

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, 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 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)

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:

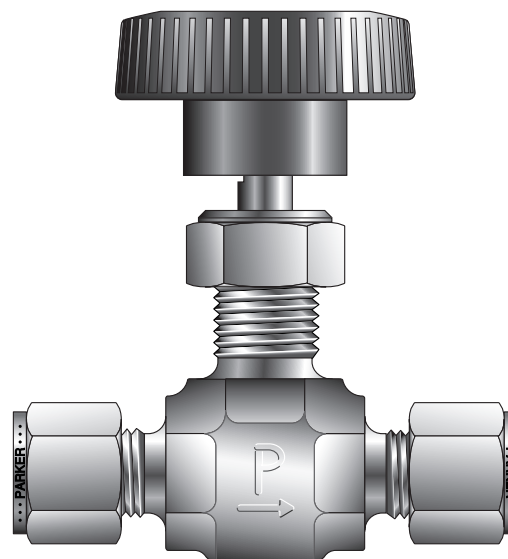
-15°F to 400°F (-26°C to 204°C)

Ethylene Propylene Rubber Stem Seal:

-70°F to 275°F (-57°C to 135°C)

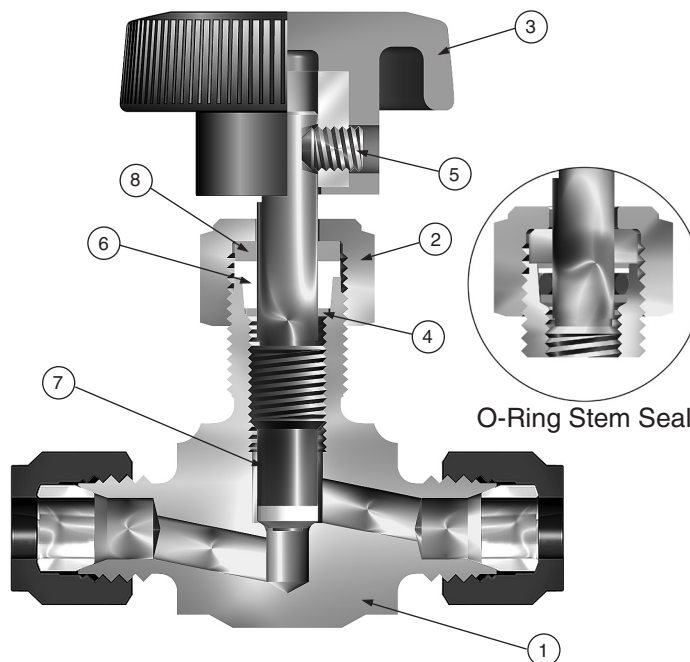
Note: When combining body, seat and seal materials, the most restrictive temperature rating becomes the limiting factor on temperature range.

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



Model Shown: 4Z-V4LK-SS

Materials of Construction (with PTFE Packing)

