

## 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

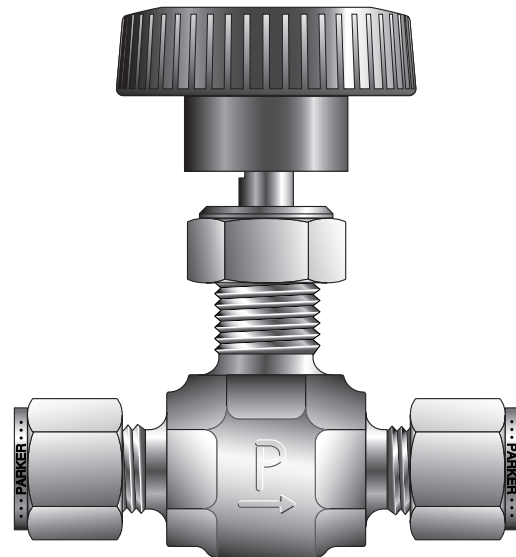
**Port size:** 1/8" to 3/4" (3mm to 12mm)

### 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)

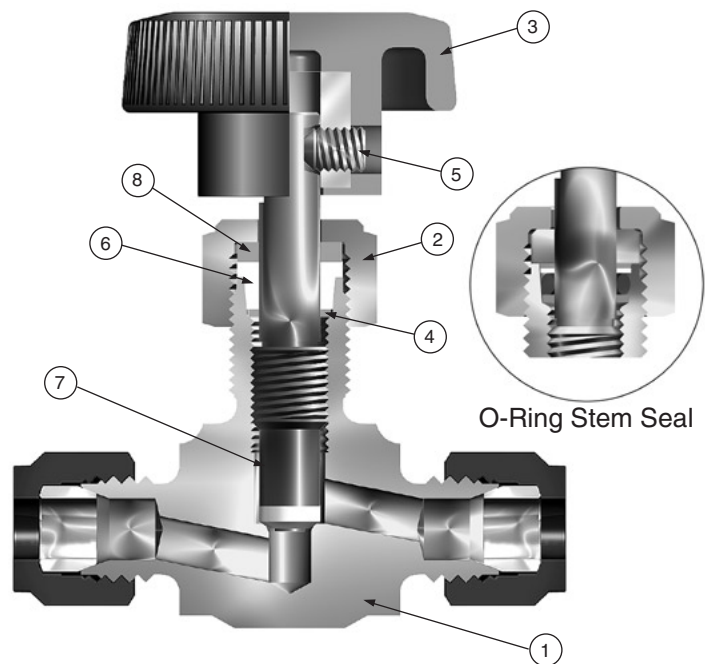
**Note:** When combining body, seat and seal materials, the most restrictive temperature rating becomes the limiting factor on temperature range.

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



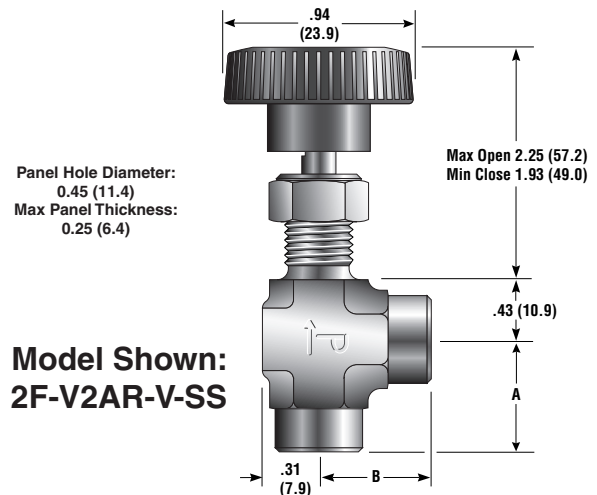
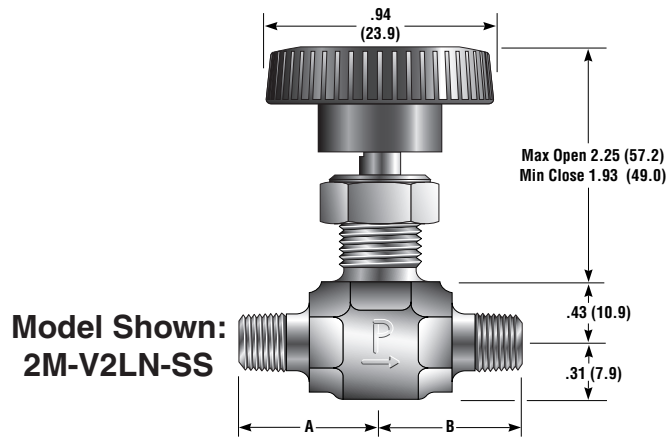
Model Shown: 4Z-V4LK-SS

