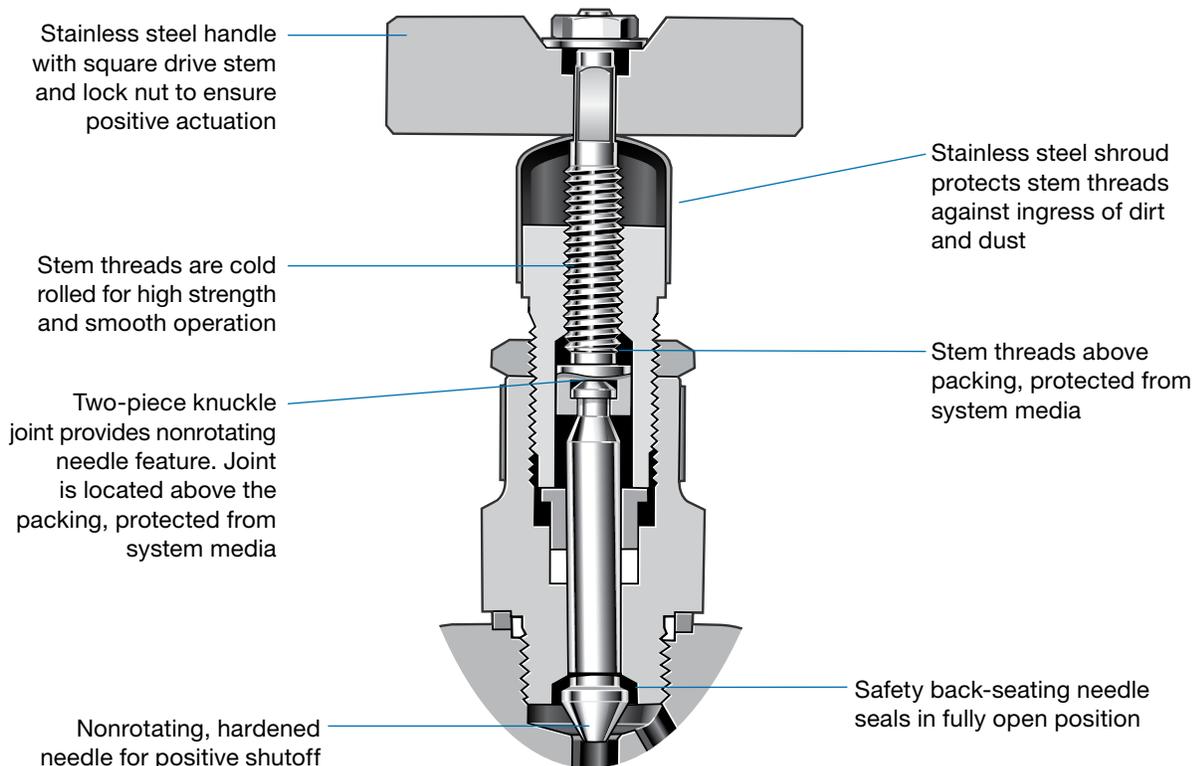# General Utility Service Needle Valves

GU Series

■ Straight and angle patterns

■ Stainless steel and carbon steel body material

■ Pressures up to 6000 psig (413 bar)

■ Temperatures up to 450°F (232°C) with PTFE packing; up to 650°F (343°C) with optional graphite packing

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Features

GU series needle valves are for use in general-purpose applications to isolate or vent system media. The hardened stainless steel, nonrotating needle promotes leak-tight shutoff and long service life. The valve stem threads are isolated from the media.

■ Compact design

■ Stainless steel stop pin

■ High-temperature packing and bonnet seal option available

■ Antitamper and lockable handle features available

■ Suitable for sour gas service; materials are selected in accordance with NACE MR0175/ISO 15156.

