

# Swagelok® Nuclear Products

Code-Compliant, Safety-Related, and Commercial Grade



- Full line of reliable products for the nuclear industry
- Nuclear quality and documentation compliance
- ASME Section III, NQA-1, 10CFR50 Appendix B
- ASME B16.34 valve products

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## Swagelok Nuclear Products

Swagelok is committed to the nuclear industry, offering a full line of code-compliant, safety-related, and commercial-grade fluid system products. This catalog describes the full breadth of the Swagelok nuclear products offering and the steps needed to meet the stringent quality requirements of the nuclear industry. See **How to Order**, below, for detailed ordering instructions.

### Code-Compliant Products

Code-compliant products are designed, fabricated, and tested in accordance with the requirements of Section III of the ASME Boiler and Pressure Vessel Code.

ASME B16.34 is a widely accepted industry standard for code-compliant valves, and it addresses design, testing, and performance. Swagelok valves that comply with ASME B16.34 have these characteristics:

- Wall thicknesses of body and other pressure-containing components meet specified values for each pressure class and material of construction.
- Materials comply with ASME and ASTM standards for chemistry and mechanical properties.
- Bolting is ASTM grade bolting with maximum applied stress, as applicable.
- Internally loaded and blowout-proof stems enhance operator safety.

- Pressure testing is conducted for shell leakage at 1.5 times rated pressure and seat leakage at 1.1 times rated pressure.
- Valves are permanently marked with body material, operating pressure and temperature, and manufacturer name. Valves also are tagged.

Swagelok ASME B16.34 valves are listed in the table on page 3 and detailed starting on page 7. In addition to valves, a variety of stainless steel fittings, flanges, and tubing is available for code applications, as identified in the table on page 4.

### Safety-Related Products

Safety-related products are designed, fabricated, and tested in accordance with the requirements of 10CFR50 Appendix B, 10CFR21, and NQA-1. These products are identified in the tables on pages 4 through 6.

### Commercial-Grade Products

Most Swagelok products can be used in commercial-grade applications within nuclear power plants. For these non-safety and non-code-compliant products, see our standard product catalogs for specifications and ordering information. Please note any special requirements when placing a request for quotation.

### How to Order Code-Compliant and Safety-Related Products

**Step 1:** Use the tables on pages 3 through 6 to determine if the component can be certified to the desired nuclear requirements. For code valves only, see the ASME B16.34 product descriptions on pages 7 through 20 for specifications and ordering numbers. For all other nuclear products, see the product catalog identified in the tables to select an ordering number.

**Step 2:** Provide a complete specification, in English, to your authorized Swagelok sales and service representative.

The specification must include, as applicable:

- Material requirements
- Cleaning and packaging procedures
- Marking, seismic<sup>①</sup>, and external environmental qualification requirements
- Process fluid and maximum operating pressure and temperature
- Any other requirements identified in the specification
- ASME Section III code valve requests must include a complete design specification that is certified by a registered professional engineer and indicates code classification and code year.

**Step 3:** Swagelok conducts a technical and quality review of each complete customer specification. This review may take two to three weeks or more, depending on its complexity. You will be notified in writing of any exceptions to your specification.

**Step 4:** Your purchase order must document acceptance of any exceptions identified.

Please contact your authorized Swagelok representative with any questions.

<sup>①</sup> Swagelok uses the static analysis method for seismic evaluations. This analysis is performed under customer-specified design conditions and summarized in a seismic report.

## Code-Compliant 316 Stainless Steel, ASME B16.34 Valves

Valve Series ASME Pressure Class	N Series Union- Bonnet Needle Valves CL2200	UW Series Bellows- Sealed Valves CL1500	50 Series Lift Check Valves CL2200	CP and CPA Series Inline Check Valves CL900	V Series Instrument Manifolds CL1800
See Page	7	9	11	13	16
<b>Applicable Codes and Standards</b>					
NQA-1	✓	✓	✓	✓	✓
10CFR50 / 21 (Safety-Related)	✓	✓	✓	✓	✓
HAF604 (China)	✓	✓	✓	✓	✓
ISO 9001	✓	✓	✓	✓	✓
ASME III Class 1	✓	✓	✓	✓	✓
ASME III Class 2	✓	✓	✓	✓	✓
ASME III Class 3	✓	✓	✓	✓	✓
N285 Class 1	✓	✓	✓	✓	✓
N285 Class 2	✓	✓	✓	✓	✓
N285 Class 3	✓	✓	✓	✓	✓
N285 Class 6	✓	✓	✓	✓	✓
ASME QME-1 <sup>①</sup>	②	②			
ASME B16.34	✓	✓	✓	✓	✓
ASME B31.1	③	✓	③	⑤	✓
ASME B31.3	③	✓	③	✓	✓
PED—Sound Engineering Practice	✓	✓	✓	✓	✓
<b>Standard Materials</b>					
316 SS	✓	✓	✓	✓	✓
316L SS	⑦	⑦	⑦	⑦	⑦
<b>Standard End Connection Types and Sizes<sup>®</sup></b>					
Swagelok Tube Fitting	✓	✓	✓		✓
Tube Socket Weld	✓	✓	✓		
Pipe Socket Weld	✓	✓	✓		
Female NPT	✓	✓	✓	✓	✓
Fractional Sizes, in.	1/8 to 3/4	1/4 to 3/4	1/8 to 3/4	1/4 and 1/2	3/8 and 1/2
Metric Sizes, mm	Contact your authorized Swagelok representative for metric sizes.				—

① Applies only to active (actuated) valves; does not apply to manually operated valves.

② Contact your authorized Swagelok representative for information about models and actuators compliant with ASME QME-1.

③ Exception to ASME B31.1 and B31.3: 650°F (343°C) maximum temperature rating.

④ Exception to ASME B31.1 107.1(d): Stem can be removed along with packing nut.

⑤ Exception to ASME B31.3: Threaded joints not prevented from loosening. CP and CPA series 1/2 in. male NPT end wall required is 0.109 in. (2.77 mm) minimum.

⑥ Exception to ASME B31.3 307 2.2: Stem can be removed along with packing nut.

⑦ 316L stainless steel is available; different ASME B16.34 pressure and temperature ratings apply. Contact your authorized Swagelok representative for more information.

⑧ Valves with Swagelok tube fitting end connections can be certified to ASME Section III. Valves with socket weld, butt weld, and female NPT end connections can be certified to meet the requirements of ASME B16.34 and ASME Section III.

## Code-Compliant and Safety-Related Stainless Steel Fittings, Flanges, Quick-Connects, and Tubing

See **How to Order**, page 2.

Product	Swagelok Gaugeable Tube Fittings	Weld Fittings (TSW, PSW, Butt, Automatic)	Weld Rings	VCO® and VCR® Face Seal Fittings	Pipe Fittings	Union Ball Joint	Flanges	Quick Connects	Tubing, Seamless Instrument (Nuclear tubing must be designated as Nuclear Grade)	FM Series Hose <sup>5</sup>
<b>Swagelok Product Catalog</b>	<i>Gaugeable Tube Fittings and Adapter Fittings, MS-01-140</i>	<i>Weld Fittings, MS-01-149</i>		<i>VCO O-Ring Face Seal Fittings, MS-01-28; VCR Metal-Gasket Face Seal Fittings, MS-01-24</i>	<i>Pipe Fittings, MS-01-147</i>		<i>Flange Adapters, MS-02-200</i>	<i>Quick-Connects, MS-01-138</i>	<i>Stainless Steel Tubing, MS-01-181, MS-01-107</i>	<i>Hose and Flexible Tubing, MS-01-180</i>
<b>Applicable Codes and Standards</b>										
NQA-1	✓	✓	✓	✓	✓	✓	✓	④	✓	✓
10CFR50 / 21 (Safety-Related)	✓	✓	✓	✓	✓	✓	✓	④	✓	✓
HAF604 (China)	✓	✓	✓	✓	✓	✓	✓	④	✓	✓
ISO 9001	✓	✓	✓	✓	✓	✓	✓	④	✓	✓
Canadian Registration (CRN)	✓	✓		✓	✓	✓	✓			✓
ASME III Class 1	✓	✓	✓	✓	✓				✓	
ASME III Class 2	✓	✓	✓	✓	✓				✓	⑥
ASME III Class 3	✓	✓	✓	✓	✓				✓	⑥
RCC-M Class 1	①	①	①	①	①		①	④	✓	
RCC-M Class 2	①	①	①	①	①		①	④	✓	✓
RCC-M Class 3	①	①	①	①	①		①	④	✓	✓
N285 Class 1	✓	✓	✓	✓	✓		✓		✓	
N285 Class 2	✓	✓	✓	✓	✓		✓		✓	✓
N285 Class 3	✓	✓	✓	✓	✓		✓		✓	✓
N285 Class 6	✓	✓	✓	✓	✓	✓	✓		✓	✓
ASME B31.1	✓	✓		✓				✓		✓
ASME B31.3	✓	✓		✓				✓		✓
PED—Sound Engineering Practice	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Intergraph Available	✓	✓			✓					
<b>Standard Materials</b>										
316 SS	✓	✓		✓	✓	✓	✓	✓	✓	✓
316L SS	②	✓	✓	✓	②	②	②	②	②	②
<b>Standard End Connection Types and Sizes</b>										
Swagelok Tube Fitting	✓	✓		✓	✓	✓	✓	✓		✓
Tube Socket Weld	✓	✓		✓	✓	✓	✓	✓		
Pipe Socket Weld	✓	✓		✓	✓	✓	✓	✓		
Female NPT	✓	✓		✓	✓	✓	✓	✓		✓
Fractional Sizes, in.	1/16 to 2 <sup>③</sup>	1/8 to 2 <sup>③</sup>	1/4 to 1/2	1/8 to 1	1/16 to 1	1/8 to 2 <sup>③</sup>	1/16 to 2 <sup>③</sup>	1/8 to 1	1/8 to 2 <sup>③</sup>	1/4 to 2
Metric Sizes, mm	2 to 50 <sup>③</sup>	6 to 18	—	—	—	—	2 to 50 <sup>③</sup>	6 to 12	3 to 50 <sup>③</sup>	6 to 50

① There are known material differences between ASME and RCC-M for Swagelok 300 series stainless steel. Customers must accept noted exceptions.

