

Block and Bleed Valves —IPT Series

For pressures up to 20 000 psig
(1378 bar)



- 316 stainless steel construction
- Pressure rating: Up to 20 000 psig (1378 bar)
- Temperatures up to 650°F (121°C)
- Female NPT end connection sizes: 1/4 to 1 in.
- Medium-pressure cone and thread end connection sizes: 1/4 to 1 in.
- High-pressure cone and thread end connection sizes: 1/4, 3/8, and 9/16 in.
- Swagelok medium-pressure tube fitting (FK)

Features

- Two configurations available:
 - Single block and bleed (needle/needle)
 - Double block and bleed (ball/needle/ball or needle/needle/needle).
- Double block and bleed configuration allows for double positive isolation.
- Vee stem vent valve.

Important Information About Ball Valves

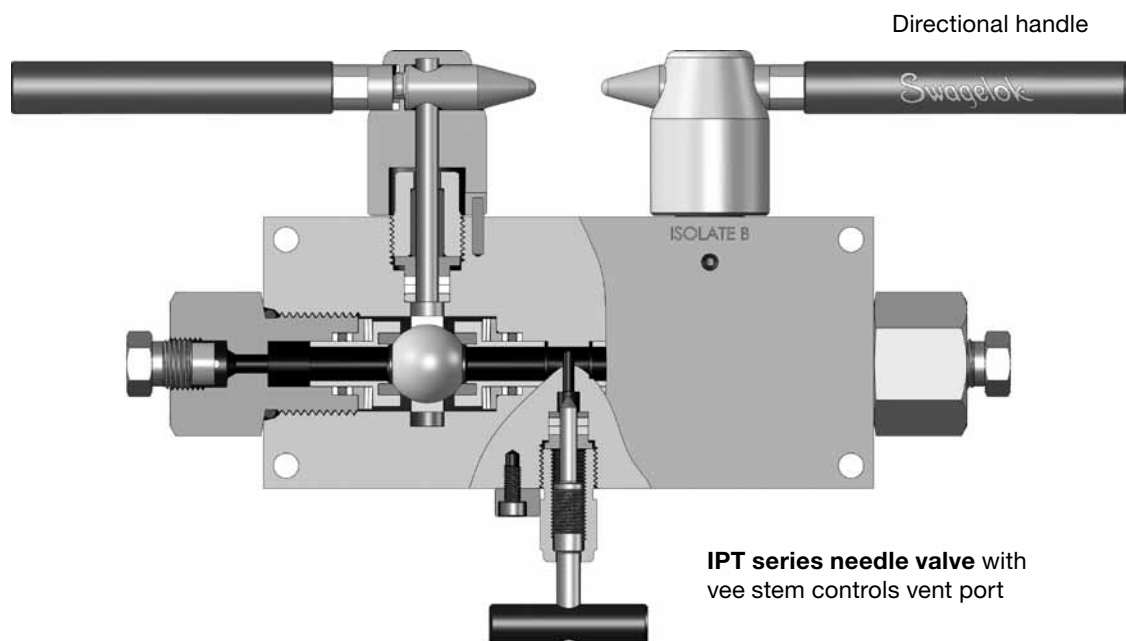
- ⚠ A packing adjustment may be required periodically to increase service life and to prevent leakage.
- ⚠ Valves that have not been cycled for a period of time may have a higher initial actuation torque.
- ⚠ To avoid damage and over-actuation, do not attempt to actuate past positive stop

Features

IPT series trunnion-style ball design

- seals consistently across a full range of pressures, even if system is depressurized and repressurized
- ensures reliable operation for improved actuation of control systems.

Ball/Needle/Ball Configuration



Shown with cone and thread end connections

Pressure-Temperature Ratings

Ball/Needle/Ball – 316 Stainless Steel with Fluorocarbon FKM O-Rings		
Temperature °F (°C)	End Connection	Working Pressure, psig (bar) ^{①②}
0 (-17) to 250 (121)	FNPT: 3/4 in. and 1 in.	10 000 (689)
	FNPT: 1/4 in. and 1/2 in.	15 000 (1034)
	Swagelok medium-pressure tube fitting 1/4 in. to 3/4 in.	15 000 (1034)
	Medium Pressure and High Pressure C&T	15 000 (1034)

① Working pressure determined based on ASME B31.3 Process Piping, Chapter IX High Pressure Piping.

