

Needle Valves

Catalog 4110-NV

June 2019

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



ENGINEERING YOUR SUCCESS.

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

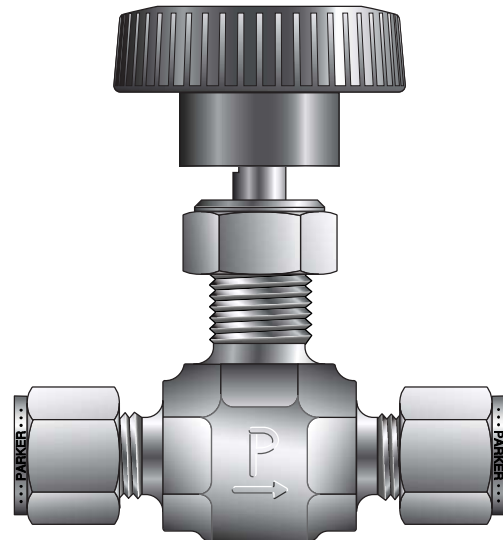
Port size: 1/8" to 3/4" (3mm to 12mm)

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)

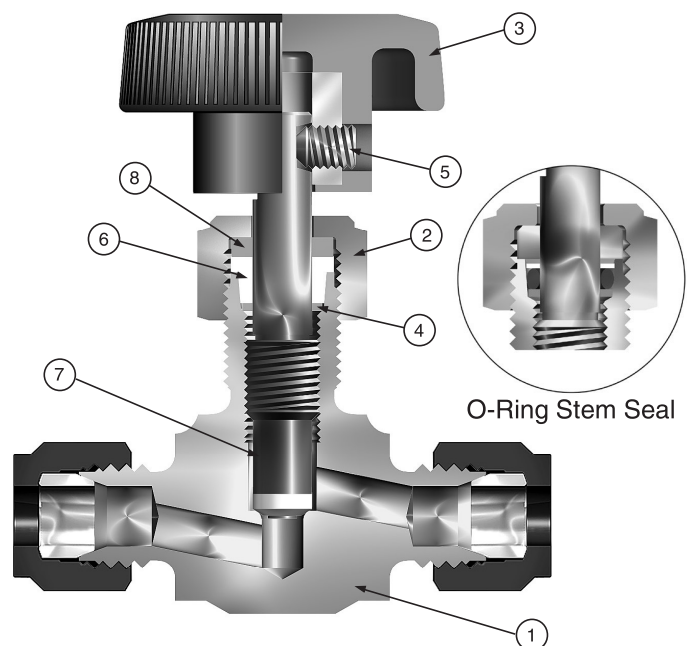
Note: When combining body, seat and seal materials, the most restrictive temperature rating becomes the limiting factor on temperature range.

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



Model Shown: 4Z-V4LK-SS

Materials of Construction (with PTFE Packing)