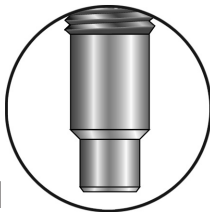


Model Shown: 4Z-V4LK-SS

Stem Types



K
PCTFE tipped



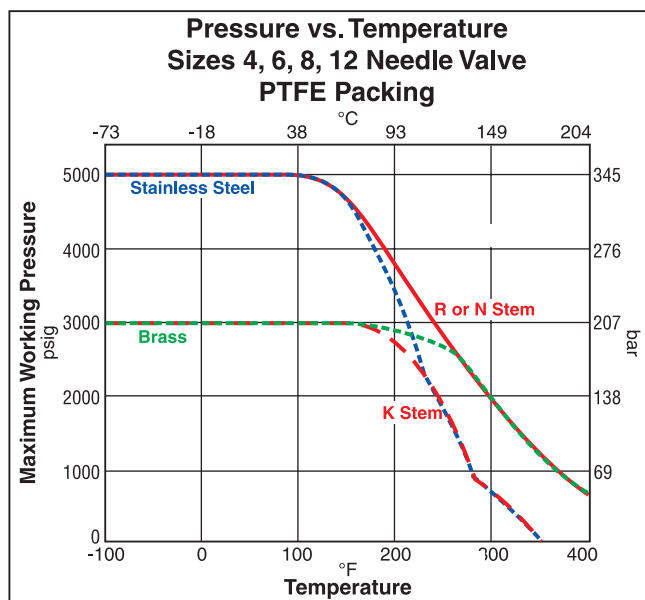
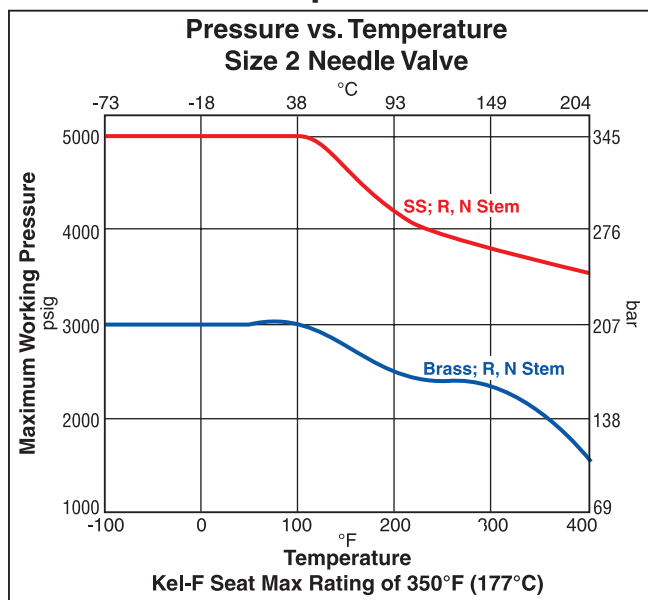
N
Needle (2-1/2°)



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	Monel® Alloy 400
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700	ASTM B 564 Alloy N04400
2	Packing Nut	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
4	Lower Packing Washer	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM B 164 Alloy N04400
5	Handle Screw	Stainless Steel	Stainless Steel	Stainless Steel
6	Packing**	PTFE	PTFE	PTFE
7	Stem (R and N Stem)	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 B 164 with PCTFE
8	Upper Packing Washer	Brass	Brass	Brass
9	Panel Nut***	316 Stainless Steel	316 Stainless Steel	316 Stainless Steel

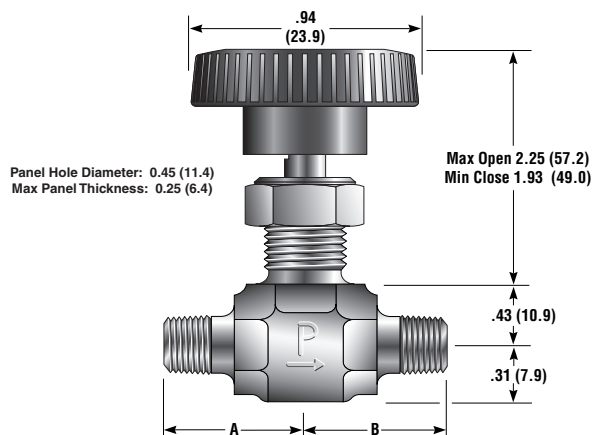
* Handles for V8 and V12 Series Valves with R and N Stems are aluminum T-bars.

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

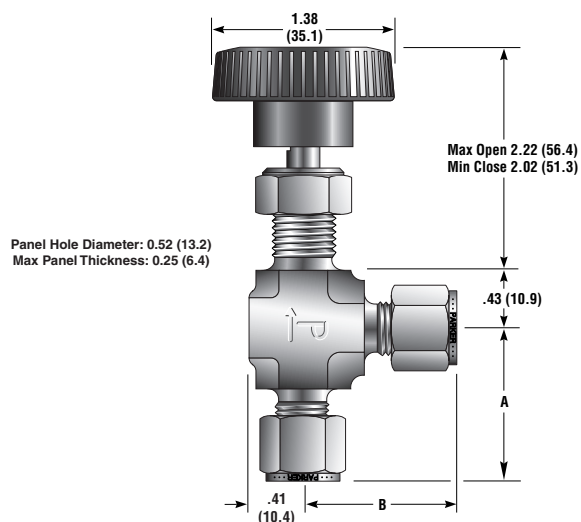
*** Panel Nut is nickel plated brass on V2 Series Valves. Panel Nuts must be ordered separately – See page 7.
Lubrication: Perfluorinated Polyether

