An Installer's Pocket Guide for Swagelok®

Valves

Swagelok®

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. The complete catalog contents must be reviewed to ensure that the system designer and user make a safe product selection.

Caution: Do not mix or interchange components 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.

Your Authorized Swagelok Representative

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Introduction

Swagelok Company is a global developer and provider of high-quality and reliable fluid system solutions including products, assemblies, and services. Our manufacturing, research, technical support, and distribution facilities support a global network of more than 200 authorized sales and service centers offering support in more than 70 countries.

Swagelok has a long-standing presence in the oil & gas, pulp & paper, power generation, and many other industries. Our high-quality valves, including ball, plug, relief, needle, and check valves, help ensure reliability and minimize downtime in all of your fluid systems.

This easy-to-use catalog was designed for you. It includes a variety of helpful information and tools to help make your valve selection experience as seamless as possible. For the most current information, please contact your authorized Swagelok sales and service representative or visit our website at www.swagelok.com.

Table of Contents
(Sorted by Function)

0, 1, 18, 20, 26 Series

Integral Bonnet (Needle Valves)

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: Up to 600°F (315°C)

Size Range: 1/8 to 3/4 in. Tube Fitting
1/8 to 1/2 in. NPT

Materials: 316 SS, Brass, Steel, Alloy 400

Catalog Reference: MS-01-164

Highlights/Features:

Both regulating and shut-off stems
Soft seats available
Straight, angle, and cross flow patterns

Ordering Information

End Connections		Cv	Orifice in. (mm)	Order Number
Inlet/Outlet	Size			
0, 1, and 18 Series				
Fractional Swagelok Tube Fittings	1/8 in.	0.09	0.080 (2.0)	SS-0RS2
	1/4 in.	0.37	0.172 (4.4)	SS-1RS4
	3/8 in.	0.73	0.250 (6.4)	SS-1RS6
	1/2 in.			SS-1RS8
	1/2 in.	1.80	0.375 (9.5)	SS-18RS8
	3/4 in.			SS-18RS12
Metric Swagelok Tube Fittings	3 mm	0.09	0.080 (2.0)	SS-0RS3MM
	6 mm	0.37	0.172 (4.4)	SS-1RS6MM
	8 mm			SS-1RS8MM
	10 mm	0.73	0.250 (6.4)	SS-1RS10MM
	12 mm			SS-1RS12MM
	12 mm	1.80	0.375 (9.5)	SS-18RS12MM
	18 mm			SS-18RS18MM
Female NPT	1/8 in.	0.09	0.080 (2.0)	SS-0RF2
	1/8 in.	0.37	0.172 (4.4)	SS-1RF2
	1/4 in.	0.73	0.250 (6.4)	SS-1RF4
	3/8 in.	1.80	0.375 (9.5)	SS-18RF6
	1/2 in.			SS-18RF8
Male NPT	1/8 in.	0.09	0.080 (2.0)	SS-0RM2
	1/8 in.	0.37	0.172 (4.4)	SS-1RM2
	1/4 in.			SS-1RM4
	3/8 in.	0.73	0.250 (6.4)	SS-1RM6
	1/2 in.	1.80	0.375 (9.5)	SS-18RM8
Male NPT/ Swagelok Tube Fittings	1/8 in.	0.09	0.080 (2.0)	SS-0RM2-S2
	1/4 in.	0.37	0.172 (4.4)	SS-1RM4-S4
	1/4/ 3/8 in.	0.73	0.250 (6.4)	SS-1RM4-S6
	3/8 in.			SS-1RM6-S6
	3/8/ 1/2 in.			SS-1RM6-S8
Male/Female NPT	1/4 in.	0.73	0.250 (6.4)	SS-1RM4-F4
	1/2 in.	1.80	0.375 (9.5)	SS-18RM8-F8
Female ISO[1]	1/4 in.	0.73	0.250 (6.4)	SS-1RF4RT
	3/8 in.	1.80	0.375 (9.5)	SS-18RF6RT
	1/2 in.			SS-18RF8RT

(1) See specifications ISO 7/1, BS EN 10226-1, DIN-2999, JIS B0203.

End Connections		Cv	Orifice in. (mm)	Order Number
Inlet/Outlet	Size			
20 Series with soft-seat stem and PCTFE stem tip				
Female NPT	1/4 in.	0.09	0.080 (2.0)	SS-20KF4
Male NPT	1/4 in.			SS-20KM4
Male/Female NPT	1/4 in.			SS-20KM4-F4
20 and 26 Series with vee stem				
Swagelok Tube Fittings	1/4 in.	0.21	0.125 (3.2)	SS-20VS4
	3/8 in.	0.73	0.250 (6.4)	SS-26VS6
	1/2 in.			SS-26VS8
Female NPT	1/4 in.	0.21	0.125 (3.2)	SS-20VF4
	3/8 in.	0.73	0.250 (6.4)	SS-26VF6
	1/2 in.			SS-26VF8
Male NPT	1/4 in.	0.21	0.125 (3.2)	SS-20VM4
Male NPT/ Swagelok Tube Fittings	1/4 in.			SS-20VM4-S4
Male/Female NPT	1/4 in.			SS-20VM4-F4
	3/8 in.	0.73	0.250 (6.4)	SS-26VM6-F6
	1/2 in.			SS-26VM8-F8
	3/4 to 1/2 in.			SS-26VM12-F8
Female ISO[1]	1/4 in.	0.21	0.125 (3.2)	SS-20VF4RT
	1/2 in.	0.73	0.250 (6.4)	SS-26VF8RT

(1) See specifications ISO 7/1, BS EN 10226-1, DIN-2999, JIS B0203.

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.

GU Series

General Utility (Needle Valves)

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: 450°F (232°C) PTFE
650°F (343°C) with optional graphite packing

Size Range: 1/4 to 1 in. NPT
1/4 to 1 in. Socket Weld
6 to 25mm Socket Weld

Materials: 316 SS, Carbon Steel

Catalog Reference: MS-02-312

Highlights/Features:
NACE MR0175 rated needle valves
High temperature models available
Compact design
Two-piece knuckle joint stem

Ordering Information

End Connections		Cv	Orifice in. (mm)	Ordering Number	
Type	Size			Stainless Steel	Carbon Steel
Angle Pattern					
Female NPT	1/4 in.	0.55	0.20 (5.0)	SS-4GUF4-A	S-4GUF4-A
	3/8 in.			SS-4GUF6-A	S-4GUF6-A
	1/2 in.			SS-4GUF8-A	S-4GUF8-A
	1/2 in.	1.60	0.31 (8.0)	SS-8GUF8-A	S-8GUF8-A
	3/4 in.			SS-8GUF12-A	S-8GUF12-A
	1 in.			SS-8GUF16-A	S-8GUF16-A