② Other steel alloys and materials may be available. Contact your authorized Swagelok representative.

③ Order silver-plated ferrules for over 1 in. / 25 mm Swagelok tube fitting end connections.

④ QC Series Quick-Connects only.

⑤ Other Hose products are available. Contact your authorized Swagelok representative.

⑥ Hose products can only be certified as ASME Class 2 and 3.

## Safety-Related Stainless Steel Valves

See **How to Order**, page 2.

Product	N and HN Series Severe-Service Union-Bonnet Needle Valves	U Series Bellows-Sealed Valves	60 Series General-Purpose Ball Valves	Integral Bonnet Needle Valves	50 Series Lift Check Valves	C, CA, CP, CPA Series Check Valves	V Series Instrument Manifolds	4P and 5P Series Rising Plug Valves	Gauge Valves
<b>Swagelok Product Catalog</b>	MS-01-168	MS-01-38	MS-01-146	MS-01-164	MS-01-98	MS-01-176	MS-01-178	MS-01-49	MS-01-52
<b>Applicable Codes and Standards</b>									
NQA-1	✓	✓	✓	✓	✓		✓	✓	✓
10CFR50 / 21 (Safety-Related)	✓	✓	✓	✓	✓	✓	✓	✓	✓
HAF604 (China)	✓	✓	✓	✓	✓	✓	✓	✓	✓
ISO 9001	✓	✓	✓	✓	✓	✓	✓	✓	✓
Canadian Registration (CRN)	✓	✓	✓	✓	✓	✓	✓	✓	✓
N285 Class 6	✓	✓	✓	✓	✓	✓	✓	✓	✓
ASME QME-1 <sup>①</sup>	②	②							
ASME B31.1	③	✓	✓	④	③		✓	④	④
ASME B31.3	③	✓	✓	⑤	③		✓	⑤	⑤
PED—CE Marked			⑥						
PED—Sound Engineering Practice	✓	✓	⑥	✓	✓	✓	✓	✓	✓
Intergraph Available	✓	✓	✓	✓	✓	✓	✓		
<b>Standard Materials</b>									
316 SS	✓	✓	✓	✓	✓	✓	✓	✓	✓
316L SS	✓	✓	✓						
<b>Standard End Connection Types and Sizes</b>									
Swagelok Tube Fitting	✓	✓	✓	✓	✓	✓			
Tube Socket Weld	✓	✓	✓		✓				
Pipe Socket Weld	✓	✓	✓		✓				
Female NPT	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fractional Sizes, in.	1/8 to 1	1/4 to 3/4	1/8 to 2 <sup>⑦</sup>	1/8 to 3/4	1/4 to 3/4	1/8 to 1	1/2	1/2 to 3/4	1/2 to 3/4
Metric Sizes, mm	6 to 12	6 to 12	6 to 25	3 to 18	6	6 to 25	—	—	—

① Applies only to active (actuated) valves; does not apply to manually operated valves.

② Contact your authorized Swagelok representative for information about models and actuators compliant with ASME QME-1.

③ Exception to ASME B31.1 and B31.3: 1000°F (537°C) maximum temperature rating.

④ Exception to ASME B31.1 107.1(d): Stem can be removed along with packing nut.

⑤ Exception to ASME B31.3 307 2.2: Stem can be removed along with packing nut.

⑥ 67 and 68 series valves are CE marked for PED. 62, 63, and 65 valves follow PED Sound Engineering Practice.

⑦ Order silver-plated ferrules for over 1 in. / 25 mm Swagelok tube fitting end connections.

## Safety-Related Stainless Steel Valves

See **How to Order**, page 2.

Product	OG, 1G, 92 Toggle Valves	Bleed Valves and Purge Valves	JB Series Screwed-Bonnet Needle Valves	40 and 40G Series Instrument Ball Valves	AFS, FKB, SK, and 83 Series Ball Valves	XS Series Excess Flow Valves	R Series Proportional Relief Valves	D60 Series Distribution Block Valves	6DB Series Blowdown Valves
<b>Swagelok Product Catalog</b>	MS-01-54	MS-01-62	MS-01-84	MS-02-331	MS-02-303, MS-02-354, MS-02-345, MS-01-166	MS-01-110	MS-01-141	MS-02-02	MS-02-118
<b>Applicable Codes and Standards</b>									
NQA-1	✓	✓	✓	✓	✓	✓	✓	✓	✓
10CFR50 / 21 (Safety-Related)	✓	✓	✓	✓	✓	✓	✓	✓	✓
HAF604 (China)	✓	✓	✓	✓	✓	✓	✓	✓	✓
ISO 9001	✓	✓	✓	✓	✓	✓	✓	✓	✓
Canadian Registration (CRN)	✓	✓	✓	✓	✓	✓	✓		✓
N285 Class 6		✓	✓	✓	✓	✓	✓		✓
ASME B31.1	①	✓	①	①				✓	✓
ASME B31.3	②	✓	②	②				✓	
PED—Sound Engineering Practice	✓	✓	✓	✓	✓	✓	✓	③	✓
Intergraph Available									
<b>Standard Materials</b>									
316 SS	✓	✓	✓	✓	✓	✓	✓		✓
316L SS								✓	
<b>Standard End Connection Types and Sizes</b>									
Swagelok Tube Fitting	✓	✓	✓	✓	✓	✓	✓		✓
Tube Socket Weld								✓	✓
Pipe Socket Weld								✓	✓
Female NPT	✓	✓	✓	✓	✓	✓	✓		✓
Fractional Sizes, in.	1/8 to 1/2	1/8 to 1/2	1/8 to 3/8	1/16 to 3/4	1/8 to 1	1/8 to 1/2	1/4 to 1/2	④	1/4 to 1/2
Metric Sizes, mm	3 to 12	—	6 to 8	3 to 12	6 to 16	6 to 12	6 to 12	④	10 to 12

① Exception to ASME B31.1 107.1(d): Stem can be removed along with packing nut.

② Exception to ASME B31.3 307 2.2: Stem can be removed along with packing nut.

③ 67 and 68 series valves are CE marked for PED. 62, 63, and 65 series valves follow PED Sound Engineering Practice.

④ See the Swagelok *D60 Series Distribution Block Valves* catalog, MS-02-02.

# Union-Bonnet Needle Valves ASME B16.34 N Series

- ASME Section III Class 1, 2, 3
- 10CFR50 Appendix B / 10CFR21 Safety Related

## Features

- 316 stainless steel material
- Ball tip (NB) or regulating (NR) stem
- Swagelok tube fitting, female NPT, tube socket weld, and pipe socket weld connections; contact your authorized Swagelok representative for pipe butt weld and female Swagelok tube fitting end connections.
- End connection sizes from 1/8 to 3/4 in.; contact your authorized Swagelok representative for metric sizes.
- Panel mounting
- Orifice from 0.156 to 0.437 in. (4.0 to 11.1 mm)
- Flow coefficient from 0.35 to 2.4

## Pressure-Temperature Ratings

ASME Class	2200
Material Group	2.2
Material Name	316 SS
Temperature °F (°C)	Working Pressure psig (bar)
-20 (28) to 100 (37)	5280 (363)
200 (93)	4541 (312)
300 (148)	4101 (282)
400 (204)	3767 (259)
500 (260)	3503 (241)
600 (315)	3309 (227)
650 (343)	3256 (224)

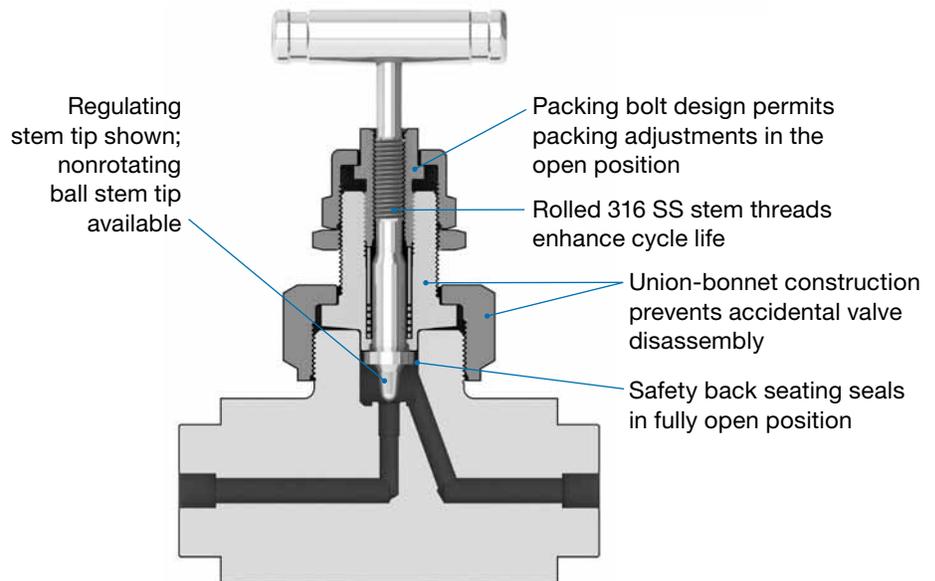
## Testing

Every ASME B16.34 union-bonnet needle valve is factory tested with nitrogen at 1000 psig (69 bar). Seats have a maximum allowable leak rate of 0.1 std cm<sup>3</sup>/min. Additionally, each valve is shell tested at 1.5 times the rated pressure for a specified time duration to a requirement of no detectable leakage with a liquid leak detector. Each valve is seat tested at 1.1 times the rated pressure.

