

NEEDLE VALVES



V Series Needle Valves

Catalog 4110-NV

Introduction

Parker V Series Needle Valves are designed for positive leak tight shut-off and regulation of fluids in process, power, and instrumentation applications. With a wide variety of port sizes and styles, temperature capabilities ranging from -65°F to 450°F (-54°C to 232°C) and pressures to 5000 psig (345 bar), V Series Needle Valves provide the user with the utmost in flexibility when designing miniaturized tubing or piping systems.

Features

- ▶ Choice of three stem types:
 - R-Stem – All metal, blunt stem tip
 - N-Stem – All metal, tapered needle stem tip
 - K-Stem – PCTFE stem tip
- ▶ Differential hardness between the strain hardened stem and cold formed body threads provides improved cycle life
- ▶ Choice of PTFE packing or elastomeric O-ring stem seals
- ▶ 316 Stainless Steel, Steel, Brass and Monel® Alloy 400 construction
- ▶ Inline and angle patterns
- ▶ Wide variety of US Customary and SI ports
- ▶ Panel mountable
- ▶ 100% factory tested
- ▶ Optional color coded handles

Specifications

Pressure Ratings:

316 Stainless Steel: 5000 psig (345 bar) CWP
 Brass, Steel and Monel® Alloy 400:
 3000 psig (207 bar) CWP

Orifice: 0.078" to 0.312" (2.0mm to 7.9mm)

C_v: 0.12 to 1.90

Port size: 1/8" to 3/4" (3mm to 12mm)

Temperature Ratings:

Stainless Steel and Monel® Alloy 400:

-65°F to 450°F (-54°C to 232°C)

Brass: -65°F to 400°F (-54°C to 204°C)

Steel: -20°F to 350°F (-29°C to 177°C)

PTFE Packing:

-65°F to 450°F (-54°C to 232°C)

PCTFE Stem Tip:

-65°F to 350°F (-54°C to 177°C)

Nitrile Rubber Stem Seal:

-30°F to 250°F (-34°C to 121°C)

Fluorocarbon Rubber Stem Seal:

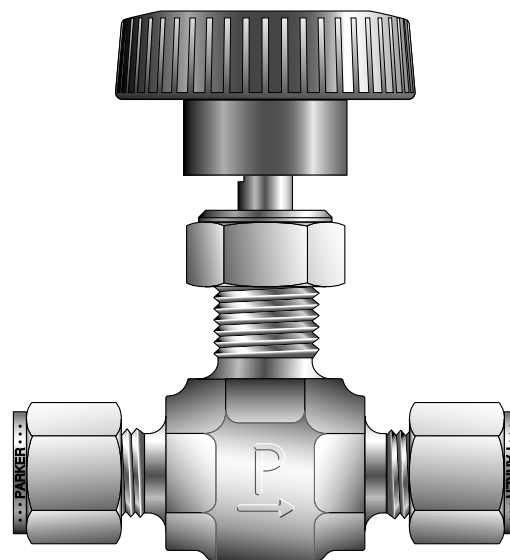
-15°F to 400°F (-26°C to 204°C)

Ethylene Propylene Rubber Stem Seal:

-70°F to 275°F (-57°C to 135°C)

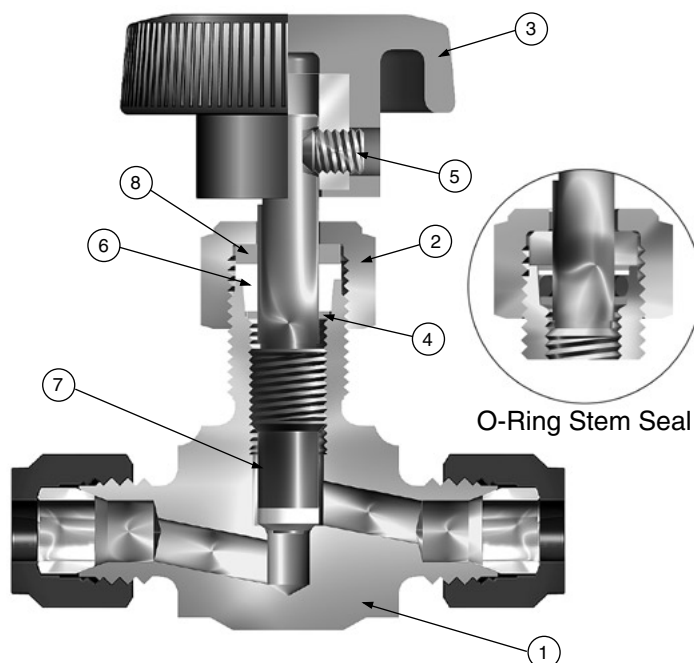
Note: When combining body, seat and seal materials, the most restrictive temperature rating becomes the limiting factor on temperature range.

Monel® Alloy 400 is the registered trademark of Special Metals Corporation.



Model Shown: 4Z-V4LK-SS

Materials of Construction (with PTFE Packing)



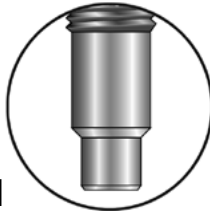
Model Shown: 4Z-V4LK-SS

V Series Needle Valves

Stem Types



K
PCTFE tipped



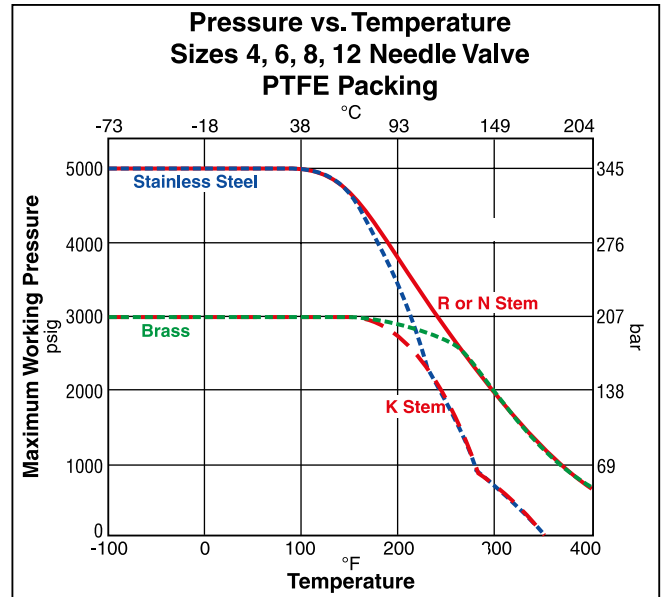
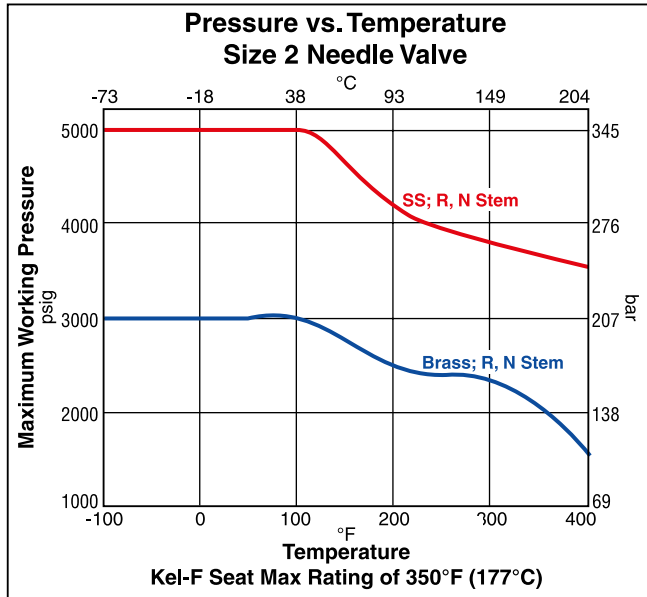
N
Needle (2-1/2°)



R
Blunt (30°)

V

Pressure vs. Temperature



Note: To determine MPa, multiply bar by 0.1

Materials of Construction (with PTFE Packing)

Item #	Part Description	Stainless Steel	Brass	Steel	Monel® Alloy 400
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700	ASTM A 576 Grade 1214	ASTM B 564 Alloy N04400
2	Packing Nut	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM A 479 Type 316
3	Handle*	Nylon 6/6 with SS insert	Nylon 6/6 with SS insert	Nylon 6/6 with SS insert	Nylon 6/6 with SS insert
4	Lower Packing Washer	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM B 164 Alloy N04400
5	Handle Screw	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
6	Packing**	PTFE	PTFE	PTFE	PTFE
7	Stem (R and N Stem)	ASTM A 276 Type 316	ASTM A 276 Type 316	ASTM A 276 Type 316	ASTM B 164 Alloy N04400
7A	Stem (K Stem)	ASTM A 276 Type 316, with PCTFE	ASTM A 276 Type 316, with PCTFE	ASTM A 276 Type 316, with PCTFE	ASTM B 164 with PCTFE
8	Upper Packing Washer	Brass	Brass	Brass	Brass
9	Panel Nut***	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel

* Handles for V8 and V12 Series Valves with R and N Stems are aluminum T-bars.

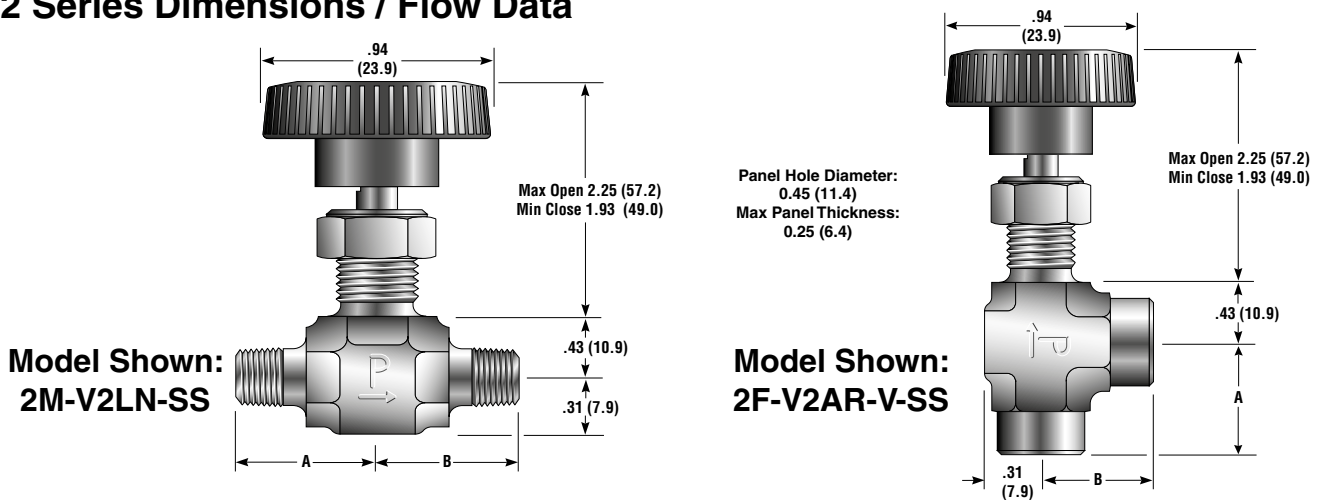
** Optional O-ring elastomeric stem seals are available – See How to Order.

