Parker Autoclave Engineers: Fluid Components Product Catalog

February 2013

Valves, Fittings and Tubing

Pressures to 150,000 psi (10,000 bar)

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Parker Autoclave Engineers

ENGINEERING YOUR SUCCESS.

Needle Valves

Low Pressure

10V & SW Series

Pressures to 15,000 psi (1034 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 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, research, and oil and gas industries.

Low Pressure Valve Features:

- 10V Series valve design provides in-line tube connections for 1/4" to 1/2" tube sizes.
- SW Series valve design provides increased flow capabilities.
- Tubing sizes from 1/8" to 1/2".
- Rising stem/barstock body design.
- 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.
- 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 tips.
- Available in five body patterns.

Parker Autoclave Engineers valves are complemented by a complete line of low pressure fittings, tubing, check valves and line filters. The 10V and SW series use Parker Autoclave Engineers' SpeedBite connection. This single-ferrule compression sleeve connection delivers fast, easy make-up and reliable bubble-tight performance in liquid or gas service.

Parker

Autoclave Engineers

www.autoclave.com

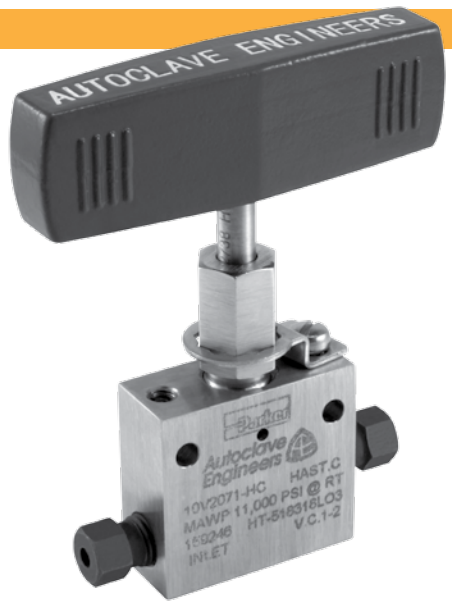
Valve Series - 10V Series

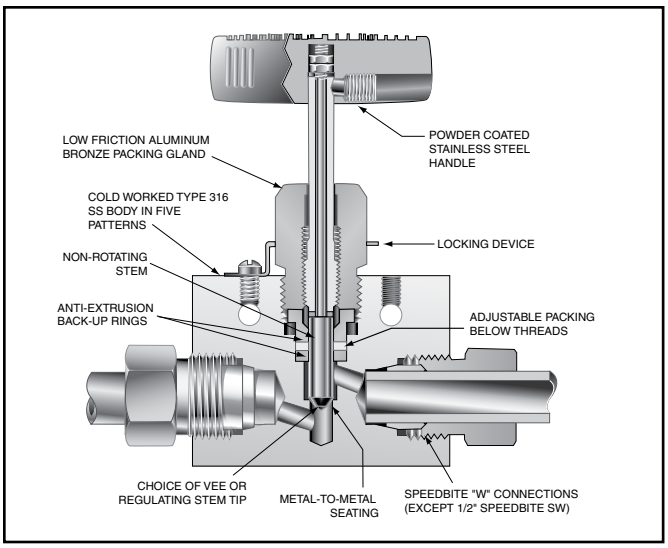
Pressures to 15,000 psi (1034 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @ Room Temperature**
1/8	W125	0.094 (2.39)	0.12	15,000 (1034)
1/4	W250	0.125 (3.18)	0.20	15,000 (1034)
3/8	W375	0.125 (3.18)	0.20	15,000 (1034)
1/2	SW500	0.250 (6.35)	0.86	10,000 (690)

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)*

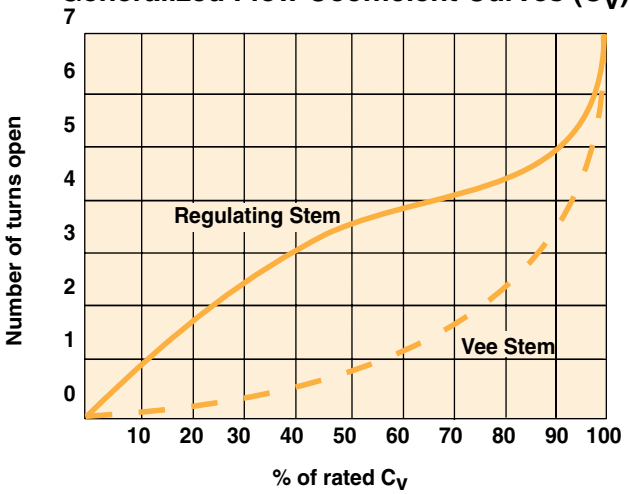
*** For complete temperature ratings see pressure/temperature rating guide in Technical Information section.*





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. 10V Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **10V4071**

10V — **Valve Series**

4 — **Outside Diameter Tube Size**

2-1/8”
4-1/4”
6-3/8”
8-1/2”

Note: Contact Sales for 1/16”tube size or see MVE Series.

07 — **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
- **88** - Regulating stem with replaceable seat

1 — **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

XX — **Options**

For extreme temperature and other options, see Valve Options.

Valve Options

Extreme Temperatures
Standard Parker Autoclave valves with PTFE packing may be operated to 450°F (232°C). High temperature packing and/or extended stuffing box is available for service from -100°F (-73°C) to 650°F (343°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 650°F (343°C).
B standard valve with cryogenic trim materials and Telfon packing to -100°F (-73°C).

†*Parker Autoclave Engineers does not recommend compression sleeve connections below -100°F (-73°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative.*

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R10V4071**)

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

Consult your Parker Autoclave Engineers 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) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
2-Way Straight																	
10V2071	**VEE**	1/8**	0.094	1.50	0.75	0.31	1.06	0.81	1.38	3.00	0.62	0.17	3.75	0.56	0.31	0.62	**See Figure 1**
10V2081	**REG**	(3.18)	(2.39)	(38.10)	(19.05)	(7.87)	(26.92)	(20.57)	(35.05)	(76.20)	(15.75)	(4.32)	(95.25)	(14.22)	(7.87)	(15.75)	
10V4071	**VEE**	1/4	0.125	2.00	1.00	0.56	1.19		1.69	3.00	0.97	0.22	4.44	0.69	0.38	1.00	
10V4081	**REG**	(6.35)	(3.18)	(50.80)	(25.40)	(14.22)	(30.23)		(42.93)	(76.20)	(24.64)	(5.59)	(112.78)	(17.53)	(9.65)	(25.40)	
10V6071	**VEE**	3/8	0.125	2.00	1.00	0.62	1.19		1.69	3.00	0.97	0.22	4.31	0.69	0.38	1.00	
10V6081	**REG**	(9.53)	(3.18)	(50.80)	(25.40)	(15.75)	(30.23)		(42.93)	(76.20)	(24.64)	(5.59)	(109.47)	(17.53)	(9.65)	(25.40)	
10V8071	**VEE**	1/2	0.250	2.50	1.25	0.53	1.25		1.81	3.00	0.97	0.22	4.44	0.69	0.38	1.00	
10V8081	**REG**	(12.70)	(6.35)	(63.50)	(31.75)	(13.46)	(31.75)		(45.97)	(76.20)	(24.64)	(5.59)	(112.78)	(17.53)	(9.65)	(25.40)	
2-Way Angle																	
10V2072	**VEE**	1/8	0.094	1.50	0.75	0.31	0.81		1.56	3.00	0.62	0.17	3.94	0.56	0.31	0.62	**See Figure 2**
10V2082	**REG**	(3.18)	(2.39)	(38.1)	(19.05)	(7.87)	(20.57)		(39.62)	(76.20)	(15.75)	(4.32)	(100.08)	(12.70)	(7.87)	(15.75)	
10V4072	**VEE**	1/4	0.125	2.00	1.00	0.56	1.19		2.19	3.00	0.97	0.22	4.81	0.69	0.31	1.00	
10V4082	**REG**	(6.35)	(3.18)	(50.80)	(25.40)	(14.2)	(30.23)		(55.63)	(76.20)	(24.64)	(5.59)	(122.17)	(17.53)	(7.87)	(25.40)	
10V6072	**VEE**	3/8	0.125	2.00	1.00	0.62	1.19		2.19	3.00	0.97	0.22	4.81	0.69	0.31	1.00	
10V6082	**REG**	(9.53)	(3.18)	(50.80)	(25.40)	(15.7)	(30.23)		(55.63)	(76.20)	(24.64)	(5.59)	(122.17)	(17.53)	(7.87)	(25.40)	
10V8072	**VEE**	1/2	0.250	2.50	1.25	0.53	1.25		2.50	3.00	0.97	0.22	5.06	0.69	0.38	1.00	
10V8082	**REG**	(12.70)	(6.35)	(63.50)	(31.75)	(13.5)	(31.75)		(63.50)	(76.20)	(24.64)	(5.59)	(128.52)	(17.53)	(9.65)	(25.40)	
3-Way / 2 on Pressure																	
10V2073	**VEE**	1/8**	0.094	1.50	0.75	0.31	1.06	0.81	1.69	3.00	0.62	0.17	4.06	0.56	0.31	0.62	**See Figure 3**
10V2083	**REG**	(3.18)	(2.39)	(38.10)	(19.05)	(7.87)	(26.92)	20.57	(42.93)	(76.20)	(15.75)	(4.32)	(103.12)	(12.70)	(7.87)	(15.75)	
10V4073	**VEE**	1/4	0.125	2.00	1.00	0.56	1.19		2.19	3.00	0.97	0.22	4.81	0.69	0.38	1.00	
10V4083	**REG**	(6.35)	(3.18)	(50.80)	(25.40)	(14.22)	(30.23)		(55.63)	(76.20)	(24.64)	(5.59)	(122.17)	(17.53)	(9.65)	(25.40)	
10V6073	**VEE**	3/8	0.125	2.00	1.00	0.62	1.19		2.19	3.00	0.97	0.22	4.81	0.69	0.38	1.00	
10V6083	**REG**	(9.53)	(3.18)	(50.80)	(25.40)	(15.75)	(30.23)		(55.63)	(76.20)	(24.64)	(5.59)	(122.17)	(17.53)	(9.65)	(25.40)	
10V8073	**VEE**	1/2	0.250	2.50	1.25	0.53	1.19		2.44	3.00	0.97	0.22	5.06	0.69	0.38	1.00	
10V8083	**REG**	(12.70)	(6.35)	(63.50)	(31.75)	(13.46)	(30.23)		(61.98)	(76.20)	(24.64)	(5.59)	(128.52)	(17.53)	(9.65)	(25.40)	

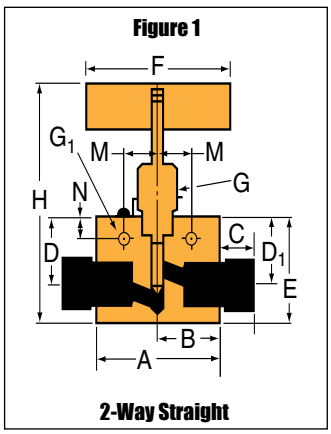
G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting drill size: 0.22" all valves.

** H Dimension is with stem in closed position.*
*** 1/8" straight and 3-Way/2 on pressure valves have offset tube connections.*

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

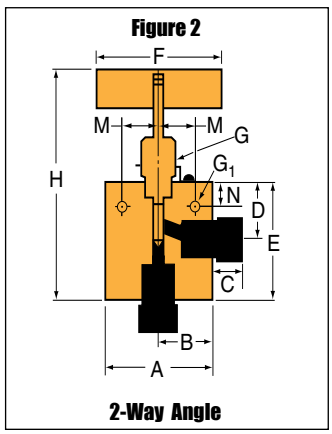
All dimensions for reference only and subject to change.

Figure 1



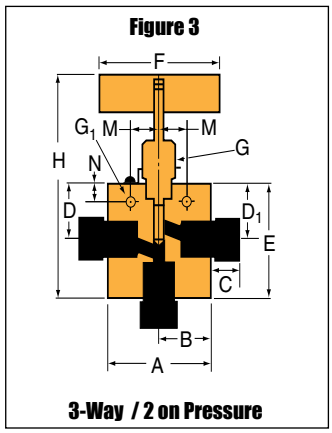
2-Way Straight

Figure 2



2-Way Angle

Figure 3



3-Way / 2 on Pressure

3-Way / 1 on Pressure

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thick-ness	Valve Pattern
10V2074	VEE	1/8	0.094	1.50	0.75	0.31	0.81		1.56	3.00	0.62	0.17	3.94	0.56	0.31	0.62	See Figure 4
10V2084	REG	(3.18)	(2.39)	(38.1)	(19.05)	(7.87)	(20.57)		(39.62)	(76.20)	(15.75)	(4.32)	(100.08)	(12.70)	(7.87)	(15.7)	
10V4074	VEE	1/4	0.125	2.00	1.00	0.56	1.19		2.19	3.00	0.97	0.22	4.81	0.69	0.38	1.00	
10V4084	REG	(6.35)	(3.18)	(50.8)	(25.40)	(14.22)	(30.23)		(55.63)	(76.20)	(24.64)	(5.59)	(122.17)	(17.53)	(9.65)	(25.40)	
10V6074	VEE	3/8	0.125	2.00	1.00	0.62	1.19		2.19	3.00	0.97	0.22	4.81	0.69	0.38	1.00	
10V6084	REG	(9.53)	(3.18)	(50.8)	(25.40)	(15.75)	(30.23)		(55.63)	(76.20)	(24.64)	(5.59)	(122.17)	(17.53)	(9.65)	(25.40)	
10V8074	VEE	1/2	0.250	2.50	1.25	0.53	1.19		2.44	3.00	0.97	0.22	5.06	0.69	0.38	1.00	
10V8084	REG	(12.70)	(6.35)	(63.5)	(31.75)	(13.46)	(30.23)		(61.98)	(76.20)	(24.64)	(5.59)	(128.52)	(17.53)	(9.65)	(25.40)	

2-Way Angle / Replaceable Seat

10V2872	VEE	1/8	0.094	1.50	0.75	0.31	0.81	1.28	1.56	3.00	0.62	0.17	4.50	0.56	0.31	0.62	See Figure 5
10V2882	REG	(3.18)	(2.39)	(38.10)	(19.05)	(7.87)	(20.57)	(32.51)	(39.62)	(76.20)	(15.75)	(4.32)	(114.30)	(12.70)	(7.87)	(15.75)	
10V4872	VEE	1/4	0.125	2.00	1.00	0.56	1.12	2.13	2.25	3.00	0.97	0.22	6.00	0.69	0.38	1.00	
10V4882	REG	(6.35)	(3.18)	(50.80)	(25.40)	(14.22)	(28.45)	(54.10)	(57.15)	(76.20)	(24.64)	(5.59)	(152.40)	(17.53)	(9.65)	(25.40)	
10V6872	VEE	3/8	0.125	2.00	1.00	0.62	1.12	2.28	2.25	3.00	0.97	0.22	6.00	0.69	0.38	1.00	
10V6882	REG	(9.53)	(3.18)	(50.80)	(25.40)	(15.75)	(28.45)	(57.91)	(57.15)	(76.20)	(24.64)	(5.59)	(152.40)	(17.53)	(9.65)	(25.40)	
10V8872	VEE	1/2	0.250	2.50	1.25	0.53	1.00	2.50	2.38	3.00	0.97	0.28	6.06	0.69	0.38	1.00	
10V8882	REG	(12.70)	(6.35)	(63.50)	(31.75)	(13.46)	(25.45)	(63.50)	(60.45)	(76.20)	(24.64)	(7.11)	(153.92)	(17.53)	(9.65)	(25.40)	

3-Way / 2-Stem Manifold

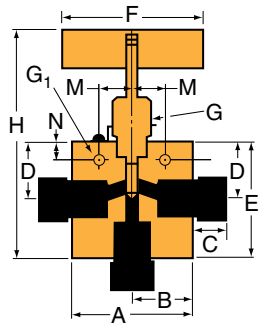
10V2075	VEE	1/8	0.094	1.50	0.75	0.31	1.12	0.81	2.25	3.00	0.62	0.17	4.63	0.56	0.31	0.62	See Figure 6
10V2085	REG	(3.18)	(2.39)	(38.10)	(19.05)	(7.87)	(28.45)	(20.57)	(57.15)	(76.20)	(15.75)	(4.32)	(117.60)	(12.70)	(7.87)	(15.7)	
10V4075	VEE	1/4	0.125	2.00	1.00	0.56	1.69	1.09	3.38	3.00	0.97	0.22	5.82	0.69	0.38	1.00	
10V4085	REG	(6.35)	(3.18)	(50.80)	(25.40)	(14.22)	(42.93)	(27.69)	(85.85)	(76.20)	(24.64)	(5.59)	(147.83)	(17.53)	(9.65)	(25.40)	
10V6075	VEE	3/8	0.125	2.00	1.00	0.62	1.69	1.09	3.38	3.00	0.97	0.22	5.82	0.69	0.38	1.00	
10V6085	REG	(9.53)	(3.18)	(50.80)	(25.40)	(15.75)	(42.93)	(27.69)	(85.85)	(76.20)	(24.64)	(5.59)	(147.83)	(17.53)	(9.65)	(25.40)	
10V8075	VEE	1/2	0.250	2.50	1.25	0.53	1.69	1.03	3.38	3.00	0.97	0.22	5.82	0.69	0.38	1.00	
10V8085	REG	(12.70)	(6.35)	(63.50)	(31.75)	(13.46)	(42.93)	(26.16)	(85.85)	(76.20)	(24.64)	(5.59)	(147.83)	(17.53)	(9.65)	(25.40)	

G - Packing gland mounting hole drill size
G_1 - 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.

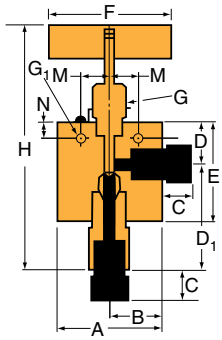
For prompt service, Autoclave stocks select products. Consult factory.

Figure 4



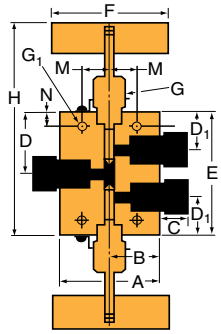
3-Way / 1 on Pressure

Figure 5



2-Way Angle / Replaceable Seat

Figure 6



3-Way / 2-Stem Manifold

Needle Valves - SW Series

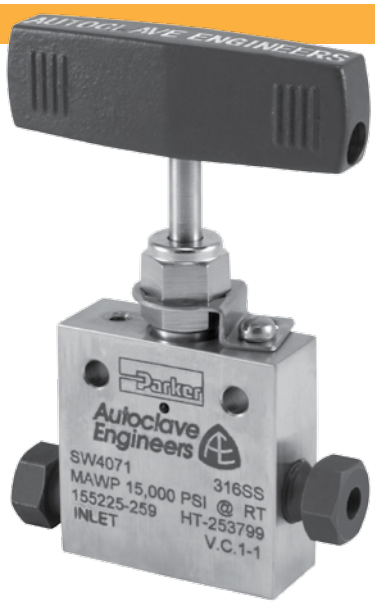
Pressures to 15,000 psi (1034 bar)

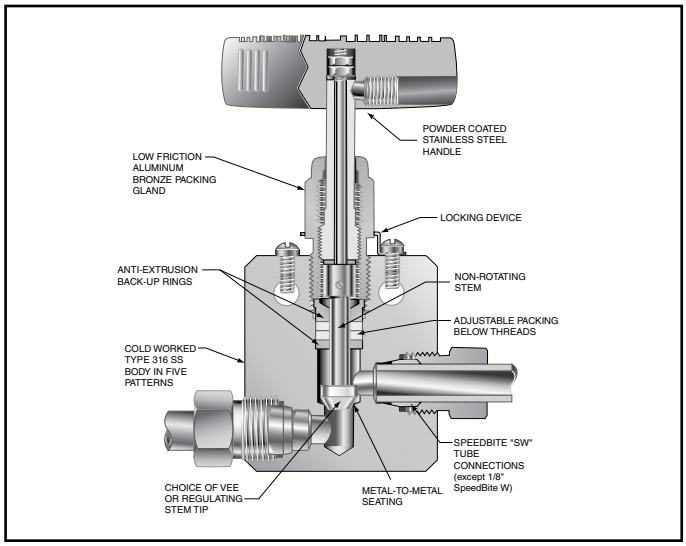
Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @ Room Temperature**
1/8	W125— Refer to 10V Series Valves —			
1/4	SW250	0.188 (4.77)	0.65	15,000 (1034)
3/8	SW375	0.250 (6.35)	0.95	15,000 (1034)
1/2	SW500	0.375 (9.52)	1.90	10,000 (690)

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)*

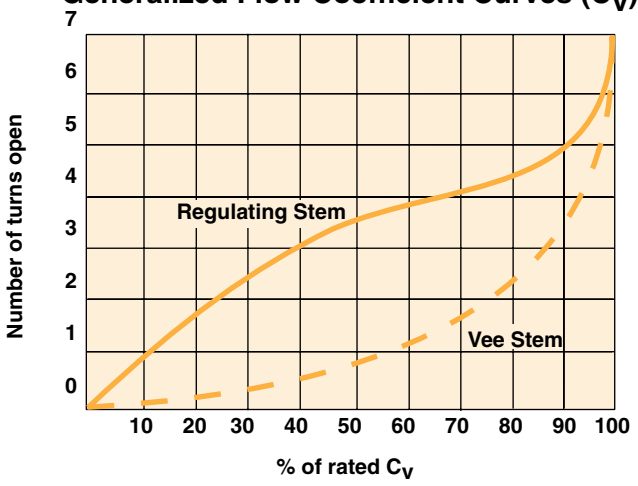
** *For complete temperature ratings see pressure/temperature rating guide in Technical Information section.*





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. SW Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **SW4071**

SW — Valve Series

4 — Outside Diameter Tube Size
- **4**-1/4"
- **6**-3/8"
- **8**-1/2"

07 — 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
- **88** - Regulating stem with replaceable seat

1 — 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

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XX — Options

For extreme temperature and other options, see Valve Options.

Valve Options

Extreme Temperatures
Standard Parker Autoclave valves with PTFE packing may be operated to 450°F (232°C). High temperature packing and/or extended stuffing box are available for service from -100°F (-73°C) to 650°F (343°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 650°F (343°C).
B standard valve with cryogenic trim materials and Telfon packing to -100°F (-73°C).

†*Parker Autoclave Engineers does not recommend compression sleeve connections below -100°F (-73°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative.*

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **RSW4071**)

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

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

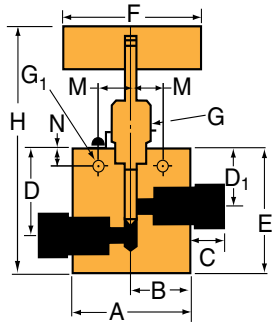
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
2-Way Straight																	
SW4071	VEE	1/4	0.187	2.00	1.00	0.38	1.62	1.19	2.00	3.00	0.75	0.22	4.50	0.62	0.38	0.75	See Figure 1
SW4081	REG	(6.35)	(4.75)	(50.80)	(25.40)	(9.65)	(41.15)	(30.23)	(50.80)	(76.20)	(19.05)	(5.59)	(114.30)	(15.75)	(9.65)	(19.05)	
SW6071	VEE	3/8	0.250	2.00	1.00	0.47	1.62	1.19	2.00	3.00	0.75	0.22	4.50	0.62	0.38	0.75	
SW6081	REG	(9.53)	(6.35)	(50.80)	(25.40)	(11.94)	(41.15)	(30.23)	(50.80)	(76.20)	(19.05)	(5.59)	(114.30)	(15.75)	(9.65)	(19.05)	
SW8071	VEE	1/2	0.375	2.50	1.25	0.53	2.38	1.75	2.88	4.00	1.00	0.34	5.95	0.69	0.50	1.00	
SW8081	REG	(12.70)	(9.53)	(63.50)	(31.75)	(13.46)	(60.45)	(44.45)	(73.15)	(101.60)	(25.40)	(8.64)	(151.37)	(17.53)	(12.70)	(25.40)	
2-Way Angle																	
SW4072	VEE	1/4	0.187	2.00	1.00	0.38	1.19		2.43	3.00	0.75	0.22	5.00	0.62	0.38	0.75	See Figure 2
SW4082	REG	(6.35)	(4.75)	(50.80)	(25.40)	(9.65)	(30.23)		(61.72)	(76.20)	(19.05)	(5.59)	(127.00)	(15.75)	(9.65)	(19.05)	
SW6072	VEE	3/8	0.250	2.00	1.00	0.47	1.19		2.19	3.00	0.75	0.22	5.00	0.62	0.38	0.75	
SW6082	REG	(9.53)	(6.35)	(50.80)	(25.40)	(11.94)	(30.23)		(55.63)	(76.20)	(19.05)	(5.59)	(127.00)	(15.75)	(9.65)	(19.05)	
SW8072	VEE	1/2	0.375	2.50	1.25	0.53	1.75		3.38	4.00	1.00	0.34	6.45	0.69	0.50	1.00	
SW8082	REG	(12.70)	(9.53)	(63.50)	(31.75)	(13.46)	(44.45)		(85.85)	(101.60)	(25.40)	(8.64)	(163.83)	(17.53)	(12.70)	(25.40)	
3-Way / 2 on Pressure																	
SW4073	VEE	1/4	0.187	2.00	1.00	0.38	1.62	1.19	2.62	3.00	0.75	0.22	5.18	0.62	0.38	0.75	See Figure 3
SW4083	REG	(6.35)	(4.75)	(50.80)	(25.40)	(9.65)	(41.15)	(30.23)	(66.55)	(76.20)	(19.05)	(5.59)	(131.57)	(15.75)	(9.65)	(19.05)	
SW6073	VEE	3/8	0.250	2.00	1.00	0.47	1.62	1.19	2.62	3.00	0.75	0.22	5.13	0.62	0.38	0.75	
SW6083	REG	(9.53)	(6.35)	(50.80)	(25.40)	(11.94)	(41.15)	(30.23)	(66.55)	(76.20)	(19.05)	(5.59)	(130.30)	(15.75)	(9.65)	(19.05)	
SW8073	VEE	1/2	0.375	2.50	1.25	0.53	2.38	1.75	3.62	4.00	1.00	0.34	6.70	0.69	0.50	1.00	
SW8083	REG	(12.70)	(9.53)	(63.50)	(31.75)	(13.46)	(60.45)	(44.45)	(91.95)	(101.60)	(25.40)	(8.64)	(170.18)	(17.53)	(12.70)	(25.40)	

G - Packing gland mounting hole drill size
G_1 - 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.

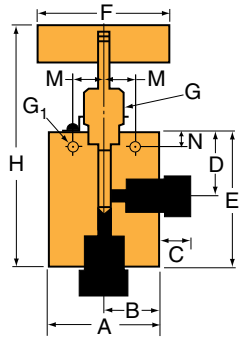
For prompt service, Autoclave stocks select products. Consult factory.

Figure 1



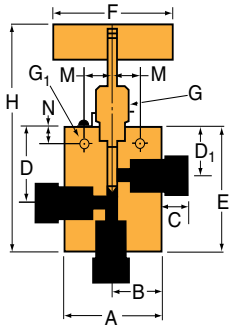
2-Way Straight

Figure 2



2-Way Angle

Figure 3



3-Way / 2 on Pressure

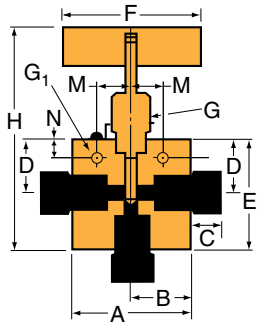
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions -inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
3-Way / 1 on Pressure																	
SW4074	VEE	1/4	0.187	2.00	1.00	0.38	1.19		2.43	3.00	0.75	0.22	5.00	0.62	0.38	0.75	See Figure 4
SW4084	REG	(6.35)	(4.75)	(50.80)	(25.40)	(9.65)	(30.23)		(61.72)	(76.20)	(19.05)	(5.59)	(127.00)	(15.75)	(9.65)	(19.05)	
SW6074	VEE	3/8	0.250	2.00	1.00	0.47	1.19		2.43	3.00	0.75	0.22	5.00	0.62	0.38	0.75	
SW6084	REG	(9.53)	(6.35)	(50.80)	(25.40)	(11.94)	(30.23)		(61.72)	(76.20)	(19.05)	(5.59)	(127.00)	(15.75)	(9.65)	(19.05)	
SW8074	VEE	1/2	0.375	2.50	1.25	0.53	1.75		3.38	4.00	1.00	0.34	6.45	0.69	0.50	1.00	
SW8084	REG	(12.70)	(9.53)	(63.50)	(31.75)	(13.46)	(44.45)		(85.85)	(101.60)	(25.40)	(8.64)	(163.83)	(17.53)	(12.70)	(25.40)	
2-Way Angle / Replaceable Seat																	
SW4872	VEE	1/4	0.187	2.00	1.00	0.38	1.19	1.88	2.25	3.00	0.75	0.22	5.75	0.62	0.38	0.75	See Figure 5
SW4882	REG	(6.35)	(4.75)	(50.80)	(25.40)	(9.65)	(30.23)	(47.75)	(57.15)	(76.20)	(19.05)	(5.59)	(146.05)	(15.75)	(9.65)	(19.05)	
SW6872	VEE	3/8	0.250	2.00	1.00	0.47	1.19	2.19	2.25	3.00	0.75	0.22	5.75	0.62	0.38	0.75	
SW6882	REG	(9.53)	(6.35)	(50.80)	(25.40)	(11.94)	(30.23)	(55.62)	(57.15)	(76.20)	(19.05)	(5.59)	(146.05)	(15.75)	(9.65)	(19.05)	
SW8872	VEE	1/2	0.375	2.50	1.25	0.53	1.75	2.50	3.25	4.00	1.00	0.34	7.51	0.69	0.50	1.00	
SW8882	REG	(12.70)	(9.53)	(63.50)	(31.75)	(13.46)	(44.45)	(63.50)	(82.55)	(101.60)	(25.40)	(8.64)	(190.75)	(17.53)	(12.70)	(25.40)	
3-Way / 2-Stem Manifold																	
SW4075	VEE	1/4	0.187	2.00	1.00	0.38	1.68	1.19	3.38	3.00	0.75	0.22	5.94	0.62	0.38	0.75	See Figure 6
SW4085	REG	(6.35)	(4.75)	(50.80)	(25.40)	(9.65)	(42.67)	(30.23)	(85.85)	(76.20)	(19.05)	(5.59)	(150.88)	(15.75)	(9.65)	(19.05)	
SW6075	VEE	3/8	0.250	2.00	1.00	0.47	1.68	1.19	3.38	3.00	0.75	0.22	5.94	0.62	0.38	0.75	
SW6085	REG	(9.53)	(6.35)	(50.80)	(25.40)	(11.94)	(42.67)	(30.23)	(85.85)	(76.20)	(19.05)	(5.59)	(150.88)	(15.75)	(9.65)	(19.05)	
SW8075	VEE	1/2	0.375	2.50	1.25	0.53	2.56	1.75	5.12	4.00	1.00	0.34	8.20	0.69	0.50	1.00	
SW8085	REG	(12.70)	(9.53)	(63.50)	(31.75)	(13.46)	(65.02)	(44.45)	(130.05)	(101.60)	(25.40)	(8.64)	(208.28)	(17.53)	(12.70)	(25.40)	

G - Packing gland mounting hole drill size
G_1 - 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.

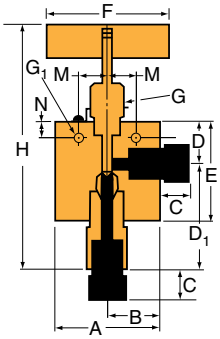
For prompt service, Autoclave stocks select products. Consult factory.

Figure 4



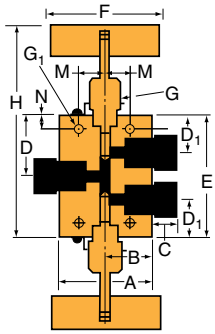
3-Way / 1 on Pressure

Figure 5



2-Way Angle / Replaceable Seat

Figure 6



3-Way / 2-Stem Manifold

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WARNING

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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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02-0102SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Needle Valves

Medium Pressure

15SM Series

Pressures to 15,000 psi (1034 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 valve available for medium pressure applications.
- Tubing size 1-1/2".
- 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 two body patterns.

Parker Autoclave Engineers valves are complemented by a complete line of fittings and tubing. The SM Series uses Parker Autoclave Engineers' Medium pressure coned and threaded connection.

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Needle Valves - 15SM Series

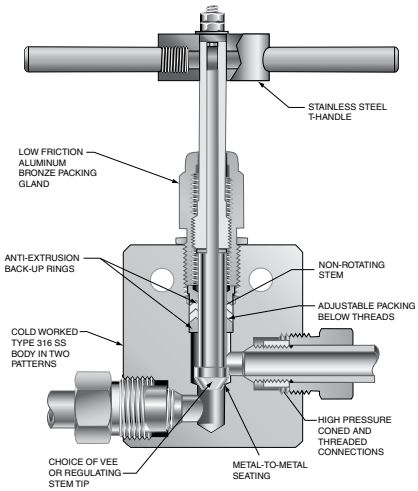
Pressures to 15,000 psi (1034 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @ Room Temperature**
1-1/2	SF1500CX	.937 (23.80)	14	15,000 (1034)

Notes:

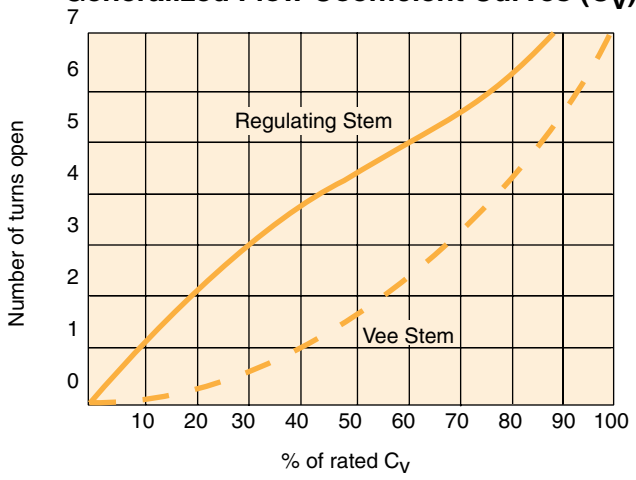
** C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%. (Based on water)*

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



To ensure proper fit use Parker 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. 15SM Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **15SM24071**

15SM	24	07	1	—	XX
Valve Series	**Outside Diameter Tube Size**	**Stem/Seat Type**	**Body Pattern**		**Options**
	24-1-1/2"	**07** - non-rotating Vee stem (on-off service) **08** - non-rotating regulating stem (tapered tip for regulating and shutoff)	**1** - two-way straight **2** - two-way angle		For extreme temperature and other options, see Valve Options.

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: Contact factory for pressure ratings using 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).
K anti-vibration collet and gland assembly

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

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R15SM24071**)

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

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

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).

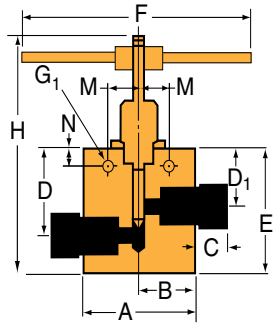
Catalog Number	Stem Type	Pipe Size	Orifice Dia.	Dimensions - inches (mm)												Block Thickness	Fitting Pattern
				A	B	C	D	D1	E	F	G	G1	H	M	N		
2-Way Straight																	
15SM24071	VEE	1-1/2	0.937	5.75	2.88	1.00	5.25	3.75	6.38	23.75		0.75	10.98	1.88	1.50	2.25	See Fig. 1
15SM24081	REG	(38.10)	(23.80)	(146.05)	(73.03)	(25.40)	(133.35)	(95.25)	(161.93)	(603.25)		(19.05)	(278.79)	(47.63)	(38.10)	(57.15)	
2-Way Angle																	
15SM24072	VEE	1-1/2	0.937	5.75	2.88	1.00	3.75		6.75	23.75		0.75	11.35	1.88	1.50	2.25	See Fig. 2
15SM24082	REG	(38.10)	(23.80)	(146.05)	(73.03)	(25.40)	(95.25)		(171.45)	(603.25)		(19.05)	(288.32)	(47.63)	(38.10)	(57.15)	

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting drill size: 0.75" all valves.