End Connections		Cv	Orifice in. (mm)	Ordering Number	
Type	Size			Stainless Steel	Carbon Steel
Straight Pattern					
Female NPT	1/4 in.	0.45	0.20 (5.0)	SS-4GUF4	S-4GUF4
	3/8 in.			SS-4GUF6	S-4GUF6
	1/2 in.	0.45	0.20 (5.0)	SS-4GUF8	S-4GUF8
		1.20	0.31 (8.0)	SS-8GUF8	S-8GUF8
	3/4 in.	1.20	0.31 (8.0)	SS-8GUF12	S-8GUF12
		2.25	0.43 (11.0)	SS-16GUF12	S-16GUF12
	1 in.	1.20	0.31 (8.0)	SS-8GUF16	S-8GUF16
		2.25	0.43 (11.0)	SS-16GUF16	S-16GUF16
Male NPT/ Female NPT	1/4 in.	0.45	0.20 (5.0)	SS-4GUM4-F4	S-4GUM4-F4
	3/8 in.			SS-4GUM6-F6	S-4GUM6-F6
	1/2 in.	0.45	0.20 (5.0)	SS-4GUM8-F8	S-4GUM8-F8
		1.20	0.31 (8.0)	SS-8GUM8-F8	S-8GUM8-F8
	3/4 in.	1.20	0.31 (8.0)	SS-8GUM12-F12	S-8GUM12-F12
		2.25	0.43 (11.0)	SS-16GUM12-F12	S-16GUM12-F12
	1 in.	1.20	0.31 (8.0)	SS-8GUM16-F16	S-8GUM16-F16
		2.25	0.43 (11.0)	SS-16GUM16-F16	S-16GUM16-F16
Fractional Tube Socket Weld	1/4 in.	0.45	0.20 (5.0)	SS-4GUSW4T	S-4GUSW4T
	3/8 in.			SS-4GUSW6T	S-4GUSW6T
	1/2 in.	0.45	0.20 (5.0)	SS-4GUSW8T	S-4GUSW8T
		1.20	0.31 (8.0)	SS-8GUSW8T	S-8GUSW8T
	3/4 in.	1.20	0.31 (8.0)	SS-8GSW12T	S-8GUSW12T
		2.25	0.43 (11.0)	SS-16GUSW12T	S-16GUSW12T
	1 in.	1.20	0.31 (8.0)	SS-8GUSW16T	S-8GUSW16T
		2.25	0.43 (11.0)	SS-16GUSW16T	S-16GUSW16T
Fractional Pipe Socket Weld	1/4 in.	0.45	0.20 (5.0)	-	S-4GUSW4P
	3/8 in.				S-4GUSW6P
	1/2 in.	0.45	0.20 (5.0)		S-4GUSW8P
		1.20	0.31 (8.0)		S-8GUSW8P
	3/4 in.	1.20	0.31 (8.0)		S-8GUSW12P
		2.25	0.43 (11.0)		S-16GUSW12P
	1 in.	1.20	0.31 (8.0)		S-8GUSW16P
		2.25	0.43 (11.0)		S-16GUSW16P
Metric Tube Socket Weld	6 mm	0.45	0.20 (5.0)	SS-4GUSW6MMT	-
	8 mm			SS-4GUSW8MMT	
	10 mm			SS-4GUSW10MMT	
	12 mm	0.45	0.20 (5.0)	SS-4GUSW12MMT	
		1.20	0.31 (8.0)	SS-8GUSW12MMT	
	14 mm	1.20	0.31 (8.0)	SS-8GUSW14MMT	
		2.25	0.43 (11.0)	SS-16GUSW14MMT	
	16 mm	1.20	0.31 (8.0)	SS-8GUSW16MMT	
		2.25	0.43 (11.0)	SS-16GUSW16MMT	
	18 mm	2.25	0.43 (11.0)	SS-16GUSW18MMT	
	25 mm			SS-16GUSW25MMT	

A packing adjustment may be required periodically to increase service life and 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.

N and HN Series

Severe Service (Needle Valves)

Working Pressure: up to 10,000 psi (689 bar)

Temp Range: -65° to 450°F (-53° to 232°C) PTFE
Up to 1200°F (648°C) with Grafoil® packing

Size Range: 1/4 to 1 in. Tube Fitting
1/8 to 1 in. NPT
1/4 to 1/2 in. Tube Socket Weld
1/4 to 1/2 in. Pipe Socket Weld

Materials: Alloy 400, Alloy 20, Alloy 600, Alloy C-276 316SS, Titanium

Catalog Reference: MS-01-168

Highlights/Features:
ASME Class 2500
Large orifice for high flow
High pressure and temperature capabilities

Ordering Information

End Connections		Cv	Ordering Number
Inlet/Outlet	Size		
3N Series: 0.156 in. (4.0 mm) Orifice			
Female NPT	1/8 in.	0.35	SS-3NBF2
	1/4 in.		SS-3NBF4
Male NPT	1/4 in.		SS-3NBM4
Male/ Female NPT	1/4 in.		SS-3NBM4-F4
Swagelok Tube Fittings	1/4 in.		SS-3NBS4
	6 mm		SS-3NBS6MM
	8 mm		SS-3NBS8MM
Tube Socket Welds	1/4 in.		SS-3NBSW4T
Male VCO Fittings®	1/4 in.		SS-3NBVCO4
Male VCR Fittings®	1/4 in.		SS-3NBVCR4
6N Series: 0.250 in. (6.4 mm) Orifice			
Female NPT	1/4 in.	0.86	SS-6NBF4
	3/8 in.		SS-6NBF6
Swagelok Tube Fittings	3/8 in.		SS-6NBS6
	1/2 in.		SS-6NBS8
	10 mm		SS-6NBS10MM
	12 mm		SS-6NBS12MM
Tube Socket Welds	3/8 in.		SS-6NBSW6T
	1/2 in.		SS-6NBSW8T
Pipe Socket Welds	1/4 in.		SS-6NBSW4P
Male VCO Fittings	1/2 in.		SS-6NBVCO8
Male VCR Fittings	1/2 in.		SS-6NBVCR8

End Connections		Cv	Ordering Number
Inlet/Outlet	Size		
12N Series: 0.437 in. (11.1 mm) Orifice			
Female NPT	1/2 in.	2.4	SS-12NBF8
	3/4 in.		SS-12NBF12
	1 in.		SS-12NBF16
Male/ Female NPT	1/2 in.	1.9	SS-12NBM8-F8
	3/4 in.		SS-12NBM12-F12
	1 in.		SS-12NBM16-F16
Swagelok Tube Fittings	1/2 in.	2.1	SS-12NBS8
	3/4 in.	2.4	SS-12NBS12
	1 in.		SS-12NBS16
	12 mm	1.9	SS-12NBS12MM
Tube Socket Welds	1/2 in.	2.2	SS-12NBSW8T
	3/4 in.		SS-12NBSW12T
Pipe Socket Welds	1/2 in.	2.4	SS-12NBSW8P
Male VCO Fittings	3/4 in.	2.2	SS-12NBVCO12
Male VCR Fittings	1/2 in.	1.9	SS-12NBVCR8

End Connections		Ordering Number
Inlet/Outlet	Size	
3HN Series: 0.156 in. (4.0 mm) Orifice; 0.35 Cv		
Female NPT	1/8 in.	SS-3HNRF2
	1/4 in.	SS-3HNRF4
Male NPT	1/4 in.	SS-3HNRM4
Male/Female NPT	1/4 in.	SS-3HNRM4-F4
Swagelok Tube Fittings	1/4 in.	SS-3HNRS4
Tube Socket Welds	1/4 in.	SS-3HNRSW4T
6HN Series: 0.250 in. (6.4 mm) Orifice; 0.86 Cv		
Female NPT	1/4 in.	SS-6HNRF4
	1/2 in.	SS-6HNRF8
Male NPT	1/2 in.	SS-6HNRM8
Male/Female NPT	1/2 in.	SS-6HNRM8-F8