② Pressure ratings may derate based upon the chosen end connection.

Needle/Needle and Needle/Needle/Needle - 316 Stainless Steel		
Temperature °F (°C)	End Connection	Working Pressure, psig (bar) ^{①②}
-40 (-40) to 250 (121) ^③	FNPT: 1/4 in. to 1/2 in.	15 000 (1034)
	FNPT: 3/4 in. and 1 in.	10 000 (689)
	Swagelok medium-pressure tube fitting 1/4 in. to 3/4 in.	20 000 (1378)
	Medium Pressure and High Pressure C&T	20 000 (1378)
250 (121) to 300 (148) ^④	FNPT: 1/4 in. to 1/2 in.	14 400 (992)
	FNPT: 3/4 in. and 1 in.	9 600 (661)
	Swagelok medium-pressure tube fitting 1/4 in. to 3/4 in.	19 200 (1323)
	Medium Pressure and High Pressure C&T	19 200 (1323)
300 (148) to 650 (343) ^④	FNPT: 1/4 in. to 1/2 in.	13 950 (992)
	FNPT: 3/4 in. and 1 in.	9 300 (641)
	Swagelok medium-pressure tube fitting 1/4 in. to 3/4 in.	18 600 (1282)
	Medium Pressure and High Pressure C&T	18 600 (1282)

① Working pressure determined based on ASME B31.3 Process Piping, Chapter IX High Pressure Piping.

② Pressure ratings may derate based upon the chosen end connection.

③ Ratings are based on manual needle valves with optional Grafoil packing.

④ Ratings are limited to: 250°F (121°C) max with reinforced PTFE stem packing.