*** Panel Nut is nickel plated brass on V2 Series Valves. Panel Nuts must be ordered separately – see page 10.
Lubrication: Perfluorinated Polyether

V Series Needle Valves

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V2 Series Dimensions / Flow Data



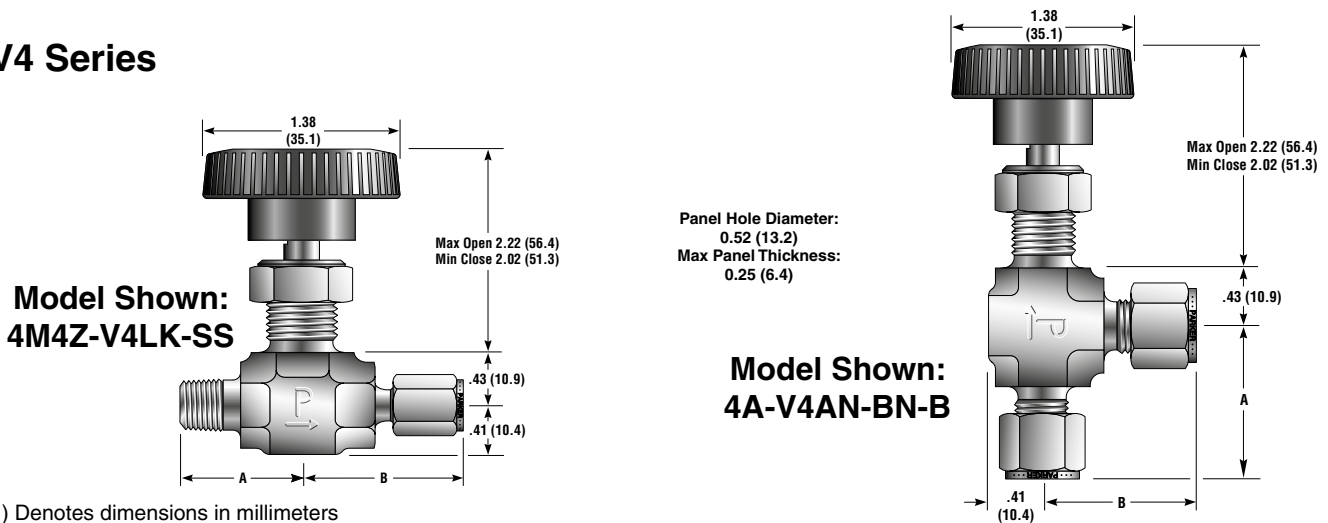
Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions			
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†		B†	
Inline	Angle				Inch	mm	C _V	X _T *	C _V	X _T *	Inch	mm	Inch	mm
2A-V2LR	2A-V2AR	1/8" Compression A-LOK®		Blunt	0.078	2.0	0.12	0.78	0.14	0.67	1.01	25.7	1.01	25.7
2A-V2LN	2A-V2AN		Needle	0.12			0.80	0.14	0.63					
2A-V2LK	2A-V2AK		PCTFE	0.13			0.83	0.14	0.63					
2F-V2LR	2F-V2AR	1/8" Female NPT		Blunt	0.093	2.4	0.13	0.61	0.16	0.49	0.94	23.9	0.94	23.9
2F-V2LN	2F-V2AN		Needle	0.12			0.66	0.18	0.39					
2F-V2LK	2F-V2AK		PCTFE	0.12			0.73	0.17	0.54					
2M-V2LR	2M-V2AR	1/8" Male NPT		Blunt	0.093	2.4	0.13	0.61	0.16	0.49	0.75	19.1	0.75	19.1
2M-V2LN	2M-V2AN		Needle	0.12			0.66	0.18	0.39					
2M-V2LK	2M-V2AK		PCTFE	0.12			0.73	0.17	0.54					
2Z-V2LR	2Z-V2AR	1/8" Compression CPI™		Blunt	0.078	2.0	0.12	0.78	0.14	0.67	1.01	25.7	1.01	25.7
2Z-V2LN	2Z-V2AN		Needle	0.12			0.80	0.14	0.63					
2Z-V2LK	2Z-V2AK		PCTFE	0.13			0.83	0.14	0.63					
4A-V2LR	4A-V2AR	1/4" Compression A-LOK®		Blunt	0.078	2.0	0.12	0.78	0.14	0.67	1.09	27.7	1.09	27.7
4A-V2LN	4A-V2AN		Needle	0.12			0.80	0.14	0.63					
4A-V2LK	4A-V2AK		PCTFE	0.13			0.83	0.14	0.63					
4Z-V2LR	4Z-V2AR	1/4" Compression CPI™		Blunt	0.078	2.0	0.12	0.78	0.14	0.67	1.09	27.7	1.09	27.7
4Z-V2LN	4Z-V2AN		Needle	0.12			0.80	0.14	0.63					
4Z-V2LK	4Z-V2AK		PCTFE	0.13			0.83	0.14	0.63					

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

V4 Series



() Denotes dimensions in millimeters

V4 Series Dimensions / Flow Data

Basic Part Number		End Connections		Stem Type	Flow Data					Dimensions			
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†		B†
Inline	Angle			Inch	mm	C _V	X _T *	C _V	X _T *	Inch	mm	Inch	mm
2A-V4LR	2A-V4AR	1/8" Compression A-LOK®	Blunt	0.078	2.0	0.12	0.52	0.15	0.64	1.10	27.9	1.10	27.9
2A-V4LN	2A-V4AN		Needle			0.12	0.68	0.15	0.59				
2A-V4LK	2A-V4AK		PCTFE			0.14	0.66	0.17	0.49				
2F-V4LR	2F-V4AR	1/8" Female NPT	Blunt	0.176	4.5	0.43	0.77	0.55	0.63	0.81	20.6	0.81	20.6
2F-V4LN	2F-V4AN		Needle			0.43	0.69	0.55	0.63				
2F-V4LK	2F-V4AK		PCTFE			0.45	0.55	0.58	0.68				
2M-V4LR	2M-V4AR	1/8" Male NPT	Blunt	0.125	3.2	0.28	0.67	0.36	0.55	0.81	20.6	0.81	20.6
2M-V4LN	2M-V4AN		Needle			0.28	0.63	0.36	0.51				
2M-V4LK	2M-V4AK		PCTFE			0.29	0.51	0.37	0.59				
2Z-V4LR	2Z-V4AR	1/8" Compression CPI™	Blunt	0.078	2.0	0.12	0.52	0.15	0.64	1.10	27.9	1.10	27.9
2Z-V4LN	2Z-V4AN		Needle			0.12	0.68	0.15	0.59				
2Z-V4LK	2Z-V4AK		PCTFE			0.14	0.66	0.17	0.49				
4A-V4LR	4A-V4AR	1/4" Compression A-LOK®	Blunt	0.176	4.5	0.43	0.85	0.55	0.63	1.15	29.2	1.15	29.2
4A-V4LN	4A-V4AN		Needle			0.43	0.77	0.55	0.63				
4A-V4LK	4A-V4AK		PCTFE			0.45	0.69	0.58	0.68				
4M-V4LR	4M-V4AR	1/4" Male NPT	Blunt	0.176	4.5	0.43	0.85	0.55	0.63	0.94	23.9	0.94	23.9
4M-V4LN	4M-V4AN		Needle			0.43	0.77	0.55	0.63				
4M-V4LK	4M-V4AK		PCTFE			0.45	0.69	0.58	0.68				
4W-V4LR	4W-V4AR	1/4" Tube Socket Weld	Blunt	0.176	4.5	0.43	0.85	0.55	0.63	0.80	20.3	0.80	20.3
4W-V4LN	4W-V4AN		Needle			0.43	0.77	0.55	0.63				
4W-V4LK	4W-V4AK		PCTFE			0.45	0.69	0.58	0.68				
4Z-V4LR	4Z-V4AR	1/4" Compression CPI™	Blunt	0.176	4.5	0.43	0.85	0.55	0.63	1.15	29.2	1.15	29.2
4Z-V4LN	4Z-V4AN		Needle			0.43	0.77	0.55	0.63				
4Z-V4LK	4Z-V4AK		PCTFE			0.45	0.69	0.58	0.68				
6A-V4LR	6A-V4AR	3/8" Compression A-LOK®	Blunt	0.176	4.5	0.43	0.85	0.55	0.63	1.17	29.7	1.17	29.7
6A-V4LN	6A-V4AN		Needle			0.43	0.77	0.55	0.63				
6A-V4LK	6A-V4AK		PCTFE			0.45	0.69	0.58	0.68				
6Z-V4LR	6Z-V4AR	3/8" Compression CPI™	Blunt	0.176	4.5	0.43	0.85	0.55	0.63	1.17	29.7	1.17	29.7
6Z-V4LN	6Z-V4AN		Needle			0.43	0.77	0.55	0.63				
6Z-V4LK	6Z-V4AK		PCTFE			0.45	0.69	0.58	0.68				
M3A-V4LR	M3A-V4AR	3mm Compression A-LOK®	Blunt	0.078	2.0	0.12	0.52	0.15	0.64	1.10	27.9	1.10	27.9
M3A-V4LN	M3A-V4AN		Needle			0.12	0.68	0.15	0.59				
M3A-V4LK	M3A-V4AK		PCTFE			0.14	0.66	0.17	0.49				
M3Z-V4LR	M3Z-V4AR	3mm Compression CPI™	Blunt	0.078	2.0	0.12	0.52	0.15	0.64	1.10	27.9	1.10	27.9
M3Z-V4LN	M3Z-V4AN		Needle			0.12	0.68	0.15	0.59				
M3Z-V4LK	M3Z-V4AK		PCTFE			0.14	0.66	0.17	0.49				
M6A-V4LR	M6A-V4AR	6mm Compression A-LOK®	Blunt	0.156	4.0	0.37	0.78	0.48	0.60	1.15	29.2	1.15	29.2
M6A-V4LN	M6A-V4AN		Needle			0.37	0.72	0.48	0.58				
M6A-V4LK	M6A-V4AK		PCTFE			0.39	0.62	0.51	0.64				
M6Z-V4LR	M6Z-V4AR	6mm Compression CPI™	Blunt	0.156	4.0	0.37	0.78	0.48	0.60	1.15	29.2	1.15	29.2
M6Z-V4LN	M6Z-V4AN		Needle			0.37	0.72	0.48	0.58				
M6Z-V4LK	M6Z-V4AK		PCTFE			0.39	0.62	0.51	0.64				
M8A-V4LR	M8A-V4AR	8mm Compression A-LOK®	Blunt	0.176	4.5	0.43	0.85	0.55	0.63	1.18	30.0	1.18	30.0
M8A-V4LN	M8A-V4AN		Needle			0.43	0.77	0.55	0.63				
M8A-V4LK	M8A-V4AK		PCTFE			0.45	0.69	0.58	0.68				
M8Z-V4LR	M8Z-V4AR	8mm Compression CPI™	Blunt	0.176	4.5	0.43	0.85	0.55	0.63	1.18	30.0	1.18	30.0
M8Z-V4LN	M8Z-V4AN		Needle			0.43	0.77	0.55	0.63				
M8Z-V4LK	M8Z-V4AK		PCTFE			0.45	0.69	0.58	0.68				

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

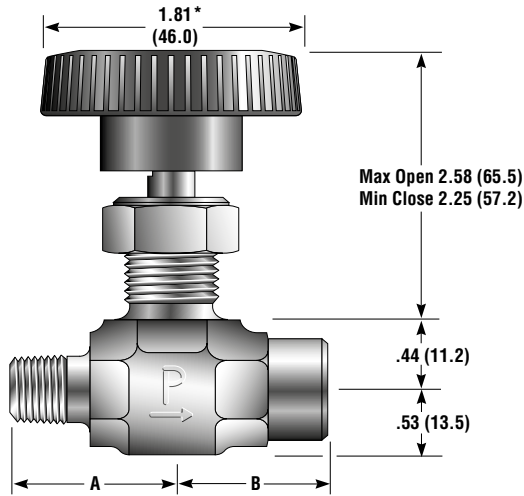
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