Stainless steel handle with square drive stem and lock nut to ensure positive actuation

Stem threads are cold rolled for high strength and smooth operation

Two-piece knuckle joint provides nonrotating needle feature. Joint is located above the packing, protected from system media

Nonrotating, hardened needle for positive shutoff

Stainless steel shroud protects stem threads against ingress of dirt and dust

Stem threads above packing, protected from system media

Safety back-seating needle seals in fully open position

GU SERIES
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Materials of Construction

Component	Valve Body Material	
	Stainless Steel	Carbon Steel
	Material Grade/ASTM Specification	
Body	*316 SS/ A479*	*Zinc plated[1] carbon steel/ AISI 1018*
Bonnet		*316 SS/A479*
Needle	*S17400 SS/A564 Condition H1150D*	
Packing, bonnet seals	*Carbon/glass-filled PTFE or graphite*	
Lubricant	*Fluorinated base with PTFE and tungsten disulfide*	
Bonnet seal ring, gland nut, shroud, stem, gland, handle, handle lock nut, handle washer, locking pin	316 SS	
Gland lock nut	Powdered metal 300 series SS	

Wetted components listed in *italics*.

[1] Bodies with weld end connections receive a rust-preventive coating instead of zinc plating.

Pressure-Temperature Ratings

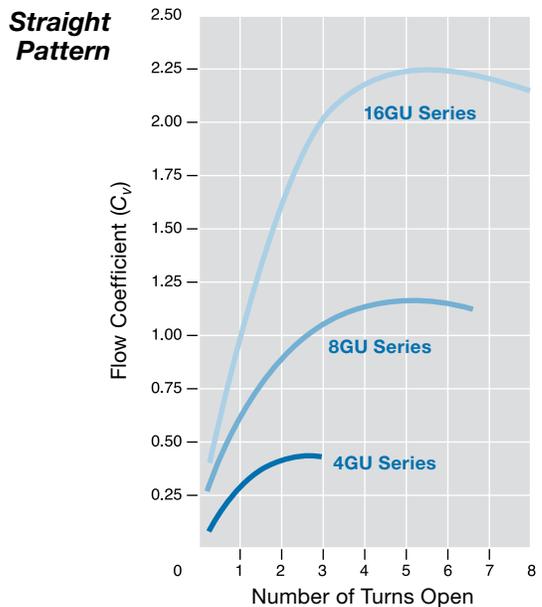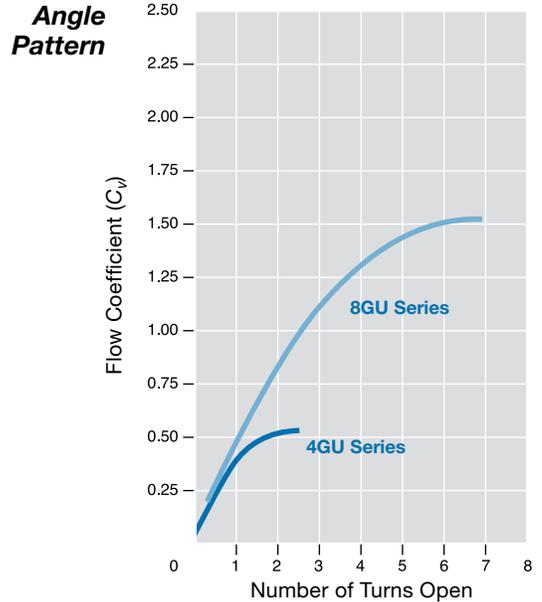| Temperature, °F (°C)	Packing Material	
	PTFE	Graphite
	Working Pressure, psig (bar)	
–20 (–28) to 0 (–17)	—	6000 (413)
0 (–17) to 100 (37)	6000 (413)	6000 (413)
200 (93)	5160 (355)	5160 (355)
300 (148)	4680 (322)	4680 (322)
400 (204)	4260 (293)	4260 (293)
450 (232)	4110 (283)	4110 (283)
500 (260)	—	3960 (272)
600 (315)	—	3780 (260)
650 (343)	—	3660 (252)

Testing

Every Swagelok GU series needle valve is factory tested with nitrogen at 1000 psig (69 bar). Seats have a maximum allowable leak rate of 0.1 std cm^3/min. Shell testing is performed to a requirement of no detectable leakage with a liquid leak detector.

