

# Needle Valves

## High Pressure

**30SC, 43SC, 30VM, 40VM, 60VM,  
100VM & 150V Series**

*Pressures to 150,000 psi (10342 bar)*

Since 1945, Autoclave Engineers has designed and built premium quality valves, fittings and tubing. This commitment to engineering and manufacturing excellence has earned Autoclave a reputation for reliable and efficient product performance. Autoclave Engineers has long been established as the worldwide leader in high pressure fluid handling components for the chemical/petrochemical, research, oil and gas, waterjet, and waterblast industries.



**Autoclave  
Engineers** 

Fluid Components  
Division of Snap-tite, Inc.  
[www.autoclave.com](http://www.autoclave.com)

**Needle Valves - High Pressure**  
**30SC, 43SC, 30VM, 40VM, 60VM, 100VM & 150V Series**

# Needle Valves - High Pressure

## High Pressure Valve Features

- Tubing sizes from 1/4" to 1".
- Non-rotating stem prevents stem/seat galling.
- Rising stem/barstock body design.
- Metal-to-metal seating achieves bubble-tight shut-off, longer stem/seat life in abrasive flow, greater durability for repeated on/off cycles and excellent corrosion resistance.
- For dependable stem and body sealing 30SC, 43SC and 30VM valves are furnished with PTFE (Teflon) encapsulated packing; the 40VM and 60VM valves feature nylon/leather packing below threads.
- Stem sleeve and packing gland materials have been selected to achieve extended thread cycle life and reduced handle torque.
- Choice of Vee or Regulating stem tips.

### Series 100VM: Pressures to 100,000 psi (6895 bar) features:

- Cold-worked type 316 or 15-5PH stainless steel body with aluminum bronze packing gland and non-rotating stem.
- Nylon and leather packing below stem threads.

### Series 150V: Pressures to 150,000 psi (10342 bar) features:

- Cylindrical body of high strength 15-5PH stainless steel with stainless steel packing gland. Tool steel non-rotating stem with replaceable seat of nickel maraging steel. Stem must be actuated with torque wrench (refer to Tools, Installation, Operation and Maintenance section).
- Wedge-type Teflon and leather packing below stem threads with beryllium-copper Autoclave Anti-Extrusion Back up Rings.
- Vee stem tip only

Autoclave valves are complemented by a complete line of high pressure fittings and tubing. The high pressure series uses Autoclave's coned-and-threaded connections for dependable performance in gas or liquid service.

# Needle Valves - SC Series

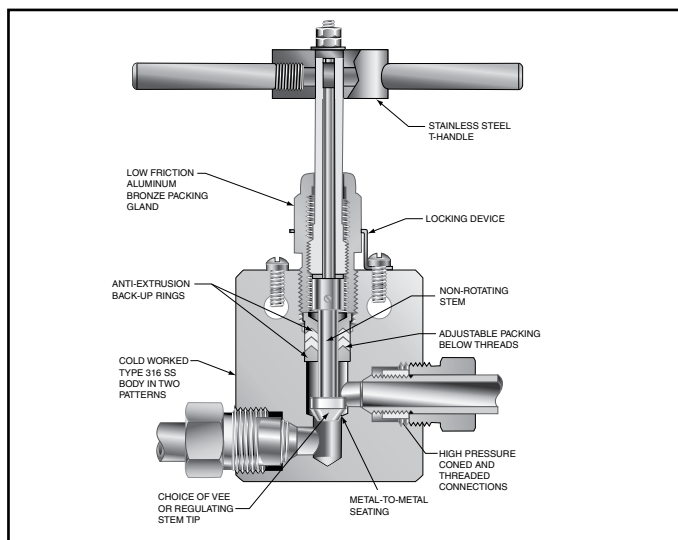
**Pressures to 43,000 psi (2965 bar)**

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated $C_v$ *	Pressure Rating psi (bar) @ Room Temperature**
Series 30SC 1	F1000C43	.438 (11.12)	2.6	30,000 (2068)
Series 43SC 1	F1000C43	.438 (11.12)	2.6	43,000 (2965)

## Notes:

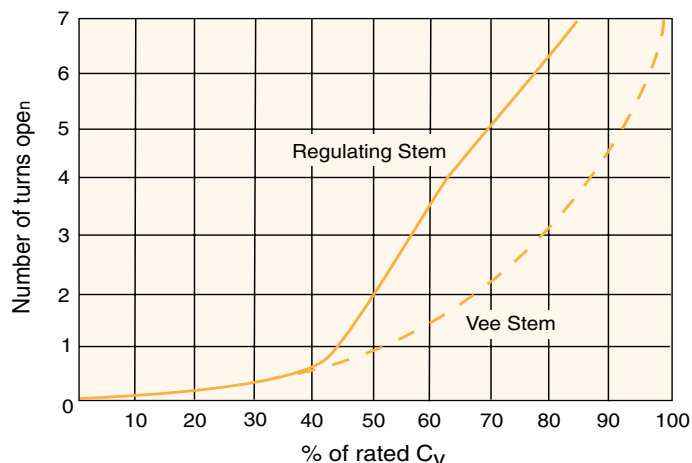
\*  $C_v$  values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase  $C_v$  value 50%.

\*\* For complete temperature ratings see pressure/temperature rating guide in Technical Information section.



To ensure proper fit use Autoclave tubing

**Generalized Flow Coefficient Curves ( $C_v$ )**



## Ordering Procedure

For complete information on available stem types, optional connections and additional valve options, see Needle Valve Options section or contact your Sales Representative. The 30SC Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **30SC16071**

30SC	16	07	1	XX
Valve Series	Outside Diameter Tube Size	Stem/Seat Type	Body Pattern	Options
30SC 43SC	16-1"	07 - non-rotating Vee stem (on-off service) 08 - non-rotating regulating stem (tapered tip for regulating and shutoff) 87 - Vee stem with replaceable seat 88 - Regulating stem with replaceable seat	1 - two-way straight 2 - two-way angle	For extreme temperature and other options, see Valve Options.

## Valve Options

### Extreme Temperatures

Standard Autoclave valves with Teflon packing may be operated from 0°F (-17.8°C) to 450°F (232°C). High temperature packing is available for service from -423°F (-252°C) to 1200°F (649°C) by adding the following suffixes to catalog order number.

**TG** - standard valve with Teflon glass packing to 600°F (316°C).

**GY** - standard valve with graphite braided yarn packing to 800°F (427°C).  
8,000 psi (569 bar) max.

**HT** - extended stuffing box valve with graphite braided yarn packing to 1200°F (649°C).

**B** - standard valve with cryogenic trim material and Teflon packing to -100°F (-73°C).

**LT** - extended stuffing box valve with Teflon packing & Cryogenic trim materials to -423°F (-252°C).

**K** - anti-vibration collet and gland assembly.

## Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit.  
(Example: **R30SC16071**)

Valve Bodies: Valve bodies are available. Order using the eight (8) digit part number found in the valve drawing or contact your Sales Representative for information.