Dimensions / Flow Data

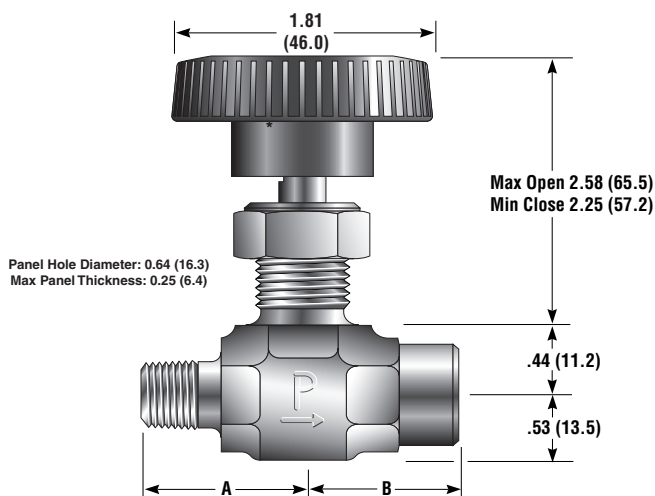
V



Model Shown: 2M-V2LN-SS



Model Shown: 4A-V4AR-BN-B



Model Shown: 6M4F-V6LR-V-SS

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

Dimensions / Flow Data

Basic Part Number		End Connections		Stem Type	Flow Data					Dimensions	
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle	A† and B†	
Inline	Angle				Inch	mm	C _V	X _T *	C _V	X _T *	Inch (mm)
2A-V2LR-SS	2A-V2AR-SS	1/8" Compression A-LOK®		Blunt	0.078	2.0	0.12	0.78	0.14	0.67	1.01 (25.7)
2A-V2LN-SS	2A-V2AN-SS			Needle			0.12	0.80	0.14	0.63	
2A-V2LK-SS	2A-V2AK-SS			PCTFE			0.13	0.83	0.14	0.63	
2F-V2LR-SS	2F-V2AR-SS	1/8" Female NPT		Blunt	0.093	2.4	0.13	0.61	0.16	0.49	0.94 (23.9)
2F-V2LN-SS	2F-V2AN-SS			Needle			0.12	0.66	0.18	0.39	
2F-V2LK-SS	2F-V2AK-SS			PCTFE			0.12	0.73	0.17	0.54	
2M-V2LR-SS	2M-V2AR-SS	1/8" Male NPT		Blunt	0.093	2.4	0.13	0.61	0.16	0.49	0.75 (19.1)
2M-V2LN-SS	2M-V2AN-SS			Needle			0.12	0.66	0.18	0.39	
2M-V2LK-SS	2M-V2AK-SS			PCTFE			0.12	0.73	0.17	0.54	
2Z-V2LR-SS	2Z-V2AR-SS	1/8" Compression CPI™		Blunt	0.078	2.0	0.12	0.78	0.14	0.67	1.01 (25.7)
2Z-V2LN-SS	2Z-V2AN-SS			Needle			0.12	0.80	0.14	0.63	
2Z-V2LK-SS	2Z-V2AK-SS			PCTFE			0.13	0.83	0.14	0.63	
2F-V4LR-SS	2F-V4AR-SS	1/8" Female NPT		Blunt	0.176	4.5	0.43	0.77	0.55	0.63	0.81 (20.6)
2F-V4LN-SS	2F-V4AN-SS			Needle			0.43	0.69	0.55	0.63	
2F-V4LK-SS	2F-V4AK-SS			PCTFE			0.45	0.55	0.58	0.68	
4A-V4LR-SS	4A-V4AR-SS	1/4" Compression A-LOK®		Blunt	0.176	4.5	0.43	0.85	0.55	0.63	1.15 (29.2)
4A-V4LN-SS	4A-V4AN-SS			Needle			0.43	0.77	0.55	0.63	
4A-V4LK-SS	4A-V4AK-SS			PCTFE			0.45	0.69	0.58	0.68	
4M-V4LR-SS	4M-V4AR-SS	1/4" Male NPT		Blunt	0.176	4.5	0.43	0.85	0.55	0.63	0.94 (23.9)
4M-V4LN-SS	4M-V4AN-SS			Needle			0.43	0.77	0.55	0.63	
4M-V4LK-SS	4M-V4AK-SS			PCTFE			0.45	0.69	0.58	0.68	
4Z-V4LR-SS	4Z-V4AR-SS	1/4" Compression CPI™		Blunt	0.176	4.5	0.43	0.85	0.55	0.63	1.15 (29.2)
