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V
U
VQ
NP6
SN6
PV
MPN
Cyl & Acc
End Conn

* Actual pressure rating will be determined by the valve configuration, body material, seat material and other factors.

⚠ WARNING – USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

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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

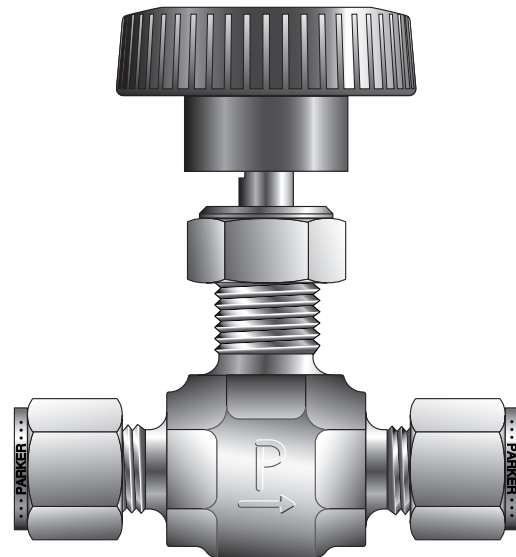
Port size: 1/8" to 3/4" (3mm to 12mm)

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)

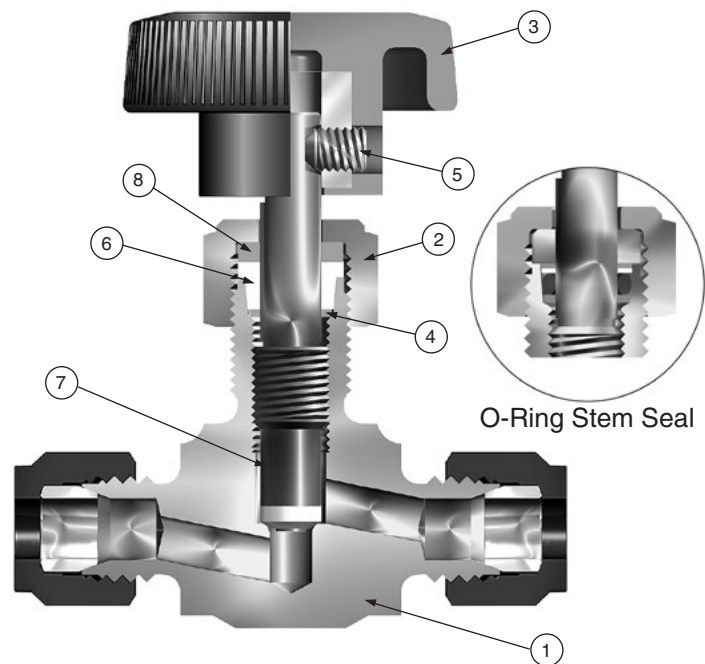
Note: When combining body, seat and seal materials, the most restrictive temperature rating becomes the limiting factor on temperature range.

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



Model Shown: 4Z-V4LK-SS

Materials of Construction (with PTFE Packing)

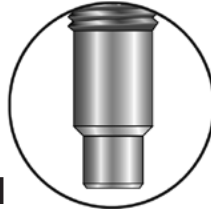


Model Shown: 4Z-V4LK-SS

Stem Types



K
PCTFE tipped

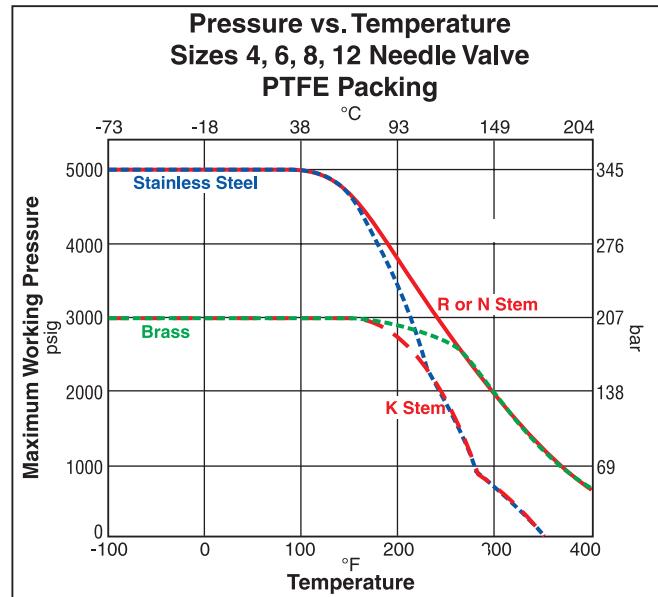
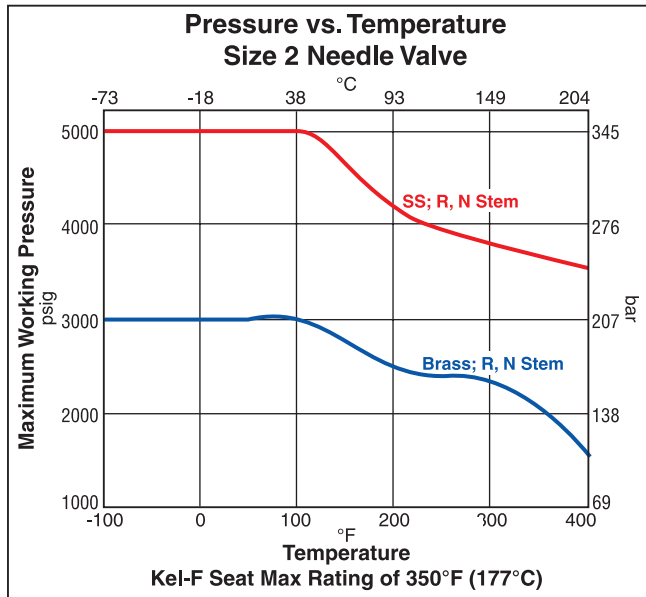