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

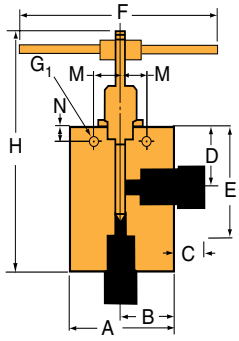
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 1



2-Way Straight

Figure 2



2-Way Angle

WARNING

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02-9225BE January2013

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ISO-9001 Certified

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.

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Needle Valves - SM Series

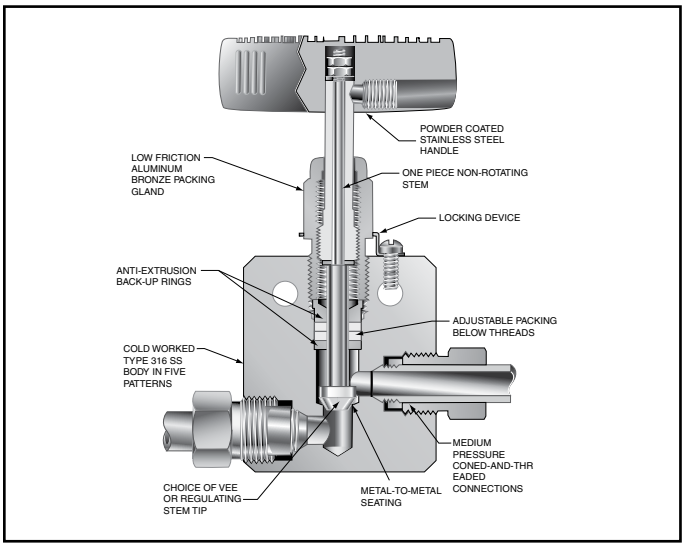
Pressures to 20,000 psi (1379 bar)

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	10,000 (690)
3/4	SF750CX10	0.516 (13.10)	2.80	10,000 (690)
1	SF1000CX10	0.688 (17.48)	5.20	10,000 (690)

Notes:

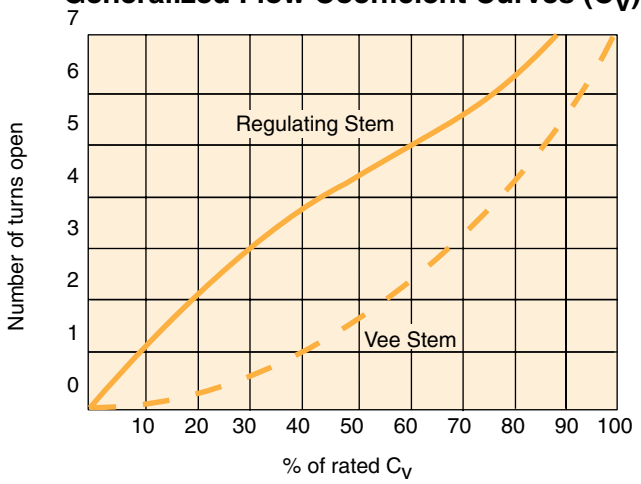
** C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%. (Based on water)*

*** 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: **20SM4071**

20SM — Valve Series
- **10SM**
- **20SM**

4 — Outside Diameter Tube Size
- **4**-1/4"
- **6**-3/8"
- **9**-9/16"
- **12**-3/4"
- **16**-1"

07 — 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
- **88** - Regulating stem with replaceable seat

1 — 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

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XX — Options

For extreme temperature and other options, see Valve Options.

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).
K anti-vibration collet and gland assembly

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

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R20SM4071**)

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

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

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).

2-Way Straight

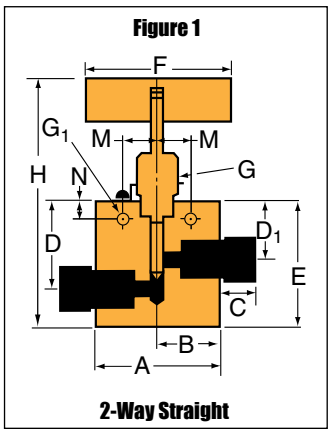
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
20SM4071	VEE	1/4	0.125	2.00	1.00	0.38	1.62	1.19	2.00	3.00	0.75	0.22	4.69	0.62	0.38	0.75	See Figure 1
20SM4081	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.65)	(41.15)	(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)	(44.4 5)	
10SM9071	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	
10SM9081	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)	
10SM12071	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	
10SM12081	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)	
10SM16071	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	
10SM16081	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
G_1 - 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

2-Way Angle

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thick-ness	Valve Pattern
20SM4072	VEE	1/4	0.125	2.00	1.00	0.38	1.19		2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75	
20SM4082	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.65)	(30.23)		(61.90)	(76.20)	(19.05)	(5.59)	(122.25)	(15.75)	(9.65)	(19.05)	
20SM6072	VEE	3/8	0.219	2.00	1.00	0.47	1.19		2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75	
20SM6082	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(30.23)		(61.90)	(76.20)	(19.05)	(5.59)	(122.25)	(15.75)	(9.65)	(19.05)	
20SM9072	VEE	9/16	0.312	2.50	1.25	0.53	1.75		3.38	4.00	1.00	0.34	6.43	0.69	0.50	1.00	
20SM9082	REG	(14.29)	(7.92)	(63.50)	(31.75)	(13.46)	(44.45)		(85.85)	(101.60)	(25.40)	(8.64)	(163.56)	(17.53)	(12.70)	(25.40)	
20SM12072	VEE	3/4	0.438	3.00	1.50	0.62	2.25		4.25	10.25	1.12	0.44	7.50	0.88	0.63	1.38	
20SM12082	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.75)	(57.15)		(107.95)	(260.35)	(28.45)	(11.18)	(190.50)	(22.35)	(16.00)	(35.05)	
20SM16072	VEE	1	0.562	4.12	2.06	0.63	2.81		5.12	10.25	1.62	0.56	9.00	1.25	1.13	1.75	
20SM16082	REG	(25.40)	(14.27)	(104.65)	(52.32)	(16.00)	(71.37)		(130.05)	(260.35)	(41.15)	(14.22)	(228.84)	(31.75)	(28.70)	(44.4 5)	
10SM9072	VEE	9/16	0.359	2.50	1.25	0.53	1.75		3.38	4.00	1.00	0.34	6.43	0.69	0.50	1.00	
10SM9082	REG	(14.29)	(9.12)	(63.50)	(31.75)	(13.46)	(44.45)		(85.85)	(101.60)	(25.40)	(8.64)	(163.56)	(17.53)	(12.70)	(25.40)	
10SM12072	VEE	3/4	0.516	3.00	1.50	0.62	2.25		4.25	10.25	1.12	0.44	7.50	0.88	0.63	1.38	
10SM12082	REG	(19.03)	(13.11)	(76.20)	(38.10)	(15.75)	(57.15)		(107.95)	(260.35)	(28.45)	(11.18)	(190.50)	(22.35)	(16.00)	(35.05)	
10SM16072	VEE	1	0.688	4.12	2.06	0.63	2.81		5.12	10.25	1.62	0.56	9.00	1.25	1.13	1.75	
10SM16082	REG	(25.40)	(17.48)	(104.65)	(52.32)	(16.00)	(71.37)		(130.05)	(260.35)	(41.15)	(14.22)	(228.84)	(31.75)	(28.70)	(44.45)	

See Figure 2

3-Way / 2 on Pressure

20SM4073	VEE	1/4	0.125	2.00	1.00	0.38	1.63	1.19	2.63	3.00	0.75	0.22	5.00	0.62	0.38	0.75	
20SM4083	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.65)	(41.28)	(30.23)	(66.68)	(76.20)	(19.05)	(5.59)	(127.00)	(15.75)	(9.65)	(19.05)	
20SM6073	VEE	3/8	0.219	2.00	1.00	0.47	1.63	1.19	2.63	3.00	0.75	0.22	5.00	0.62	0.38	0.75	
20SM6083	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(41.28)	(30.23)	(66.68)	(76.20)	(19.05)	(5.59)	(127.00)	(15.75)	(9.65)	(19.05)	
20SM9073	VEE	9/16	0.312	2.50	1.25	0.53	2.38	1.75	3.63	4.00	1.00	0.34	6.51	0.69	0.50	1.00	
20SM9083	REG	(14.29)	(7.92)	(63.50)	(31.75)	(13.46)	(60.45)	(44.45)	(92.08)	(101.60)	(25.40)	(8.64)	(165.59)	(17.53)	(12.70)	(25.40)	
20SM12073	VEE	3/4	0.438	3.00	1.50	0.62	3.00	2.25	4.63	10.25	1.12	0.44	7.88	0.88	0.63	1.38	
20SM12083	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.75)	(76.20)	(57.15)	(117.48)	(260.35)	(28.45)	(11.18)	(200.03)	(22.35)	(16.00)	(35.05)	
20SM16073	VEE	1	0.562	4.12	2.06	0.63	3.75	2.81	5.88	10.25	1.62	0.56	9.75	1.25	1.13	1.75	
20SM16083	REG	(25.40)	(14.27)	(104.65)	(52.32)	(16.00)	(95.25)	(71.37)	(149.35)	(260.35)	(41.15)	(14.22)	(247.89)	(31.75)	(28.70)	(44.4 5)	
10SM9073	VEE	9/16	0.359	2.50	1.25	0.53	2.38	1.75	3.63	4.00	1.00	0.34	6.52	0.69	0.50	1.00	
10SM9083	REG	(14.29)	(9.12)	(63.50)	(31.75)	(13.46)	(60.45)	(44.45)	(92.08)	(101.60)	(25.40)	(8.64)	(165.59)	(17.53)	(12.70)	(25.40)	
10SM12073	VEE	3/4	0.516	3.00	1.50	0.62	3.00	2.25	4.63	10.25	1.12	0.44	7.88	0.88	0.63	1.38	
10SM12083	REG	(19.03)	(13.11)	(76.20)	(38.10)	(15.75)	(76.20)	(57.15)	(117.48)	(260.35)	(28.45)	(11.18)	(200.03)	(22.35)	(16.00)	(35.05)	
10SM16073	VEE	1	0.688	4.12	2.06	0.63	3.75	2.81	5.88	10.25	1.62	0.56	9.75	1.25	1.13	1.75	
10SM16083	REG	(25.40)	(17.48)	(104.65)	(52.32)	(16.00)	(95.25)	(71.37)	(149.35)	(260.35)	(41.15)	(14.22)	(247.89)	(31.75)	(28.70)	(44.45)	

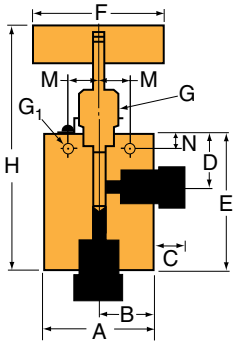
See Figure 3

G - Packing gland mounting hole drill size
G_1 - 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.

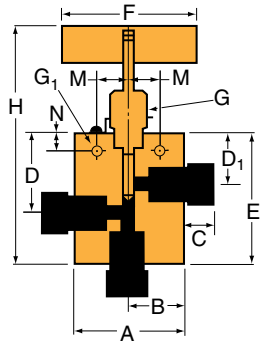
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 2



2-Way Angle

Figure 3



3-Way / 2 on Pressure

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		

3-Way / 1 on Pressure

20SM4074	VEE	1/4	0.125	2.00	1.00	0.38	1.19		2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75	
20SM4084	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.65)	(30.23)		(61.90)	(76.20)	(19.05)	(5.59)	(122.25)	(15.75)	(9.65)	(19.05)	
20SM6074	VEE	3/8	0.219	2.00	1.00	0.47	1.19		2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75	
20SM6084	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(30.23)		(61.90)	(76.20)	(19.05)	(5.59)	(122.25)	(15.75)	(9.65)	(19.05)	
20SM9074	VEE	9/16	0.312	2.50	1.25	0.53	1.75		3.38	4.00	1.00	0.34	6.31	0.69	0.50	1.00	
20SM9084	REG	(14.29)	(7.92)	(63.50)	(31.75)	(13.46)	(44.45)		(85.85)	(101.60)	(25.40)	(8.64)	(160.56)	(17.53)	(12.70)	(25.40)	
20SM12074	VEE	3/4	0.438	3.00	1.50	0.62	2.25		4.25	10.25	1.12	0.44	7.50	0.88	0.63	1.38	
20SM12084	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.75)	(57.15)		(107.95)	(260.35)	(28.45)	(11.18)	(190.50)	(22.35)	(16.00)	(35.05)	
20SM16074	VEE	1	0.562	4.12	2.06	0.63	2.81		5.12	10.25	1.62	0.56	9.09	1.25	1.13	1.75	
20SM16084	REG	(25.40)	(14.27)	(104.65)	(52.32)	(16.00)	(71.37)		(130.05)	(260.35)	(41.15)	(14.22)	(231.13)	(31.75)	(28.70)	(44.4 5)	
10SM9074	VEE	9/16	0.359	2.50	1.25	0.53	1.75		3.38	4.00	1.00	0.34	6.31	0.69	0.50	1.00	
10SM9084	REG	(14.29)	(9.12)	(63.50)	(31.75)	(13.46)	(44.45)		(85.85)	(101.60)	(25.40)	(8.64)	(160.56)	(17.53)	(12.70)	(25.40)	
10SM12074	VEE	3/4	0.516	3.00	1.50	0.62	2.25		4.25	10.25	1.12	0.44	7.50	0.88	0.63	1.38	
10SM12084	REG	(19.03)	(13.11)	(76.20)	(38.10)	(15.75)	(57.15)		(107.95)	(260.35)	(28.45)	(11.18)	(190.50)	(22.35)	(16.00)	(35.05)	
10SM16074	VEE	1	0.688	4.12	2.06	0.63	2.81		5.12	10.25	1.62	0.56	9.09	1.25	1.13	1.75	
10SM16084	REG	(25.40)	(17.48)	(104.65)	(52.32)	(16.00)	(71.37)		(130.05)	(260.35)	(41.15)	(14.22)	(231.13)	(31.75)	(28.70)	(44.45)	

See Figure 4

2-Way Angle / Replaceable Seat

20SM4872	VEE	1/4	0.125	2.00	1.00	0.38	1.19	2.13	2.25	3.00	0.75	0.22	5.75	0.62	0.38	0.75	
20SM4882	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.65)	(30.23)	(53.98)	(57.15)	(76.20)	(19.05)	(5.59)	(146.05)	(15.75)	(9.65)	(19.05)	
20SM6872	VEE	3/8	0.219	2.00	1.00	0.47	1.19	2.13	2.25	3.00	0.75	0.22	5.75	0.62	0.38	0.75	
20SM6882	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(30.23)	(53.98)	(57.15)	(76.20)	(19.05)	(5.59)	(146.05)	(15.75)	(9.65)	(19.05)	
20SM9872	VEE	9/16	0.312	2.50	1.25	0.53	1.75	2.50	3.13	4.00	1.00	0.34	7.34	0.69	0.50	1.00	
20SM9882	REG	(14.29)	(7.92)	(63.50)	(31.75)	(13.46)	(44.45)	(63.50)	(79.38)	(101.60)	(25.40)	(8.64)	(186.68)	(17.53)	(12.70)	(25.40)	
20SM12872	VEE	3/4	0.438	3.00	1.50	0.62	2.25	3.44	4.25	10.25	1.12	0.44	9.00	0.88	0.63	1.38	
20SM12882	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.75)	(57.15)	(87.38)	(107.95)	(260.35)	(28.45)	(11.18)	(228.60)	(22.35)	(16.00)	(35.05)	
20SM16872	VEE	1	0.562	4.12	2.06	0.63	2.69	4.38	5.25	10.25	1.62	0.56	11.00	1.25	1.13	1.75	
20SM16882	REG	(25.40)	(14.27)	(104.65)	(52.32)	(16.00)	(68.33)	(111.13)	(133.35)	(260.35)	(41.15)	(14.22)	(279.64)	(31.75)	(28.70)	(44.4 5)	
10SM9872	VEE	9/16	0.359	2.50	1.25	0.53	1.75	2.50	3.38	4.00	1.00	0.34	7.34	0.69	0.50	1.00	
10SM9882	REG	(14.29)	(9.12)	(63.50)	(31.75)	(13.46)	(44.45)	(63.50)	(85.85)	(101.60)	(25.40)	(8.64)	(186.68)	(17.53)	(12.70)	(25.40)	
10SM12872	VEE	3/4	0.516	3.00	1.50	0.62	2.25	3.44	4.25	10.25	1.12	0.44	9.00	0.88	0.63	1.38	
10SM12882	REG	(19.03)	(13.11)	(76.20)	(38.10)	(15.75)	(57.15)	(87.38)	(107.95)	(260.35)	(28.45)	(11.18)	(228.60)	(22.35)	(16.00)	(35.05)	
10SM16872	VEE	1	0.688	4.12	2.06	0.63	2.69	4.38	5.25	10.25	1.62	0.56	11.00	1.25	1.13	1.75	
10SM16882	REG	(25.40)	(17.48)	(104.65)	(52.32)	(16.00)	(68.33)	(111.13)	(133.35)	(260.35)	(41.15)	(14.22)	(279.64)	(31.75)	(28.70)	(44.45)	

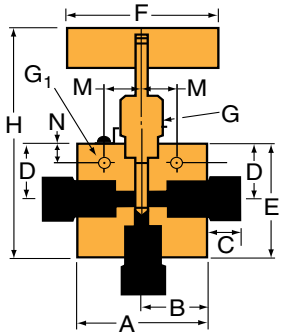
See Figure 5

G - Packing gland mounting hole drill size
G_1 - 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.

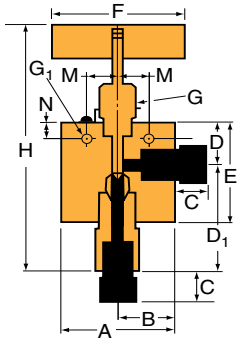
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 4



3-Way / 1 on Pressure

Figure 5



2-Way Angle / Replaceable Seat

3-Way / 2-Stem Manifold

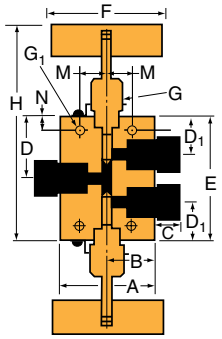
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thick-ness	Valve Pattern
20SM4075	VEE	1/4	0.125	2.00	1.00	0.38	1.69	1.19	3.38	3.00	0.75	0.22	5.69	0.62	0.38	0.75	See Figure 6
20SM4085	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.65)	(42.85)	(30.15)	(85.73)	(76.20)	(19.05)	(5.59)	(144.50)	(15.75)	(9.65)	(19.05)	
20SM6075	VEE	3/8	0.219	2.00	1.00	0.47	1.69	1.19	3.38	3.00	0.75	0.22	5.69	0.62	0.38	0.75	
20SM6085	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(42.85)	(30.15)	(85.73)	(76.20)	(19.05)	(5.59)	(144.50)	(15.75)	(9.65)	(19.05)	
20SM9075	VEE	9/16	0.312	2.50	1.25	0.53	2.56	1.75	5.13	4.00	1.00	0.34	8.13	0.69	0.50	1.00	
20SM9085	REG	(14.29)	(7.92)	(63.50)	(31.75)	(13.46)	(65.07)	(44.45)	(130.18)	(101.60)	(25.40)	(8.64)	(206.5)	(17.53)	(12.70)	(25.40)	
20SM12075	VEE	3/4	0.438	3.00	1.50	0.62	3.25	2.25	6.50	10.25	1.12	0.44	9.75	0.88	0.63	1.38	
20SM12085	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.75)	(82.55)	(57.15)	(165.10)	(260.35)	(28.45)	(11.18)	(247.65)	(22.35)	(16.00)	(35.05)	
20SM16075	VEE	1	0.562	4.12	2.06	0.63	3.75	2.81	7.50	10.25	1.62	0.56	12.18	1.25	1.13	1.75	
20SM16085	REG	(25.40)	(14.27)	(104.65)	(52.32)	(16.00)	(95.25)	(71.37)	(190.50)	(260.35)	(41.15)	(14.22)	(309.40)	(31.75)	(28.70)	(44.4 5)	
10SM9075	VEE	9/16	0.359	2.50	1.25	0.53	2.56	1.75	5.13	4.00	1.00	0.34	8.13	0.69	0.50	1.00	
10SM9085	REG	(14.29)	(9.12)	(63.50)	(31.75)	(13.46)	(65.07)	(44.45)	(130.18)	(101.60)	(25.40)	(8.64)	(206.5)	(17.53)	(12.70)	(25.40)	
10SM12075	VEE	3/4	0.516	3.00	1.50	0.62	3.25	2.25	6.50	10.25	1.12	0.44	9.75	0.88	0.63	1.38	
10SM12085	REG	(19.03)	(13.11)	(76.20)	(38.10)	(15.75)	(82.55)	(57.15)	(165.10)	(260.35)	(28.45)	(11.18)	(247.65)	(22.35)	(16.00)	(35.05)	
10SM16075	VEE	1	0.688	4.12	2.06	0.63	3.75	2.81	7.50	10.25	1.62	0.56	12.18	1.25	1.13	1.75	
10SM16085	REG	(25.40)	(17.48)	(104.65)	(52.32)	(16.00)	(95.25)	(71.37)	(190.50)	(260.35)	(41.15)	(14.22)	(309.40)	(31.75)	(28.70)	(44.45)	

G - Packing gland mounting hole drill size
G_1 - 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 6



3-Way / 2-Stem Manifold

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02-0112SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Needle Valves

Medium Pressure

QS Series

Pressures to 15,000 psi (1034 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, water-blast, research, and oil and gas industries.

Medium Pressure Valve Features:

- Compression Sleeve to 15,000 psi (1034 bar).
- Tubing sizes available from 1/4" to1".
- Rising stem/barstock body design.
- Non-rotating stem prevents stem/seat galling.
- Anti-galling molybdenum disulfide coated gland nuts.
- Gland nut positioning mark for assembly.
- Connection weep holes for safety and leak detection.
- 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 two body patterns.
- 1" valve bodies are 2507 Super Duplex standard

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, check valves and line filters. The QS Series uses Parker Autoclave Engineers' Quick Set compression sleeve design, providing fast easy make-up and reliable bubble-tight performance in liquid or gas service.

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Needle Valves - QS Series

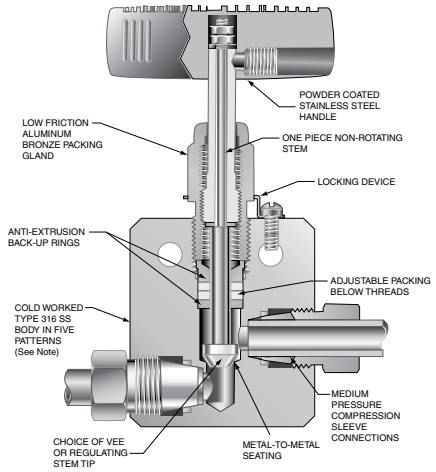
Pressures to 15,000 psi (1034 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @ Room Temperature**
1/4	QS 250	0.125 (3.18)	0.31	15,000 (1034)
3/8	QS 375	0.219 (5.56)	0.75	15,000 (1034)
9/16	QS 562	0.359 (9.12)	2.80	15,000 (1034)
3/4	QS 750	0.516 (13.10)	5.20	15,000 (1034)
1	QS 1000	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)*

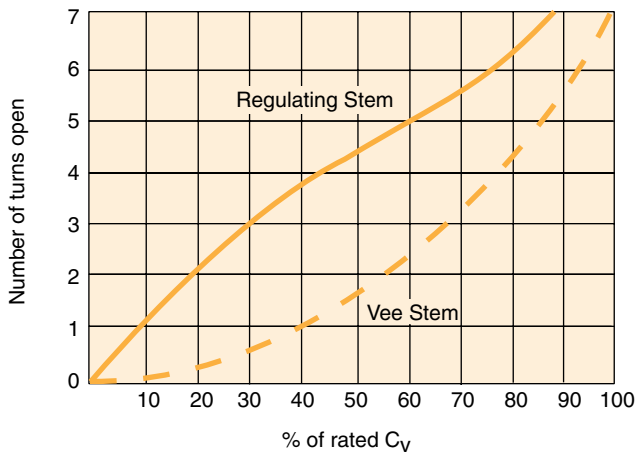
** *For complete temperature ratings see pressure/temperature rating guide in Technical Information section.*



(**Note:** 1" valves are 2507 Super Duplex)

To ensure proper fit use Parker Autoclave Engineers 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. QS Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **15QS4071**

15QS — Valve Series
- **15QS**

4 — Outside Diameter Tube Size
- **4**-1/4"
- **6**-3/8"
- **9**-9/16"
- **12**-3/4"
- **16**-1"

07 — 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
- **88** - Regulating stem with replaceable seat

1 — 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

—

XX — Options
- **TG** - PTFE Glass Plating
- **GY** - Graphite Yarn Packing

See valve options for ratings

Valve Options

Extreme Temperatures
Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing and/or extended stuffing box are available for service from -100°F (-73°C) to 650°F (343°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 650°F (343°C).
B standard valve with cryogenic trim materials and PTFE packing to -100°F (-73°C).

†Parker Autoclave Engineers does not recommend compression sleeve connections below -100°F (-73°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative.

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R15QS4071**)

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

Consult your Parker Autoclave Engineers representative for pricing on repair kits and valve bodies.

2-Way Straight

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thick-ness	Valve Pattern
15QS4071	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	
15QS4081	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.53)	(41.15)	(30.23)	(50.80)	(76.20)	(19.05)	(5.59)	(119.13)	(15.75)	(9.65)	(19.05)	
15QS6071	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	0.81	
15QS6081	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(41.15)	(30.23)	(50.80)	(76.20)	(19.05)	(5.59)	(117.60)	(15.75)	(9.65)	(20.57)	
15QS9071	VEE	9/16	0.359	3.00	1.50	0.53	2.38	1.75	3.00	4.00	1.00	0.34	6.05	0.69	0.50	1.25	See Figure 1
15QS9081	REG	(14.29)	(9.12)	(76.20)	(38.10)	(13.46)	(60.45)	(44.45)	(76.20)	(101.60)	(25.40)	(8.64)	(153.67)	(17.53)	(12.70)	(31.75)	
15QS12071	VEE	3/4	0.516	4.12	2.06	0.62	3.00	2.25	3.88	10.25	1.12	0.44	7.13	0.88	0.63	1.50	
15QS12081	REG	(19.05)	(13.11)	(104.65)	(52.32)	(15.75)	(76.20)	(57.15)	(98.43)	(260.35)	(28.45)	(11.18)	(180.98)	(22.35)	(16.00)	(38.10)	
15QS16071	VEE	1	0.688	4.75	2.38	1.19	3.75	2.63	4.75	10.25	1.12	0.44	8.00	0.88	0.63	2.00	
15QS16081	REG	(25.40)	(17.48)	(120.65)	(60.33)	(30.18)	(95.25)	(66.68)	(120.65)	(260.35)	(28.45)	(11.18)	(203.20)	(22.35)	(16.00)	(50.80)	

Note: 1" valve bodies are 2507 Super Duplex

2-Way Angle

15QS4072	VEE	1/4	0.125	2.00	1.00	0.38	1.19		2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75	
15QS4082	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.53)	(30.23)		(61.98)	(76.20)	(19.05)	(5.59)	(122.17)	(15.75)	(9.65)	(19.05)	
15QS6072	VEE	3/8	0.219	2.00	1.00	0.47	1.20		2.56	3.00	0.75	0.22	4.93	0.62	0.38	0.81	
15QS6082	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(30.48)		(65.02)	(76.20)	(19.05)	(5.59)	(125.22)	(15.75)	(9.65)	(20.62)	
15QS9072	VEE	9/16	0.359	3.00	1.50	0.53	1.69		3.50	4.00	1.00	0.36	6.55	0.69	0.50	1.25	See Figure 2
15QS9082	REG	(14.29)	(9.12)	(76.20)	(38.10)	(13.46)	(42.88)		(88.90)	(101.60)	(25.40)	(9.14)	(166.37)	(17.53)	(12.70)	(31.75)	
15QS12072	VEE	3/4	0.516	4.12	2.06	0.62	2.19		4.63	10.25	1.12	0.44	7.88	0.88	0.63	1.50	
15QS12082	REG	(19.05)	(13.11)	(104.65)	(52.32)	(15.75)	(55.58)		(117.48)	(260.35)	(28.45)	(11.18)	(200.15)	(22.35)	(16.00)	(38.10)	
15QS16072	VEE	1	0.688	4.75	2.38	1.19	3.75		5.38	10.25	1.12	0.44	8.63	0.88	0.63	2.00	
15QS16082	REG	(25.40)	(17.48)	(120.65)	(60.33)	(30.18)	(95.25)		(136.53)	(260.35)	(28.45)	(11.18)	(219.25)	(22.35)	(16.00)	(50.80)	

Note: 1" valve bodies are 2507 Super Duplex

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting drill size: 0.22" all valves.

** H Dimension is with stem in closed position.*
***1/8" straight and 3-Way/2 on pressure valves have offset tube connections*

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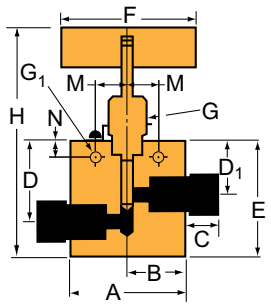
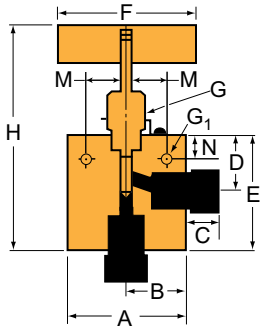
All dimensions for reference only and subject to change.

Figure 1



2-Way Straight

Figure 2



2-Way Angle

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02-1246BE January2013

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ISO-9001 Certified

Needle Valves

High Pressure

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

Pressures to 150,000 psi (10342 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 a reputation for reliable and efficient product performance. Parker 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.

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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 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 PTFE and leather packing below stem threads with beryllium-copper Autoclave Anti-Extrusion Back up Rings.
- Vee stem tip only

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

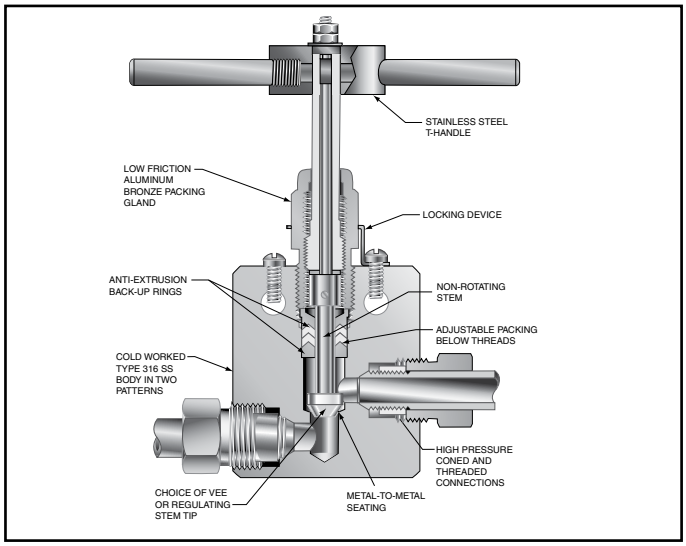
Needle Valves - SC Series

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)

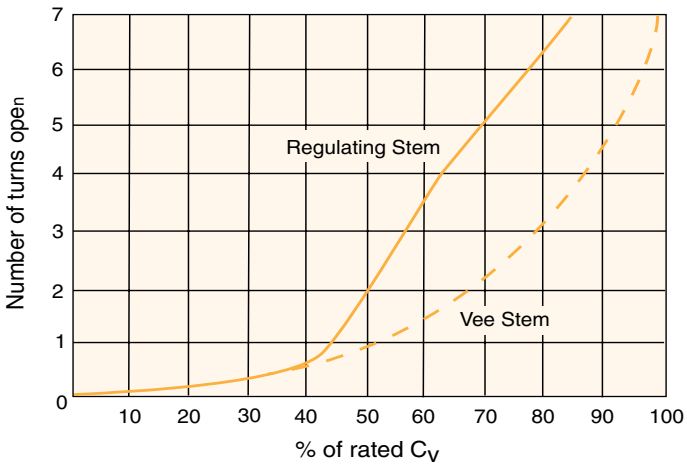
Notes:
** C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%.*

*** 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 Parker Autoclave Engineers valves with PTFE 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 PTFE 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 PTFE packing to -100°F (-73°C).
LT - extended stuffing box valve with PTFE 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 Parker Autoclave Engineers representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

2-Way Straight

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
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	
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)	See Figure 1
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	
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)	See Figure 2
43SC16072	VEE	1"	0.438	4.88	2.44	0.72	2.75		5.12	10.25	1.62	0.56	9.35	1.25	1.12	2.25	
43SC16082	REG	(25.40)	(11.12)	(123.96)	(61.96)	(18.28)	(69.85)		(130.04)	(260.35)	(41.14)	(14.22)	(237.49)	(31.75)	(28.44)	(57.15)	

2-Way Angle/Replaceable Seat

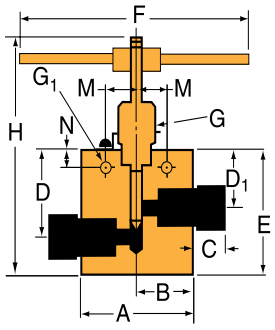
30SC16872	VEE	1"	0.438	4.13	2.06	0.72	2.75	4.31	5.24	10.25	1.62	0.56	10.56	1.25	1.12	1.75	
30SC16882	REG	(25.40)	(11.12)	(104.90)	(52.32)	(18.28)	(71.37)	(109.47)	(133.35)	(260.35)	(41.14)	(14.22)	(268.22)	(31.75)	(28.44)	(44.45)	See Figure 3
43SC16872	VEE	1"	0.438	4.88	2.44	0.72	2.75	4.31	5.24	10.25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

G - Packing gland mounting hole drill size
G_1 - 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.