4Z-V4LN-SS	4Z-V4AN-SS			Needle			0.43	0.77	0.55	0.63	
4Z-V4LK-SS	4Z-V4AK-SS			PCTFE			0.45	0.69	0.58	0.68	
M6A-V4LR-SS	M6A-V4AR-SS	6mm Compression A-LOK®		Blunt	0.156	4.0	0.37	0.78	0.48	0.60	1.15 (29.2)
M6A-V4LN-SS	M6A-V4AN-SS			Needle			0.37	0.72	0.48	0.58	
M6A-V4LK-SS	M6A-V4AK-SS			PCTFE			0.39	0.62	0.51	0.64	
M6Z-V4LR-SS	M6Z-V4AR-SS	6mm Compression CPI™		Blunt	0.156	4.0	0.37	0.78	0.48	0.60	1.15 (29.2)
M6Z-V4LN-SS	M6Z-V4AN-SS			Needle			0.37	0.72	0.48	0.58	
M6Z-V4LK-SS	M6Z-V4AK-SS			PCTFE			0.39	0.62	0.51	0.64	
4F-V6LR-SS	4F-V6AR-SS	1/4" Female NPT		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	0.94 (23.9)
4F-V6LN-SS	4F-V6AN-SS			Needle			0.55	0.61	0.92	0.62	
4F-V6LK-SS	4F-V6AK-SS			PCTFE			0.80	0.87	1.23	0.56	
6A-V6LR-SS	6A-V6AR-SS	3/8" Compression A-LOK®		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.29 (32.8)
6A-V6LN-SS	6A-V6AN-SS			Needle			0.55	0.61	0.92	0.62	
6A-V6LK-SS	6A-V6AK-SS			PCTFE			0.80	0.87	1.23	0.56	
6M-V6LR-SS	6M-V6AR-SS	3/8" Male NPT		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.03 (26.2)
6M-V6LN-SS	6M-V6AN-SS			Needle			0.55	0.61	0.92	0.62	
6M-V6LK-SS	6M-V6AK-SS			PCTFE			0.80	0.87	1.23	0.56	
6Z-V6LR-SS	6Z-V6AR-SS	3/8" Compression CPI™		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.29 (32.8)
6Z-V6LN-SS	6Z-V6AN-SS			Needle			0.55	0.61	0.92	0.62	
6Z-V6LK-SS	6Z-V6AK-SS			PCTFE			0.80	0.87	1.23	0.56	
M10A-V6LR-SS	M10A-V6AR-SS	10mm Compression A-LOK®		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.30 (33.0)
M10A-V6LN-SS	M10A-V6AN-SS			Needle			0.55	0.61	0.92	0.62	
M10A-V6LK-SS	M10A-V6AK-SS			PCTFE			0.80	0.87	1.23	0.56	
M10Z-V6LR-SS	M10Z-V6AR-SS	10mm Compression CPI™		Blunt	0.228	5.8	0.73	0.90	1.23	0.50	1.30 (33.0)
M10Z-V6LN-SS	M10Z-V6AN-SS			Needle			0.55	0.61	0.92	0.62	
M10Z-V6LK-SS	M10Z-V6AK-SS			PCTFE			0.80	0.87	1.23	0.56	