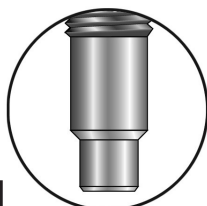


Model Shown: 4Z-V4LK-SS

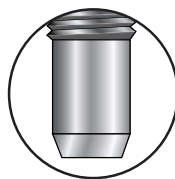
Stem Types



K
PCTFE tipped

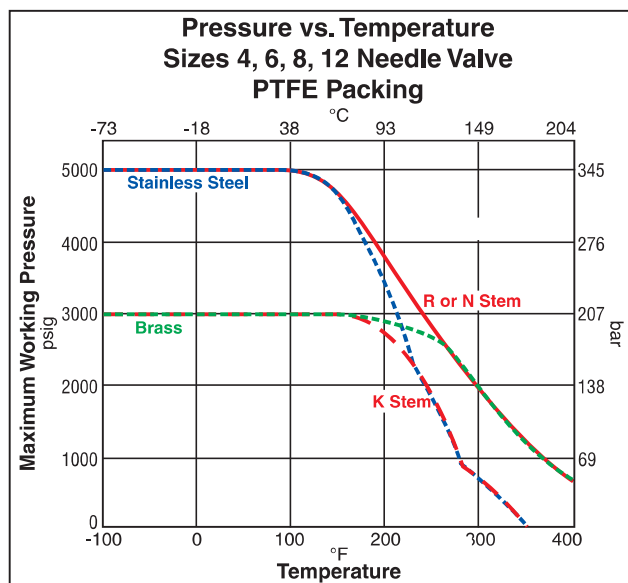
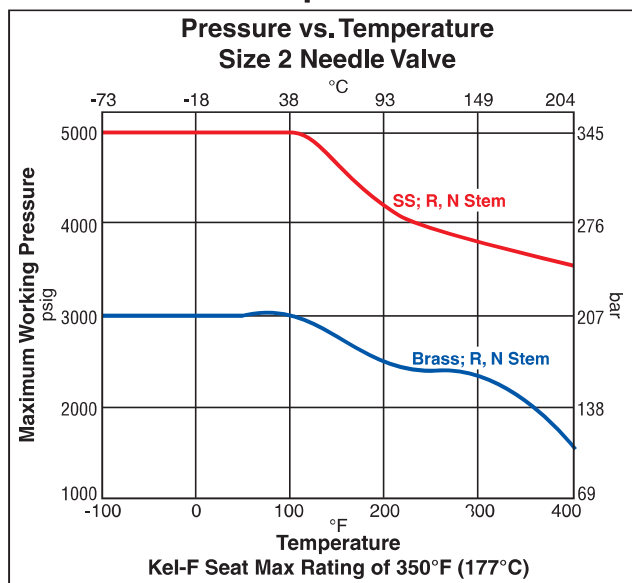


N
Needle (2-1/2°)



R
Blunt (30°)

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.

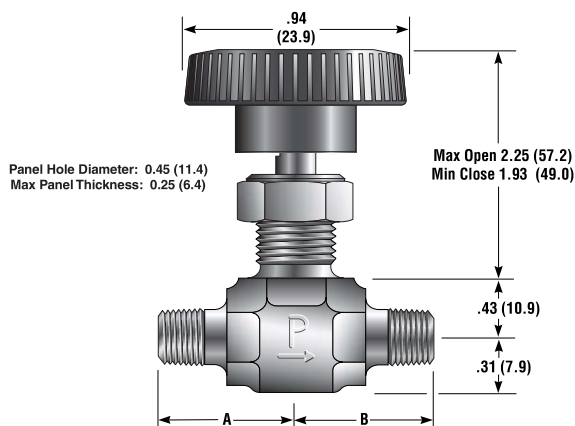
** Optional O-ring elastomeric stem seals are available – See How to Order.

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

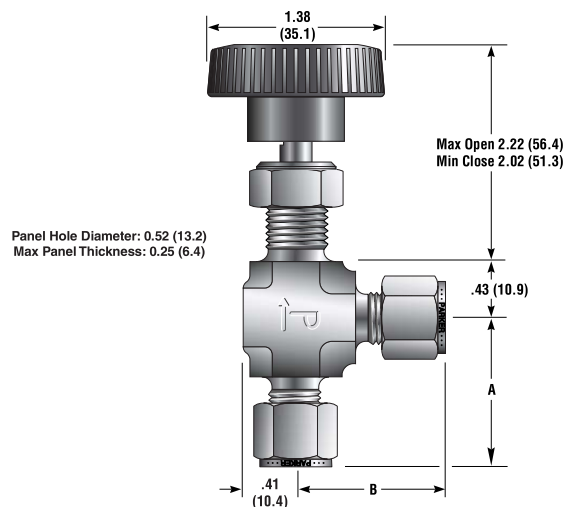
Lubrication: Perfluorinated Polyether

Dimensions / Flow Data

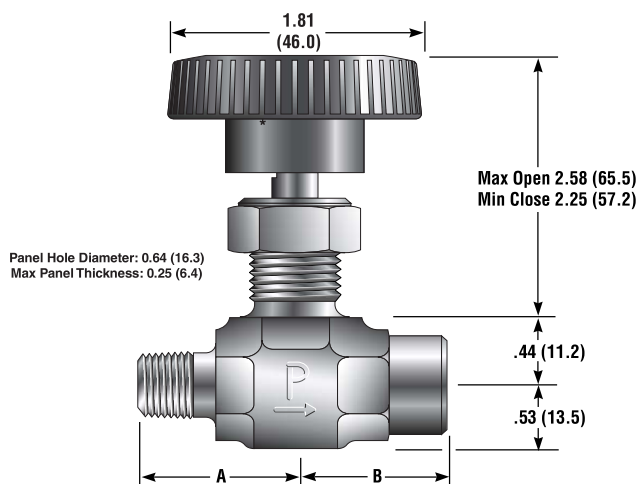
V



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.