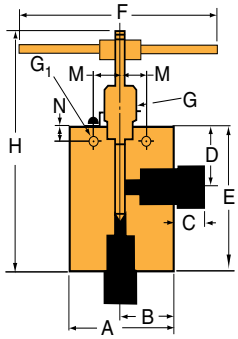
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 1



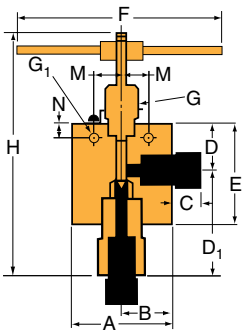
2-Way Straight

Figure 2



2-Way Angle

Figure 3



2-Way Angle / Replaceable Seat

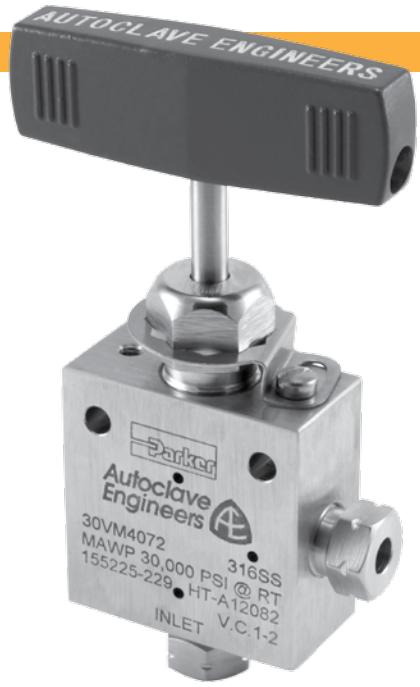
Needle Valves - 30VM Series

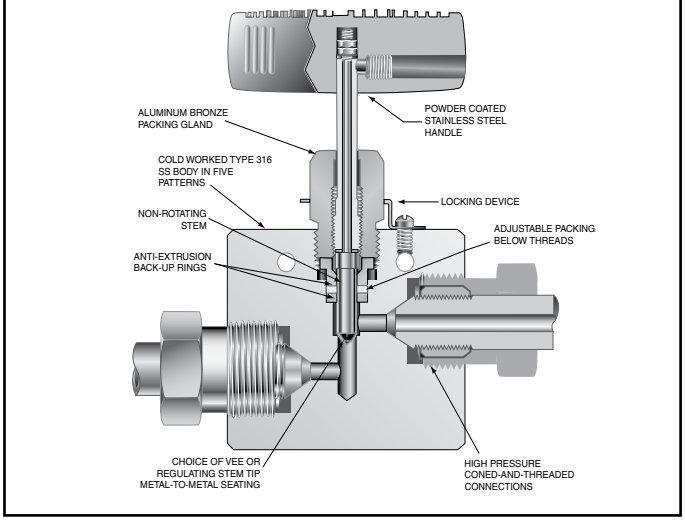
Pressures to 30,000 psi (2068 bar)

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%.*

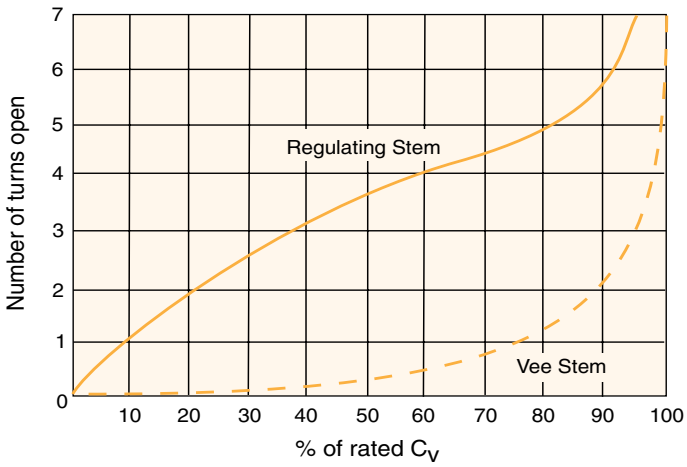
*** For complete temperature ratings see pressure/temperature rating guide in Technical Information section.*





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**

30VM — **Valve Series**

4 — **Outside Diameter Tube Size**
- **4**-1/4”
- **6**-3/8”
- **9**-9/16”

07 — **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
- **88** - Regulating stem with replaceable seat

1 — **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

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XX — **Options**

For extreme temperature and other options, see Valve Options.

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 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 PTFE 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 PTFE packing to -100°F (-73°C).
LT - extended stuffing box valve with PTFE 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 Parker Autoclave Engineers representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

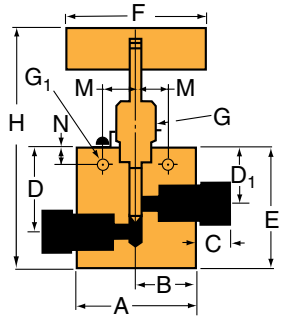
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
2-Way Straight																	
30VM4071	VEE	1/4	0.094	2.00	1.00	0.50	1.50	1.12	2.00	3.00	1.00	0.22	4.62	0.69	0.38	1.00	See Figure 1
30VM4081	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_1 - 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.

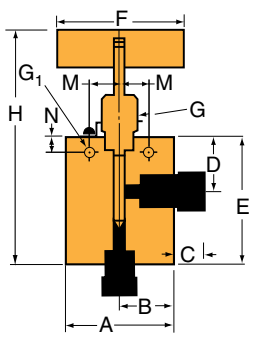
For prompt service, Parker Autoclave Engineers stock select products.Consult factory.

Figure 1



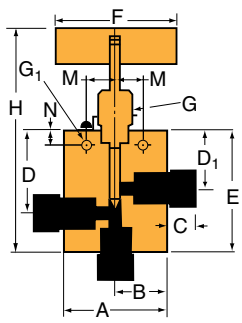
2-Way Straight

Figure 2



2-Way Angle

Figure 3



3-Way / 2 on Pressure

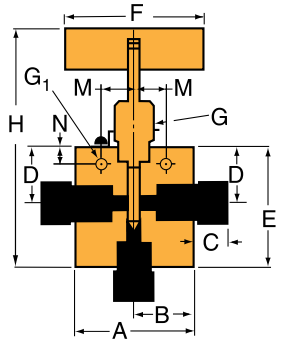
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
3-Way / 1 on Pressure																	
30VM4074	VEE	1/4	0.094	2.00	1.00	0.50	1.12		2.00	3.00	1.00	0.22	4.62	0.69	0.38	1.00	See Figure 4
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_1 - 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.

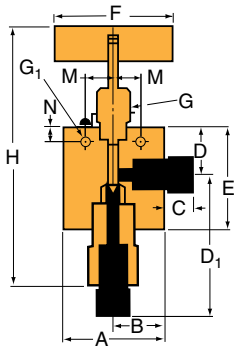
For prompt service, Parker Autoclave engineers stock select products. Consult factory.

Figure 4



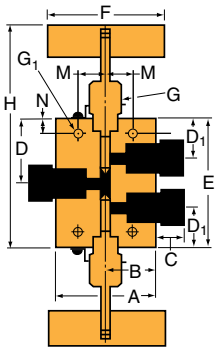
3-Way / 1 on Pressure

Figure 5



2-Way Angle / Replacable Seat

Figure 6



3-Way / 2-Stem Manifold

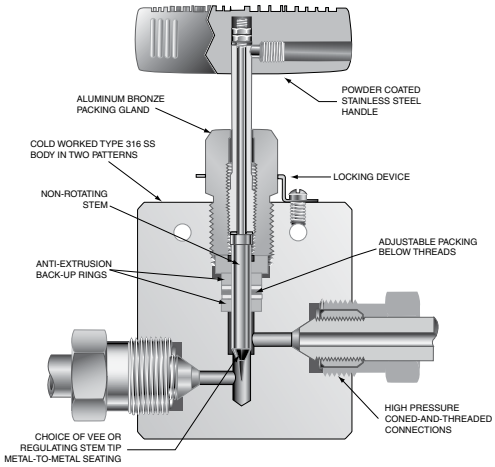
Needle Valves - 40VM Series

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)

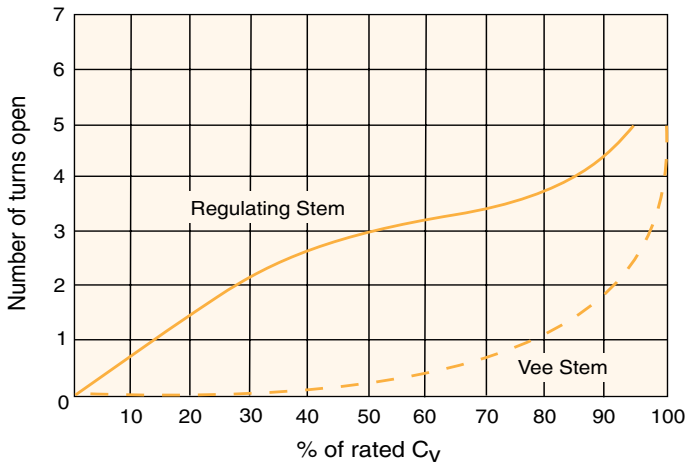
Notes:
** C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%.*

*** 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**

40VM — **Valve Series**

9 — **Outside Diameter Tube Size**

9-9/16"

07 — **Stem/Seat Type**

- **07** - non-rotating Vee stem (on-off service)
- **08** - non-rotating regulating stem (tapered tip for regulating and shutoff)

1 — **Body Pattern**

- **1** - two-way straight
- **2** - two-way angle
- **5** - three-way, two-stem manifold valve

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XX — **Options**

For extreme temperature and other options, see Valve Options.

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 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 PTFE glass packing to 600°F (316°C). **See note below.**
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 PTFE packing to -100°F (-73°C).
LT - extended stuffing box valve with PTFE packing & Cryogenic trim materials to -423°F (-252°C).
K - anti-vibration collet and gland assembly.

Note: 40VM and 60VM valves supplied with Peak/PTFE Glass/Peek

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

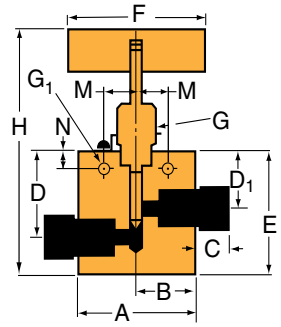
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
2-Way Straight																	
40VM9071	VEE	9/16	0.109	2.62	1.31	0.72	1.75	1.31	2.50	3.00	1.00	0.28	5.06	0.69	0.38	1.50	See Figure 1
40VM9081	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)	
2-Way Angle / Replaceable Seat																	
40VM9872	VEE	9/16	0.109	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	See Figure 4
40VM9882	REG	(14.29)	(2.77)	(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)	

G - Packing gland mounting hole drill size
G_1 - 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.

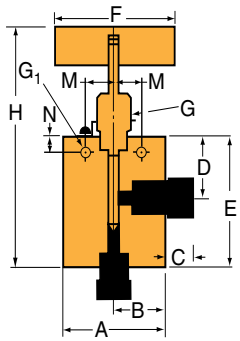
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 1



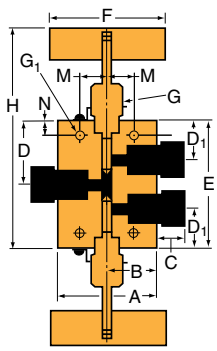
2-Way Straight

Figure 2



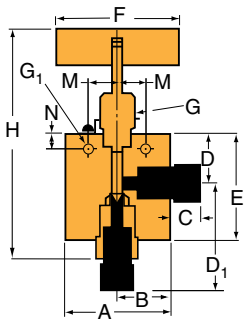
2-Way Angle

Figure 3



3-Way / 2 Stem Manifold

Figure 4



2-Way Angle / Replaceable Seat

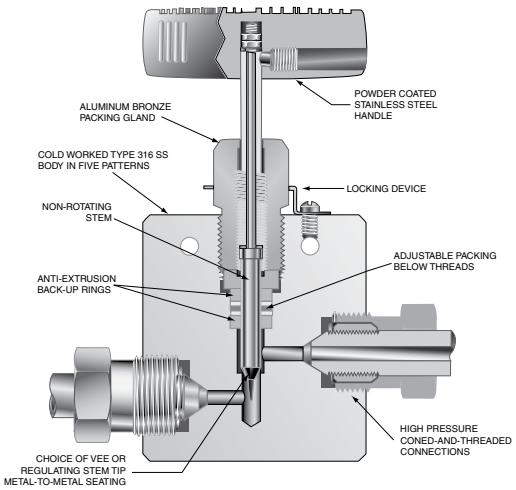
Needle Valves - 60VM Series

Pressures to 60,000 psi (4137 bar)

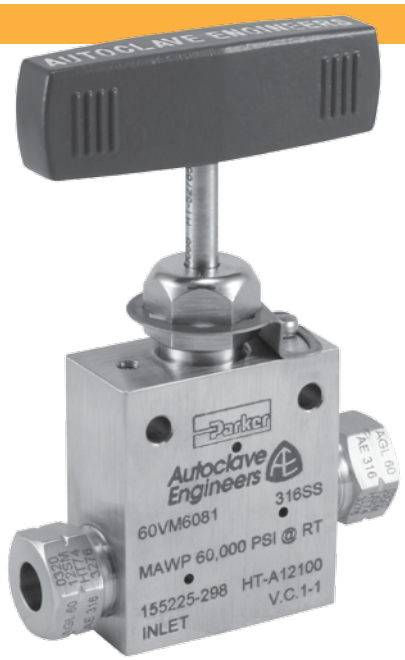
Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @ Room Temperature**
1/4	F250C	0.062 (1.57)	0.08	60,000 (4137)
3/8	F375C	0.062 (1.57)	0.09	60,000 (4137)
9/16	F562C	0.078 (1.98)	0.14	60,000 (4137)

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

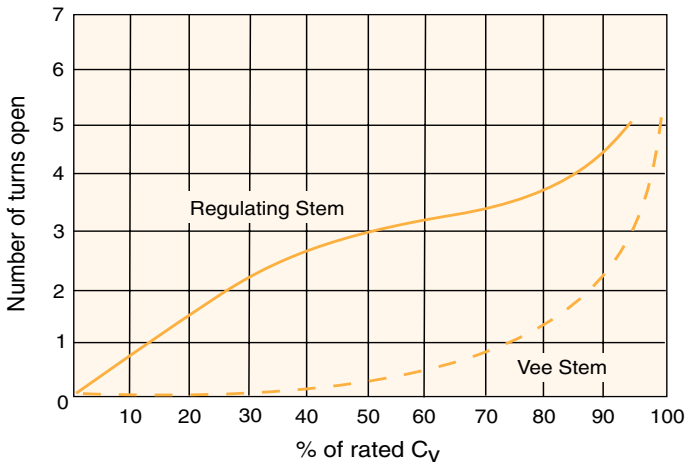
*** For complete temperature ratings see pressure/temperature rating guide in Technical Information section.*



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**

60VM — **Valve Series**

4 — **Outside Diameter Tube Size**
- **4**-1/4”
- **6**-3/8”
- **9**-9/16”

07 — **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
- **88** - Regulating stem with replaceable seat

1 — **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

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XX — **Options**

For extreme temperature and other options, see Valve Options.

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 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 PTFE glass packing to 600°F (316°C). **See note below.**
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 PTFE packing to -100°F (-73°C).
LT - extended stuffing box valve with PTFE packing & Cryogenic trim materials to -423°F (-252°C).
K - anti-vibration collet and gland assembly.

Note: 40VM and 60VM valves supplied with Peak/PTFE Glass/Peek

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

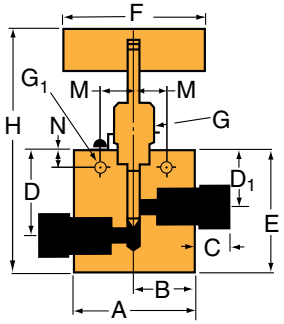
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
2-Way Straight																	
60VM4071	VEE	1/4	0.062	2.00	1.00	0.50	1.69	1.31	2.12	3.00	1.00	0.22	4.75	0.69	0.38	1.00	See Figure 1
60VM4081	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_1 - 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.

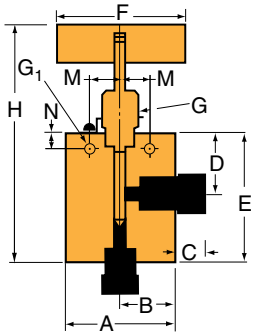
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 1



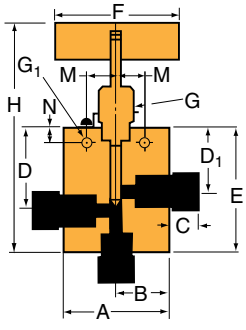
2-Way Straight

Figure 2



2-Way Angle

Figure 3



3-Way / 2 on Pressure

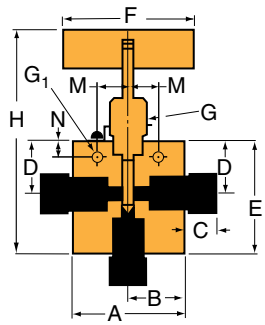
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
3-Way / 1 on Pressure																	
60VM4074	VEE	1/4	0.062	2.00	1.00	0.50	1.31		2.38	3.00	1.00	0.22	5.00	0.69	0.38	1.00	See Figure 4
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_1 - 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.

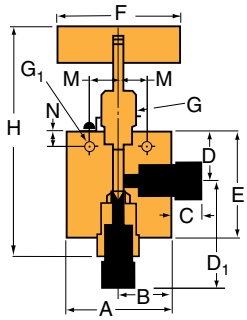
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 4



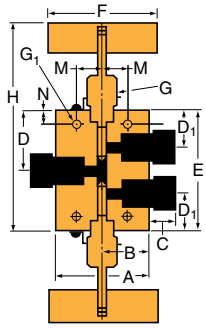
3-Way / 1 on Pressure

Figure 5



2-Way Angle / Replaceable Seat

Figure 6



3-Way / 2 Stem Manifold

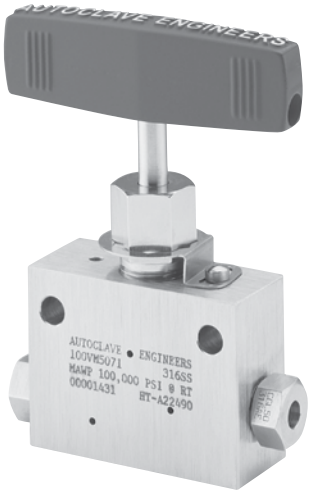
Needle Valves - 100VM & 150V Series

Pressures to 150,000 psi (10350 bar)

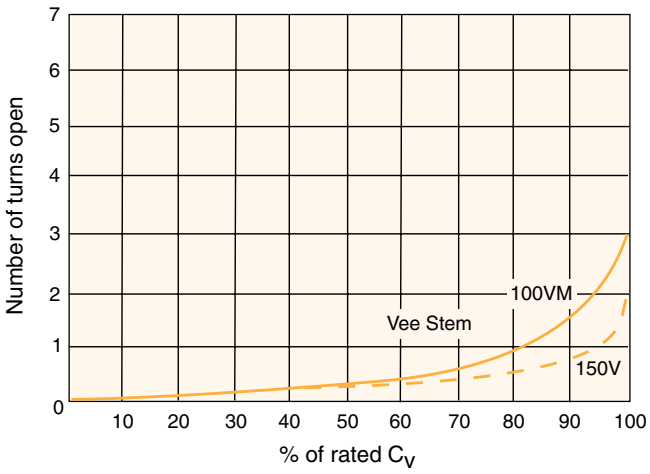
Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @ Room Temperature**
Series 100VM				
1/4, 5/16, 3/8	F312C150	0.062 (1.57)	.09	100,000 (6895)
Series 150V				
5/16	F312C150	0.062 (1.57)	.06	150,000 (10342)

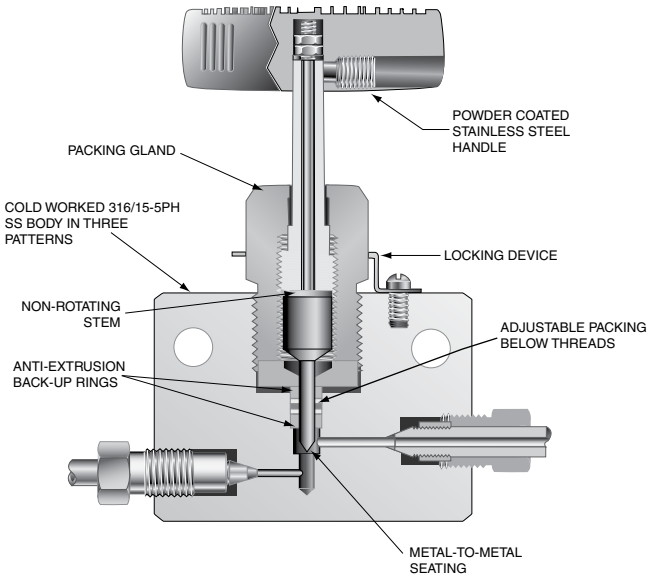
Notes:
** C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%.*

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

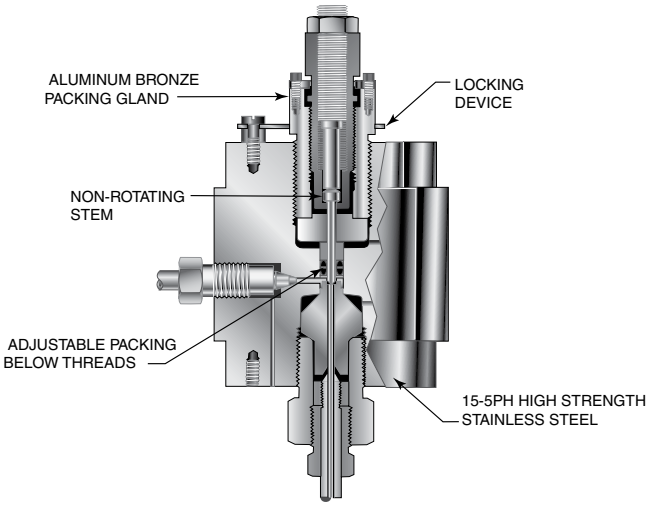


Generalized Flow Coefficient Curves (C_V)





100VM Series



Notes: Torque wrench required to operate valves.

150V Series

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

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

Valve Options

Extreme Temperatures
Standard Parker Autoclave Engineers valves with PTFE 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 Parker Autoclave Engineers representative for pricing on repair kits and valve bodies. Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

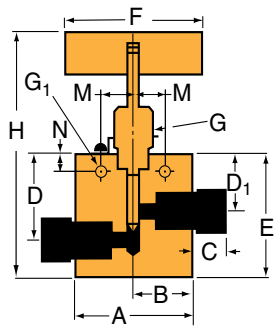
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
2-Way Straight																	
100VM4071 100VM5071 100VM6071	VEE	1/4" (6.35) 5/16" (7.93) 3/8" (9.53)	0.062 (1.57)	3.00 (76.20)	1.50 (38.10)	0.52 (13.21)	1.75 (44.45)	1.44 (36.58)	2.25 (57.15)	4.00 (101.60)	1.12 (28.45)	0.34 (8.64)	5.32 (135.13)	1.12 (28.45)	0.50 (12.70)	1.38 (35.05)	See Figure 1
2-Way Angle																	
100VM4072 100VM5072 100VM6072	VEE	1/4" (6.35) 5/16" (7.93) 3/8" (9.53)	0.062 (1.57)	2.25 (57.15)	1.50 (38.10)	0.52 (13.21)	1.44 (36.58)		3.00 (76.20)	4.00 (101.60)	1.12 (28.45)	0.34 (8.64)	6.05 (153.67)	0.94 (23.88)	0.50 (12.70)	1.38 (35.05)	See Figure 2

G - Packing gland mounting hole drill size
G_1 - 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.

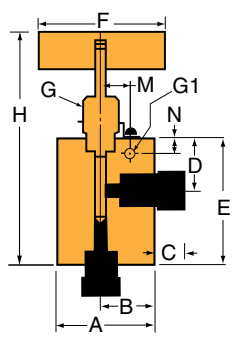
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 1



2-Way Straight

Figure 2



2-Way Angle

3-Way / 2 On Pressure

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thick-ness	Valve Pattern
100VM4073 100VM5073 100VM6073	VEE	1/4" (6.35) 5/16" (7.93) 3/8" (9.53)	0.062 (1.57)	3.00 (76.20)	1.50 (38.10)	0.52 (13.21)	1.75 (44.45)	1.44 (36.58)	3.25 (82.55)	4.00 (101.60)	1.12 (28.45)	0.34 (8.64)	6.31 (160.27)	1.12 (28.45)	0.50 (12.70)	1.38 (35.05)	See Figure 3

2-Way Angle/Replaceable Seat

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

2-Way Angle / Replaceable Seat

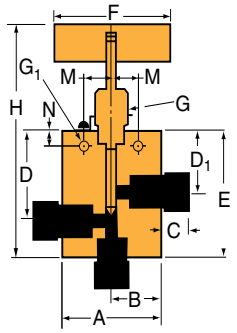
150V5072	VEE	5/16 (7.93)	0.062 (1.57)	3.75 (95.25)	1.88 (47.63)	.052 (13.21)	2.25 (57.15)	2.63 (66.80)	4.00 (101.60)		1.650 (41.91)		7.12 (180.85)	1.25† (31.75)			See Figure 5

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting drill size: 0.22" all valves.
See mounting note below for 150V series.

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

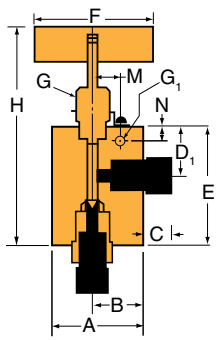
For prompt service, Parker Autoclave Engineers stock select products. Consult factory.

Figure 3



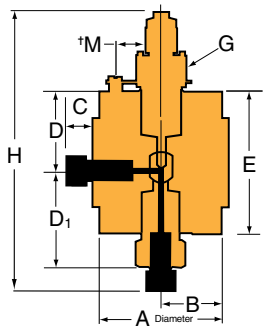
3-Way / 2 on Pressure

Figure 4



2-Way Angle / Replaceable Seat

Figure 5



2-Way Angle / Replaceable Seat

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

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.

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02-0113SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Needle Valves

Pipe Valves

P Series

Pressures to 15,000 psi (1034 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, research, and oil and gas industries.

Pipe Valve Features:

- P Series valve design provides in-line pipe connections for 1/4” to 1” pipe sizes. 1/8 connections offset.
- Rising stem/barstock body design.
- Non-rotating stem prevents stem/seat galling (1/8" NPT rotating stem 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.
- 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 tips.
- Operating temperature range from -423°F (-252°C) to 400°F (204°C).

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, check valves and line filters.

Parker

Autoclave Engineers

www.autoclave.com

Valve Series - P Series

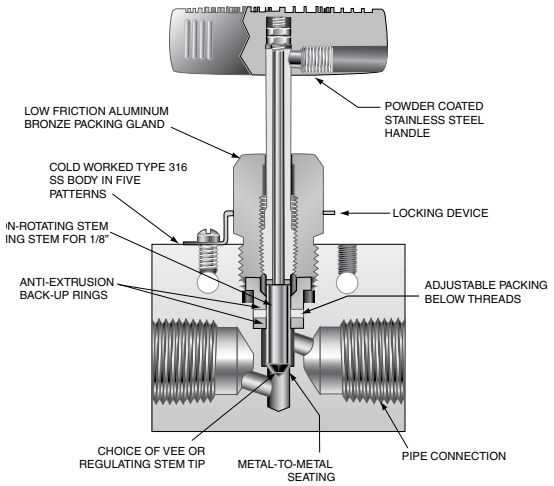
Pressures to 15,000 psi (1034 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @ Room Temperature**
1/8	Pipe	0.078 (1.98)	0.11	15,000 (1034)
1/4	Pipe	0.203 (5.16)	0.63	15,000 (1034)
3/8	Pipe	0.219 (5.56)	0.75	15,000 (1034)
1/2	Pipe	0.312 (7.92)	1.30	15,000 (1034)
3/4	Pipe	0.438 (11.13)	2.50	10,000 (690)
1	Pipe	0.562 (14.27)	4.40	10,000 (690)

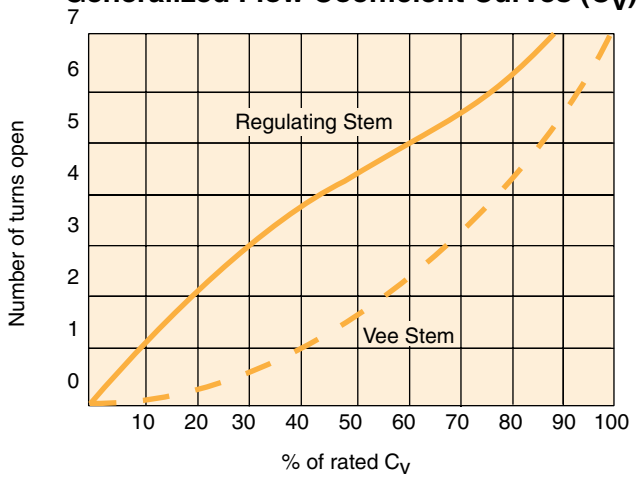
Notes:

* *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.*



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.

Typical catalog number: **15P4071**

15P — Valve Series

10P-10,000 psi (690 bar)
15P-15,000 psi (1034 bar)

4 — Nominal Pipe Size

2-1/8”
4-1/4”
6-3/8”
8-1/2”
12-3/4”
16-1”

Note: 3/4" and 1" 10,000 psi (690 bar) max.

07 — Stem/Seat Type

00 - rotating Vee stem (on-off service)
01 - rotating regulating stem (tapered tip for regulating and shut off)
07 - non-rotating Vee stem (on-off service)
08 - non-rotating regulating stem (tapered tip for regulating and shutoff)

1 — 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

XX — Options

For extreme temperature and other options, see Valve Options.

Valve Options

Extreme Temperatures

Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing and/or extended stuffing box is available for service from 0°F (-17.8°C) to 650°F (343°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 650°F (343°C).
B standard valve with cryogenic trim material 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).

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R15P4071 or R10P12071**)

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

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

† Parker Autoclave Engineers recommends pipe connections be operated between -423°F (-252°C) and 400°F (204°C). For additional valve options, contact your Sales Representative.

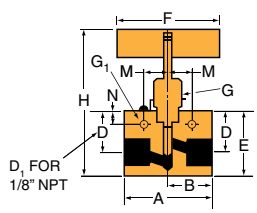
Catalog Number	Stem Type	Pipe Size	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H	M	N	Block Thickness	Valve Pattern
2-Way Straight																	
15P2001	VEE	1/8	0.078	1.50	0.75		0.56	0.82	1.25	1.75	0.56	0.16	2.53	0.45	0.20	0.63	
15P2011	REG	(3.18)	(1.98)	(38.10)	(19.05)		(14.22)	(20.62)	(31.75)	(44.45)	(14.22)	(4.06)	(64.26)	(11.43)	(5.16)	(15.88)	
15P4071	VEE	1/4	0.203	2.00	1.00		1.41		2.00	3.00	0.75	0.22	4.63	0.62	0.38	0.75	
15P4081	REG	(6.35)	(5.16)	(50.80)	(25.40)		(35.81)		(50.80)	(76.20)	(19.05)	(5.59)	(117.60)	(15.75)	(9.65)	(19.05)	
15P6071	VEE	3/8	0.219	2.50	1.25		1.41		2.00	3.00	0.75	0.22	4.63	0.62	0.38	1.00	
15P6081	REG	(9.53)	(5.56)	(63.50)	(31.75)		(35.81)		(50.80)	(76.20)	(19.05)	(5.59)	(117.60)	(15.75)	(9.65)	(25.4)	**See Figure 1**
15P8071	VEE	1/2	0.312	3.00	1.50		2.06		2.88	4.00	1.00	0.34	5.93	0.69	0.50	1.38	
15P8081	REG	(12.70)	(7.92)	(76.20)	(38.10)		(52.32)		(73.15)	(101.60)	(25.40)	(8.64)	(150.62)	(17.53)	(12.70)	(35.05)	
10P12071	VEE	3/4	0.437	3.50	1.75		2.63		3.75	10.25	1.12	0.44	7.00	0.88	0.63	1.75	
10P12081	REG	(19.05)	(11.10)	(88.90)	(44.45)		(66.80)		(95.25)	(260.35)	(28.45)	(11.18)	(177.80)	(22.35)	(16.00)	(44.45)	
10P16071	VEE	1	0.562	4.12	2.06		3.31		4.62	10.25	1.62	0.56	9.00	1.25	1.13	1.75	
10P16081	REG	(25.40)	(14.27)	(104.65)	(52.32)		(84.07)		(117.35)	(260.35)	(41.15)	(14.22)	(228.60)	(31.75)	(28.70	(44.45)	
2-Way Angle																	
15P2002	VEE	1/8	0.078	1.50	0.75		0.56		1.38	1.75	0.56	0.16	2.66	0.45	0.20	0.63	
15P2012	REG	(3.18)	(1.98)	(38.10)	(19.05)		(14.22)		(34.93)	(44.45)	(14.22)	(4.06)	(67.56)	(11.43)	(5.16)	(15.88)	
15P4072	VEE	1/4	0.203	2.00	1.00		1.41		2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75	
15P4082	REG	(6.35)	(5.16)	(50.80)	(25.40)		(35.81)		(61.98)	(76.20)	(19.05)	(5.59)	(122.17)	(15.75)	(9.65)	(19.05)	
15P6072	VEE	3/8	0.219	2.50	1.25		1.41		2.44	3.00	0.75	0.22	4.81	0.62	0.38	1.00	
15P6082	REG	(9.53)	(5.56)	(63.50)	(31.75)		(35.81)		(61.98)	(76.20)	(19.05)	(5.59)	(122.17)	(15.75)	(9.65)	(25.40)	**See Figure 2**
15P8072	VEE	1/2	0.312	3.00	1.50		2.06		3.38	4.00	1.00	0.34	6.43	0.69	0.50	1.38	
15P8082	REG	(12.70)	(7.92)	(76.20)	(38.10)		(52.32)		(85.85)	(101.60)	(25.40)	(8.64)	(163.32)	(17.53)	(12.70)	(35.05)	
10P12072	VEE	3/4	0.437	3.50	1.75		2.63		4.25	10.25	1.12	0.44	7.50	0.88	0.63	1.75	
10P12082	REG	(19.05)	(11.10)	(88.90)	(44.45)		(66.80)		(107.95)	(260.35)	(28.45)	(11.18)	(190.50)	(22.35)	(16.00)	(44.45)	
10P16072	VEE	1	0.562	4.12	2.06		3.31		5.12	10.25	1.62	0.56	9.00	1.25	1.13	1.75	
10P16082	REG	(25.40)	(14.27)	(104.65)	(52.32)		(84.07)		(130.05)	(260.35)	(41.15)	(14.22)	(228.60)	(31.75)	(28.70	(44.45)	
3-Way / 2 on Pressure																	
15P4073	VEE	1/4	0.203	2.00	1.00		1.41		2.62	3.00	0.75	0.22	5.00	0.62	0.38	0.75	
15P4083	REG	(6.35)	(5.16)	(50.80)	(25.40)		(35.71)		(66.55)	(76.20)	(19.05)	(5.59)	(127.00)	(15.75)	(9.65)	(19.05)	
15P6073	VEE	3/8	0.219	2.50	1.25		1.41		2.62	3.00	0.75	0.22	5.00	0.62	0.38	1.00	
15P6083	REG	(9.53)	(5.56)	(63.50)	(31.75)		(35.71)		(66.55)	(76.20)	(19.05)	(5.59)	(127.00)	(15.75)	(9.65)	(25.40)	
15P8073	VEE	1/2	0.312	3.00	1.50		2.06		3.62	4.00	1.00	0.34	6.52	0.69	0.50	1.38	**See Figure 3**
15P8083	REG	(12.70)	(7.92)	(76.20)	(38.10)		(52.40)		(91.95)	(101.60)	(25.40)	(8.64)	(165.61)	(17.53)	(12.70)	(35.05)	
10P12073	VEE	3/4	0.437	3.50	1.75		2.65		4.62	10.25	1.12	0.44	7.88	0.88	0.63	1.75	
10P12083	REG	(19.05)	(11.10)	(88.90)	(44.45)		(67.31)		(117.35)	(260.35)	(28.45)	(11.18)	(200.15)	(22.35)	(16.00)	(44.45)	
10P16073	VEE	1	0.562	4.12	2.06		3.31		5.88	10.25	1.62	0.56	9.75	1.25	1.13	1.75	
10P16083	REG	(25.40)	(14.27)	(104.65)	(52.32)		(84.12)		(149.35)	(260.35)	(41.15)	(14.22)	(247.65)	(31.75)	(28.70)	(44.45)	

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting drill size: 0.22" all valves. Panel mount screws for the 1/8" NPT are M3.5 x .7 thd.