Consult your Autoclave representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

### 2-Way Straight

30SC16071	VEE	1"	0.438	4.13	2.06	0.72	3.50	2.75	4.44	10.25	1.62	0.56	8.42	1.25	1.12	1.75	See Figure 1
30SC16081	REG	(25.40)	(11.12)	(104.90)	(52.32)	(18.28)	(88.90)	(69.85)	(112.77)	(260.35)	(41.14)	(14.22)	(213.86)	(31.75)	(28.44)	(44.45)	
43SC16071	VEE	1"	0.438	4.88	2.44	0.72	3.50	2.75	4.44	10.25	1.62	0.56	8.42	1.25	1.12	2.25	
43SC16081	REG	(25.40)	(11.12)	(123.96)	(61.96)	(18.28)	(88.90)	(69.85)	(112.77)	(260.35)	(41.14)	(14.22)	(213.86)	(31.75)	(28.44)	(57.15)	

### 2-Way Angle

30SC16072	VEE	1"	0.438	4.13	2.06	0.72	2.75		5.12	10.25	1.62	0.56	9.35	1.25	1.12	1.75	See Figure 2
30SC16082	REG	(25.40)	(11.12)	(104.90)	(52.32)	(18.28)	(69.85)		(130.04)	(260.35)	(41.14)	(14.22)	(237.49)	(31.75)	(28.44)	(44.45)	
43SC16072	VEE	1"	0.438	4.88	2.44	0.72	3.50		5.12	10.25	1.62	0.56	8.42	1.25	1.12	2.25	
43SC16082	REG	(25.40)	(11.12)	(123.96)	(61.96)	(18.28)	(88.90)		(130.04)	(260.35)	(41.14)	(14.22)	(213.86)	(31.75)	(28.44)	(57.15)	

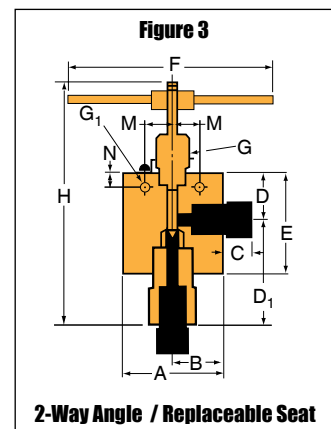
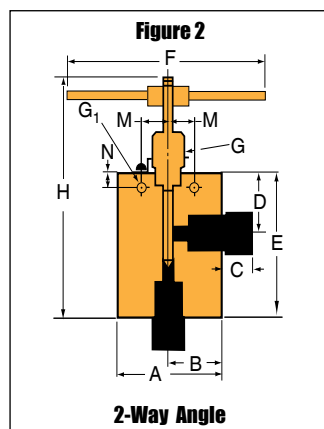
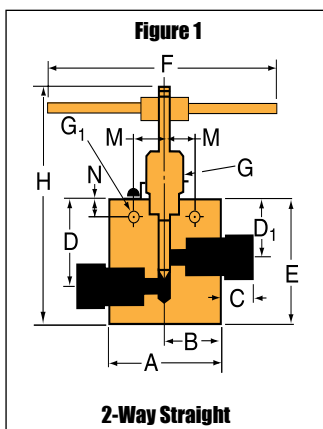
### 2-Way Angle/Replaceable Seat

30SC16872	VEE	1"	0.438	4.13	2.06	0.72	2.75	4.31	5.24	10.25	1.62	0.56	10.56	1.25	1.12	1.75	See Figure 3
30SC16882	REG	(25.40)	(11.12)	(104.90)	(52.32)	(18.28)	(71.37)	(109.47)	(133.35)	(260.35)	(41.14)	(14.22)	(268.22)	(31.75)	(28.44)	(44.45)	
43SC16872	VEE	1"	0.438	4.88	2.44	0.72	2.75	4.31	5.24	10.25	1.62	0.56	8.42	1.25	1.12	2.25	
43SC16882	REG	(25.40)	(11.12)	(123.96)	(61.96)	(18.28)	(71.37)	(109.47)	(133.35)	(260.35)	(41.14)	(14.22)	(213.86)	(31.75)	(28.44)	(57.15)	

G - Packing gland mounting hole drill size  
G<sub>1</sub> - Bracket mounting hole size  
Panel mounting drill size: 0.22" all valves.

All dimensions for reference only and subject to change.  
\*H Dimension is with stem in closed position

For prompt service, Autoclave stocks select products. Consult factory.



# Needle Valves - 30VM Series

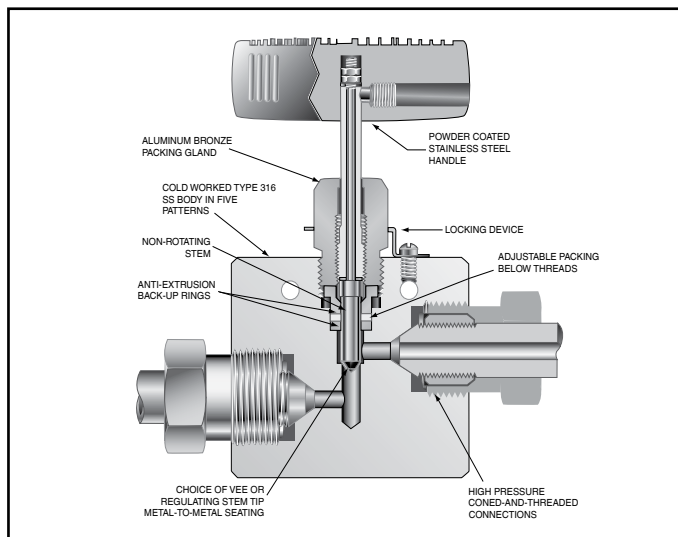
Pressures to 30,000 psi (2068 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated $C_V^*$	Pressure Rating psi (bar) @ Room Temperature**
1/4	F250C	0.094 (2.39)	0.12	30,000 (2068)
3/8	F375C	0.125 (3.18)	0.23	30,000 (2068)
9/16	F562C	0.125 (3.18)	0.33	30,000 (2068)

## Notes:

\*  $C_V$  values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase  $C_V$  value 50%.

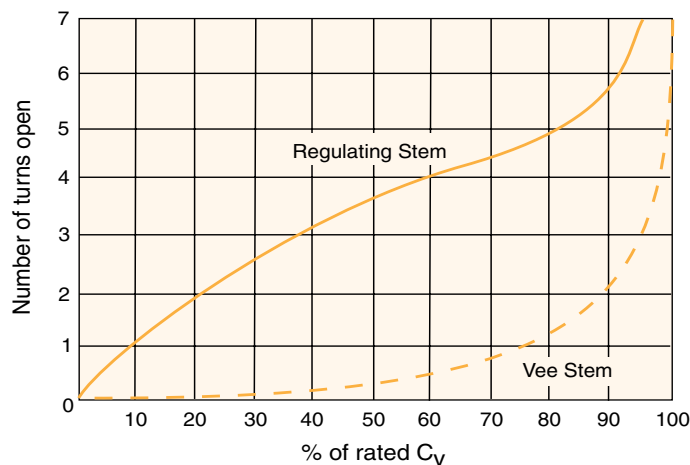
\*\* For complete temperature ratings see pressure/temperature rating guide in Technical Information section.



To ensure proper fit use Autoclave tubing



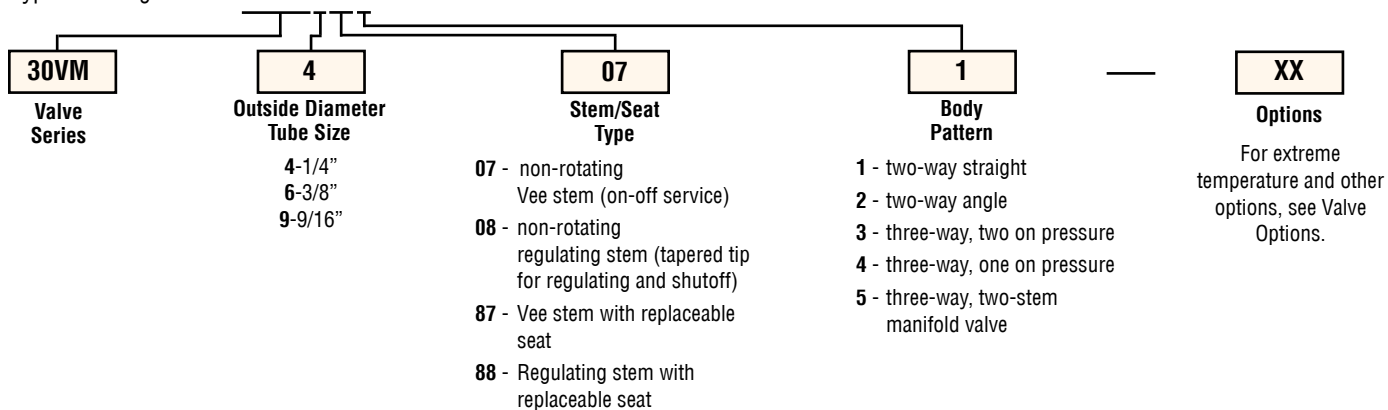
Generalized Flow Coefficient Curves ( $C_V$ )



## Ordering Procedure

For complete information on available stem types, optional connections and additional valve options, see Needle Valve Options section or contact your Sales Representative. The 30VM Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **30VM4071**



## Valve Options

### Extreme Temperatures

Standard Autoclave valves with Teflon packing may be operated from 0°F (-17.8°C) to 450°F (232°C). High temperature packing is available for service from -423°F (-252°C) to 1200°F (644°C) by adding the following suffixes to catalog order number.

