

Special-Alloy Fluid System Components



Special-Alloy Products

- Select fittings, valves, filters, and hoses
- Alloy C-276, alloy 20, alloy 400/R-405, alloy 600, alloy 825, and titanium materials

Special Alloys

Select fittings, valves, filters, and hoses are available in special-alloy body materials. **For technical data, including materials of construction, dimensions, and other necessary product information, see the appropriate Swagelok® product catalog.**

Special-Alloy Designators

Alloy C-276	Alloy 20	Alloy 400/ R-405	Alloy 600	Alloy 825	Titanium Grade 4
HC	C20	M	INC	825	TI

Tube Fittings and Adapter Fittings

Male Connectors



Tube OD in.	Pipe Size in.	Basic Ordering Number
1/4	1/8	-400-1-2
1/4	1/4	-400-1-4
3/8	1/4	-600-1-4
3/8	1/2	-600-1-8
1/2	1/4	-810-1-4
1/2	1/2	-810-1-8

Union Elbows



Tube OD in.	Basic Ordering Number
1/4	-400-9
3/8	-600-9
1/2	-810-9

Female Adapters Tube to Pipe



Tube OD in.	Pipe Size in.	Basic Ordering Number
1/4	1/8	-4-TA-7-2
1/4	1/4	-4-TA-7-4
1/4	1/2	-4-TA-7-8
3/8	1/4	-6-TA-7-4
3/8	1/2	-6-TA-7-8
1/2	1/4	-8-TA-7-4
1/2	1/2	-8-TA-7-8

Caps



Tube OD in.	Basic Ordering Number
1/4	-400-C
3/8	-600-C
1/2	-810-C

Male Elbows



Tube OD in.	Pipe Size in.	Basic Ordering Number
1/4	1/4	-400-2-4
3/8	1/4	-600-2-4
1/2	1/2	-810-2-8

Union Tees



Tube OD in.	Basic Ordering Number
1/4	-400-3
3/8	-600-3
1/2	-810-3

Male Adapters Tube to Pipe



Tube OD in.	Pipe Size in.	Basic Ordering Number
1/4	1/8	-4-TA-1-2
1/4	1/4	-4-TA-1-4
1/4	1/2	-4-TA-1-8
3/8	1/4	-6-TA-1-4
3/8	1/2	-6-TA-1-8
1/2	1/4	-8-TA-1-4
1/2	1/2	-8-TA-1-8

Plugs



Tube OD in.	Basic Ordering Number
1/4	-400-P
3/8	-600-P
1/2	-810-P

Nuts



Tube OD in.	Basic Ordering Number
1/4	-402-1
3/8	-602-1
1/2	-812-1

Unions



Tube OD in.	Basic Ordering Number
1/4	-400-6
3/8	-600-6
1/2	-810-6

Bulkhead Unions



Tube OD in.	Basic Ordering Number
1/4	-400-61
3/8	-600-61
1/2	-810-61

Reducers



Tube OD, in.		Basic Ordering Number
T	Tx	
3/8	1/4	-600-R-4
1/2	3/8	-810-R-6

Back Ferrules



Tube OD in.	Basic Ordering Number
1/4	-404-1
3/8	-604-1
1/2	-814-1

Front Ferrules



Tube OD in.	Basic Ordering Number
1/4	-403-1
3/8	-603-1
1/2	-813-1

See the Swagelok *Gageable Tube Fittings and Adapter Fittings* catalog, MS-01-140. See *Swagelok Tubing Data*, MS-01-107, for pressure-temperature ratings.

SAF 2507™ Super Duplex Material

SAF 2507 super duplex stainless steel tube fittings and weld fittings are available for use with SAF 2507 tubing. See the Swagelok *Gageable SAF 2507 Super Duplex Tube Fittings* catalog, MS-01-174, and Swagelok *SAF 2507 Super Duplex Weld Fittings* catalog, MS-01-173.