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

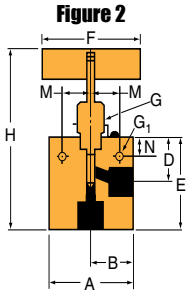
For prompt service, Parker Autoclave stocks select products. Consult factory.
All dimensions for reference only and subject to change.

Figure 1



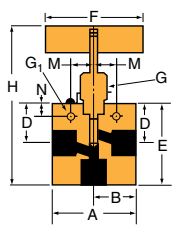
2-Way Straight

Figure 2



2-Way Angle

Figure 3



3-Way /2 on Pressure

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thick-ness	Valve Pattern
3-Way / 1 on Pressure																	
15P4074	VEE	1/4	.0203	2.00	1.00		1.41		2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75	See Figure 4
15P4084	REG	(6.35)	(5.16)	(50.80)	(25.40)		(35.71)		(61.98)	(76.20)	(19.05)	(5.59)	(122.17)	(15.75)	(9.65)	(19.05)	
15P6074	VEE	3/8	0.219	2.50	1.25		1.41		2.44	3.00	0.75	0.22	4.81	0.62	0.38	1.00	
15P6084	REG	(9.53)	(5.56)	(63.50)	(31.75)		(35.71)		(61.98)	(76.20)	(19.05)	(5.59)	(122.17)	(15.75)	(9.65)	(25.40)	
15P8074	VEE	1/2	0.312	3.00	1.50		2.06		3.38	4.00	1.00	0.34	6.31	0.69	0.50	1.38	
15P8084	REG	(12.70)	(7.92)	(76.20)	(38.10)		(52.40)		(85.85)	(101.60)	(25.40)	(8.64)	(160.27)	(17.53)	(12.70)	(35.05)	
10P12074	VEE	3/4	0.437	3.50	1.75		2.65		4.25	10.25	1.12	0.44	7.50	0.88	0.63	1.75	
10P12084	REG	(19.05)	(11.10)	(88.90)	(44.45)		(67.31)		(107.95)	(260.35)	(28.45)	(11.18)	(190.50)	(22.35)	(16.00)	(44.45)	
10P16074	VEE	1	0.562	4.12	2.06		3.31		5.12	10.25	1.62	0.56	9.09	1.25	1.13	1.75	
10P16084	REG	(25.40)	(14.27)	(104.65)	(52.32)		(84.07)		(130.05)	(260.35)	(41.15)	(14.22)	(230.89)	(31.75)	(28.70)	(44.45)	
3-Way/2-Stem Manifold																	
15P4075	VEE	1/4	0.203	2.00	1.00		1.69	1.19	3.38	3.00	0.75	0.22	5.75	0.62	0.38	0.75	See Figure 5
15P4085	REG	(6.35)	(5.16)	(50.80)	(25.40)		(42.88)	(30.18)	(85.85)	(76.20)	(19.05)	(5.59)	(146.05)	(15375)	(9.65)	(19.05)	
15P6075	VEE	3/8	0.219	2.50	1.25		1.69	1.19	3.38	3.00	0.75	0.22	5.75	0.62	0.38	1.00	
15P6085	REG	(9.53)	(5.56)	(63.50)	(31.75)		(42.88)	(30.18)	(85.85)	(76.20)	(19.05)	(5.59)	(146.05)	(15.75)	(9.65)	(25.40)	
15P8075	VEE	1/2	0.312	3.00	1.50		2.56	1.75	5.12	4.00	1.00	0.34	8.05	0.69	0.50	1.38	
15P8085	REG	(12.70)	(7.92)	(76.20)	(38.10)		(65.07)	(44.45)	(130.05)	(101.60)	(25.40)	(8.64)	(204.47)	(17.53)	(12.70)	(35.05)	
10P12075	VEE	3/4	0.437	3.50	1.75		3.25	2.25	6.50	10.25	1.12	0.44	9.75	0.88	0.63	1.75	
10P12085	REG	(19.05)	(11.10)	(88.90)	(44.45)		(82.55)	(57.15)	(165.10)	(260.35)	(28.45)	(11.18)	(247.65)	(22.35)	(16.00)	(44.45)	
10P16075	VEE	1	0.562	4.12	2.06		3.75	2.81	7.50	10.25	1.62	0.56	11.47	1.25	1.13	1.75	
10P16085	REG	(25.40)	(14.27)	(104.65)	(52.32)		(95.25)	(71.42)	(190.50)	(260.35)	(41.15)	(14.22)	(291.38)	(31.75)	(28.70)	(44.45)	

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting drill size: 0.22" all valves.

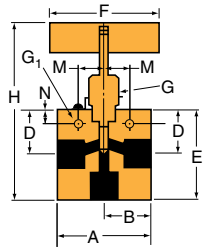
***H Dimension is with stem in closed position.**
All dimensions for reference only and subject to change.

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

NOTE: NPT (Pipe) Connections:

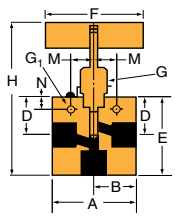
- NPT threads must be sealed using a high quality PTFE tape and/or paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

Figure 4



3-Way/1 on Pressure

Figure 5



3-Way/2-Stem Manifold

WARNING

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02-1251SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Needle Valves

Mini Valves

MVE/MV Series

Pressures to 15,000 psi (1034 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 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, research, and oil and gas industries.

Mini Valve Features:

- Mini valve provides a rugged compact design.
- Tubing sizes available are 1/16” and 1/8”.
- 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.
- PTFE encapsulated packing provides dependable stem and body sealing.
- Stem and packing gland design have been selected to achieve extended thread cycle life and reduced handle torque.
- Vee stem tip provided.
- Available in five body patterns.
- Mini valves available with metric tube glands.

Parker Autoclave Engineers valves are complemented by a complete line of mini fittings and tubing. The MVE/MV Series uses Parker Autoclave Engineers' SpeedBite connection. This single-ferrule compression sleeve connection delivers fast, easy make-up and reliable bubble-tight performance in liquid or gas service.

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Autoclave Engineers

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Needle Valves - MVE/MV Series

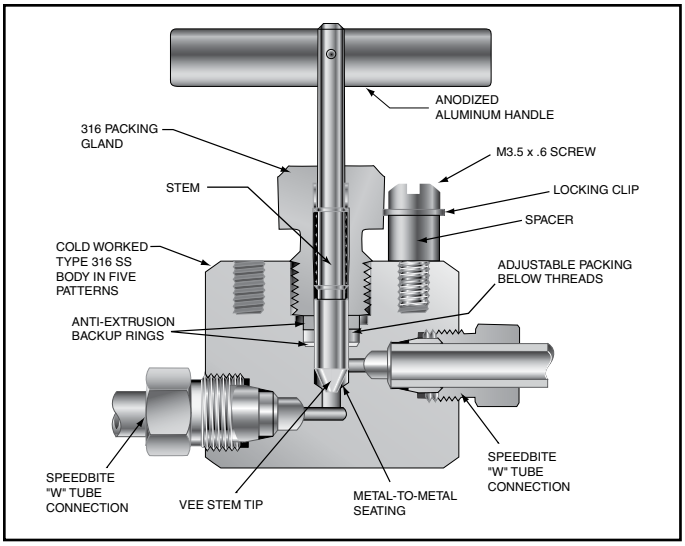
Pressures to 15,000 psi (1034 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure Rating psi (bar) @ Room Temperature**
1/16	W062	0.055 (1.40)	0.05	15,000 (1034)
1/8	W125	0.078 (1.98)	0.11	15,000 (1034)

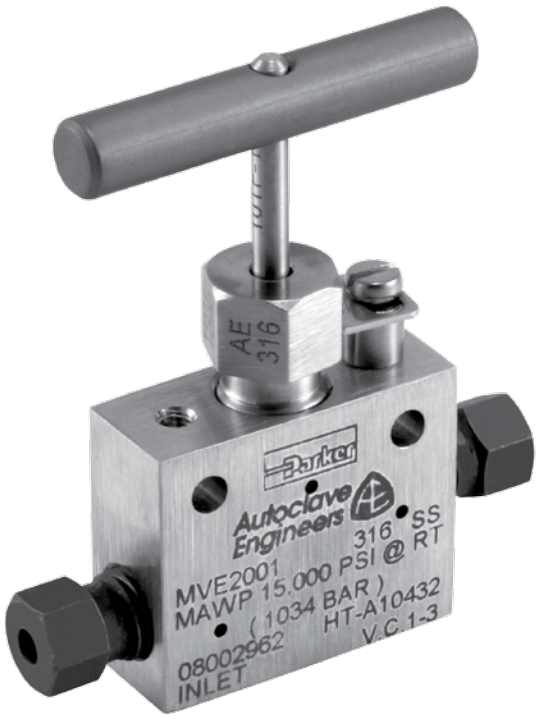
Notes:

* *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 Parker Autoclave tubing



Ordering Procedure

For complete information on valve options, contact your Sales Representative. MVE Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **MVE2001**

MVE — **2** — **00** — **1** — — **XX**

MVE — **Valve Series**

MVE - 3/8 Hex tubing glands

MV - 10mm Hex tubing glands

2 — **Outside Diameter Tube Size**

1-1/16”
2-1/8”

00 — **Stem Type**

00 - rotating Vee stem (on-off service)

01 - rotating Regulating stem (tapered tip for regulating and shut-off)

1 — **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

XX — **Options**

See valve options for ratings.

Valve Options

Extreme Temperatures
Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing is available for service from 0°F (-17.8°C) to 600°F (316°C) by adding the following suffixes to catalog order number.†
TG standard valve with PTFE glass packing to 600°F (316°C).

†*Parker Autoclave Engineers does not recommend compression sleeve connections below 0°F (-17.8°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative.*

Valve Maintenance

Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

2-Way Straight

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
MVE1001	VEE	1/16	0.055	1.38	0.69	0.45	0.81	0.56	1.13	1.75	0.56	0.16	2.38	0.45	0.20	0.56	See Figure 1
MV1001	VEE	(1.57)	(1.40)	(34.93)	(17.45)	(11.43)	(20.65)	(14.30)	(28.58)	(44.45)	(14.27)	(4.04)	(60.38)	(11.49)	(5.16)	(14.27)	
MVE2001	VEE	1/8	0.078	1.38	0.69	0.45	0.81	0.56	1.13	1.75	0.56	0.16	2.38	0.45	0.20	0.56	
MV2001	VEE	(3.18)	(1.98)	(34.93)	(17.45)	(11.43)	(20.65)	(14.30)	(28.58)	(44.45)	(14.27)	(4.04)	(60.38)	(11.49)	(5.16)	(14.27)	

2-Way Angle

MVE1002	VEE	1/16	0.055	1.38	0.69	0.45	0.56		1.38	1.75	0.56	0.16	2.63	0.45	0.20	0.56	See Figure 2
MV1002	VEE	(1.57)	(1.40)	(34.93)	(17.45)	(11.43)	(14.30)		(34.93)	(44.45)	(14.27)	(4.04)	(66.75)	(11.49)	(5.16)	(14.27)	
MVE2002	VEE	1/8	0.078	1.38	0.69	0.45	0.56		1.38	1.75	0.56	0.16	2.38	0.45	0.20	0.56	
MV2002	VEE	(3.18)	(1.98)	(34.93)	(17.45)	(11.43)	(14.30)		(34.93)	(44.45)	(14.27)	(4.04)	(60.38)	(11.49)	(5.16)	(14.27)	

3-Way / 2 on Pressure

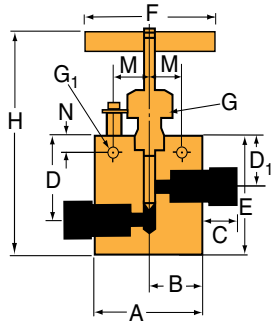
MVE1003	VEE	1/16	0.055	1.38	0.69	0.45	0.81	0.56	1.44	1.75	0.56	0.16	2.69	0.45	0.20	0.56	See Figure 3
MV1003	VEE	(1.57)	(1.40)	(34.93)	(17.45)	(11.43)	(20.65)	(14.30)	(36.50)	(44.45)	(14.27)	(4.04)	(68.30)	(11.49)	(5.16)	(14.27)	
MVE2003	VEE	1/8	0.078	1.38	0.69	0.45	0.81	0.56	1.44	1.75	0.56	0.16	2.69	0.45	0.20	0.56	
MV2003	VEE	(3.18)	(1.98)	(34.93)	(17.45)	(11.43)	(20.65)	(14.30)	(36.50)	(44.45)	(14.27)	(4.04)	(68.30)	(11.49)	(5.16)	(14.27)	

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting screws are M3.5 x .7 thd.
Tube glands are 3/8" hex on standard MVE models
Tube glands are 10mm hex on MV models.

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

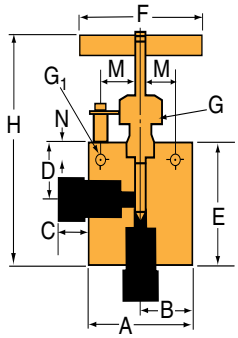
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Figure 1



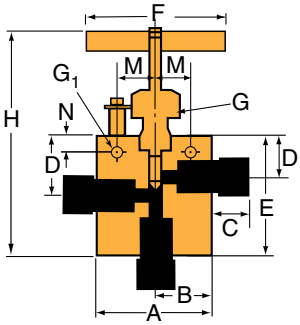
2-Way Straight

Figure 2



2-Way Angle

Figure 3



3-Way / 2 on Pressure

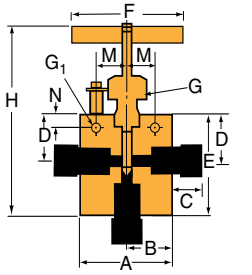
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thick-ness	Valve Pattern
3-Way / 1 on Pressure																	
MVE1004	**VEE**	1/16	0.055	1.38	0.69	0.45	0.56	0.56	1.44	1.75	0.56	0.16	2.69	0.45	0.20	0.56	**See Figure 4**
MV1004	**VEE**	(1.57)	(1.40)	(34.93)	(17.45)	(11.43)	(14.22)	(14.30)	(36.50)	(44.45)	(14.27)	(4.04)	(68.30)	(11.49)	(5.16)	(14.27)	
MVE2004	**VEE**	1/8	0.078	1.38	0.69	0.45	0.56	0.56	1.44	1.75	0.56	0.16	2.69	0.45	0.20	0.56	
MV2004	**VEE**	(3.18)	(1.98)	(34.93)	(17.45)	(11.43)	(14.22)	(14.30)	(36.50)	(44.45)	(14.27)	(4.04)	(68.30)	(11.49)	(5.16)	(14.27)	
3-Way / 2-Stem Manifold																	
MVE1005	**VEE**	1/16	0.055	1.38	0.69	0.45	0.81	0.56	1.63	1.75	0.56	0.16	4.11	0.45	0.20	0.56	**See Figure 5**
MV1005	**VEE**	(1.57)	(1.40)	(34.93)	(17.45)	(11.43)	(20.65)	(14.30)	(41.28)	(44.45)	(14.27)	(4.04)	(104.44)	(11.49)	(5.16)	(14.27)	
MVE2005	**VEE**	1/8	0.078	1.38	0.69	0.45	0.81	0.56	1.63	1.75	0.56	0.16	4.11	0.45	0.20	0.56	
MV2005	**VEE**	(3.18)	(1.98)	(34.93)	(17.45)	(11.43)	(20.65)	(14.30)	(41.28)	(44.45)	(14.27)	(4.04)	(104.44)	(11.49)	(5.16)	(14.27)	

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting screws are M3.5 x .7 thd.
Tube glands are 3/8 hex on standard MVE models
Tube glands are 10mm hex on MV models

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

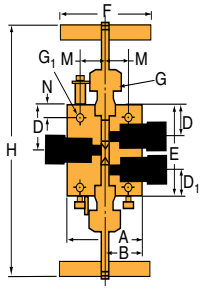
For prompt service, Parker Autoclave stocks select products. Consult factory.

Figure 4



3-Way / 1 on Pressure

Figure 5



3-Way / 2-Stem Manifold

WARNING

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02-0114SE January2013

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ISO-9001 Certified

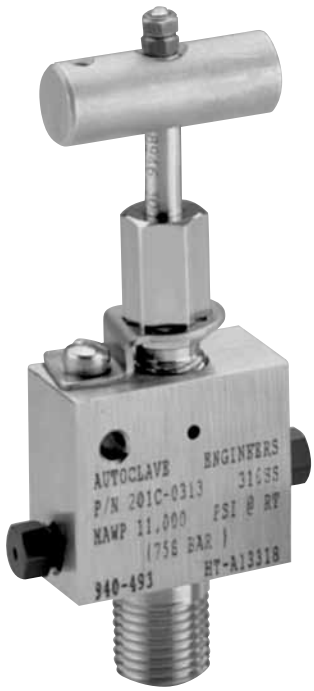
Needle Valves

Low Pressure

Bottle Valve Series

Pressures to 15,000 psi (1034 bar)

Since 1945 Parker Autoclave Engineers has designed and built premium quality valves, fittings and tubing. Parker Autoclave Engineers has long been established as the world leader in high-pressure fluid handling components for the chemical/petrochemical, research, and oil and gas industries. Bottle valves are used on sample bottles and cylinders for remote sampling in the oil industry.



Bottle Valve Features:

- BTV Series valve design provides male inlet connections from 1/8" to 1/2" NPT.
- Outlet connections in NPT or tube to 1/4".
- Rising stem/barstock body design.
- 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.
- 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.
- Available with Vee stem tips.
- Available in five body patterns.

Parker Autoclave Engineers valves are complemented by a complete line of low pressure fittings, tubing, check valves and line filters. The Bottle Valve Series use Parker Autoclave Engineers' SpeedBite connection. This single-ferrule compression sleeve-connection delivers fast, easy make-up and reliable bubble-tight performance in liquid or gas service.

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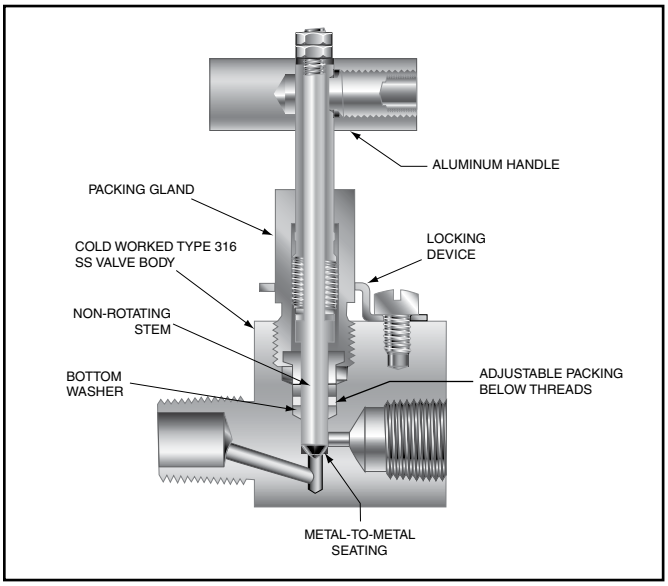
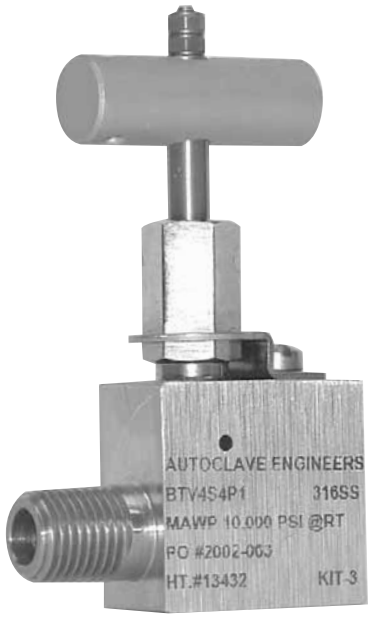
Valve Series - BTV Series

Pressures to 15,000 psi (1034 bar)



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. BTV Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **BTV4S4P1**

BTV	4	S	4	P	1	—	XX
Valve Series	**Male NPT** **2**-1/8” **4**-1/4” **6**-3/8” **8**-1/2”	**Male NPT Position** **F** - Front **S** - Side **B** - Bottom	**Female Port Sizes** **2**-1/8” **4**-1/4” **6**-3/8” **8**-1/2”	**Female Connection Type** **P** - NPT **L** - Low Pressure	**Body Pattern** **1** - Straight **2** - Angle **3** - 3 Way 2 on Pressure *2 **4** - 3 Way 1 on Pressure *1		**Options** **R** - Regulating Stem

*Note: 1 inlet is NPT male
2 inlets are NPT male and 1 female connection

Valve Options

Standard Parker Autoclave valves with PTFE packing may be operated to 450°F (232°C).
R regulating stem

Parker Autoclave Engineers does not recommend compression sleeve connections below 0°F (-17.8°C) or above 650°F(343°C). For additional valve options, contact your Sales Representative.

Valve Maintenance

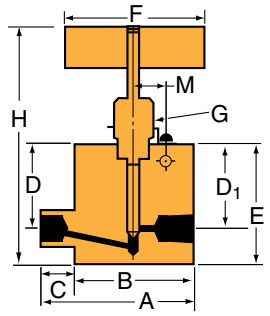
Repair Kits: add “R” to the front of valve catalog number for proper repair kit. (Example: **RBTV4F2L1**)

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

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

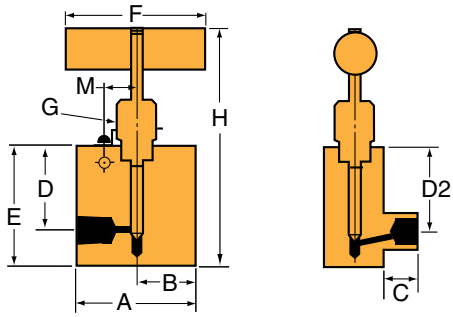
Catalog Number	Stem Type	Pipe/ Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	D_2	E	F	G	H	M	Block Thickness	Valve Pattern
2-Way Straight																
BTV4S4P1 Side Inlet	VEE	1/4 (6.35)	0.094 (2.39)	2.00 (50.80)	1.31 (33.27)	0.69 (17.53)	0.82 (20.83)	0.82 (20.83)		1.28 (32.51)	1.50 (38.10)	0.61 (15.49)	3.41 (86.61)	0.56 (14.22)	0.75 (19.05)	See Figure 1
BTV4F2L1 Front Inlet	VEE	1/8 (3.18)	0.094 (2.39)	1.50 (38.10)	0.75 (19.05)	0.63 (15.88)	0.81 (20.57)		0.88 (22.35)	1.38 (35.05)	1.50 (38.10)	0.61 (15.49)	3.49 (88.65)	0.56 (14.22)	0.63 (16.00)	See Figure 2
2-Way Angle																
BTV4B2L2 Bottom Inlet	VEE	1/8 (3.18)	0.094 (2.39)	2.00 (50.80)	1.00 (25.40)	0.81 (20.57)	1.19 (30.23)			1.63 (41.40)	1.50 (38.10)	0.75 (19.05)	4.75 (120.65)	0.62 (15.75)	0.75 (19.05)	See Figure 3
BTV4B4P2 Bottom Inlet	VEE	1/4 (6.35)	0.203 (5.16)	1.50 (38.10)	1.00 (25.40)	1.25 (31.75)	1.19 (30.23)			1.63 (41.40)	3.00 (76.20)	0.75 (19.05)	5.30 (134.62)	0.62 (15.75)	0.75 (19.05)	See Figure 3

Figure 1



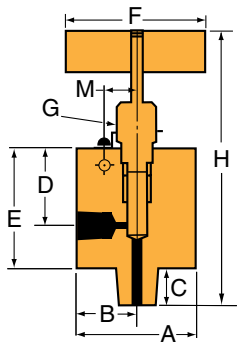
2-Way Straight

Figure 2



2-Way Straight

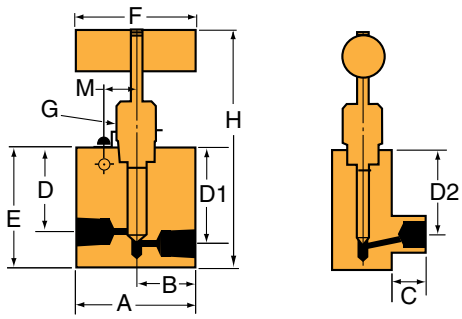
Figure 3



2-Way Angle

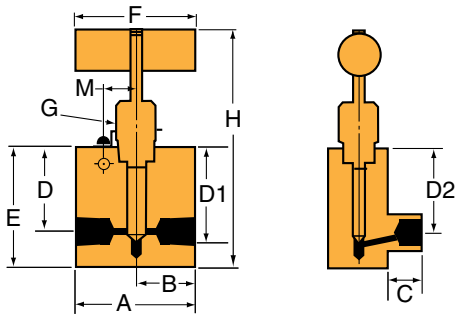
Catalog Number	Stem Type	Pipe/ Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	D_2	E	F	G	H	M	Block Thickness	Valve Pattern
3-Way/2 on Pressure																
BTV4F2L3 Front Inlet	VEE	1/8 (3.18)	0.094 (2.39)	1.50 (38.10)	0.75 (19.05)	0.63 (15.88)	0.81 (20.57)	1.06 (26.92)	0.88 (22.35)	1.38 (34.93)	1.50 (38.10)	0.75 (19.05)	3.49 (88.65)	0.50 (12.70)	0.75 (19.05)	See Figure 4
3-Way/1 on Pressure																
BTV4F2L4 Front Inlet	VEE	1/8 (3.18)	0.094 (2.39)	1.50 (38.10)	.75 (19.05)	0.63 (15.88)	0.81 (20.57)	0.81 (20.57)	0.88 (22.35)	1.38 (34.93)	1.50 (38.10)	0.75 (19.05)	3.49 (86.66)	0.50 (12.70)	0.75 (19.05)	See Figure 5

Figure 4



3-Way / 2 on Pressure

Figure 5



3-Way / 1 on Pressure

G - Packing gland mounting hole drill size

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

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

All dimensions for reference only and subject to change.

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02-1248SE January 2013

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ISO-9001 Certified

Needle Valves

MicroMetering

VRMM Series

Pressures to 60,000 psi (4137 bar)

MicroMetering valves are designed for applications where more precise control of small flows is required than is possible with a standard regulating stem. Barrel and Thimble micrometer design permits settings to be repeated.

Metering is effected by a finely tapered stem acting in a precisely mated replaceable seat. Very fine stem position is achieved utilizing a 40 TPI thread. The Barrel and Thimble are set for proper metering at the factory.

These valves are designed for metering only and cannot be used as a shutoff valve. Minimum flow is factory set and occurs at "0" position. DO NOT OPERATE THE VALVE BELOW THE ZERO POSITION OR DAMAGE WILL RESULT. When shutoff action is required, a correlated shutoff valve from Parker AE series 10V, 30VM or 60VM should be installed in series with the MicroMetering valve.

MicroMetering Valve Features:

- Barrel and Thimble design permits repeatable settings.
- Barrel divisions every 0.025"
- 25 Thimble divisions, each representing 0.001" stem travel
- One revolution = 0.025" stem travel
- Cold-worked type 316 stainless steel body with stainless steel packing gland. Stem and seat are cold-worked type 316 stainless steel.
- Packing below stem threads is PTFE for the 10VRMM and 30VRMM valves and nylon-leather for the 60VRMM. For packing options, see Technical Information Section.
- SpeedBite "W" connections are used on the 10VRMM and Parker AE High Pressure coned-and-threaded connections on 30VRMM and 60VRMM.

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, check valves andline filters.

Parker

Autoclave Engineers®

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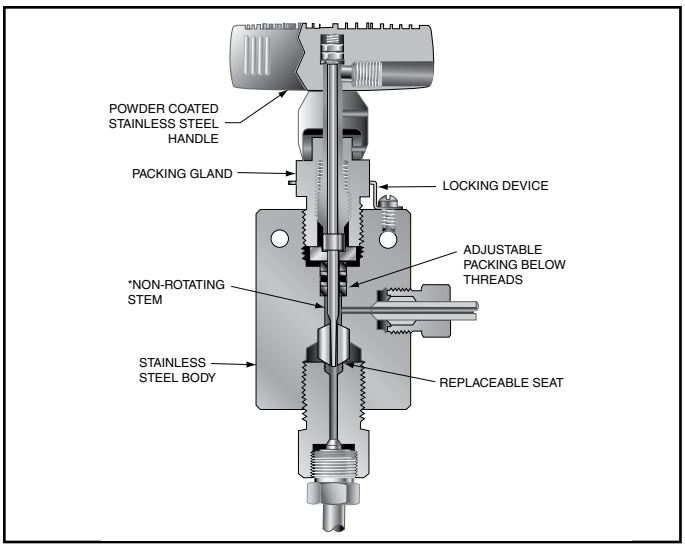
Needle Valves - MicroMetering

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**
10VRMM	1/8	W125	0.062 (1.57)	0.004	15,000 (1034)
30VRMM	1/4	F250C	0.062 (1.57)	0.004	30,000 (2069)
60VRMM	1/4	F250C	0.062 (1.57)	0.004	60,000 (4137)
60VRMM	3/8	F375C	0.062 (1.57)	0.004	60,000 (4137)

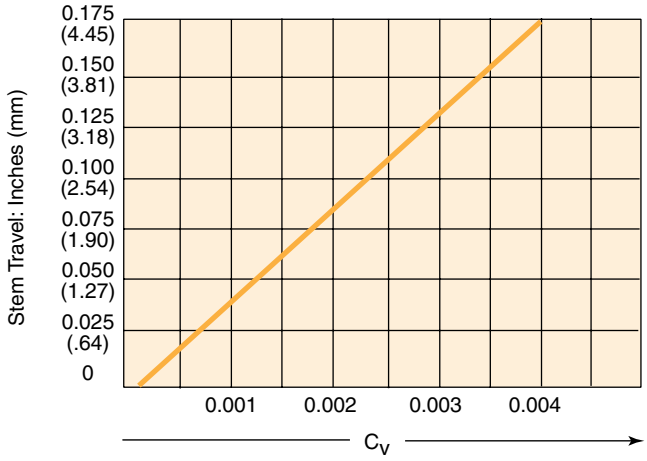
Note:

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



To ensure proper fit use Parker Autoclave Engineers tubing

Flow Coefficient (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. VRMM Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **60VRMM4812**

60VRMM	4	81	2	—	XX
Valve Series	**Outside Diameter Tube Size**	**Stem/Seat Type**	**Body Pattern**		**Options**
10VRMM **30VRMM** **60VRMM**	**2**-1/8” **4**-1/4” **6**-3/8”	**81** - Rotating regulating one piece stem with replaceable seat.	**2** - two-way angle		For extreme temperature and other options, see Valve Options.

NOTE:
Ordering procedure for information only. Models available are shown in tables on next page.

Valve Options

Extreme Temperatures

Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing and/or extended stuffing box 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 PTFE glass packing to 600°F (316°C). **See note below.**

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 PTFE packing to -100°F (-73°C).

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

Note: 60VRMM valves supplied with Peak/PTFE Glass/Peek

Parker Autoclave Engineers does not recommend compression sleeve connections below 0°F (-17.8°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative.

See Needle Valve options for stem and seat coatings for erosive service.

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R60VRMM**)

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

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

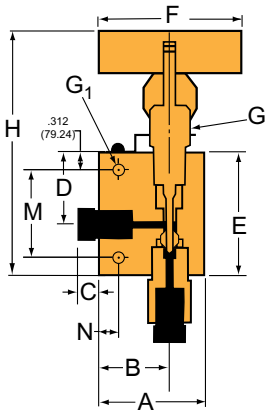
Catalog Number	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
10VRMM2812	1/8	0.062	1.50	0.88	0.31	0.94	1.56	3.00	0.62	0.16	5.06	1.00	0.25	0.75	See Figure 1
	(3.17)	(1.57)	(38.10)	(22.35)	(7.87)	(23.87)	(39.62)	(76.20)	(15.74)	(4.06)	(128.52)	(25.40)	(6.35)	(19.05)	
* Note: M dimension is distance between holes for mounting bracket.															
30VRMM4812	1/4	0.062	2.00	1.00	0.50	1.12	2.00	3.00	0.97	0.22	5.06	0.69	0.50	1.00	See Figure 2
	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(28.44)	(50.80)	(76.20)	(24.63)	(5.58)	(128.52)	(17.25)	(12.70)	(25.40)	
60VRMM4812	1/4	0.062	2.00	1.00	0.50	1.31	2.63	3.00	0.97	0.22	6.06	0.69	0.38	1.00	
	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(33.27)	(66.80)	(76.20)	(24.63)	(5.58)	(153.92)	(17.25)	(9.65)	(25.40)	
60VRMM6812	3/8	0.062	2.00	1.00	0.53	1.31	2.63	3.00	0.97	0.22	6.06	0.69	0.38	1.00	
	(9.53)	(1.57)	(50.80)	(25.40)	(13.46)	(33.27)	(66.80)	(76.20)	(24.63)	(5.58)	(153.92)	(17.25)	(9.65)	(25.40)	

G - Packing gland mounting hole drill size
G_1 - 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.

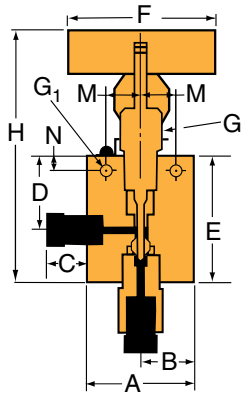
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Figure 1



10VRMM

Figure 2



30VRMM/60VRMM

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ISO-9001 Certified

Needle Valves

Block and Bleed

MVBB Series

Pressures to 20,000 psi (1379 bar)

Parker Autoclave Engineers series MVBB block and bleed valve is a two stem manifold valve providing an economical and convenient method of blocking, bleeding and calibrating pressure transmitters and gauges. The valve utilizes the mini valve packing and stem design making it compact and easy to use. The valve can be surface or panel mounted for safe operation. In addition, manifold style valves reduce the number of fittings and space required for installation.

Block and Bleed Features:

- MVBB Series valve design provides large valve performance in a small package
- Tubing sizes: 1/4" and 3/8"
- 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.
- PTFE encapsulated packing provides dependable stem and body sealing.
- Stem and packing gland design have been selected to achieve extended thread cycle life and reduced handle torque.

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubings and accessories. The MVBB Series uses Parker Autoclave Engineers' medium pressure connections. This coned and threaded connection provides a reliable bubble-tight seal for dependable performance in gas or liquid service.

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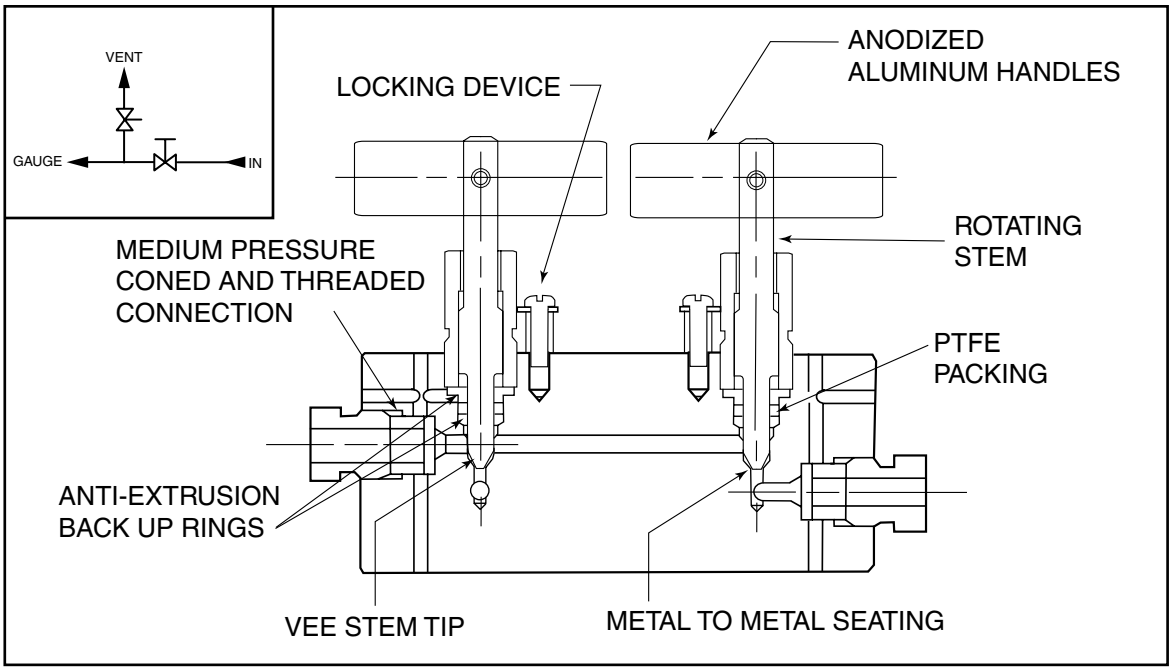
Needle Valves - MVBB Series

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	SF250CX	0.093 (2.36)	0.20	20,000 (1379)
3/8	SF375CX	0.093 (2.36)	0.20	20,000 (1379)

Notes:

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



To ensure proper fit use Autoclave tubing

Valve Options

Extreme Temperatures

Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing is available for service from 0°F (-17.8°C) to 800°F (427°C) by adding the following suffixes to catalog order number.

