Needle Valve

High Pressure Cone & Thread
60,000 psi, 100,000 psi, 150,000 psi

30SC, 43SC, 30VM, 40VM, 60VM, 100VM,
and 150V Series



Principle of Operation:

Since 1945, Parker Autoclave Engineers (PAE) has designed and built premium quality valves, fittings and tubing. Our valves are designed specifically for use with High or Ultra High Pressure Fittings and Tubing for the most efficient flow path possible using Cone & Thread style connections. Designed in accordance with ASME 31.3 Chapter IX High Pressure Piping standards.

High Pressure Valve (to 60,000 psi) Features:

- Temperature Rated -423° to 1200°F (-252° to 650°C) with options
- Manufactured with UNS S31600 cold worked 316 stainless steel made to PAE proprietary standard
- Various designs cover valve sizes 1/4" to 1" that use the "F" Series Connections (see Tools & Installation)
- Non-Rotating stem prevents stem/seat galling
- 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 packing; the 40VM and 60VM valves feature nylon/leather/nylon packing below threads and all can be used on liquids and gases
- Choice of Vee (Shutoff) or Regulating (Flow Control) stem tips available with optional N-Dura or Stellite material options for severe service

Series 100VM: Pressures to 100,000 psi (6900 bar) features:

- Cold-worked type 316 or 15-5PH stainless steel body with aluminum bronze packing gland and on-rotating stem
- Nylon/leather/nylon packing below stem threads
- Sizes from 1/4" to 9/16" that use the "F***C100" Series Connections (see Tools & Installation)

Series 150V: Pressures to 150,000 psi (10340 bar) features:

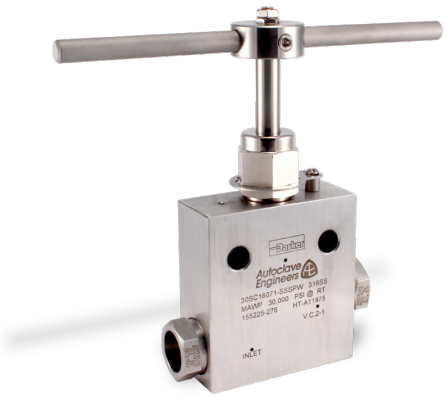
- Cylindrical body of high strength 15-5PH stainless steel with aluminum bronze packing gland. Tool steel non-rotating stem with replaceable seat of nickel maraging steel. Stem must be actuated with torque wrench see page 22 for torque values
- Wedge-type PTFE and leather packing below stem threads with beryllium-copper Parker Autoclave Anti-Extrusion Back up Rings
- Designed for use with 5/16" 150 Ksi tubing only, Vee stem tip (Shutoff) only

Parker Autoclave Engineers valves are complemented by a complete line of high pressure fittings and tubing. Traceability is ensured by use of heat and purchase order codes etched on valve body that also include model number, MAWP rating, and material type references. All valves include connection collar and gland nut unless requested otherwise.

ENGINEERING YOUR SUCCESS.

30SC/43SC Series: Pressures to 43,000 psi (2965 bar)

For use with 1" High Pressure Tubing w/.438" ID

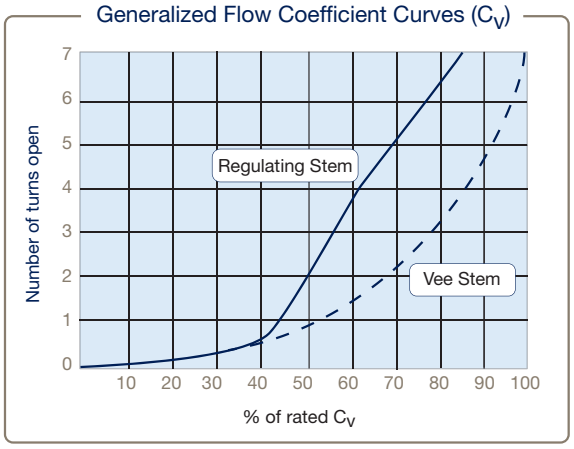


Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @Room Temperature**
1 (30SC Series)	F1000C43	0.438 (11.12)	2.6	30,000 (2068)
1 (43SC Series)	F1000C43	0.438 (11.12)	2.6	43,000 (2965)

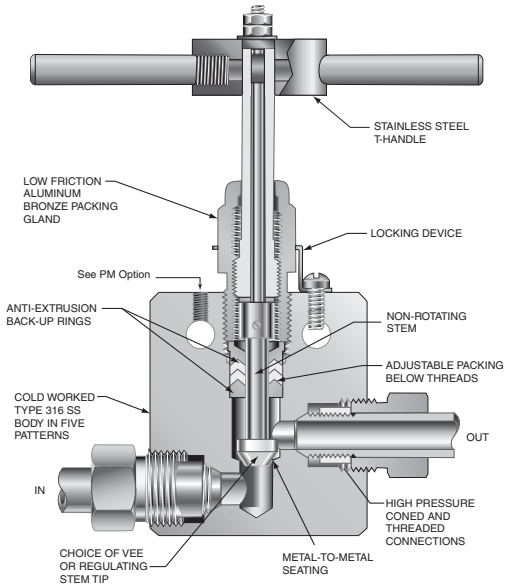
Notes

* Cv values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase CV value 50%. (Based on water). Formula for converting Cv to volumetric flow can be found in Technical Information section.

** Maximum Allowable Working Pressures decrease as temperatures increase - see pressure/temperature rating guide in Technical Information section.



30SC and 43SC Series Flow Curve for Vee and Regulating Stem Valves



To ensure proper fit use Parker Autoclave tubing

Valve Packing Options:

Standard Parker Autoclave Engineers valves with PTFE packing may be operated from 0°F (-17.8°C) to 450°F (232°C). High and Cryogenic temperature packing and/or extended stuffing box are available for service from -423°F (-252°C) to 1200°F (650°C) by adding the following suffixes to catalog order number:

B Cryogenic trim materials and PTFE packing required when below 0°F (-18°C) to -100°F (-73°C)

LT Extended stuffing box valve with PTFE packing and Cryogenic trim materials to -423°F (-252°C)

TG Standard valve with PTFE-Glass packing -100°F (-73°C) to 600°F (316°C) (See also -B option above when below 0°F (-18°C)

GY Standard valve with Graphite Yarn packing 32°F (0°C) to 800°F (427°C). Used when selecting HT option. (Note: 1" valve using graphite yarn packing has significant increase in torque needed to actuate valve at pressure. Contact factory with application detail for assistance.)

HT Extended stuffing box valve with Graphite Yarn packing to 1200°F (650°C)

(See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.)

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Ordering Guide:

For complete information on available stem types, optional connections and additional valve options, see pages 26-27 or contact your Sales Representative. 30SC & 43SC Series valves are furnished complete with connection components, unless otherwise specified. See High Pressure Fittings and Tubing brochure for compatible products.

Building a Part Number: ***Example: 30SC16071***

Example Part Number:	30SC	16	07	1	XX
Ordering Parameters/Options:	Valve Series	Outside Diameter Tube Size	Stem/Seat Type	Body Pattern	Options
Table Reference: (see below)	A	B	C	D	E

A - Valve Series	
30SC	High Pressure Needle Valve
43SC	High Pressure Needle Valve

B - Outside Diameter Tube Size	
16	1"

C - Stem/Seat Type	
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 (angle valve only)
88	Regulating Stem with Replaceable Seat (angle valve only)

Notes: Valves that have not been cycled for a substantial period of time may require higher initial actuation torque.

Valve Manuals can be found on our website at **www.Autoclave.com**, Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section.

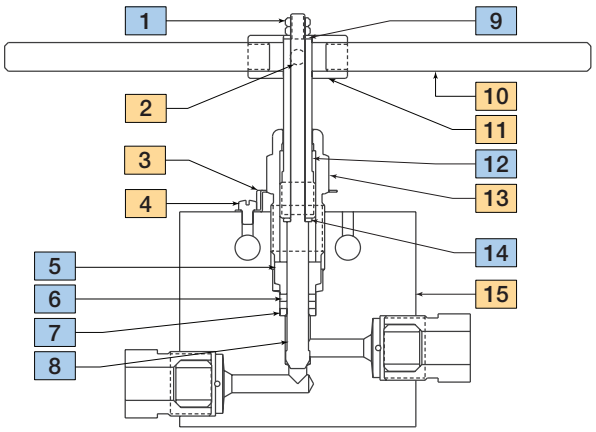
D - Body Pattern	
1	Two-Way Straight
2	Two-Way Angle
3	Three-Way, Two on Pressure
4	Three-Way, One on Pressure
5	Three-Way, Two Stem Manifold Valve

E - Options	
K	Antivibration Gland (replaces standard gland)
B	All 316 SS Materials required when below 0°F (-18°C) (included in LT)
LT	Low Temperature Extension (to -423°F) (includes PTFE packing)
TG	PTFE Glass (25%) Packing (to 600°F)
GY	Graphite Yarn Packing (to 800°F) [GY Packing increases Handle Torque, contact factory]
HT	High Temperature Extension (to 1200°F) (includes GY packing)

Pneumatic Actuator Options - see Actuator brochure for Suffix Codes
Other materials available upon request. See Technical Brochure for list of common options.
See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.