Cleaning and Packaging

Every Swagelok GU series needle valve is cleaned and packaged in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)* (MS-06-62), page 1174.
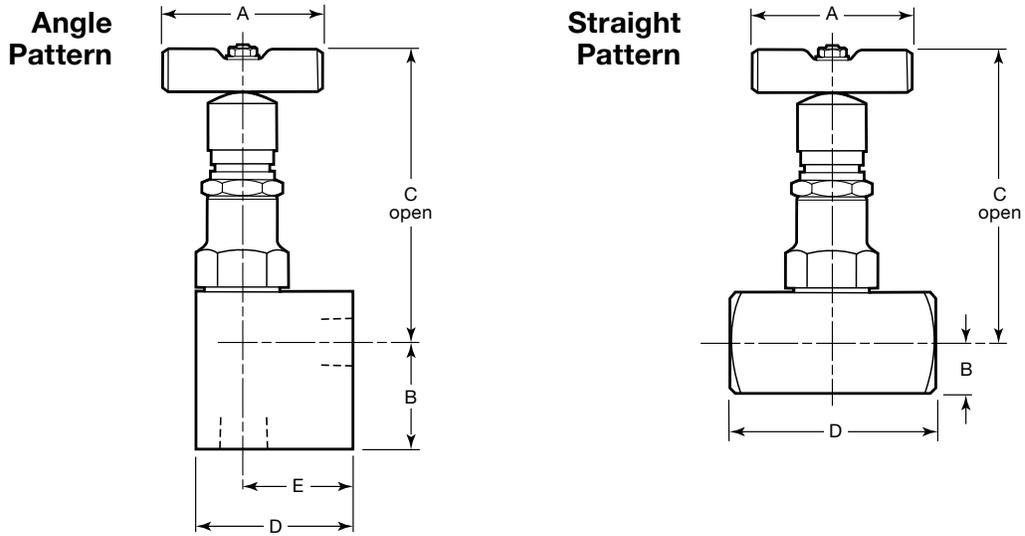
Flow Data

Flow Coefficient at Turns Open

Angle Pattern

Flow Coefficient (C_v) vs Number of Turns Open — 8GU Series, 4GU Series

Straight Pattern

Flow Coefficient (C_v) vs Number of Turns Open — 16GU Series, 8GU Series, 4GU Series

GU SERIES NEEDLE

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Ordering Information and Dimensions

Dimensions are for reference only and are subject to change.

Angle Pattern

Straight Pattern

Angle Pattern

End Connections			Orifice	Ordering Number		Dimensions, in. (mm)				
Type	Size	C_v	in. (mm)	Stainless Steel	Carbon Steel	A	B	C	D	E
Female NPT	1/4 in.	0.55	0.20 (5.0)	SS-4GUF4-A	S-4GUF4-A	1.75 (44.5)	0.85 (21.6)	3.20 (81.2)	1.50 (38.1)	1.00 (25.4)
	3/8 in.			SS-4GUF6-A	S-4GUF6-A		1.10 (27.9)		1.75 (44.5)	1.25 (31.8)
	1/2 in.			SS-4GUF8-A	S-4GUF8-A		1.23 (31.2)	3.33 (84.6)	2.00 (51.0)	1.31 (33.3)
	1/2 in.	1.60	0.31 (8.0)	SS-8GUF8-A	S-8GUF8-A	2.00 (51.0)	1.23 (31.2)	3.87 (98.3)	2.00 (51.0)	1.38 (35.1)
	3/4 in.			SS-8GUF12-A	S-8GUF12-A		1.60 (40.6)	3.98 (101)	2.50 (63.5)	1.50 (38.1)
	1 in.			SS-8GUF16-A	S-8GUF16-A			4.25 (108)	2.76 (70.0)	1.75 (44.5)

GU SERIES NEEDLE

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Ordering Information and Dimensions

Dimensions are for reference only and are subject to change.