## Cleaning and Packaging

All ASME B16.34 union-bonnet needle valves are free of foreign material such as dirt, oil, grease, rust, scale, and compounds used during fabrication, prior to shipment. Cleaning agents and processes will not harm surfaces or finishes or affect material properties or valve operation.

Cleanliness of the valves is in accordance with NQA-1 Subpart 2.1 Class B or equivalent (ANSI N45.2.1). Packaging procedures are in accordance with NQA-1 Subpart 2.2 or equivalent (ANSI N45.2.2).



## Materials of Construction

Component	Material Grade / ASTM Specification
Handle, gland, set screw	316 SS / A479
Packing bolt, union nut	316 SS / SA479
Handle pin	17-4 H900 / A564
Lock nut, panel nut	316 SS / A276 or A479
<i>Packing</i>	<i>Grafoil® GTJ</i>
<i>Body, bonnet</i>	<i>316 SS / SA479</i>
<i>NB stem shank and ball, NR regulating stem</i>	<i>316 SS / SA479 or Cobalt based Alloy</i>
<i>Lubricant</i>	<i>High-purity, metal-free, mineral oil-based antiseize</i>

Wetted components listed in *italics*.

- ⚠ **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 valve performance, and prevent leakage, apply only as much torque as is required to achieve positive shutoff.**
- ⚠ **Optional regulating tip stems are not rated for shut off service.**

## Dimensions and Ordering Information

Dimensions are for reference only and are subject to change.

Ordering numbers specify a ball stem tip. For a regulating stem, replace **NB** in the basic ordering number with **NR**.

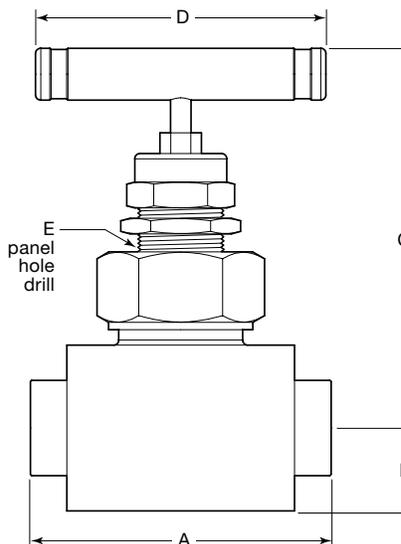
Example: SS-3NRS4-CL2200

For a complete ordering number, add an ASME Section III class designator to the basic ordering number.

ASME Section III Class	Designator
1	NB
2	NC
3	ND

Example: SS-3NBS4-CL2200**NB**

See **How to Order**, page 2, for detailed ordering instructions.



End Connections		C <sub>v</sub>	Orifice in. (mm)	Basic Ordering Number	Dimensions, in. (mm)					Weight lb (kg)
Style	Size in.				A	B	C	D	E	
<b>3N Series</b>										
Swagelok tube fitting	1/4	0.35	0.156 (4.0)	SS-3NBS4-CL2200	3.70 (94.0)	0.69 (17.2)	3.59 (91.2)	1.75 (44.4)	0.81 (20.6)	1.86 (0.84)
Female NPT	1/8			SS-3NBF2-CL2200	3.12 (79.2)	0.69 (17.2)	3.59 (91.2)	1.75 (44.4)	0.81 (20.6)	1.93 (0.88)
Tube socket weld	1/4			SS-3NBSW4T-CL2200	3.12 (79.2)	0.69 (17.2)	3.59 (91.2)	1.75 (44.4)	0.81 (20.6)	2.07 (0.94)
<b>6N Series</b>										
Swagelok tube fitting	3/8	0.86	0.250 (6.4)	SS-6NBS6-CL2200	3.63 (92.2)	1.00 (25.4)	4.44 (113)	3.50 (88.9)	1.06 (26.9)	4.39 (1.99)
Female NPT	1/4			SS-6NBF4-CL2200	3.63 (92.2)	1.00 (25.4)	4.44 (113)	3.50 (88.9)	1.06 (26.9)	4.56 (2.07)
	3/8			SS-6NBF6-CL2200	3.63 (92.2)	1.00 (25.4)	4.44 (113)	3.50 (88.9)	1.06 (26.9)	4.58 (2.08)
Tube socket weld	3/8			SS-6NBSW6T-CL2200	3.63 (92.2)	1.00 (25.4)	4.44 (113)	3.50 (88.9)	1.06 (26.9)	4.48 (2.03)
	1/2			SS-6NBSW8T-CL2200	3.63 (92.2)	1.00 (25.4)	4.44 (113)	3.50 (88.9)	1.06 (26.9)	4.54 (2.06)
Pipe socket weld	1/4			SS-6NBSW4P-CL2200	3.63 (92.2)	1.00 (25.4)	4.44 (113)	3.50 (88.9)	1.06 (26.9)	4.60 (2.09)
	3/8	SS-6NBSW6P-CL2200	3.63 (92.2)	1.00 (25.4)	4.44 (113)	3.50 (88.9)	1.06 (26.9)	4.68 (2.12)		
<b>12N Series</b>										
Swagelok tube fitting	1/2	2.1	0.406 (10.3)	SS-12NBS8-CL2200	3.72 (94.5)	1.08 (27.4)	5.24 (133)	3.50 (88.9)	1.31 (33.3)	6.00 (2.72)
	3/4	2.4	0.437 (11.1)	SS-12NBS12-CL2200	3.50 (88.9)	1.08 (27.4)	5.24 (133)	3.50 (88.9)	1.31 (33.3)	5.60 (2.54)
Female NPT	1/2	2.4	0.437 (11.1)	SS-12NBF8-CL2200	3.72 (94.5)	1.08 (27.4)	5.24 (133)	3.50 (88.9)	1.31 (33.3)	6.06 (2.75)
	3/4	2.4	0.437 (11.1)	SS-12NBF12-CL2200	3.72 (94.5)	1.08 (27.4)	5.24 (133)	3.50 (88.9)	1.31 (33.3)	6.99 (3.17)
Tube socket weld	3/4	2.4	0.437 (11.1)	SS-12NBSW12T-CL2200	3.50 (88.9)	1.13 (28.7)	5.24 (133)	3.50 (88.9)	1.31 (33.3)	6.27 (2.84)
Pipe socket weld	1/2 in.	2.4	0.437 (11.1)	SS-12NBSW8P-CL2200	3.50 (88.9)	1.13 (28.7)	5.24 (133)	3.50 (88.9)	1.31 (33.3)	6.11 (2.77)
	3/4 in.	2.4	0.437 (11.1)	SS-12NBSW12P-CL2200	3.50 (88.9)	1.13 (28.7)	5.24 (133)	3.50 (88.9)	1.31 (33.3)	5.94 (2.69)

Dimensions shown with Swagelok tube fitting nuts finger-tight.

# Bellows-Sealed Valves ASME B16.34 UW Series

- ASME Section III Class 1, 2, 3
- 10CFR50 Appendix B / 10CFR21 Safety Related

## Features

- 316 stainless steel material
- Swagelok tube fitting, female NPT, tube socket weld, and pipe socket weld connections; contact your authorized Swagelok representative for pipe butt weld and female Swagelok tube fitting end connections.
- End connection sizes 1/4 to 3/4 in.; contact your authorized Swagelok representative for metric sizes.
- Panel mounting
- Orifice 0.156 to 0.504 in. (4.0 to 12.8 mm)
- Flow coefficient from 0.40 to 3.1

## Pressure-Temperature Ratings

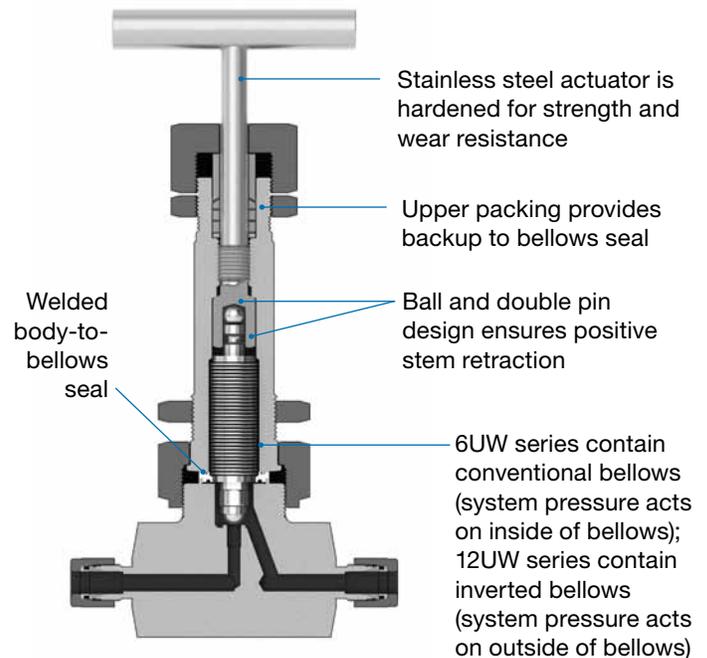
<b>ASME Class</b>	<b>1500<sup>①</sup></b>
<b>Material Group</b>	<b>2.2</b>
<b>Material Name</b>	<b>316 SS</b>
<b>Temperature</b> °F (°C)	<b>Working Pressure</b> psig (bar)
-20 (28) to 650 (343)	2500 (172)

<sup>①</sup> Class 1500 rating based on the pressure boundary components as defined by ASME Section III, which excludes the bellows. The UW series valve should not be operated above the 2500 psig (172 bar) maximum allowable working pressure (MAWP) of the bellows.