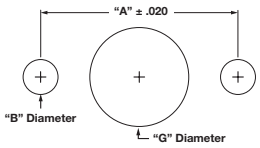
Material of Construction:

Item #	Description	Material
1	Lock Nut	316 SS
2	Hex Socket Set Screw	300 Series SS
3	Locking Device	302 SS
4	Round Screw, #10-24	300 Series SS
5	Packing Washer	AMPCO 45
6	Packing	Teflon
7	Bottom Washer	316 SS
8	One Piece Stem	316 SS
9	Thrust Washer	17-4 PH
10	Handle	304 SS
11	Hub	316 SS
12	Sleeve	316 SS
13	Packing Gland	AMPCO 45
14	Thrust Washer	17-4 PH
15	Valve Body	316 SS
	Typical spare parts found in Repair Kits	



Panel Hole Sizes:

Valve Size	Inches			
	A	B	Screw Size	G
16	2.50	.22	#10-24	1.62
Use suffix **-PM** for extra mounting hardware				



Needle Valve Panel Mount

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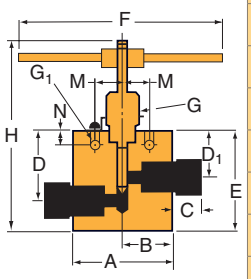
Basic Repair Kits for 316 SS Material:

Stem Type		Basic Repair Kit for 316 SS Material	
		Outside Diameter Tube:	
		30SC 1"	43SC 1"
2 Way Straight, 2 Way Angle 3 Way 2 On-Pressure, 3 Way 1 On-Pressure	VEE REG	R30SC1607 R30SC1608	R43SC1607 R43SC1608
2 Way, Replaceable Seat and Stem	VEE REG	R30SC16872 R30SC16882	R43SC16872 R43SC16882
3 Way, 2 Stem Manifold	VEE REG	R30SC16075 R30SC16085	R43SC16075 R43SC16085

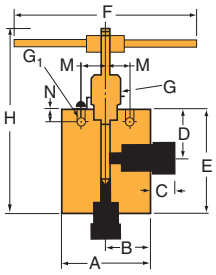
When ordering for valves bought with additional suffix options, please include those exact suffix codes when ordering repair kit. (Example: the stem for a manual valve is manufactured differently for a pneumatically actuated valve and the repair kit must include the exact actuator suffix codes).
Valve Manuals can be found on our website at **www.Autoclave.com**,
Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section.

30SC and 43SC Series Dimensions:

2 Way Straight

		Catalog Number	
Stem Type	VEE REG	30SC16071 30SC16081	43SC16071 43SC16081
Outside Diameter Tube		1 (25.40)	1 (25.40)
Orifice Diameter		0.438 (11.12)	0.438 (11.12)
Dimensions: inches (mm)	A	4.12 (104.65)	4.88 (123.96)
	B	2.06 (52.32)	2.44 (61.96)
	C	0.72 (18.28)	0.72 (18.28)
	D	3.50 (88.90)	3.50 (88.90)
	D1	2.75 (69.85)	2.75 (69.85)
	E	4.44 (112.77)	4.44 (112.77)
	F	10.24 (260.10)	10.23 (259.84)
	G	1.62 (41.15)	1.62 (41.15)
	G1	0.56 (14.22)	0.56 (14.22)
	H*	8.61 (218.69)	8.61 (218.69)
	M	1.25 (31.75)	1.25 (31.75)
	N	1.12 (28.44)	1.12 (28.44)
Block Thickness		1.75 (44.45)	2.25 (57.15)

2 Way Angle

		Catalog Number	
Stem Type	VEE REG	30SC16072 30SC16082	43SC16072 43SC16082
Outside Diameter Tube		1 (25.40)	1 (25.40)
Orifice Diameter		0.438 (11.12)	0.438 (11.12)
Dimensions: inches (mm)	A	4.12 (104.65)	4.88 (123.96)
	B	2.06 (52.32)	2.44 (61.96)
	C	0.72 (18.28)	0.72 (18.28)
	D	2.75 (69.85)	2.75 (69.85)
	D1	-	-
	E	5.12 (130.04)	5.12 (130.04)
	F	10.24 (260.10)	10.23 (259.84)
	G	1.62 (41.15)	1.62 (41.15)
	G1	0.56 (14.22)	0.56 (14.22)
	H*	9.29 (235.97)	9.29 (235.97)
	M	1.25 (31.75)	1.25 (31.75)
	N	1.12 (28.44)	1.12 (28.44)
Block Thickness		1.75 (44.45)	2.25 (57.15)

G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

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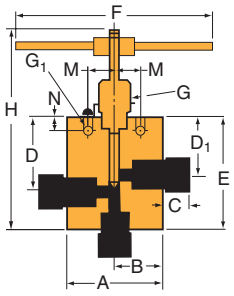
30SC and 43SC Series Dimensions:

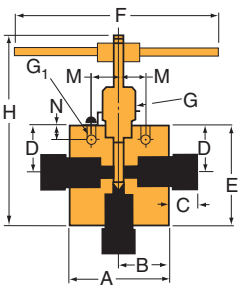
3 Way, 2 On Pressure

Stem Type	VEE REG	Catalog Number 30SC16073 30SC16083	Catalog Number 43SC16073 43SC16083
Outside Diameter Tube		1 (25.40)	1 (25.40)
Orifice Diameter		0.438 (11.12)	0.438 (11.12)
Dimensions: inches (mm)	A	4.12 (104.65)	4.88 (123.96)
	B	2.06 (52.32)	2.44 (61.96)
	C	0.72 (18.28)	0.72 (18.28)
	D	2.75 (69.85)	2.75 (69.85)
	D1	-	-
	E	5.12 (130.04)	5.12 (130.04)
	F	10.24 (260.10)	10.23 (259.84)
	G	1.62 (41.15)	1.62 (41.15)
	G1	0.56 (14.22)	0.56 (14.22)
	H*	9.29 (235.97)	9.29 (235.97)
	M	1.25 (31.75)	1.25 (31.75)
	N	1.12 (28.44)	1.12 (28.44)
Block Thickness		1.75 (44.45)	2.25 (57.15)



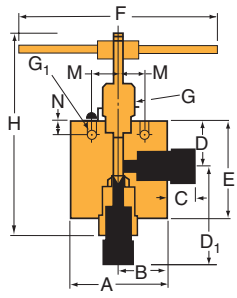
3 Way, 1 On Pressure

Stem Type	VEE REG	Catalog Number 30SC16074 30SC16084	Catalog Number 43SC16074 43SC16084
Outside Diameter Tube		1 (25.40)	1 (25.40)
Orifice Diameter		0.438 (11.12)	0.438 (11.12)
Dimensions: inches (mm)	A	4.12 (104.65)	4.88 (123.96)
	B	2.06 (52.32)	2.44 (61.96)
	C	0.72 (18.28)	0.72 (18.28)
	D	2.75 (69.85)	2.75 (69.85)
	D1	-	-
	E	5.12 (130.04)	5.12 (130.04)
	F	10.24 (260.10)	10.23 (259.84)
	G	1.62 (41.15)	1.62 (41.15)
	G1	0.56 (14.22)	0.56 (14.22)
	H*	9.29 (235.97)	9.29 (235.97)
	M	1.25 (31.75)	1.25 (31.75)
	N	1.12 (28.44)	1.12 (28.44)
Block Thickness		1.75 (44.45)	2.25 (57.15)



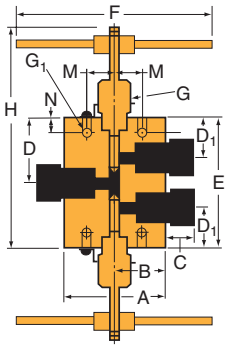
2 Way Angle Replaceable Seat

Stem Type	VEE REG	Catalog Number 30SC16872 30SC16882	Catalog Number 43SC16872 43SC16882
Outside Diameter Tube		1 (25.40)	1 (25.40)
Orifice Diameter		0.438 (11.12)	0.438 (11.12)
Dimensions: inches (mm)	A	4.12 (104.65)	4.88 (123.96)
	B	2.06 (52.32)	2.44 (61.96)
	C	0.72 (18.28)	0.72 (18.28)
	D	2.75 (69.85)	2.75 (69.85)
	D1	4.41 (112.05)	4.39 (111.51)
	E	5.25 (133.35)	5.25 (133.35)
	F	10.24 (260.10)	10.23 (259.84)
	G	1.62 (41.15)	1.62 (41.15)
	G1	0.56 (14.22)	0.56 (14.22)
	H*	11.33 (287.78)	11.31 (287.27)
	M	1.25 (31.75)	1.25 (31.75)
	N	1.12 (28.44)	1.12 (28.44)
Block Thickness		1.75 (44.45)	2.25 (57.15)



3 Way, 2 Stem Manifold

Stem Type	VEE REG	Catalog Number 30SC16075 30SC16085	Catalog Number 43SC16075 43SC16085
Outside Diameter Tube		1 (25.40)	1 (25.40)
Orifice Diameter		0.438 (11.12)	0.438 (11.12)
Dimensions: inches (mm)	A	4.12 (104.65)	4.88 (123.96)
	B	2.06 (52.32)	2.44 (61.96)
	C	0.72 (18.28)	0.72 (18.28)
	D	2.75 (69.85)	2.75 (69.85)
	D1	-	-
	E	5.12 (130.04)	5.12 (130.04)
	F	10.24 (260.10)	10.23 (259.84)
	G	1.62 (41.15)	1.62 (41.15)
	G1	0.56 (14.22)	0.56 (14.22)
	H*	9.29 (235.97)	9.29 (235.97)
	M	1.25 (31.75)	1.25 (31.75)
	N	1.12 (28.44)	1.12 (28.44)
Block Thickness		1.75 (44.45)	2.25 (57.15)



G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

30VM Series: Pressures to 30,000 psi (2068 bar)

Larger Orifice and Higher Cv than 60VM valves

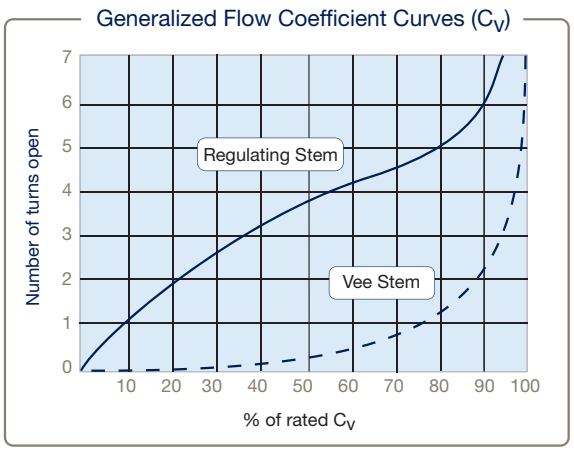


Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @Room Temperature**
1/4	F250C	0.094 (2.39)	0.12	30,000 (2068)
3/8	F375C	0.125 (3.18)	0.23	30,000 (2068)
9/16	F562C	0.125 (3.18)	0.33	30,000 (2068)

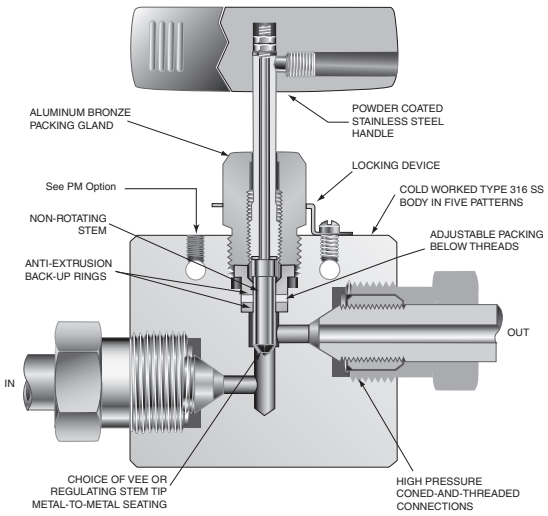
Notes

* Cv values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase CV value 50%. (Based on water). Formula for converting Cv to volumetric flow can be found in Technical Information section.

