

5 = 900/1500

6 = 2500

E Process Connection Size

A = 1/2 in. (DN 15)

B = 3/4 in. (DN 20)

C = 1 in. (DN 25)

D = 1 1/2 in. (DN 40)

E = 2 in. (DN 50)

F Process Connection Type

1 = Flange, RF smooth
(3.2 to 6.3 µm)

G Outlet Connection

C = 1/2 in. female NPT

H Vent Connection

C = 1/2 in. female NPT

J Handle Options

A = Block, nonlockable levers;
bleed, antitamper^①

C = Block, nonlockable levers;
bleed, bar

^① Antitamper key sold separately.
See **Accessories**, below.

Accessories

Antitamper Key

**For Process Interface Valves and
Process Monoflanges**

- Fits all Swagelok antitamper handles.
- Order separately.

Ordering number: **S004468**



Flange Adapters

See the Swagelok *Flange Adapters* catalog, MS-02-200, for more information.



Pressure Gauges

See the Swagelok *Pressure Gauges, Industrial and Process—PGI Series* catalog, MS-02-170, for more information.



Tubing

Swagelok can provide a variety of stainless steel tubing in fractional, metric, and Imperial sizes. For more information, contact your authorized Swagelok representative.



Instrumentation Ball Valves

See the Swagelok *One-Piece Instrumentation Ball Valves—40G Series and 40 Series* catalog, MS-02-331, for more information.



Ball Valves

See the Swagelok *Ball Valves, General Purpose and Special Application—60 Series* catalog, MS-01-146, for more information.



Needle Valves

See the Swagelok *Severe-Service Union-Bonnet Needle Valves—N Series and HN Series* catalog, MS-01-168, for more information.



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.

Caution: Do not mix or interchange parts with those of other manufacturers.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.