Straight Pattern

End Connections		Cᵥ	Orifice in. (mm)	Ordering Number		Dimensions, in. (mm)			
Type	Size	C_v	Orifice in. (mm)	Stainless Steel	Carbon Steel	A	B	C	D
Female NPT	1/4 in.	0.45	0.20 (5.0)	SS-4GUF4	S-4GUF4	1.75 (44.5)	0.50 (12.7)	3.20 (81.2)	2.13 (54.1)
	3/8 in.			SS-4GUF6	S-4GUF6				2.25 (57.2)
	1/2 in.	0.45	0.20 (5.0)	SS-4GUF8	S-4GUF8	1.75 (44.5)	0.63 (16.0)	3.33 (84.6)	2.63 (66.8)
		1.20	0.31 (8.0)	SS-8GUF8	S-8GUF8	2.00 (51.0)		3.87 (98.3)	2.76 (70.0)
	3/4 in.	1.20	0.31 (8.0)	SS-8GUF12	S-8GUF12	2.00 (51.0)	0.75 (19.1)	3.98 (101)	3.00 (76.2)
		2.25	0.43 (11.0)	SS-16GUF12	S-16GUF12	3.00 (76.2)	0.88 (22.4)	5.24 (133)	3.25 (82.6)
	1 in.	1.20	0.31 (8.0)	SS-8GUF16	S-8GUF16	2.00 (51.0)	1.00 (25.4)	4.25 (108)	3.50 (88.9)
		2.25	0.43 (11.0)	SS-16GUF16	S-16GUF16	3.00 (76.2)		5.35 (136)	4.02 (102)
Male NPT/ female NPT	1/4 in.	0.45	0.20 (5.0)	SS-4GUM4-F4	S-4GUM4-F4	1.75 (44.5)	0.50 (12.7)	3.20 (81.2)	2.38 (60.5)
	3/8 in.			SS-4GUM6-F6	S-4GUM6-F6				
	1/2 in.	0.45	0.20 (5.0)	SS-4GUM8-F8	S-4GUM8-F8	1.75 (44.5)	0.63 (16.0)	3.33 (84.6)	2.76 (70.0)
		1.20	0.31 (8.0)	SS-8GUM8-F8	S-8GUM8-F8	2.00 (51.0)		3.87 (98.3)	3.00 (76.2)
	3/4 in.	1.20	0.31 (8.0)	SS-8GUM12-F12	S-8GUM12-F12	2.00 (51.0)	0.75 (19.1)	3.98 (101)	3.13 (79.6)
		2.25	0.43 (11.0)	SS-16GUM12-F12	S-16GUM12-F12	3.00 (76.2)	0.88 (22.4)	5.24 (133)	3.50 (88.9)
	1 in.	1.20	0.31 (8.0)	SS-8GUM16-F16	S-8GUM16-F16	2.00 (51.0)	1.00 (25.4)	4.25 (108)	3.50 (88.9)
		2.25	0.43 (11.0)	SS-16GUM16-F16	S-16GUM16-F16	3.00 (76.2)		5.35 (136)	4.02 (102)
Fractional tube socket weld	1/4 in.	0.45	0.20 (5.0)	SS-4GUSW4T	S-4GUSW4T	1.75 (44.5)	0.50 (12.7)	3.20 (81.3)	2.00 (50.8)
	3/8 in.			SS-4GUSW6T	S-4GUSW6T				
	1/2 in.	0.45	0.20 (5.0)	SS-4GUSW8T	S-4GUSW8T	1.75 (44.5)	0.50 (12.7)	3.20 (81.3)	2.25 (57.2)
		1.20	0.31 (8.0)	SS-8GUSW8T	S-8GUSW8T	2.00 (51.0)	0.63 (16.0)	3.87 (98.3)	2.63 (66.8)
	3/4 in.	1.20	0.31 (8.0)	SS-8GUSW12T	S-8GUSW12T	2.00 (51.0)	0.63 (16.0)	3.87 (98.3)	2.63 (66.8)
		2.25	0.43 (11.0)	SS-16GUSW12T	S-16GUSW12T	3.00 (76.2)	0.88 (22.4)	5.24 (133)	3.25 (82.6)
	1 in.	1.20	0.31 (8.0)	SS-8GUSW16T	S-8GUSW16T	2.00 (51.0)	0.75 (19.1)	3.98 (101)	2.63 (66.8)
		2.25	0.43 (11.0)	SS-16GUSW16T	S-16GUSW16T	3.00 (76.2)	0.88 (22.4)	5.24 (133)	3.25 (82.6)
Fractional pipe socket weld	1/4 in.	0.45	0.20 (5.0)	—	S-4GUSW4P	1.75 (44.5)	0.50 (12.7)	3.20 (81.2)	2.25 (57.2)
	3/8 in.				S-4GUSW6P		0.63 (16.0)	3.33 (84.6)	
	1/2 in.	0.45	0.20 (5.0)		S-4GUSW8P	1.75 (44.5)	0.75 (19.1)	3.45 (87.6)	2.50 (63.5)
		1.20	0.31 (8.0)		S-8GUSW8P	2.00 (51.0)		3.98 (101)	2.63 (66.8)
	3/4 in.	1.20	0.31 (8.0)		S-8GUSW12P	2.00 (51.0)	0.88 (22.4)	4.13 (105)	3.25 (82.6)
		2.25	0.43 (11.0)		S-16GUSW12P	3.00 (76.2)		5.24 (133)	3.50 (88.9)
	1 in.	1.20	0.31 (8.0)		S-8GUSW16P	2.00 (51.0)	1.00 (25.4)	4.25 (108)	3.50 (88.9)
		2.25	0.43 (11.0)		S-16GUSW16P	3.00 (76.2)		5.35 (136)	
Metric tube socket weld	6 mm	0.45	0.20 (5.0)	SS-4GUSW6MMT	—	1.75 (44.5)	0.50 (12.7)	3.20 (81.2)	2.38 (60.5)
	8 mm			SS-4GUSW8MMT					2.00 (51.0)
	10 mm			SS-4GUSW10MMT					
	12 mm	0.45	0.20 (5.0)	SS-4GUSW12MMT		1.75 (44.5)	0.50 (12.7)	3.20 (81.2)	2.25 (57.2)
		1.20	0.31 (8.0)	SS-8GUSW12MMT		2.00 (51.0)	0.63 (16.0)	3.87 (98.2)	2.63 (66.8)
	14 mm	1.20	0.31 (8.0)	SS-8GUSW14MMT		2.00 (51.0)	0.63 (16.0)	3.87 (98.2)	2.63 (66.8)
		2.25	0.43 (11.0)	SS-16GUSW14MMT		3.00 (76.2)	0.88 (22.4)	5.24 (133)	3.75 (95.3)
	16 mm	1.20	0.31 (8.0)	SS-8GUSW16MMT		2.00 (51.0)	0.63 (16.0)	3.87 (98.2)	2.63 (66.8)
		2.25	0.43 (11.0)	SS-16GUSW16MMT		3.00 (76.2)	0.88 (22.4)	5.24 (133)	3.50 (88.9)
	18 mm	2.25	0.43 (11.0)	SS-16GUSW18MMT		3.00 (76.2)	0.88 (22.4)	5.24 (133)	3.25 (82.6)
	25 mm			SS-16GUSW25MMT					

