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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.

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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<sub>v</sub>:** 0.12 to 1.90

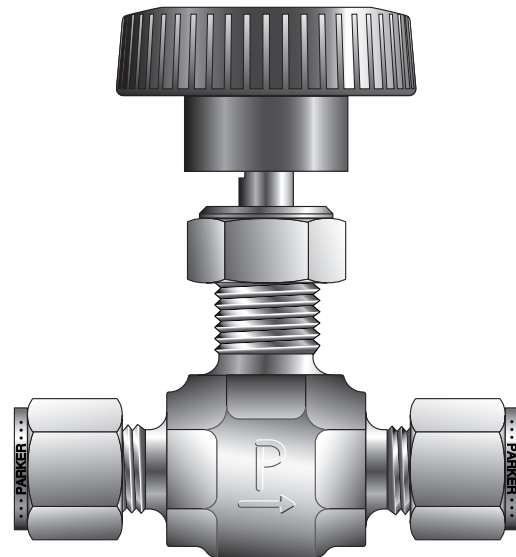
**Port size:** 1/8" to 3/4" (3mm to 12mm)

### 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)

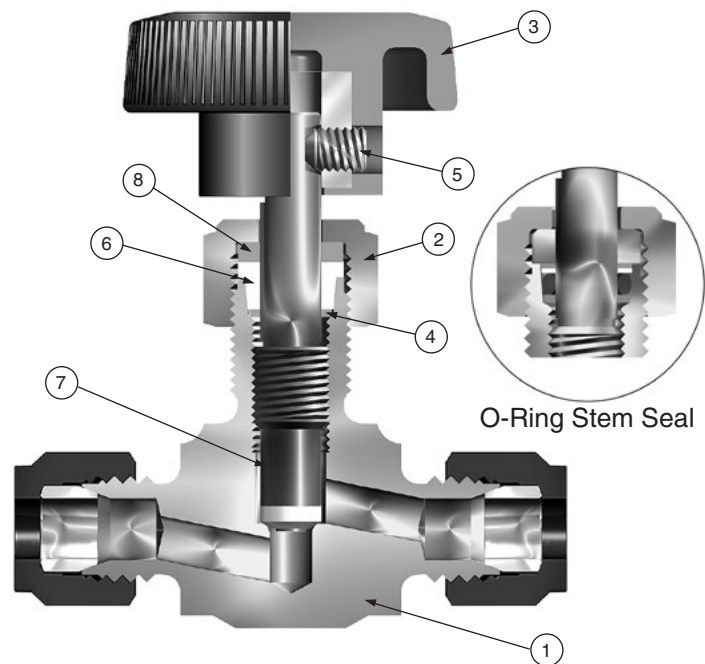
**Note:** When combining body, seat and seal materials, the most restrictive temperature rating becomes the limiting factor on temperature range.

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



Model Shown: 4Z-V4LK-SS

## Materials of Construction (with PTFE Packing)

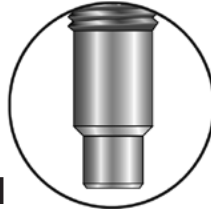


Model Shown: 4Z-V4LK-SS

## Stem Types



**K**  
PCTFE tipped

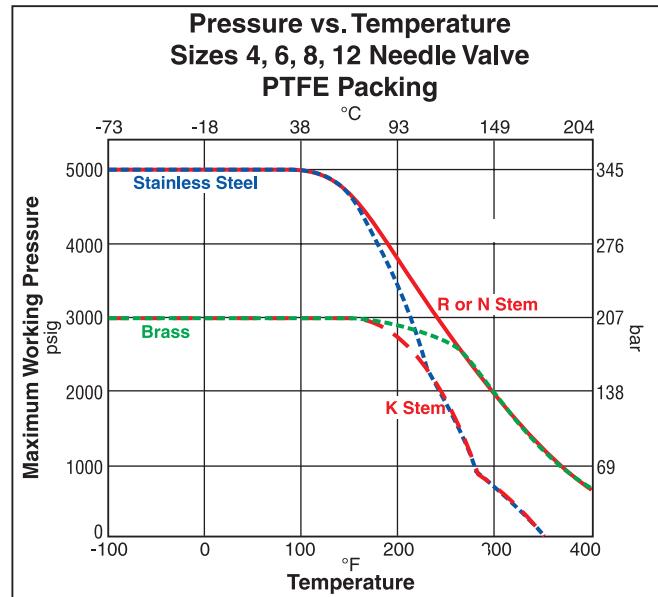
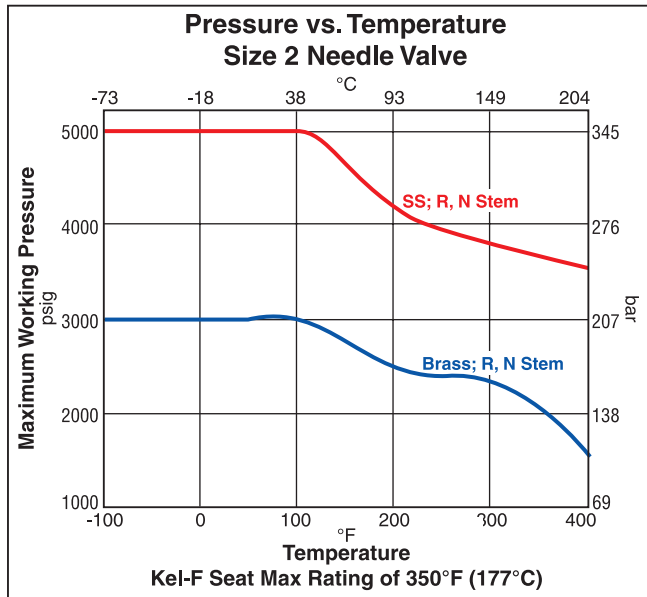