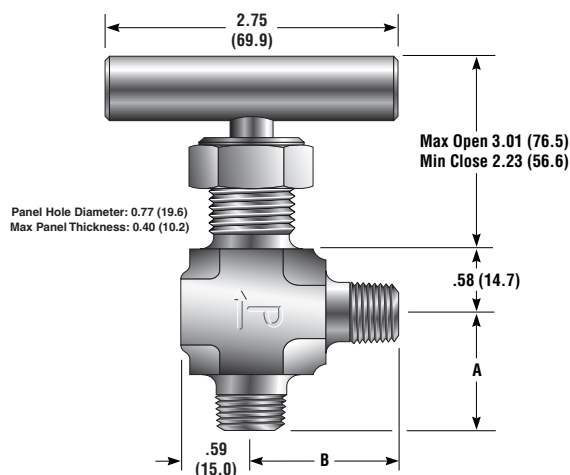
* Tested in accordance with ISA S75.02. Gas flow will be choked when $P_1 - P_2 / P_1 = x_T$.

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

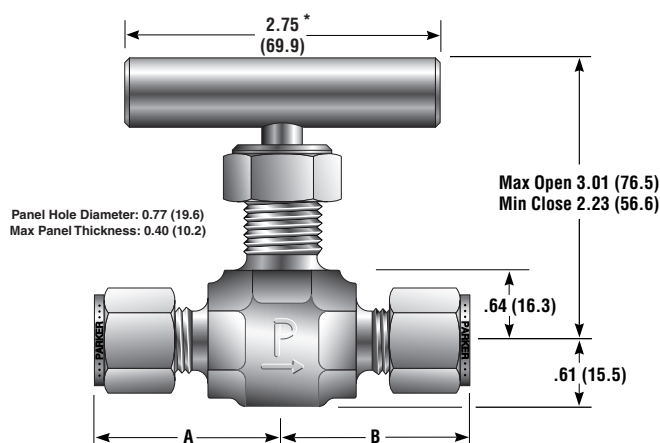
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V