⚠ **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.**

40 and 40 G Series

One-Piece Instrumentation
Ball Valves

Working Pressure: up to 3,000 psi (206 bar)

Temp Range: -65° to 300°F (-53° to 148°C)

Size Range: 1/16 to 3/4 in. Tube Fitting
1/8 to 1/2 in. NPT

Materials: 316 SS, Brass, Alloy 400

Catalog Reference: MS-02-331

Highlights/Features:
On/off, switching, and crossover flow paths
Low temperature models available
Capsule seat packing for better sealing on the ball

Ordering Information

End Connections		Cv		40G Series Complete Ordering Number	40 Series Basic Ordering Number	Orifice in. (mm)
Inlet/Outlet	Size	Straight	Angle			
On-Off (2-Way) Valves						
Fractional Swagelok Tube Fittings	1/16 in.	0.10	-	SS-41GS1	SS-41S1	0.052 (1.32)
	1/8 in.	0.20	0.15	SS-41GS2	SS-41S2	0.093 (2.36)
	1/4 in.	0.60	0.35	SS-42GS4	SS-42S4	0.125 (3.18)
		1.40	0.90	SS-43GS4	SS-43S4	0.187 (4.75)
	3/8 in.	1.50	0.90	SS-43GS6	SS-43S6	0.187 (4.75)
		6.00	2.00	-	SS-44S6	0.281 (7.14)
	1/2 in.	12.00	4.60	-	SS-45S8	0.406 (10.3)
	3/4 in.	6.40	3.80	-	SS-45S12	0.406 (10.3)
Metric Swagelok Tube Fittings	3 mm	0.20	0.15	SS-41GS3MM	SS-41S3MM	0.093 (2.36)
	6 mm	0.60	0.35	SS-42GS6MM	SS-42S6MM	0.125 (3.18)
		1.40	0.90	SS-43GS6MM	SS-43S6MM	0.187 (4.75)
	8 mm	1.50	0.90	SS-43GS8MM	SS-43S8MM	0.187 (4.75)
	10 mm	6.00	2.00	-	SS-44S10MM	0.281 (7.14)
	12 mm	12.00	4.60	-	SS-45S12MM	0.406 (10.3)
Female NPT	1/8 in.	0.50	0.30	SS-42GF2	SS-42F2	0.125 (3.18)
		1.20	0.70	SS-43GF2	SS-43F2	0.187 (4.75)
	1/4 in.	0.90	0.75	SS-43GF4	SS-43F4	0.187 (4.75)
		3.00	1.70	-	SS-44F4	0.281 (7.14)
	3/8 in.	2.60	1.50	-	SS-44F6	0.281 (7.14)
	1/2 in.	6.30	3.50	-	SS-45F8	0.406 (10.3)
Female ISO/BSP Tapered	1/4 in.	0.90	-	SS-43GF4RT	SS-43F4RT	0.187 (4.75)
	3/8 in.	2.60		-	SS-44F6RT	0.281 (7.14)
	1/2 in.	6.30		-	SS-45F8RT	0.406 (10.3)
Male NPT	1/4 in.	1.20	0.75	SS-43GM4	SS-43M4	0.187 (4.75)
Male NPT/ Swagelok Tube Fitting	1/4 in.	1.60	0.75	SS-43GM4-S4	SS-43M4-S4	0.187 (4.75)
VCO Fittings	1/4 in.	0.60	0.35	SS-42GVCO4	SS-42VCO4	0.125 (3.18)
		2.40	0.90	SS-43GVCO4	SS-43VCO4	0.187 (4.75)
Integral Male VCR® Fittings	1/4 in.	0.60	0.35	SS-42GVCR4	SS-43VCR4	0.125 (3.18)
		2.40	0.90	SS-43GVCR4	SS-V3VCR4	0.187 (4.75)
	1/2 in.	6.00	-	-	SS-44VCR8 (1)	0.281 (7.14)
		12.00	-	-	SS-45VCR8 (1)	0.406 (10.3)

(1) Not recommended for panel mounting.

End Connections		Cv	40GX Series Complete Ordering Number	40X Series Basic Ordering Number	Orifice in. (mm)
Side/Bottom	Size				
Switching (3-Way Valves)					
Fractional Swagelok Tube Fittings	1/16 in.	0.08	SS-41GXS1	SS-41XS1	0.052 (1.32)
	1/8 in.	0.15	SS-41GXS2	SS-41XS2	0.093 (2.36)
	1/4 in.	0.35	SS-42GXS4	SS-42XS4	0.125 (3.18)
		0.90	SS-43GXS4	SS-43XS4	0.187 (4.75)
	3/8 in.	2.00	-	SS-44XS6	0.281 (7.14)
	1/2 in.	4.60	-	SS-45XS8	0.406 (10.3)
	3/4 in.	3.80	-	SS-45XS12	0.406 (10.3)
Metric Swagelok Tube Fittings	3 mm	0.15	SS-41GXS3MM	SS-41XS3MM	0.093 (2.36)
	6 mm	0.35	SS-42GXS6MM	SS-42XS6MM	0.125 (3.18)
		0.90	SS-43GXS6MM	SS-43XS6MM	0.187 (4.75)
	8 mm	0.80	SS-43GXS8MM	SS-43XS8MM	0.187 (4.75)
	10 mm	2.00	-	SS-44XS10MM	0.281 (7.14)
	12 mm	4.60	-	SS-45XS12MM	0.406 (10.3)
Female NPT	1/8 in.	0.30	SS-42GXF2	SS-42XF2	0.125 (3.18)
	1/4 in.	0.75	SS-43GXF4	SS-43XF4	0.187 (4.75)
		1.70	-	SS-44XF4	0.281 (7.14)
	3/8 in.	1.50	-	SS-44XF6	0.281 (7.14)
	1/2 in.	3.50	-	SS-45XF8	0.406 (10.3)
Female ISO/ BSP Tapered	1/4 in.	0.75	SS-43GXF4RT	SS-43XF4RT	0.187 (4.75)
	3/8 in.	1.50	-	SS-44XF6RT	0.281 (7.14)
	1/2 in.	3.50	-	SS-45XF8RT	0.406 (10.3)
Swagelok Tube Fittings/Male NPT	1/4 in.	0.80	SS-43GXS4-S4-M4	SS-43XS4-S4-M4	0.187 (4.75)
Integral Male VCR Fittings	1/4 in.	0.35	SS-42GXVCR4	SS-42XVCR4	0.125 (3.18)
		0.90	SS-43GXVCR4	SS-43XVCR4	0.187 (4.75)

End Connections		40 Series Basic Ordering Number	Cv	Orifice in. (mm)
Inlet/Outlet	Size			
5-Way Valves				
Female Swagelok Tube Fittings	1/8 in.	-43ZFS2 (1)	0.07	0.062 (1.57)
Female NPT	1/8 in.	-43ZF2 (1)	0.07	0.062 (1.57)
	1/2 in.	-45ZF8-ND (2)	3.50	0.406 (10.3)
7-Way Valves				
Female Swagelok Tube Fittings	1/16 in.	-43Z6FS1	0.05	0.052 (1.32)
	1/8 in.	-43Z6FS2	0.07	0.062 (1.57)