** Maximum Allowable Working Pressures decrease as temperatures increase - see pressure/temperature rating guide in Technical Information section.



30VM Series Flow Curve for Vee and Regulating Stem Valves



To ensure proper fit use Parker Autoclave tubing

Valve Packing Options:

Standard Parker Autoclave Engineers valves with PTFE packing may be operated from 0°F (-17.8°C) to 450°F (232°C). High and Cryogenic temperature packing and/or extended stuffing box are available for service from -423°F (-252°C) to 1200°F (650°C) by adding the following suffixes to catalog order number:

B Cryogenic trim materials and PTFE packing required when below 0°F (-18°C) to -100°F (-73°C)

LT Extended stuffing box valve with PTFE packing and Cryogenic trim materials to -423°F (-252°C)

TG Standard valve with PTFE-Glass packing -100°F (-73°C) to 600°F (316°C) (See also -B option above when below 0°F (-18°C)

GY Standard valve with Graphite Yarn packing 32°F (0°C) to 800°F (427°C). Used when selecting HT option.

HT Extended stuffing box valve with Graphite Yarn packing to 1200°F (650°C)

(See “Technical Brochure” for Pressure/Temperature effect on temperatures above ambient.)

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Ordering Guide:

For complete information on available stem types, optional connections and additional valve options, see pages 26-27 or contact your Sales Representative. 30VM Series valves are furnished complete with connection components, unless otherwise specified. See High Pressure Fittings and Tubing brochure for compatible products.

Building a Part Number: ***Example: 30VM4071***

Example Part Number:	30VM	4	07	1	XX
Ordering Parameters/Options:	Valve Series	Outside Diameter Tube Size	Stem/Seat Type	Body Pattern	Options
Table Reference: (see below)	A	B	C	D	E

A - Valve Series	
30VM	High Pressure Needle Valve

B - Outside Diameter Tube Size	
4	1/4"
6	3/8"
9	9/16"

C - Stem/Seal Type	
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 (angle valve only)
88	Regulating Stem with Replaceable Seat (angle valve only)

Notes: Valve Manuals can be found on our website at **www.Autoclave.com**. Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section. Valves that have not been cycled for a substantial period of time may require higher initial actuation torque.

*Replaceable seat option is sold with two (2) seat surfaces 180° apart.

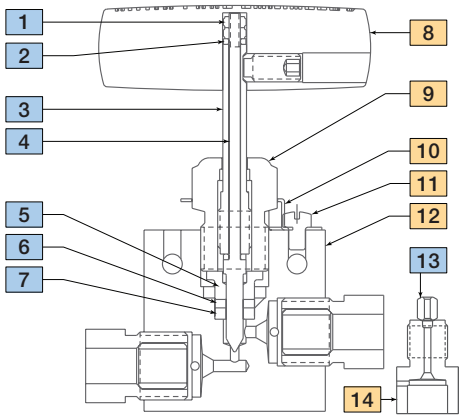
D - Body Pattern	
1	Two-Way Straight
2	Two-Way Angle
3	Three-Way, Two on Pressure
4	Three-Way, One on Pressure
5	Three-Way, Two Stem Manifold Valve

E - Options	
K	Antivibration Gland (replaces standard gland)
B	All 316 SS Materials required when below 0°F (-18°C) (included in LT)
LT	Low Temperature Extension (to -423°F) (includes PTFE packing)
TG	PTFE Glass (25%) Packing (to 600°F)
GY	Graphite Yarn Packing (to 800°F)
HT	High Temperature Extension (to 1200°F) (includes GY packing)
SOG	NACE MR0175 Material, Hardness Verification/Certificate
HYG	Hydrogen/Helium Upgrade/Seat Testing

Pneumatic Actuator Options - see Actuator brochure for Suffix Codes
Other materials available upon request. See Technical Brochure for list of common options.
See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.

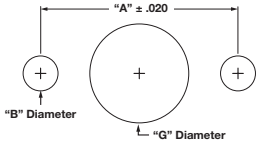
Material of Construction:

Item #	Description	Material
1	Hex Nut	300 Series SS
2	Thrust Washer	17-4 PH
3	Stem Sleeve	316 SS
4	Vee Stem, (3/8" 30VM shown)	316 SS
5	Packing Washer	AMPCO 45
6	Packing	PTFE
7	Bottom Washer	316 SS
8	Handle	316 SS
9	Packing Gland	AMPCO 45
10	Locking Device	302SS
11	Screw #10	18-8 SS
12	Valve Body	316 SS
13	Replaceable Seat	17-4PH
14	Seat Retainer	316 SS
	Typical spare parts found in Repair Kits	



Panel Hole Sizes:

Valve Size	Inches			
	A	B	Screw Size	G
4 and 6	1.38	.22	#10-24	1.00
9	1.38	.22	#10-24	1.00
Use suffix **-PM** for extra mounting hardware				



Needle Valve Panel Mount

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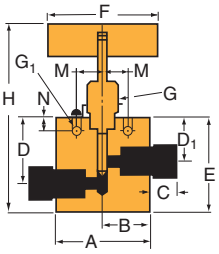
Basic Repair Kits for 316 SS Material:

Stem Type		Basic Repair Kit for 316 SS Material Outside Diameter Tube: 1/4", 3/8", 9/16"
2 Way Straight, 2 Way Angle 3 Way 2 On-Pressure, 3 Way 1 On-Pressure	VEE REG	R30VM7 R30VM8
2 Way, Replaceable Seat and Stem	VEE REG	R30VM872 R30VM882
3 Way, 2 Stem Manifold	VEE REG	R30VM075 R30VM085

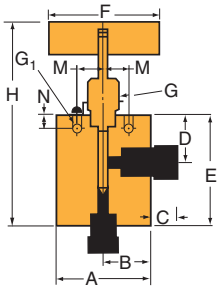
When ordering for valves bought with additional suffix options, please include those exact suffix codes when ordering repair kit. (Example: the stem for a manual valve is manufactured differently for a pneumatically actuated valve and the repair kit must include the exact actuator suffix codes).
Valve Manuals can be found on our website at **www.Autoclave.com**,
Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section.

30VM Series Dimensions:

2 Way Straight

		Catalog Number		
Stem Type	VEE REG	30VM4071 30VM4081	30VM6071 30VM6081	30VM9071 30VM9081
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.81 (20.57)
	D	1.50 (38.10)	1.50 (38.10)	1.56 (39.62)
	D1	1.12 (28.45)	1.12 (28.45)	1.12 (28.45)
	E	2.00 (50.80)	2.00 (50.80)	2.44 (61.98)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	4.62 (117.35)	4.68 (118.87)	5.06 (128.52)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)

2 Way Angle

		Catalog Number		
Stem Type	VEE REG	30VM4072 30VM4082	30VM6072 30VM6082	30VM9072 30VM9082
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.81 (20.57)
	D	1.12 (28.45)	1.12 (28.45)	1.12 (28.45)
	D1	-	-	-
	E	2.00 (50.80)	2.12 (53.85)	2.44 (61.98)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	4.62 (117.35)	4.74 (120.40)	5.06 (128.52)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)

G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

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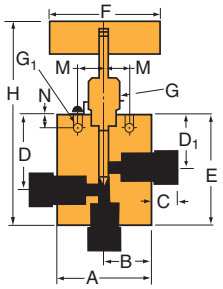
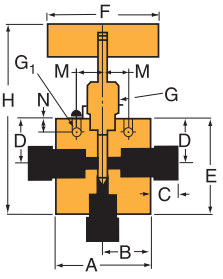
30VM Series Dimensions:

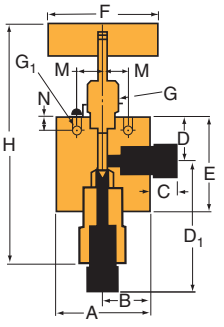
3 Way, 2 On Pressure

Stem Type	VEE REG	Catalog Number		
		30VM4073 30VM4083	30VM6073 30VM6083	30VM9073 30VM9083
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.81 (20.57)
	D	1.50 (38.10)	1.50 (38.10)	1.56 (39.62)
	D1	1.12 (28.45)	1.12 (28.45)	1.12 (28.45)
	E	2.12 (53.85)	2.50 (63.50)	2.88 (73.15)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	4.74 (120.40)	5.12 (130.05)	5.49 (139.45)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)