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Options

To order valves with multiple options, add the appropriate designator in *alphabetical* order.

High-Temperature Stem Packing, Bonnet Seal

Graphite stem packing and bonnet seal material is available for temperatures up to 650°F (343°C).

To order valves with graphite material, add **-G** to the valve ordering number:

Example: SS-4GUF4-**G**

Antitamper Handle

The antitamper handle reduces the risk of human error and deliberate tampering. The valve can be operated with the antitamper key, sold separately.

To order valves with antitamper handles, add **-AT** to the valve ordering number.

Example: SS-4GUF4-**AT**

Round Lockable Handles

The lockable handles can lock the valve in any position. These round handles accommodate shackle diameters smaller than 0.22 in. (5.7 mm) for 4GU and 8GU series valves and 0.28 in. (7.0 mm) for 16GU series valves.

Nylon

A nylon lockable handle is available for ambient temperatures up to 250°F (121°C) and process temperatures up to 450°F (232°C).

To order, add **-NLH** to the valve ordering number.

Example: SS-4GUF8-**NLH**

Stainless Steel

A stainless steel lockable handle is available for marine service.

To order, add **-SLH** to the valve ordering number.

Example: SS-4GUF8-**SLH**

⚠ **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.**

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

Accessories

Antitamper Key
■ Fits all vent valves within the system
■ Order separately

Valve Series	Ordering Number
4GU	S004468
8GU	
16GU	S007240

Handle Kits

Standard stainless steel bar handle kits contain a handle, washer, lock nut, and instructions.

Optional round lockable nylon or stainless steel handle kits contains a handle, lock shield, retaining ring, label, washer, lock nut, and instructions.

Handle Style	Valve Series	Kit Ordering Number
Stainless steel bar	4GU	SS-5K-4GU
	8GU	SS-5K-8GU
	16GU	SS-5K-16GU
Round lockable nylon	4GU	SS-5K-4GU-NLH
	8GU	SS-5K-8GU-NLH
	16GU	SS-5K-16GU-NLH
Round lockable stainless steel	4GU	SS-5K-4GU-SLH
	8GU	SS-5K-8GU-SLH
	16GU	SS-5K-16GU-SLH

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