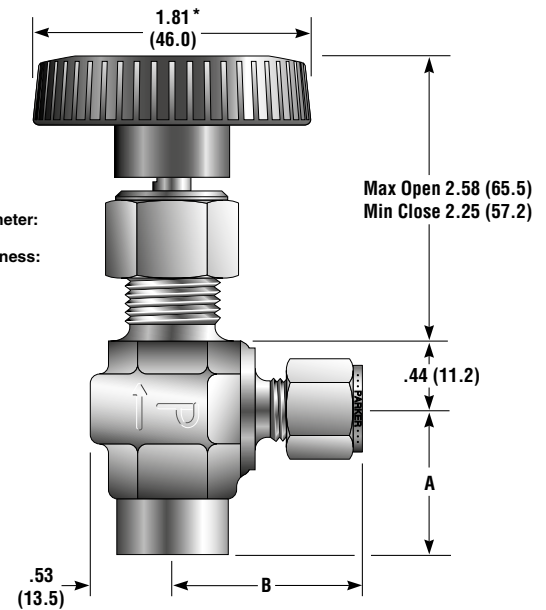
V Series Needle Valves

Catalog 4110-NV

V6 Series Dimensions / Flow Data



Model Shown:
6M4F-V6LR-V-SS



Model Shown:
4F6Z-V6AK-SS

* Note: Handle diameter for K Stem V6 Series Valves is 1.38 (35.4)
() Denotes dimensions in millimeters

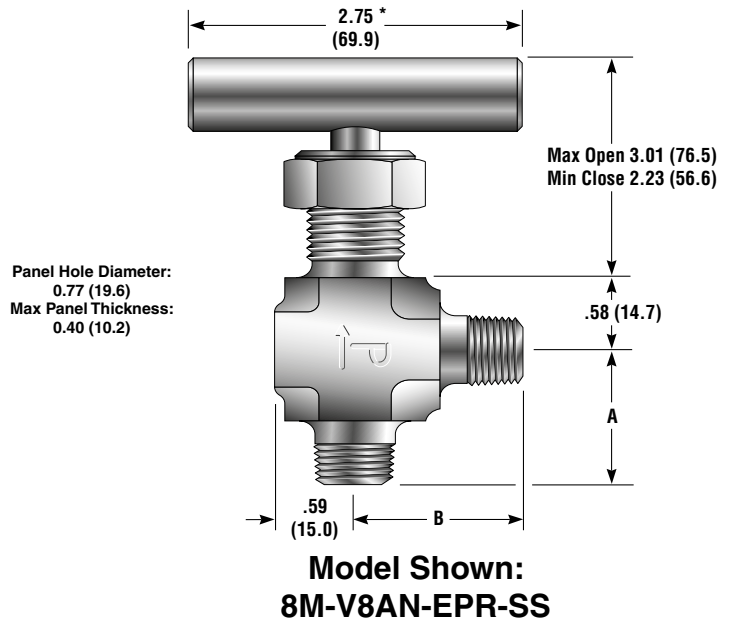
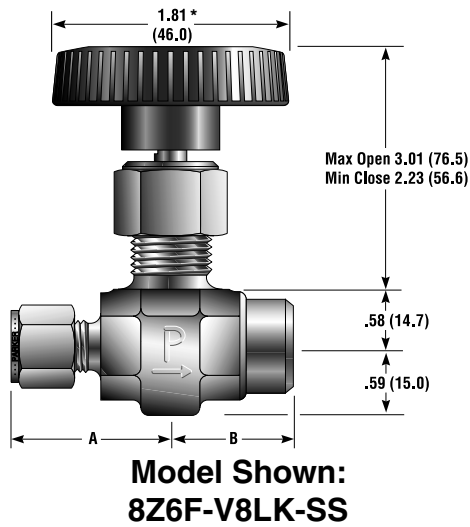
Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions			
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†		B†	
Inline	Angle				Inch	mm	C _V	X _T *	C _V	X _T *	Inch	mm	Inch	mm
4F-V6LR	4F-V6AR	1/4" Female NPT		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	0.94	23.9	0.94	23.9
4F-V6LN	4F-V6AN			Needle			0.55	0.61	0.92	0.62				
4F-V6LK	4F-V6AK			PCTFE			0.80	0.87	1.23	0.56				
6A-V6LR	6A-V6AR	3/8" Compression A-LOK®		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.29	32.8	1.29	32.8
6A-V6LN	6A-V6AN			Needle			0.55	0.61	0.92	0.62				
6A-V6LK	6A-V6AK			PCTFE			0.80	0.87	1.23	0.56				
6M-V6LR	6M-V6AR	3/8" Male NPT		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.03	26.2	1.03	26.2
6M-V6LN	6M-V6AN			Needle			0.55	0.61	0.92	0.62				
6M-V6LK	6M-V6AK			PCTFE			0.80	0.87	1.23	0.56				
6Z-V6LR	6Z-V6AR	3/8" Compression CPI™		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.29	32.8	1.29	32.8
6Z-V6LN	6Z-V6AN			Needle			0.55	0.61	0.92	0.62				
6Z-V6LK	6Z-V6AK			PCTFE			0.80	0.87	1.23	0.56				
8A-V6LR	8A-V6AR	1/2" Compression A-LOK®		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.40	35.6	1.40	35.6
8A-V6LN	8A-V6AN			Needle			0.55	0.61	0.92	0.62				
8A-V6LK	8A-V6AK			PCTFE			0.80	0.87	1.23	0.56				
8Z-V6LR	8Z-V6AR	1/2" Compression CPI™		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.40	35.6	1.40	35.6
8Z-V6LN	8Z-V6AN			Needle			0.55	0.61	0.92	0.62				
8Z-V6LK	8Z-V6AK			PCTFE			0.80	0.87	1.23	0.56				
M10A-V6LR	M10A-V6AR	10mm Compression A-LOK®		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.30	33.0	1.30	33.0
M10A-V6LN	M10A-V6AN			Needle			0.55	0.61	0.92	0.62				
M10A-V6LK	M10A-V6AK			PCTFE			0.80	0.87	1.23	0.56				
M10Z-V6LR	M10Z-V6AR	10mm Compression CPI™		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.30	33.0	1.30	33.0
M10Z-V6LN	M10Z-V6AN			Needle			0.55	0.61	0.92	0.62				
M10Z-V6LK	M10Z-V6AK			PCTFE			0.80	0.87	1.23	0.56				

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

V8 Series Dimensions / Flow Data



* Note: Handles for N or R Stem V8 Series Valves are a T-bar
() Denotes dimensions in millimeters

Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions			
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†		B†	
Inline	Angle				Inch	mm	C _V	X _T * 	C _V	X _T * 	Inch	mm	Inch	mm
6F-V8LR	6F-V8AR	3/8" Female NPT	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.34	34.0	1.34	34.0	
6F-V8LN	6F-V8AN		Needle			1.05	0.83	1.28	0.80					
6F-V8LK	6F-V8AK		PCTFE			1.29	0.91	1.90	0.76					
8A-V8LR	8A-V8AR	1/2" Compression A-LOK®	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.53	38.9	1.53	38.9	
8A-V8LN	8A-V8AN		Needle			1.05	0.83	1.28	0.80					
8A-V8LK	8A-V8AK		PCTFE			1.29	0.91	1.90	0.76					
8M-V8LR	8M-V8AR	1/2" Male NPT	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.34	34.0	1.34	34.0	
8M-V8LN	8M-V8AN		Needle			1.05	0.83	1.28	0.80					
8M-V8LK	8M-V8AK		PCTFE			1.29	0.91	1.90	0.76					
8Z-V8LR	8Z-V8AR	1/2" Compression CPI™	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.53	38.9	1.53	38.9	
8Z-V8LN	8Z-V8AN		Needle			1.05	0.83	1.28	0.80					
8Z-V8LK	8Z-V8AK		PCTFE			1.29	0.91	1.90	0.76					
M10A-V8LR	M10A-V8AR	10mm Compression A-LOK®	Blunt	0.281	7.1	1.13	0.79	1.52	0.66	1.42	36.1	1.42	36.1	
M10A-V8LN	M10A-V8AN		Needle			0.97	0.78	1.18	0.75					
M10A-V8LK	M10A-V8AK		PCTFE			1.18	0.80	1.69	0.66					
M10Z-V8LR	M10Z-V8AR	10mm Compression CPI™	Blunt	0.281	7.1	1.13	0.79	1.52	0.66	1.42	36.1	1.42	36.1	
M10Z-V8LN	M10Z-V8AN		Needle			0.97	0.78	1.18	0.75					
M10Z-V8LK	M10Z-V8AK		PCTFE			1.18	0.80	1.69	0.66					
M12A-V8LR	M12A-V8AR	12mm Compression A-LOK®	Blunt	0.281	7.1	1.13	0.79	1.52	0.66	1.51	38.4	1.51	38.4	
M12A-V8LN	M12A-V8AN		Needle			0.97	0.78	1.18	0.75					
M12A-V8LK	M12A-V8AK		PCTFE			1.18	0.80	1.69	0.66					
M12Z-V8LR	M12Z-V8AR	12mm Compression CPI™	Blunt	0.281	7.1	1.13	0.79	1.52	0.66	1.51	38.4	1.51	38.4	
M12Z-V8LN	M12Z-V8AN		Needle			0.97	0.78	1.18	0.75					
M12Z-V8LK	M12Z-V8AK		PCTFE			1.18	0.80	1.69	0.66					

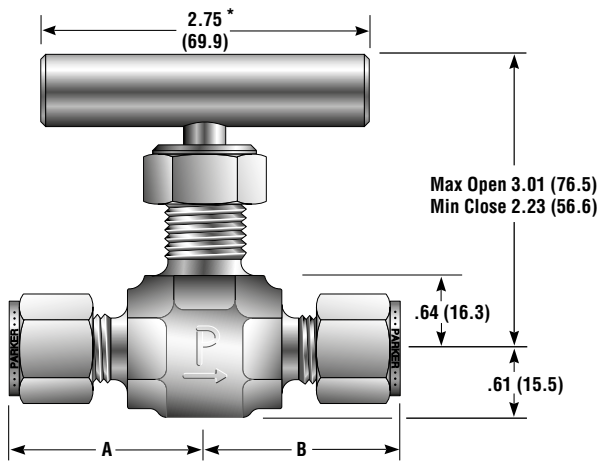
* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

V Series Needle Valves

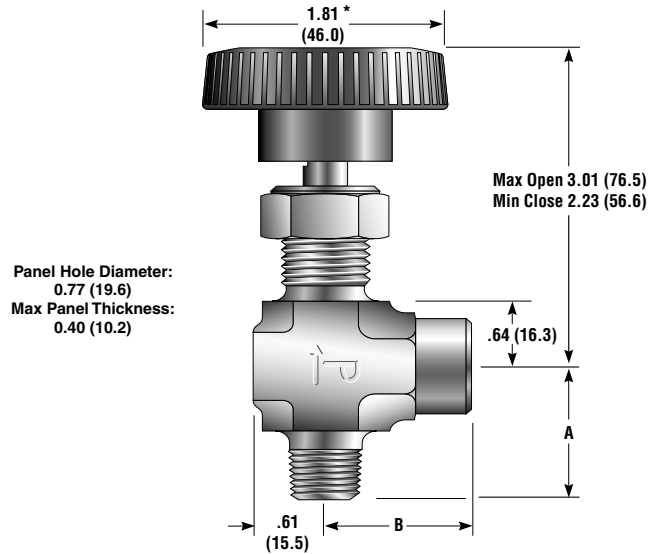
Catalog 4110-NV

V12 Series Dimensions / Flow Data



Model Shown: 10Z-V12LN-B

* Note: Handles for N or R Stem V12 Series Valves are a T-bar
() Denotes dimensions in millimeters