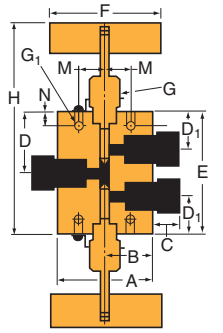
3 Way, 1 On Pressure

Stem Type	VEE REG	Catalog Number		
		30VM4074 30VM4084	30VM6074 30VM6084	30VM9074 30VM9084
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.81 (20.57)
	D	1.12 (28.45)	1.12 (28.45)	1.12 (28.45)
	D1	-	-	-
	E	2.00 (50.80)	2.12 (53.85)	2.44 (61.98)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	4.62 (117.35)	4.74 (120.40)	5.12 (130.05)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)

2 Way Angle Replaceable Seat

Stem Type	VEE REG	Catalog Number		
		30VM4872 30VM4882	30VM6872 30VM6882	30VM9872 30VM9882
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.81 (20.57)
	D	1.12 (28.45)	1.12 (28.45)	1.12 (28.45)
	D1	2.06 (52.32)	2.31 (58.67)	2.62 (66.55)
	E	2.38 (60.45)	2.38 (60.45)	2.44 (61.98)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	5.80 (147.32)	6.05 (153.67)	6.45 (163.83)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)

3 Way, 2 Stem Manifold

Stem Type	VEE REG	Catalog Number		
		30VM4075 30VM4085	30VM6075 30VM6085	30VM9075 30VM9085
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.81 (20.57)
	D	1.53 (38.86)	1.62 (41.15)	1.88 (47.75)
	D1	1.12 (28.45)	1.12 (28.45)	1.12 (28.45)
	E	3.06 (77.72)	3.25 (82.55)	3.75 (95.25)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	5.68 (144.27)	5.87 (149.10)	6.37 (161.80)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)

G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

40VM Series: Pressures to 40,000 psi (2760 bar)

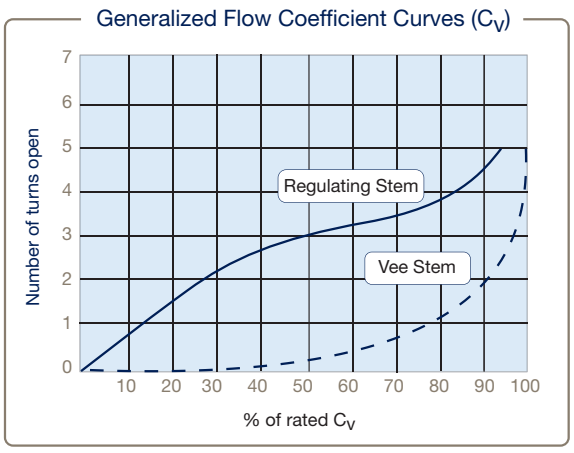
For use with 9/16" High Pressure Tubing w/ .250" ID



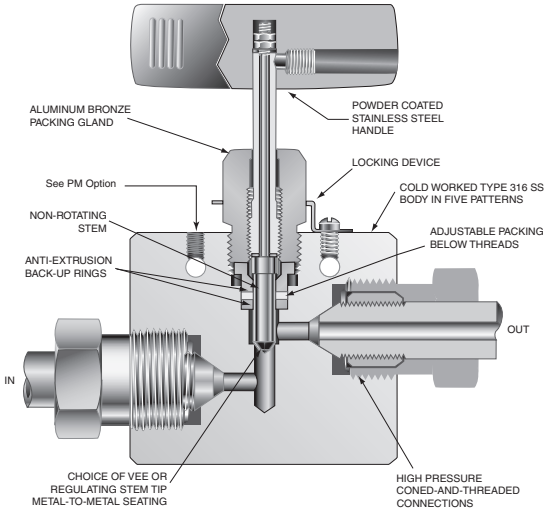
Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @Room Temperature**
9/16	F562C40	0.109 (2.77)	0.28	40,000 (2760)

Notes
* Cv values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase CV value 50%. (Based on water). Formula for converting Cv to volumetric flow can be found in Technical Information section.

** Maximum Allowable Working Pressures decrease as temperatures increase - see pressure/temperature rating guide in Technical Information section.



40VM Series Flow Curve for Vee and Regulating Stem Valves



To ensure proper fit use Parker Autoclave tubing

Valve Packing Options:

Standard Parker Autoclave Engineers valves with nylon/leather/nylon packing may be operated from 40°F (4.4°C) to 230°F (110°C). Extended temperature packing is available for service from -423°F (-252°C) to 1200°F (650°C) by adding the following suffixes to catalog order number:

B Cryogenic trim materials and PTFE packing required when below 0°F (-18°C) to -100°F (-73°C)

LT Extended stuffing box valve with PTFE packing and Cryogenic trim materials to -423°F (-252°C)

***TG** Standard valve with PTFE-Glass packing -100°F (-73°C) to 600°F (316°C) (See also -B option above when below 0°F (-18°C)

GY Standard valve with Graphite Yarn packing 32°F (0°C) to 800°F (427°C). Used when selecting HT option.

HT Extended stuffing box valve with Graphite Yarn packing to 1200°F (650°C)

Note: *40VM and 60VM TG packing options supplied with PEEK/PTFE Glass/PEEK

(See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.)

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Ordering Guide:

For complete information on available stem types, optional connections and additional valve options, see pages 26-27 or contact your Sales Representative. 40VM Series valves are furnished complete with connection components, unless otherwise specified. See High Pressure Fittings and Tubing brochure for compatible products.

Building a Part Number: ***Example: 40VM9071***

Example Part Number:	40VM	9	07	1	XX
Ordering Parameters/Options:	Valve Series	Outside Diameter Tube Size	Stem/Seat Type	Body Pattern	Options
Table Reference: (see below)	A	B	C	D	E

A - Valve Series	
40VM	High Pressure Needle Valve

B - Outside Diameter Tube Size	
9	9/16"

C - Stem/Seat Type	
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 (angle valve only)
88	Regulating Stem with Replaceable Seat (angle valve only)

Notes: Valve Manuals can be found on our website at **www.Autoclave.com**. Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section. Valves that have not been cycled for a substantial period of time may require higher initial actuation torque.

*Replaceable seat option is sold with two (2) seat surfaces 180° apart.

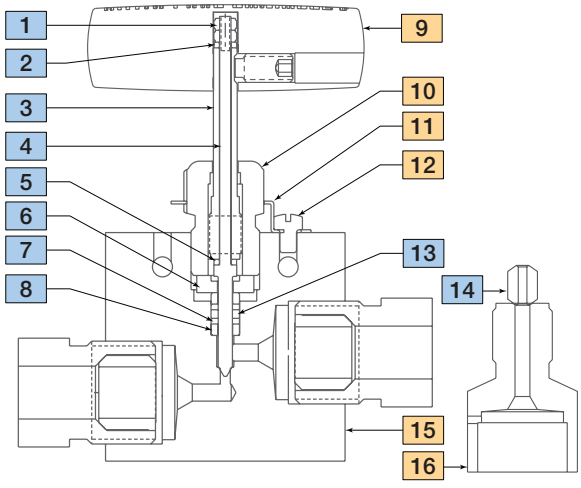
D - Body Pattern	
1	Two-Way Straight
2	Two-Way Angle (required with replaceable seat option)
3	Three-Way, Two on Pressure
4	Three-Way, One on Pressure
5	Three-Way, Two Stem Manifold Valve

E - Options	
K	Antivibration Gland (replaces standard gland)
B	All 316 SS Materials required when below 0°F (-18°C) (included in LT)
LT	Low Temperature Extension (to -423°F) (includes PTFE packing)
TG	PTFE Glass (25%) Packing (to 600°F)
GY	Graphite Yarn Packing (to 800°F)
HT	High Temperature Extension (to 1200°F) (includes GY packing)

Actuator Options - see Actuator brochure for Suffix Codes
Other materials available upon request. See Technical Brochure for list of common options.
See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.

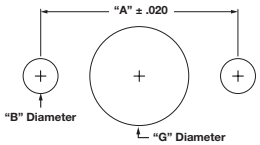
Material of Construction:

Item #	Description	Material
1	Hex Nut	300 Series SS
2	Thrust Washer	17-4 PH
3	Stem Sleeve	304 SS
4	Vee Stem, (9/16" 40VM shown)	316 SS
5	Thrust Washer	17-4 PH
6	Backup Washer	17-4 PH
7	Packing	Nylon
8	Packing Washer	17-4 PH
9	Handle, 3"	Aluminum
10	Packing Gland	AMPCO 45
11	Locking Device	302 SS
12	Screw, #10	18-8 SS
13	Packing	Leather
14	Replaceable Seat	17-4 PH
15	Valve Body	316 SS
16	Seat Retainer	316 SS
	Typical spare parts found in Repair Kits	



Panel Hole Sizes:

Valve Size	Inches			
	A	B	Screw Size	G
4 and 6	1.38	.22	#10-24	1.00
9	1.38	.22	#10-24	1.00
Use suffix **-PM** for extra mounting hardware				



Needle Valve Panel Mount

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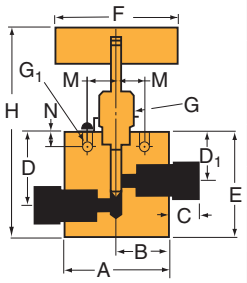
Basic Repair Kits for 316 SS Material:

Stem Type		Basic Repair Kit for 316 SS Material Outside Diameter Tube: 9/16"
2 Way Straight, 2 Way Angle 3 Way 2 On-Pressure, 3 Way 1 On-Pressure	VEE REG	R40VM7 R40VM8
2 Way, Replaceable Seat and Stem	VEE REG	R40VM872 R40VM882
3 Way, 2 Stem Manifold	VEE REG	R40VM075 R40VM085

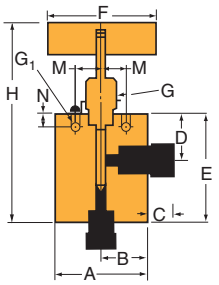
When ordering for valves bought with additional suffix options, please include those exact suffix codes when ordering repair kit. (Example: the stem for a manual valve is manufactured differently for a pneumatically actuated valve and the repair kit must include the exact actuator suffix codes).
Valve Manuals can be found on our website at **www.Autoclave.com**,
Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section.