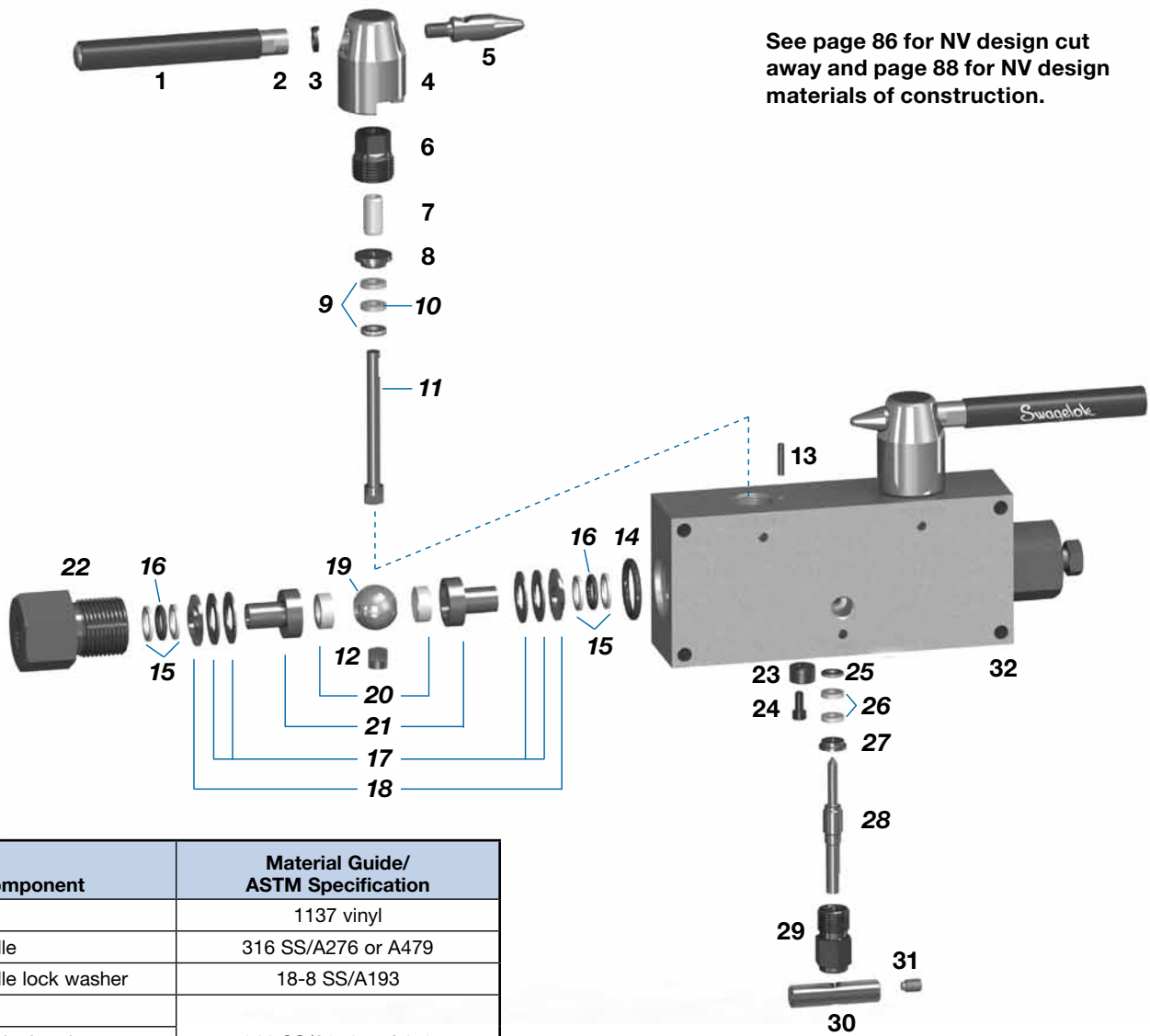
Testing

Every Swagelok IPT series block-and-bleed valve is factory tested with water at the maximum working pressure for 60 seconds. Shell and seat testing is performed to a requirement of no visible leakage.

Cleaning and Packaging

Every block-and-bleed valve is cleaned in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)*, MS-06-62.

Materials of Construction



Component	Material Guide/ ASTM Specification
1 BV Grip	1137 vinyl
2 BV Handle	316 SS/A276 or A479
3 BV Handle lock washer	18-8 SS/A193
4 BV Hub	316 SS/A276 or A479
5 BV stem lock pointer	
6 BV packing gland	Reinforced PEEK
7 BV bearing sleeve	
8 BV top packing washer	316 SS/A276 or A479
9 BV packing ring	Reinforced PTFE
10 BV bottom packing washer	316 SS/A276 or A479
11 BV stem	S17400/A564, Type 630
12 BV support tab	
13 Stop pin	316 SS
14 Seat carrier O-ring	Fluorocarbon FKM
15 Backup washer	Reinforced PEEK
16 O-ring	Fluorocarbon FKM
17 Follower	316 SS/A276 or A479
18 Seat springs	
19 BV ball	Reinforced PEEK
20 Seat seal	
21 Seat carrier	316 SS/A276 or A479
22 End screw	

Component	Material Guide/ ASTM Specification
23 NV locking device	316L SS/A276
24 Socket head cap screw	18-8 SS/A193
25 NV bottom packing washer	316 SS/A276 or A479
26 NV packing	Reinforced PTFE
27 NV top packing washer	316 SS/A276 or A479
28 NV vee stem	S17400/A564, Type 630
29 NV packing gland	316 SS/A276 or A497
30 NV handle	303 SS/A5640
31 NV handle set screw	18-8 SS/A193
32 Body	316 SS/A276 or A479
Wetted lubricants	Silicone-based, tungsten disulfide additive
Nonwetted lubricants	Hydrocarbon-based

Wetted components listed in *italics*.

BV = ball valve component; NV = needle valve component.

Options

O-Ring Materials

Optional O-ring materials are available for all IPT series ball/needle/ball double block and bleed valves shown below. To order, add the optional O-ring material designator to the valve ordering number.