(1) Cross-port flow may occur during switching. If cross-port flow is unacceptable, specify a 0.049 in. ball orifice. Example: SS-43ZF2-**049**

(2) Cross-port flow may occur during switching. If cross-port flow is unacceptable, specify a 0.093 in. ball orifice. Example: SS-45ZF8-ND-**093**

4-Way Valves				
Female Swagelok Tube Fittings	1/16 in.	-43YFS1 (1)	0.06	0.052 (1.32)
	1/8 in.	-43YFS2 (1)	0.08	0.062 (1.57)
Female NPT	1/8 in.	-43YF2 (1)	0.08	0.062 (1.57)
	1/2 in.	-45YF8 (2)	1.60	0.281 (7.14)
6-Way Valves				
Female Swagelok Tube Fittings	1/16 in.	-43Y6FS1	0.06	0.052 (1.32)
	1/8 in.	-43Y6FS2	0.08	0.062 (1.57)

(1) Cross-port flow may occur during switching. If cross-port flow is unacceptable, specify a 0.049 in. ball orifice. Example: SS-43YFS2-**049**

(2) Cross-port flow may occur during switching. If cross-port flow is unacceptable, specify a 0.093 in. ball orifice. Example: SS-45YF8-**093**

⚠ **Swagelok ball valves are designed to be used in a fully open or fully closed position.**

⚠ **Valves that have not been cycled for a period of time may have a higher initial actuation torque.**

⚠ **A packing adjustment may be required periodically to increase service life and to prevent leakage.**

Important Information About Swagelok Instrumentation Ball Valves

- Service instructions are shipped with each 40G series valve.
- 40G and 40 series valves are factory tested with nitrogen at 1,000 psig (69 bar).
- 40 series valve packing must be readjusted for service at higher than test pressure.
- Instrumentation ball valves exposed to dynamic temperature conditions before installation may lose their initial packing load. Packing adjustment may be needed.
- 41G and 42G series valves require an 8 mm deep-well socket and 43G series valves require a 9 mm deep-well socket to adjust the packing bolt.
- 41 and 42 series valves require a 3/8 in. open-ended wrench; 44 series valves require a 1/2 in. open-ended wrench; and 45 series valves require a 5/8 in. open-ended wrench to adjust the packing bolt.
- 43 series valves require an adapter to adjust the packing bolt. Ordering number: MS-WK-43.

60 Series

General Purpose and Special Application

Working Pressure: up to 3,000 psi (206 bar)

Temp Range: -65˚ to 450˚F (-53˚ to 232˚C)

Size Range: 1/8 to 2 in. NPT
1/8 to 2 in. Tube Fitting

Materials: 316 SS, Brass, Special Alloys, Carbon Steel

Catalog Reference: MS-01-146

Highlights/Features:

General purpose and special applications (steam, fire, thermal)

On/off and switching capability

Wide variety of packing and seat materials available

Ordering Information

Switching (3-Way) Valves		
Valve Series	Bottom End Connection	Designator
62	1/4 in. Female NPT 1/4 in. Female ISO Tapered 1/4 in. Swagelok Tube Fitting	-F4 -F4RT -S4
63	3/8 in. Swagelok Tube Fitting 1/2 in. Female NPT 1/2 in. Female ISO Tapered 1/2 in. Swagelok Tube Fitting	-S6 -F8 -F8RT -S8
65	3/4 in. Female NPT 3/4 in. Female ISO Tapered 1 in. Female NPT 1 in. Female ISO Tapered	-F12 -F12RT -F16 -F16RT
67	1 1/2 in. Female NPT	-F24
68	2 in. Female NPT	-F32

Swagelok Tube Fitting End Connections			
Size	Basic Ordering Number	Orifice in. (mm)	Cv
1/4 in.	SS-62TS4	0.188 (4.8)	1.2
3/8 in.	SS-62TS6	0.281 (7.1)	3.8
1/2 in.	SS-63TS8	0.406 (10.3)	7.5
3/4 in.	SS-63TS12	0.516 (13.1)	13.6
1 in.	SS-65TS16	0.875 (22.2)	40
1 1/2 in.	SS-67TS24	1.250 (31.8)	100
2 in.	SS-68TS32	1.500 (38.1)	130
6 mm	SS-62TS6MM	0.188 (4.8)	1.2
8 mm	SS-62TS8MM	0.250 (6.4)	2.5
10 mm	SS-62TS10MM	0.281 (7.1)	3.8
12 mm	SS-63TS12MM	0.375 (9.5)	7.5
18 mm	SS-63TS18MM	0.516 (13.1)	13.6
25 mm	SS-65TS25MM	0.875 (22.2)	40

Female Pipe Thread End Connections			
Size	Ordering Number	Orifice in. (mm)	Cv
Female NPT			
1/8 in.	SS-62TF2	0.281 (7.1)	3.8
1/4 in.	SS-62TF4	0.281 (7.1)	3.8
3/8 in.	SS-63TF6	0.516 (13.1)	12
1/2 in.	SS-63TF8	0.516 (13.1)	12
3/4 in.	SS-65TF12	0.875 (22.2)	31
1 in.	SS-65TF16	0.875 (22.2)	38
1 1/4 in.	SS-67TF20	1.250 (31.8)	90
1 1/2 in.	SS-67TF24	1.250 (31.8)	100
2 in.	SS-68TF32	1.500 (38.1)	130
Female ISO Tapered			
1/4 in.	SS-62TF4RT	0.281 (7.1)	3.8
1/2 in.	SS-63TF8RT	0.516 (13.1)	12
3/4 in.	SS-65TF12RT	0.875 (22.2)	31
1 in.	SS-65TF16RT	0.875 (22.2)	38
1 1/2 in.	SS-67TF24RT	1.250 (31.8)	100
2 in.	SS-68TF32RT	1.500 (38.1)	130
Male Lagging Extension to Female NPT with Gauge Ports			
1/2 to 1/2 in.	SS-63TM8L-GF8	0.411 (10.4)	7.5
3/4 to 1/2 in.	SS-63TM12L-GF8	0.500 (12.7)	11.3

Swagelok ball valves are designed to be operated in a fully open or fully closed position.

A packing adjustment may be required periodically to increase service life and to prevent leakage.

Caution: Actuated assemblies must be properly aligned and supported. Inadequate alignment or improper support of the actuated assembly may result in leakage or premature valve failure.