TG standard valve with PTFE glass packing to 600°F (316°C)

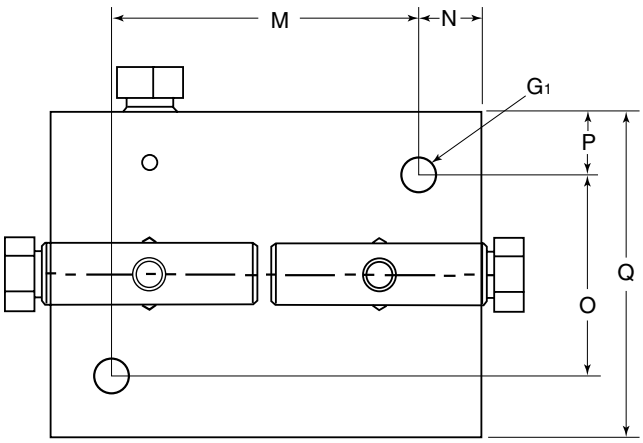
GY standard valve with Graphite braided yarn packing to 800°F (427°C).

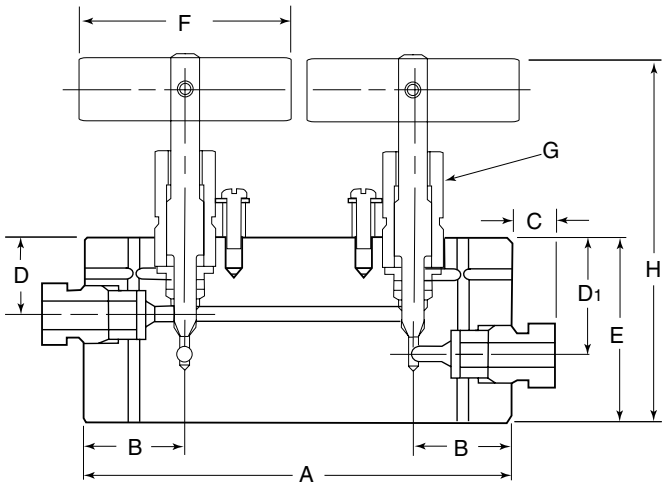
For additional valve options, contact your Sales Representative.

Note: 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)														
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N	O	P	Q
20MVBB	**VEE**	1/4	0.094	3.50	0.813	0.38	0.625	0.938	1.50	1.75	0.56	0.281	2.94	2.50	0.485	1.63	.500	2.625
		(6.35)	(2.39)	(88.90)	(20.65)	(9.65)	(15.88)	(23.83)	(38.10)	(44.45)	(14.27)	(7.14)	(74.68)	(63.50)	(12.32)	(41.40)	12.70	66.68
20MVBB6	**VEE**	3/8	0.094	3.88	1.00	0.44	0.625	0.938	1.50	1.75	0.56	0.281	2.94	2.88	0.50	1.63	.500	2.625
		(9.53)	(2.39)	(98.60)	(25.40)	(11.10)	(15.88)	(23.83)	(38.10)	(44.45)	(14.27)	(7.14)	(74.68)	(73.15)	(12.70)	(41.40)	12.70	66.68

For complete information on available options, contact your Sales representative. MVBB Series valves are furnished with connection components unless otherwise specified.





G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size

** H Dimension is with stem in closed position.*
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Needle Valves

Double Block and Bleed

20DBNV Series

Pressures to 20,000 psi (1379 bar)

Parker Autoclave Engineers series DBNV double block and bleed valve is a three system manifold valve providing an economical and convenient method of blocking and bleeding in applications such as pressure monitoring and test, chemical injection and drain line isolation. The valve utilizes our standard valve packing and stem design to make it compact and easy to use. Manifold style valves reduce the number of fittings and space required for installation.

Block and Bleed Features:

- 20DBNV Series valve design provides large valve performance in a small package.
- Tubing sizes: 1/4" to 1".
- 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.
- PTFE encapsulated packing provides dependable stem and body sealing.
- Stem and packing gland design have been selected to achieve extended thread cycle life and reduced handle torque.
- Temperatures from -100°F (-73°C) to 600°F (316°C)

Parker Autoclave Engineers' valves are complemented by a complete line of fittings, tubings and accessories. The 20DBNV Series uses Parker Autoclave Engineers' pressure connections. This coned and threaded connection provides a reliable bubble-tight seal for dependable performance in gas or liquid service.

Parker

Autoclave Engineers

www.autoclave.com

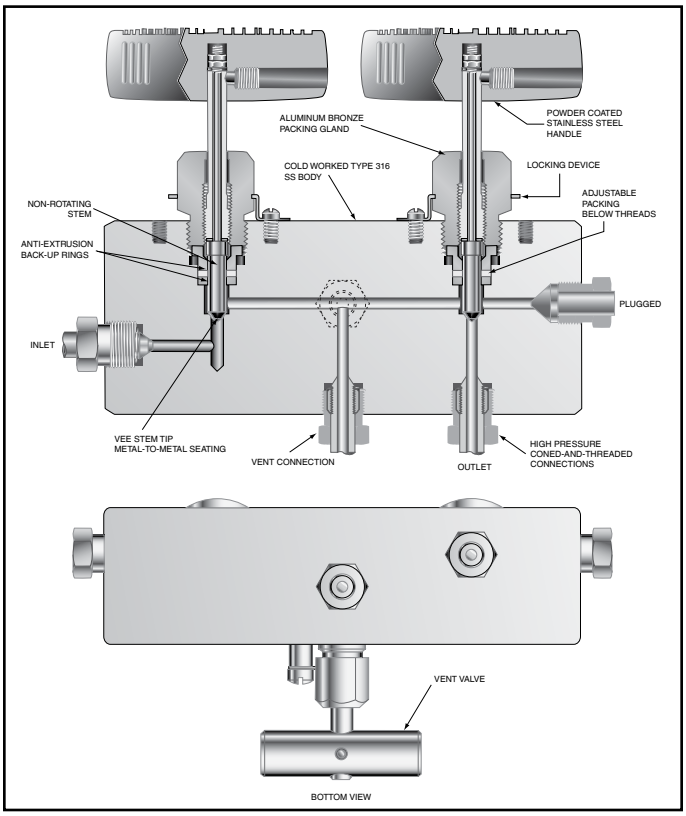
Needle Valves - 20DBNV Series

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	SF250CX	0.093 (2.36)	0.10	20,000 (1379)
3/8	SF375CX	0.093 (2.36)	0.27	20,000 (1379)
9/16	F562C	0.093 (2.36)	0.27	20,000 (1379)

Notes:

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



To ensure proper fit use Parker Autoclave Engineers tubing

Valve Options

Extreme Temperatures

Standard Parker Autoclave Engineers' valves with PTFE packing may be operated to 450°F (232°C). High temperature packing is available for service from 0°F (-17.8°C) to 800°F (427°C) by adding the following suffixes to catalog order number.

TG standard valve with PTFE glass packing to 600°F (316°C).

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

For additional valve options, contact your Sales Representative.

Note: Refer to the Tools, Installation, Operation and Maintenance section for proper maintenance procedures.

Ordering Procedure

For complete information on available end connections, see end connections options below. 20DBNV valves are furnished complete with tube connections.

Typical catalog number: **20DBNV M4 M4 XXX**

20DBNV
Valve Series
20DBNV Double Block & Bleed Needle Valve

M4
Tube Connection
M4 - SF250CX20
M6 - SF375CX20
H9 - F562C
(see chart below)

M4
Vent Connection
M4 - SF250CX20
(see chart below)

XXX
Options
TG - PTFE Glass Packing
B - Cryogenic Trim -100°F (-73°C)
K - Anti-vibration Collet & Gland Assembly

Connection Options

Catalog Number	Tube Connection Number	Connection	MAWP @ Room Temperature	Vent Connection Number	Vent Connection
20DBNVM4M4	M4	SF250CX20	20,000 psi (1379 bar)	M4	SF250CX20
20DBNVM6M4	M6	SF375CX20	20,000 psi (1379 bar)	M4	SF250CX20
20DBNVH9M4	H9	F562C	20,000 psi (1379 bar)	M4	SF250CX20

MAWP: Maximum Allowable Working Pressure

Valve Options

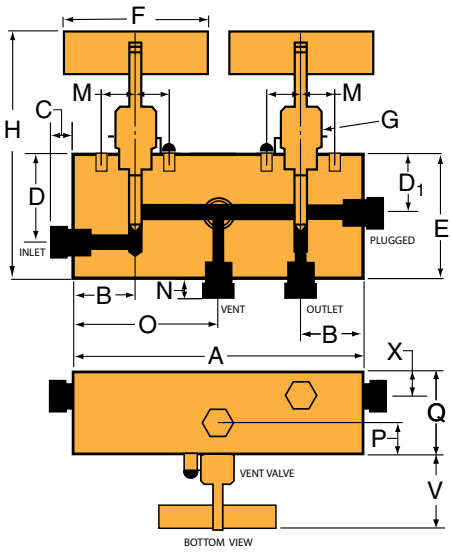
See needle valve options for complete information on available stem types, optional connections and additional valve options. For material options consult factory.

Valve Maintenance

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

Catalog Number	Stem Type	Pipe Size	Orifice Dia.	Dimensions - inches (mm)															
				A	B	C	D	D_1	E	F	G	H	M	N	O	P	Q	V	X
20DBNVM4M4	VEE	1/4	0.094	5.25	1.00	0.38	1.50	1.13	2.13	3.00	1.00	4.65	0.69	0.50	0.75	0.63	1.50	1.43	.50
		(6.35)	(2.39)	(133.35)	(25.40)	(9.65)	(38.10)	(28.70)	(54.10)	(76.20)	(25.40)	(118.11)	(17.53)	(12.70)	(19.05)	(16.00)	(38.10)	(36.32)	(12.70)
20DBNVM6M4	VEE	3/8	0.094	5.25	1.00	0.44	1.50	1.13	2.13	3.00	1.00	4.65	0.69	0.50	0.75	0.63	1.50	1.43	.50
		(9.53)	(2.39)	(133.35)	(25.40)	(11.18)	(38.10)	(28.70)	(54.10)	(76.20)	(25.40)	(118.11)	(17.53)	(12.70)	(19.05)	(16.00)	(38.10)	(36.32)	(12.70)
20DBNVH9M4	VEE	9/16	0.094	5.88	1.31	0.53	1.50	1.13	3.00	3.00	1.00	5.53	0.69	0.50	1.38	0.63	1.75	1.43	.75
		(14.29)	(2.39)	(149.35)	(33.27)	(13.46)	(38.10)	(28.70)	(76.20)	(76.20)	(25.40)	(140.46)	(17.53)	(12.70)	(35.05)	(16.00)	(44.45)	(36.32)	(19.05)

For complete information on available options, contact your Sales representative. **20DBNV** Series valves are furnished with connection components unless otherwise specified.



G - Packing gland mounting hole drill size
H Dimension is with stem in closed position.
All dimensions for reference only and subject to change

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

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ISO-9001 Certified

Needle Valves - Wellhead Gauge and Bleed Valves

Pressures to 30,000 psi (2068 bar)

Wellhead Gauge Valve

Series	Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_v	Pressure Rating psi (bar) @ Room Temperature
20GV	3/8	F375C	0.125 (3.18)	0.23	20,000 (1379)
20GV	9/16	SF562CX	0.125 (3.18)	0.23	20,000 (1379)
30GV	9/16	F562C	0.125 (3.18)	0.33	30,000 (2068)
Bleed Valve					
20BV	3/8	SM375CX	0.093 (2.36)	-	20,000 (1379)
20BV	9/16	SM562CX	0.093 (2.36)	-	20,000 (1379)
30BV	9/16	M562C	0.093 (2.36)	-	30,000 (2068)*

Notes:
** Rating shown is in closed position.*
Rating @ 15,000 psi (1034 bar) in open position. *Glands and collars included*

Parker Autoclave Engineers' Wellhead Gauge valves are designed for reliable shut-off service at a maximum working pressure of 30,000 psi (2068 bar). The Wellhead Gauge and Bleed Valves are standard in 316 stainless steel material. Special materials available on request.

Applications:

Wellhead Gauge Valve
- Sample Lines
- Instrument calibration

Bleed Valve
- Pressure bleed

Gauge Valve Features:
- One inlet, three outlet ports
- Metal-to-metal bubble tight shut-off
- Packing below stem threads
- Two piece non-rotating stem on standard valves

Bleed Valve Features:
- One piece hex construction allows easy installation
- Vent port tapped for plumbing to safe area
- Tee handle for easy operation
- Positive blow out prevention on stem
- 1/8" NPT outlet connection

Ordering Procedure

Typical catalog number: **30GV9078**

30GV	9	07	8
Valve Series	**Outside Diameter Tube Size**	**Stem Type**	**Body Pattern**
20GV **30GV**	**6**-3/8" **9**-9/16"	**00** - one piece VEE stem **07**- non-rotating VEE stem	**8** - 4 ports, 1 inlet, 3 outlets

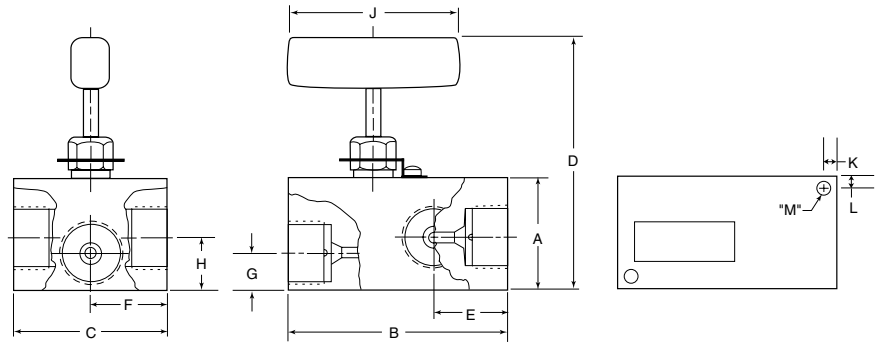
Bleed Valve

Typical catalog number: **30BV9002**

30BV	9	00	2
Valve Series	**Outside Diameter Tube Size**	**Stem Type**	**Body Pattern**
20BV **30BV**	**6**-3/8" **9**-9/16"	**00** - one piece VEE stem	**2** -Angle

Wellhead Gauge Valve

Catalog Number	Connection Type	Connection Size	Pressure Rating psi (bar)	Dimensions - inches (mm)									Valve Pattern
				A	B	C	D	E	F	G	H	J	
20GV6078	SF375CX	3/8	20,000	2.00	3.12	2.00	4.52	1.13	1.00	0.50	0.94	3.00	See Figure 1
			(1379)	(50.80)	(79.25)	(50.80)	(114.80)	(28.58)	(25.40)	(12.70)	(23.83)	(76.20)	
20GV9078	SF562CX	9/16	20,000	2.00	3.88	2.75	4.54	1.31	1.38	0.66	0.94	3.00	
			(1379)	(50.80)	(98.55)	(69.85)	(115.31)	(33.27)	(34.93)	(16.76)	(23.83)	(76.20)	
30GV9078	F562C	9/16	30,000	2.00	3.88	2.75	4.50	1.31	1.38	0.66	0.94	3.00	
			(2068)	(50.80)	(98.55)	(69.85)	(114.30)	(33.27)	(34.93)	(16.76)	(23.83)	(76.20)	

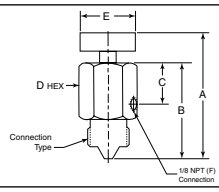


Mounting Dimensions			
	K	L	"M" Dia.
20GV6078	.25 (6.4)	.25 (6.4)	.28 (7.1)
20GV9078	.38 (9.7)	.38 (9.7)	.28 (7.1)
30GV9078	.38 (9.7)	.38 (9.7)	.28 (7.1)

Figure 1 - Wellhead Gauge Valve

Bleed Valve

Catalog Number	Connection Type	Connection Size	Pressure Rating psi (bar)	Dimensions - inches (mm)					Valve Pattern
				A	B	C	D	E	
20BV6002	SM375CX	3/8	20,000	3.23	2.42	1.12	1.38	1.50	
			(1379)	(82.04)	(61.47)	(28.45)	(35.05)	(38.10)	
20BV9002	SM562CX	9/16	20,000	3.68	2.86	1.12	1.38	1.50	
			(1379)	(93.47)	(76.64)	(28.45)	(35.05)	(38.10)	
30BV9002	M562C	9/16	30,000	3.44	2.61	1.12	1.38	1.50	
			(2068)	(87.38)	(66.29)	(28.45)	(35.05)	(38.10)	



WARNING

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02-1250SE January2013

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ISO-9001 Certified

Needle Valves

Extreme Temperature

HT, LT and PV Series

Pressures to 60,000 psi (4137 bar)

Parker Autoclave Engineers has two different styles of valves for extreme temperature. Standard valves can be supplied with packing for operation from -100°F (-73°C) to 800°F (427°C), or with the addition of an extended packing housing for operation from -423°F (-252°C) to 1200°F (649°C). The extended packing housing provides the means of removing the packing from the extreme temperature medium. Machined grooves on the housing act as a heatsink to remove heat or cold.
The second, which is economically priced, is a modified standard designed for the power industry. It operates to 1200°F (649°C) with graphite packing and no extended packing housing.

Extreme Temperature Valve Features:

- The extreme temperature option can be ordered on low, medium, high, micro-metering and other valve series.
- Reliable long life operation with extended stuffing box at very high and low temperatures.
- Design available for operation to 1200°F (649°C) without extended packing housing.
- Available with a variety of tubing connections and orifice sizes.
- Non-rotating stem.
- Wide range of material options
- Adjustable packing below threads.
- Metal to metal seating.
- Anti-extrusion back-up rings.

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, and accessories.

Applications:

- Hot well condenser
- Super-heated steam hookup/ measurement
- Supercritical fluid processing
- Boiler ignition system

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Needle Valve - HT, LT Series

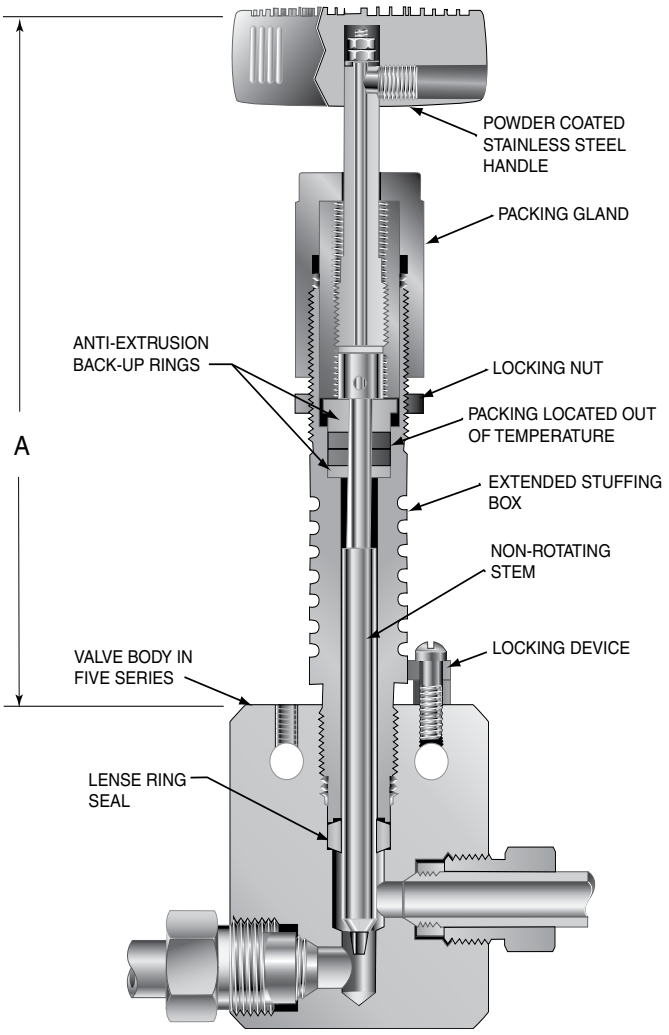
Standard Valve with Stuffing Box option - Pressures to 60,000 psi (4137 bar)

High Temperature Valves to 1200°F (649°C)

High Temperature Packing Option
Standard Parker Autoclave Engineers valves can be operated up to 800°F (427°C) at the packing with appropriate packing materials. See table in Technical Section for temperature ratings and ordering information.

High Temperature Extended Stuffing Box Option "HT"
For operation above 800°F (427°C) at the packing, optional extended stuffing box removes packing and stem threads from the hot zone. The "HT" option is standard graphite-yarn packing; add "HT" to valve order number. For other packing materials, add both "HT" and the suffix for the desired packing material (See table in Technical Section).

High or Low Temperature Air Operated Valves with extended stuffing box can be ordered by adding suffix "HT" to Air Operated Valve order number.



Cryogenic Valves to -423°F (256°C)

Low Temperature Trim Materials Option "B"
While all WETTED parts in most Parker AE valves are type 316SS, some TRIM parts are constructed of mechanically preferable materials. For low temperature to -100°F (-73°C), type 316SS trim parts and PTFE packing can be furnished (except Series 100V and 150V). To order, add suffix "B" to valve order number.

Cryogenic Extended Stuffing Box Option "LT"
For operation below -100°F (-73°C) or for rigorous cycling, an extended stuffing box removes packing from the extreme low temperature zone. The "LT" option also includes many type 316 SS trim parts and PTFE packing. Add "LT" suffix to valve order number.

Valve Series	O.D. Tube Size inches	Dimension"A" inches (mm)
10V	1/8 1/4 3/8 1/2	5.38 (136.65) 5.94 (150.87) 5.94 (150.87) 5.94 (150.87)
SW	1/4 3/8 1/2	5.50 (139.70) 5.50 (139.70) 6.31 (160.27)
10SM & 20SM	1/4 3/8 9/16 3/4 1	5.50 (139.70) 5.50 (139.70) 6.31 (160.27) 6.31 (160.27) 6.31 (160.27)
30SC	1	9.52 (241.80)
30VM	1/4 3/8 9/16	5.94 (150.87) 5.94 (150.87) 5.94 (150.87)
40VM	9/16	6.19 (157.22)
60VM	1/4 3/8 9/16	5.87 (149.10) 5.94 (150.87) 6.19 (157.22)
10VRMM	1/8	5.38 (136.65)
30VRMM	1/4	5.94 (150.87)
60VRMM	1/4 3/8	6.06 (153.92) 6.06 (153.92)

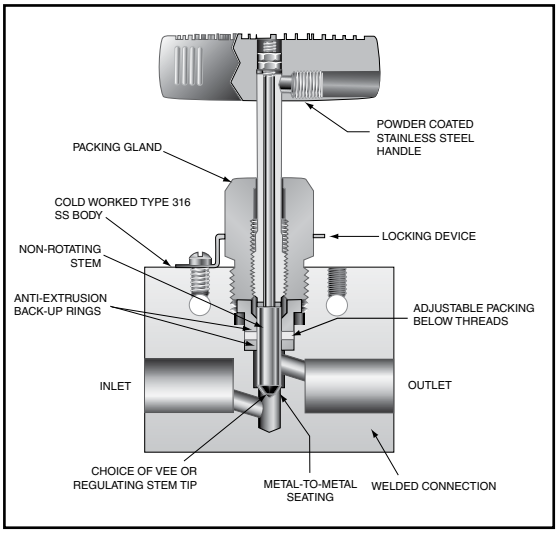
Note: Caution should be exercised in proper selection of medium pressure tubing based on actual operating conditions. Two series available: 10,000 psi (690 bar) and 20,000 psi (1379 bar).
Handle Extenders *are available to facilitate extreme temperature operation of valves and for remote actuation through an insulating wall or barricade.* See appropriate valve ordering section.
* See Valve Actuators section.
All dimensions for reference only and subject to change.

Needle Valve - PV Series

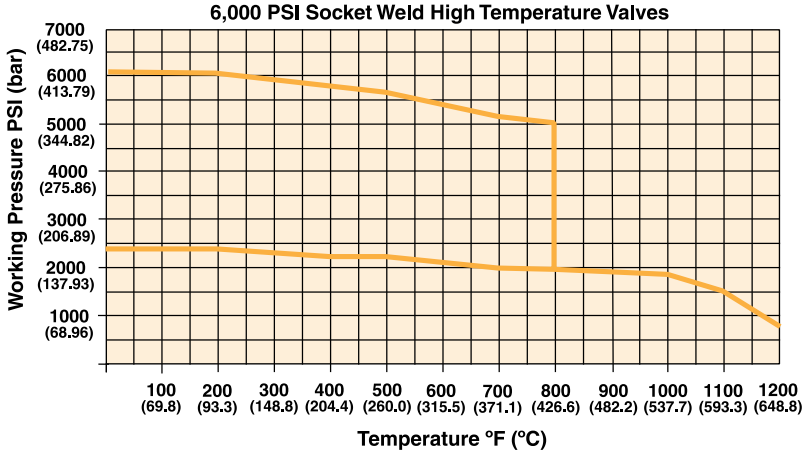
Pressures to 6,000 psi (414 bar)

Tube Outside Diameter	Connection Type	Orifice Size	Pressure Rating psi (bar) @ Room Temperature**
1/4	TW/PW	3/16”	6,000 (414)
3/8	TW/PW	1/4”	6,000 (414)
1/2	TW/PW	1/4”	6,000 (414)
3/4	TW/PW	1/2”	6,000 (414)
10mm	TW	6.50mm	6,000 (414)
12mm	TW	6.50mm	6,000 (414)
14mm	TW	6.50mm or 9.0mm	6,000 (414)
16mm	TW	9.00mm or 11.0mm	6,000 (414)

TW - Tube Weld
PW - Pipe Weld
*Note: ** For temperature ratings see pressure/temperature rating guide chart below..*



Pressure/Temperature Rating Curve
6,000 PSI Socket Weld High Temperature Valves



See Technical Information section for curve details.

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.

Typical catalog number: **PV4TW6MG**

PV — Valve Series

4 — Outside Diameter Tube Size
- **4**-1/4”
- **6**-3/8”
- **8**-1/2”
- **12**- 3/4”
- **A**-10mm
- **B**-12mm
- **C**-14mm
- **D**-16mm

TW — Connection Type
- **TW** - Tube Socket Weld
- **PW** - Pipe Socket Weld

Outlet See Note — Size/Type

6M — Port Size
- **3** -3/16”
- **4** -1/4”
- **8** -1/2”
- **6M** - 6.5mm
- **9M** - 9.0mm
- **11M** - 11.0mm

G — Packing
- **G** - Graphic Yarn
- **GF** -Grafoil

Note: Use if outlet connection is different - *Example: PV4TW**ATW**6M-G*

Valve Options

For optional connection sizes, connection types,material or other options not listed contact your sales representative.
Consult factory for availability of dissimilar end connections.

Valve Maintenance

Repair Kits: add “R” to the front of valve catalog number for proper repair kit. (Example: **RPV4TWG**)

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

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

2-Way Straight

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
PV4TW3G	VEE	1/4	0.187	2.00	1.00		1.41	1.41	2.00	3.00	0.75	0.22	4.43	0.62	0.38	0.75	See Figure 1
		(6.35)	(4.75)	(50.80)	(25.40)		(35.81)	(35.81)	(50.80)	(76.20)	(19.05)	(5.59)	(112.52)	(15.75)	(9.65)	(19.05)	
PVT6TW4G	VEE	3/8	0.250	2.00	1.00		1.41	1.41	2.00	3.00	0.75	0.22	4.43	0.62	0.38	0.75	
		(9.53)	(6.35)	(50.80)	(25.40)		(35.81)	(35.81)	(50.80)	(76.20)	(19.05)	(5.59)	(112.52)	(15.75)	(9.65)	(19.05)	
Metric (In)																	
PVCTW6MG	VEE	14.00	6.5	50.80	25.40		35.81	35.81	50.80	76.20	19.05	5.59	111.00	15.75	9.65	19.05	
		(0.55)	(0.26)	(2.00)	(1.00)		(1.41)	(1.41)	(2.00)	(3.00)	(0.75)	(0.22)	(4.37)	(0.62)	(0.38)	(0.75)	
PVCTW9MG	VEE	14.00	9.0	63.50	31.75		52.32	52.32	73.15	101.60	22.23	5.59	148.34	17.53	12.70	25.40	
		(0.55)	(0.35)	(2.50)	(1.25)		(2.06)	(2.06)	(2.88)	(4.00)	(0.88)	(0.22)	(5.84)	(0.69)	(0.50)	(1.00)	

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting drill size: 0.22” all valves.

** H Dimension is with stem in closed position.*
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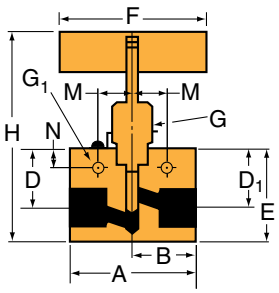
Figure 1



2-Way Straight

02-0117SE January2013

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ISO-9001 Certified

Needle Valves

Diverter

20DV Series

Pressures to 20,000 psi (1379 bar)

Parker Autoclave Engineers diverter valves provide the ability to direct incoming flow to one of two outlets. Flow is changed by rotating the handle in or out causing a double-ended stem to block the flow path to the outlet not needed. Diverter valves eliminate the need for multiple valves and the possibility of error in flow direction changes.

AE Diverter Valve Features:

- Diverts incoming flow to one of two outlet lines.
- Tubing sizes from 9/16" to 1".
- Rising stem/barstock body design.
- 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.
- 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.

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, and accessories. The 20DV series uses Parker Autoclave Engineers' medium pressure connection. This coned and threaded connection provides a reliable bubble-tight seal for dependable performance to 20,000 psi (1379).

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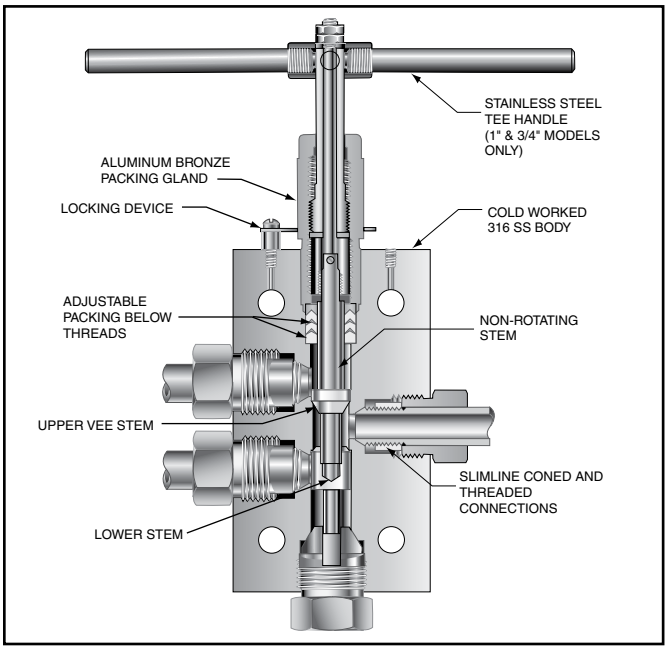
Valve Series - 20DV Series

Pressures to 20,000 psi (1379 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V	Pressure psi (bar) @ Room Temperature**
9/16	SF562CX	0.359 (9.12)	1.5	20,000 (1379)
3/4	SF750CX	0.516 (13.10)	2.9	20,000 (1379)
1	SF1000CX	0.562 (14.27)	4.5	20,000 (1379)

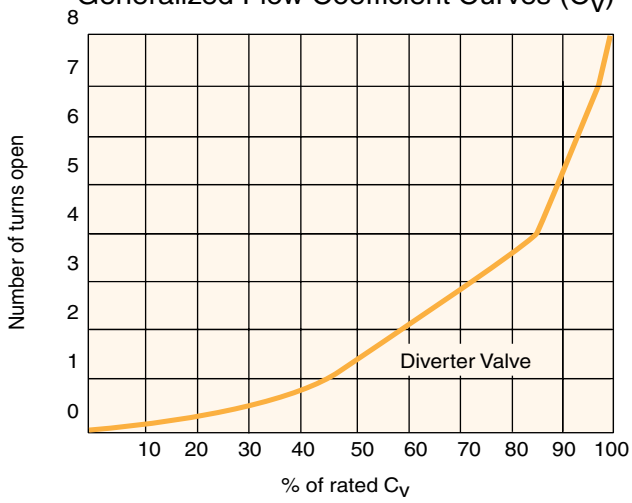
Notes:

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



To ensure proper fit use Parker Autoclave Engineers 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 20DV Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **20DV16077**

20DV	16	07	7	—	XX
Valve Series	**Outside Diameter Tube Size**	**Stem Type**	**Body Pattern**		**Options**
	9-9/16" **12**-3/4" **16**-1"	**07** - non-rotating Vee stem (on off service)	**7** - diverter		For extreme temperature and other options, see Valve Options.

Valve Options

Extreme Temperatures
Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing and/or extended stuffing box is available for service from -423°F (-252°C) to 1200°F (649°C) by adding the following suffixes to catalog order number.

HT extended stuffing box valve with graphite braided yarn packing to 1200°F (648°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).
K anti-vibe collet gland assembly.

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R20DV16077**)

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

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

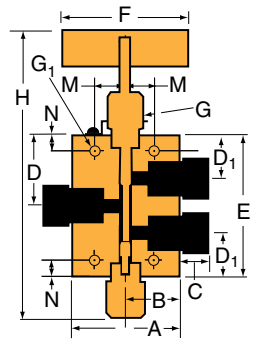
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)											Block Thickness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N	
20DV9077	VEE	9/16	0.359	2.50	1.25	0.53	2.41	1.75/1.63	4.69	4.00	1.00	0.34	8.88	0.69	0.50	1.00	See Figure 1
		(14.29)	(9.12)	(63.50)	(31.75)	(13.46)	(61.21)	(44.45/41.40)	(119.13)	(101.60)	(25.40)	(8.64)	(225.55)	(17.53)	(12.70)	(25.40)	
20DV12077	VEE	3/4	0.516	3.00	1.50	0.62	3.00	2.13/1.81	5.69	10.25	1.12	0.44	10.12	0.88	0.62	1.38	
		(19.05)	(13.11)	(76.20)	(38.10)	(15.75)	(76.20)	(54.10/45.97)	(144.53)	(260.35)	(28.45)	(11.18)	(257.05)	(22.35)	(15.75)	(35.05)	
20DV16077	VEE	1	0.562	4.12	2.06	0.72	3.75	2.81/2.62	7.25	10.25	1.62	0.56	12.79	1.25	1.12	1.75	
		(25.40)	(14.27)	(104.65)	(52.33)	(18.29)	(95.25)	(71.37/66.55)	(184.15)	(260.35)	(41.15)	(14.22)	(324.87)	(31.75)	(28.45)	(44.45)	

G - Packing gland mounting hole drill size
G_1 - 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 stocks select products. Consult factory.