40VM Series Dimensions:

2 Way Straight

		Catalog Number
Stem Type	VEE REG	40VM9071 40VM9081
Outside Diameter Tube		9/16 (14.29)
Orifice Diameter		0.312 (7.93)
Dimensions: inches (mm)	A	2.62 (66.55)
	B	1.31 (33.35)
	C	0.72 (18.29)
	D	1.75 (44.45)
	D1	1.31 (33.32)
	E	2.50 (63.50)
	F	3.00 (76.20)
	G	1.00 (25.40)
	G1	0.28 (7.11)
	H*	5.01 (127.25)
	M	0.69 (17.53)
	N	0.38 (9.65)
Block Thickness		1.50 (38.10)

2 Way Angle

		Catalog Number
Stem Type	VEE REG	40VM9072 40VM9082
Outside Diameter Tube		9/16 (14.29)
Orifice Diameter		0.312 (7.93)
Dimensions: inches (mm)	A	2.62 (66.55)
	B	1.31 (33.35)
	C	0.72 (18.29)
	D	1.31 (44.45)
	D1	-
	E	2.81 (71.37)
	F	3.00 (76.20)
	G	1.00 (25.40)
	G1	0.28 (7.11)
	H*	5.32 (135.13)
	M	0.69 (17.53)
	N	0.38 (9.65)
Block Thickness		1.50 (38.10)

G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

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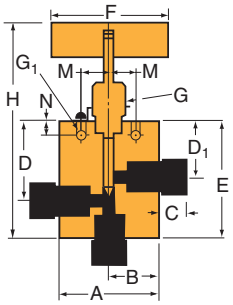
40VM Series Dimensions:

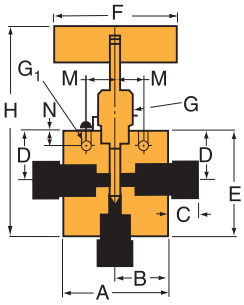
3 Way, 2 On Pressure

		Catalog Number
Stem Type	VEE REG	40VM9073 40VM9083
Outside Diameter Tube		**9/16 (14.29)**
Orifice Diameter		0.312 (7.93)
Dimensions: inches (mm)	**A**	2.62 (66.55)
	B	1.31 (33.35)
	C	0.72 (18.29)
	D	1.75 (44.45)
	D1	1.31 (33.32)
	E	3.13 (79.38)
	F	3.00 (76.20)
	G	1.00 (25.40)
	G1	0.28 (7.11)
	H*	5.64 (143.13)
	M	0.69 (17.53)
	N	0.38 (9.65)
Block Thickness		1.50 (38.10)



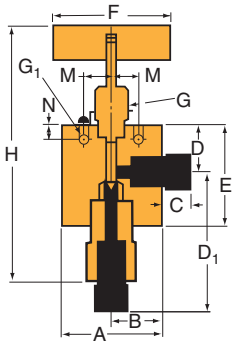
3 Way, 1 On Pressure

		Catalog Number
Stem Type	VEE REG	40VM9074 40VM9084
Outside Diameter Tube		**9/16 (14.29)**
Orifice Diameter		0.312 (7.93)
Dimensions: inches (mm)	**A**	2.62 (66.55)
	B	1.31 (33.35)
	C	0.72 (18.29)
	D	1.31 (44.45)
	D1	-
	E	2.81 (71.37)
	F	3.00 (76.20)
	G	1.00 (25.40)
	G1	0.28 (7.11)
	H*	5.32 (135.13)
	M	0.69 (17.53)
	N	0.38 (9.65)
Block Thickness		1.50 (38.10)



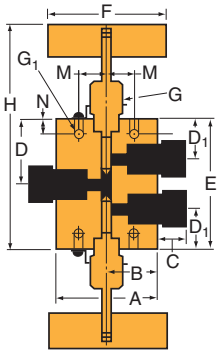
2 Way Angle Replaceable Seat

		Catalog Number
Stem Type	VEE REG	40VM9872 40VM9882
Outside Diameter Tube		**9/16 (14.29)**
Orifice Diameter		0.312 (7.93)
Dimensions: inches (mm)	**A**	2.62 (66.55)
	B	1.31 (33.35)
	C	0.72 (18.29)
	D	1.31 (33.35)
	D1	2.68 (68.07)
	E	2.63 (66.80)
	F	3.00 (76.20)
	G	1.00 (25.40)
	G1	0.28 (7.11)
	H*	6.85 (173.99)
	M	0.69 (17.53)
	N	0.38 (9.65)
Block Thickness		1.50 (38.10)



3 Way, 2 Stem Manifold

		Catalog Number
Stem Type	VEE REG	40VM9075 40VM9085
Outside Diameter Tube		**9/16 (14.29)**
Orifice Diameter		0.312 (7.93)
Dimensions: inches (mm)	**A**	2.62 (66.55)
	B	1.31 (33.35)
	C	0.72 (18.29)
	D	2.06 (52.37)
	D1	1.31 (33.32)
	E	4.12 (104.65)
	F	3.00 (76.20)
	G	1.00 (25.40)
	G1	0.28 (7.11)
	H*	6.63 (168.40)
	M	0.69 (17.53)
	N	0.38 (9.65)
Block Thickness		1.50 (38.10)



G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

60VM Series: Pressures to 60,000 psi (4137 bar)

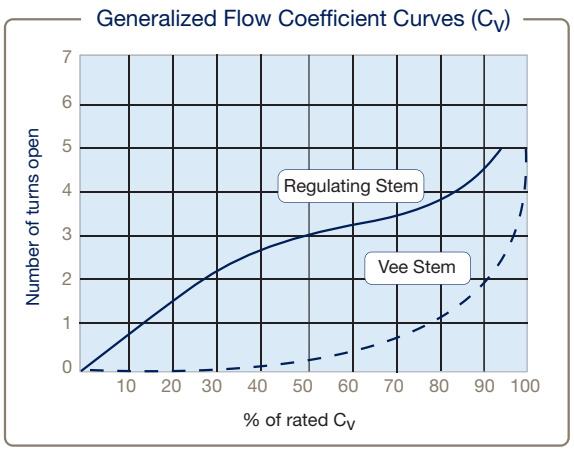
Temperatures from -423°F to 1200°F (-253°C to 650°C)



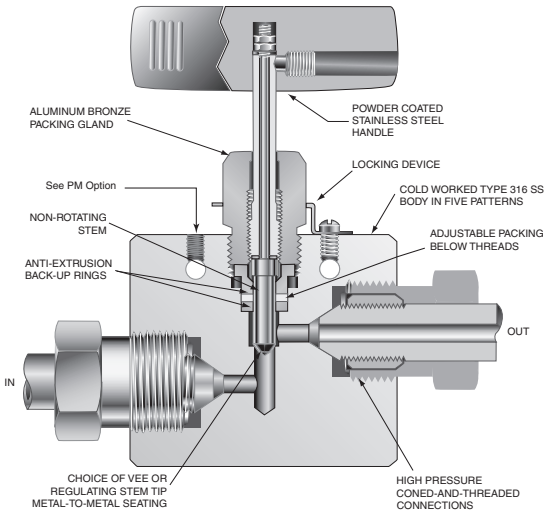
Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @Room Temperature**
1/4	F250C	0.062 (1.57)	0.08	60,000 (4137)
3/8	F375C	0.062 (1.57)	0.09	60,000 (4137)
9/16	F562C	0.0789 (1.98)	0.14	60,000 (4137)

Notes
* Cv values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase CV value 50%. (Based on water). Formula for converting Cv to volumetric flow can be found in Technical Information section.

** Maximum Allowable Working Pressures decrease as temperatures increase - see pressure/temperature rating guide in Technical Information section.



60VM Series Flow Curve for Vee and Regulating Stem Valves



To ensure proper fit use Parker Autoclave tubing

Valve Packing Options:

Standard Parker Autoclave Engineers valves with nylon/leather/nylon packing may be operated from 40°F (4.4°C) to 230°F (110°C). Extended temperature packing is available for service from -423°F (-252°C) to 1200°F (650°C) by adding the following suffixes to catalog order number:

- **B** Cryogenic trim materials and PTFE packing required when below 0°F (-18°C) to -100°F (-73°C)
- **LT** Extended stuffing box valve with PTFE packing and Cryogenic trim materials to -423°F (-252°C)
- ***TG** Standard valve with PTFE-Glass packing -100°F (-73°C) to 600°F (316°C) (See also -B option above when below 0°F (-18°C)
- **GY** Standard valve with Graphite Yarn packing 32°F (0°C) to 800°F (427°C). Used when selecting HT option.
- **HT** Extended stuffing box valve with Graphite Yarn packing to 1200°F (650°C)

Note: 40VM and *60VM TG packing options supplied with PEEK/PTFE Glass/PEEK

(See “Technical Brochure” for Pressure/Temperature effect on temperatures above ambient.)

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Ordering Guide:

For complete information on available stem types, optional connections and additional valve options, see pages 26-27 or contact your Sales Representative. 60VM Series valves are furnished complete with connection components, unless otherwise specified. See High Pressure Fittings and Tubing brochure for compatible products.

Building a Part Number: ***Example: 60VM4071***

Example Part Number:	60VM	4	07	1	XX
Ordering Parameters/Options:	Valve Series	Outside Diameter Tube Size	Stem/Seat Type	Body Pattern	Options
Table Reference: (see below)	A	B	C	D	E

A - Valve Series	
60VM	High Pressure Needle Valve

B - Outside Diameter Tube Size	
4	1/4"
6	3/8"
9	9/16"

C - Stem/Seat Type	
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 (angle valve only)
88	Regulating Stem with Replaceable Seat (angle valve only)

Notes: VValve Manuals can be found on our website at **www.Autoclave.com**. Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section. Valves that have not been cycled for a substantial period of time may require higher initial actuation torque.