**Model Shown:
8M8F-V12AK-BN-SS**

Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions			
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†		B†	
Inline	Angle					Inch	mm	C _V	X _T *	C _V	X _T *	Inch	mm	Inch
8F-V12LR	8F-V12AR	1/2" Female NPT	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.38	35.1	1.38	35.1	
8F-V12LN	8F-V12AN		Needle			1.05	0.83	1.28	0.80					
8F-V12LK	8F-V12AK		PCTFE			1.29	0.91	1.90	0.76					
8W-V12LR	8W-V12AR	1/2" Tube Socket Weld	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.12	28.4	1.12	28.4	
8W-V12LN	8W-V12AN		Needle			1.05	0.83	1.28	0.80					
8W-V12LK	8W-V12AK		PCTFE			1.29	0.91	1.90	0.76					
10A-V12LR	10A-V12AR	5/8" Compression A-LOK®	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.52	38.6	1.52	38.6	
10A-V12LN	10A-V12AN		Needle			1.05	0.83	1.28	0.80					
10A-V12LK	10A-V12AK		PCTFE			1.29	0.91	1.90	0.76					
10Z-V12LR	10Z-V12AR	5/8" Compression CPI™	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.52	38.6	1.52	38.6	
10Z-V12LN	10Z-V12AN		Needle			1.05	0.83	1.28	0.80					
10Z-V12LK	10Z-V12AK		PCTFE			1.29	0.91	1.90	0.76					
12A-V12LR	12A-V12AR	3/4" Compression A-LOK®	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.52	38.6	1.52	38.6	
12A-V12LN	12A-V12AN		Needle			1.05	0.83	1.28	0.80					
12A-V12LK	12A-V12AK		PCTFE			1.29	0.91	1.90	0.76					
12Z-V12LR	12Z-V12AR	3/4" Compression CPI™	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.52	38.6	1.52	38.6	
12Z-V12LN	12Z-V12AN		Needle			1.05	0.83	1.28	0.80					
12Z-V12LK	12Z-V12AK		PCTFE			1.29	0.91	1.90	0.76					

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

V Series Needle Valves

How to Order

Dimensions in inches/millimeters are for reference only, subject to change.

The correct part number is easily derived from the following example and ordering chart. The six product characteristics required are coded as shown in the chart.

Example 1, below, describes an angle pattern V4 Series needle valve equipped with 1/4" CPI™ compression inlet and outlet ports, a PCTFE tipped stem, Nitrile seals, and stainless steel construction.

Example 2, below, describes an inline pattern V6 Series needle valve equipped with 1/4" male NPT inlet port, 1/4" female NPT outlet port, a needle stem type, PTFE stem seal, brass construction.

Example 1: 4Z-V4AK-BN-SS (shown in the part number blocks below)

Example 2: 4M4F-V6LN-B

4Z		V4		AK	BN		SS
Inlet Port*		Valve Series		Stem Type	Stem Seal		Body Material
Inlet Port*	Outlet Port*	Valve Series	Stem Type	Stem Seal	Body Material		
2A 2M 4A		V2	R Blunt (30°)	Blank PTFE	SS Stainless Steel		
2F 2Z 4Z			N Needle (2-1/2°)	BN Nitrile Rubber	S Steel		
2A 4A 6A	M6A	V4	K PCTFE	EPR Ethylene Propylene Rubber	M Monel® Alloy 400		
2F 4M 6Z	M6Z			V Fluorocarbon Rubber	B Brass		
2M 4W M3A	M8A						
2Z 4Z M3Z	M8Z						
4A 6A 8A	M10A	V6					
4F 6M 8Z	M10Z						
4M 6W M8A	M12A						
4Z 6Z M8Z	M12Z						
4F 6Z 8Z	M12A	V8					
6A 8A M10A	M12Z						
6F 8M M10Z							
8F 10A 12A		V12					
8W 10Z 12Z							

*If the inlet and outlet ports are the same, eliminate the outlet port designator.

How to Order Options

Colored Round Handles – Add the designator corresponding to the correct handle color as a suffix to the part number. Black is standard, **W** - white, **B** - blue, **G** - green, **R** - red, **Y** - yellow. **Example:** M10A-V6LK-SS-**G**

Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned and assembled for oxygen service in accordance with Parker Specification ES8003. **Example:** 4A-V4AN-EPR-SS-**C3**

V Series Needle Valves

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How to Order Components

Colored Round Nylon Handles with Handle Screw – Valve Series-Handle-Color. **Example: V4-HANDLE-BLUE**

Stainless Steel T-Bar Handles with Handle Screw – **Examples:** V2: V2-BAR-HANDLE-SS; V4: V4-BAR-HANDLE-SS; V6: V6-BAR-HANDLE-SS; V8: U12-BAR-HANDLE-SS; V12: U12-BAR-HANDLE-SS

Aluminum T-Bar Handles with Handle Screw – **Examples:** V2: Not available; V4: V4-BAR-HANDLE-AL; V6: V4-BAR-HANDLE-AL; V8: U12-BAR-HANDLE-AL; V12: U12-BAR-HANDLE-AL

Panel Mounting Nuts – **Examples:** V2: 2-Panel-Nut-SS; V4: 4-Panel-Nut-SS; V6: 6-Panel-Nut-SS; V8: 8-Panel-Nut-SS

How to Order Maintenance Kits

PTFE Packing Stem Kits – Consists of One Stem; One PTFE Packing; One Upper Packing Washer; One Lower Packing Washer; One Packing Nut; Maintenance Instructions.

Kit-Valve Series and StemType-Body Material. **Examples: KIT-V4K-SS; KIT-V6N-B**

Fluorocarbon Rubber Packing Stem Kits – Consists of One Stem; One Fluorocarbon Rubber O-ring Seal; One O-ring Back-up Gland; One O-ring Gland; One Lower Packing Washer; One Packing Nut; Maintenance Instructions.

Kit-Valve Series and Stem Type-V-Body Material. **Examples: KIT-V2R-V-B; KIT-V4K-V-SS**

Nitrile Rubber Packing Stem Kits – Consists of One Stem; One Nitrile Rubber O-ring Seal; One O-ring Back-up Gland; One O-ring Gland; One Lower Packing Washer; One Packing Nut; Maintenance Instructions.

Kit-Valve Series and Stem Type-BN-Body Material. **Examples: KIT-V2R-BN-B; KIT-V4K-BN-SS**

Ethylene Propylene Rubber Packing Stem Kits – Consists of One Stem; One Ethylene Propylene Rubber O-ring Seal; One O-ring Back-up Gland; One O-ring Gland; One Lower Packing Washer; One Packing Nut; Maintenance Instructions.

Kit-Valve Series and Stem Type-EPR-Body Material. **Examples: KIT-V2R-EPR-B; KIT-V4K-EPR-SS**

U Series Needle Valves

Catalog 4110-NV

Introduction

Parker U Series Union Bonnet Valves have been engineered for use at pressures up to 6,000 (414 bar) and temperatures as high as 1,200°F (649°C). A non-rotating lower stem helps to extend packing life by removing rotation from the packing area. Stem packing below the threads isolates the thread lubricant from the flow, ensuring adequate lubrication regardless of the media.

Features

- ▶ Union bonnet design ensures high integrity seal under severe service applications
- ▶ Packing below the power threads protects thread lubricants from media and isolates the lubricants from the media
- ▶ Dust seal in the packing nut protects stem threads from external contamination
- ▶ Stem swivel above the packing eliminates entrapment area and increases packing life
- ▶ Choice of Grafoil® or PTFE packing
- ▶ Choice of Regulating or Blunt stem types. Blunt stem type helps combat wire draw which may occur when two phase flow is present (i.e. steam service)
- ▶ 316 stainless steel construction
- ▶ Wide variety of US Customary and SI ports
- ▶ Panel mountable
- ▶ 100% factory tested

Materials of Construction

Item #	Description	Material
*1	Body	ASTM A 182, Type F316
2	Bonnet Nut	ASTM A 479, Type 316
*3	Bonnet	ASTM A 479, Type 316
4	Lower Stem	ASTM A 564, Type 630
5	Upper Stem	ASTM A 564, Type 630
6	Stem Guide	ASTM A 581, Type 416
7	Ball	440-C Stainless Steel
*8	Bonnet Seal**	Nickel-Chromium-Iron Alloy
9	Packing Nut	ASTM A 479, Type 316
*10	Packing***	Grafoil®
*11	Packing Washer	316 Stainless Steel
12	Handle****	Aluminum
13	Handle Screw	316 Stainless Steel
14	Dust Seal*****	Nylon 6/6
15	Locking Nut	Stainless Steel

* Wetted parts

* Lower Stem material is ASTM A 276 Type 316 with HT option

** Not required on U6 and U12 Series which have metal-to-metal seals

*** Optional PTFE Packing is available

**** Handle material is stainless steel with HT option

***** Dust Seal not available with HT option

Lubrication: Molybdenum disulfide with soft metallic fillers

Specifications

Pressure Rating:

6000 psig (414 bar) CWP

Temperature Rating:

PTFE packing:

-65°F to 450°F (-54°C to 232°C)

Grafoil® packing:

-65°F to 700°F (-54°C to 371°C)

Grafoil® packing with HT option:

-65°F to 1200°F (-54°C to 649°C)

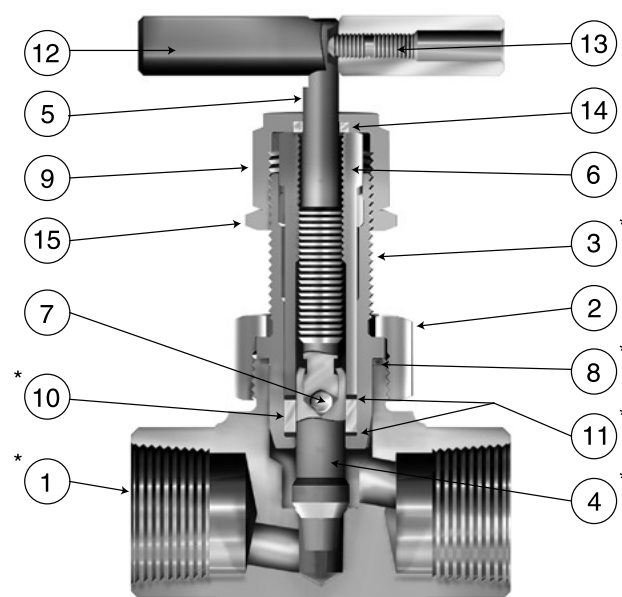
Orifice: .177" to .437" (4.5mm to 11.1mm)

Cv: .53 to 3.55

Pressure Rating and Tubing Selection:

For working pressures of A-LOK® and CPI™ tube connections, please see the Instrument Tubing Selection Guide (Bulletin 4200-TS), found in the Technical Section of the Parker Instrumentation Products Master Binder, or the Parker Instrument Tube Fitting Installation Manual (Bulletin 4200-B4).

For working pressures of valves with external or internal pipe threads, please see Catalog 4260, Instrumentation Pipe Fittings.