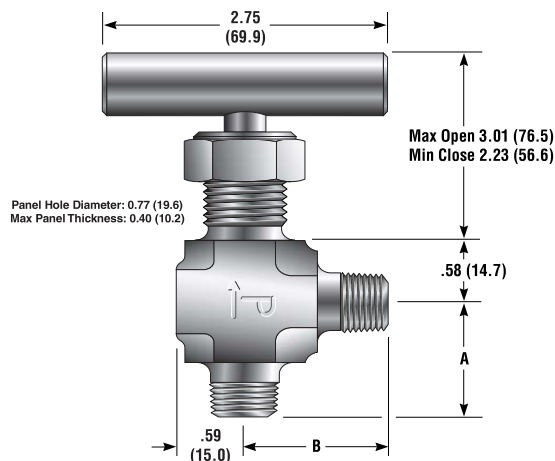
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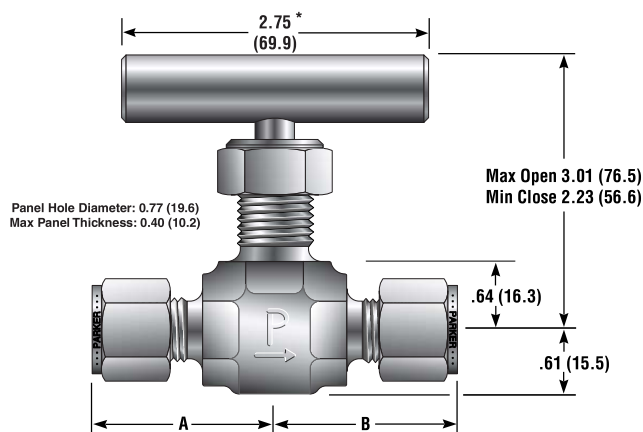
V Series Needle Valves

Catalog 4110-NV

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

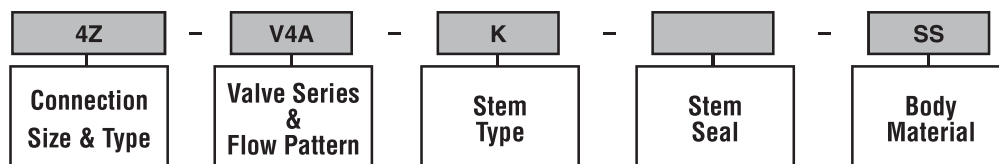
Dimensions in inches/millimeters are for reference only, subject to change.



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**

Parker Worldwide

AE – UAE, Dubai
Tel: +971 4 8875600
parker.me@parker.com

AR – Argentina, Buenos Aires
Tel: +54 3327 44 4129
falecom@parker.com

AT – Austria, Wiener Neustadt
Tel: +43 (0)2622 23501-0
parker.austria@parker.com

AT – Eastern Europe, Wiener Neustadt
Tel: +43 (0)2622 23501 970
parker.easteurope@parker.com

AU – Australia, Dandenong
Tel: +61 (0)3 9768 5555
customer.service.au@parker.com

AZ – Azerbaijan, Baku
Tel: +994 50 2233 458
parker.azerbaijan@parker.com

BE/LX – Belgium, Nivelles
Tel: +32 (0)67 280 900
parker.belgium@parker.com

BR – Brazil, Sao Jose dos Campos
Tel: +55 12 4009 3504
falecom@parker.com

BY – Belarus, Minsk
Tel: +375 17 209 9399
parker.belarus@parker.com

CA – Canada, Grimsby, Ontario
Tel: +1 905-945-2274
ipd_canada@parker.com

CH – Switzerland, Etoy
Tel: +41 (0) 21 821 02 30
parker.switzerland@parker.com

CL – Chile, Santiago
Tel: +56 (0) 2 2303 9640
falecom@parker.com

CN – China, Shanghai
Tel: +86 21 2899 5000
INGtechnical.china@parker.com

CZ – Czech Republic, Klecany
Tel: +420 284 083 111
parker.czechrepublic@parker.com