**TG** - standard valve with Teflon glass packing to 600°F (316°C).

**GY** - standard valve with graphite braided yarn packing to 800°F (427°C).

**HT** - extended stuffing box valve with graphite braided yarn packing to 1200°F (649°C).

**B** - standard valve with cryogenic trim material and Teflon packing to -100°F (-73°C).

**LT** - extended stuffing box valve with Teflon packing & Cryogenic trim materials to -423°F (-252°C).

**K** - anti-vibration collet and gland assembly.

## Valve Maintenance

**Repair Kits:** add "R" to the front of valve catalog number for proper repair kit.  
(Example: **R30VM4071**)

**Valve Bodies:** Valve bodies are available. Order using the eight (8) digit part number found in the valve drawing or contact your Sales Representative for information.

Consult your Autoclave representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

### 2-Way Straight

30VM4071	VEE	1/4	0.094	2.00	1.00	0.50	1.50	1.12	2.00	3.00	1.00	0.22	4.62	0.69	0.38	1.00	See Figure 1
30VM4081	REG	(6.35)	(2.39)	(50.80)	(25.40)	(12.70)	(38.10)	(28.45)	(50.80)	(76.20)	(25.40)	(5.59)	(117.35)	(17.53)	(9.65)	(25.40)	
30VM6071	VEE	3/8	0.125	2.00	1.00	0.53	1.50	1.12	2.00	3.00	1.00	0.22	4.68	0.69	0.38	1.00	
30VM6081	REG	(9.53)	(3.18)	(50.80)	(25.40)	(13.46)	(38.10)	(28.45)	(50.80)	(76.20)	(25.40)	(5.59)	(118.87)	(17.53)	(9.65)	(25.40)	
30VM9071	VEE	9/16	0.125	2.62	1.31	0.81	1.56	1.12	2.44	3.00	1.00	0.28	5.06	0.69	0.38	1.50	
30VM9081	REG	(14.29)	(3.18)	(66.55)	(33.27)	(20.57)	(39.62)	(28.45)	(61.98)	(76.20)	(25.40)	(7.11)	(128.52)	(17.53)	(9.65)	(38.10)	

### 2-Way Angle

30VM4072	VEE	1/4	0.094	2.00	1.00	0.50	1.12		2.00	3.00	1.00	0.22	4.62	0.69	0.38	1.00	See Figure 2
30VM4082	REG	(6.35)	(2.39)	(50.80)	(25.40)	(12.70)	(28.45)		(50.80)	(76.20)	(25.40)	(5.59)	(117.35)	(17.53)	(9.65)	(25.40)	
30VM6072	VEE	3/8	0.125	2.00	1.00	0.53	1.12		2.12	3.00	1.00	0.22	4.74	0.69	0.38	1.00	
30VM6082	REG	(9.53)	(3.18)	(50.80)	(25.40)	(13.46)	(28.45)		(53.85)	(76.20)	(25.40)	(5.59)	(120.40)	(17.53)	(9.65)	(25.40)	
30VM9072	VEE	9/16	0.125	2.62	1.31	0.81	1.12		2.44	3.00	1.00	0.28	5.06	0.69	0.38	1.50	
30VM9082	REG	(14.29)	(3.18)	(66.55)	(33.27)	(20.57)	(28.45)		(61.98)	(76.20)	(25.40)	(7.11)	(128.52)	(17.53)	(9.65)	(38.10)	

### 3-Way / 2 on Pressure

30VM4073	VEE	1/4	0.094	2.00	1.00	0.50	1.50	1.12	2.12	3.00	1.00	0.22	4.74	0.69	0.38	1.00	See Figure 3
30VM4083	REG	(6.35)	(2.39)	(50.80)	(25.40)	(12.70)	(38.10)	(28.45)	(53.85)	(76.20)	(25.40)	(5.59)	(120.40)	(17.53)	(9.65)	(25.40)	
30VM6073	VEE	3/8	0.125	2.00	1.00	0.53	1.50	1.12	2.50	3.00	1.00	0.22	5.12	0.69	0.38	1.00	
30VM6083	REG	(9.53)	(3.18)	(50.80)	(25.40)	(13.46)	(38.10)	(28.45)	(63.50)	(76.20)	(25.40)	(5.59)	(130.05)	(17.53)	(9.65)	(25.40)	
30VM9073	VEE	9/16	0.125	2.62	1.31	0.81	1.56	1.12	2.88	3.00	1.00	0.28	5.49	0.69	0.38	1.50	
30VM9083	REG	(14.29)	(3.18)	(66.55)	(33.27)	(20.57)	(39.62)	(28.45)	(73.15)	(76.20)	(25.40)	(7.11)	(139.45)	(17.53)	(9.65)	(38.10)	

G - Packing gland mounting hole drill size

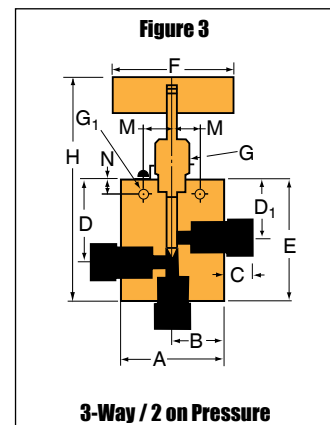
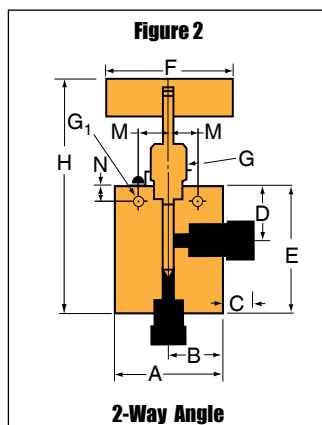
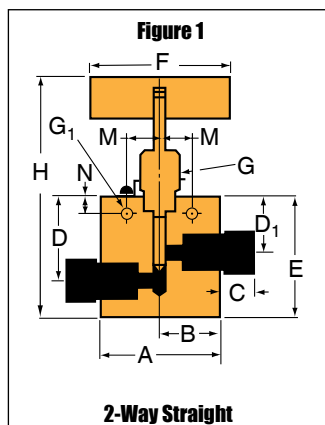
G<sub>1</sub> - Bracket mounting hole size

Panel mounting drill size: 0.22" all valves.

All dimensions for reference only and subject to change.

\* H Dimension is with stem in the closed position.

For prompt service,  
Autoclave stocks select products.  
Consult factory.



Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

### 3-Way / 1 on Pressure

30VM4074	VEE	1/4	0.094	2.00	1.00	0.50	1.12		2.00	3.00	1.00	0.22	4.62	0.69	0.38	1.00	See Figure 4
30VM4084	REG	(6.35)	(2.39)	(50.80)	(25.40)	(12.70)	(28.45)		(50.80)	(76.20)	(25.40)	(5.59)	(117.35)	(17.53)	(9.65)	(25.40)	
30VM6074	VEE	3/8	0.125	2.00	1.00	0.53	1.12		2.12	3.00	1.00	0.22	4.74	0.69	0.38	1.00	
30VM6084	REG	(9.53)	(3.18)	(50.80)	(25.40)	(13.46)	(28.45)		(53.85)	(76.20)	(25.40)	(5.59)	(120.40)	(17.53)	(9.65)	(25.40)	
30VM9074	VEE	9/16	0.125	2.62	1.31	0.81	1.12		2.44	3.00	1.00	0.28	5.12	0.69	0.38	1.50	
30VM9084	REG	(14.29)	(3.18)	(66.55)	(33.27)	(20.57)	(28.45)		(61.98)	(76.20)	(25.40)	(7.11)	(130.05)	(17.53)	(9.65)	(38.10)	