## Materials of Construction

Component	Material Grade / ASTM Specification
Handle, gland, jam nut, panel nut	316 SS / A479
Set screw (6UW)	Alloy steel / ANSI 18.3
Cap nut (12UW)	18-8 SS
Packing (3)	Grafoil GTJ
Spacer	316 SS / A240
Bonnet nut	Silver-plated 316 SS / SA479
Lower seal O-ring	316 SS / A580
Actuator	316 SS / A276
Actuator pin (2)	416 SS
Ball bearing, stem extension	440C SS / A276
<i>Body, bonnet, weld ring, gland nut</i>	<i>316 SS / SA479</i>
<i>Stem adapter</i>	<i>316 SS / A479</i>
<i>Stem tip</i>	<i>316 SS / A276</i>
<i>Bellows (6UW)</i>	<i>347 SS / A269</i>
<i>Bellows (12UW)</i>	<i>316 SS / A240</i>
<i>Lubricant</i>	<i>High-purity, metal-free, mineral oil-based antiseize</i>

Wetted components listed in *italics*.



## Testing

Every ASME B16.34 bellows-sealed valve is factory tested with nitrogen at 1000 psig (69 bar). Seats have a maximum allowable leak rate of 0.1 std cm<sup>3</sup>/min. Additionally, each valve is shell tested at 1.5 times the rated pressure for to a requirement of no detectable leakage with a liquid leak detector. Each valve is seat tested at 1.1 times the rated pressure.

## Cleaning and Packaging

All ASME B16.34 bellows-sealed valves are free of foreign material such as dirt, oil, grease, rust, scale, and compounds used during fabrication, prior to shipment. Cleaning agents and processes will not harm surfaces or finishes or affect material properties or valve operation.

Cleanliness of the valves is in accordance with NQA-1 Subpart 2.1 Class B or equivalent (ANSI N45.2.1). Packaging procedures are in accordance with NQA-1 Subpart 2.2 or equivalent (ANSI N45.2.2).

## Dimensions and Ordering Information

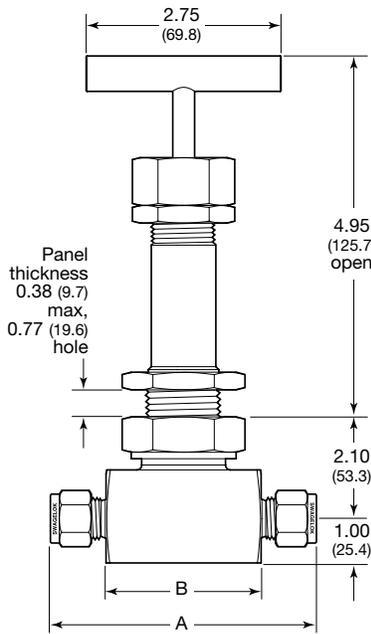
Dimensions are for reference only and are subject to change.

For a complete ordering number, add an ASME Section III class designator to the basic ordering number.

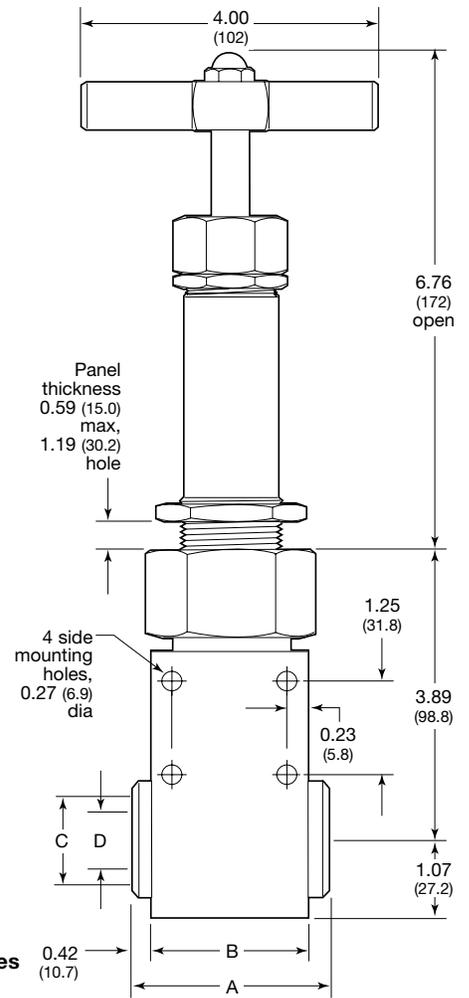
ASME Section III Class	Designator
1	NB
2	NC
3	ND

Example: SS-6UWS4-CL1500**NB**

See **How to Order**, page 2, for detailed ordering instructions.



6UW Series



12UW Series

End Connections		C <sub>v</sub>	Orifice in. (mm)	Basic Ordering Number	Dimensions, in. (mm)				Weight lb (kg)
Style	Size in.				A	B	C	D	
<b>4UW Series</b>									
Swagelok tube fitting	1/4	0.4	0.168 (4.3)	SS-4UWS4-CL1500	3.63 (92.2)	2.81 (71.4)	—	0.26 (6.6)	4.99 (2.26)
Tube socket weld				SS-4UWSW4T-CL1500	3.63 (92.2)	3.00 (76.2)	0.54 (13.7)	0.26 (6.6)	5.23 (2.37)
<b>6UW Series</b>									
Swagelok tube fitting	3/8	1.0	0.300 (7.62)	SS-6UWS6-CL1500	3.63 (92.2)	2.69 (68.3)	—	0.38 (9.6)	4.81 (2.18)
Tube socket weld	3/8			SS-6UWSW6T-CL1500	3.63 (92.2)	2.37 (60.2)	0.65 (16.5)	0.38 (9.6)	4.79 (2.17)
Pipe socket weld	1/4			SS-6UWSW4P-CL1500	3.63 (92.2)	2.40 (61.0)	—	—	4.88 (2.21)
	3/8			SS-6UWSW6P-CL1500	3.63 (92.2)	2.28 (57.9)	—	—	4.77 (2.16)
<b>12UW Series</b>									
Swagelok tube fitting	1/2	1.2	0.344 (8.7)	SS-12UWS8-CL1500	3.03 (77.0)	2.10 (53.3)	—	0.51 (13.0)	7.30 (3.31)
	3/4	2.4	0.438 (11.1)	SS-12UWS12-CL1500	3.03 (77.0)	2.10 (53.3)	—	0.76 (19.3)	7.30 (3.31)
Tube socket weld	1/2	1.7	0.344 (8.7)	SS-12UWSW8T-CL1500	2.98 (75.7)	2.10 (53.3)	1.15 (29.2)	0.51 (13.0)	6.86 (3.11)
	3/4	3.1	0.504 (12.8)	SS-12UWSW12T-CL1500	3.04 (77.2)	2.10 (53.3)	1.55 (39.4)	0.76 (19.3)	6.93 (3.14)
Pipe socket weld	1/2	3.1	0.504 (12.8)	SS-12UWSW8P-CL1500	2.90 (73.7)	2.10 (53.3)	1.30 (33.0)	0.87 (22.1)	7.30 (3.31)
	3/4	3.1	0.504 (12.8)	SS-12UWSW12P-CL1500	3.18 (80.8)	2.10 (53.3)	1.50 (38.1)	1.08 (27.4)	7.37 (3.34)

Dimensions shown with Swagelok tube fitting nuts finger-tight.

**⚠ To increase service life, ensure proper valve performance, and prevent leakage, apply only as much torque as is required to achieve positive shutoff.**

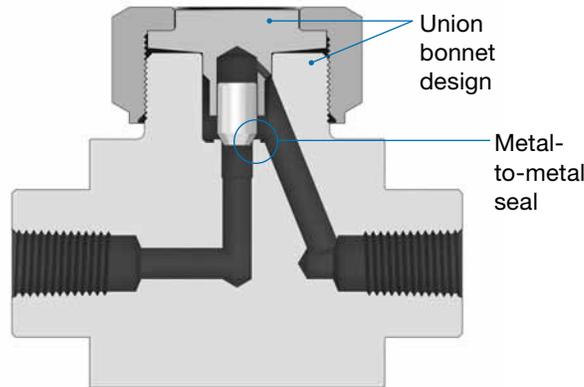
## Lift Check Valves ASME B16.34 50 Series

- ASME Section III Class 1, 2, 3
- 10CFR50 Appendix B / 10CFR21 Safety Related



### Features

- 316 stainless steel material
- Reverse flow coefficient less than 0.1 % of forward flow coefficient
- No springs or elastomers
- Compact size
- Swagelok tube fitting, female NPT, tube socket weld, and pipe socket weld connections; contact your authorized Swagelok representative for pipe butt weld and female Swagelok tube fitting end connections.
- End connection sizes 1/8 to 3/4 in.; contact your authorized Swagelok representative for metric sizes.
- Orifice from 0.156 to 0.437 in. (4.0 to 11.1 mm)
- Flow coefficient from 0.30 to 2.20



Forward flow lifts the poppet, opening the valve. Reverse flow seats the poppet against the orifice, closing the valve.