*Replaceable seat option is sold with two (2) seat surfaces 180° apart.

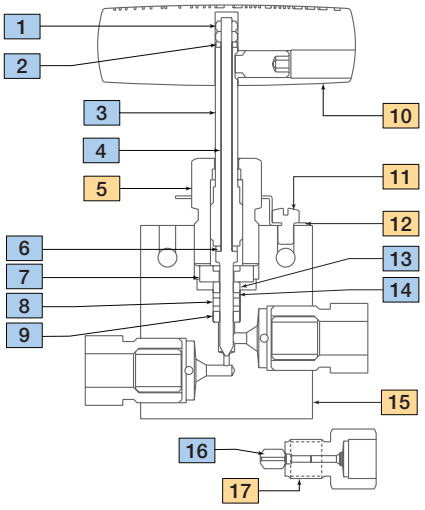
D - Body Pattern	
1	Two-Way Straight
2	Two-Way Angle
3	Three-Way, Two on Pressure
4	Three-Way, One on Pressure
5	Three-Way, Two Stem Manifold Valve

E - Options	
K	Antivibration Gland (replaces standard gland)
B	All 316 SS Materials required when below 0°F (-18°C) (included in LT)
LT	Low Temperature Extension (to -423°F) (includes PTFE packing)
TG	PTFE Glass (25%) Packing (to 600°F)
GY	Graphite Yarn Packing (to 800°F)
HT	High Temperature Extension (to 1200°F) (includes GY packing)
SOG	NACE MR0175 Material, Hardness Verification/Certificate
HYG	Hydrogen/Helium Upgrade/Seat Testing

Actuator Options - see individual brochures for Suffix Codes
Other materials available upon request. See Technical Brochure for list of common options.
See "Technical Brochure" for Pressure/Temperature effect on temperatures above ambient.

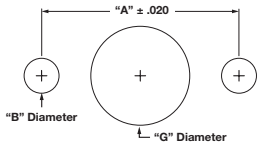
Material of Construction:

Item #	Description	Material
1	Hex Nut	300 Series SS
2	Thrust Washer	17-4 PH
3	Stem Sleeve	304 SS
4	Vee Stem	316 SS
5	Packing Gland	AMPCO 45
6	Thrust Washer	17-4 PH
7	Backup Washer	17-4 PH
8	Packing	Leather
9	Packing Washer	17-4 PH
10	Handle	316 SS
11	Screw, #10	18-8 SS
12	Locking Device	302 SS
13	Packing Washer	17-4 PH
14	Packing	Nylon
15	Body, (3/8" 60VM shown)	316 SS
16	Replaceable Seat	17-4 PH
17	Seat Retainer	316 SS
	Typical spare parts found in Repair Kits	



Panel Hole Sizes:

Valve Size	Inches			
	A	B	Screw Size	G
4 and 6	1.38	.22	#10-24	1.00
9	1.38	.22	#10-24	1.00
Use suffix **-PM** for extra mounting hardware				



Needle Valve Panel Mount

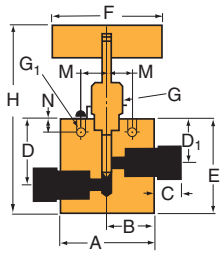
Basic Repair Kits for 316 SS Material:

Stem Type		Basic Repair Kit for 316 SS Material Outside Diameter Tube: 1/4", 3/8", 9/16"
2 Way Straight, 2 Way Angle 3 Way 2 On-Pressure, 3 Way 1 On-Pressure	VEE REG	R60VM7 R60VM8
2 Way, Replaceable Seat and Stem	VEE REG	R60VM872 R60VM882
3 Way, 2 Stem Manifold	VEE REG	R60VM075 R60VM085

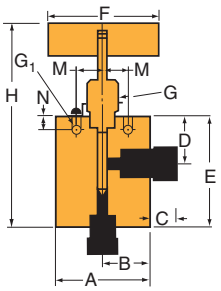
When ordering for valves bought with additional suffix options, please include those exact suffix codes when ordering repair kit. (Example: the stem for a manual valve is manufactured differently for a pneumatically actuated valve and the repair kit must include the exact actuator suffix codes).
Valve Manuals can be found on our website at **www.Autoclave.com**,
Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section.

60VM Series Dimensions:

2 Way Straight

Stem Type	VEE REG	Catalog Number 60VM4071 60VM4081	 60VM6071 60VM6081	 60VM9071 60VM9081
Outside Diameter Tube		**1/4 (6.35)**	**3/8 (9.53)**	**9/16 (14.29)**
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	**A**	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	**B**	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.72 (18.29)
	D	1.69 (42.93)	1.69 (42.93)	1.75 (45.45)
	D1	1.31 (33.27)	1.31 (33.27)	1.31 (33.27)
	E	2.12 (53.85)	2.25 (57.15)	2.50 (63.50)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	4.75 (120.65)	4.75 (120.65)	5.13 (130.30)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)

2 Way Angle

Stem Type	VEE REG	Catalog Number 60VM4072 60VM4082	 60VM6072 60VM6082	 60VM9072 60VM9082
Outside Diameter Tube		**1/4 (6.35)**	**3/8 (9.53)**	**9/16 (14.29)**
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	**A**	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	**B**	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.72 (18.29)
	D	1.31 (33.27)	1.31 (33.27)	1.31 (33.27)
	D1	-	-	-
	E	2.38 (60.45)	2.62 (66.55)	2.81 (71.37)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	5.00 (127.00)	5.25 (133.35)	5.44 (138.14)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)

G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

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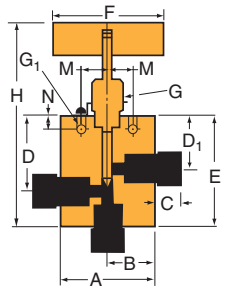
60VM Series Dimensions:

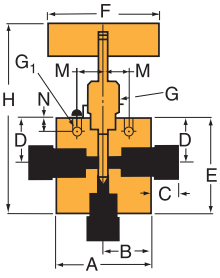
3 Way, 2 On Pressure

Stem Type	VEE REG	Catalog Number		
		60VM4073 60VM4083	60VM6073 60VM6083	60VM9073 60VM9083
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.72 (18.29)
	D	1.69 (42.93)	1.69 (42.93)	1.75 (45.45)
	D1	1.31 (33.27)	1.31 (33.27)	1.31 (33.27)
	E	2.38 (60.45)	2.75 (68.86)	3.03 (76.96)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	4.75 (120.65)	4.87 (123.70)	5.13 (130.30)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)



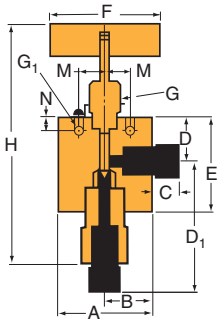
3 Way, 1 On Pressure

Stem Type	VEE REG	Catalog Number		
		60VM4074 60VM4084	60VM6074 60VM6084	60VM9074 60VM9084
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.72 (18.29)
	D	1.31 (33.27)	1.31 (33.27)	1.31 (33.27)
	D1	-	-	-
	E	2.38 (60.45)	2.62 (66.55)	2.81 (71.37)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	5.00 (127.00)	5.25 (133.35)	5.44 (138.18)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)



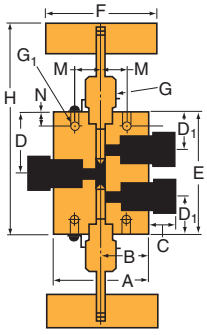
2 Way Angle Replaceable Seat

Stem Type	VEE REG	Catalog Number		
		60VM4872 60VM4882	60VM6872 60VM6882	60VM9872 60VM9882
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.72 (18.29)
	D	1.31 (33.27)	1.31 (33.27)	1.31 (33.27)
	D1	2.12 (53.85)	2.36 (59.94)	2.68 (68.07)
	E	2.62 (66.55)	2.62 (66.55)	2.62 (66.55)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	6.28 (159.51)	6.52 (154.60)	6.90 (175.26)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)



3 Way, 2 Stem Manifold

Stem Type	VEE REG	Catalog Number		
		60VM4075 60VM4085	60VM6075 60VM6085	60VM9075 60VM9085
Outside Diameter Tube		1/4 (6.35)	3/8 (9.53)	9/16 (14.29)
Orifice Diameter		0.94 (2.39)	0.125 (3.18)	0.125 (3.18)
Dimensions: inches (mm)	A	2.00 (50.80)	2.00 (50.80)	2.62 (66.55)
	B	1.00 (25.40)	1.00 (25.40)	1.31 (33.27)
	C	0.50 (12.70)	0.53 (13.46)	0.72 (18.29)
	D	1.72 (43.69)	1.88 (47.75)	2.06 (52.32)
	D1	1.31 (33.27)	1.31 (33.27)	1.31 (33.27)
	E	3.44 (87.38)	3.75 (95.25)	4.12 (104.65)
	F	3.00 (76.20)	3.00 (76.20)	3.00 (76.20)
	G	1.00 (25.40)	1.00 (25.40)	1.00 (25.40)
	G1	0.22 (5.59)	0.22 (5.59)	0.28 (7.11)
	H*	6.07 (154.18)	6.37 (161.80)	6.37 (161.80)
	M	0.69 (17.53)	0.69 (17.53)	0.69 (17.53)
	N	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)
Block Thickness		1.00 (25.40)	1.00 (25.40)	1.50 (38.10)



G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

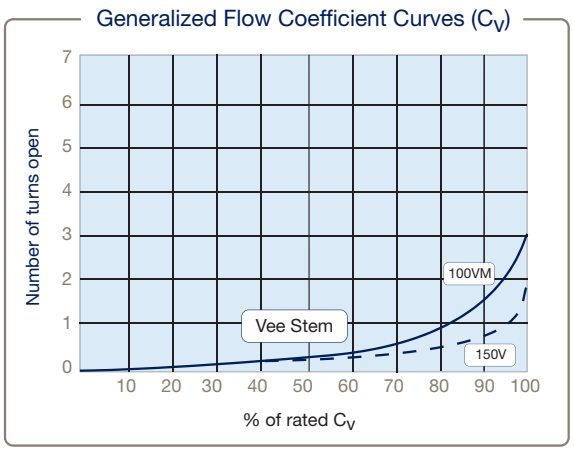
100VM & 150V Series: Pressures to 150,000 psi (10350 bar)