Examples:

Optional HNBR O-ring: DB9M4M2V15-H

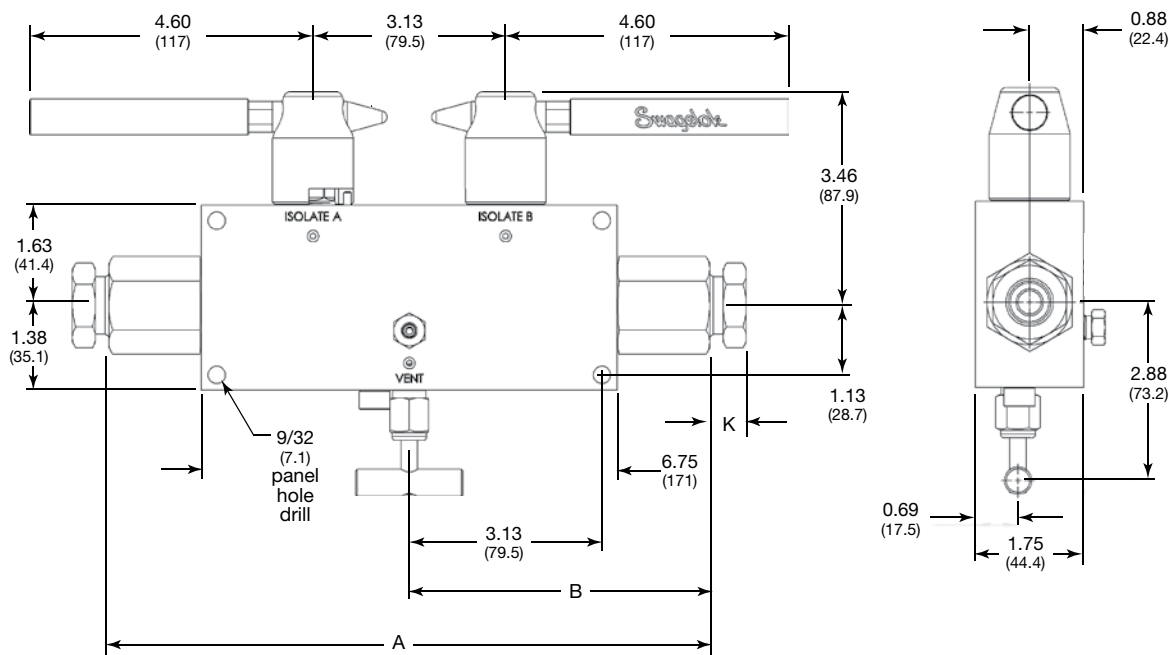
Optional perfluorocarbon FFKM O-ring: DB9M4M2V15-C

O-Ring Material	Temperature Rating °F (°C)	Designator
HNBR	0 to 250 (-17 to 121)	-H
Perfluorocarbon FFKM	20 to 185 (-6 to 85)	-C

Dimensions

Dimensions, shown with coned and thread fitting nuts finger-tight, are for reference only and are subject to change. For additional dimensions of valve configurations, contact your authorized Swagelok representative.

Typical Ball/Needle/Ball Configuration with Medium-Pressure Cone & Thread Connections