**The lift check valve is gravity assisted and must be mounted horizontally, with bonnet nut on top.**

### Pressure-Temperature Ratings

ASME Class	2200
Material Group	2.2
Material Name	316 SS
Temperature °F (°C)	Working Pressure psig (bar)
-20 (28) to 100 (37)	5280 (363)
200 (93)	4541 (312)
300 (148)	4101 (282)
400 (204)	3767 (259)
500 (260)	3503 (241)
600 (315)	3309 (227)
650 (343)	3256 (224)

### Testing

Every ASME B16.34 lift check valve is factory tested. Shell testing is performed to a requirement of no detectable leakage with a liquid leak detector. Each valve is shell tested at 1.5 times the rated pressure for a time duration specified by code or customer requirements.

### Cleaning and Packaging

All ASME B16.34 lift check valves are free of foreign material such as dirt, oil, grease, rust, scale, and compounds used during fabrication, prior to shipment. Cleaning agents and processes will not harm surfaces or finishes or affect material properties or valve operation.

Cleanliness of the valves is in accordance with NQA-1 Subpart 2.1 Class B or equivalent (ANSI N45.2.1). Packaging procedures are in accordance with NQA-1 Subpart 2.2 or equivalent (ANSI N45.2.2).

### Materials of Construction

Component	Material Grade / ASTM Specification
Bonnet nut	316 SS / SA479
<i>Bonnet, body</i>	<i>316 SS / SA479</i>
<i>Poppet</i>	<i>17-4 H900 / A564</i>
<i>Lubricant</i>	<i>High-purity, metal-free, mineral oil-based antiseize</i>

Wetted components listed in *italics*.

## Dimensions and Ordering Information

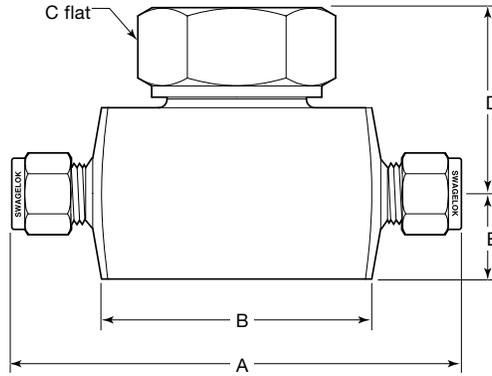
Dimensions are for reference only and are subject to change.

For a complete ordering number, add an ASME Section III class designator to the basic ordering number.

ASME Section III Class	Designator
1	NB
2	NC
3	ND

Example: SS-53S4-CL2200**NB**

See **How to Order**, page 2, for detailed ordering instructions.



End Connections		C <sub>v</sub>	Orifice in. (mm)	Basic Ordering Number	Dimensions, in. (mm)					Weight lb (kg)
Style	Size				A	B	C	D	E	
<b>53 Series</b>										
Swagelok tube fittings	1/4 in.	0.30	0.156 (4.0)	SS-53S4-CL2200	3.70 (94.0)	2.17 (55.1)	1 3/8	1.49 (37.8)	0.69 (17.5)	1.60 (0.73)
Female NPT	1/8 in.			SS-53F2-CL2200	3.13 (79.5)	2.13 (54.1)	1 3/8	1.49 (37.8)	0.69 (17.5)	1.65 (0.75)
Tube socket weld	1/4 in.			SS-53SW4T-CL2200	3.13 (79.5)	2.51 (63.8)	1 3/8	1.49 (37.8)	0.69 (17.5)	1.81 (0.82)
<b>56 Series</b>										
Swagelok tube fittings	3/8 in.	0.64	0.250 (6.4)	SS-56S6-CL2200	4.21 (107)	2.55 (64.8)	1 3/4	2.13 (54.1)	1.00 (25.4)	3.86 (1.75)
Female NPT	1/4 in.			SS-56F4-CL2200	3.63 (92.2)	2.38 (60.5)	1 3/4	2.06 (52.3)	1.00 (25.4)	3.75 (1.70)
	3/8 in.			SS-56F6-CL2200	3.63 (92.2)	2.63 (66.8)	1 3/4	2.13 (54.1)	1.00 (25.4)	3.98 (1.80)
Tube socket weld	3/8 in.			SS-56SW6T-CL2200	3.63 (92.2)	2.87 (72.9)	1 3/4	2.06 (52.3)	1.00 (25.4)	4.03 (1.83)
	1/2 in.			SS-56SW8T-CL2200	3.63 (92.2)	2.75 (69.8)	1 3/4	2.06 (52.3)	1.00 (25.4)	3.89 (1.76)
Pipe socket weld	1/4 in.			SS-56SW4P-CL2200	3.63 (92.2)	3.63 (92.2)	1 3/4	2.06 (52.3)	1.00 (25.4)	4.69 (2.13)
	3/8 in.	SS-56SW6P-CL2200	3.63 (92.2)	3.63 (92.2)	1 3/4	2.06 (52.3)	1.00 (25.4)	4.63 (2.10)		
<b>58 Series</b>										
Swagelok tube fittings	1/2 in.	2.20	0.437 (11.1)	SS-58S8-CL2200	4.31 (109)	2.37 (60.2)	2 1/8	2.49 (63.2)	1.13 (28.7)	4.95 (2.25)
	3/4 in.			SS-58S12-CL2200	4.29 (109)	2.37 (60.2)	2 1/8	2.49 (63.2)	1.13 (28.7)	4.96 (2.25)
Female NPT	1/2 in.			SS-58F8-CL2200	3.50 (88.9)	2.25 (57.2)	2 1/8	2.49 (63.2)	1.13 (28.7)	4.94 (2.24)
Tube socket weld	1/2 in.			SS-58SW8T-CL2200	3.50 (88.9)	2.38 (60.5)	2 1/8	2.49 (63.2)	1.13 (28.7)	5.09 (2.31)

Dimensions shown with Swagelok tube fitting nuts finger-tight.

## Inline Check Valves ASME B16.34 CP and CPA Series

- ASME Section III Class 1, 2, 3
- 10CFR50 Appendix B / 10CFR21 Safety Related



### Features

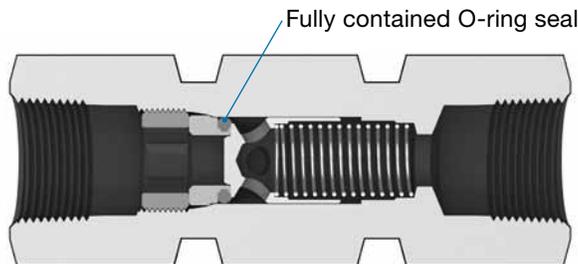
- 316 stainless steel material
- 1/4 and 1/2 in. female NPT end connections; contact your authorized Swagelok representative for metric end connections.
- Fixed cracking pressures from 1/3 to 25 psi (0.03 to 1.8 bar); adjustable cracking pressures from 3 to 600 psi (0.21 to 41.4 bar)

### Pressure-Temperature Ratings

Temperature rating is limited by seal materials.

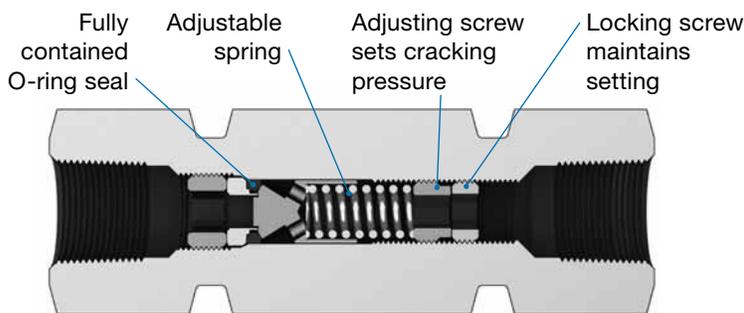
<b>ASME Class</b>	<b>900</b>
<b>Material Group</b>	<b>2.2</b>
<b>Material Name</b>	<b>316 SS</b>
<b>Temperature</b> °F (°C)	<b>Working Pressure</b> psig (bar)
-20 (28) to 100 (37)	2160 (148)
200 (93)	1860 (128)
300 (148)	1680 (115)

#### CP Series (Fixed Cracking Pressure)



Compact, one-piece body

#### CPA Series (Adjustable Cracking Pressure)



Compact, one-piece body

### Materials of Construction

Component	Material Grade/ ASTM Specification
<i>Body, insert, poppet</i>	316 SS / SA479
<i>Insert lock screw</i>	316 SS / A276 or A479
<i>O-ring</i>	Ethylene propylene (EP)
<i>Spring</i>	302 SS / A313
<i>Adjusting screw, locking screw (CPA series)</i>	316 SS / A276
<i>Lubricant</i>	Hydrocarbon-based, PTFE-free synthetic

Wetted components listed in *italics*.