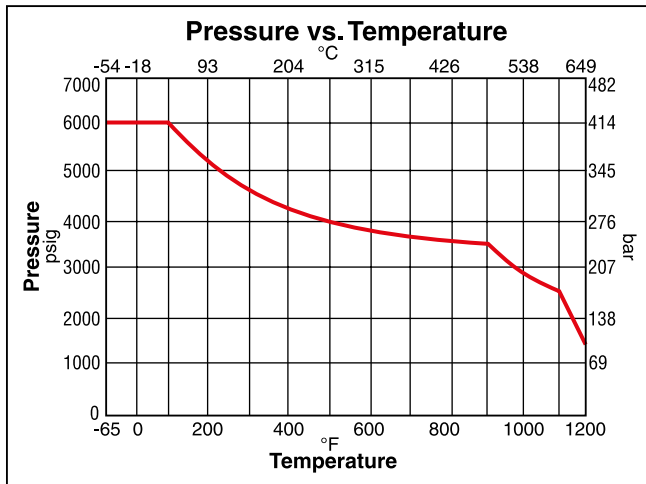


Model Shown: 16F-U16LR-G-SS

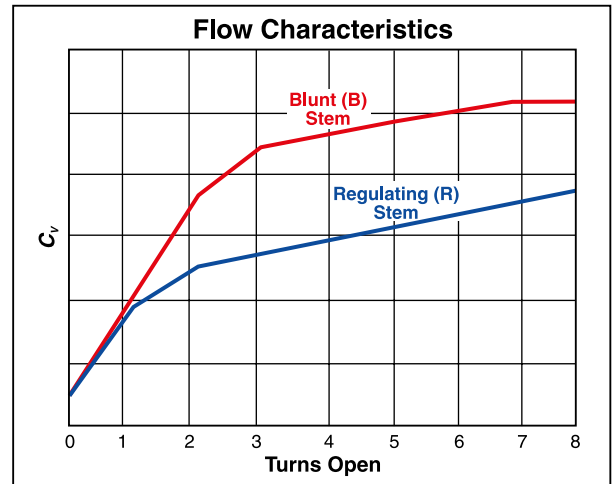
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U Series Needle Valves

Pressure vs. Temperature

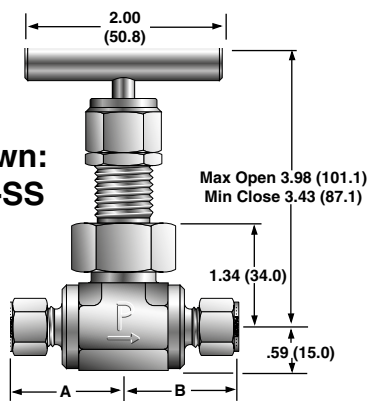


Flow Characteristics



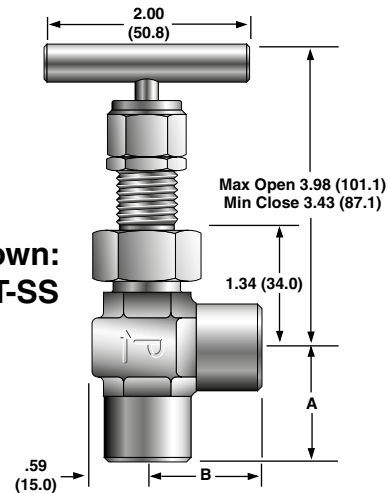
U6 Series Dimensions / Flow Data

Model Shown:
4Z-U6LB-T-SS



Panel Hole Diameter:
0.65 (16.5)
Max Panel Thickness:
0.42 (10.7)

Model Shown:
4F-U6AR-T-SS



() Denotes dimensions
in millimeters

Basic Part Number		End Connections		Stem Type	Flow Data				Dimensions			
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†	
					Inch	mm	Cv	X _T *	Cv	X _T *	Inch	mm
2F-U6LR	2F-U6AR	1/8" Female NPT		Regulating	0.188	4.8	0.58	0.83	0.77	0.70	1.00	25.4
2F-U6LB	2F-U6AB			Blunt			0.69	0.50	0.91	0.42		
4A-U6LR	4A-U6AR	1/4" Compression A-LOK®		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	35.1
4A-U6LB	4A-U6AB			Blunt			0.65	0.48	0.86	0.40		
4F-U6LR	4F-U6AR	1/4" Female NPT		Regulating	0.228	5.8	0.78	0.95	1.04	0.80	1.03	26.2
4F-U6LB	4F-U6AB			Blunt			0.82	0.59	1.09	0.50		
4M-U6LR	4M-U6AR	1/4" Male NPT		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.09	27.7
4M-U6LB	4M-U6AB			Blunt			0.65	0.48	0.86	0.40		
4W-U6LR	4W-U6AR	1/4" Socket Weld		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	.91	23.1
4W-U6LB	4W-U6AB			Blunt			0.65	0.48	0.86	0.40		
4Z-U6LR	4Z-U6AR	1/4" Compression CPI™		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	35.1
4Z-U6LB	4Z-U6AB			Blunt			0.65	0.48	0.86	0.40		
M6A-U6LR	M6A-U6AR	6mm Compression A-LOK®		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	35.1
M6A-U6LB	M6A-U6AB			Blunt			0.65	0.48	0.86	0.40		
M6Z-U6LR	M6Z-U6AR	6mm Compression CPI™		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	35.1
M6Z-U6LB	M6Z-U6AB			Blunt			0.65	0.48	0.86	0.40		
M8A-U6LR	M8A-U6AR	8mm Compression A-LOK®		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	35.1
M8A-U6LB	M8A-U6AB			Blunt			0.65	0.48	0.86	0.40		
M8Z-U6LR	M8Z-U6AR	8mm Compression CPI™		Regulating	0.177	4.5	0.53	0.80	0.70	0.67	1.38	35.1
M8Z-U6LB	M8Z-U6AB			Blunt			0.65	0.48	0.86	0.40		

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

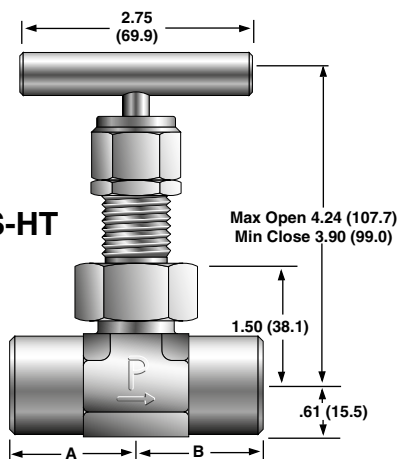
Dimensions in inches/millimeters are for reference only, subject to change.

U Series Needle Valves

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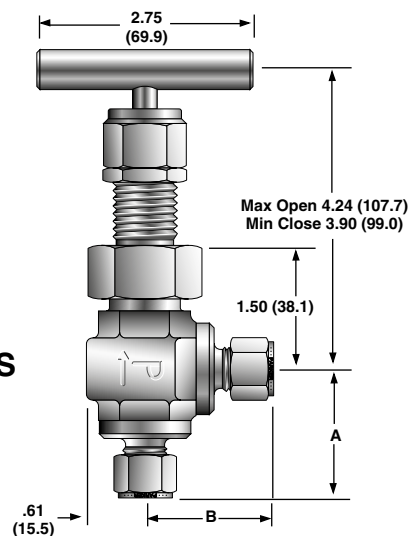
U12 Series Dimensions / Flow Data

Model Shown:
6F-U12LB-G-SS-HT



Panel Hole Diameter:
0.83 (21.1)
Max Panel Thickness:
0.61 (15.5)

Model Shown:
8A-U12AB-T-SS



() Denotes dimensions in millimeters

Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions			
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†		B†	
Inline	Angle				Inch	mm	C _V	X _T [*]	C _V	X _T [*]	Inch	mm	Inch	mm
4A-U12LR	4A-U12AR	1/4" Compression A-LOK®	Regulating	0.125	3.2	0.44	0.57	0.60	0.49	1.39	35.3	1.39	35.3	
4A-U12LB	4A-U12AB		Blunt			0.51	0.40	0.68	0.33					
4F-U12LR	4F-U12AR	1/4" Female NPT	Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.13	28.7	1.13	28.7	
4F-U12LB	4F-U12AB		Blunt			1.03	0.60	1.37	0.51					
4Z-U12LR	4Z-U12AR	1/4" Compression CPI™	Regulating	0.125	3.2	0.44	0.57	0.60	0.49	1.39	35.3	1.39	35.3	
4Z-U12LB	4Z-U12AB		Blunt			0.51	0.40	0.68	0.33					
6A-U12LR	6A-U12AR	3/8" Compression A-LOK®	Regulating	0.187	4.7	0.69	0.61	0.92	0.52	1.60	40.6	1.60	40.6	
6A-U12LB	6A-U12AB		Blunt			0.77	0.50	1.02	0.42					
6F-U12LR	6F-U12AR	3/8" Female NPT	Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.30	33.0	1.30	33.0	
6F-U12LB	6F-U12AB		Blunt			1.31	0.80	1.74	0.68					
6W-U12LR	6W-U12AR	3/8" Tube Socket Weld	Regulating	0.228	5.8	0.85	0.64	1.13	0.54	1.13	28.7	1.13	28.7	
6W-U12LB	6W-U12AB		Blunt			0.94	0.57	1.25	0.48					
6Z-U12LR	6Z-U12AR	3/8" Compression CPI™	Regulating	0.187	4.7	0.69	0.61	0.92	0.52	1.60	40.6	1.60	40.6	
6Z-U12LB	6Z-U12AB		Blunt			0.77	0.50	1.02	0.42					
8A-U12LR	8A-U12AR	1/2" Compression A-LOK®	Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.49	37.8	1.49	37.8	
8A-U12LB	8A-U12AB		Blunt			1.03	0.60	1.37	0.51					
8F-U12LR	8F-U12AR	1/2" Female NPT	Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.50	38.1	1.50	38.1	
8F-U12LB	8F-U12AB		Blunt			1.31	0.80	1.74	0.68					
8W-U12LR	8W-U12AR	1/2" Tube Socket Weld	Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.25	31.8	1.25	31.8	
8W-U12LB	8W-U12AB		Blunt			1.31	0.80	1.74	0.68					
8Z-U12LR	8Z-U12AR	1/2" Compression CPI™	Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.49	37.8	1.49	37.8	
8Z-U12LB	8Z-U12AB		Blunt			1.03	0.60	1.37	0.51					
M10A-U12LR	M10A-U12AR	10mm Compression A-LOK®	Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.53	38.9	1.53	38.9	
M10A-U12LB	M10A-U12AB		Blunt			1.03	0.60	1.37	0.51					
M10Z-U12LR	M10Z-U12AR	10mm Compression CPI™	Regulating	0.250	6.4	0.94	0.65	1.25	0.55	1.53	38.9	1.53	38.9	
M10Z-U12LB	M10Z-U12AB		Blunt			1.03	0.60	1.37	0.51					
M12A-U12LR	M12A-U12AR	12mm Compression A-LOK®	Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.70	43.2	1.70	43.2	
M12A-U12LB	M12A-U12AB		Blunt			1.31	0.80	1.74	0.68					
M12Z-U12LR	M12Z-U12AR	12mm Compression CPI™	Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.70	43.2	1.70	43.2	
M12Z-U12LB	M12Z-U12AB		Blunt			1.31	0.80	1.74	0.68					
M14A-U12LR	M14A-U12AR	14mm Compression A-LOK®	Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.70	43.2	1.70	43.2	
M14A-U12LB	M14A-U12AB		Blunt			1.31	0.80	1.74	0.68					
M14Z-U12LR	M14Z-U12AR	14mm Compression CPI™	Regulating	0.312	7.9	1.19	0.78	1.58	0.66	1.70	43.2	1.70	43.2	
M14Z-U12LB	M14Z-U12AB		Blunt			1.31	0.80	1.74	0.68					

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

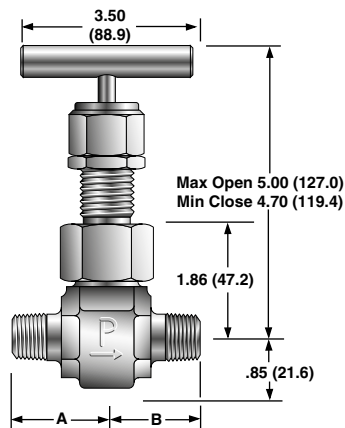
Dimensions in inches/millimeters are for reference only, subject to change.