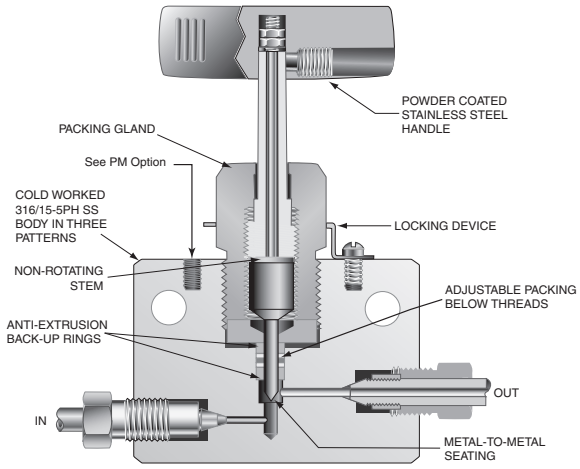
Tube Outside Diameter Size (inches)	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @Room Temperature**
1/4 (100VM)	F312C150	0.062 (1.57)	0.09	100,000 (10350)
5/16 (100VM)	F312C150	0.062 (1.57)	0.09	100,000 (10350)
3/8 (100VM)	F312C150	0.062 (1.57)	0.09	100,000 (10350)
9/16 (100VM)	F562C	0.188 (4.75)	0.65	100,000 (10350)
5/16 (150V)	F312C150	0.062 (1.57)	0.06	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%. (Based on water)

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



100VM and 150V Series Flow Curve for Vee Stem Valves



100VM Series

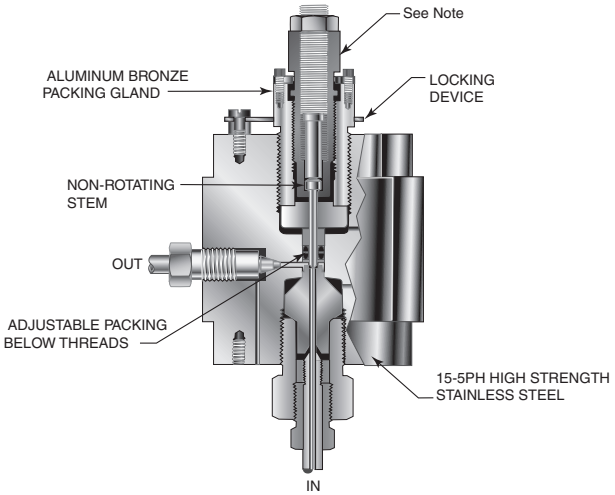
Note: 100VM9 Series comes with a T-Handle. To ensure proper fit use Parker Autoclave tubing

Valve Packing Options:

Standard Parker Autoclave Engineers valves with nylon/ leather/nylon packing may be operated from 40°F (4.4°C) to 230°F (110°C).

Note: Stem must be actuated with 15/16" hex size torque wrench (offered in Tools and Installation Catalog)

Shut-off torque = 32 ft-lbf (force in excess could damage stem)
Running torque = 26 ft-lbf



150V Series

To ensure proper fit use Parker Autoclave tubing

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Ordering Guide:

For complete information on available stem types, optional connections and additional valve options, see pages 26-27 or contact your Sales Representative. 100VM Series valves are furnished complete with connection components, unless otherwise specified.

Building a Part Number: ***Example: 100VM4071***

Example Part Number:	100VM	4	07	1	XX
Ordering Parameters/Options:	Valve Series	Outside Diameter Tube Size	Stem/Seat Type	Body Pattern	Options
Table Reference: (see below)	A	B	C	D	E

A - Valve Series	
100VM	High Pressure Needle Valve
150V	High Pressure Needle Valve (5/16" 150Ksi tubing only)

B - Outside Diameter Tube Size	
4	1/4"
5	5/16"
6	3/8"
9	9/16" (this size requires -155 material option)

C - Stem/Seat Type	
07	Non-Rotating Vee Stem (on-off service)
87	Vee Stem with Replaceable Seat (angle valve only)

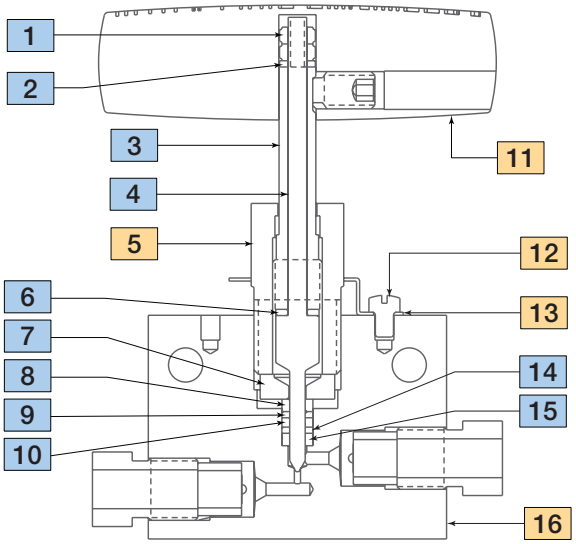
D - Body Pattern	
1	Two-Way Straight
2	Two-Way Angle (Required for 150V valves)

E - Options	
Pneumatic Actuator Options - see Actuator brochure for Suffix Codes	
-155	15-5 PH material (mandatory for size 9 valve)

Notes: Valve Manuals can be found on our website at **www.Autoclave.com**. Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section. Valves that have not been cycled for a substantial period of time may require higher initial actuation torque.

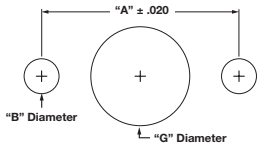
Material of Construction (100VM):

Item #	Description	Material
1	Hex Nut, #10-32	316 SS
2	Thrust Washer	17-4 PH
3	Stem Sleeve	304 SS
4	Vee Stem, (3/8" 100VM shown)	MP35N
5	Packing Gland	AMPCO 45
6	Thrust Washer	17-4 PH
7	Backup Washer	15-5 PH
8	Packing Washer	Berylco
9	Packing	Nylon
10	Packing	Leather
11	Handle	316 SS
12	Screw, #10	18-8 SS
13	Locking Device	302 SS
14	Packing	Nylon
15	Packing Washer	Berylco
16	Body, (3/8" 100VM shown)	316 SS
•	Replaceable Seat	17-4 PH
•	Seat Retainer	316 SS
	Typical spare parts found in Repair Kits	



Panel Hole Sizes:

Valve Size	Inches			
	A	B	Screw Size	G
4 and 6	2.25	.22	#10-24	1.12
9	1.75	.22	#10-24	1.12
Use suffix **-PM** for extra mounting hardware				



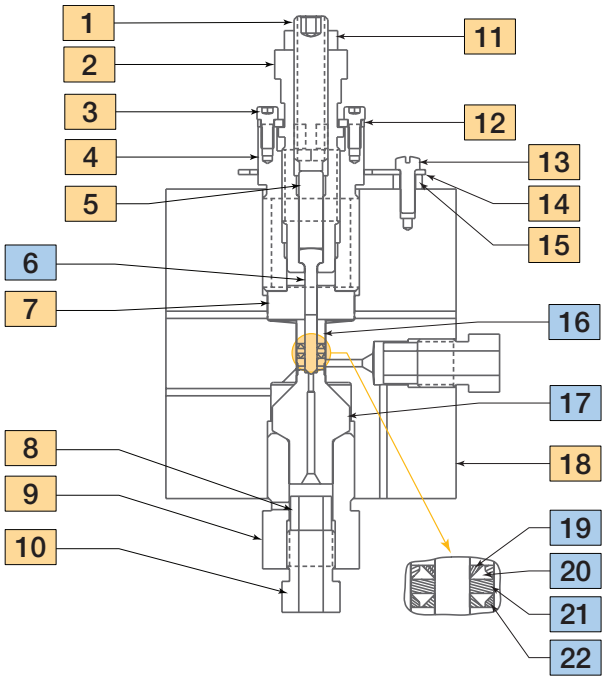
Needle Valve Panel Mount

Material of Construction (150V):

Item #	Description	Material
1	Hex Nut, 7/16-14	300 Series SS
2	Stem Retainer	316 SS
3	Stem Sleeve	AMPCO 45
4	Packing Gland	MP35N
5	Dowel Pin, 5/16"	Steel
6	Stem	Tool Steel
7	Packing Washer	E52100 Steel
8	Collar	316 SS
9	Seat Nut	630 SS
10	Gland	316 SS
11	Hex Nut, 7/16 - 14	300 Series SS
12	Stop Segment	Carbon Steel
13	Screw, #10	300 Series SS
14	Locking Device	302 SS
15	Spacer	304 SS
16	Bottom Washer	Tool Steel
17	Seat	NI Maraging Steel
18	Body, (5/16" 150VM shown)	4340
19	Wedge Ring	Berylco
20	Packing	PTFE
21	Packing	Leather
22	Wedge Ring	Berylco

Typical spare parts found in Repair Kits

Note:
150V Shutoff torque = 32 ft-lbf (Force in excess could damage stem)
150V Running torque - 26 ft-lbf



Basic Repair Kits for 316 SS Material:

Stem Type		Basic Repair Kit for 316 SS Material		
		Valve Type		
		100VM4 to 6	100VM9	150V
2 Way Straight, 2 Way Angle 3 Way 2 On-Pressure, 3 Way 1 On-Pressure (All sizes)	VEE	R100VM407 R100VM507 R100VM607	R100VM907	N/A
2 Way, Replaceable Seat and Stem	VEE	R100VM872	R100VM9872	R150V5072

When ordering for valves bought with additional suffix options, please include those exact suffix codes when ordering repair kit. (Example: the stem for a manual valve is manufactured differently for a pneumatically actuated valve and the repair kit must include the exact actuator suffix codes).
Valve Manuals can be found on our website at **www.Autoclave.com**,
Connection, Running and Seating Torques can be found in the product manual or in our Tools and Installation Catalog Section.