**N**  
Needle (2-1/2°)



**R**  
Blunt (30°)

## Pressure vs. Temperature



Note: To determine MPa, multiply bar by 0.1

## Materials of Construction (with PTFE Packing)

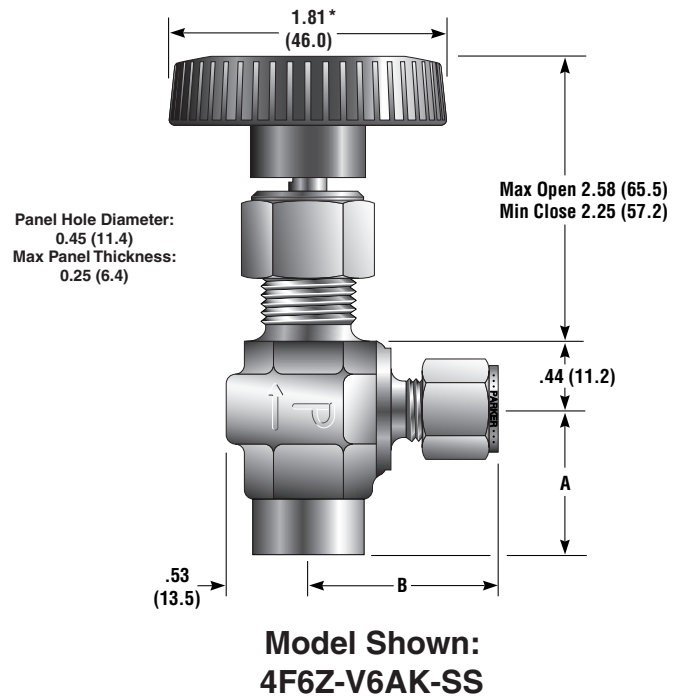
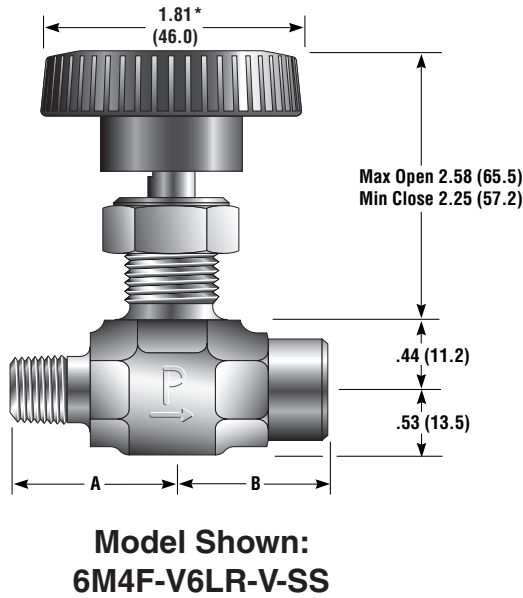
Item #	Part Description	Stainless Steel	Brass	Steel	Monel® Alloy 400
1	Body	ASTM A 182 Type F316	ASTM B 283 Alloy C37700	ASTM A 576 Grade 1214	ASTM B 564 Alloy N04400
2	Packing Nut	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM A 479 Type 316	ASTM A 479 Type 316
3	Handle*	Nylon 6/6 with SS insert	Nylon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

## V6 Series Dimensions / Flow Data



\* 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					
					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
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.

## 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**