Figure 1



Diverter 20DV Series

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02-0118SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Needle Valves

Yoke

Y Series

Pressures to 50,000 psi (3447 bar)

Parker Autoclave Engineers' yoke valves are extra heavy-duty, plant grade instrument valves for industrial and severe service applications. Yoke valves feature low closing torque for ease of operation and are designed for use with Parker Autoclave Engineers medium and high pressure tubing and fittings.

Yoke Valve Features:

- Tubing sizes from 9/16" to 1".
- Rising stem/barstock body design.
- 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.
- 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 tips.
- Available in two body patterns.
- Optional materials for cryogenic and other applications.

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, and accessories.

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Valve Series - Y Series

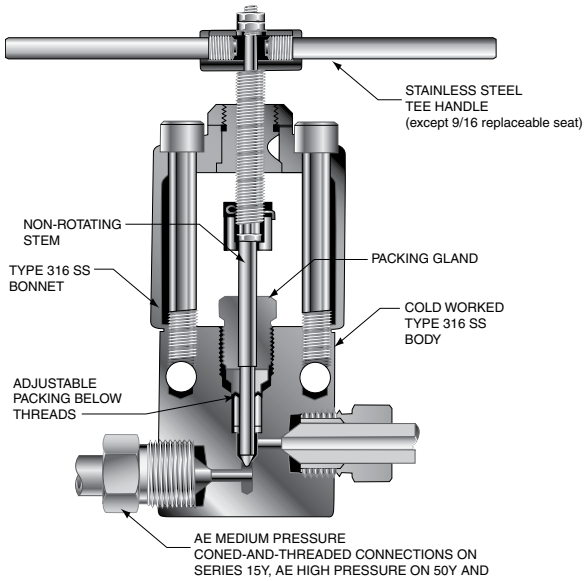
Pressures to 50,000 psi (3447 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V *	Pressure psi (bar) @ Room Temperature**
9/16	F562C	0.188 (4.76)	0.66	50,000 (3447)
3/4	SF750CX	0.438 (11.13)	2.41	15,000 (1034)
1	SF1000CX	0.562(14.27)	3.15	15,000 (1034)
1	F1000C43	0.375 (9.53)	2.3	43,000 (2965)

Notes:

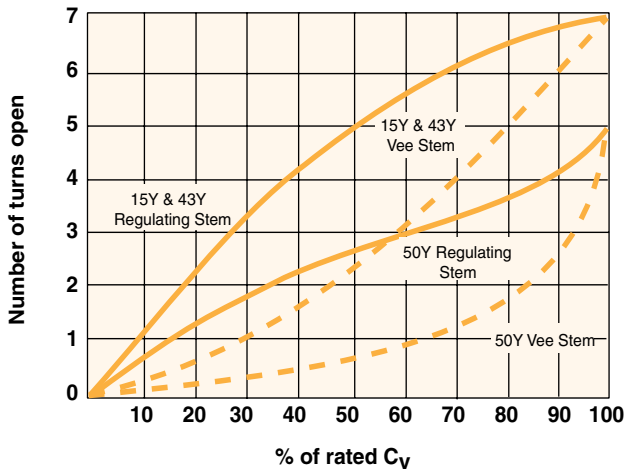
** C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%.*

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



To ensure proper fit use Parker Autoclave Engineers 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 Y Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **50Y9071**

50Y — **Valve Series**
- **15Y**
- **43Y**
- **50Y**

9 — **Outside Diameter Tube Size**
- **9**-9/16”
- **12**-3/4”
- **16**-1.0”

07 — **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
- **88** - Regulating stem with replaceable seat

1 — **Body Pattern**
- **1** - two-way straight
- **2** - two-way angle

—

XX — **Options**
- **TG** - PTFE Glass Packing
- **B** - Cryogenic Trim and PTFE Packing

See Valve options for ratings

Valve Options

Extreme Temperatures

Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing is available for service from 0°F (-17.8°C) to 600°F (316°C) by adding the following suffixes to catalog order number.

TG standard valve with PTFE glass packing to 600°F (316°C).
B standard valve with cryogenic trim materials and PTFE packing to -100°F (-73°C).

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R50Y9071**)

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

Consult your Parker Autoclave Engineers 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) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
2-Way Straight																	
15Y12071	VEE	3/4	0.438	3.00	1.50	0.63	.75	1.50	3.50	8.00		0.28	9.38	1.13	0.88	1.38	See Figure 1
15Y12081	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.88)	(19.05)	(38.10)	(88.90)	(203.20)		(7.11)	(238.25)	(28.58)	(22.23)	(34.93)	
15Y16071	VEE	1.00	0.562	4.13	2.06	0.63	.88	1.88	4.13	10.25		0.28	10.00	1.50	1.13	1.75	
15Y16081	REG	(25.40)	(14.27)	(104.78)	(52.39)	(15.88)	(22.35)	(47.75)	(104.78)	(260.35)		(7.11)	(254.00)	(38.10)	(28.58)	(44.45)	
43Y16071	VEE	1.00	0.375	4.13	2.07	0.72	1.00	1.88	4.13	10.25		0.28	9.56	1.50	1.00	1.75	
43Y16081	REG	(25.40)	(9.53)	(104.90)	(52.45)	(18.29)	(25.40)	(47.75)	(104.78)	(260.35)		(7.11)	(242.82)	(38.10)	(25.40)	(44.45)	
50Y9071	VEE	9/16	0.188	3.00	1.50	0.56	.688	1.25	3.25	13.00		0.50	8.69	1.13	0.88	1.38	
50Y9081	REG	(14.27)	(4.78)	(76.20)	(38.10)	(14.27)	(17.48)	(31.75)	(82.55)	(330.20)		(12.70)	(220.73)	(28.58)	(22.23)	(34.93)	
2-Way Angle																	
15Y12072	VEE	3/4	0.438	3.00	1.50	0.63	1.75		3.75	8.00		0.28	9.63	1.13	0.88	1.38	See Figure 2
15Y12082	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.88)	(44.45)		(95.25)	(203.20)		(7.11)	(244.48)	(28.58)	(22.23)	(34.93)	
15Y16072	VEE	1.00	0.562	4.13	2.06	0.63	2.25		4.50	10.25		0.28	10.38	1.50	1.13	1.75	
15Y16082	REG	(25.40)	(14.27)	(104.90)	(52.39)	(15.88)	(57.15)		(114.30)	(260.35)		(7.11)	(263.53)	(38.10)	(28.58)	(44.45)	
43Y16072	VEE	1.00	0.375	4.13	2.07	0.72	2.31		4.56	10.25		0.28	10.80	1.50	1.00	1.75	
43Y16082	REG	(25.40)	(9.53)	(104.90)	(52.45)	(18.29)	(58.67)		(115.82)	(260.35)		(7.11)	(274.32)	(38.10)	(25.40)	(44.45)	
50Y9072	VEE	9/16	0.188	3.00	1.50	0.56	1.50		3.50	13.00		0.50	8.81	1.13	0.88	1.38	
50Y9082	REG	(14.27)	(4.78)	(76.20)	(38.10)	(14.27)	(38.10)		(88.90)	(330.20)		(12.70)	(223.82)	(28.58)	(22.23)	(34.93)	
2-Way Angle/Replaceable Seat																	
15Y12872	VEE	3/4	0.438	3.00	1.50	0.63	2.06		4.00	8.00		0.28	11.31	1.13	0.88	1.38	See Figure 3
15Y12882	REG	(19.05)	(11.13)	(76.20)	(38.10)	(15.88)	(52.32)		(101.60)	(203.20)		(7.11)	(287.27)	(28.58)	(22.23)	(34.93)	
15Y16872	VEE	1.00	0.562	4.13	2.06	0.63	2.06		4.13	10.25		0.28	11.75	1.50	1.03	1.75	
15Y16882	REG	(25.40)	(14.27)	(104.78)	(52.39)	(15.88)	(52.32)		(104.78)	(260.35)		(7.11)	(298.45)	(38.10)	(26.16)	(44.45)	
43Y16872	VEE	1.00	0.375	4.13	2.07	0.72	2.13		4.38	10.25		0.28	11.95	1.50	1.00	1.75	
43Y16882	REG	(25.40)	(9.53)	(104.78)	(52.45)	(18.29)	(54.10)		(111.25)	(260.35)		(7.11)	(303.53)	(38.10)	(25.40)	(44.45)	
50Y9872	VEE	9/16	0.188	3.00	1.50	0.56	1.38		3.38	4.00		0.28	12.12	1.13	1.06	1.38	
50Y9882	REG	(14.27)	(4.78)	(76.20)	(38.10)	(14.27)	(35.05)		(85.73)	(101.60)		(7.11)	(307.85)	(28.58)	(26.97)	(34.93)	

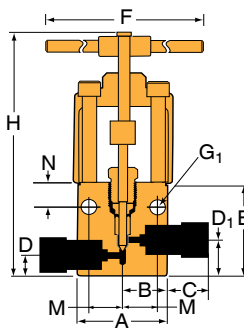
G - Bracket mounting hole size

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

All dimensions for reference only and subject to change.

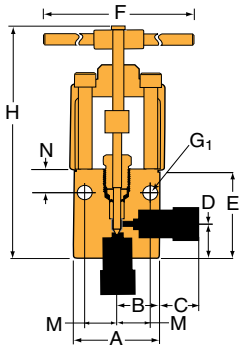
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Figure 1



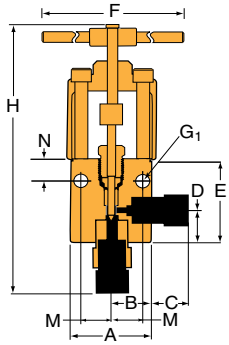
2-Way Straight

Figure 2



2-Way Angle

Figure 3



2-Way Angle/Replaceable Seat

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02-0119SE January2013

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ISO-9001 Certified

Needle Valves

Options

Parker Autoclave Engineer's Needle Valves can be supplied with a number of options to meet your requirements. These include various materials of construction, packing material, high temperature packing, handle colors, stem options, custom valves, pneumatic actuators, and a number of other options.

The following pages provide details on these options. For additional or technical information not found in this section, please consult the factory or local distributor.

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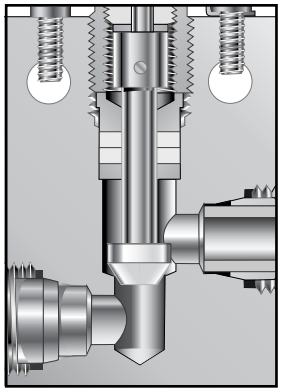
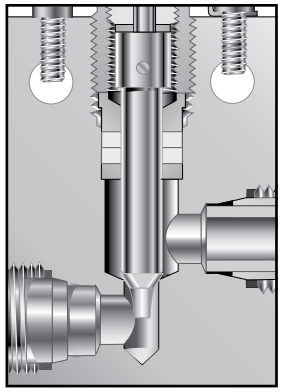
Three Stem Types

Three types of stems are offered by Parker Autoclave Engineers: Vee, Regulating and MicroMetering. Both Vee and Regulating stems are interchangable on most Parker AE valves and provide bubble-tight shut-off against liquids and gases.



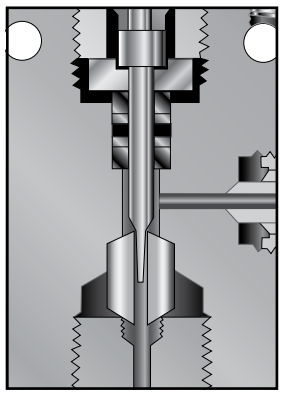
VEE Stem

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. This stem has a 4° taper at the tip in conjunction with a standard 60° section for 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.



MicroMetering Stem

Where precise control of small flows is required, Autoclave offers special MicroMetering valves. For complete information on MicroMetering valves, refer to Micro-Metering in the Needle Valve section.

Optional Materials

To order optional materials for wetted parts, add the following designations to the order number.

316L	Type 316 extra low carbon stainless steel
HB	*Hastelloy B-2
HC	*Hastelloy C276 wetted parts
IN	*Inconel 600
IN625	*Inconel 625
IN825	*Incoloy 825
KMO	*Monel K500
MO	*Monel 400 or 450
NI	Nickel 200
TI	Titanium grade 2

Note: For duplex, super duplex and other materials contact your sales representative.

* *Trademark names*

Air Operated Valves

Refer to Valve Actuators section for available models.

Packing Options

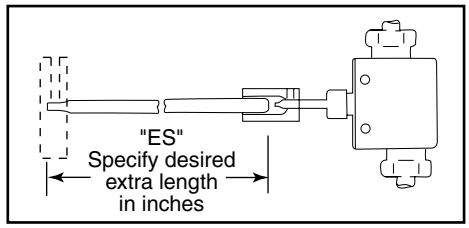
Refer to the valve model required, and see valve options in that section.

Optional Connections

In addition to standard tube connections, Parker Autoclave Engineers can supply many valve and fitting series with such optional end connections as Female or Male NPT, Socket Weld to O.D. tube size, or nominal pipe size, Female “AN” (MS 33649), Male “AN (MS 33656), Butt Weld and British straight thread. Contact factory for current information. Metric sizes can be supplied on most Parker Autoclave Engineers valves and fittings on special order.

Anti-Vibration Adder
For valves or other components supplied with anti-vibration option, add -K to catalog number. See fitting and tubing sections for anti-vibration information.

Stem and Handle Extenders
Stem Extenders are offered for high or low temperature operation on most Parker Autoclave Engineers valves. They are also useful for remote actuation, such as behind a barricade. To order any valve with a Stem Extender, add “ES” and the length (6”, 12”, 18” or 24”) to the beginning of the valve catalog number: e.g. ES12-30VM4071. Other lengths on special order. To order stem extender only, please provide extender number and the prefix of the valve model. Ex: ES12-20SM6 (handle not included.)



Abrasive or Highly Erosive Service Option
For service conditions where high flows, erosive mediums, or high pressures cause premature wear on stems and seats, N-Dura coating can be supplied to increase component life.

N-Dura coating is specifically used to enhance stem and seat life by providing a protective coating over a base substrate. This creates a thin, hard, protective coating with no effects of brittleness. The coating will not peel, chip or flake off the base material. The coating hardness is in a range of minimum 85 Rc surpassing other coatings and most materials.

The additional performance characteristics provided with the coating are reduced friction, corrosion resistance exceeding 400 stainless steel, and operating temperature ranges from -300°F to 1200°F.
The coating has been tested in erosive applications, yielding far better results than Stellite®, which has been utilized extensively in these applications. With few exceptions, most major ferrous and non ferrous materials can be successfully coated.

Most valves in this catalog are available with N-Dura coated stems or with both N-Dura coated stems and replaceable seats. This coating is available for all stem options. To order both N-Dura stems on any valve pattern, add suffix “CS” to the catalog model number. To order both N-Dura coated stems and N-Dura coated replaceable seats (available on 2-way angle replaceable seat pattern only) add suffix “CSS” to the catalog number. Stellite® is available as a special upon request.

Optional Valve Handles
Blue powder coated stainless handles are standard on the majority of the valve series. Stainess handles can be purchased in different colors if required, contact the factory for color options.

Exception: Heavy-duty Stainless Steel T-handles assemblies are standard on our larger valves, see detailed information on each section for handles used.

Panel Mounting
Most Parker Autoclave Engineers valve series can be panel mounted through the locking device screw hole and a corresponding hole opposite the packing gland. To order a set of two panel mounting screws, add PM to the catalog order number.

Handle Lockouts: Handle lockouts are available to lockout valves in the open or closed position preventing unauthorized personnel from actuating valves during shutdowns or emergency situations. Lockouts consist of two halves that completely cover the valve handle and can be locked for security. They are constructed of durable plastic resistant to abrasion, solvents, and chemical agents. Consult factory for details.
To order lockouts with valves add -L to part number.
Lockout part numbers: 90088 - 2.5" (63.5) to 5.0" (127.0) handle size
90194 - 6.5" (165.1) to 10.0" (254.0) handle size

Note: Modifications may be required to some valves to use lockouts if purchased separately. See page 1 of ball valve options for photo of clamp style lockout.

Note: Many standard and special options and accessories for Parker Autoclave Engineers valves are listed here. Not all options apply to all valve series - see individual ordering pages for specifics. Some options listed here are special order options with prices quoted on application. See Custom Valves/Manifolds section for other options.

For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers Specifications AES-222. Failure to do so will void warranty.

ISO-9001 Certified

Pneumatic Valve Actuator

Pressures to 150,000 psi (10342 bar)

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 Engineer's valves are available with diaphragm or piston type actuators. Six sizes of air actuators (light, heavy light, medium, heavy duty or extra heavy, single and double stage) are offered to meet the service requirements of Parker Autoclave Engineer's Low, Medium and High Pressure 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 are available upon request.

For most Parker Autoclave Engineers valve series there is a choice of two or more actuator designs. This provides the most efficient and economical pneumatic valve operation for any combination of process requirements and available air pressure.

Actuators are available for outdoor service. These operators provide corrosion resistant components and prevent the ingress of outside elements.

Limit switch packages for valve position indication are also available upon request.

Parker

Autoclave Engineers®

www.autoclave.com

Actuator - Pneumatic

Pressures to 150,000 psi (10342 bar)

Pneumatic Actuator

Pressures to 150,000 psi (10342 bar)

Six sizes of air operators (light, heavy light, medium, heavy duty or extra heavy, single and double stage) are offered for remote on-off operation or automatic operation of Parker Autoclave Engineer's low, medium or high pressure valves. The actuators are available in air-to-open (normally closed) and air-to-close (normally open) designs.

Remote on-off

Parker Autoclave Engineer's air-operated valves (**ATO**- Air-To-Open or **ATC**-Air-To-Close) can be controlled by a 3-way manual low pressure valve or by a low pressure solenoid valve. These are actuated by either a manual switch or an automatic control instrument. Parker Autoclave Engineer's air-operated, high pressure valves permit process control from a remotely located panel without the necessity of piping high pressure lines to the control panel. Safety is greatly increased and process "hold-up" is reduced. Prudent selection of ATO or ATC valves, together with the air controlling devices, permits the design of systems to "fail safe" in either the closed or open condition in the event of loss of operating air, or electrical failure, or malfunction.
Where explosion proof conditions are a requirement, pneumatic actuated valves can be considered. Remote mounting of the solenoid valve removes the potential from the hazardous area.

Ordering Procedure

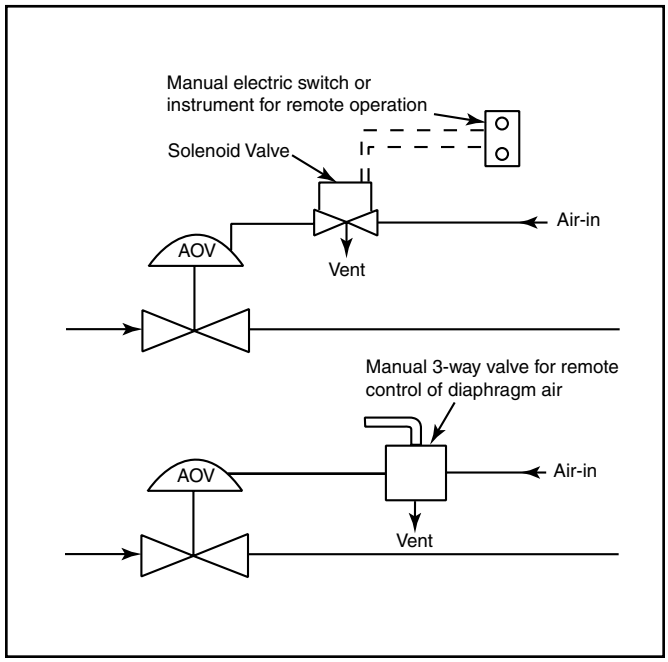
To order a valve with an air operator, select the duty rating and type of the air operator from the chart below. Add the air operator identifying suffix to the catalog number of the Parker Autoclave Engineer's valve. To order a 2-way straight, 30VM vee stem, 9/16" valve with a medium duty air-to-close air operator, specify: ex: **30VM9071-C1S** for a yoke style piston air actuated valve or **30VM9071-CM** for an integral style diaphragm air operated valve.

To order the same valve with an extended high temperature stuffing box, add HT to the ordering number: ex: **30VM9071-C1SHT** or **30VM9071-CMHT**.

To order a dual air operator manifold valve, specify both operators if different. The same valve with a medium duty ATC on one stem and a medium duty ATO on the other, specify: ex: **30VM9075-C1SO1S.**

To order a valve with operators for outdoor service add an "OD" suffix to the catalog number.

Note: Ordering air actuated valves models with regulating stems is not recommend. These are open/close actuators and will not regulate flow.



Duty Rating	Operator	Type	Ordering Suffix
Light	Diaphragm	Air-to-open	OL
		Air-to-close	CL
	Piston	Air-to-open	OLP
		Air-to-close	CLP
Mini-Light	Piston	Air-to-open	OHLP
		Air-to-close	CHLP
Medium	Diaphragm	Air-to-open	OM
		Air-to-close	CM
	Piston	Air-to-open	O1S
		Air-to-close	C1S
Heavy	Diaphragm	Air-to-open	OH
		Air-to-close	CH
	Piston	Air-to-open	O2S
		Air-to-close	C2S
Extra Heavy Single Stage	Piston	Air-to-open	HO1S
		Air-to-close	HC1S
Extra Heavy Double Stage	Piston	Air-to-open	HO2S
		Air-to-close	HC2S
Outdoor Service Actuators			
Medium	Piston	Air-to-open	O1SOD
		Air-to-close	C1SOD
Heavy	Piston	Air-to-open	O2SOD
		Air-to-close	C2SOD
Extra Heavy Single Stage	Piston	Air-to-open	HO1SOD
		Air-to-close	HC1SOD
Extra Heavy Doubl Stage	Piston	Air-to-open	HO2SOD
		Air-to-close	HC2SOD

Pneumatic Valve Actuators - Actuator Quick Selector Guide

This table allows the designer to quickly select an appropriate air actuator based on valve style and size, maximum system operating pressure and maximum available air pressure. For example, if the system operating pressure is 25,000 psi (1724 bar) and the available air pressure is 60 psi (4.14 bar) and an air-to-open (spring fail closed) valve is required, a 30VM or 60VM valve with a heavy duty air operator can be used. More specific sizing data is available in the sizing charts on the following pages.

Valve Series	Tube Outside Diameter in (mm)	Air-to-Close									
		Light		Medium		Heavy		Extra Heavy Single Stage		Extra Heavy Two Stage	
		System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)
10V	1/8 (3.18)	15,000 (1034.20)	100 (6.89)	15,000 (1034.20)	30 (2.07)						
	1/4 (6.35)	10,000 (689.46)	100 (6.89)	15,000 (1034.20)	40 (2.76)						
	3/8 (9.52)	10,000 (689.46)	100 (6.89)	15,000 (1034.20)	40 (2.76)						
	1/2 (12.70)			10,000 (689.46)	65 (4.48)						
SW	1/4 (6.35)			15,000 (1034.20)	65 (4.48)						
	3/8 (9.52)			15,000 (1034.20)	90 (6.21)	15,000 (1034.20)	50 (3.45)				
	1/2 (12.70)			8,000 (551.57)	100 (6.89)	10,000 (689.46)	60 (4.13)				
10SM	9/16 (14.27)			8,600 (592.94)	100 (6.89)	10,000 (689.45)	55 (3.79)	10,000 (689.45)	45 (3.10)	10,000 (689.46)	20 (1.38)
	3/4 (19.05)			4,,800 (330.94)	100 (6.89)	10,000 (689.46)	100 (6.89)	10,000 (689.46)	75 (5.17)	10,000 (689.46)	35 (2.41)
	1 (25.40)			2,800 (193.05)	100 (6.89)	6,300 (434.36)	100 (6.89)	8,500 (586.04)	100 (6.89)	10,000 (689.46)	35 (2.41)
20SM	1/4 (6.35)			20,000 (1378.93)	95 (6.55)	20,000 (1378.93)	50 (3.45)				
	3/8 (9.52)			19,000 (1310.00)	100 (6.89)	20,000 (1378.93)	55 (3.79)				
	9/16 (14.27)			10,700 (737.73)	100 (6.89)	20,000 (1378.93)	85 (5.86)	20,000 (1378.93)	60 (4.13)	20,000 (1378.93)	30 (2.07)
	3/4 (19.05)			6,100 (420.57)	100 (6.89)	13,600 (937.67)	100 (6.89)	19,000 (1310.00)	100 (6.89)	20,000 (1378.93)	50 (3.45)
	1 (25.40)			3,900 (268.89)	100 (6.89)	8,800 (606.73)	100 (6.89)	12,500 (861.83)	100 (6.89)	20,000 (1378.93)	75 (5.17)

NOTE: For 10P and 15P series pipe valves see sizing data tables.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Pneumatic Valve Actuators - Actuator Quick Selector Guide

Valve Series	Tube Outside Diameter in (mm)	Air-to-Open									
		Light		Medium		Heavy		Extra Heavy Single Stage		Extra Heavy Two Stage	
		System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)
10V	1/8 (3.18)	8,200 (565.36)	60 (4.14)	15,000 (1034.20)	45 (3.10)						
	1/4 (6.35)	5,600 (386.10)	60 (4.14)	15,000 (1034.20)	65 (4.48)						
	3/8 (9.52)	5,600 (386.10)	60 (4.14)	15,000 (1034.20)	65 (4.48)						
	1/2 (12.70)			10,000 (689.46)	95 (6.55)						
SW	1/4 (6.35)			15,000 (1034.20)	100 (6.89)						
	3/8 (9.52)			10,000 (689.46)	95 (6.55)	15,000 (1034.20)	75 (5.17)				
	1/2 (12.70)			6,000 (413.68)	95 (6.55)	10,000 (689.46)	75 (5.17)				
10SM	9/16 (14.27)			7,900 (544.68)	95 (6.55)	10,000 (689.45)	75 (5.17)	10,000 (689.45)	65 (4.48)	10,000 (689.46)	40 (2.76)
	3/4 (19.05)							10,000 (689.46)	95 (6.55)	10,000 (689.46)	65 (4.14)
	1 (25.40)							6,500 (448.15)	100 (6.89)	10,000 (689.46)	85 (5.81)
20SM	1/4 (6.35)			20,000 (1378.93)	95 (6.55)	20,000 (1378.93)	50 (3.45)				
	3/8 (9.52)			18,250 (1258.27)	95 (6.55)	18,250 (1258.27)	50 (3.45)				
	9/16 (14.27)			9,800 (675.68)	95 (6.55)	15,700 (1082.46)	75 (5.17)	20,000 (1378.93)	85 (5.86)	20,000 (1378.93)	55 (3.79)
	3/4 (19.05)					6,000 (413.68)	75 (5.17)	15,000 (1034.20)	100 (6.89)	20,000 (1378.93)	80 (5.52)
	1 (25.40)					4,000 (275.79)	75 (5.17)	10,000 (689.46)	100 (6.89)	20,000 (1378.93)	100 (6.89)

NOTE: For 10P and 15P series pipe valves see sizing data tables.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
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Pneumatic Valve Actuators - Actuator Quick Selector Guide

Valve Series	Tube Outside Diameter in (mm)	Air-to-Close								Air-to-Open							
		Light		Medium		Heavy		Extra Heavy Two Stage		Light		Medium		Heavy		Extra Heavy Two Stage	
		System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)	System Pressure psi (bar)	Air Pressure psi (bar)
30SC	1 (25.40)							30,000 (2068.39)	80 (5.52)							30,000 (2068.39)	80 (5.52)
30VM	1/4 (6.35)			30,000 (2068.39)	50 (3.45)	30,000 (2068.39)	30 (2.07)					30,000 (2068.39)	75 (5.17)	30,000 (2068.39)	40 (2.76)		
	3/8 (9.52)			30,000 (2068.39)	75 (5.17)	30,000 (2068.39)	40 (2.76)					30,000 (2068.39)	95 (6.55)	30,000 (2068.39)	50 (3.45)		
	9/16 (14.27)			30,000 (2068.39)	75 (5.17)	30,000 (2068.39)	40 (2.76)					30,000 (2068.39)	95 (6.55)	30,000 (2068.39)	50 (3.45)		
40VM	9/16 (14.27)					40,000 (2757.86)	45 (3.10)							40,000 (2757.86)	55 (3.79)		
60VM	1/4 (6.35)			60,000 (4136.79)	75 (5.17)	60,000 (4136.79)	40 (2.76)					60,000 (4136.79)	95 (6.55)	60,000 (4136.79)	50 (3.45)		
	3/8 (9.52)			60,000 (4136.79)	75 (5.17)	60,000 (4136.79)	40 (2.76)					60,000 (4136.79)	95 (6.55)	60,000 (4136.79)	50 (3.45)		
	9/16 (14.27)			60,000 (4136.79)	90 (6.21)	60,000 (4136.79)	45 (3.10)					60,000 (4136.79)	95 (6.55)	60,000 (4136.79)	50 (3.45)		
100VM	5/16 (7.92)			100,000 (6894.55)	100 (6.89)	100,000 (6894.65)	50 (3.45)							100,000 (6894.65)	70 (4.83)		
150V	5/16 (7.92)					150,000 (10341.97)	80 (5.52)							150,000 (10341.97)	75 (5.17)		

MVE/MV Mini Valves Series

Valve Series	Tube Outside Diameter in (mm)	Air-to-Close			Air-to-Open		
		Mini-Light			Mini-Light		
MVE	1/16 (1.57)	15,000 (1034.20)	75 (5.17)		15,000 (1034.20)	100 (6.89)	
MV	1/8 (3.18)	15,000 (1034.20)	75 (5.17)		15,000 (1034.20)	100 (6.89)	

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
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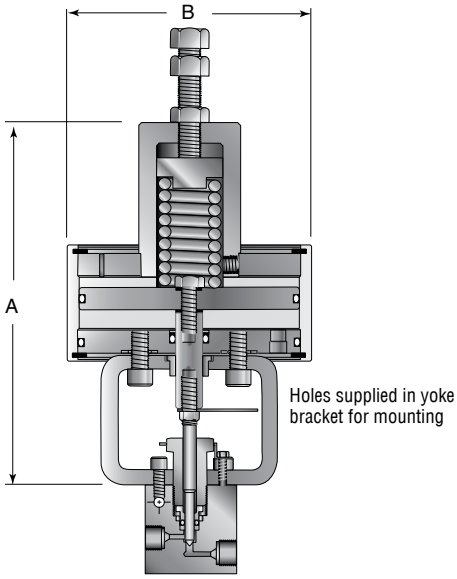
Pneumatic Valve Actuators - Piston Style Pneumatic

Pressures to 150,000 psi (10342 bar)

Piston type air-operated valves offer a unique, reliable design providing for a long and dependable life. These valves are more compact than diaphragm valves and are appropriate for applications such as high-flow gas and liquid delivery systems to reactors and mixer/vaporizers.

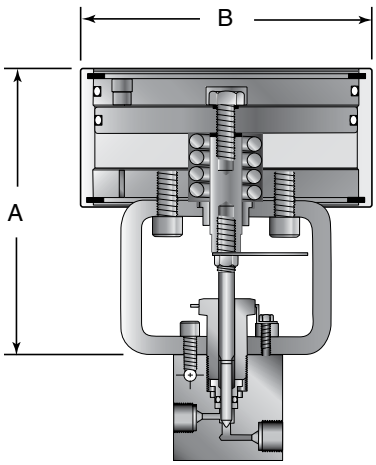
Parker Autoclave Engineer's piston type actuators feature:

- Small, compact, piston actuator
- Air-to-open or -close with spring return
- Yoke design for separation of process and air pressure †
- Ease of stem replacement
- Stem position indicator is standard†
- Positive shut-off metal-to-metal seating
- High actuator cycle life
- 1/8" NPT air inlet connection except Extra Heavy duty has 3/8" NPT



Air-to-Open (ATO)

NOTE: Air inlet for air to open operator is located in the back, opposite the front of valve. For other locations, consult factory.



Air-to-Close (ATC)

† The standard Mini-Light operator does not utilize the yoke design. A yoke design is available upon request.

Mini-Light

Air Operator Materials

Cylinder, piston, cover plates, spring housing

- Anodized aluminum (for corrosion and wear resistance).

Yoke

- Painted Steel

Technical Data

Air Operator

- Maximum allowable working pressure: 100 psi (6.89 bar)
- Allowable piston temperature range: -20°F to 200°F (-29°C to 93°C)
- Area of piston:
  - Light duty - 4.9 sq. in (31.6 sq. cm)
  - Mini-Light duty - 5.4 sq. in (34.8 sq. cm)
  - Medium duty - 19.6 sq. in (126.5 sq. cm)
  - Heavy duty - 39.2 sq. in (252.9 sq. cm)
  - Extra Heavy duty single stage - 56 sq. in (361.3 sq. cm)
  - Extra Heavy duty double stage - 112 sq. in (722.6 sq. cm)
- Approximate air usage/cycle @ 100 psi (6.89 bar):
  - Light duty - .003 SCF (.00008 SCM)
  - Mini-Light duty - .007 SCF (.0002 SCM)
  - Medium duty - .04 SCF (.0011 SCM)
  - Heavy duty - .08 SCF (.0022 SCM)
  - Extra Heavy duty single stage - .33 SCF (.0095 SCM)
  - Extra Heavy duty double stage - .67 SCF (.019 SCM)
- Tested to 100,000 cycles at 100 psi (6.89 bar) with no leakage or signs of wear or fatigue.

Duty Rating	Type	Ordering Suffix	Dimensions: inches (mm)	
			A	B
Light	Air-to-open	OLP	5.50 (139.70)	2.81 (71.37)
	Air-to-close	CLP	3.94 (100.08)	2.81 (71.37)
† Mini-Light	Air-to-open	OHLP	3.84 (97.67)	3.06 (77.72)
	Air-to-close	CHLP	2.61 (66.3)	3.06 (77.70)
Medium	Air-to-open	O1S	8.25 (209.55)	5.69 (144.52)
	Air-to-close	C1S	5.50 (139.70)	5.69 (144.52)
Heavy	Air-to-open	O2S	11.88 (301.75)	5.69 (144.52)
	Air-to-close	C2S	8.50 (215.90)	5.69 (144.52)
Extra Heavy Single Stage	Air-to-open	HO1S	15.16 (385.06)	9.44 (239.77)
	Air-to-close	HC1S	8.75 (217.67)	9.44 (239.77)
Extra Heavy Two Stage	Air-to-open	HO2S	18.50 (469.90)	9.44 (239.78)
	Air-to-close	HC2S	11.94 (303.27)	9.44 (239.78)

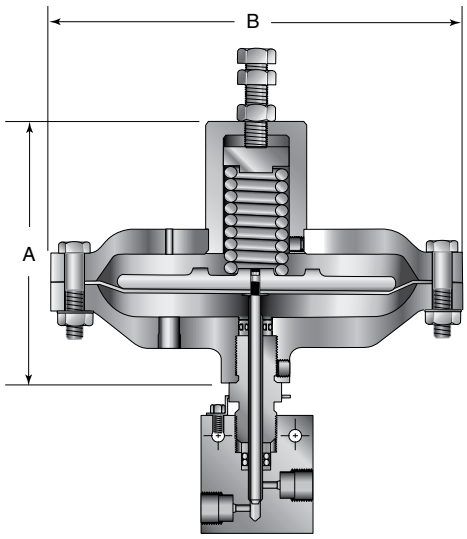
Pneumatic Valve Actuators - Diaphragm Style Pneumatic

Pressures to 150,000 psi (10342 bar)

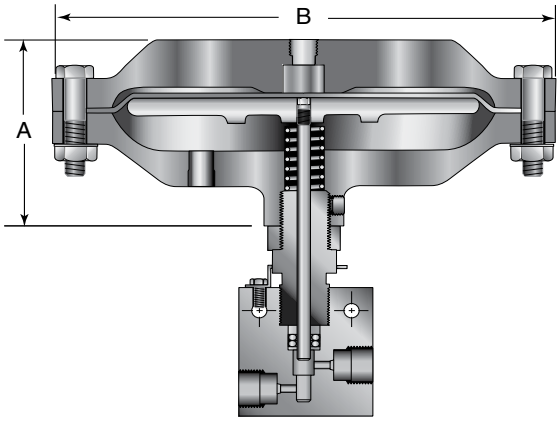
Diaphragm type air-operated valves are an efficient and economical means for "remote on-off" control of a wide range of process requirements. Diaphragm type actuators are designed to provide a dependable alternative to piston type actuators.