U Series Needle Valves

U16 Series Dimensions / Flow Data

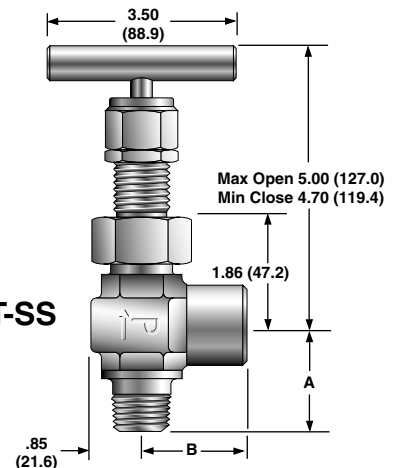
Model Shown: 16M-U16LR-G-SS

() Denotes dimensions
in millimeters



Panel Hole Diameter:
1.02 (25.9)
Max Panel Thickness:
0.62 (15.7)

Model Shown: 16M16F-U16AB-T-SS



Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions			
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†		B†	
Inline	Angle				Inch	mm	C _V	X _T *	C _V	X _T *	Inch	mm	Inch	mm
8A-U16LR	8A-U16AR	1/2" Compression A-LOK®	Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97	50.0	1.97	50.0	
8A-U16LB	8A-U16AB		Blunt			1.90	0.95	2.53	0.81					
8F-U16LR	8F-U16AR	1/2" Female NPT	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.56	39.6	1.56	39.6	
8F-U16LB	8F-U16AB		Blunt			2.67	0.80	3.55	0.68					
8M-U16LR	8M-U16AR	1/2" Male NPT	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.92	48.8	1.92	48.8	
8M-U16LB	8M-U16AB		Blunt			2.67	0.80	3.55	0.68					
8PSW-U16LR	8PSW-U16AR	1/2" Pipe Socket Weld	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.56	39.6	1.56	39.6	
8PSW-U16LB	8PSW-U16AB		Blunt			2.67	0.80	3.55	0.68					
8W-U16LR	8W-U16AR	1/2" Tube Socket Weld	Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.69	42.9	1.69	42.9	
8W-U16LB	8W-U16AB		Blunt			1.90	0.95	2.53	0.81					
8Z-U16LR	8Z-U16AR	1/2" Compression CPI™	Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97	50.0	1.97	50.0	
8Z-U16LB	8Z-U16AB		Blunt			1.90	0.95	2.53	0.81					
12A-U16LR	12A-U16AR	3/4" Compression A-LOK®	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97	50.0	1.97	50.0	
12A-U16LB	12A-U16AB		Blunt			2.67	0.80	3.55	0.68					
12F-U16LR	12F-U16AR	3/4" Female NPT	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.63	41.4	1.63	41.4	
12F-U16LB	12F-U16AB		Blunt			2.67	0.80	3.55	0.68					
12M-U16LR	12M-U16AR	3/4" Male NPT	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.63	41.4	1.63	41.4	
12M-U16LB	12M-U16AB		Blunt			2.67	0.80	3.55	0.68					
12PSW-U16LR	12PSW-U16AR	3/4" Pipe Socket Weld	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.56	39.6	1.56	39.6	
12PSW-U16LB	12PSW-U16AB		Blunt			2.67	0.80	3.55	0.68					
12W-U16LR	12W-U16AR	3/4" Tube Socket Weld	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.56	39.6	1.56	39.6	
12W-U16LB	12W-U16AB		Blunt			2.67	0.80	3.55	0.68					
12Z-U16LR	12Z-U16AR	3/4" Compression CPI™	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97	50.0	1.97	50.0	
12Z-U16LB	12Z-U16AB		Blunt			2.67	0.80	3.55	0.68					
16A-U16LR	16A-U16AR	1" Compression A-LOK®	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97	50.0	1.97	50.0	
16A-U16LB	16A-U16AB		Blunt			2.67	0.80	3.55	0.68					
16F-U16LR	16F-U16AR	1" Female NPT	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.81	46.0	1.81	46.0	
16F-U16LB	16F-U16AB		Blunt			2.67	0.80	3.55	0.68					
16M-U16LR	16M-U16AR	1" Male NPT	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.81	46.0	1.81	46.0	
16M-U16LB	16M-U16AB		Blunt			2.67	0.80	3.55	0.68					
16Z-U16LR	16Z-U16AR	1" Compression CPI™	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97	50.0	1.97	50.0	
16Z-U16LB	16Z-U16AB		Blunt			2.67	0.80	3.55	0.68					
M12A-U16LR	M12A-U16AR	12mm Compression A-LOK®	Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97	50.0	1.97	50.0	
M12A-U16LB	M12A-U16AB		Blunt			1.90	0.95	2.53	0.81					
M12Z-U16LR	M12Z-U16AR	12mm Compression CPI™	Regulating	0.394	10.0	1.59	0.73	2.11	0.62	1.97	50.0	1.97	50.0	
M12Z-U16LB	M12Z-U16AB		Blunt			1.90	0.95	2.53	0.81					
M20A-U16LR	M20A-U16AR	20mm Compression A-LOK®	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97	50.0	1.97	50.0	
M20A-U16LB	M20A-U16AB		Blunt			2.67	0.80	3.55	0.68					
M20Z-U16LR	M20Z-U16AR	20mm Compression CPI™	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97	50.0	1.97	50.0	
M20Z-U16LB	M20Z-U16AB		Blunt			2.67	0.80	3.55	0.68					
M25A-U16LR	M25A-U16AR	25mm Compression A-LOK®	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97	50.0	1.97	50.0	
M25A-U16LB	M25A-U16AB		Blunt			2.67	0.80	3.55	0.68					
M25Z-U16LR	M25Z-U16AR	25mm Compression CPI™	Regulating	0.437	11.1	1.82	0.72	2.42	0.61	1.97	50.0	1.97	50.0	
M25Z-U16LB	M25Z-U16AB		Blunt			2.67	0.80	3.55	0.68					

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

U Series Needle Valves

Catalog 4110-NV

How to Order

Dimensions in inches/millimeters are for reference only, subject to change.

The correct part number is easily derived from the following example and ordering chart. The six product characteristics required are coded as shown in the chart.

The example below describes an angle pattern U6 Series needle valve equipped with 1/4" CPI™ compression inlet and outlet ports, a regulating stem type, Grafoil® packing, stainless steel construction.

Example 1: 4Z-U6AR-G-SS

4Z					-	U6A		R		-	G		-	SS	
Inlet Port*		Outlet Port*				Valve Series		Stem Type			Packing			Body Material	
Inlet Port*		Outlet Port*				Valve Series		Stem Type			Packing			Body Material	
2F	4F	4W	M6A	M8		U6A	B	Blunt			T	PTFE		SS	Stainless Steel
4A	4M	4Z	M6Z	M8Z		U6L	R	Regulating			G	Grafoil®			
4A	6W	8W	12A	M12A		U12A									
4F	6Z	8Z	12Z	M12Z		U12L									
4Z	8A	10A	M10A	M14A											
6A	8F	10Z	M10Z	M14Z											
6F															
8A	8W	12PSW	16M	M20Z		U16A									
8F	8Z	12W	16Z	M25A		U16L									
8M	12F	12Z	M12Z	M25Z											
8PSW	12M	16F	M20A												

*If the inlet and outlet ports are the same, eliminate the outlet port designator.

How to Order Options

High Temperature – Add the suffix **-HT** to the end of the part number to receive valves with a 316 stainless steel lower stem and stainless steel handle. **Example:** 4M-U6LB-G-SS-HT

Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned and assembled for oxygen service in accordance with Parker Specification ES8003. **Example:** 8A-U12LR-T-SS-C3

Stainless Steel Bar Handle – To obtain valves with stainless steel bar handle, add the suffix **-ST** to the end of the part number. **Example:** 12Z-U16AB-T-SS-ST

ASME B31.1 Compliant Valves – Add the suffix **-QC311**. **Example:** 8F-U12LR-G-SS-QC311

How to Order Maintenance Kits

Stainless Steel T-Bar Handles with Handle Screw – **Examples:** U6: V4-BAR-HANDLE-SS; U12: U12-BAR-HANDLE-SS; U16: U16-BAR-HANDLE-SS

Aluminum T-Bar Handles with Handle Screw – **Examples:** U6: V4-BAR-HANDLE-AL; U12: U12-BAR-HANDLE-AL; U16: U16-BAR-HANDLE-AL

Panel Mounting Nuts – **Examples:** U6: U6-LOCKNUT; U12: U12-LOCKNUT; U16: U16-LOCKNUT

PTFE Packing Kits – Consists of One PTFE Packing; One Dust Seal; Maintenance Instructions. Kit-Valve Series-T. **Example:** KIT-U12-T

Grafoil® Packing Kits – Consists of One Grafoil® Packing; One Dust Seal; Maintenance Instructions. Kit-Valve Series-G. **Example:** KIT-U16-G

Grafoil® is a registered trademark GrafTech International Holdings, Inc.

VQ Series Toggle Valves

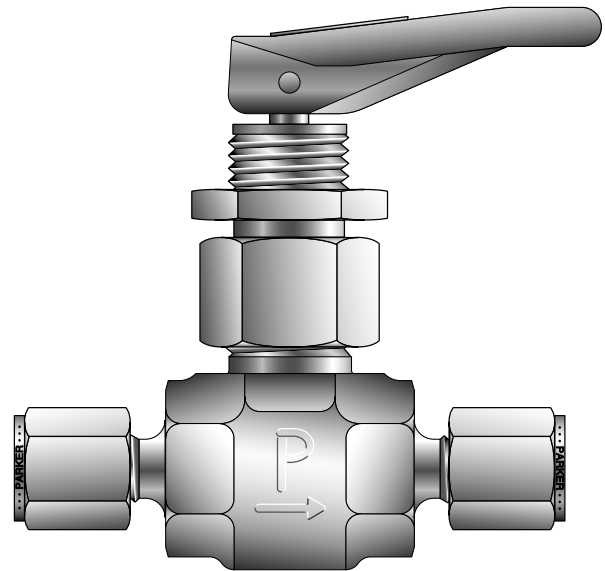
Catalog 4110-NV

Introduction

Parker VQ Series Toggle Valves are the right combination of performance and value for manual or pneumatic on-off control in moderate pressure and temperature applications. The manual version employs a toggle handle for quick action at pressures up to 300 psig (21 bar). Compact double acting, normally closed, and normally open pneumatically actuated versions of this valve are ideal for automatic control at pressures up to 600 psig (41 bar).