### Testing

Every ASME B16.34 inline check valve is factory tested for crack and reseal performance with a liquid leak detector.

Check valves with fixed cracking pressures, CP series, are cycled six times prior to testing. Every valve is tested to ensure it seals within 5 s at the appropriate reseal pressure.

Check valves with adjustable cracking pressures, CPA series, are tested at two pressure points. Every valve is tested at a low-pressure setting and at a high-pressure setting. All valves must seal within 5 s at the appropriate reseal pressure.

Each valve is shell tested at 1.5 times the rated pressure for a time duration specified by code or customer requirements.

### Cleaning and Packaging

All ASME B16.34 inline check valves are free of foreign material such as dirt, oil, grease, rust, scale, and compounds used during fabrication, prior to shipment. Cleaning agents and processes will not harm surfaces or finishes or affect material properties or valve operation.

Cleanliness of the valves is in accordance with NQA-1 Subpart 2.1 Class B or equivalent (ANSI N45.2.1). Packaging procedures are in accordance with NQA-1 Subpart 2.2 or equivalent (ANSI N45.2.2).

## Technical Data

Cracking pressure—the inlet pressure at which the first indication of flow occurs (steady stream of bubbles).

Reseal pressure—the pressure at which there is no indication of flow.

Back pressure—the differential pressure between the inlet and outlet pressures.

**⚠ For valves not actuated for a period of time, initial cracking pressure may be higher than the set cracking pressure.**

Series	Maximum Flow Coefficient (C <sub>v</sub> )	Nominal Cracking Pressure <sup>①</sup> psi (bar)	Maximum Back Pressure at 70°F (20°C) psig (bar)
<b>Fixed Cracking Pressure</b>			
4CP	0.35	1/3, 1, 10 and 25 (0.03, 0.07, 0.69, and 1.8)	2160 (148)
8CP	1.20		
<b>Adjustable Cracking Pressure</b>			
4CPA	0.35	3 to 50 (0.21 to 3.5) 50 to 150 (3.5 to 10.4) 150 to 350 (10.4 to 24.2) 350 to 600 (24.2 to 41.4)	2160 (148)

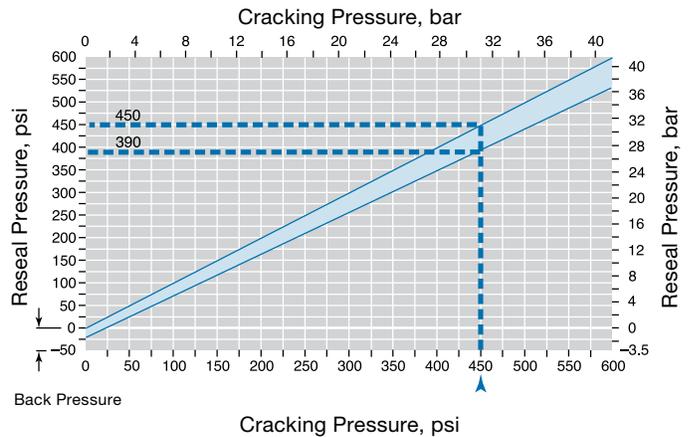
① Other cracking pressures are available; contact your authorized Swagelok sales and service representative.

### Cracking and Reseal Pressures at 70°F (20°C)

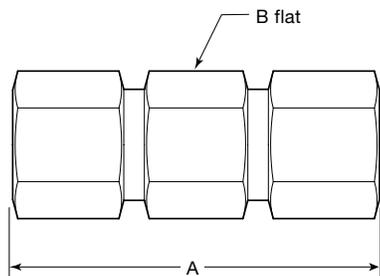
#### 4CP and 8CP Series

Nominal Cracking Pressure psi (bar)	Cracking Pressure Range psi (bar)	Reseal Pressure psi (bar)
1/3 (0.03)	Up to 3 (0.21)	Up to 20 (1.4) back pressure
1 (0.07)	Up to 4 (0.28)	Up to 20 (1.4) back pressure
10 (0.69)	7 to 13 (0.49 to 0.90)	Up to 10 (0.69) back pressure
25 (1.8)	21 to 29 (1.5 to 2.0)	5 (0.35) or more inlet pressure

#### 4CPA Series



## Dimensions and Ordering Information



End Connections		Basic Ordering Number	Dimensions, in. (mm)		Weight lb (kg)
Style	Size		A	B	
<b>Fixed Cracking Pressure, CP Series</b>					
Female NPT	1/4 in.	SS-4CP4-CL900	2.41 (61.2)	7/8	0.33 (0.15)
	1/2 in.	SS-8CP4-CL900	3.71 (94.2)	1 5/16	1.00 (0.45)
<b>Adjustable Cracking Pressure, CPA Series</b>					
Female NPT	1/4 in.	SS-4CPA4-CL900	2.98 (75.7)	7/8	0.47 (0.21)

**⚠ Check valves are designed for directional flow control only. Swagelok check valves should never be used as code safety relief devices.**

Dimensions are for reference only and are subject to change.

For a complete ordering number:

- Insert a cracking pressure designator after the series designator in the basic ordering number.

- Add an ASME Section III class designator.

ASME Section III Class	Designator
1	NB
2	NC
3	ND

Cracking Pressure psi (bar)	Designator
<b>Fixed, CP Series</b>	
1/3 (0.03)	-1/3
1 (0.07)	-1
10 (0.69)	-10
25 (1.8)	-25
<b>Adjustable, CPA Series</b>	
3 to 50 (0.21 to 3.5)	-3
50 to 150 (3.5 to 10.4)	-50
150 to 350 (10.4 to 24.2)	-150
350 to 600 (24.2 to 41.4)	-350

Example: SS-4CP4-1/3-CL900**NB**

See **How to Order**, page 2, for detailed ordering instructions.

Example: SS-4CP4-1/3-CL900

## 2-, 3-, and 5-Valve Manifolds ASME B16.34 V Series

- ASME Section III Class 1, 2, 3
- 10CFR50 Appendix B / 10CFR21 Safety Related



### Features

- 316 stainless steel material; one-piece construction
- Grafoil stem packing
- 3/8 and 1/2 in. female Swagelok tube fitting and 1/2 in. female NPT end connections
- Metal-to-metal body-to-bonnet seal eliminates the need for O-ring seals
- 316 stainless steel pin prevents detachment of the bonnet from stem operation or vibration
  - Design is vibration tested to MIL-STD 167-1, Sections 5.1.2.4.2 through 5.1.2.4.6
- Small-bonnet valve orifice 0.125 in. (3.2 mm); large-bonnet valve orifice 0.156 in. (4.0 mm)

### Pressure-Temperature Ratings

<b>ASME Class</b>	<b>1800</b>
<b>Material Group</b>	<b>2.2</b>
<b>Material Name</b>	<b>316 SS</b>
<b>Temperature</b> °F (°C)	<b>Working Pressure</b> psig (bar)
-20 (28) to 100 (37)	4320 (297)
200 (93)	3715 (255)
300 (148)	3355 (231)
400 (204)	3083 (212)
500 (260)	2867 (197)
600 (315)	2707 (186)
650 (343)	2664 (183)

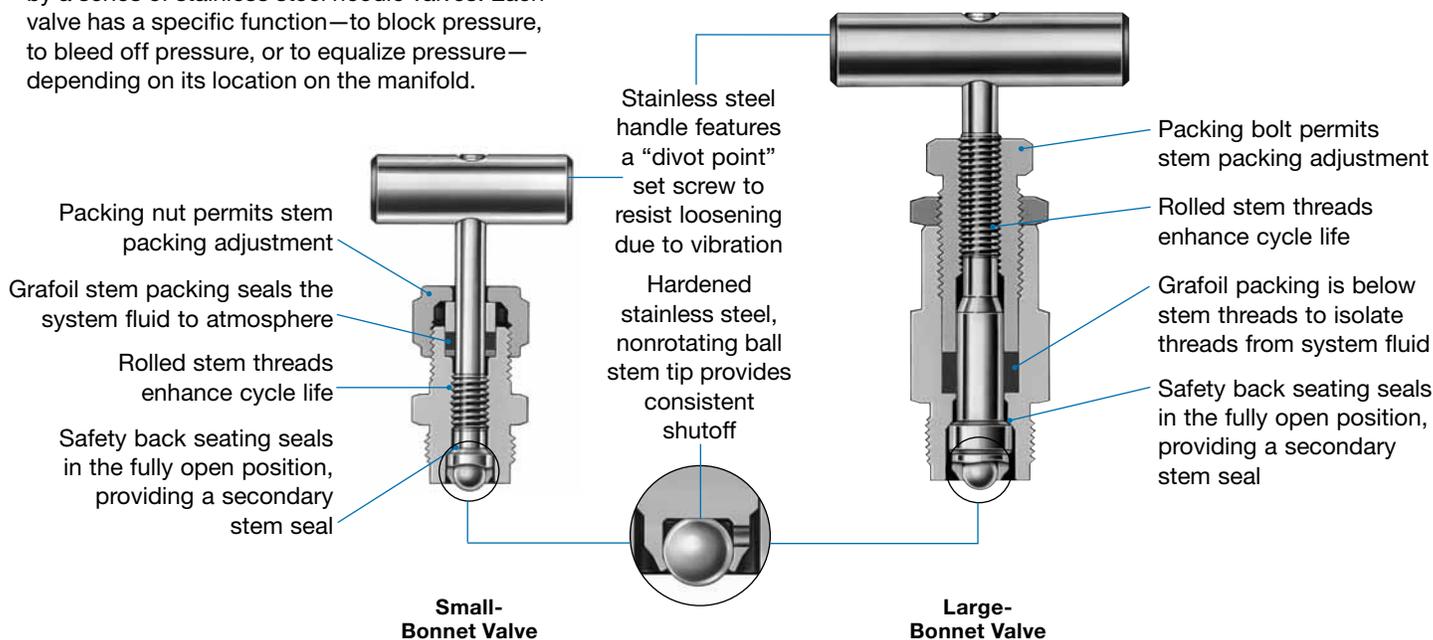
### Materials of Construction

Component	Material Grade / ASTM Specification
Handle, set screw, packing bolt, packing nut, upper gland, stop pin	316 SS / SA479
Jam nut	316 SS / SA276
<i>Body, bonnet, ball tip</i>	316 SS / SA479
<i>Lower gland</i>	316 SS / A240 or A167
<i>Packing</i>	<i>Grafoil</i>
<i>Stem</i>	316 SS / A276
<i>Lubricant</i>	<i>High-purity, metal-free, mineral oil-based antiseize</i>

Wetted components listed in *italics*.