Process and Instrument 3-Piece Ball Valves (60 Series)

- Special-alloy body and flange materials available in 62, 63, and 65 series valves
- 1/4, 1/2, 3/4, and 1 in. female NPT end connections
- 1/4, 3/8, 1/2, and 1 in. Swagelok tube fitting end connections
- Working pressure at 100°F (37°C)—1500 psig (103 bar)^①
- Temperature rating—50 to 150°F (10 to 65°C)

^① Contact your authorized Swagelok sales and service representative for higher-temperature applications and pressure ratings at elevated temperatures.

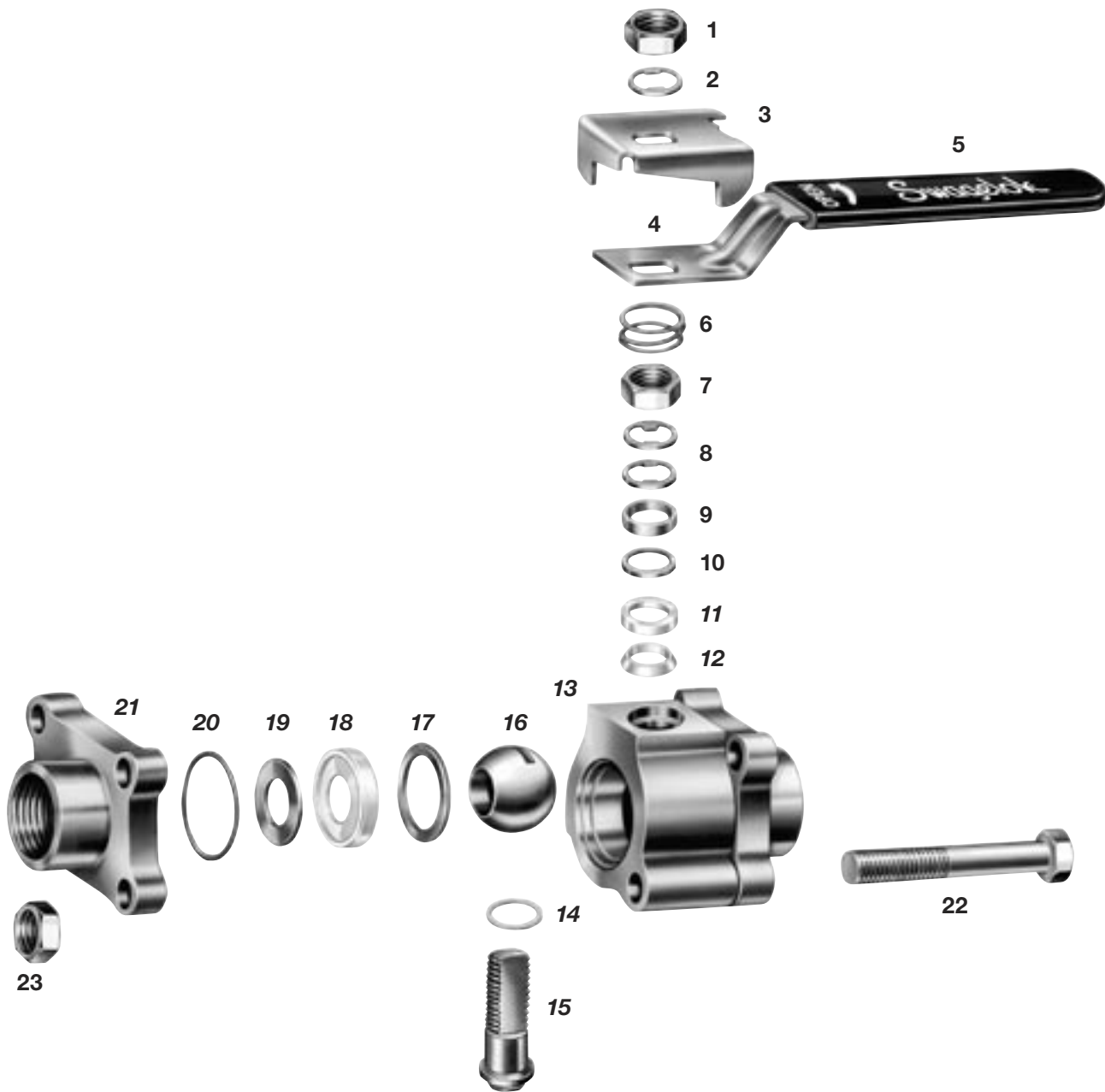


Materials of Construction

Component	Valve Body Materials				
	Alloy C-276	Alloy 20	Alloy 400/R-405	Alloy 600	Titanium
	Material Grade/ASTM Specification				
1 Stem nut	316 SS/A240				
2 Stem spring ^①	Strain-hardened 316 SS/A240				
3 Stop plate ^①	304 SS/A240 or 316 SS/A240				
4 Handle					
5 Handle sleeve	Vinyl				
6 Grounding spring	302 SS/A313				
7 Stem nut	Alloy 400/R-405				
8 Stem springs (2)	Strain-hardened 316 SS/A240				
9 Gland	PTFE-coated 316 SS/B783				
10 Packing support	PEEK				
11 Top packing	Virgin PTFE				
12 Bottom packing					
13 Body	<i>Alloy C-276/ B574, B575 or CW-12MW/A494</i>	<i>Alloy 20/ B473, B463 or CN-7M/A351</i>	<i>Alloy R-405/ B164, B127 or M-35-1/A494</i>	<i>Alloy 600/ B166, B168 or CY-40/A494</i>	<i>Ti grade 4/ B348</i>
14 Stem bearing	ECTFE				