### 2-Way Angle / Replaceable Seat

30VM4872	VEE	1/4	0.094	2.00	1.00	0.50	1.12	2.06	2.38	3.00	1.00	0.22	5.80	0.69	0.38	1.00	See Figure 5
30VM4882	REG	(6.35)	(2.39)	(50.80)	(25.40)	(12.70)	(28.45)	(52.32)	(60.45)	(76.20)	(25.40)	(5.59)	(147.32)	(17.53)	(9.65)	(25.40)	
30VM6872	VEE	3/8	0.125	2.00	1.00	0.53	1.12	2.31	2.38	3.00	1.00	0.22	6.05	0.69	0.38	1.00	
30VM6882	REG	(9.53)	(3.18)	(50.80)	(25.40)	(13.46)	(28.45)	(58.67)	(60.45)	(76.20)	(25.40)	(5.59)	(153.67)	(17.53)	(9.65)	(25.40)	
30VM9872	VEE	9/16	0.125	2.62	1.31	0.81	1.19	2.62	2.44	3.00	1.00	0.28	6.45	0.69	0.38	1.50	
30VM9882	REG	(14.29)	(3.18)	(66.55)	(33.27)	(20.57)	(30.23)	(66.55)	(61.98)	(76.20)	(25.40)	(7.11)	(163.83)	(17.53)	(9.65)	(38.10)	

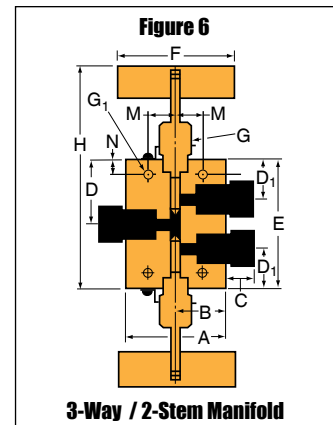
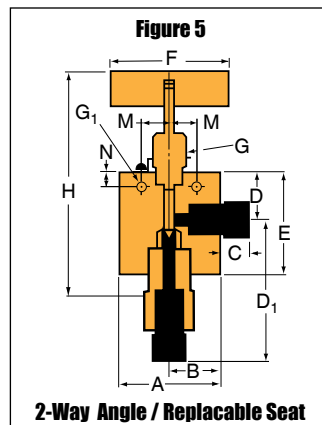
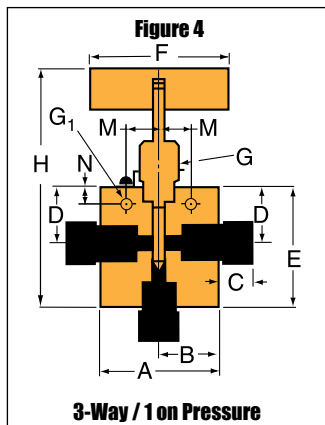
### 3-Way / 2-Stem Manifold

30VM4075	VEE	1/4	0.094	2.00	1.00	0.50	1.53	1.12	3.06	3.00	1.00	0.22	5.68	0.69	0.38	1.00	See Figure 6
30VM4085	REG	(6.35)	(2.39)	(50.80)	(25.40)	(12.70)	(38.86)	(28.45)	(77.72)	(76.20)	(25.40)	(5.59)	(144.27)	(17.53)	(9.65)	(25.40)	
30VM6075	VEE	3/8	0.125	2.00	1.00	0.53	1.62	1.12	3.25	3.00	1.00	0.22	5.87	0.69	0.38	1.00	
30VM6085	REG	(9.53)	(3.18)	(50.80)	(25.40)	(13.46)	(41.15)	(28.45)	(82.55)	(76.20)	(25.40)	(5.59)	(149.10)	(17.53)	(9.65)	(25.40)	
30VM9075	VEE	9/16	0.125	2.62	1.31	0.81	1.88	1.12	3.75	3.00	1.00	0.28	6.37	0.69	0.38	1.50	
30VM9085	REG	(14.29)	(3.18)	(66.55)	(33.27)	(20.57)	(47.75)	(28.45)	(95.25)	(76.20)	(25.40)	(7.11)	(161.80)	(17.53)	(9.65)	(38.10)	

G - Packing gland mounting hole drill size  
G<sub>1</sub> - Bracket mounting hole size  
Panel mounting drill size: 0.22" all valves.

All dimensions for reference only and subject to change.  
\* H Dimension is with stem in the closed position.

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Autoclave stocks select products.  
Consult factory.



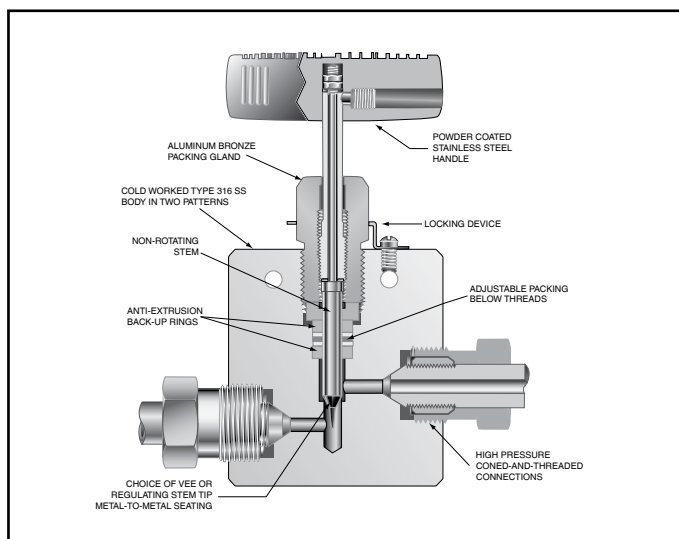
# Needle Valves - 40VM Series

**Pressures to 40,000 psi (2760 bar)**



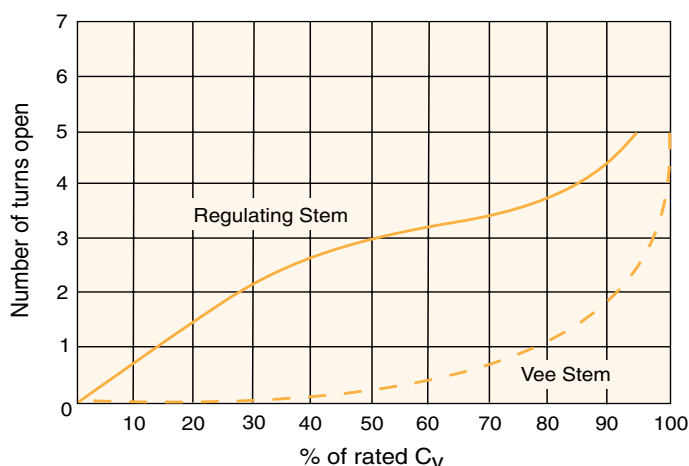
Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated $C_v^*$	Pressure Rating psi (bar) @ Room Temperature**
9/16	F562C40	0.109 (2.77)	0.28	40,000 (2760)

**Notes:**  
 \*  $C_v$  values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase  $C_v$  value 50%.  
 \*\* For complete temperature ratings see pressure/temperature rating guide in Technical Information section.



To ensure proper fit use Autoclave tubing

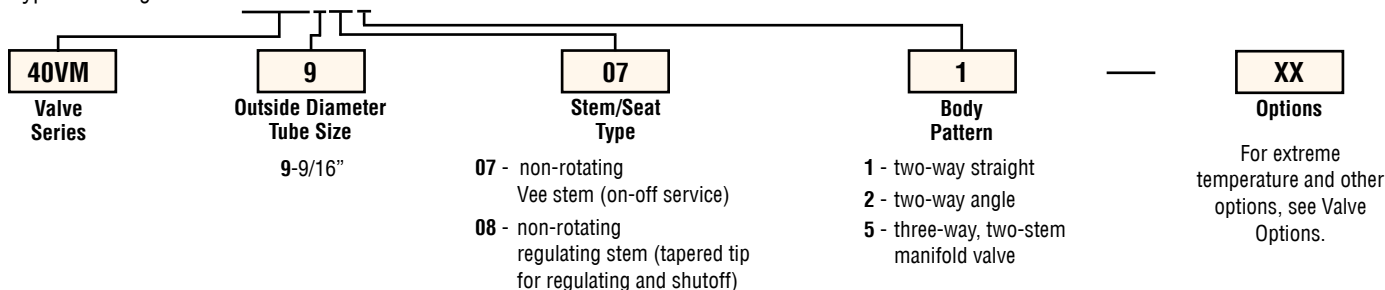
**Generalized Flow Coefficient Curves ( $C_v$ )**



## Ordering Procedure

For complete information on available stem types, optional connections and additional valve options, see Needle Valve Options Section or contact your Sales Representative. The 40VM Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **40VM9071**





## Valve Options

### Extreme Temperatures

Standard Autoclave valves with Teflon packing may be operated from 0°F (-17.8°C) to 450°F (232°C). High temperature packing is available for service from -423°F (-252°C) to 1200°F (649°C) by adding the following suffixes to catalog order number.