## Materials of Construction (with PTFE Packing)



Model Shown: 4Z-V4LK-SS

## V2 Series Dimensions / Flow Data



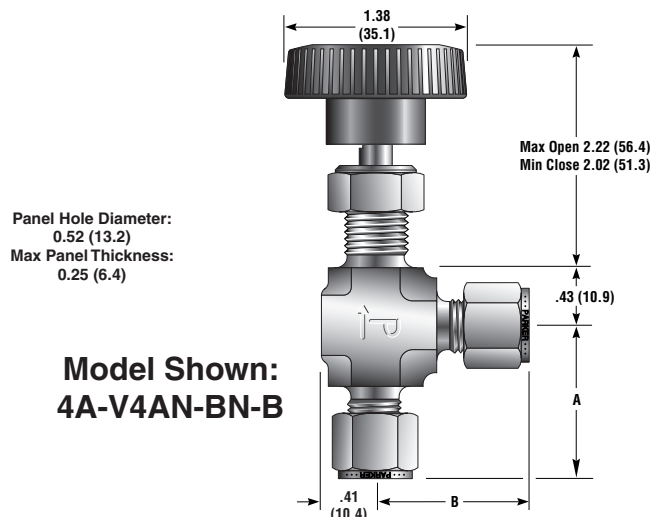
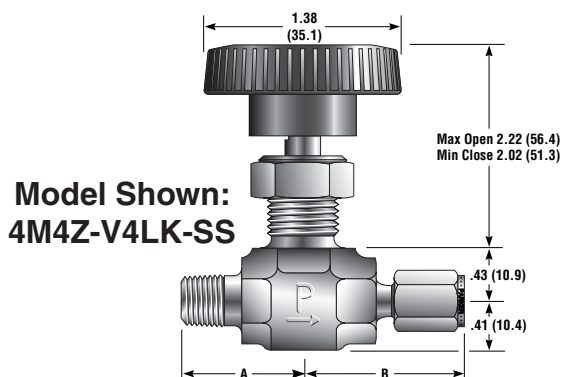
Basic Part Number		End Connections		Stem Type	Flow Data				Dimensions					
Inline	Angle	Inlet (Port 1)	Outlet (Port 2)		Orifice		Inline		Angle		A†		B†	
					Inch	mm	$C_V$	$X_T^*$	$C_V$	$X_T^*$	Inch	mm	Inch	mm
2A-V2LR	2A-V2AR	1/8" Compression A-LOK®		Blunt	0.078	2.0	0.12	0.78	0.14	0.67	1.01	25.7	1.01	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

## 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		V4	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		K	PCTFE			EPR	Ethylene Propylene Rubber		M	Monel® Alloy 400														
2F	4M	6Z	M6Z	V6				V	Fluorocarbon Rubber		B	Brass															
2M	4W	M3A	M8A						V8																		
2Z	4Z	M3Z	M8Z																V12								
4A	6A	8A	M10A																								
4F	6M	8Z	M10Z	8W	10Z	12Z																					
4M	6W	M8A	M12A																								
4Z	6Z	M8Z	M12Z																								
6A	8A	M10A	M12Z																								
6F	8M	M10Z																									
8F	10A	12A																									
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**



## 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**

## 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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