15 Stem	<i>Alloy C-276/ B574, B575</i>	<i>Alloy 20/ B473, B463</i>	<i>Alloy R-405/ B164</i>	<i>Alloy 600/ B166, B168</i>	<i>Ti grade 4/ B348</i>
16 Ball			<i>Alloy R-405/B164 or alloy 400/B127</i>		
17 Support rings (2)	Virgin PTFE				
18 Seats (2)	Virgin PTFE				
19 Coned-disc springs (2)	<i>Alloy C-276/ B574, B575</i>	<i>Alloy X-750/ AMS 5542</i>	<i>K-500/Federal spec QQ-N-286</i>	<i>Alloy X-750 / AMS 5542</i>	
20 Flange seals (2)	Virgin PTFE				
21 Flanges (2)	<i>Alloy C-276/ B574, B575 or CW-12MW/A494</i>	<i>Alloy 20/ B473, B463 or CN-7M/A351</i>	<i>Alloy 400/ B164, B127 or M-35-1/A494</i>	<i>Alloy 600/ B166, B168 or CY-40/A494</i>	<i>Ti grade 4/ B348</i>
22 Body fasteners (4)	Alloy 400/R-405				
23 Body hex nuts (8 or 4)					
Lubricant	<i>Silicone-based and PTFE-based; other lubricants available</i>				

Wetted components listed in *italics*.

^① 62 series—no upper stem spring and stop plate integral with handle.



Ordering Information

To order, add a special-alloy designator to a basic ordering number.

Example: HC-62VS4

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

End Connections		Basic Ordering Number	Orifice in. (mm)	Flow Coefficient (C _v)
Type	Size			
Swagelok tube fittings	1/4 in.	-62VS4	0.188 (4.78)	1.2
	3/8 in.	-62VS6	0.281 (7.14)	3.8
	1/2 in.	-63VS8	0.406 (10.3)	7.5
	1 in.	-65VS16	0.875 (22.2)	40
Female NPT	1/4 in.	-62VF4	0.281 (7.14)	3.8
	1/2 in.	-63VF8	0.516 (13.1)	12
	3/4 in.	-65VF12	0.875 (22.2)	31
	1 in.	-65VF16		38