83 and H83 Series

High-Pressure Trunnion Ball Valves

Working Pressure: up to 10,000 psi (689 bar)

Temp Range: 0° to 450°F (-17° to 121°C)

Size Range: 1/8 to 1/2 in. NPT
1/8 to 1/2 in. Tube Fitting

Materials: 316 SS, Alloy 400

Catalog Reference: MS-01-166

Highlights/Features:
High pressure design (up to 10,000 psi)
On/off and switching designs
Compact maximum flow design

Ordering Information

End Connections		Flow Coefficient (Cv)	83 Series Valve Ordering Number	H83 Series Valve Ordering Number
Type	Size			
2-Way Valve, 0.187 in. (4.75 mm) Orifice				
Female NPT	1/8 in.	1.2	SS-83KF2	SS-H83PF2
	1/4 in.	1.0	SS-83KF4	-
			-	SS-H83PF4
	1/2 in. [1]	1.2	SS-83KF8	-
Fractional Swagelok Tub Fitting	1/4 in.	1.6	SS-83KS4	SS-H83PS4
	3/8 in.	1.4	SS-83KS6	SS-H83PS6
	1/2 in. [1]	1.0	SS-83KS8	SS-H83PS8
Metric Swagelok Tube Fittings	6 mm	1.6	SS-83KS6MM	SS-H83PS6MM
	8 mm	1.5	SS-83KS8MM	SS-H83PS8MM
	10 mm	1.3	SS-83KS10MM	SS-H83PS10MM
	12 mm [1]	1.0	SS-83KS12MM	SS-H83PS12MM
3-Way Valve, 0.187 in. (4.75 mm) Orifice				
Female NPT [2]	1/8 in.	0.75	SS-83XKF2	SS-H83XPF2
	1/4 in.		SS-83XKF4	-
			-	SS-H83XPF4
Fractional Swagelok Tube Fitting [2]	1/4 in.		SS-83XKS4	SS-H83XPS4
	3/8 in.		SS-83XKS6	SS-H83XPS6
	1/2 in. [1]		SS-83XKS8	SS-H83XPS8
Metric Swagelok Tube Fitting [1]	6 mm		SS-83XKS6MM	SS-H83XPS6MM
	8 mm		SS-83XKS8MM	SS-H83XPS8MM
	10 mm		SS-83XKS10MM	SS-H83XPS10MM
	12 mm [1]		SS-83XKS12MM	SS-H83XPS12MM

For more information about pressure ratings of valves with tube fitting end connections, see Swagelok *Tubing Data*, MS-01-107.

(1) Not recommended for panel mounting.

(2) Bottom port of all 3-way valves is 1/4 in. female NPT.

Swagelok ball valves are designed to be used in a fully open or fully closed position.

Valves that have not been cycled for a period of time may have a higher initial actuation torque.

Actuated assemblies must be properly aligned and supported. Improper alignment or inadequate support of the actuated assembly may result in leakage or premature valve failure.

SK Series

Multi-purpose Ball Valves

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: -40° to 302°F (-40° to 150°C)

Size Range: 1/4 to 3/8 in. (6 to 8 mm)

Materials: 316 SS

Catalog Reference: MS-02-345

Highlights/Features:

Medium pressure design (up to 6,000 psi)

Low torque 1/4 turn actuations

Bi-directional flow

Ordering Information

End Connections [1]		Ordering Number	Cv
Type	Size		
0.188 in. (4.8mm) Orifice			
Swagelok Tube Fittings	1/4 in.	SS-4SKPS4	1.3
	3/8 in.	SS-4SKPS6	1.4
	6 mm	SS-4SKPS6MM	1.3
	8 mm	SS-4SKPS8MM	1.3
Female NPT	1/4 in.	SS-4SKPF4	1.2
Female ISO [2]	1/4 in.	SS-4SKPF4RT	1.2
Male NPT	1/4 in.	SS-4SKPM4	1.1
Male VCO Fitting [3]	1/4 in.	SS-4SKPVCO4	0.9

(1) SK series valves can be ordered with two different end connections. Contact your authorized Swagelok representative for ordering information.

(2) See specifications ISO 7/1, BS EN 10226-1, DIN-2999, and JIS B0203.

(3) VCO fittings on standard valves include low-temperature fluorocarbon FKM O-rings.

Swagelok ball valves are designed to be used in a fully open or fully closed position.

Valves that have not been cycled for a period of time may have higher initial actuation torque.

Actuated assemblies must be properly aligned and supported. Improper alignment or inadequate support of the actuated assembly may result in leakage or premature valve failure.

AFS Series

High-pressure, High-flow Applications

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: -40° to 200°F (-40° to 93°C)

Size Range: 3/8 to 1 in. Tube Fitting
12 to 16 mm Tube Fitting
3/8 to 3/4 in. NPT

Materials: 316 SS

Catalog Reference: MS-02-303

Highlights/Features:
High-flow capability
Medium pressure design (up to 6,000 psi)
Low operating torque

Ordering Information

End Connections [1]		Ordering Number	Cv	Orifice in. (mm)
Type	Size			
Fractional Swagelok Tube Fitting	3/8 in.	SS-AFSS6	4.0	0.281 (7.1)
	1/2 in.	SS-AFSS8	7.2	0.406 (10.3)
	3/4 in.	SS-AFSS12	7.1	0.472 (12.0)
	1 in.	SS-AFSS16 [2]	6.5	0.472 (12.0)
Metric Swagelok Tube Fitting	12 mm	SS-AFSS12MM	5.2	0.406 (10.3)
	16 mm	SS-AFSS16MM	12.4	0.472 (12.0)
Female NPT	3/8 in.	SS-AFSF6	11.0	0.472 (12.0)
	1/2 in.	SS-AFSF8	13.8	
	3/4 in.	SS-AFSF12 [2]	7.8	
Female ISO Tapered [3]	1/2 in.	SS-AFSF8RT	13.8	0.472 (12.0)

Dimensions shown with Swagelok tube fitting nuts finger tight.

(1) Valves can be ordered with two different end connections. Contact your authorized Swagelok sales and service representative.

(2) Not available with AGA, IAS, and ECE R110 certifications; not recommended for panel mounting; not available with pneumatic actuator.

(3) Thread type ISO/BSP (tapered), based on DIN 3852, Swagelok RT fittings. See specifications ISO 7/1, BS EN ISO 10226-1, and JIS B0203.

Swagelok AFS ball valves are designed to be used in the fully open or fully closed position.

Valves that have not been cycled for a period of time may have a higher initial actuation torque.

Actuated assemblies must be properly aligned and supported. Improper alignment or inadequate support of the actuated assembly may result in shorter valve life.

P4T and P6T Series

Plug Valves

Working Pressure: up to 3,000 psi (206 bar)

Temp Range: -10° to 400°F (-23° to 204°C)

Size Range: 1/8 to 1/2 in. Tube Fitting
1/8 to 1/2 in. NPT

Materials: 316 SS, Brass

Catalog Reference: MS-01-59

Highlights/Features:
1/4 turn actuation
Throttling capability
Simple design, easy to maintain

Ordering Information

End Connections		Ordering Numbers		Series
Inlet/ Outlet	Size	Stainless Steel	Brass	
Plug Valves: P4T Series and P6T Series				
Fractional Swagelok Tube Fittings	1/8 in.	SS-2P4T	B-2P4T	P4T
	1/4 in.	SS-4P4T	B-4P4T	P4T
	3/8 in.	SS-6P4T	B-6P4T	P4T
		SS-6P6T	B-6P6T	P6T
	1/2 in.	SS-8P6T	B-8P6T	P6T
Metric Swagelok Tube Fittings	6 mm	SS-6P4T-MM	B-6P4T-MM	P4T
	8 mm	SS-8P6T-MM	B-8P6T-MM	P6T
	10 mm	SS-10P6T-MM	B-10P6T-MM	P6T
	12 mm	SS-12P6T-MM	B-12P6T-MM	P6T
Female NPT	1/8 in.	SS-2P4T4	B-2P4T4	P4T
	1/4 in.	SS-4P4T4	B-4P4T4	P4T
		SS-4P6T4	B-4P6T4	P6T
	1/2 in.	SS-8P6T4	B-8P6T4	P6T
Male NPT	1/8 in.	SS-2P4T2	B-2P4T2	P4T
	1/4 in.	SS-4P4T2	B-4P4T2	P4T
	1/2 in.	SS-8P6T2	B-8P6T2	P6T
Male NPT/ Swagelok Tube Fittings	1/4 in.	SS-4P4T1	B-4P4T1	P4T
Male/ Female NPT	1/4 in.	SS-4P4T5	B-4P4T5	P4T
Female ISO (1)	1/4 in.	SS-4P4T4-RT	B-4P4T4-RT	P4T
	1/2 in.	SS-8P6T4-RT	B-8P6T4-RT	P6T

(1) See specifications ISO 7/1, BS EN 10226-1, DIN 2999, and JIS B0203.