Parker Autoclave Engineer's diaphragm type air actuators feature:

- Economical diaphragm design
- Air-to-open or -close with spring return
- Integral connection of valve and operator for height resticted applications.
- Oversized weep holes for separation of process and air operator pressures.
- Stem position indicator optional
- Medium actuator cycle life
- 1/8" NPT air inlet connection



Air-to-Open (ATO)



Air-to-Close (ATC)

Air Operator Materials

Upper and lower housing, spring housing
- Anodized aluminum†

Diaphragm plate
- Cast ductile iron.

Technical Data

Air Operator

- Maximum allowable working pressure: 100 psi (6.89 bar)
- Allowable diaphragm temperature range: -40°F to 200°F (-40°C to 93°C)
- Area of diaphragm:
  - Light duty - 4.9 sq. in (31.6 sq. cm)
  - Medium duty - 19.6 sq. in (126.5 sq. cm)
  - Heavy duty - 45.66 sq. in (294.58 sq. cm)
- Approximate air usage/cycle @ 100 psi (6.89 bar):
  - Light duty - .007 SCF (.00019 SCM)
  - Medium duty - .07 SCF (.0019 SCM)
  - Heavy duty - .2 SCF (.0056 SCM)

†Note: OH and CH are carbon steel painted

Duty Rating	Type	Ordering Suffix	Dimensions: inches (mm)	
			A	B
Light	Air-to-open	OL	5.00 (127.00)	4.25 (107.95)
	Air-to-close	CL	2.38 (60.45)	4.25 (107.95)
Medium	Air-to-open	OM	6.42 (163.01)	7.12 (180.90)
	Air-to-close	CM	3.75 (95.25)	7.12 (180.90)
Heavy	Air-to-open	OH	8.75 (222.25)	10.00 (254.00)
	Air-to-close	CH	4.69 (119.13)	10.00 (254.00)

Pneumatic Valve Actuators - Air Operator Sizing Data

Air-to-Close

Series 10V and SW Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Stem Travel in (mm)	Flow Coefficient**
			1-4 (6.89-27.57)	6 (41.37)	8 (55.16)	10 (68.95)	12 (82.74)	14 (96.53)	15 (103.42)							
10V2	Light Duty	Air Pressure psi (bar)	30 (2.07)	40 (2.76)	55 (3.79)	65 (4.48)	85 (5.86)	95 (6.55)	100 (6.89)					15,000 (1034.20)	0.16 (4.06)	0.12
	Medium Duty		25 (1.72)	25 (1.72)	25 (1.72)	25 (1.72)	25 (1.72)	25 (1.72)	30 (2.07)							
10V4	Light Duty		40 (2.76)	60 (4.13)	75 (5.17)	95 (6.55)								10,000 (689.46)	0.19 (4.83)	0.20
	Medium Duty		30 (2.07)	30 (2.07)	30 (2.07)	30 (2.07)	35 (2.41)	35 (2.41)	40 (2.76)					15,000 (1034.20)		
10V6	Light Duty		40 (2.76)	60 (4.13)	75 (5.17)	100 (6.89)								10,000 (689.46)	0.19 (4.83)	0.20
	Medium Duty		30 (2.07)	30 (2.07)	30 (2.07)	35 (2.41)	35 (2.41)	35 (2.41)	40 (2.76)					15,000 (1034.20)		
10V8	Medium Duty		50 (3.45)	50 (3.45)	55 (3.79)	65 (4.48)								10,000 (689.46)	0.31 (7.90)	0.86
SW4	Medium Duty		40 (2.76)	40 (2.76)	40 (2.76)	50 (3.45)	55 (3.79)	60 (4.13)	65 (4.48)					15,000 (1034.20)	0.25 (6.40)	0.65
SW6	Medium Duty		50 (3.45)	50 (3.45)	55 (3.79)	70 (4.83)	75 (5.17)	85 (5.86)	90 (6.21)					15,000 (1034.20)	0.25 (6.40)	0.95
	Heavy Duty		20 (1.38)	25 (1.72)	30 (2.07)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)					15,000 (1034.20)		
SW8	Medium Duty		65 (4.48)	70 (4.83)	100 (6.89)									8,000 (551.57)	0.38 (9.70)	1.90
	Heavy Duty		35 (2.41)	35 (2.41)	50 (3.45)	60 (4.13)								10,000 (698.46)		

Series 10SM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Stem Travel in (mm)	Flow Coefficient**
			1-3 (6.89-20.68)	4 (27.58)	6 (41.37)	8 (55.16)	10 (68.95)	12 (82.74)	14 (96.53)	16 (110.31)	18 (124.10)	20 (137.89)				
10SM9	Medium Duty	Air Pressure psi (bar)	65 (4.48)	65 (4.48)	75 (5.17)	100 (6.89)								8,600 (592.94)	0.38 (9.65)	1.75
	Heavy Duty		35 (2.41)	35 (2.41)	40 (2.76)	50 (3.45)	55 (3.79)							10,000 (689.46)		
	Extra Heavy Duty Single Stage		30 (2.07)	30 (2.07)	30 (2.07)	35 (2.41)	45 (3.10)							10,000 (689.46)		
	Extra Heavy Duty Two Stage		15 (1.03)	15 (1.03)	15 (1.03)	20 (1.38)	20 (1.38)							10,000 (689.46)		
10SM12	Medium Duty		90 (6.21)	100 (6.89)										4,800 (330.94)	0.44 (11.18)	2.80
	Heavy Duty		45 (3.10)	45 (3.10)	60 (4.13)	80 (5.52)	100 (6.89)							10,000 (689.46)		
	Extra Heavy Duty Single Stage		35 (2.41)	35 (2.41)	50 (3.45)	60 (4.13)	70 (4.83)							10,000 (689.46)		
	Extra Heavy Duty Two Stage		20 (1.38)	20 (1.38)	25 (1.72)	30 (2.07)	35 (2.41)							10,000 (689.46)		
10SM16	Medium Duty		100 (6.89)											2,800 (193.05)	0.56 (14.22)	5.20
	Heavy Duty		60 (4.13)	70 (4.83)	100 (6.89)									6,300 (434.36)		
	Extra Heavy Duty Single Stage		45 (3.10)	50 (3.45)	70 (4.83)	95 (6.55)								8,500 (586.46)		
	Extra Heavy Duty Two Stage		25 (1.72)	25 (1.72)	35 (2.41)	45 (3.10)	55 (3.79)							10,000 (689.46)		

Air-to-Close - Series 20SM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Stem Travel in (mm)	Flow Coefficient**
			1-3 (6.89-20.68)	4 (27.58)	6 (41.37)	8 (55.16)	10 (68.95)	12 (82.74)	14 (96.53)	16 (110.31)	18 (124.10)	20 (137.89)				
20SM4 15P4†	Medium Duty	Air Pressure psi (bar)	40 (2.76)	40 (2.76)	40 (2.76)	40 (2.76)	50 (3.45)	60 (4.13)	70 (4.83)	80 (5.52)	85 (5.86)	95 (6.55)		20,000 (1378.93)	0.25 (6.35)	0.31
	Heavy Duty		20 (1.38)	20 (1.38)	20 (1.38)	20 (1.38)	25 (1.72)	30 (2.07)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)				
20SM6 15P6†	Medium Duty		45 (3.10)	45 (3.10)	45 (3.10)	45 (3.10)	55 (3.79)	65 (4.48)	75 (5.17)	85 (5.86)	95 (6.55)	100 (6.89)		19,000 (1309.98)	0.25 (6.35)	0.75
	Heavy Duty		25 (1.72)	25 (1.72)	25 (1.72)	25 (1.72)	30 (2.07)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)	55 (3.79)		20,000 (1378.93)		
20SM9 15P8†	Medium Duty		60 (4.13)	60 (4.13)	65 (4.48)	80 (5.52)	100 (6.89)							10,700 (737.73)	0.38 (9.65)	1.30
	Heavy Duty		30 (2.07)	30 (2.07)	30 (2.07)	40 (2.76)	50 (3.45)	55 (3.79)	60 (4.13)	70 (4.83)	80 (5.52)	85 (5.86)		20,000 (1378.93)		
	Extra Heavy Duty Single Stage		25 (1.72)	25 (1.72)	25 (1.72)	30 (2.07)	35 (2.41)	45 (3.10)	50 (3.45)	55 (3.79)	60 (4.13)	65 (4.48)		20,000 (1378.93)		
	Extra Heavy Duty Two Stage		15 (1.03)	15 (1.03)	15 (1.03)	15 (1.03)	20 (1.38)	20 (1.38)	25 (1.72)	25 (1.72)	30 (2.07)	30 (2.07)		20,000 (1378.93)		
20SM12 10P12†	Medium Duty		80 (5.44)	80 (5.44)	100 (6.80)									6,100 (420.57)	0.44 (11.18)	2.50
	Heavy Duty		40 (2.72)	40 (2.72)	50 (3.40)	60 (4.08)	75 (5.10)	90 (6.12)	100 (6.80)					13,600 (937.67)		
	Extra Heavy Duty Single Stage		30 (2.07)	30 (2.07)	40 (2.76)	50 (3.45)	60 (4.13)	65 (4.48)	75 (5.17)	85 (5.86)	95 (6.55)	100 (6.89)		19,000 (1310.00)		
	Extra Heavy Duty Two Stage		15 (1.03)	15 (1.03)	20 (1.38)	25 (1.72)	30 (2.07)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)	50 (3.45)		20,000 (1378.93)		
20SM16 10P16†	Medium Duty		100 (6.89)	100 (6.89)										3,900 (268.89)	0.56 (14.22)	3.40
	Heavy Duty		50 (3.45)	50 (3.45)	70 (4.83)	100 (6.89)								8,800 (606.73)		
	Extra Heavy Duty Single Stage		40 (2.76)	40 (2.76)	55 (3.79)	70 (4.83)	85 (5.86)	100 (6.89)						12,500 (861.83)		
	Extra Heavy Duty Two Stage		20 (1.38)	20 (1.38)	25 (1.72)	35 (2.41)	40 (2.76)	50 (3.45)	55 (3.79)	60 (4.48)	70 (4.83)	75 (5.17)		20,000 (1378.93)		

Series 30SC Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Stem Travel in (mm)	Flow Coefficient**
			1-10 (6.89-68.94)	15 (103.42)	16 (110.31)	18 (124.10)	20 (137.89)	22 (151.68)	24 (165.47)	26 (179.26)	28 (193.05)	30 (206.84)				
30SC16	Extra Heavy Duty Two Stage	Air Pressure psi (bar)	30 (2.07)	40 (2.76)	45 (3.10)	50 (3.45)	55 (3.79)	60 (4.13)	65 (4.48)	70 (4.83)	75 (5.17)	80 (5.52)		30,000 (2068.39)	0.50 (12.70)	2.61

*** C_V data is for 2-way straight valves.*
For angle pattern, add approximately 50% to the C_V valve.

***CAUTION:** While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring, FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

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Air-to-Close - Series 30VM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Stem Travel in (mm)	Flow Coefficient**
			1-10 (6.89-68.94)	12 (82.74)	14 (96.53)	16 (110.31)	18 (124.10)	20 (137.89)	22 (151.68)	24 (165.47)	26 (179.26)	28 (193.05)	30 (206.84)			
30VM4	Medium Duty	Air Pressure psi (bar)	25 (1.72)	25 (1.72)	25 (1.72)	30 (2.07)	35 (2.41)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)	50 (3.45)	55 (3.79)	30,000 (2068.39)	0.19 (4.83)	0.12
	Heavy Duty		15 (1.03)	15 (1.03)	15 (1.03)	15 (1.03)	20 (1.38)	20 (1.38)	20 (1.38)	25 (1.72)	25 (1.72)	25 (1.72)	30 (2.07)			
30VM6 & 30VM9	Medium Duty		30 (2.07)	30 (2.07)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)	55 (3.79)	60 (4.13)	65 (4.48)	70 (4.83)	75 (5.17)	30,000 (2068.39)	0.19 (4.83)	0.23 (30VM6)
	Heavy Duty		15 (1.03)	15 (1.03)	20 (1.38)	20 (1.38)	25 (1.72)	25 (1.72)	30 (2.07)	30 (2.07)	35 (2.41)	35 (2.41)	40 (2.76)			0.33 (30VM9)

Series 40VM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)								Maximum Pressure psi (bar)*	Stem Travel in (mm)	Flow Coefficient**
			1-10 (6.89-68.94)	15 (103.42)	20 (137.89)	25 (172.37)	30 (206.84)	35 (241.31)	40 (275.79)				
40VM9	Medium Duty	Air Pressure psi (bar)	40 (2.76)	50 (3.45)	60 (4.13)	70 (4.83)	80 (5.52)	90 (6.21)	90 (6.21)		40,000 (2757.86)	0.25 (6.35)	0.28
	Heavy Duty		20 (1.38)	25 (1.70)	30 (2.07)	35 (2.41)	40 (2.76)	45 (3.10)	45 (3.10)				

Series 60VM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)										Maximum Pressure psi (bar)*	Stem Travel in (mm)	Flow Coefficient**
			1-20 (6.89-137.89)	25 (172.37)	30 (206.84)	35 (241.31)	40 (275.79)	45 (310.26)	50 (344.73)	55 (379.21)	60 (413.68)				
60VM4 & 60VM6	Medium Duty	Air Pressure psi (bar)	30 (2.07)	30 (2.07)	35 (2.41)	45 (3.10)	50 (3.45)	55 (3.79)	60 (4.13)	70 (4.83)	75 (5.17)		60,000 (4136.79)	0.25 (6.35)	0.08 (60VM4)
	Heavy Duty		15 (1.03)	15 (1.03)	20 (1.38)	25 (1.72)	25 (1.72)	30 (2.07)	30 (2.07)	35 (2.41)	40 (2.76)				0.09 (60VM6)
60VM9	Medium Duty		35 (2.41)	40 (2.76)	50 (3.45)	55 (3.79)	65 (4.48)	70 (4.83)	75 (5.17)	85 (5.86)	90 (6.21)		60,000 (4136.79)	0.25 (6.35)	0.14
	Heavy Duty		20 (1.38)	20 (1.38)	25 (1.72)	30 (2.07)	35 (2.41)	35 (2.41)	40 (2.76)	45 (3.10)	45 (3.10)				

Series 100VM & 150V Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)									Maximum Pressure psi (bar)*	Stem Travel in (mm)	Flow Coefficient**
			1-40 (6.89-275.79)	50 (344.73)	60 (413.68)	70 (482.63)	80 (551.57)	90 (620.52)	100 (689.46)	150 (1034.20)				
100VM4 100VM5 100VM6	Medium Duty	Air Pressure psi (bar)	50 (3.45)	55 (3.79)	65 (4.48)	75 (5.17)	85 (5.86)	95 (6.55)	100 (6.89)			100,000 (6894.65)	0.12 (3.05)	0.09
	Heavy Duty		30 (2.07)	30 (2.07)	35 (2.41)	40 (2.76)	40 (2.76)	45 (3.10)	50 (3.45)					
150V5	Heavy Duty		35 (2.41)	40 (2.76)	45 (3.10)	45 (3.10)	50 (3.45)	55 (3.79)	60 (4.13)	100 (6.89)		150,000 (10341.97)	0.12 (3.05)	0.06

Pneumatic Valve Actuators - Air Operator Sizing Data

Air-to-Open

Series 10V Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-6 (6.89-41.37)	8 (110.31)	10 (124.10)	12 (82.74)	14 (96.53)	15 (103.42)							
10V2	Light Duty	Air Pressure: psi (bar)	60 **(4.13)**	60 **(4.13)**										8,200 **(565.36)**	0.12 to 0.09***
		Spring Pre-Compression: in. (mm)	0.31 **(7.87)**	0.38 **(9.65)**											
		Stem Travel in (mm)	0.12 **(3.05)**	0.06 **(1.52)**											
	Medium Duty	Air Pressure: psi (bar)	40 **(2.76)**	40 **(2.76)**	40 **(2.76)**	40 **(2.76)**	40 **(2.76)**	45 **(3.10)**						15,000 **(1034.20)**	0.12
		Spring Pre-Compression: in. (mm)	0.12 **(3.05)**	0.12 **(3.05)**	0.12 **(3.05)**	0.12 **(3.05)**	0.12 **(3.05)**	0.16 **(4.06)**							
		Stem Travel in (mm)	0.12 **(3.05)**	0.12 **(3.05)**	0.12 **(3.05)**	0.12 **(3.05)**	0.12 **(3.05)**	0.12 **(3.05)**							
10V4 10V6	Light Duty	Air Pressure: psi (bar)	60 **(4.13)**											5,600 **(386.46)**	0.02 to 0.17***
		Spring Pre-Compression: in. (mm)	0.38 **(9.65)**												
		Stem Travel in (mm)	0.06 **(1.52)**												
10V4	Medium Duty	Air Pressure: psi (bar)	45 **(3.10)**	45 **(3.10)**	50 **(3.45)**	55 **(3.79)**	60 **(4.14)**	65 **(4.48)**						15,000 **(1034.20)**	0.20
		Spring Pre-Compression: in. (mm)	0.12 **(3.05)**	0.12 **(3.05)**	0.14 **(3.65)**	0.18 **(4.75)**	0.20 **(5.08)**	0.22 **(5.59)**							
		Stem Travel in (mm)	0.19 **(4.83)**	0.19 **(4.83)**	0.19 **(4.83)**	0.19 **(4.83)**	0.19 **(4.83)**	0.19 **(4.83)**							
10V6	Medium Duty	Air Pressure: psi (bar)	45 **(3.10)**	45 **(3.10)**	50 **(3.45)**	55 **(3.79)**	60 **(4.13)**	65 **(4.48)**						15,000 **(1034.20)**	0.20
		Spring Pre-Compression: in. (mm)	0.12 **(3.05)**	0.12 **(3.05)**	0.14 **(3.56)**	0.18 **(4.57)**	0.20 **(5.08)**	0.22 **(5.57)**							
		Stem Travel in (mm)	0.19 **(4.83)**	0.19 **(4.83)**	0.19 **(4.83)**	0.19 **(4.83)**	0.19 **(4.83)**	0.19 **(4.83)**							
10V8	Medium Duty	Air Pressure: psi (bar)	75 **(5.17)**	85 **(5.86)**	95 **(6.55)**									10,000 **(689.46)**	0.86
		Spring Pre-Compression: in. (mm)	0.25 **(6.35)**	0.30 **(7.62)**	0.38 **(9.65)**										
		Stem Travel in (mm)	0.25 **(6.35)**	0.25 **(6.35)**	0.25 **(6.35)**										
	Heavy Duty	Air Pressure: psi (bar)	50 **(3.45)**	55 **(3.79)**	60 **(4.13)**									10,000 **(689.46)**	0.86
		Spring Pre-Compression: in. (mm)	0.14 **(3.56)**	0.20 **(5.08)**	0.24 **(6.10)**										
		Stem Travel in (mm)	0.25 **(6.35)**	0.25 **(6.35)**	0.25 **(6.35)**										

*** C_V data is for 2-way straight valves.*
For angle pattern, add approximately 50% to the C_V valve.

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Series SW Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-6 (6.89-41.37)	8 (55.16)	10 (68.95)	12 (82.74)	14 (96.53)	15 (103.41)							
SW4	Medium Duty	Air Pressure: psi (bar)	65 (4.48)	65 (4.48)	75 (5.17)	85 (5.52)	95 (6.55)	95 (6.55)						15,000 (1034.20)	0.65
		Spring Pre-Compression: in. (mm)	0.19 (4.83)	0.19 (4.83)	0.25 (6.35)	0.31 (7.87)	0.36 (9.14)	0.38 (9.14)							
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	025 (6.35)	025 (6.35)	025 (6.35)							
SW6	Medium Duty	Air Pressure: psi (bar)	75 (5.17)	75 (5.17)	95 (6.55)	95 (6.55)	95 (6.55)	100 (6.89)						13,500 (930.77)	0.62 to 0.95
		Spring Pre-Compression: in. (mm)	0.25 (6.35)	0.25 (6.35)	0.28 (7.11)	0.44 (11.17)	0.52 (13.21)	0.56 (14.22)							
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.19 (4.83)	0.10 (2.54)	0.06 (1.53)							
SW6	Heavy Duty	Air Pressure: psi (bar)	50 (3.45)	55 (3.79)	60 (4.13)	65 (4.48)	70 (4.83)	75 (5.17)						15,000 (1034.20)	0.95
		Spring Pre-Compression: in. (mm)	0.14 (3.56)	0.19 (4.83)	0.24 (6.10)	0.28 (7.11)	0.34 (8.64)	0.36 (9.14)							
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)							
SW8	Medium Duty	Air Pressure: psi (bar)	95 (6.55)	95 (6.55)										7,200 (469.41)	1.75
		Spring Pre-Compression: in. (mm)	0.38 (9.65)	0.56 (14.22)											
		Stem Travel in (mm)	0.25 (6.35)	0.05 (1.53)											
SW8	Heavy Duty	Air Pressure: psi (bar)	65 (4.48)	75 (5.17)	75 (5.17)									10,000 (689.46)	1.14
		Spring Pre-Compression: in. (mm)	0.28 (7.11)	0.38 (9.65)	0.44 (11.18)										
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.19 (4.83)										

Series MVE/MV Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-6 (6.89-41.37)	8 (55.15)	10 (68.95)	12 (82.74)	14 (96.53)	15 (103.41)							
MVE1 MV1	Mini-Light Duty	Air Pressure: psi (bar)	60 (4.13)	65 (4.48)	75 (5.17)	85 (5.86)	90 (6.21)	100 (6.89)						15,000 (1034.20)	MVE1/MV1 (0.05)
		Spring Pre-Compression: in. (mm)	0.073 (1.85)	0.094 (2.39)	0.125 (3.18)	0.147 (3.73)	0.172 (4.37)	0.188 (4.78)							
MVE2 MV2		Stem Travel in (mm)	0.094 (2.39)	0.094 (2.39)	0.094 (2.39)	0.094 (2.39)	0.094 (2.39)	0.094 (2.39)							MVE2/MV2 (0.11)

*** C_V data is for 2-way straight valves.*
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Air-to-Open - Series 10SM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-4 (6.89-27.58)	6 (41.37)	8 (55.15)	10 (68.95)	12 (82.74)	14 (96.53)	16 (110.31)	18 (124.10)	20 (137.89)				
10SM9	Medium Duty	Air Pressure: psi (bar)	95 (6.55)	95 (6.55)	95 (6.55)									7,900 (544.68)	1.74 to 0.72***
		Spring Pre-Compression: in. (mm)	0.38 (9.65)	0.44 (11.18)	0.56 (14.22)										
		Stem Travel in (mm)	0.25 (6.35)	0.19 (4.83)	0.06 (1.52)										
	Heavy Duty	Air Pressure: psi (bar)	55 (3.79)	65 (4.48)	70 (4.83)	75 (5.17)								10,000 (689.46)	1.74 to 0.72***
		Spring Pre-Compression: in. (mm)	0.22 (5.59)	0.28 (7.11)	0.34 (8.64)	0.44 (11.18)									
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.19 (4.83)									
	Extra Heavy Duty Single Stage	Air Pressure: psi (bar)	45 (3.10)	45 (3.10)	55 (3.79)	60 (4.13)								10,000 (689.46)	1.75
		Spring Pre-Compression: in. (mm)	0.31 (7.87)	0.34 (8.64)	0.47 (11.94)	0.59 (14.99)									
		Stem Travel in (mm)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)									
	Extra Heavy Duty Two Stage	Air Pressure: psi (bar)	25 (1.72)	30 (2.07)	35 (2.41)	40 (2.76)								10,000 (689.46)	1.75
		Spring Pre-Compression: in. (mm)	0.16 (4.06)	0.19 (4.83)	0.25 (6.35)	0.28 (7.11)									
		Stem Travel in (mm)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)									
10SM12	Extra Heavy Duty Single Stage	Air Pressure: psi (bar)	55 (3.79)	65 (4.48)	80 (5.52)	95 (6.55)								10,000 (689.46)	2.80
		Spring Pre-Compression: in. (mm)	0.44 (11.18)	0.63 (16.00)	0.84 (21.34)	1.06 (26.92)									
		Stem Travel in (mm)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)									
	Extra Heavy Duty Two Stage	Air Pressure: psi (bar)	40 (2.76)	50 (3.45)	55 (3.79)	60 (4.13)								10,000 (689.46)	2.80
		Spring Pre-Compression: in. (mm)	0.22 (5.59)	0.31 (7.87)	0.44 (11.18)	0.53 (13.46)									
		Stem Travel in (mm)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)									
10SM16	Extra Heavy Duty Single Stage	Air Pressure: psi (bar)	75 (5.17)	100 (6.89)										6,500 (448.15)	5.20
		Spring Pre-Compression: in. (mm)	0.69 (17.53)	1.13 (28.70)											
		Stem Travel in (mm)	0.50 (12.70)	0.50 (12.70)											
	Extra Heavy Duty Two Stage	Air Pressure: psi (bar)	55 (3.79)	65 (4.48)	75 (5.17)	85 (5.86)								10,000 (689.46)	5.20
		Spring Pre-Compression: in. (mm)	0.34 (8.64)	0.53 (13.46)	0.69 (17.53)	0.88 (22.35)									
		Stem Travel in (mm)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)									

Air-to-Open - Series 20SM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-4 (6.89-27.58)	6 (41.37)	8 (55.15)	10 (68.95)	12 (82.74)	14 (96.53)	16 (110.31)	18 (124.10)	20 (137.89)				
20SM4 15P4†	Medium Duty	Air Pressure: psi (bar)	65 (4.48)	65 (4.48)	65 (4.48)	75 (5.17)	85 (5.86)	95 (6.55)	95 (6.55)	95 (6.55)	95 (6.55)			20,000 (1378.93)	0.31 to 0.22***
		Spring Pre-Compression: in. (mm)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.25 (6.35)	0.31 (7.87)	0.38 (9.65)	0.44 (11.18)	0.50 (12.70)	0.56 (14.22)				
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.19 (4.83)	0.12 (3.05)	0.06 (1.52)				
	Heavy Duty	Air Pressure: psi (bar)	35 (2.41)	35 (2.41)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)	50 (3.45)	50 (3.45)	50 (3.45)				
20SM6 15P6†	Medium Duty	Air Pressure: psi (bar)	65 (4.48)	65 (4.48)	75 (5.17)	85 (5.86)	95 (6.55)	95 (6.55)	95 (6.55)	95 (6.55)				18,250 (1258.27)	0.75 to 0.57***
		Spring Pre-Compression: in. (mm)	0.19 (4.83)	0.19 (4.83)	0.25 (6.35)	0.31 (7.87)	0.38 (9.65)	0.44 (11.18)	0.50 (12.70)	0.56 (14.22)					
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.19 (4.83)	0.12 (3.05)	0.06 (1.52)					
	Heavy Duty	Air Pressure: psi (bar)	35 (2.41)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)	50 (3.45)	50 (3.45)	50 (3.45)					
20SM9 15P8†	Medium Duty	Air Pressure: psi (bar)	85 (5.86)	90 (6.21)	95 (6.55)	95 (6.55)								9,800 (675.68)	1.29 to 0.53***
		Spring Pre-Compression: in. (mm)	0.31 (7.87)	0.34 (8.64)	0.47 (11.94)	0.56 (14.22)									
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.15 (3.81)	0.06 (1.52)									
	Heavy Duty	Air Pressure: psi (bar)	50 (3.45)	55 (3.79)	65 (4.48)	70 (4.83)	75 (5.17)	75 (5.17)	75 (5.17)					15,700 (1082.46)	1.29 to 0.53***
		Spring Pre-Compression: in. (mm)	0.19 (4.83)	0.22 (5.59)	0.28 (7.11)	0.34 (8.64)	0.44 (11.18)	0.50 (12.70)	0.56 (14.22)						
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.19 (4.83)	0.12 (3.05)	0.06 (1.52)						
	Extra Heavy Duty Single Stage	Air Pressure: psi (bar)	40 (2.76)	40 (2.76)	50 (3.45)	55 (3.79)	60 (4.13)	65 (4.48)	70 (4.83)	75 (5.17)	85 (5.86)			20,000 (1378.93)	1.30
		Spring Pre-Compression: in. (mm)	0.25 (6.35)	0.28 (7.11)	0.38 (9.65)	0.47 (11.94)	0.56 (14.22)	0.66 (16.76)	0.75 (19.05)	0.84 (21.34)	0.94 (23.88)				
		Stem Travel in (mm)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)				
	Extra Heavy Duty Two Stage	Air Pressure: psi (bar)	30 (2.07)	35 (2.41)	35 (2.41)	40 (2.72)	40 (2.72)	45 (3.10)	50 (3.45)	50 (3.45)	55 (3.79)			20,000 (1378.93)	1.30
		Spring Pre-Compression: in. (mm)	0.13 (3.30)	0.16 (4.06)	0.19 (4.83)	0.25 (6.35)	0.28 (7.11)	0.34 (8.64)	0.38 (9.65)	0.44 (11.18)	0.47 (11.94)				
		Stem Travel in (mm)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)	0.38 (9.65)				

† *Maximum rating is based on the valve rating.*

*** *C_V varies because of spring compression limitations. The flow coefficient range is given for the maximum stem travel (lowest system pressure) to minimum travel (highest system pressure).*

Air-to-Open - Series 20SM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-4 (6.89-27.58)	6 (41.37)	8 (55.15)	10 (68.95)	12 (82.74)	14 (96.53)	16 (110.31)	18 (124.10)	20 (137.89)				
20SM12 10P12†	Heavy Duty	Air Pressure: psi (bar)	65 (4.48)	75 (5.17)										6,000 (413.68)	0.80 to 0.78***
		Spring Pre-Compression: in. (mm)	0.28 (7.11)	0.38 (9.65)											
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)											
	Extra Heavy Duty Single Stage	Air Pressure: psi (bar)	50 (3.45)	60 (4.13)	70 (4.83)	80 (5.52)	90 (6.21)	100 (6.89)	100 (6.89)					15,000 (1034.19)	2.50
		Spring Pre-Compression: in. (mm)	0.38 (9.65)	0.50 (12.70)	0.66 (16.76)	0.81 (20.57)	0.97 (24.64)	1.13 (28.70)	1.22 (30.99)						
		Stem Travel in (mm)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)				
	Extra Heavy Duty Two Stage	Air Pressure: psi (bar)	40 (2.76)	45 (3.10)	50 (3.45)	55 (3.79)	60 (4.13)	65 (4.48)	70 (4.83)	75 (5.17)	80 (5.52)			20,000 (1378.93)	2.50
		Spring Pre-Compression: in. (mm)	0.19 (4.83)	0.25 (6.35)	0.31 (7.87)	0.41 (10.41)	0.50 (12.70)	0.56 (14.22)	0.66 (16.76)	0.72 (18.29)	0.81 (20.57)				
		Stem Travel in (mm)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)	0.44 (11.18)				
20SM16 10P16†	Heavy Duty	Air Pressure: psi (bar)	75 (5.17)											4,000 (275.79)	2.73 to .15***
		Spring Pre-Compression: in. (mm)	0.38 (9.65)												
		Stem Travel in (mm)	0.25 (6.35)												
	Extra Heavy Duty Single Stage	Air Pressure: psi (bar)	65 (4.48)	80 (5.52)	95 (6.55)	100 (6.89)								10,000 (689.46)	3.40
		Spring Pre-Compression: in. (mm)	0.50 (12.70)	0.75 (19.05)	0.97 (24.64)	1.22 (30.99)									
		Stem Travel in (mm)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)									
	Extra Heavy Duty Two Stage	Air Pressure: psi (bar)	50 (3.45)	55 (3.79)	65 (4.48)	70 (4.83)	80 (5.52)	85 (5.86)	90 (6.21)	100 (6.89)	100 (6.89)			20,000 (1378.93)	3.40
		Spring Pre-Compression: in. (mm)	0.25 (6.35)	0.38 (9.65)	0.50 (12.70)	0.63 (16.00)	0.75 (19.05)	0.84 (21.34)	0.97 (24.64)	1.09 (27.69)	1.22 (30.99)				
		Stem Travel in (mm)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)				

† Maximum rating is based on the valve rating.