Model Shown: 8M-V8AN-EPR-SS



Model Shown: 10Z-V12LN-B

Dimensions / Flow Data - continued

Basic Part Number		End Connections		Stem Type	Flow Data						Dimensions
		Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A† and B†
Inline	Angle				Inch	mm	C _V	X _T [*]	C _V	X _T [*]	Inch (mm)
6F-V8LR-SS	6F-V8AR-SS	3/8" Female NPT	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.34 (34.0)	
6F-V8LN-SS	6F-V8AN-SS		Needle			1.05	0.83	1.28	0.80		
6F-V8LK-SS	6F-V8AK-SS		PCTFE			1.29	0.91	1.90	0.76		
8A-V8LR-SS	8A-V8AR-SS	1/2" Compression A-LOK®	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.53 (38.9)	
8A-V8LN-SS	8A-V8AN-SS		Needle			1.05	0.83	1.28	0.80		
8A-V8LK-SS	8A-V8AK-SS		PCTFE			1.29	0.91	1.90	0.76		
8M-V8LR-SS	8M-V8AR-SS	1/2" Male NPT	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.34 (34.0)	
8M-V8LN-SS	8M-V8AN-SS		Needle			1.05	0.83	1.28	0.80		
8M-V8LK-SS	8M-V8AK-SS		PCTFE			1.29	0.91	1.90	0.76		
8Z-V8LR-SS	8Z-V8AR-SS	1/2" Compression CPI™	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.53 (38.9)	
8Z-V8LN-SS	8Z-V8AN-SS		Needle			1.05	0.83	1.28	0.80		
8Z-V8LK-SS	8Z-V8AK-SS		PCTFE			1.29	0.91	1.90	0.76		
M12A-V8LR-SS	M12A-V8AR-SS	12mm Compression A-LOK®	Blunt	0.281	7.1	1.13	0.79	1.52	0.66	1.51 (38.4)	
M12A-V8LN-SS	M12A-V8AN-SS		Needle			0.97	0.78	1.18	0.75		
M12A-V8LK-SS	M12A-V8AK-SS		PCTFE			1.18	0.80	1.69	0.66		
M12Z-V8LR-SS	M12Z-V8AR-SS	12mm Compression CPI™	Blunt	0.281	7.1	1.13	0.79	1.52	0.66	1.51 (38.4)	
M12Z-V8LN-SS	M12Z-V8AN-SS		Needle			0.97	0.78	1.18	0.75		
M12Z-V8LK-SS	M12Z-V8AK-SS		PCTFE			1.18	0.80	1.69	0.66		
8F-V12LR-SS	8F-V12AR-SS	1/2" Female NPT	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.38 (35.1)	
8F-V12LN-SS	8F-V12AN-SS		Needle			1.05	0.83	1.28	0.80		
8F-V12LK-SS	8F-V12AK-SS		PCTFE			1.29	0.91	1.90	0.76		
10A-V12LR-SS	10A-V12AR-SS	5/8" Compression A-LOK®	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.52 (38.6)	
10A-V12LN-SS	10A-V12AN-SS		Needle			1.05	0.83	1.28	0.80		
10A-V12LK-SS	10A-V12AK-SS		PCTFE			1.29	0.91	1.90	0.76		
10Z-V12LR-SS	10Z-V12AR-SS	5/8" Compression CPI™	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.52 (38.6)	
10Z-V12LN-SS	10Z-V12AN-SS		Needle			1.05	0.83	1.28	0.80		
10Z-V12LK-SS	10Z-V12AK-SS		PCTFE			1.29	0.91	1.90	0.76		
12A-V12LR-SS	12A-V12AR-SS	3/4" Compression A-LOK®	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.52 (38.6)	
12A-V12LN-SS	12A-V12AN-SS		Needle			1.05	0.83	1.28	0.80		
12A-V12LK-SS	12A-V12AK-SS		PCTFE			1.29	0.91	1.90	0.76		
12Z-V12LR-SS	12Z-V12AR-SS	3/4" Compression CPI™	Blunt	0.312	7.9	1.23	0.87	1.66	0.72	1.52 (38.6)	
12Z-V12LN-SS	12Z-V12AN-SS		Needle			1.05	0.83	1.28	0.80		
12Z-V12LK-SS	12Z-V12AK-SS		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.

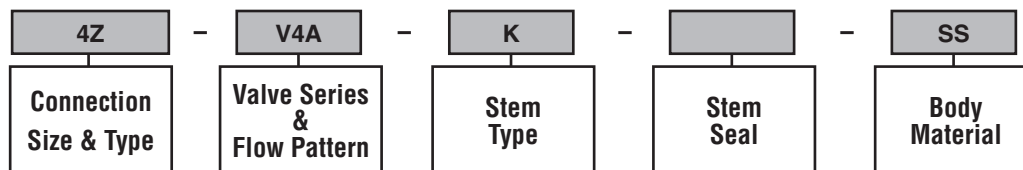
() Denotes dimensions in millimeters

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How to Order

The part number sequence identifies product characteristics as shown below

Example: 4Z-V4AK-SS describes an angle pattern V4 Series needle valve equipped with 1/4" CPI™ compression inlet and outlet ports, a PCTFE tipped stem, PTFE seals, and stainless steel construction.



How to Order Options

O-Ring Packing - Add the designator corresponding to the desired elastomer to the part number **BN** - Nitrile Rubber, **EPR** - Ethylene Propylene Rubber, or **V** - Fluorocarbon Rubber. **Example : 6A-V6LN-EPR-SS**

Available Body Materials - **B** (Brass) or - **M** (Monel® Alloy 400) **Example: 8Z-V8LN-B**

Oxygen Cleaning – Add the suffix **-C3** to the end of the part number to receive valves cleaned in accordance with ASTM G93 level C, class 500. This ASTM details cleaning methods and cleanliness levels for materials and equipment used in oxygen-enriched environments. **Example: 4A-V4AN-EPR-SS-C3**

How to Order Components

Colored Round Nylon Handles with Handle Screw – Valve Series-Handle-Color (**B** - blue, **G** - green, **R** - red)
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**