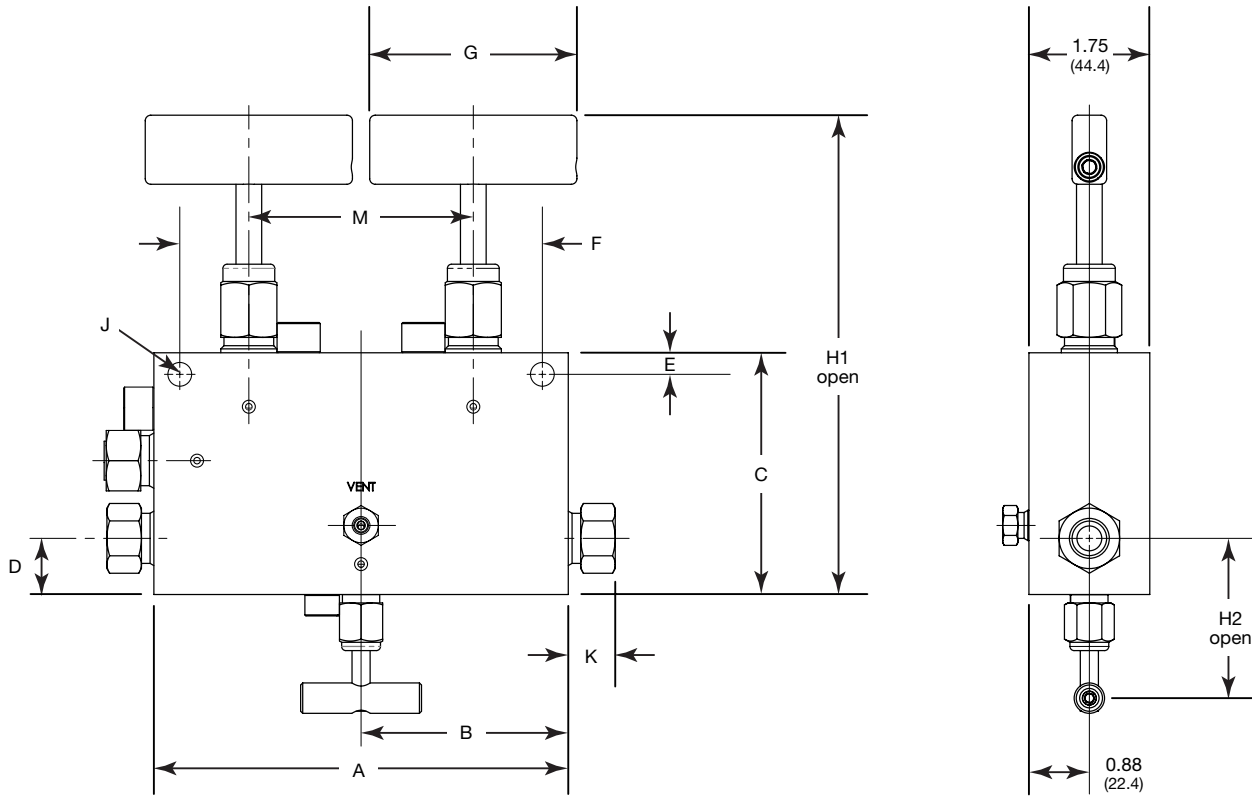


End Connections		Vent Port Size/Style	Typical Ordering Number	Orifice in. (mm)	Flow Coefficient (C _v)	Dimensions, in. (mm)		
Inlet/Outlet	Size					A	B	K
15 000 psig (1034 bar)								
Female medium-pressure cone & thread	1/4 in.	1/4 in. female medium-pressure cone & thread	DB4M4M2V15	0.375 (9.5)	0.2	8.65 (220)	4.33 (110)	0.38 (9.7)
	3/8 in.		DB6M4M2V15		0.9	8.81 (224)	4.41 (112)	0.48 (12.2)
	9/16 in.		DB9M4M2V15		2.5	9.35 (238)	4.67 (119)	0.68 (17.3)
	3/4 in.		DB12M4M2V15		3.5	9.75 (248)	5.15 (131)	0.59 (15.0)
	1 in.		DB16M4M2V15		3.5	10.5 (267)	5.26 (134)	0.74 (18.8)

Dimensions

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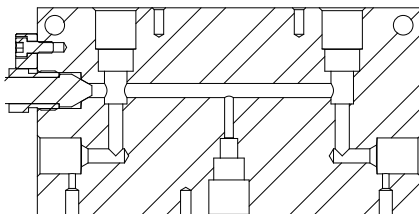
Typical Needle/Needle/Needle Configuration with Medium-Pressure Cone & Thread Connections