Severe-Service Union-Bonnet Needle Valves (N Series)

- Ball tip, regulating, and soft-seat regulating stem designs
- Alloy 400, alloy 20, alloy C-276, 440C SS, cobalt-base alloy, and titanium ball stem tip materials
- 1/4, 3/8, and 1/2 in. female NPT and Swagelok tube fitting end connections
- Pneumatic actuation available, except for 1/2 in. female NPT-ended valves

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



Poppet Check Valves (C Series)

- Special-alloy materials available in 4C, 8C, and 12C series valves
- 1/4, 1/2, and 3/4 in. female NPT and Swagelok tube fitting end connections
- 1, 10, and 25 psi (0.068, 0.68, and 1.7 bar) nominal cracking pressures
- Springs—alloy C-276 in all valves (optional PTFE coating available)
- Gaskets—alloy C-276 in all 12C valves. All other gaskets same material as body.



Working Pressure at 70°F (20°C)

Valve Series	Alloy C-276	Alloy 20	Alloy 400/ R-405	Alloy 600	Titanium
	Working Pressure, psig (bar)				
4C, 8C	3000 (206)	2500 (172)	2500 (172)	3000 (206)	1785 (122)
12C	2000 (137)	1660 (114)	1660 (114)	1990 (137)	1185 (81.6)

Contact your authorized Swagelok representative for pressure ratings at elevated temperatures.

To order, replace **SS** in a C series valve ordering number from the Swagelok *Check Valves—C, CA, CH, CP, and CPA Series* catalog with a special-alloy designator and add the nominal cracking pressure in psi.

Example: **HC-4C-1**

See the Swagelok *Check Valves—C, CA, CH, CP, and CPA Series* catalog, MS-01-176.

In-Line Particulate Filters (F Series)

- Alloy C-276 material available for filter with 1/4 in. female NPT end connections
- All metal components are alloy C-276
- 2, 7, 15, 60, and 90 μm nominal pore size sintered elements
- Working pressure at 100°F (37°C)—3000 psig (206 bar) for 2F and 4F series; 2500 psig (172 bar) for 6F and 8F series^①



- 1000 psi (68.9 bar) maximum differential pressure
- Temperature rating—800°F (426°C) maximum

To order, add the nominal pore size to basic ordering number **HC-4F4-**.

Example: **HC-4F4-2**

See the Swagelok *Filters—FW, F, and TF Series* catalog, MS-01-92.

^① Contact your authorized Swagelok representative for pressure ratings at elevated temperatures.

PTFE-Lined, Stainless Steel Braided Hose (TH, TC, and TL Series)

- Tube adapter end connections—special alloy
- Core tube—smooth virgin PTFE
- Hose braid—304 stainless steel
- Carbon black filled hose (TC series) and hose with alloy 400/R-405 overbraid (TL series) also available.



See the Swagelok *Hose—Hose Assemblies, Bulk Hose, and End Connections* catalog, MS-01-167.

Tubing

See Swagelok *Tubing Data*, MS-01-107, for information about selecting special-alloy tubing for use with Swagelok tube fittings.

Purchase specifications should include:

- Fully annealed seamless (or welded and drawn, where permitted) alloy tubing to the ASTM specification shown.
- Tubing to be free of scratches, suitable for bending and flaring.

Tubing Material	ASTM Specification	Tubing Type
Alloy C-276	B622	Seamless only
Alloy 20	B729 B468	Seamless or welded and drawn
Alloy 400	B165	Seamless only
Alloy 600	B167	
Titanium	B338	Seamless or welded and drawn

SAF 2507 Super Duplex Material

Tubing of SAF 2507 super duplex stainless steel is also available. See the Swagelok *SAF 2507 Super Duplex Seamless Tubing—Fractional Sizes* catalog, MS-02-151.

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.

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