**TG** - standard valve with Teflon glass packing to 600°F (316°C).

**GY** - standard valve with graphite braided yarn packing to 800°F (427°C).

**HT** - extended stuffing box valve with graphite braided yarn packing to 1200°F (649°C).

**B** - standard valve with cryogenic trim material and Teflon packing to -100°F (-73°C).

**LT** - extended stuffing box valve with Teflon packing & Cryogenic trim materials to -423°F (-252°C).

**K** - anti-vibration collet and gland assembly.

## Valve Maintenance

**Repair Kits:** add "R" to the front of valve catalog number for proper repair kit.  
(Example: **R40VM9071**)

**Valve Bodies:** Valve bodies are available. Order using the eight (8) digit part number found in the valve drawing or contact your Sales Representative for information.

Consult your Autoclave representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

### 2-Way Straight

40VM9071	VEE	9/16	0.109	2.62	1.31	0.72	1.75	1.31	2.50	3.00	1.00	0.28	5.06	0.69	0.38	1.50	See Figure 1
40VM9081	REG	(14.3)	(2.77)	(66.55)	(33.27)	(18.29)	(44.45)	(33.27)	(63.50)	(76.20)	(25.40)	(7.11)	(128.52)	(17.53)	(9.65)	(38.10)	

### 2-Way Angle

40VM9072	VEE	9/16	0.109	2.62	1.31	0.72	1.31		2.81	3.00	1.00	0.28	5.37	0.69	0.38	1.50	See Figure 2
40VM9082	REG	(14.3)	(2.77)	(66.55)	(33.27)	(18.29)	(33.27)		(71.37)	(76.20)	(25.40)	(7.11)	(136.40)	(17.53)	(9.65)	(38.10)	

### 3-Way / 2 Stem Manifold

40VM9075	VEE	9/16	0.109	2.62	1.31	0.72	2.06	1.31	4.12	3.00	1.00	0.28	6.59	0.69	0.38	1.50	See Figure 3
40VM9085	REG	(14.3)	(2.77)	(66.55)	(33.27)	(18.29)	(52.32)	(33.27)	(104.65)	(76.20)	(25.40)	(7.11)	(167.39)	(17.53)	(9.65)	(38.10)	

G - Packing gland mounting hole drill size

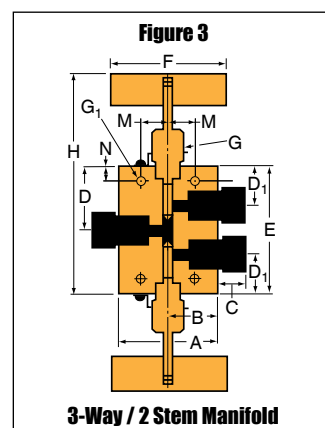
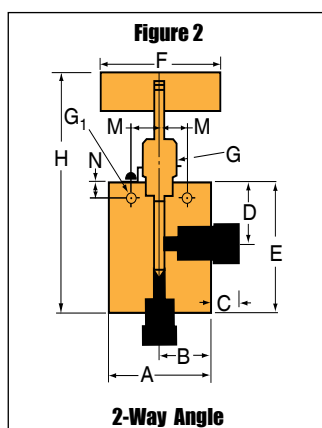
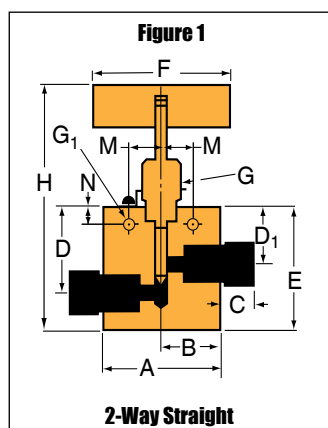
G<sub>1</sub> - Bracket mounting hole size

Panel mounting drill size: 0.22" all valves.

All dimensions for reference only and subject to change.

\* H Dimension is with stem in the closed position

For prompt service, Autoclave stocks select products. Consult factory.



# Needle Valves - 60VM Series

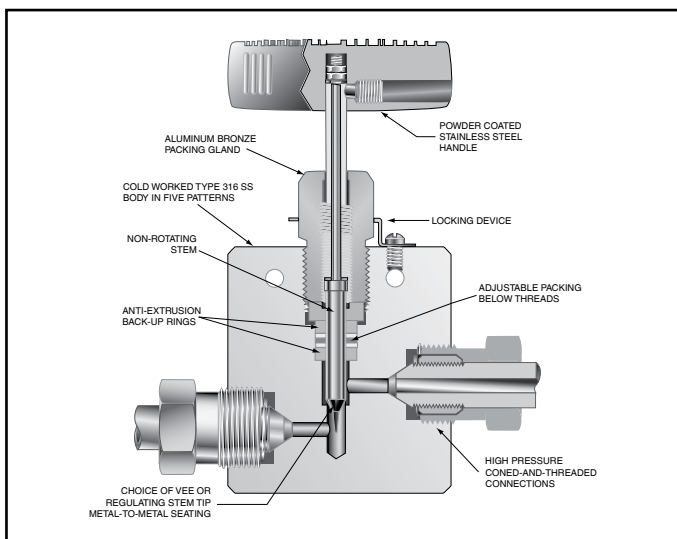
Pressures to 60,000 psi (4137 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated $C_v^*$	Pressure Rating psi (bar) @ Room Temperature**
1/4	F250C	0.062 (1.57)	0.08	60,000 (4137)
3/8	F375C	0.062 (1.57)	0.09	60,000 (4137)
9/16	F562C	0.078 (1.98)	0.14	60,000 (4137)

## Notes:

\*  $C_v$  values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase  $C_v$  value 50%.

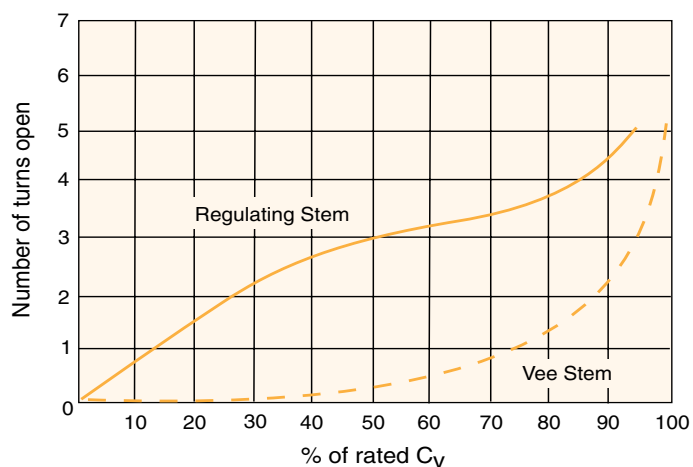
\*\* For complete temperature ratings see pressure/temperature rating guide in Technical Information section.