DE – Germany, Kaarst
Tel: +49 (0)2131 4016 0
parker.germany@parker.com

DK – Denmark, Ballerup
Tel: +45 43 56 04 00
parker.denmark@parker.com

ES – Spain, Madrid
Tel: +34 902 33 00 01
parker.spain@parker.com

FI – Finland, Vantaa
Tel: +358 (0)20 753 2500
parker.finland@parker.com

FR – France, Contamine s/Arve
Tel: +33 (0)4 50 25 80 25
parker.france@parker.com

GR – Greece, Athens
Tel: +30 210 933 6450
parker.greece@parker.com

HU – Hungary, Budapest
Tel: +36 1 220 4155
parker.hungary@parker.com

ID – Indonesia, Tangerang
Tel: +62 (0)21 7588 1906
parker.id@parker.com

IE – Ireland, Dublin
Tel: +353 (0)1 466 6370
parker.ireland@parker.com

IN – India, Mumbai
Tel: +91 22 6513 7081-85

IT – Italy, Corsico (MI)
Tel: +39 02 45 19 21
parker.italy@parker.com

JP – Japan, Tokyo
Tel: +(81) 3 6408 3900
infophj@parker.com

KR – South Korea, Seoul
Tel: +82 2 559 0400
parker.kr@parker.com

KZ – Kazakhstan, Almaty
Tel: +7 7272 505 800
parker.easteurope@parker.com

LV – Latvia, Riga
Tel: +371 6 745 2601
parker.latvia@parker.com

MX – Mexico, Toluca
Tel: +52 722 275 4200
contacto@parker.com

MY – Malaysia, Selangor
Tel: +603 784 90 800
parker.my@parker.com

NL – The Netherlands, Oldenzaal
Tel: +31 (0)541 585 000
parker.nl@parker.com

NO – Norway, Stavanger
Tel: +47 (0)51 826 300
parker.norway@parker.com

NZ – New Zealand, Mt Wellington
Tel: +64 9 574 1744

PL – Poland, Warsaw
Tel: +48 (0)22 573 24 00
parker.poland@parker.com

PT – Portugal, Leca da Palmeira
Tel: +351 22 999 7360
parker.portugal@parker.com

RO – Romania, Bucharest
Tel: +40 21 252 1382
parker.romania@parker.com

RU – Russia, Moscow
Tel: +7 495 645-2156
parker.russia@parker.com

SE – Sweden, Spånga
Tel: +46 (0)8 59 79 50 00
parker.sweden@parker.com

SG – Singapore,
Tel: +65 6887 6300
parkersg@parker.com

SK – Slovakia, Banská Bystrica
Tel: +421 484 162 252
parker.slovakia@parker.com

SL – Slovenia, Novo Mesto
Tel: +386 7 337 6650
parker.slovenia@parker.com

TH – Thailand, Bangkok
Tel: +66 2 186 7000
phthailand@parker.com

TR – Turkey, Istanbul
Tel: +90 216 4997081
parker.turkey@parker.com

TW – Taiwan, Taipei
Tel: +886 2 2298 8987
enquiry.taiwan@parker.com

UA – Ukraine, Kiev
Tel: +380 44 494 2731
parker.ukraine@parker.com

UK – United Kingdom, Warwick
Tel: +44 (0)1926 317878
parker.uk@parker.com

USA – IPD, Huntsville
Tel: +1 256 881 2040
ipdcct@parker.com

USA – Autoclave Engineers, Erie
Tel: +1 814 860 5700
ipdaect@parker.com

VN – Vietnam, Hochi Minh City
Tel: +84 (0)8337 546 51
parker_viet@parker.com

ZA – South Africa, Kempton Park
Tel: +27 (0)11 961 0700
parker.southafrica@parker.com

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Parker Hannifin Corporation
Instrumentation Products Division
2651 Alabama Highway 21 North
Jacksonville, AL 36265-9681
phone 256 435 2130
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www.parker.com/ipd

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