N
Needle (2-1/2°)



R
Blunt (30°)

Pressure vs. Temperature



Note: To determine MPa, multiply bar by 0.1

Materials of Construction (with PTFE Packing)

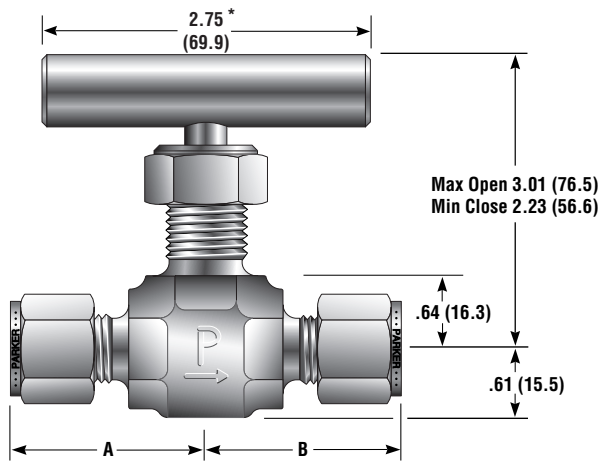
Item #	Part Description	Stainless Steel	Brass	Steel	Monel® Alloy 400
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700	ASTM A 576 Grade 1214	ASTM B 564 Alloy N04400
2	Packing Nut	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM A 479 Type 316
3	Handle*	Nylon 6/6 with SS insert	Nylon 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.

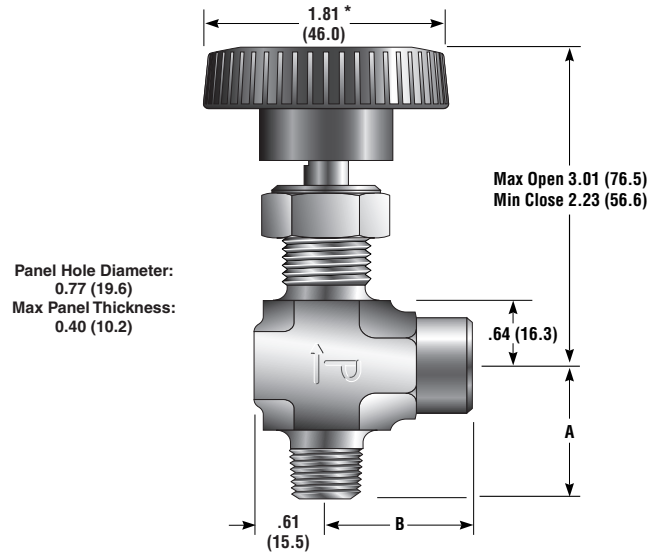
*** Panel Nut is nickel plated brass on V2 Series Valves. Panel Nuts must be ordered separately – See page 10.
Lubrication: Perfluorinated Polyether

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					
					Orifice		Inline		Angle		A†		B†	
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		Inch	mm	C_V	X_T^*	C_V	X_T^*	Inch	mm	Inch	mm
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.

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*		Outlet Port*		Valve Series	Stem Type	Stem Seal		Body Material			
Inlet Port*	Outlet Port*	Valve Series	Stem Type	Stem Seal		Body Material					
2A 2M 4A		V2A	R Blunt (30°)	Blank	PTFE	SS	Stainless Steel				
2F 2Z 4Z		V2L	N Needle (2-1/2°)	BN	Nitrile Rubber	S	Steel				
2A 4A 6A	M6A	V4A	K PCTFE	EPR	Ethylene Propylene Rubber	M	Monel® Alloy 400				
2F 4M 6Z	M6Z	V4L		V	Fluorocarbon Rubber	B	Brass				
2M 4W M3A	M8A										
2Z 4Z M3Z	M8Z										
4A 6A 8A	M10A	V6A									
4F 6M 8Z	M10Z	V6L									
4M 6W M8A	M12A										
4Z 6Z M8Z	M12Z										
4F 6Z 8Z	M12A	V8A									
6A 8A M10A	M12Z	V8L									
6F 8M M10Z											
8F 10A 12A		V12A									
8W 10Z 12Z		V12L									

*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**

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

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