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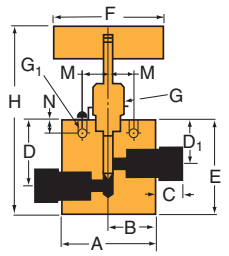
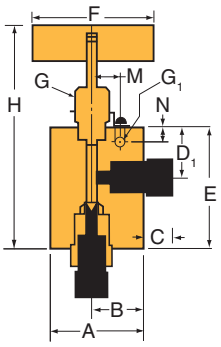
100VM & 150V Series Dimensions:

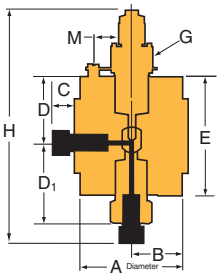
2-Way Straight

		Catalog Number			
Stem Type	VEE	100VM			
Outside Diameter Tube		1/4 (6.35)	5/16 (7.93)	3/8 (9.53)	9/16 (14.3)
Orifice Diameter		0.94 (2.39)	0.062 (1.57)	0.125 (3.18)	0.188 (4.8)
Dimensions: inches (mm)	A	3.00 (76.20)			3.00 (76.20)
	B	1.50 (38.10)			1.50 (38.10)
	C	0.52 (13.21)			0.75 (19.05)
	D	1.75 (44.45)			2.68 (68.07)
	D1	1.44 (36.58)			2.18 (55.37)
	E	2.25 (57.15)			3.50 (88.9
	F	4.00 (101.60)			10.34 (262.6)
	G	1.12 (28.45)			1.12 (28.45)
	G1	0.34 (8.64)			0.44 (11.18)
	H*	5.35 (136.00)			6.8 (172.7)
	M	0.88 (22.4)			0.88 (22.4)
	N	0.50 (12.70)			0.63 (16.0)
Block Thickness		1.38 (35.05)			2.00 (50.8)

2 Way Angle Replaceable Seat

		Catalog Number			
Stem Type	VEE	100VM			
Outside Diameter Tube		1/4 (6.35)	5/16 (7.93)	3/8 (9.53)	9/16 (14.3)
Orifice Diameter		0.94 (2.39)	0.062 (1.57)	0.125 (3.18)	0.188 (4.8)
Dimensions: inches (mm)	A	2.25 (57.15)			3.00 (76.20)
	B	1.50 (38.10)			1.50 (38.10)
	C	0.52 (13.21)			0.72 (18.28)
	D	-			-
	D1	1.44 (36.58)			2.20 (55.88)
	E	3.00 (76.20)			3.80 (96.52)
	F	4.00 (101.60)			10.34 (262.6)
	G	1.12 (28.45)			1.12 (28.45)
	G1	0.34 (8.64)			0.44 (11.18)
	H*	7.57 (192.30)			7.1 (180.3)
	M	0.88 (22.4)			0.88 (22.4)
	N	0.50 (12.70)			0.63 (16.0)
Block Thickness		1.38 (35.05)			2.00 (50.8)

2 Way Angle Replaceable Seat (150V Valve only)

		Catalog Number
Stem Type	VEE	150V5072
Outside Diameter Tube		5/16 (7.93)
Orifice Diameter		0.062 (1.57)
Dimensions: inches (mm)	A	3.75 (95.25)
	B	1.88 (47.63)
	C	0.52 (13.21)
	D	2.25 (57.15)
	D1	2.63 (66.80)
	E	4.00 (101.60)
	F	-
	G	1.65 (41.91)
	G1	-
	H*	7.12 (180.85)
	M	1.25** (31.75)
	N	-
		**(2) 1/4"-20 mounting holes 180° apart and (1) locking device screw 90° apart

G - Packing Gland mounting hole drill size • G1 - Bracket mounting hole size • H* - Dimension is with stem in closed position
All dimensions for reference only and subject to change • For prompt service, Parker Autoclave stocks select products. Consult factory.

Valve Options: (For Actuator Options please reference specific Actuator brochure)



Pneumatic Valve Actuators:

The need to control process and vent valves from a remote location makes air operated valves a vital component to many processing operations. All Parker Autoclave Engineers' valves are available with piston type actuators. Five sizes of air actuators (light, mini-light, medium, heavy duty or extra heavy, single and double stage) are offered to meet the service requirements of Parker Autoclave Engineers' Low, Medium and High Pressure needle valves. Both air-to-open (normally closed) and air-to-close (normally open) designs are included in the product line. Optional air to open AND close actuators available upon request. Please see our Pneumatic Valve Actuator Brochure to help size the proper actuator for your application.



Electric Valve Actuators:

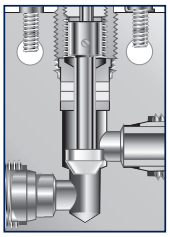
Remotely controlling process flow at high pressure enhances safety and lowers labor costs. Parker Autoclave Engineers developed a flow control valve available in several models including weatherproof and explosionproof options.

The Electrically Actuated Shut-off/Flow Regulating Actuator (FRC Series) is available for most of our Needle Valves through 9/16" tubing size and up to 60,000 psi maximum pressure. Explosion proof version is rated for hydrogen service and can withstand wide process temperature ranges.

Stem Options:

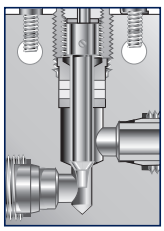
Most Parker Autoclave Engineers' valves are available with either Vee (on-off) or Regulating (Flow Control) Stems in our standard valve body seat or with our optional replaceable seat as shown below:

VEE Stem



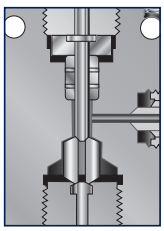
The Vee stem is used for direct on-off, metal-to-metal shut-off with quick-opening flow characteristics.

Regulating Stem



In some applications, more precise flow control is required than is possible with a Vee stem. For these cases, Autoclave offers a non-rotating, two-piece regulating stem which can be used for both control and shut-off. While it is not as precise as the control associated with the MicroMetering stem, especially with smaller flows, it does offer substantially better control than the Vee stem.

Replaceable Seat
(with Vee Stem)



Replaceable seat option is only available with Right-Angle Style body. Replaceable seat is supplied as standard with an additional seat - rotate to use second side. Can be used with either stem type. Options include Stellite material or N-Dura coating to increase service life.

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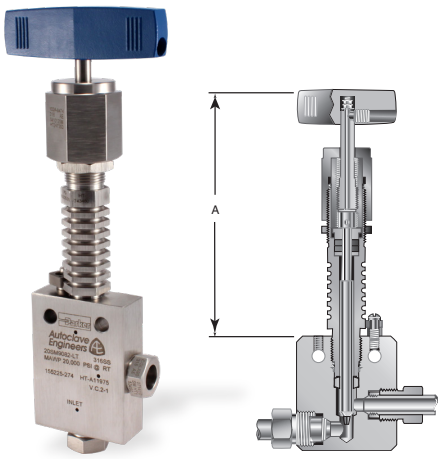
Valve Options: (For Actuator Options please reference specific Actuator brochure)



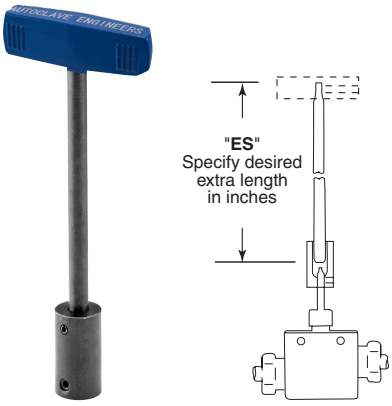
High/Low Temperature Extension:

Required with extreme temperatures to remove packing from contact with flow stream.

-HT High Temperature (over 800°F (427°C))

-LT Low Temperature (under -100°F (-73°C))

Valve Series	Outside Diameter Tube Size (inches)	Dimensions "A" inches (mm)
30SC 30VM 40VM 43SC 60VM	1/4"	6.00 (152)
	3/8"	6.00 (152)
	9/16"	6.00 (152)
	1"	9.42 (239)
HT option code includes Graphite (-GY) packing LT option code includes 316 SS Trim material and PTFE packing		



ES Stem Extender:

Stem extenders are offered for High and Low temperature operation or to extend through panel or barricade.

To order valve with Stem Extender, add "**ES-**" and length (6", 12", 18", 24") to beginning of valve part number e.g. ES12-60VM6071. Other lengths to special order.

To order Stem Extender only, provide valve model prefix e.g. ES12-60VM6. Handle not included – use same provided with original valve.



Needle Valve Clam Shell Handle Lockout:

(order separately using part numbers shown below, padlock not included)

Clam Shell Handle locks are provided to lockout valves in open or closed position preventing unauthorized personnel from actuating valve during shutdown or emergency situations. This clamshell design is available in four (4) sizes dependent on handle length:

P/N AE004855 – 1" to 2.5" handle length
P/N 90088 – 2.5" to 5.0" handle length
P/N 90194 – 6.5" to 10" handle length
P/N AE004350 – 8" to 13" handle length

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! CAUTION !

Do not mix or interchange component parts or tubing with those of other manufacturers. Doing so is unsafe and will void warranty.

Parker Autoclave Engineers Valves, Fittings, and Tools are not designed to interface with common commercial instrument tubing and are designed to only connect with tubing manufactured to Parker Autoclave Engineers AES specifications. Failure to do so is unsafe and will void warranty.

WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS 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 and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met. The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

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The items described in this document are available for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. Any sale contract entered by Parker will be governed by the provisions stated in Parker's standard terms and conditions of sale (copy available upon request).

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Literature #: 02-0113SE November 2019

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