To ensure proper fit use Autoclave tubing



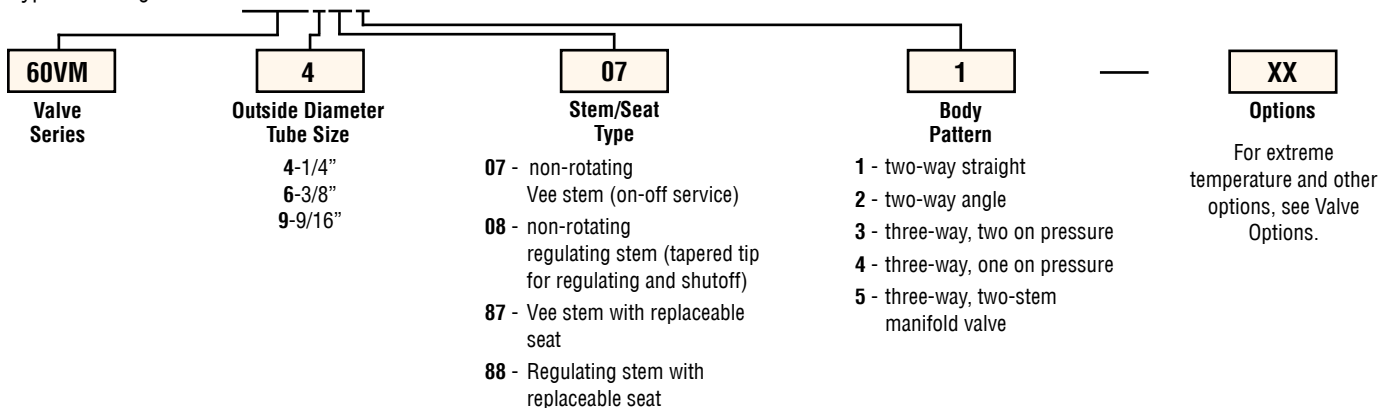
Generalized Flow Coefficient Curves ( $C_v$ )



## Ordering Procedure

For complete information on available stem types, optional connections and additional valve options, see Needle Valve Options section or contact your Sales Representative. The 60VM Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **60VM4071**



## Valve Options

### Extreme Temperatures

Standard Autoclave valves with Teflon packing may be operated from 0°F (-17.8°C) to 450°F (232°C). High temperature packing is available for service from -423°F (-252°C) to 1200°F (649°C) by adding the following suffixes to catalog order number.

**TG** - standard valve with Teflon glass packing to 600°F (316°C).

**GY** - standard valve with graphite braided yarn packing to 800°F (427°C).

**HT** - extended stuffing box valve with graphite braided yarn packing to 1200°F (649°C).

**B** - standard valve with cryogenic trim material and Teflon packing to -100°F (-73°C).

**LT** - extended stuffing box valve with Teflon packing & Cryogenic trim materials to -423°F (-252°C).

**K** - anti-vibration collet and gland assembly.

## Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit.  
(Example: **R60VM4071**)

Valve Bodies: Valve bodies are available. Order using the eight (8) digit part number found in the valve drawing or contact your Sales Representative for information.

Consult your Autoclave representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

### 2-Way Straight

60VM4071	VEE	1/4	0.062	2.00	1.00	0.50	1.69	1.31	2.12	3.00	1.00	0.22	4.75	0.69	0.38	1.00	See Figure 1
60VM4081	REG	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(42.93)	(33.27)	(53.85)	(76.20)	(25.40)	(5.59)	(120.65)	(17.53)	(9.65)	(25.40)	
60VM6071	VEE	3/8	0.062	2.00	1.00	0.53	1.69	1.31	2.25	3.00	1.00	0.22	4.87	0.69	0.38	1.00	
60VM6081	REG	(9.53)	(1.57)	(50.80)	(25.40)	(13.46)	(42.93)	(33.27)	(57.15)	(76.20)	(25.40)	(5.59)	(123.70)	(17.53)	(9.65)	(25.40)	
60VM9071	VEE	9/16	0.078	2.62	1.31	0.72	1.75	1.31	2.50	3.00	1.00	0.28	5.13	0.69	0.38	1.50	
60VM9081	REG	(14.29)	(1.98)	(66.55)	(33.27)	(18.29)	(45.45)	(33.27)	(63.50)	(76.20)	(25.40)	(7.11)	(130.30)	(17.53)	(9.65)	(38.10)	

### 2-Way Angle

60VM4072	VEE	1/4	0.062	2.00	1.00	0.50	1.31		2.38	3.00	1.00	0.22	5.00	0.69	0.38	1.00	See Figure 2
60VM4082	REG	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(33.27)		(60.45)	(76.20)	(25.40)	(5.59)	(127.00)	(17.53)	(9.65)	(25.40)	
60VM6072	VEE	3/8	0.062	2.00	1.00	0.53	1.31		2.62	3.00	1.00	0.22	5.25	0.69	0.38	1.00	
60VM6082	REG	(9.53)	(1.57)	(50.80)	(25.40)	(13.46)	(33.27)		(66.55)	(76.20)	(25.40)	(5.59)	(133.35)	(17.53)	(9.65)	(25.40)	
60VM9072	VEE	9/16	0.078	2.62	1.31	0.72	1.31		2.81	3.00	1.00	0.28	5.44	0.69	0.38	1.50	
60VM9082	REG	(14.29)	(1.98)	(66.55)	(33.27)	(18.29)	(33.27)		(71.37)	(76.20)	(25.40)	(7.11)	(138.18)	(17.53)	(9.65)	(38.10)	

### 3-Way / 2 on Pressure

60VM4073	VEE	1/4	0.062	2.00	1.00	0.50	1.69	1.31	2.38	3.00	1.00	0.22	4.75	0.69	0.38	1.00	See Figure 3
60VM4083	REG	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(42.93)	(33.27)	(60.45)	(76.20)	(25.40)	(5.59)	(120.65)	(17.53)	(9.65)	(25.40)	
60VM6073	VEE	3/8	0.062	2.00	1.00	0.53	1.69	1.31	2.75	3.00	1.00	0.22	4.87	0.69	0.38	1.00	
60VM6083	REG	(9.53)	(1.57)	(50.80)	(25.40)	(13.46)	(42.93)	(33.27)	(68.86)	(76.20)	(25.40)	(5.59)	(123.70)	(17.53)	(9.65)	(25.40)	
60VM9073	VEE	9/16	0.078	2.62	1.31	0.72	1.75	1.31	3.03	3.00	1.00	0.28	5.13	0.69	0.38	1.50	
60VM9083	REG	(14.29)	(1.98)	(66.55)	(33.27)	(18.29)	(45.45)	(33.27)	(76.96)	(76.20)	(25.40)	(7.11)	(130.30)	(17.53)	(9.65)	(38.10)	

G - Packing gland mounting hole drill size

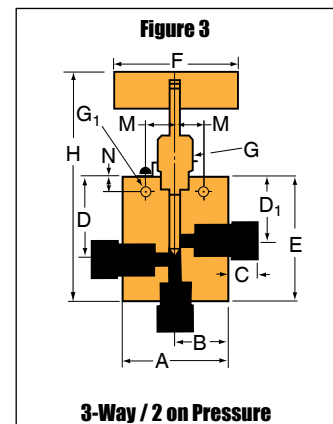
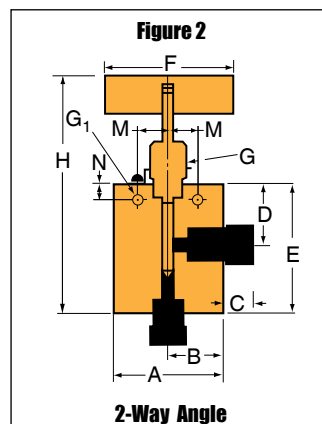
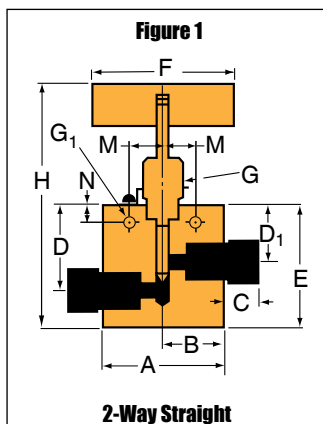
G<sub>1</sub> - Bracket mounting hole size

Panel mounting drill size: 0.22" all valves.

All dimensions for reference only and subject to change.

\* H Dimension is with stem in the closed position.

For prompt service,  
Autoclave stocks select products.  
Consult factory.



Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

### 3-Way / 1 on Pressure

60VM4074	VEE	1/4	0.062	2.00	1.00	0.50	1.31		2.38	3.00	1.00	0.22	5.00	0.69	0.38	1.00	See Figure 4
60VM4084	REG	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(33.27)		(60.45)	(76.20)	(25.40)	(5.59)	(127.00)	(17.53)	(9.65)	(25.40)	
60VM6074	VEE	3/8	0.062	2.00	1.00	0.53	1.31		2.62	3.00	1.00	0.22	5.25	0.69	0.38	1.00	
60VM6084	REG	(9.53)	(1.57)	(50.80)	(25.40)	(13.46)	(33.27)		(66.55)	(76.20)	(25.40)	(5.59)	(133.35)	(17.53)	(9.65)	(25.40)	
60VM9074	VEE	9/16	0.078	2.62	1.31	0.72	1.31		2.81	3.00	1.00	0.28	5.44	0.69	0.38	1.50	
60VM9084	REG	(14.29)	(1.98)	(66.55)	(33.27)	(18.29)	(33.27)		(71.37)	(76.20)	(25.40)	(7.11)	(138.18)	(17.53)	(9.65)	(38.10)	

### 2-Way Angle / Replaceable Seat

60VM4872	VEE	1/4	0.062	2.00	1.00	0.50	1.31	2.12	2.62	3.00	1.00	0.22	6.28	0.69	0.38	1.00	See Figure 5
60VM4882	REG	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(33.27)	(53.85)	(66.55)	(76.20)	(25.40)	(5.59)	(159.51)	(17.53)	(9.65)	(25.40)	
60VM6872	VEE	3/8	0.062	2.00	1.00	0.53	1.31	2.36	2.62	3.00	1.00	0.22	6.52	0.69	0.38	1.00	
60VM6882	REG	(9.53)	(1.57)	(50.80)	(25.40)	(13.46)	(33.27)	(59.94)	(66.55)	(76.20)	(25.40)	(5.59)	(165.60)	(17.53)	(9.65)	(25.40)	
60VM9872	VEE	9/16	0.078	2.62	1.31	0.72	1.31	2.68	2.62	3.00	1.00	0.28	6.90	0.69	0.38	1.50	
60VM9882	REG	(14.29)	(1.98)	(66.55)	(33.27)	(18.29)	(33.27)	(68.07)	(66.55)	(76.20)	(25.40)	(7.11)	(175.26)	(17.53)	(9.65)	(38.10)	

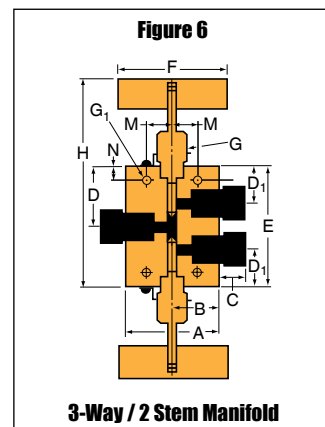
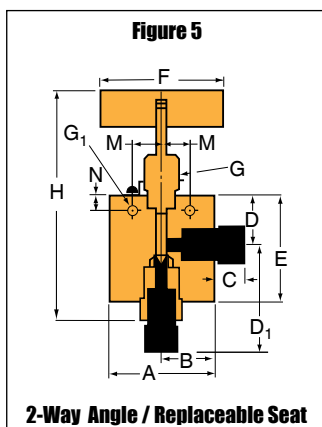
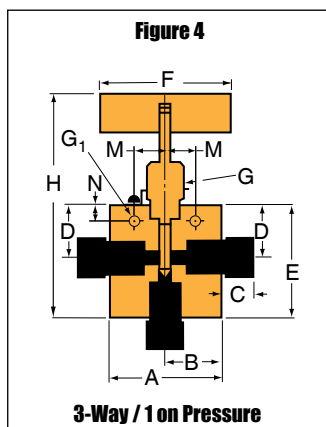
### 3-Way / 2-Stem Manifold

60VM4075	VEE	1/4	0.062	2.00	1.00	0.50	1.72	1.31	3.44	3.00	1.00	0.22	6.07	0.69	0.38	1.00	See Figure 6
60VM4085	REG	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(43.69)	(33.27)	(87.38)	(76.20)	(25.40)	(5.59)	(154.18)	(17.53)	(9.65)	(25.40)	
60VM6075	VEE	3/8	0.062	2.00	1.00	0.53	1.88	1.31	3.75	3.00	1.00	0.22	6.37	0.69	0.38	1.00	
60VM6085	REG	(9.53)	(1.57)	(50.80)	(25.40)	(13.46)	(47.75)	(33.27)	(95.25)	(76.20)	(25.40)	(5.59)	(161.80)	(17.53)	(9.65)	(25.40)	
60VM9075	VEE	9/16	0.078	2.62	1.31	0.72	2.06	1.31	4.12	3.00	1.00	0.28	6.37	0.69	0.38	1.50	
60VM9085	REG	(14.29)	(1.98)	(66.55)	(33.27)	(18.29)	(52.32)	(33.27)	(104.65)	(76.20)	(25.40)	(7.11)	(161.80)	(17.53)	(9.65)	(38.10)	

G - Packing gland mounting hole drill size  
G<sub>1</sub> - Bracket mounting hole size  
Panel mounting drill size: 0.22" all valves.

All dimensions for reference only and subject to change.  
\* H Dimension is with stem in the closed position.

For prompt service,  
Autoclave stocks select products.  
Consult factory.



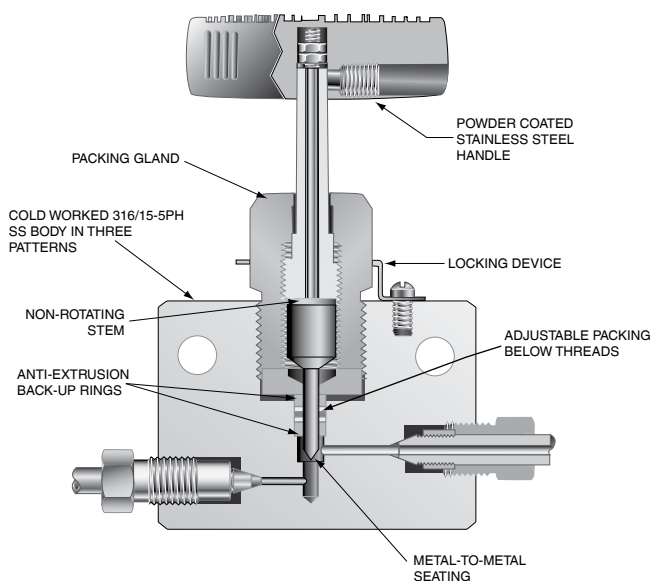
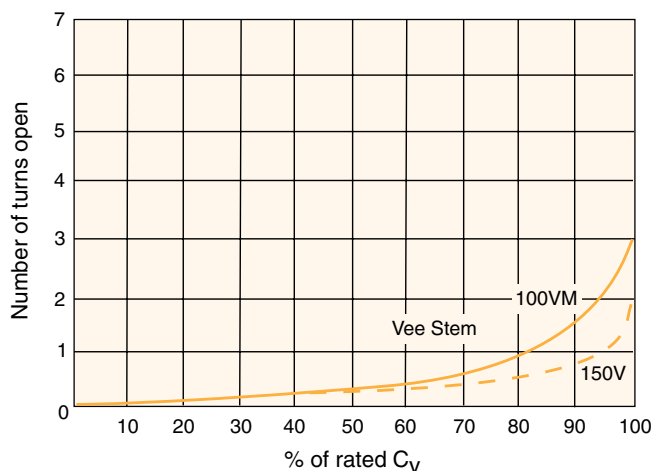
# Needle Valves - 100VM & 150V Series

Pressures to 150,000 psi (10350 bar)

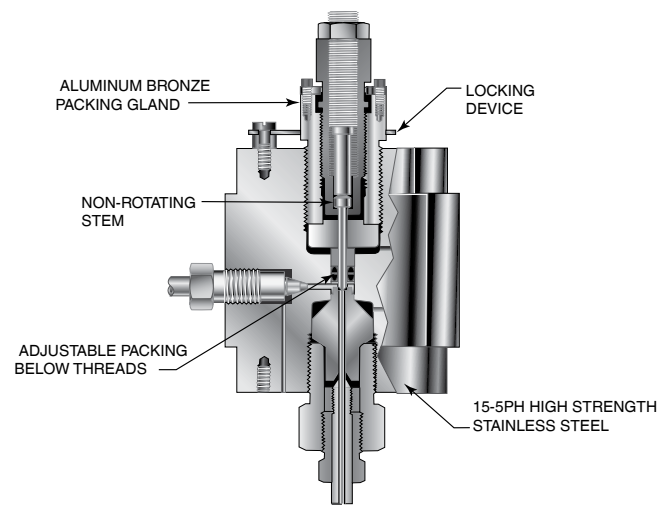
Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated $C_v$ *	Pressure Rating psi (bar) @ Room Temperature**
Series 100VM				
1/4, 5/16, 3/8	F312C150	0.062 (1.57)	.09	100,000 (6895)
Series 150V				
5/16	F312C150	0.062 (1.57)	.06	150,000 (10342)

**Notes:**  
 \*  $C_v$  values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase  $C_v$  value 50%.  
 \*\* For complete temperature ratings see pressure/temperature rating guide in Technical Information section.