Testing

Every Swagelok plug valve is factory tested for shutoff at 600 psig (41.3 bar).

Cleaning and Packaging

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

C and CA Series

Working Pressure: up to 3,000 psi (206 bar)

Temp Range: -10° to 375°F (-23° to 190°C)

Size Range: 1/8 to 1 in. Tube Fitting
1/8 to 1 in. NPT

Materials: 316 SS, Brass

Catalog Reference: MS-01-176

Highlights/Features:
Adjustable and fixed cracking pressures
Variety of end connections
316SS and brass materials available

Ordering Information

End Connections		Basic Ordering Number
Inlet/Outlet	Size	
Fixed Cracking Pressure, C Series		
Fractional Swagelok Tube Fitting	1/8 in.	SS-2C-
	1/4 in.	SS-4C-
	3/8 in.	SS-6C-
	1/2 in.	SS-8C-
	3/4 in.	SS-12C-
	1 in.	SS-16C-
Metric Swagelok Tube	6 mm	SS-6C-MM-
	10 mm	SS-10C-MM-
	12 mm	SS-12C-MM-
Female NPT	1/8 in.	SS-2C4-
	1/4 in.	SS-4C4-
	3/8 in.	SS-6C4-
	1/2 in.	SS-8C4-
	3/4 in.	SS-12C4-
	1 in.	SS-16C4-
Male NPT	1/8 in.	SS-2C2-
	1/4 in.	SS-4C2-
	3/8 in.	SS-6C2-
	1/2 in.	SS-8C2-
	3/4 in.	SS-12C2-
	1 in.	SS-16C2-
Male NPT/Swagelok Tube Fittings	1/4 in.	SS-4C1-
Male VCR Fittings	1/4 in.	SS-4C-VCR-
	1/2 in.	SS-8C-VCR-
	3/4 in.	SS-12C-VCR-
	1 in.	SS-16C-VCR-
Adjustable Cracking Pressure, CA Series		
Swagelok Tube Fittings	1/4 in.	SS-4CA-
	6 mm	SS-6CA-MM-
	8 mm	SS-8CA-MM-
Male NPT/ Swagelok Tube Fittings	1/4 in.	SS-4CA1-
Male VCR Fitting	1/4 in.	SS-4CA-VCR-

Refer to page 40 for completing the ordering number.

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.

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

CH Series

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: -10° to 400°F (-23° to 204°C)

Size Range: 1/8 to 1 in. Tube Fitting
1/4 to 1 in. NPT

Materials: 316 SS

Catalog Reference: MS-01-176

Highlights/Features:
Wide range of cracking pressures
Working pressures up to 6,000 psi
Wide variety of tube and pipe end connections

Ordering Information

End Connections		Basic Ordering Number
Type	Size	
CH Series		
Fractional Swagelok Tube Fitting	1/8 in.	SS-CHS2-
	1/4 in.	SS-CHS4-
	3/8 in.	SS-CHS6-
	1/2 in.	SS-CHS8-
	3/4 in.	SS-CHS12-
	1 in.	SS-CHS16-
Metric Swagelok Tube Fitting	6 mm	SS-CHS6MM-
	8 mm	SS-CHS8MM-
	10 mm	SS-CHS10MM-
	12 mm	SS-CHS12MM-
	22 mm	SS-CHS22MM-
	25 mm	SS-CHS25MM-
Female NPT	1/4 in.	SS-CHF4-
	3/8 in.	SS-CHF6-
	1/2 in.	SS-CHF8-
	3/4 in.	SS-CHF12-
	1 in.	SS-CHF16-
Male NPT	1/8 in.	SS-CHM2-
	1/4 in.	SS-CHM4-
	3/8 in.	SS-CHM6-
	1/2 in.	SS-CHM8-
	3/4 in.	SS-CHM12-
	1 in.	SS-CHM16-
Female ISO [1]	1/4 in.	SS-CHF4RT-
	1/2 in.	SS-CHF8RT-
	3/4 in.	SS-CHF12RT-
	1 in.	SS-CHF16RT-
Male ISO [1]	1/4 in.	SS-CHM4RT-
	1/2 in.	SS-CHM8RT-
	3/4 in.	SS-CHM12RT-
	1 in.	SS-CHM16RT-
Female SAE/MS	1/2 in.	SS-CHF8ST-
Male SAE/MS	1/2 in.	SS-CHM8ST-
Male VCO Fitting	1/4 in.	SS-CHVC04-
	1/2 in.	SS-CHVC08-
	3/4 in.	SS-CHVC012-
	1 in.	SS-CHVC016-
Male VCR Fitting	1/4 in.	SS-CHVCR4-
	1/2 in.	SS-CHVCR8-
	3/4 in.	SS-CHVCR12-

(1) See specifications ISO 7/1, BS EN 10226-1, DIN 2999, JIS B0203.
Refer to page 40 for completing the ordering number.

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.**

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

CP and CPA Series

Working Pressure: up to 3,000 psi (206 bar)

Temp Range: -10° to 375°F (-23° to 190°C)

Size Range: 1/4 to 1/2 in. NPT

Materials: 316 SS, Brass

Catalog Reference: MS-01-176

Highlights/Features:

Over-pressure protection up to 600 psi

Male and female threaded ends available

Easily adjusted with hex wrenches

Ordering Information

End Connections		Basic Ordering Number
Inlet/Outlet	Size	
Fixed Cracking Pressure, CP series		
Female NPT	1/4 in.	SS-4CP4-
	1/2 in.	SS-8CP4-
Male NPT	1/4 in.	SS-4CP2-
	1/2 in.	SS-8CP2-
Female/Male NPT	1/4 in.	SS-4CP6-
Male/Female NPT	1/4 in.	SS-4CP5-
	1/2 in.	SS-8CP5-
Female ISO [1]	1/4 in.	SS-4CP4-RT-
Male ISO [1]	1/4 in.	SS-4CP2-RT-
Adjustable Cracking Pressure, CPA Series		
Female NPT	1/4 in.	SS-4CPA4-
Male NPT	1/4 in.	SS-4CPA2-
	1/2 in.	SS-8CPA2-
Male ISO [1]	1/4 in.	SS-4CPA2-RT-
	1/2 in.	SS-8CPA2-RT-

(1) See specifications ISO 7/1, BS EN 10226-1, DIN 2999, JIS B0203.

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.**

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

C/CP Series

To order, add a cracking pressure designator to the basic ordering number.

Cracking Pressure psi (bar)	Designator
1/3 (0.03)	1/3
1 (0.07)	1
10 (0.69)	10
25 (1.8)	25

CH Series

To order, add a cracking pressure designator to the basic ordering number.

