

Needle Valves

Medium Pressure

SM Series

Pressures to 20,000 psi (1379 bar)

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

Medium Pressure Valve Features:

- Largest-port valves available for medium pressure applications.
- Tubing sizes available from 1/4" to 1".
- Rising stem/barstock body design.
- Non-rotating stem prevents stem/seat galling.
- New one piece stem design permits ease of assembly and packing replacement.
- 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.
- PTFE encapsulated packing provides dependable stem and body sealing.
- 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 tip.
- Available in five body patterns.

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, check valves and line filters. The SM Series uses Parker Autoclave Engineers' Medium pressure connection. The coned-and-threaded connection features orifice sizes to match the high flow characteristics of this series.

Note: SM Series replaces 20SC Series.



Autoclave
Engineers 
www.autoclave.com

Needle Valves - SM Series
Medium Pressure

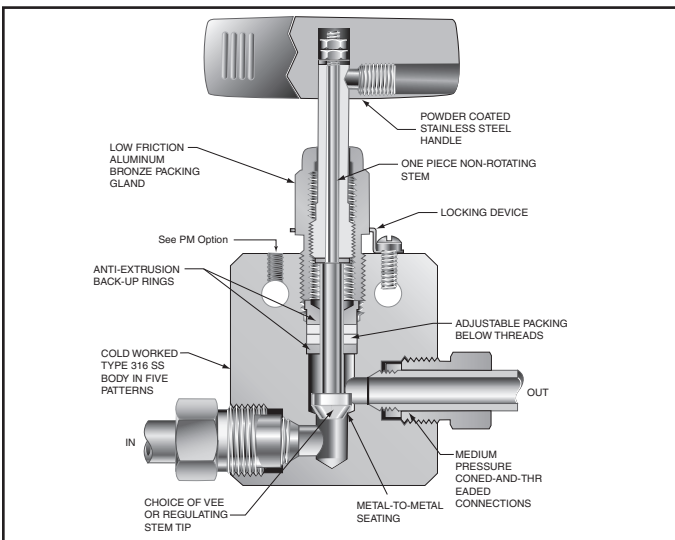
Needle Valves - SM Series

Pressures to 20,000 psi (1379 bar)



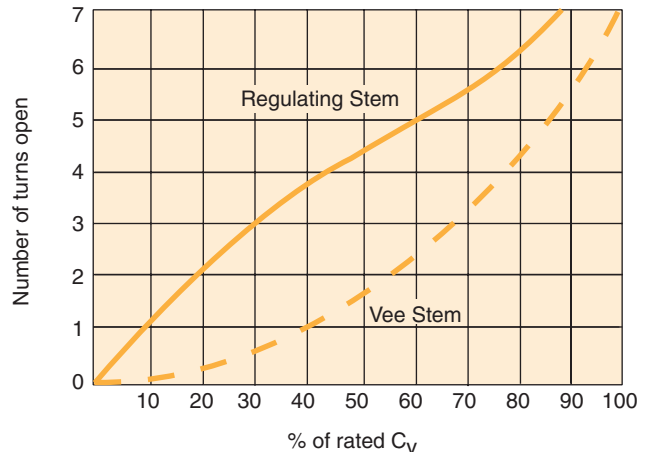
Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V^*	Pressure Rating psi (bar) @ Room Temperature**
1/4	SF250CX20	0.125 (3.18)	0.31	20,000 (1379)
3/8	SF375CX20	0.219 (5.56)	0.75	20,000 (1379)
9/16	SF562CX20	0.312 (7.92)	1.30	20,000 (1379)
3/4	SF750CX20	0.438 (11.13)	2.50	20,000 (1379)
1	SF1000CX20	0.562 (14.27)	4.40	20,000 (1379)
9/16	SF562CX10	0.359 (9.12)	1.75	15,000 (1034)
3/4	SF750CX10	0.516 (13.10)	2.80	15,000 (1034)
1	SF1000CX10	0.688 (17.48)	5.20	15,000 (1034)

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.



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. 10SM and 20SM Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number example: **20SM4071** (catalog number is created based on customer selection of product parameters, see below for example)

20SM	4	07	1	-	XX
Valve Series	Outside Diameter tube Size	Stem/Seat Type	Body Pattern		Options
15SM 20SM	4-1/4" 6-3/8" 9-9/16" 12-3/4" 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 3 - three-way, two on pressure 4 - three-way, one on pressure 5 - three-way, two stem manifold valve		For extreme temperature and other options, see Valve Options. PM - Panel Mount, additional screw is supplied. K - Anti-Vibe

Valve Options

Extreme Temperatures

Standard Parker Autoclave Engineers valves with PTFE packing may be operated from 0°F (-17.8°C) to 450°F (232°C). High temperature packing and/or extended stuffing box are 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 PTFE glass packing to 600°F (316°C).

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

Note: 3/4" rated 8000 psi (552 bar) and 1" rated 6000 psi (412 bar) maximum with graphite yarn packing.

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

B standard valve with cryogenic trim materials and PTFE packing to -100°F (-73°C).

LT extended stuffing box valve with PTFE packing and cryogenic trim materials to -423°F (-252°C).