Generalized Flow Coefficient Curves ( $C_v$ )



100VM Series



150V Series

Notes: Torque wrench required to operate valves.

To ensure proper fit use Autoclave tubing

## Ordering Procedure

For complete information on available stem types, optional connections and additional valve options, see Needle Valve Options section or contact your Sales Representative. The 100V Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **100VM5071**

100VM	5	07	1	XX
<b>Valve Series</b>	<b>Outside Diameter Tube Size</b>	<b>Stem Type</b>	<b>Body Pattern</b>	<b>Options</b>
100VM 150V	*4-1/4" 5-5/16" *6-3/8"	07 - non-rotating Vee stem (on off service) 08 - non-rotating regulating stem (tapered tip for regulating shutoff)	1 - two-way straight 2 - two-way angle 3 - three-way, two on pressure	For extreme temperature and other options, see Valve Options.

\* Note: 1/4" and 3/8" for 100VM only.

## Valve Options

### Extreme Temperatures

Standard AE valves with Teflon packing may be operated to 450°F (232°C), and to 230°F (110°C) with nylon-leather packing.

**K** - anti-vibration collet and gland assembly.

For other packing options consult the factory.

## Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit.  
(Example: **R100VM15071**)

Valve Bodies: Valve bodies are available. Order using the eight (8) digit part number found in the valve drawing or contact your Sales Representative for information.

Consult your Autoclave representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

### 2-Way Straight

100VM4071	VEE	1/4" (6.35)	0.062	3.00	1.50	0.52	1.75	1.44	2.25	4.00	1.12	0.34	5.32	1.12	0.50	1.38	See Figure 1
100VM5071		5/16" (7.93)		(76.20)	(38.10)	(13.21)	(44.45)	(36.58)	(57.15)	(101.60)	(28.45)	(8.64)	(135.13)	(28.45)	(12.70)	(35.05)	
100VM6071		3/8" (9.53)		(1.57)													

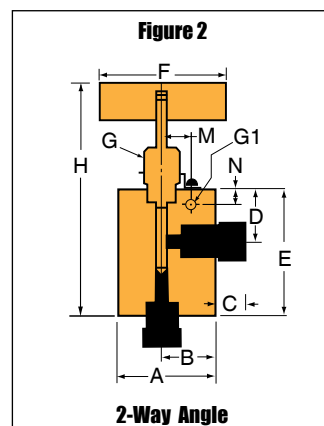
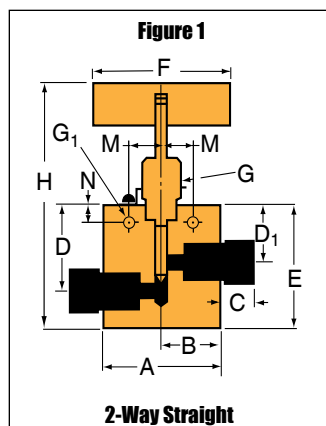
### 2-Way Angle

100VM4072	VEE	1/4" (6.35)	0.062	2.25	1.50	0.52	1.44		3.00	4.00	1.12	0.34	6.05	0.94	0.50	1.38	See Figure 2
100VM5072		5/16" (7.93)		(57.15)	(38.10)	(13.21)	(36.58)		(76.20)	(101.60)	(28.45)	(8.64)	(153.67)	(23.88)	(12.70)	(35.05)	
100VM6072		3/8" (9.53)		(1.57)													

G - Packing gland mounting hole drill size  
G<sub>1</sub> - Bracket mounting hole size  
Panel mounting drill size: 0.22" all valves.

All dimensions for reference only and subject to change.  
\* H Dimension is with stem in the closed position.

For prompt service,  
Autoclave stocks select products.  
Consult factory.



Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D <sub>1</sub>	E	F	G	G <sub>1</sub>	H*	M	N		

### 3-Way / 2 On Pressure

100VM4073	VEE	1/4" (6.35)	0.062	3.00	1.50	0.52	1.75	1.44	3.25	4.00	1.12	0.34	6.31	1.12	0.50	1.38	See Figure 3
100VM5073		5/16" (7.93)															
100VM6073		3/8" (9.53)	(1.57)	(76.20)	(38.10)	(13.21)	(44.45)	(36.58)	(82.55)	(101.60)	(28.45)	(8.64)	(160.27)	(28.45)	(12.70)	(35.05)	

### 2-Way Angle/Replaceable Seat

100VM4872	VEE	1/4" (6.35)	0.062	2.25	1.50	0.52	1.44	3.05	3.00	4.00	1.12	0.34	7.57	0.94	0.50	1.38	See Figure 4
100VM5872		5/16" (7.93)															
100VM6872		3/8" (9.53)	(1.57)	(57.15)	(38.10)	(13.21)	(36.58)	(77.47)	(76.20)	(101.60)	(28.45)	(8.64)	(192.30)	(23.88)	(12.70)	(35.05)	

### 2-Way Angle / Replaceable Seat

150V5072	VEE	5/16	0.062	3.75	1.88		2.25	2.63	4.00		1.650		7.12	1.25*			See Figure 5
		(7.93)	(1.57)	(95.25)	(47.63)		(57.15)	(66.80)	(101.60)		(41.91)		(180.85)	(31.75)			

G - Packing gland mounting hole drill size

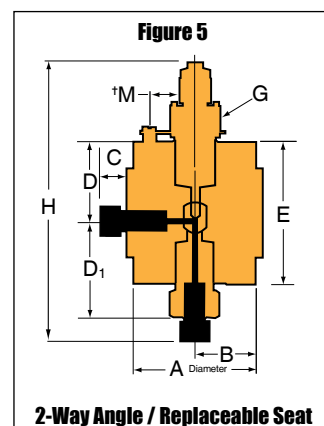
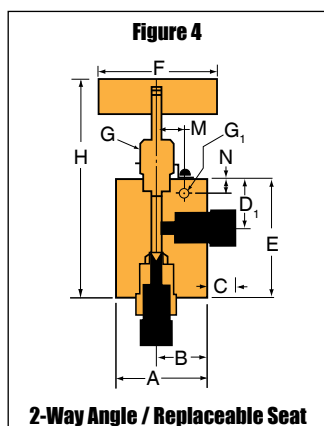
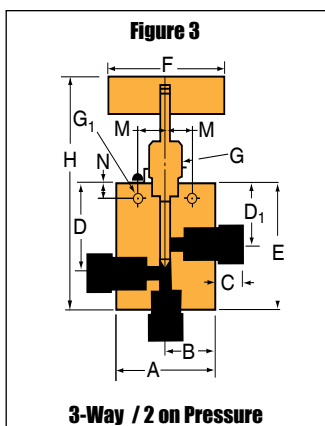
G<sub>1</sub> - Bracket mounting hole size

Panel mounting drill size: 0.22" all valves.

All dimensions for reference only and subject to change.

\* H Dimension is with stem in the closed position.

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† (2) 1/4"-20 mounting holes 180° apart  
and (1) locking device screw 90° apart



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