Cracking Pressure psi (bar)	Designator
1/3 (0.03)	1/3
1 (0.07)	1
5 (0.35)	5
10 (0.69)	10
25 (1.8)	25

CA/CPA Series

To order, add a cracking pressure range designator to the basic ordering number.

Cracking Pressure psi (bar)	Designator
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

50 Series

Lift Check Valves

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: -65° to 900°F (-53° to 482°C)

Size Range: 1/4 to 3/4 in. Tube Fitting
1/8 to 1/2 in. NPT

Materials: 316 SS

Catalog Reference: MS-01-98

Highlights/Features:
High temperature applications
All metal design
Better chemical compatibility due to no elastomers

Ordering Information

End Connections		Cv	Orifice in. (mm)	Order Number
Inlet/Outlet	Size			
Lift Check Valves - 50 Series				
Swagelok Tube Fitting	1/4 in.	0.30	0.156 (4.0)	SS-53S4
	3/8 in.	0.64	0.250 (6.4)	SS-56S6
	1/2 in.	2.20	0.437 (11.1)	SS-58S8
	3/4 in.			SS-58S12
	6 mm	0.30	0.156 (4.0)	SS-53S6MM
Female NPT	1/8 in.	0.30	0.156 (4.0)	SS-53F2
	1/4 in.			SS-53F4
	1/4 in.	0.64	0.250 (6.4)	SS-56F4
	3/8 in.	2.20	0.437 (11.1)	SS-58F6
	1/2 in.			SS-58F8
Tube Socket Weld or Pipe Butt Weld	1/4 in.	0.30	0.156 (4.0)	SS-53SW4T
	3/8 in.	0.64	0.250 (6.4)	SS-56SW6T
	1/2 in.			SS-56SW8T
	1/2 in.	2.20	0.437 (11.1)	SS-58SW8T
Swagelok Tube Fitting/Female NPT	1/4 in.	0.30	0.156 (4.0)	SS-53S4-F4

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

R Series

Proportional Relief Valves

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: -40° to 300°F (-40° to 148°C)

Size Range: 1/4 to 1/2 in. Tube Fitting
1/4 to 1/2 in NPT

Materials: 316 SS

Catalog Reference: MS-01-141

Highlights/Features:

Compact over-pressure protection
Set pressures 10 to 6,000 psi
1/4 and 1/2 inch designs

Ordering Information

Low-Pressure Valves (RL3 and RL4 Series)		
End Connections		Ordering Number
Inlet/Outlet	Size	
RL3 Series: 0.19 in. (4.8 mm) Fully Open Orifice		
Swagelok Tube Fittings	1/4 in.	SS-RL3S4
	6 mm	SS-RL3S6MM
	8 mm	SS-RL3S8MM
Male NPT/Swagelok Tube Fittings	1/4 in.	SS-RL3M4-S4
Male NPT/Female NPT	1/4 in.	SS-RL3M4-F4
Male ISO/Female ISO [1]	1/4 in.	SS-RL3M4F4-RT
RL4 Series: 0.25 in. (6.4 mm) Fully Open Orifice		
Swagelok Tube Fittings	1/2 in.	SS-RL4S8
	12 mm	SS-RL4S12MM
Male NPT/Swagelok Tube Fittings	1/2 in.	SS-RL4M8S8
Male NPT/Female NPT	1/2 in.	SS-RL4M8F8
High-Pressure Valves (R3A and R4 Series)		
R3A Series: 0.14 in. (3.6 mm) Fully Open Orifice		
Swagelok Tube Fittings	1/4 in.	SS-4R3A
	6 mm	SS-6R3A-MM
	8 mm	SS-8R3A-MM
Male NPT/Swagelok Tube Fittings	1/4 in.	SS-4R3A1
Male NPT/Female NPT	1/4 in.	SS-4R3A5
Male ISO/Female ISO [1]	1/4 in.	SS-4R3A5-RT
R4 Series: 0.25 in. (6.4 mm) Fully Open Orifice		
Swagelok Tube Fittings	1/2 in.	SS-R4S8
	12 mm	SS-R4S12MM
Male NPT/Swagelok Tube Fittings	1/2 in.	SS-R4M8S8
Male NPT/Female NPT	1/2 in.	SS-R4M8F8

Dimensions shown with Swagelok tube fitting nuts finger tight.

(1) See specifications ISO 7/1, BS EN 10226-1, DIN-2999, and JIS B0203.

Replacement Spring Kits (RL3 and RL4 Series)		
Available with springs factory-set to a specified set pressure. To order, add -SET to the valve ordering number and specify the desired set pressure.		
Series	Spring Kit Ordering	Set Pressure Range psig (bar)
RL3	177-13K-RL3	10 to 225 (0.68 to 15.5)
RL4	177-13K-RL4	

Spring Kits (R3A and R4 Series)		
Select a spring kit basic ordering number and add the spring designator for the desired set pressure range.		
Set Pressure Range psig (bar)	Spring Designator	Spring Color
R3A Series Spring Kit: Basic Ordering Number 177-R3A-K1-		
50 to 350 (3.4 to 24.1)	A	Blue
350 to 750 (24.1 to 51.7)	B	Yellow
750 to 1500 (51.7 to 103)	C	Purple
1500 to 2250 (103 to 155)	D	Orange
2250 to 3000 (155 to 206)	E	Brown
3000 to 4000 (206 to 275)	F	White
4000 to 5000 (275 to 344)	G	Red
5000 to 6000 (340 to 413)	H	Green
R4 Series Spring Kit: Basic Ordering Number 177-13K-R4-		
50 to 350 (3.4 to 24.1)	A	Blue
350 to 750 (24.1 to 51.7)	B	Yellow
750 to 1500 (51.7 to 103)	C	Purple

Applications

R Series relief valves are proportional relief valves that open gradually as the pressure increases. Consequently, they do not have a capacity rating at a given pressure rise (accumulation), and they are not certified to ASME or any other codes.

Some system applications require relief valves to meet specific safety codes. The system designer and user must determine when such codes apply and whether these relief valves conform to them.

Swagelok proportional relief valves should never be used as ASME Boiler and Pressure Vessel Code safety relief devices.

Swagelok proportional relief valves are not "Safety Accessories" as defined in the Pressure Equipment Directive 97/23/EC.

Operations

R series relief valves OPEN when system pressure reaches the set pressure and CLOSE when the system pressure falls below the set pressure.

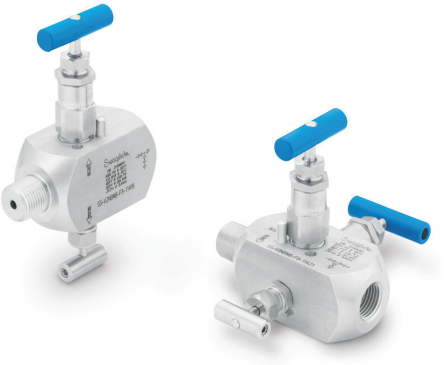
- High-pressure R3A and R4 series-select and install the spring that covers the required set pressure; apply the matching label to the cap.
- Low-pressure RL3 and RL4 series-the spring is already installed.

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

Contact your authorized Swagelok representative to discuss pre-set valves.