### Valve Features

The flow through a Swagelok manifold is controlled by a series of stainless steel needle valves. Each valve has a specific function—to block pressure, to bleed off pressure, or to equalize pressure—depending on its location on the manifold.



### Testing

Every ASME B16.34 60 manifold is factory tested with nitrogen at 1000 psig (69 bar). Seats have a maximum allowable leak rate of 0.1 std cm<sup>3</sup>/min. Additionally, each valve is shell tested at 1.5 times the rated pressure to a requirement of no detectable leakage with a liquid leak detector. Each valve is seat tested at 1.1 times the rated pressure.

### Cleaning and Packaging

All ASME B16.34 manifolds are free of foreign material such as dirt, oil, grease, rust, scale, and compounds used during fabrication, prior to shipment. Cleaning agents and processes will not harm surfaces or finishes or affect material properties or valve operation.

Cleanliness of the valves is in accordance with NQA-1 Subpart 2.1 Class B or equivalent (ANSI N45.2.1). Packaging procedures are in accordance with NQA-1 Subpart 2.2 or equivalent (ANSI N45.2.2).

### Dimensions and Ordering Information

Dimensions are for reference only and are subject to change.

For a complete ordering number, add an ASME Section III class designator to the basic ordering number.

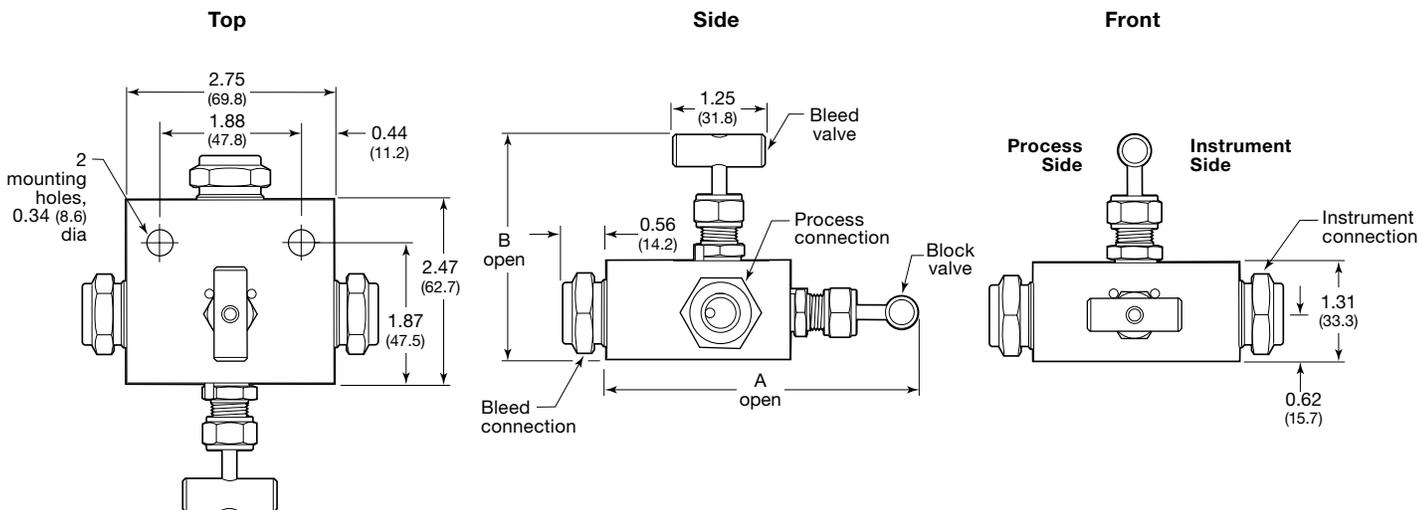
ASME Section III Class	Designator
1	NB
2	NC
3	ND

Example: SS-V2BFS8-CL1800NB

See **How to Order**, page 2, for detailed ordering instructions.

- ⚠ **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 valve performance, and prevent leakage, apply only as much torque as is required to achieve positive shutoff.**

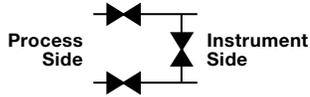
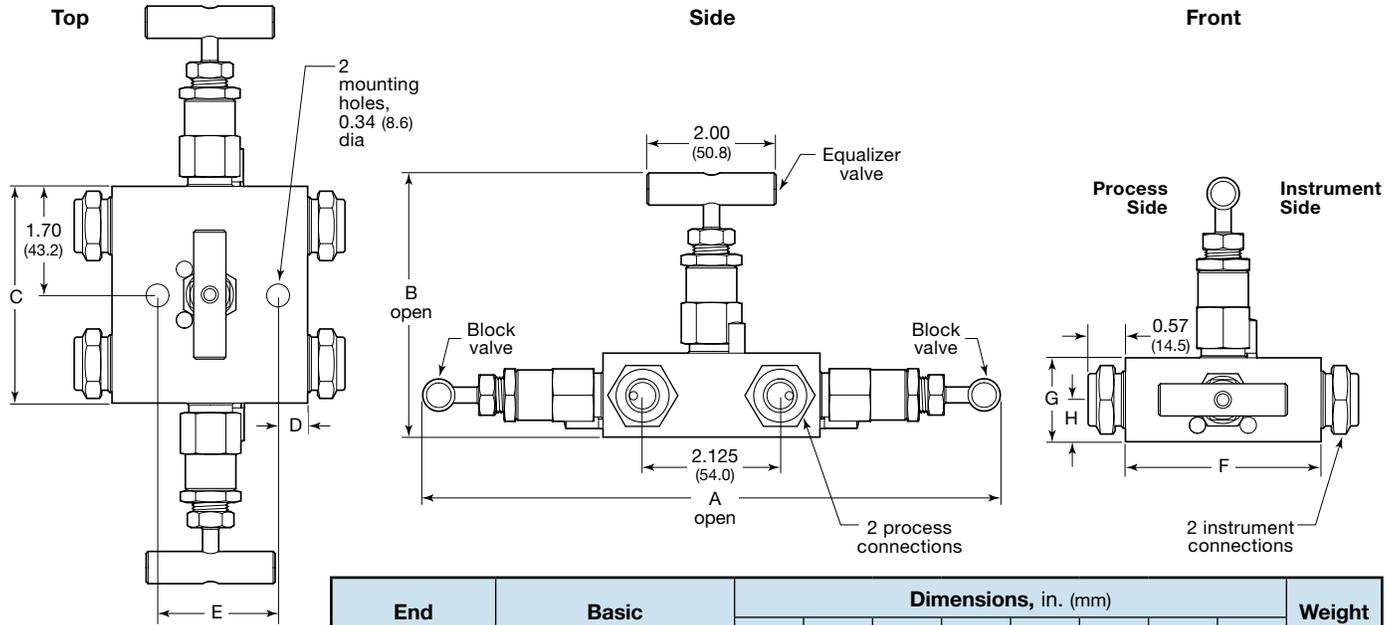
### 2-Valve Manifolds



End Connections	Basic Ordering Number	Dimensions, in. (mm)		Weight lb (kg)
		A	B	
3/8 in. female Swagelok tube fitting	SS-V2BFS6-CL1800	4.21 (107)	3.05 (77.5)	2.78 (1.26)
1/2 in. female Swagelok tube fitting	SS-V2BFS8-CL1800	4.19 (106)	3.02 (76.7)	2.73 (1.24)
1/2 in. female NPT	SS-V2BF8-CL1800	3.82 (97.0)	3.02 (76.7)	2.56 (1.16)