End Connections		Vent Port Size/Style	Typical Ordering Number	Orifice in. (mm)	Dimensions, in. (mm)					
Inlet/Outlet	Size				A	B	C	D	E	F
15 000 psig (1034 bar)										
Female medium-pressure cone & thread	1/4 in.	1/4 in. female medium-pressure cone & thread	DB4M4M1V20	0.12 (3.0)	4.00 (102)	2.00 (50.8)	2.00 (50.8)	0.37 (9.4)	0.25 (6.4)	3.50 (88.9)
	3/8 in.		DB6M4M1V20	0.20 (5.1)	5.50 (140)	2.75 (69.8)	3.00 (76.2)	0.87 (22.1)		5.00 (127)
	9/16 in.		DB9M4M1V20	0.31 (7.9)	6.00 (152)	3.00 (76.2)	3.50 (88.9)	0.81 (20.6)	0.31 (7.9)	5.24 (133)
					G	H1	H2	J	K	M
Female medium-pressure cone & thread	1/4 in.	1/4 in. female medium-pressure cone & thread	DB4M4M1V20	0.12 (3.0)	1.75 (44.4)	3.74 (95.0)	1.87 (47.5)	0.28 (7.1)	0.38 (9.7)	2.25 (57.2)
	3/8 in.		DB6M4M1V20	0.20 (5.1)	3.00 (76.2)	5.42 (138)	2.37 (60.2)		0.48 (12.2)	3.25 (82.6)
	9/16 in.		DB9M4M1V20	0.31 (7.9)	6.94 (176)	2.31 (58.7)	0.34 (8.6)	0.68 (17.3)		

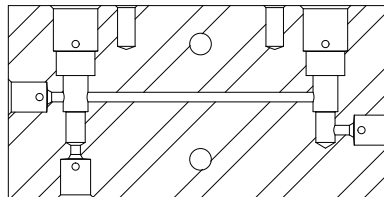
Needle/Needle/Needle Double Block and Bleed

Plugged port required for machining, not an end connection



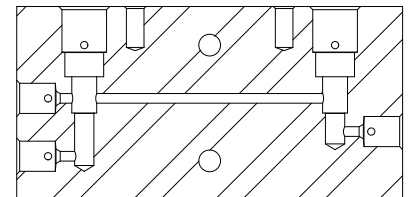
Needle/Needle Single Block and Bleed

Bottom bleed port (standard)



Needle/Needle Single Block and Bleed

Side bleed port (use -SB suffix when ordering)



Ordering Information

Build a valve ordering number by combining the designators in the sequence shown below.

1 2 3 4 5 6 7 8 9 10
DB 9 M 6 M 1 V 20 - H - GR

1 Configuration

DB = Double block/bleed
SB = Single block/bleed

2 End Connection Size

4 = 1/4 in.
6 = 3/8 in.
8 = 1/2 in. (FK, FNPT only)
9 = 9/16 in. (FK, C&T only)
12 = 3/4 in. (FK, FNPT, and MP C&T only)
16 = 1 in. (FNPT and MP C&T only)

3 End Connection Style

M = Female MP C&T
H = Female HP C&T
N = Female NPT
FK = MP Tube Fitting

4 Vent Connection Size

4 = 1/4 in.
6 = 3/8 in.
8 = 1/2 in. (FNPT, single block and bleed only)
9 = 9/16 in. (C&T, single block and bleed only)

5 Vent Connection Style

M = Female MP C&T
H = Female HP C&T
N = Female NPT
FK = MP Tube Fitting

6 Style

Double block/bleed
1 = Needle/needle/needle
2 = Ball/needle/ball
Single block/bleed
1 = Needle/needle

7 Stem Type

V = Vee
R = Regulating

8 Pressure Rating

10 = 10 000 psig (689 bar)
15 = 15 000 psig (1034 bar)
20 = 20 000 psig (1378 bar)

9 O-Ring (ball/needle/ball)

None = Fluorocarbon FKM, standard
H = HNBR
C = Perfluorocarbon FFKM

10 Options

GR = Grafoil Packing (needle valves)
SB = Side Bleed (single block)

Maintenance Kits

For maintenance kit information, contact your authorized Swagelok representative.