Manual Toggle Valve Features

- ▶ Quick acting
- ▶ Inline and angle patterns
- ▶ Available with CPI™, A-LOK®, male and female NPT end connections
- ▶ Panel mountable
- ▶ Color-coded handles
- ▶ 316 stainless steel and brass body construction
- ▶ Stem seal materials –
 - Fluorocarbon Rubber
 - Nitrile Rubber
 - Ethylene Propylene Rubber
 - Highly Fluorinated Fluorocarbon Rubber
- ▶ Optional handle positioners and anti-lock handles
- ▶ 100% factory tested

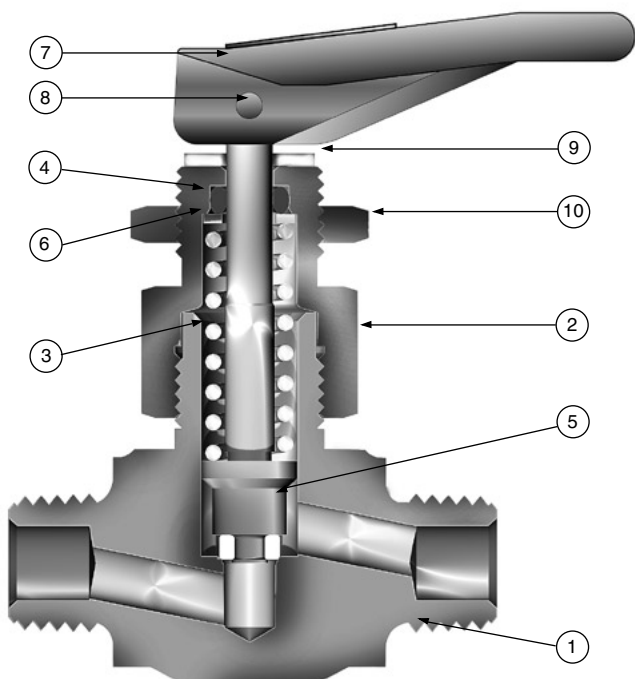


Model Shown:
4A-V4LQ-BP

Manual Toggle Valve Specifications

Pressure Rating at All Temperatures:
300 psig (21 bar) CWP

Temperature Ratings:
PTFE Stem Tip: -20°F to 200°F (-29°C to 93°C)
PCTFE Stem Tip: -65°F to 200°F (-54°C to 93°C)



Model Shown: 4M-V4LQ-SSP

Materials of Construction Manual Toggle Valve

Item #	Description	Stainless Steel	Brass
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700
2	Cap	ASTM A 479 Type 316	ASTM B 453 Alloy C34000
3	Spring	Stainless Steel	Stainless Steel
4	Stem Seal*	Fluorocarbon Rubber	Fluorocarbon Rubber
5	Stem	ASTM A 276 Type 316	ASTM A 276 Type 316
6	Stem Washer	Stainless Steel	Stainless Steel
7	Handle	Nylon 6/6	Nylon 6/6
8	Handle Pin	Stainless Steel	Stainless Steel
9	Handle Washer	Acetal	Acetal
10	Panel Nut	316 Stainless Steel	316 Stainless Steel

* Optional stem seal materials available - See How to Order
Lubrication: Perfluorinated polyether

VQ Series Toggle Valves

Actuated Valve Features

- ▶ Available in normally open, normally closed, and double acting models
- ▶ Inline and angle patterns
- ▶ Available with CPI™, A-LOK®, male and female NPT end connections
- ▶ Mounting bracket standard
- ▶ 316 stainless steel and brass body construction
- ▶ Stem seal materials -
 - Fluorocarbon Rubber
 - Nitrile Rubber
 - Ethylene Propylene Rubber
 - Highly Fluorinated Fluorocarbon Rubber
- ▶ 100% factory tested

Actuated Valve Specifications

Pressure Rating at All Temperatures:

Size VQ4 Normally Closed:

600 psig (41 bar) CWP

Size VQ6 Normally Closed:

500 psig (35 bar) CWP

Normally Open:

450 psig (31 bar) CWP

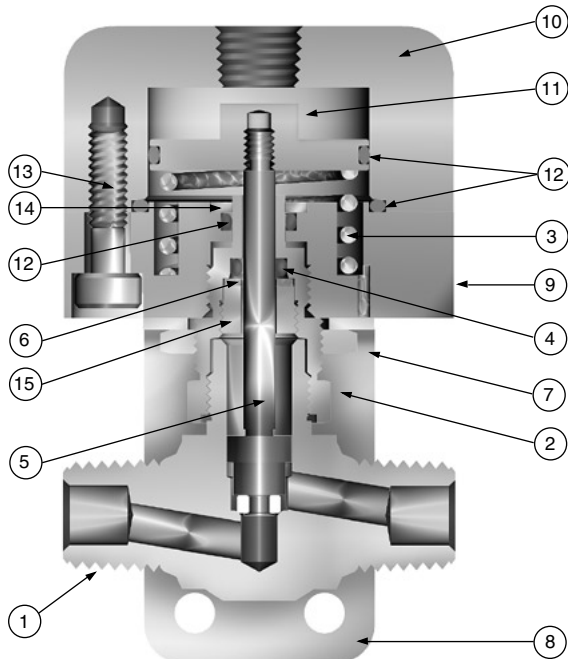
Double Acting:

450 psig (31 bar) CWP

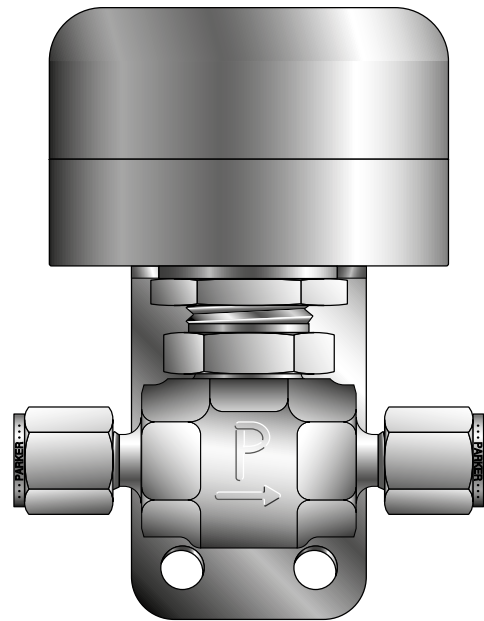
Temperature Ratings:

PTFE Stem Tip: -20°F to 200°F (-29°C to 93°C)

PCTFE Stem Tip: -65°F to 200°F (-54°C to 93°C)



Model Shown:
4M-V4LQ-11AO-SS



Model Shown:
M6A-V4LQ-BN-11AC-SS

Materials of Construction Actuated Valve

Item #	Description	Stainless Steel	Brass
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700
2	Cap	ASTM A 479 Type 316	ASTM B 453 Alloy C34000
3	Spring*	Stainless Steel	Stainless Steel
4	Stem Seal**	Fluorocarbon Rubber	Fluorocarbon Rubber
5	Stem	ASTM A 276 Type 316	ASTM A 276 Type 316
6	Stem Washer	Stainless Steel	Stainless Steel
7	Lock Nut	316 Stainless Steel	316 Stainless Steel
8	Mounting Bracket	Aluminum	Aluminum
9	Actuator Base	Aluminum	Aluminum
10	Actuator Cap	Aluminum	Aluminum
11	Piston	Aluminum	Aluminum
12	Actuator Seals	Fluorocarbon Rubber	Fluorocarbon Rubber
13	Screws	Stainless Steel	Stainless Steel
14	Actuator Bushing	Aluminum	Aluminum
15	Stem Bushing***	ASTM A 479 Type 316	ASTM A 479 Type 316

* Spring not used on Double Acting (11AD) models

** Optional stem seal materials available - See How to Order

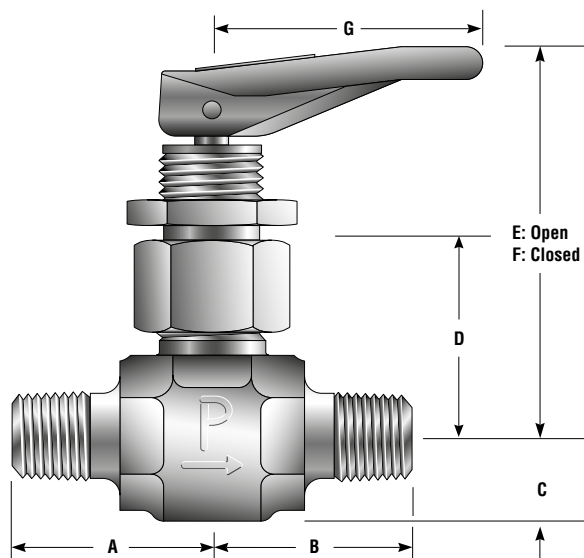
*** Stem Bushing not used on Normally Closed (11AC) models
Lubrication: Perfluorinated polyether

VQ

VQ Series Toggle Valves

Catalog 4110-NV

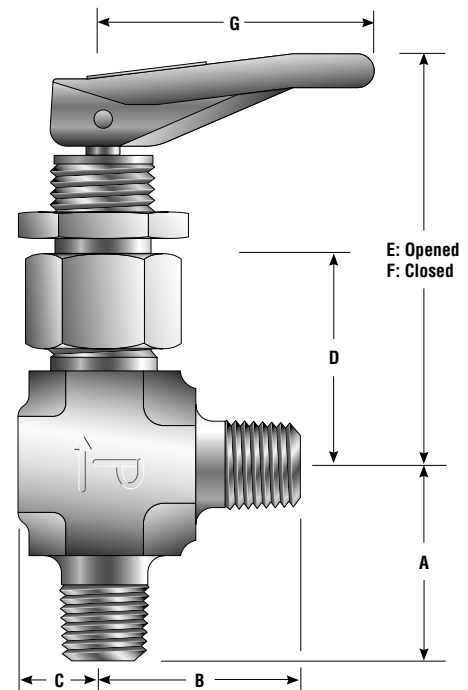
VQ4 Dimensions / Flow Data



Model Shown: 4M-V4LQ-SSP

() Denotes dimensions in millimeters

Panel Hole Diameter:
VQ4: 0.52 (13.2)
VQ6: 0.65 (16.5)
Max. Panel Thickness:
VQ4: 0.25 (6.4)
VQ6: 0.35 (8.9)



Model Shown: 4M-V4AQ-EPR-SSP

VQ4 Dimensions / Flow Data

Basic Part Number	End Connections		Flow Data				Dimensions													
	Inlet (Port 1)	Outlet (Port 2)	Orifice		C_V	X_T^*	A†		B†		C		D		E		F		G	
			Inch	mm			Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
2A-V4LQ	1/8" Compression A-LOK®		0.078	2.0	0.14	0.52	1.10	27.9	1.10	27.9	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
2A-V4AQ					0.15	0.50														
2F-V4LQ	1/8" Female NPT		0.176	4.5	0.36	0.71	0.81	20.6	0.81	20.6	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
2F-V4AQ					0.49	0.64														
2M-V4LQ	1/8" Male NPT		0.125	3.2	0.30	0.50	0.81	20.6	0.81	20.6	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
2M-V4AQ					0.35	0.55														
2Z-V4LQ	1/8" Compression CPI™		0.078	2.0	0.14	0.52	1.10	27.9	1.10	27.9	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
2Z-V4AQ					0.15	0.50														
4A-V4LQ	1/4" Compression A-LOK®		0.176	4.5	0.36	0.71	1.15	29.2	1.15	29.2	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
4A-V4AQ					0.49	0.64														
4M-V4LQ	1/4" Male NPT		0.176	4.5	0.36	0.71	0.94	23.9	0.94	23.9	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
4M-V4AQ					0.49	0.64														
4Z-V4LQ	1/4" Compression CPI™		0.176	4.5	0.36	0.71	1.15	29.2	1.15	29.2	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
4Z-V4AQ					0.49	0.64														
6A-V4LQ	3/8" Compression A-LOK®		0.176	4.5	0.36	0.71	1.17	29.7	1.17	29.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
6A-V4AQ					0.49	0.64														
6Z-V4LQ	3/8" Compression CPI™		0.176	4.5	0.36	0.71	1.17	29.7	1.17	29.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
6Z-V4AQ					0.49	0.64														
M6A-V4LQ	6mm Compres- sion A-LOK®		0.176	4.5	0.36	0.71	1.13	28.7	1.13	28.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
M6A-V4AQ					0.49	0.64														
M6Z-V4LQ	6mm Compres- sion CPI™		0.176	4.5	0.36	0.71	1.13	28.7	1.13	28.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
M6Z-V4AQ					0.49	0.64														
M8A-V4LQ	8mm Compres- sion A-LOK®		0.176	4.5	0.36	0.71	1.13	28.7	1.13	28.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
M8A-V4AQ					0.49	0.64														
M8Z-V4LQ	8mm Compres- sion CPI™		0.176	4.5	0.36	0.71	1.13	28.7	1.13	28.7	0.41	10.4	0.93	23.6	2.88	73.2	1.84	46.7	1.25	31.8
M8Z-V4AQ					0.49	0.64														