V Series

Single/Double Block & Bleed



Working Pressure: up to 6,000 psi (413 bar)

Temp Range: Up to 1200°F (648°C)

Size Range: 1/2 to 3/4 in. NPT

Materials: 316 SS

Catalog Reference: MS-02-445

Highlights/Features:

Pressures up to 6,000 psi

Temperature up to 1200°F (648°C) with Grafoil packing

Compact and integral design

Non-rotating ball design for consistent sealing

Ordering Information

Block and Bleed Valves	
Inlet End Connection	Ordering Number
1/2 in. male NPT	SS-V2NBM8-F8-11486
3/4 in. male NPT	SS-V2NBM12-F8-11486
Double Block and Bleed Valves	
Inlet End Connection	Ordering Number
1/2 in. male NPT	SS-V3NBM8-F8-11421
3/4 in. male NPT	SS-V3NBM12-F8-11421

Packing adjustments may be required during the service life of the valve.

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

Valves that have not been cycled for a period of time may have a higher initial actuation torque.

4P/5P Series

Rising Plug Valves

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: -20° to 400°F (-28° to 204°C)

Size Range: 1/4 to 3/4 in. NPT

Materials: 316 SS, Alloy 400

Catalog Reference: MS-01-49

Highlights/Features:

Roddable, straight-through orifice design
Lagging extension for insulation clearance
Replaceable seat and stem tip
Non-rotating stem tip provides consistent seal
NACE MR0175 option available

Ordering Information

End Connections		Cv	Orifice in. (mm)	Ordering Number	Series	Model
Inlet/ Outlet	Size					
Female NPT	1/4 in.	0.63	0.187 (4.8)	SS-4PDF4	4P	Standard
				SS-4PDGF4	4P	Gauge port [1]
	1/2 in.	1.80	0.250 (6.4)	SS-5PDF8	5P	Standard
				SS-5PDGF8	5P	Gauge port [1]
Male/ Female NPT	1/4 in.	0.63	0.187 (4.8)	SS-4PDM4-F4	4P	Standard
	1/2 to 1/4 in.			SS-4PDM8-F4	4P	Standard
				SS-4PDGM8-F4 [3]	4P	Gauge port [1]
	1/2 in.	1.80	0.250 (6.4)	SS-5PDM8-F8	5P	Standard
				SS-5PDGM8-F8 [3]	5P	Gauge port [1]
	3/4 to 1/2 in.			SS-5PDM12-F8	5P	Standard
				SS-5PDGM12-F8 [3]	5P	Gauge port [1]

(1) Gauge ports on 316 SS bodies match outlet size; alloy 400 bodies have 1/4 in. gauge ports.

(3) Has 2 in. (50.8 mm) lagging extension body for insertion through pipe insulation.

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

Gauge Valves

Working Pressure: up to 6,000 psi (413 bar)

Temp Range: -65° to 1200°F (-53° to 648°C)

Size Range: 1/2 to 3/4 in. NPT

Materials: 316 SS

Catalog Reference: MS-01-52

Highlights/Features:

Non-rotating ball and stem tip design provides consistent seal

Lagging extension available for insulation clearance

Replaceable seat and stem tip

NACE MR0175 option available

Ordering Information

Stem Design	Inlet/Outlet (Male to Female NPT) in.	Seat	Ordering Number
Ball Tip	1/2	316 SS	SS-6PNBGM8-F8
	Lagging 1/2 to 1/2		SS-6PNBGM8L-F8
	3/4 to 1/2		SS-6PNBGM12-F8
	Lagging 3/4 to 1/2		SS-6PNBGM12L-F8
Plug	1/2 to 1/2	Acetal	SS-6PNDGM8-F8
	3/4 to 1/2		SS-6PNDGM12-F8
	1/2 to 1/2	PFA	SS-6PNTGM8-F8
	3/4 to 1/2		SS-6PNTGM12-F8
	1/2 to 1/2	PEEK	SS-6PNPGM8-F8
	3/4 to 1/2		SS-6PNPGM12-F8

⚠ **A packing adjustment may be required periodically to increase service life and to prevent leakage.**

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

Glossary of Terms

Actuate
To open, close, or change the throttle position of a valve.

Actuator
Means the method of actuation, can be a valve handle or an electric or pneumatic driven actuator.

Angle Valve
The valve has at least one 90° change in flow direction and less flow capacity than a straight-through flow path.

Ball
The spherical component that either blocks flow or when turned by an actuator, allows fluid to flow through.

Needle
The component that regulates flow on a needle valve, may also be called a stem, available in different shapes to allow different flow characteristics.

Working Pressure
The normal operating pressure of a fluid system.

Safety Factor
The ratio between normal working pressure and the absolute failure point at which a valve may fail or present significant leakage.

Flow Coefficient
Cv or flow coefficient of a device is a relative measure of its efficiency at allowing fluid flow. It describes the relationship between the pressure drop across an orifice, valve, or other assembly and the corresponding flow rate.

Orifice Size
The physical size of the opening of a valve. Usually expressed in inches.

Reduced Port
The port or orifice size is smaller than the ID of the line size.

Full Port
The port or orifice size is equal to or larger than the ID of the line size.

Packing
The part of the valve that sits around the stem of the valve that creates a seal between the valve body and the stem.

Live Loaded Packing
Packing that is under constant pressure via a spring load mechanism to ensure better sealing.

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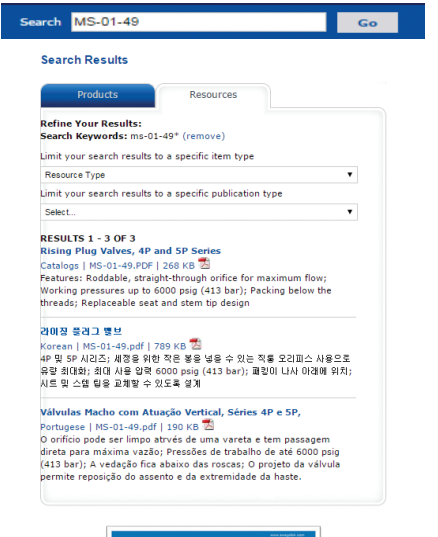

Reference Catalogs

Filters: MS-01-92

Fittings: MS-01-140

Hose and Flexible Tubing: MS-01-180

Leak Detectors, Lubricants, and Sealants:
MS-01-91

Temperature Measurement Devices:
MS-02-353

- Pressure Gauges: MS-02-170

Modular Platform Components (MPC):
MS-02-185

Pre-Engineered Subsystems:

- Field Station Module: MS-02-359
- Fluid Distribution Module: MS-02-358
- Calibration and Switching Module: MS-02-360
- Fast Loop Module: MS-02-361
- Sample Probe Module: MS-02-425

Quick Connects: MS-01-138

Regulators:

- Pressure Regulators, K Series: MS-02-230
- Pressure Regulators, RHPS Series: MS-02-430

Sample Cylinders: MS-01-177

Tubing Tools and Tubing Accessories: MS-01-179

Swagelok® Welding Systems: MS-02-342

Filters

Fittings

Hoses and Flexible Tubing

Leak Detectors Lubricants, Sealants

Measurement Devices

Miniature Modular Systems

Pre-Engineered Subsystems

Quick-Connects

Regulators

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Flow Control Valves

On/Off Control Valves

Directional Control Valves

Over-Pressure Protection

Instrument Isolation

Glossary of Terms

swagelok.com Catalogs