See needle valve options for stem and seat coating for erosive service.

Basic Repair Kits for 316 SS Material

10SM/20SM Vee Stem

RSM407, RSM607, RSM907, RSM1207, RSM1607

20SM Regulating Stem

RSM408, RSM608, RSM908, R20SM1208, R20SM1608

Two Way Replaceable Seat and Stem

Vee Stem - RSM4872, RSM6872, R20SM9872, R20SM12872, R20SM16872, R15SM9872, R15SM12872, R15SM16872

Reg. Stem - RSM4882, RSM6882, R20SM9882, R20SM12882, R20SM16882, R15SM9882, R15SM12882, R15SM16882

Two Stem Two Way Manifold

Vee Stem - RSM4075, RSM6075, RSM9075, RSM12075, RSM16075

Reg. Stem - RSM4085, RSM6085, R20SM9085, R20SM12085, R20SM16085, R15SM9085, R15SM12085, R15SM16085

Consult your Parker Autoclave Engineers representative for other kit numbers, body part numbers, and pricing. Visit www.autoclave.com for product Operation manuals.

Note: Caution should be exercised in proper selection of medium pressure tubing based on actual operating conditions. Two tubing series available in some sizes: 15,000 psi (1034 bar) and 20,000 psi (1380 bar).

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

2-Way Straight

20SM4071	VEE	1/4	0.125	2.00	1.00	0.38	1.62	1.19	2.00	3.00	0.75	0.22	4.69	0.62	0.38	0.75	See Figure 1
20SM4081	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.65)	(41.15)	(30.23)	(50.80)	(76.20)	(19.05)	(5.59)	(119.13)	(15.75)	(9.65)	(19.05)	
20SM6071	VEE	3/8	0.219	2.00	1.00	0.47	1.62	1.19	2.00	3.00	0.75	0.22	4.63	0.62	0.38	0.75	
20SM6081	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(41.15)	(30.23)	(50.80)	(76.20)	(19.05)	(5.59)	(117.48)	(15.75)	(9.65)	(19.05)	
20SM9071	VEE	9/16	0.312	2.50	1.25	0.53	2.38	1.75	2.88	4.00	1.00	0.34	5.93	0.69	0.50	1.00	
20SM9081	REG	(14.29)	(7.92)	(63.50)	(31.75)	(13.46)	(60.45)	(44.45)	(73.15)	(101.60)	(25.40)	(8.64)	(150.86)	(17.53)	(12.70)	(25.40)	
20SM12071	VEE	3/4	0.438	3.00	1.50	0.62	3.00	2.25	3.75	10.25	1.12	0.44	7.00	0.88	0.63	1.38	
20SM12081	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.75)	(76.20)	(57.15)	(95.25)	(260.35)	(28.45)	(11.18)	(177.80)	(22.35)	(16.00)	(35.05)	
20SM16071	VEE	1	0.562	4.12	2.06	0.63	3.75	2.81	4.63	10.25	1.62	0.56	9.00	1.25	1.13	1.75	
20SM16081	REG	(25.40)	(14.27)	(104.65)	(52.32)	(16.00)	(95.25)	(71.37)	(117.60)	(260.35)	(41.15)	(14.22)	(228.84)	(31.75)	(28.70)	(44.45)	
15SM9071	VEE	9/16	0.359	2.50	1.25	0.53	2.38	1.75	2.88	4.00	1.00	0.34	5.93	0.69	0.50	1.00	
15SM9081	REG	(14.29)	(9.12)	(63.50)	(31.75)	(13.46)	(60.45)	(44.45)	(73.15)	(101.60)	(25.40)	(8.64)	(150.86)	(17.53)	(12.70)	(25.40)	
15SM12071	VEE	3/4	0.516	3.00	1.50	0.62	3.00	2.25	3.75	10.25	1.12	0.44	7.00	0.88	0.63	1.38	
15SM12081	REG	(19.05)	(13.11)	(76.20)	(38.10)	(15.75)	(76.20)	(57.15)	(95.25)	(260.35)	(28.45)	(11.18)	(177.80)	(22.35)	(16.00)	(35.05)	
15SM16071	VEE	1	0.688	4.12	2.06	0.63	3.75	2.81	4.63	10.25	1.62	0.56	9.00	1.25	1.13	1.75	
15SM16081	REG	(25.40)	(17.48)	(104.65)	(52.32)	(16.00)	(95.25)	(71.37)	(117.60)	(260.35)	(41.15)	(14.22)	(228.84)	(31.75)	(28.70)	(44.45)	

G - Packing gland mounting hole drill size

G₁ - Bracket mounting hole size

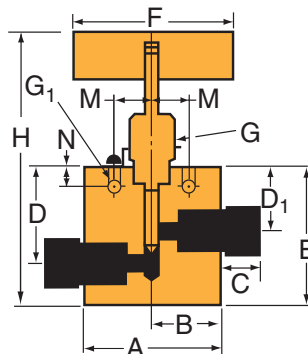
Panel mounting drill size: 0.22" all valves.

* H Dimension is with stem in closed position.

All dimensions for reference only and subject to change.

For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 1



2-Way Straight