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

VQ Series Toggle Valves

VQ6 Dimensions / Flow Data

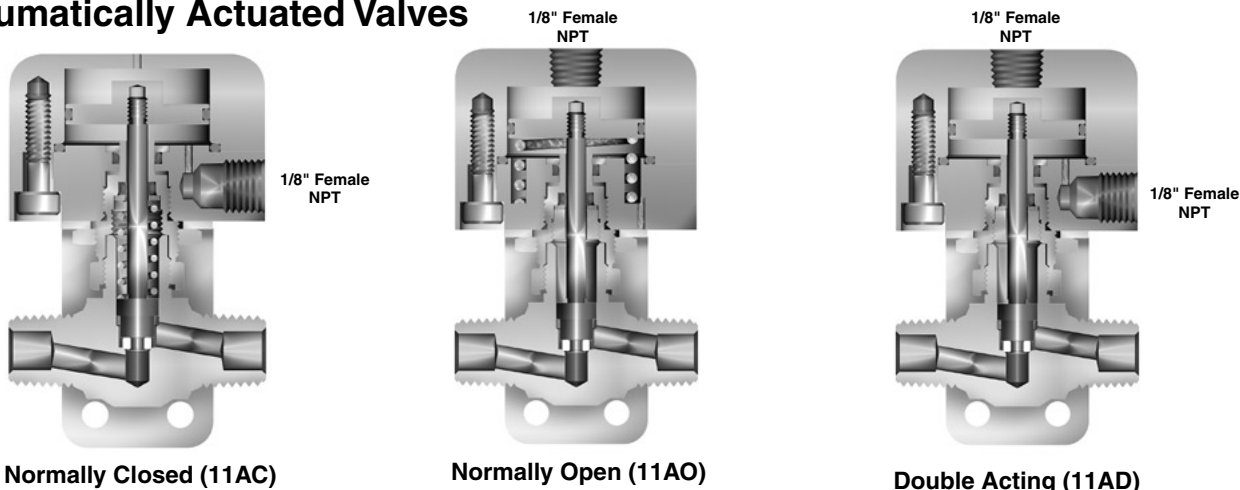
Basic Part Number	End Connections		Flow Data				Dimensions													
	Inlet (Port 1)	Outlet (Port 2)	Orifice		C_v	X_{T^*}	A†		B†		C		D		E		F		G	
			Inch	mm			Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm	Inch	mm
4F-V6LQ	1/4" Female NPT		0.250	6.4	0.83	0.70	1.00	25.4	1.00	25.4	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
4F-V6AQ					0.92	0.68														
6A-V6LQ	3/8" Compression A-LOK®		0.250	6.4	0.83	0.70	1.29	32.8	1.29	32.8	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
6A-V6AQ					0.92	0.68														
6Z-V6LQ	3/8" Compression CPI™		0.250	6.4	0.83	0.70	1.29	32.8	1.29	32.8	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
6Z-V6AQ					0.92	0.68														
8A-V6LQ	1/2" Compression A-LOK®		0.250	6.4	0.83	0.70	1.37	34.8	1.37	34.8	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
8A-V6AQ					0.92	0.68														
8Z-V6LQ	1/2" Compression CPI™		0.250	6.4	0.83	0.70	1.37	34.8	1.37	34.8	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
8Z-V6AQ					0.92	0.68														
M10A-V6LQ	10mm Compression A-LOK®		0.250	6.4	0.83	0.70	1.30	33.0	1.30	33.0	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
M10A-V6AQ					0.92	0.68														
M10Z-V6LQ	10mm Compression CPI™		0.250	6.4	0.83	0.70	1.30	33.0	1.30	33.0	0.53	13.5	1.07	27.2	3.45	87.6	2.13	54.1	1.60	40.6
M10Z-V6AQ					0.92	0.68														

* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = X_T$.

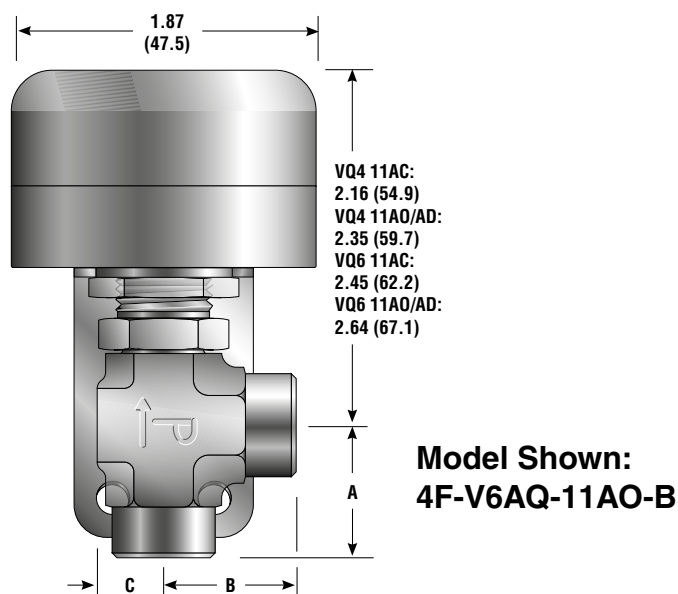
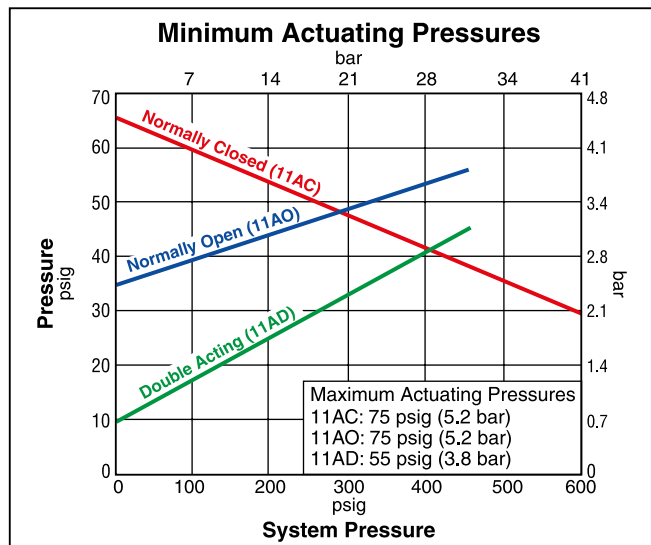
† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Dimensions in inches/millimeters are for reference only, subject to change.

Pneumatically Actuated Valves



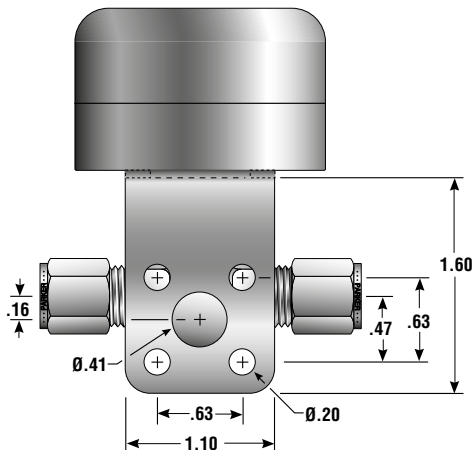
Minimum Actuating Pressures



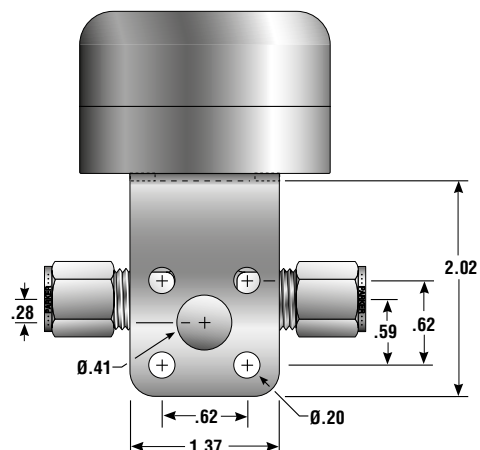
VQ Series Toggle Valves

Catalog 4110-NV

VQ4 Valve Mounting Bracket



VQ6 Valve Mounting Bracket



VQ

How to Order Manual Toggle Valves

Dimensions in inches/millimeters are for reference only, subject to change.

The correct part number is easily derived from the following example and ordering chart. The six product characteristics required are coded as shown in the chart.

The example below describes a VQ4 Series inline pattern toggle valve equipped with 1/4" CPI™ compression inlet and outlet ports, PCTFE stem tip, Nitrile rubber stem seal, and stainless steel construction with panel mounting nut.

Example 1: 4Z-V4LQK-BN-SSP

4Z				–	V4LQ		K		–	BN		–	SSP	
Inlet Port*		Outlet Port*			Valve Series		Stem Tip			Stem Seal			Body Material	
Inlet Port*		Outlet Port*			Valve Series		Stem Tip			Stem Seal			Body Material	
2A	4A	6A	M6A		V4LQ	Blank	PTFE	Blank		Fluorocarbon	SSP	Stainless		
2F	4M	6Z	M6Z	V4AQ	PCTFE		Rubber		Steel with					
2M	4Z		M8A				Nitrile Rubber		Panel Nut					
2Z			M8Z				Ethylene Propylene Rubber		BP	Brass with				
4F	6A	8A	M10A		V6LQ					Highly Fluorinated				
	6Z	8Z	M10Z		V6AQ					Fluorocarbon Rubber				

*If the inlet and outlet ports are the same, eliminate the outlet port designator.

VQ Series Toggle Valves

How to Order Actuated Valves

Dimensions in inches/millimeters are for reference only, subject to change.

The correct part number is easily derived from the following example and ordering chart. The seven product characteristics required are coded as shown in the chart.

The example below describes a VQ4 Series pneumatically actuated (normally closed) angle pattern valve equipped with a 1/4" Male NPT inlet port, a 1/4" A-LOK® compression outlet port, PTFE stem tip, fluorocarbon rubber stem seal, brass construction with mounting bracket.

Example 1: 4M4A-V4AQ-11AC-B

4M		4A		- V4AQ		- 11AC		- B	
Inlet Port*		Outlet Port*		Valve Series		Stem Seal		Actuator Type	
Inlet Port*		Outlet Port*		Valve Series		Stem Seal		Actuator Type	
2A	4A	6A	M6A	V4LQ	Blank	Blank	Fluorocarbon	11AC	Normally Closed
2F	4M	6Z	M6Z	V4AQ	K	BN	Nitrile Rubber	11AO	Normally Opened
2M	4Z		M8A			EPR	Ethylene Propylene Rubber	11AD	Double Acting
2Z			M8Z			KZ	Highly Fluorinated Fluorocarbon Rubber		
4F	6A	8A	M10A	V6LQ					
	6Z	8Z	M10Z	V6AQ					

*If the inlet and outlet ports are the same, eliminate the outlet port designator.

How to Order Options

Colored Nylon Handles – Add the designator corresponding to the correct handle color as a suffix to the part number. Black is standard, **W** - white, **B** - blue, **G** - green, **R** - red, **Y** - yellow. **Example:** M10A-V6LQ-SSP-**G**

Anti-locking Handles – Prevents the handle from locking in the open position. Add **-ALH** as a suffix to the part number. **Example:** 4M4F-V4LQ-BN-SSP-**ALH**

Handle Positioner – Aids in keeping the handle from rotating away from a desired position. To order, add the suffix **-Q4** or **-Q6** to the end of the part number. **Example:** 4M4F-V6LQ-EPR-SSP-**Q6**

Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned and assembled for oxygen service in accordance with Parker Specification ES8003. **Example:** 4A-V4AQ-EPR-SSP-**C3**

How to Order Maintenance Kits

Colored Nylon Handles with Handle Pin – Valve Series-Handle-Color. **Example:** V4Q-HANDLE-BLUE

Handle Positioners – Enables the user to position the handle in a desired location and prevents it from rotating. **Examples:** VQ4: VQ4-HANDLE-POSITIONER; VQ6: VQ6-HANDLE-POSITIONER

Rubber Seal and Stem Kits – Consists of one Stem, one Rubber O-ring Stem Seal; one Packing Washer, one Handle Pin, Maintenance Instructions, Kit-Valve Series and Stem Tip-Seal Material.

Examples: KIT-VQ4-BN; KIT-VQ6K-V