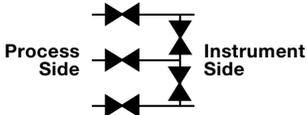
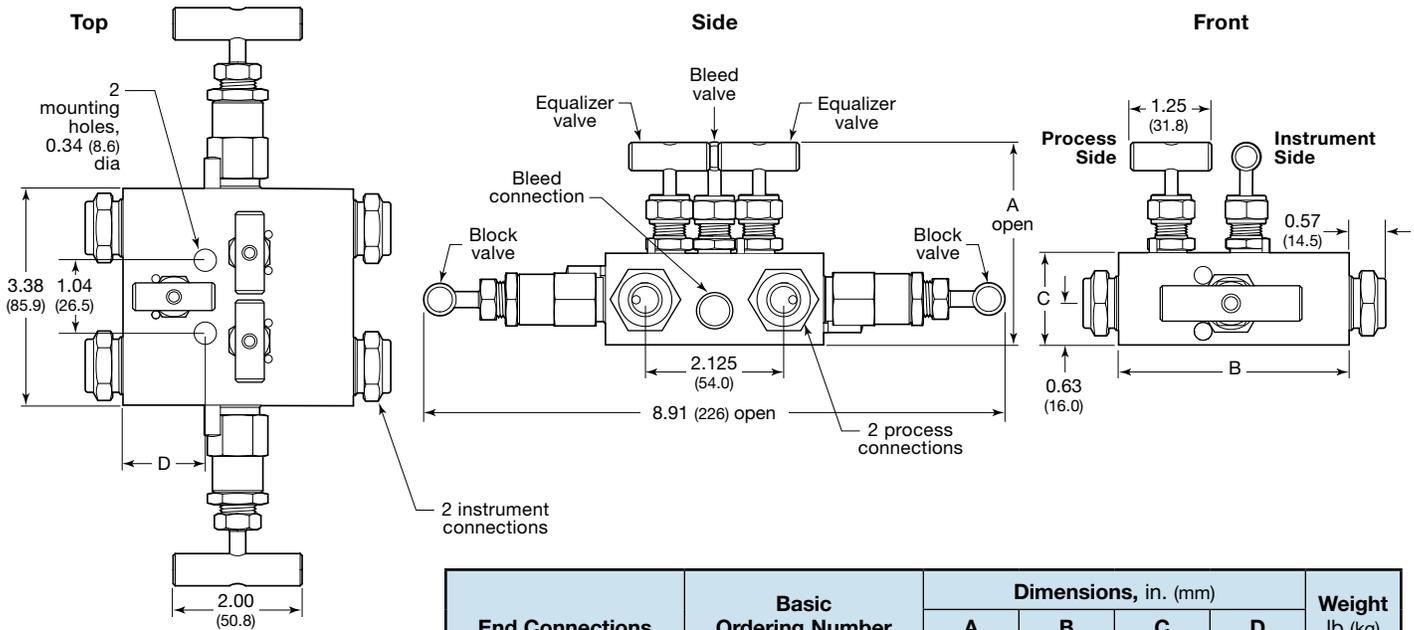
## Dimensions and Ordering Information

### 3-Valve Manifolds



End Connections	Basic Ordering Number	Dimensions, in. (mm)								Weight lb (kg)
		A	B	C	D	E	F	G	H	
3/8 in. female Swagelok tube fitting	SS-V3NBFS6-CL1800	8.96 (228)	4.11 (104)	3.37 (85.6)	0.46 (11.7)	1.88 (47.8)	3.04 (77.2)	1.31 (33.3)	0.66 (16.8)	4.89 (2.22)
1/2 in. female Swagelok tube fitting	SS-V3NBFS8-CL1800	8.91 (226)	4.08 (104)	3.38 (85.9)	0.46 (11.7)	1.88 (47.8)	3.04 (77.2)	1.31 (33.3)	0.66 (16.8)	4.84 (2.20)
1/2 in. female NPT	SS-V3NBF8-CL1800	9.03 (229)	4.08 (104)	3.50 (88.9)	0.31 (7.9)	1.88 (47.8)	2.50 (63.5)	1.31 (33.3)	0.66 (16.8)	4.00 (1.81)

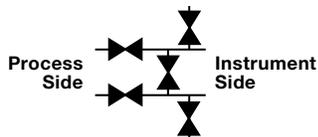
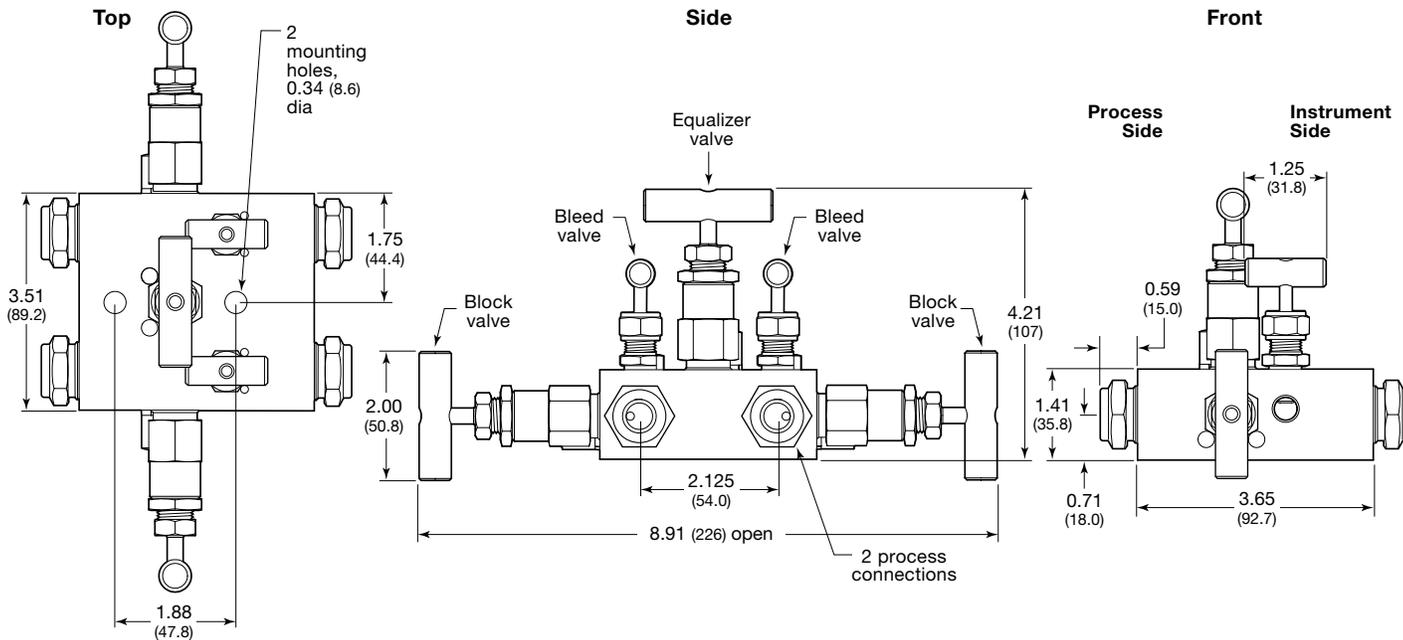
### 5-Valve Manifolds



End Connections	Basic Ordering Number	Dimensions, in. (mm)				Weight lb (kg)
		A	B	C	D	
3/8 in. female Swagelok tube fitting	SS-V5NBFS6-CL1800	3.15 (80.0)	3.54 (89.9)	1.41 (35.8)	1.28 (32.5)	5.79 (2.63)
1/2 in. female Swagelok tube fitting	SS-V5NBFS8-CL1800	3.15 (80.0)	3.54 (89.9)	1.41 (35.8)	1.28 (32.5)	6.23 (2.83)
1/2 in. female NPT	SS-V5NBF8-CL1800	3.05 (77.5)	3.75 (95.2)	1.31 (33.3)	1.23 (31.2)	5.43 (2.46)

## Dimensions and Ordering Information

### 5-Valve Manifolds



End Connections	Basic Ordering Number	Weight lb (kg)
3/8 in. female Swagelok tube fitting	SS-VB5NBFS6-CL1800	6.21 (2.82)
1/2 in. female Swagelok tube fitting	SS-VB5NBFS8-CL1800	6.23 (2.83)

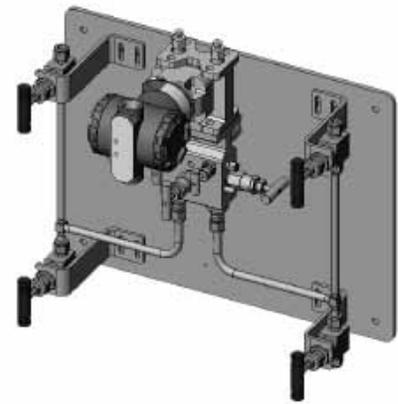
## Nuclear Assemblies

In addition to safety-related or commercial-grade custom solutions, Swagelok can manufacture nuclear assemblies under our ASME NA Certification. ASME Boiler and Pressure Vessel Code Section III Class 1, 2, and 3 assemblies and fabrications are available. This helps you:

- Unburden your onsite skilled nuclear workers
- Alleviate schedule pressures
- Ensure the highest-quality fabrication by trained, skilled technicians
- Reduce procurement efforts with seamless integration of third-party components

- Access factory testing and seismic evaluations of completed assemblies
- Eliminate waste and rework potential of onsite assembling
- Limit worker exposure in nuclear plant high radiation areas

We can take your idea, enhance your design, and fabricate your assembly—all under Swagelok’s Limited Lifetime Warranty. The process to obtain a quote for a commercial-grade, safety-related, or code nuclear assembly is similar to that described in **How to Order**, page 2. Contact your authorized Swagelok representative for more information.



**Differential Pressure (DP)  
Transmitter Panel**

### 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](http://swagelok.com) or contact your authorized Swagelok representative.

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