*** C_V data is for 2-way straight valves.*
For angle pattern, add approximately 50% to the C_V valve.

**** C_V varies because of spring compression limitations. The flow coefficient range is given for the maximum stem travel (lowest system pressure) to minimum travel (highest system pressure).*

***CAUTION:** While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring, FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Air-to-Open - Series 30SC Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-15 (6.89-103.42)	16 (110.31)	18 (124.10)	20 (137.89)	22 (151.68)	24 (165.47)	26 (179.26)	28 (193.05)	30 (206.84)				
30SC16	Extra Heavy Duty Two Stage	Air Pressure: psi (bar)	70 (4.83)	75 (5.17)	75 (5.17)	80 (5.52)	85 (5.86)	95 (6.55)	100 (6.89)	100 (6.89)	100 (6.89)			30,000 (2068.39)	2.61
		Spring Pre-Compression: in. (mm)	0.56 (14.22)	0.62 (15.75)	0.68 (17.27)	0.75 (19.05)	0.88 (22.35)	0.94 (23.88)	1.00 (25.40)	1.06 (26.92)	1.38 (35.05)				
		Stem Travel in (mm)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)	0.50 (12.70)				

Series 30VM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-10 (6.89-68.95)	12 (82.74)	14 (96.53)	16 (110.31)	18 (124.10)	20 (137.89)	22 (151.68)	24 (165.47)	26 (179.26)	28 (193.05)	30 (206.84)		
30VM4	Medium Duty	Air Pressure: psi (bar)	45 (3.10)	45 (3.10)	55 (3.79)	55 (3.79)	55 (3.79)	55 (3.79)	65 (4.48)	65 (4.48)	65 (4.48)	65 (4.48)	75 (5.17)	30,000 (2068.39)	0.12
		Spring Pre-Compression: in. (mm)	0.12 (3.15)	0.12 (3.05)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.31 (7.87)		
		Stem Travel in (mm)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)		
	Heavy Duty	Air Pressure: psi (bar)	25 (1.72)	25 (1.72)	30 (2.07)	30 (2.07)	30 (2.07)	30 (2.07)	35 (2.41)	35 (2.41)	35 (2.41)	35 (2.41)	40 (2.76)		
30VM6 & 30VM9	Medium Duty	Air Pressure: psi (bar)	45 (3.10)	55 (3.79)	55 (3.79)	65 (4.48)	65 (4.48)	75 (5.17)	75 (5.17)	75 (5.17)	85 (5.86)	85 (5.86)	95 (6.55)	30,000 (2068.39)	0.33 (30VM6) 0.33 (30VM9)
		Spring Pre-Compression: in. (mm)	0.12 (3.05)	0.19 (4.83)	0.19 (4.83)	0.25 (6.35)	0.25 (6.35)	0.31 (7.87)	0.31 (7.87)	0.31 (7.87)	0.38 (9.65)	0.38 (9.65)	0.44 (11.18)		
		Stem Travel in (mm)	0.19 (4.13)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)		
	Heavy Duty	Air Pressure: psi (bar)	25 (1.72)	30 (2.07)	30 (2.07)	35 (2.41)	35 (2.41)	40 (2.76)	40 (2.76)	40 (2.76)	45 (3.10)	45 (3.10)	50 (3.45)		

Series 40VM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-10 (6.89-68.95)	15 (103.42)	20 (137.89)	25 (172.37)	30 (206.84)	35 (241.31)	40 (275.79)						
40VM9	Medium Duty	Air Pressure: psi (bar)	60 (4.13)	70 (4.83)	75 (5.17)	85 (5.86)	95 (6.55)	100 (6.89)	100 (6.89)					40,000 (2757.86)	0.28
		Spring Pre-Compression: in (mm)	0.12 (3.05)	0.18 (4.57)	0.25 (6.35)	0.31 (7.87)	0.38 (9.65)	0.43 (10.92)	0.5 (12.70)						
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)						
	Heavy Duty	Air Pressure: psi (bar)	30 (2.07)	35 (2.41)	40 (2.76)	45 (3.10)	50 (3.45)	50 (3.45)	55 (3.79)						

Air-to-Open - Series 60VM Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-15 (6.89-103.42)	20 (137.89)	25 (172.37)	30 (206.84)	35 (241.31)	40 (275.79)	45 (310.26)	50 (344.73)	55 (379.21)	60 (413.68)			
60VM4 & 60VM6	Medium Duty	Air Pressure: psi (bar)	55 (3.79)	65 (4.48)	65 (4.48)	65 (4.48)	75 (5.17)	75 (5.17)	85 (5.86)	85 (5.86)	85 (5.86)	95 (6.55)		60,000 (4136.79)	0.08 (60VM4)
		Spring Pre-Compression: in. (mm)	0.12 (3.05)	0.19 (4.83)	0.19 (4.83)	0.19 (4.83)	0.25 (6.35)	0.25 (6.35)	0.31 (7.87)	0.31 (7.87)	0.31 (7.87)	0.38 (9.65)			
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)			
	Heavy Duty	Air Pressure: psi (bar)	30 (2.07)	35 (2.41)	35 (2.41)	35 (2.41)	40 (2.76)	40 (2.76)	45 (3.10)	45 (3.10)	45 (3.10)	50 (3.45)			0.09 (60VM6)
60VM9	Medium Duty	Air Pressure: psi (bar)	55 (3.74)	65 (4.42)	65 (4.42)	75 (5.10)	75 (5.10)	85 (5.78)	95 (6.46)	95 (6.46)	95 (6.46)	95 (6.46)		60,000 (4136.79)	0.14
		Spring Pre-Compression: in. (mm)	0.12 (3.05)	0.19 (4.83)	0.19 (4.83)	0.25 (6.35)	0.25 (6.35)	0.31 (7.87)	0.38 (9.65)	0.38 (9.65)	0.44 (11.18)	0.50 (12.70)			
		Stem Travel in (mm)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.25 (6.35)	0.19 (4.83)	0.12 (3.05)			
	Heavy Duty	Air Pressure: psi (bar)	30 (2.07)	35 (2.41)	35 (2.41)	40 (2.76)	40 (2.76)	45 (3.10)	50 (3.45)	50 (3.45)	50 (3.45)	50 (3.45)			

Series 100VM and 150V Valves

Valve Series	Operator Duty		System Pressure KSI (Mpa)											Maximum Pressure psi (bar)*	Flow Coefficient Cv**
			1-20 (6.89-137.89)	40 (275.79)	60 (13.68)	80 (551.57)	90 (620.52)	100 (689.46)	125 (861.83)	150 (1034.20)					
100VM4 100VM5 100VM6	Heavy Duty	Air Pressure: psi (bar)	35 (2.41)	40 (2.76)	50 (3.45)	60 (4.14)	70 (4.83)	70 (4.83)						100,000 (6894.65)	0.09 to 0.07***
		Spring Pre-Compression: in. (mm)	0.12 (3.05)	0.19 (4.83)	0.25 (6.35)	0.31 (7.87)	0.38 (9.65)	0.38 (9.65)							
		Stem Travel in (mm)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)							
150V5	Heavy Duty	Air Pressure: psi (bar)	30 (2.07)	40 (2.76)	45 (3.10)	55 (3.79)	60 (4.13)	60 (4.13)	70 (4.83)	75 (5.17)				150,000 (10341.97)	0.06
		Spring Pre-Compression: in. (mm)	0.12 (3.05)	0.19 (4.83)	0.25 (6.35)	0.31 (7.87)	0.38 (9.65)	0.38 (9.65)	0.44 (11.18)	0.56 (14.22)					
		Stem Travel in (mm)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)	0.12 (3.05)	0.06 (1.52)					

*** C_V data is for 2-way straight valves.*
For angle pattern, add approximately 50% to the C_V valve.

**** C_V varies because of spring compression limitations. The flow coefficient range is given for the maximum stem travel (lowest system pressure) to minimum travel (highest system pressure).*

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WARNING

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02-0121SE January2013

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ISO-9001 Certified

Electric Flow Control Valve

Pressures to 60,000 psi (4137 bar)

The need to remotely control process flow at high pressure makes this valve a vital component to processing operations. Parker Autoclave Engineers now has a flow control valve available in several models. Parker Autoclave Engineers' control valve utilizes our standard Micro-metering valve coupled to an electric actuator. The combination of these two precision, high quality components, provide a superior low flow control valve for use with liquids and gases.

Electric Flow Control Valve Features:

- Sizes 1/8", 1/4" and 3/8"
- C_V: 0.004
- Precise, accurate control
- Temperatures: -100°F to +600°F
- End connections: low pressure and high pressure Autoclave
- Materials: 316 SS, special materials available
- Controller Enclosure Rating: IP65 Weatherproof

Parker

Autoclave Engineers®

www.autoclave.com

Electric Flow Control Valve

Flow Control Valvs - Electric

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**
10VRMM	1/8	W125	0.062 (1.57)	0.004	15,000 (1034)
30VRMM	1/4	F250C	0.062 (1.57)	0.004	30,000 (2069)
60VRMM	1/4	F250C	0.062 (1.57)	0.004	60,000 (4137)
60VRMM	3/8	F375C	0.062 (1.57)	0.004	60,000 (4137)

Note:

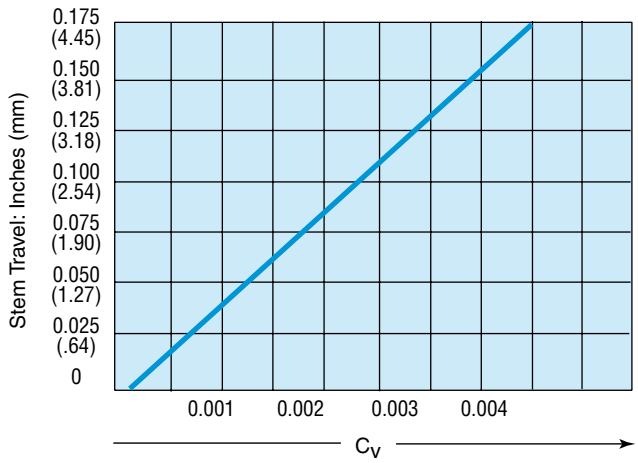
*** For complete temperature ratings see pressure/temperature rating guide in Technical Information section*

Controller Specifications

The microprocessor controlled motor guarantees optimum voltage, current and torque control when starting, running or stopping valve rotation. The microprocessor also assures accurate stem location and repeatability.

Power Requirement: 24VDC/50 Watts Min.
Control Input: 4-20 mA or 0-10 VDC
Operating Temperature: -22°F (-30°C) to 185°F (85°C)
2 foot lead cable
Anodized Aluminum Housing, IP65 (NEMA 4X) Weatherproof

Flow Coefficient (C_V)



Note: 1 turn is equal to 0.025" (0.64mm)

Ordering Information

Model	Control Input	No. Rotations	Controller RPMs	Fig.
10VRMM2812-C4	4 - 20 mA	6	10	1
10VRMM2812-C10	0 - 10 VDC	6	10	1
30VRMM4812-C4	4 - 20 mA	6	10	2
30VRMM4812-C10	0 - 10 VDC	6	10	2
60VRMM4812-C4	4 - 20 mA	6	10	2
60VRMM4812-C10	0 - 10 VDC	6	10	2
60VRMM6812-C4	4 - 20 mA	6	10	2
60VRMM6812-C10	0 - 10 VDC	6	10	2

Note: For micrometering valve details see needle valve section.

Valve Options

Extreme Temperatures
Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). Optional packing or trim material available by adding the following suffixes to catalog order number.†

TG - standard valve with PTFE glass packing to 600°F (316°C).
B - standard valve with cryogenic trim material and PTFE packing to -100°F (-73°C).

†*Parker Autoclave Engineers does not recommend compression sleeve connections below 0°F (-17.8°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative.*

See Needle Valve options for stem and seat coatings for erosive service.
Metering valve not to be used as a shutoff valve.

Valve Maintenance

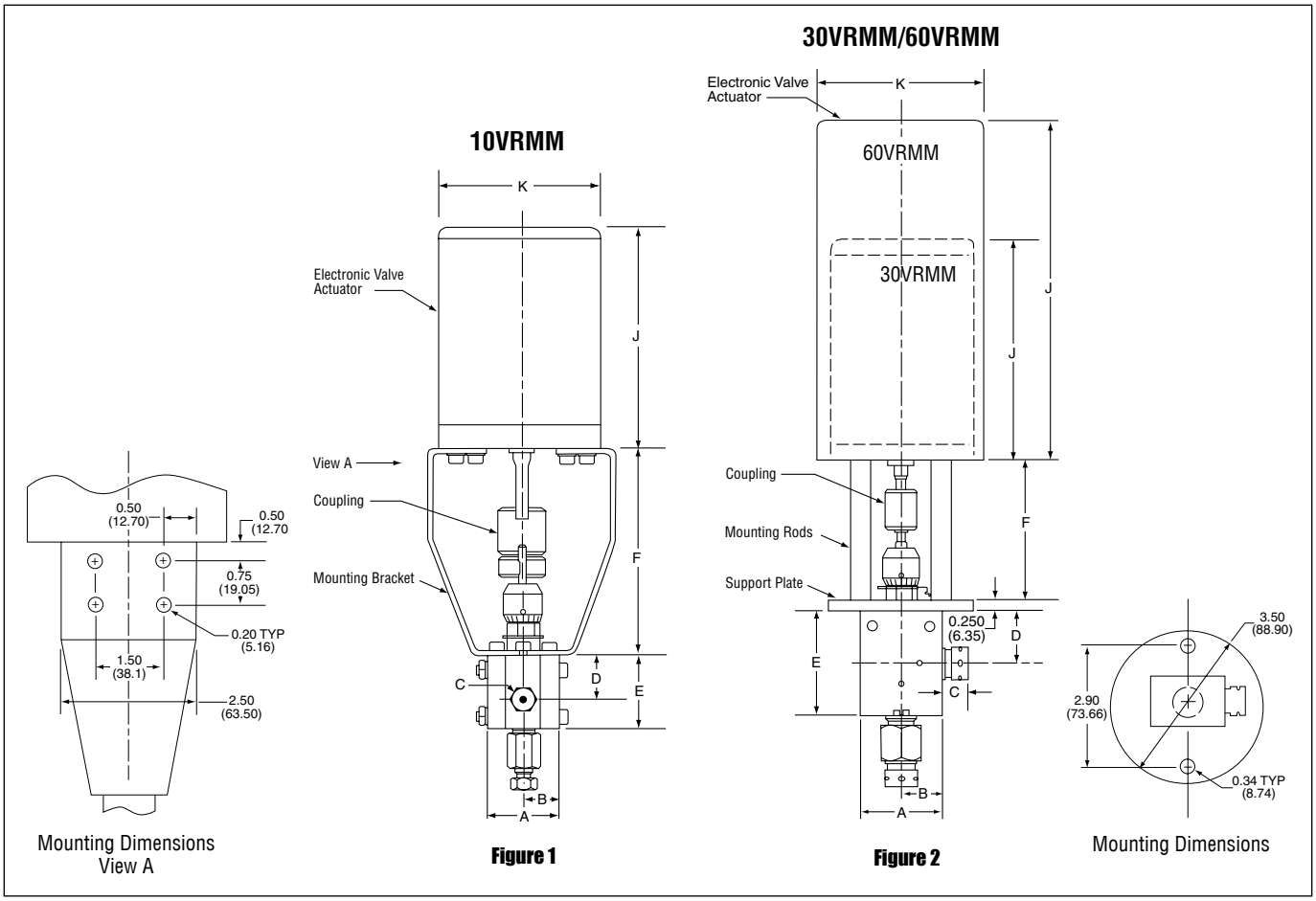
Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R60VRMM4882-C**)

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

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

Catalog Number	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	E	F	G	J	K	Block Thickness	Valve Pattern
10VRMM2812-C4	1/8	0.062	1.50	0.88	0.31	0.94	1.56	4.50	2.50	4.75	3.50	0.75	See Figure 1
10VRMM2812-C10	(3.17)	(1.57)	(38.10)	(22.35)	(7.87)	(23.87)	(39.62)	(114.30)	(63.50)	(120.65)	(88.90)	(19.05)	
30VRMM4812-C4	1/4	0.062	2.00	1.00	*0.50	1.12	2.00	3.50	3.50	4.75	3.50	1.00	See Figure 2
30VRMM4812-C10	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(28.44)	(50.80)	(88.90)	(88.90)	(120.65)	(88.90)	(25.40)	
60VRMM4812-C4	1/4	0.062	2.00	1.00	0.50	1.31	2.63	3.50	3.50	8.30	4.10	1.00	
60VRMM4812-C10	(6.35)	(1.57)	(50.80)	(25.40)	(12.70)	(33.27)	(66.80)	(88.90)	(88.90)	(210.80)	(104.14)	(25.40)	
60VRMM6812-C4	3/8	0.062	2.00	1.00	0.53	1.31	2.63	3.50	3.50	8.30	4.10	1.00	
60VRMM6812-C10	(9.53)	(1.57)	(50.80)	(25.40)	(13.46)	(33.27)	(66.80)	(88.90)	(88.90)	(210.80)	(104.14)	(25.40)	

*Distance gland extends



Mounting Dimensions View A

Figure 1

Figure 2

Mounting Dimensions

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ISO-9001 Certified

Low Pressure

Pressures to 15,000 psi (1034 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, research, and oil and gas industries.

Low Pressure Fittings and Tubing Features:

- Single-ferrule compression sleeve.
- Fast easy make-up of connection.
- Available sizes are 1/16”, 1/8”, 1/4”, 3/8”, & 1/2”.
- Fittings manufactured from cold worked 316 stainless steel.
- Tubing is manufactured from dual rated 316/316L and 304/304L annealed stainless steel.
- All items available in special materials.
- Operating temperatures from -100°F (-73°C) to 650°F (343°C).
- Molybdenum disulfide-coated gland nuts to prevent galling.

The Low Pressure Series uses Parker Autoclave Engineers' SpeedBite connection. This single-ferrule compression sleeve connection delivers fast, easy make-up and reliable bubble-tight performance, in liquid or gas service.

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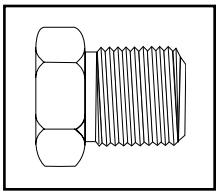
Pressures to 15,000 psi (1034 bar)

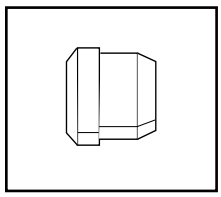
Parker Autoclave Engineers Low Pressure Fittings are designed for use with low pressure valves and tubing. These fittings feature improved SpeedBite compression connections with larger orifices for excellent flow capabilities. Parker Autoclave Engineers fittings and components are manufactured of cold-worked type 316 stainless steel. Optional materials are available upon request.

Connection Components

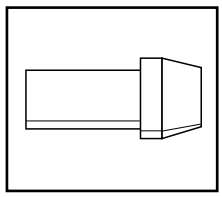
All valves and fittings are supplied complete with appropriate glands and compression sleeves. To order these components separately, use order numbers listed. When using plug, sleeve is not required.



Gland
SMN ( )



Sleeve
SSL ( )



Plug
SP ( )

Add tube size ( )
1/8" - 20
1/4" - 40
3/8" - 60
1/2" - 80

Example: 1/4" Gland - SMN 40

Note: Special material glands may be supplied with four flats in place of standard hex.

† When ordering glands separately for 10V Series 1/4" and 3/8" valves, substitute 10N for SMN.

1/16" tubing system components are available in the mini-fitting series. 1/16" tubing components can be used in 10V Series valves and fittings if required. Consult factory for information on 1/16" tubing assembly in 1/8" tubing components.

To ensure proper fit use Parker Autoclave Engineers tubing. For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

Elbow

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
SL2200	W125	1/8	15,000	0.094	1.00	1.50	0.31	0.38	0.75	0.75		0.62	
		(3.18)	**(1034.19)**	**(2.39)**	**(25.40)**	**(38.10)**	**(7.87)**	**(9.53)**	**(19.05)**	**(19.05)**		**(15.75)**	
SL4400	SW250	1/4	15,000	0.188	1.38	2.00	0.44	0.63	1.00	1.00		0.75	**See Figure 1**
		(6.35)	**(1034.19)**	**(4.78)**	**(35.05)**	**(50.80)**	**(11.18)**	**(15.88)**	**(25.40)**	**(25.40)**		**(19.05)**	
SL6600	SW375	3/8	15,000	0.250	1.38	2.00	0.53	0.75	1.00	1.00		0.75	
		(9.53)	**(1034.19)**	**(6.35)**	**(35.05)**	**(50.80)**	**(13.46)**	**(19.05)**	**(25.40)**	**(25.40)**		**(19.05)**	
SL8800	SW500	1/2	10,000	0.375	1.75	2.50	0.53	0.93	1.25	1.25		1.00	
		(12.70)	**(689.46)**	**(9.53)**	**(44.45)**	**(63.50)**	**(13.46)**	**(23.62)**	**(31.75)**	**(31.75)**		**(25.40)**	

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
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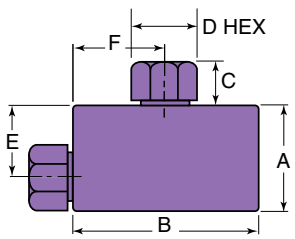
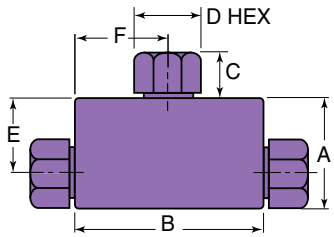
Figure 1



Elbow

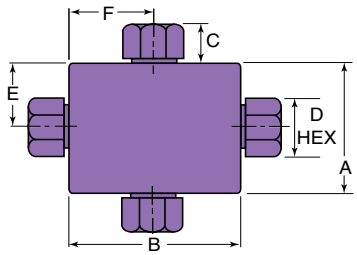
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
Tee													
ST2220	W125	1/8 (3.18)	15,000 (1034.19)	0.094 (2.39)	1.00 (25.40)	1.50 (38.10)	0.31 (7.87)	0.38 (9.53)	0.75 (19.05)	0.75 (19.05)		0.62 (15.75)	See Figure 2
ST4440	SW250	1/4 (6.35)	15,000 (1034.19)	0.188 (4.78)	1.38 (35.05)	2.00 (50.80)	0.44 (11.18)	0.63 (15.88)	1.00 (25.40)	1.00 (25.40)		0.75 (19.05)	
ST6660	SW375	3/8 (9.53)	15,000 (1034.19)	0.250 (6.35)	1.38 (35.05)	2.00 (50.80)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)	1.00 (25.40)		0.75 (19.05)	
ST8880	SW500	1/2 (12.70)	10,000 (689.46)	0.375 (9.53)	1.75 (44.45)	2.50 (63.50)	0.53 (13.46)	0.93 (23.62)	1.25 (31.75)	1.25 (31.75)		1.00 (25.40)	
Cross													
SX2222	W125	1/8 (3.18)	15,000 (1034.19)	0.094 (2.39)	1.50 (38.10)	1.50 (38.10)	0.31 (7.87)	0.38 (9.53)	0.75 (19.05)	0.75 (19.05)		0.62 (15.75)	See Figure 3
SX4444	SW250	1/4 (6.35)	15,000 (1034.19)	0.188 (4.78)	2.00 (50.80)	2.00 (50.80)	0.44 (11.18)	0.63 (15.88)	1.00 (25.40)	1.00 (25.40)		0.75 (19.05)	
SX6666	SW375	3/8 (9.53)	15,000 (1034.19)	0.250 (6.35)	2.00 (50.80)	2.00 (50.80)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)	1.00 (25.40)		0.75 (19.05)	
SX8888	SW500	1/2 (12.70)	10,000 (689.46)	0.375 (9.53)	2.50 (63.50)	2.50 (63.50)	0.53 (13.46)	0.93 (23.62)	1.25 (31.75)	1.25 (31.75)		1.00 (25.40)	
Straight Coupling													
15F2211	W125	1/8 (3.18)	15,000 (1034.19)	0.094 (2.39)	0.50 (12.70)	1.25 (31.75)	0.31 (7.87)	0.38 (9.53)					See Figure 4
6F4422	SW250	1/4 (6.35)	15,000 (1034.19)	0.188 (4.78)	0.62 (15.75)	1.62 (41.15)	0.44 (11.18)	0.63 (15.88)					
6F6622	SW375	3/8 (9.53)	15,000 (1034.19)	0.250 (6.35)	0.75 (19.05)	1.75 (44.45)	0.53 (13.46)	0.75 (19.05)					
4F8822	SW500	1/2 (12.70)	10,000 (689.46)	0.375 (9.53)	1.00 (25.40)	2.00 (50.80)	0.53 (13.46)	0.93 (23.62)					
Bulkhead Coupling													
15BF2211	W125	1/8 (3.18)	15,000 (1034.19)	0.094 (2.39)	0.690 (17.53)	1.75 (44.45)	0.31 (7.87)	0.38 (9.53)	0.38 (9.53)	0.75 (19.05)	0.38 (9.53)		See Figure 5
6BF4422	SW250	1/4 (6.35)	15,000 (1034.19)	0.188 (4.78)	0.940 (23.88)	1.88 (47.75)	0.44 (11.18)	0.63 (15.88)	0.50 (12.70)	1.00 (25.40)	0.38 (9.53)		
6BF6622	SW375	3/8 (9.53)	15,000 (1034.19)	0.250 (6.35)	0.940 (23.88)	1.88 (47.75)	0.53 (13.46)	0.75 (19.05)	0.50 (12.70)	1.00 (25.40)	0.38 (9.53)		
4BF8822	SW500	1/2 (12.70)	10,000 (689.46)	0.375 (9.53)	1.120 (28.45)	2.38 (60.45)	0.53 (13.46)	0.93 (23.62)	0.78 (19.81)	1.38 (35.05)	0.38 (9.53)		

Figure 2



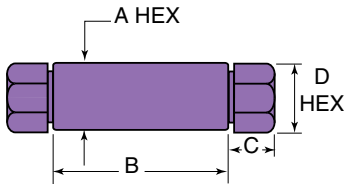
Tee

Figure 3



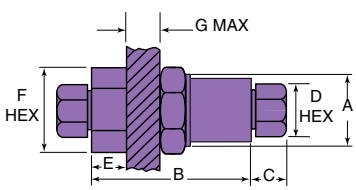
Cross

Figure 4



Straight Coupling

Figure 5



(A=Panel hole drill size)

Bulkhead Coupling

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

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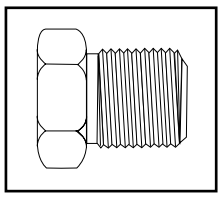
Pressure to 15,000 psi (1034 bar)

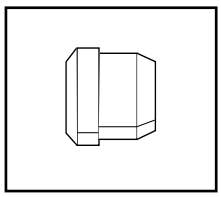
All Parker Autoclave Engineers valves and fittings are supplied complete with appropriate glands and compression sleeves. To order these components separately, use order numbers listed. When using plug, sleeve is not required.



Gland
SMN ( )

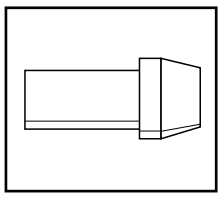
Add gland size ( ) Example: SMN - 10
- 1/16" - 10
- 1/16" - 10-10mm
- 1/8" - 20
- 1/8" - 20-10mm

Note: Gland sizes differ as folllows:
- Standard is 3/8 hex
- 10 mm is 10 millimeter hex



Sleeve
SSL ( )

Add tube size for sleeve and plug ( ) Example: 1/8" Sleeve SSL20
- 1/16" - 10
- 1/8" - 20



Plug
SP ( )

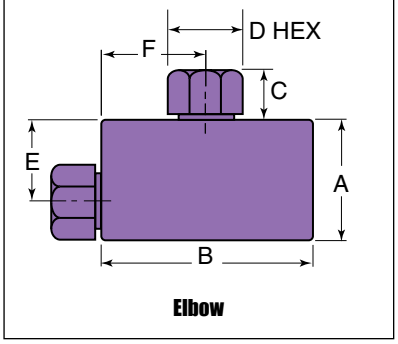
Note: Special material glands may be supplied with four flats in place of standard hex.

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F			
Elbow													
					3/8 inch hex glands (D Dimension)								
MLE1100	W062	1/16 **(1.59)**	15,000 **(1034.20)**	0.055 **(1.40)**	1.00 **(25.40)**	1.00 **(25.40)**	0.31 **(7.87)**	0.38 **(9.53)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	**See Figure 1**
MLE2200	W125	1/8 **(3.18)**	15,000 **(1034.20)**	0.093 **(2.36)**	1.00 **(25.40)**	1.00 **(25.40)**	0.31 **(7.87)**	0.38 **(9.53)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	
					10 millimeter hex glands (D Dimension)								
ML1100	W062	1/16 **(1.59)**	15,000 **(1034.20)**	0.055 **(1.40)**	1.00 **(25.40)**	1.00 **(25.40)**	0.31 **(7.87)**	0.39 **(10.00)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	
ML2200	W125	1/8 **(3.18)**	15,000 **(1034.20)**	0.093 **(2.36)**	1.00 **(25.40)**	1.00 **(25.40)**	0.31 **(7.87)**	0.39 **(10.00)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Figure 1



Elbow

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F			
Tee					**3/8 inch hex glands (D Dimension)**								
MTE1110	W062	1/16 **(1.59)**	15,000 **(1034.20)**	0.055 **(1.40)**	1.00 **(25.40)**	1.38 **(34.93)**	0.31 **(7.87)**	0.38 **(9.53)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	**See Figure 2**
MTE2220	W125	1/8 **(3.18)**	15,000 **(1034.20)**	0.093 **(2.36)**	1.00 **(25.40)**	1.38 **(34.93)**	0.31 **(7.87)**	0.38 **(9.53)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	
					10 millimeter hex glands (D Dimension)								
MT1110	W062	1/16 **(1.59)**	15,000 **(1034.20)**	0.055 **(1.40)**	1.00 **(25.40)**	1.38 **(34.93)**	0.31 **(7.87)**	0.39 **(10.00)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	
MT2220	W125	1/8 **(3.18)**	15,000 **(1034.20)**	0.093 **(2.36)**	1.00 **(25.40)**	1.38 **(34.93)**	0.31 **(7.87)**	0.39 **(10.00)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	
Cross					**3/8 inch hex glands (D Dimension)**								
MXE1111	W062	1/16 **(1.59)**	15,000 **(1034.20)**	0.055 **(1.40)**	1.38 **(34.93)**	1.38 **(34.93)**	0.31 **(7.87)**	0.38 **(9.53)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	**See Figure 3**
MXE2222	W125	1/8 **(3.18)**	15,000 **(1034.20)**	0.093 **(2.36)**	1.38 **(34.93)**	1.38 **(34.93)**	0.31 **(7.87)**	0.38 **(9.53)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	
					10 millimeter hex glands (D Dimension)								
MX1111	W062	1/16 **(1.59)**	15,000 **(1034.20)**	0.055 **(1.40)**	1.38 **(34.93)**	1.38 **(34.93)**	0.31 **(7.87)**	0.39 **(10.00)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	
MX2222	W125	1/8 **(3.18)**	15,000 **(1034.20)**	0.093 **(2.36)**	1.38 **(34.93)**	1.38 **(34.93)**	0.31 **(7.87)**	0.39 **(10.00)**	0.69 **(17.45)**	0.69 **(17.45)**		0.56 **(14.27)**	
Straight Couplings					**3/8 inch hex glands (D Dimension)**								
MCE1100	W062	1/16 **(1.59)**	15,000 **(1034.20)**	0.055 **(1.40)**	0.50 **(12.70)**	1.25 **(31.75)**	0.31 **(7.87)**	0.38 **(9.53)**					**See Figure 4**
MCE2200	W125	1/8 **(3.18)**	15,000 **(1034.20)**	0.093 **(2.36)**	0.50 **(12.70)**	1.25 **(31.75)**	0.31 **(7.87)**	0.38 **(9.53)**					
					10 millimeter hex glands (D Dimension)								
MC1100	W062	1/16 **(1.59)**	15,000 **(1034.20)**	0.055 **(1.40)**	0.50 **(12.70)**	1.25 **(31.75)**	0.31 **(7.87)**	0.39 **(10.00)**					
MC2200	W125	1/8 **(3.18)**	15,000 **(1034.20)**	0.093 **(2.36)**	0.50 **(12.70)**	1.25 **(31.75)**	0.31 **(7.87)**	0.39 **(10.00)**					

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

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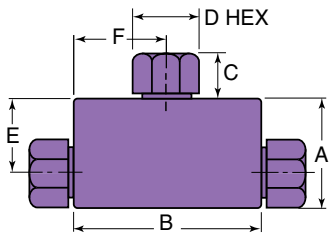
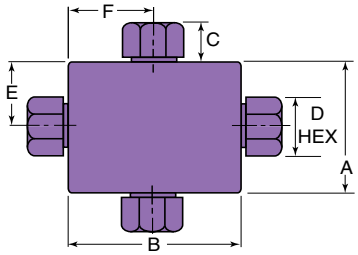
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Figure 2



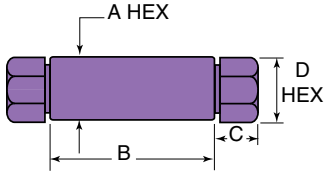
Tee

Figure 3



Cross

Figure 4



Straight Coupling

Fittings and Tubing - Low Pressure Tubing

Pressures to 15,000 psi (1034 bar)

Parker Autoclave Engineers offers a complete selection of annealed, seamless stainless steel tubing designed to match the performance standards of Parker Autoclave low pressure valves and fittings. Parker Autoclave Engineers low pressure tubing is furnished in random lengths between 20 feet (6 meters) and 26.5 feet (8.0 meters). The average is 24 feet (7.3 meters). The tubing is available in five sizes and a variety of materials. In order to ensure proper sleeve "bite" into tubing, Parker Autoclave Engineers specifies and controls the strength levels of both the tube and sleeve materials.

Inspection and Testing

Parker Autoclave Engineers low pressure tubing is inspected for compliance with specified defect restrictions as well as carburization or intergranular carbide precipitation. The tubing outside diameter and wall thickness is controlled within close tolerance to assure proper fit. Sample pieces of tube (for each lot) are tested to confirm mechanical properties for proper compression sleeve "bite" and pressure capability. Furthermore, the sample tubes are pressure tested as a final check.

Special Materials

In addition to the type 316/316L and 304/304L stainless steel tubing listed in this section, Parker Autoclave Engineers has a limited stock of hard-to-obtain shorter lengths of the following
tubing materials:

Monel 400, Inconel 600*, Titanium Grade 2*, Nickel 200*, Hastelloy C276** - (* Trademark names)

Please consult factory for stock availabilty.

Tubing Tolerance

Nominal Tubing Size inches (mm)	Tolerance/Outside Diameter inches (mm)
1/16 (1.59)	.064/.062 (1.62/1.57)
1/8 (3.18)	.128/.125 (3.25/3.18)
1/4 (6.35)	.254/.250 (6.45/6.35)
3/8 (9.53)	.379/.375 (9.74/9.53)
1/2 (12.70)	.505/.500 (12.83/12.70)

Catalog Number	Tube Materials	Fits Connection Type	Tube Size Inches (mm)			Flow Area in.² (mm²)	Working Pressure psi (bar)*				
			Outside Diameter	Inside Diameter	Wall Thickness		0 - 100°F -17.8 to 37.8°C	200°F 93°C	400°F 204°C	600°F 316°C	650°F 343°C
MS15-070	316SS	W062	1/16 **(1.59)**	0.026 **(0.66)**	0.018 **(0.46)**	0.0005 **(0.32)**	15,000 **(1034.20)**	15,000 **(1034.20)**	14,400 **(992.83)**	13,600 **(937.67)**	12,600 **(868.73)**
MS15-200	316SS	W125	1/8 **(3.18)**	0.052 **(1.32)**	0.036 **(0.91)**	0.002 **(1.29)**	15,000 **(1034.20)**	15,000 **(1034.20)**	14,400 **(992.83)**	13,600 **(937.67)**	12,600 **(868.73)**
MS15-166†	304SS			0.069 **(1.75)**	0.028 **(0.71)**	0.004 **(2.58)**	9,950 **(686.02)**	9,400 **(648.10)**	8,550 **(589.49)**	8,450 **(582.60)**	8,000 **(551.57)**
MS15-203	316SS	W250 or SW250	1/4 **(6.35)**	0.084 **(2.13)**	0.083 **(2.11)**	0.029 **(18.71)**	15,000 **(1034.16)**	15,000 **(1034.16)**	14,400 **(992.83)**	13,600 **(937.67)**	12,600 **(868.73)**
MS15-055	316SS			0.125 **(3.18)**	0.062 **(1.57)**	0.012 **(7.74)**	11,650 **(803.23)**	11,650 **(761.86)**	11,250 **(775.65)**	10,600 **(730.83)**	9,850 **(679.12)**
MS15-161†	304SS			0.180 **(4.57)**	0.035 **(0.89)**	0.026 **(16.77)**	5,450 **(375.76)**	5,150 **(355.07)**	4,700 **(324.05)**	4,600 **(317.15)**	4,400 **(303.36)**
MS15-069	316SS			0.180 **(4.57)**	0.035 **(0.89)**	0.026 **(16.77)**	5,450 **(375.76)**	5,450 **(375.76)**	5,250 **(361.97)**	4,950 **(341.29)**	4,600 **(317.15)**
MS15-158†	304SS			0.194 **(4.93)**	0.028 **(0.71)**	0.029 **(18.71)**	4,600 **(317.15)**	4,350 **(299.92)**	3,950 **(272.34)**	3,900 **(272.34)**	3,700 **(255.10)**
MS15-204	316SS	W375 or SW375	3/8 **(9.53)**	0.139 **(3.53)**	0.118 **(3.00)**	0.015 **(9.79)**	15,000 **(1034.16)**	15,000 **(1034.16)**	14,400 **(992.83)**	13,600 **(937.67)**	12,600 **(868.73)**
MS15-184	304SS			0.195 **(4.95)**	0.090 **(2.29)**	0.030 **(19.35)**	10,000 **(689.46)**	9,400 **(648.10)**	8,600 **(592.94)**	8,500 **(586.05)**	8,450 **(582.60)**
MS15-084	316SS			0.195 **(4.95)**	0.090 **(2.29)**	0.030 **(19.35)**	10,000 **(689.46)**	10,000 **(689.46)**	9,650 **(665.33)**	9,000 **(620.52)**	8,400 **(579.15)**
MS15-155†	304SS			0.250 **(6.35)**	0.062 **(1.57)**	0.049 **(31.61)**	7,500 **(517.10)**	7,100 **(489.52)**	6,450 **(444.70)**	6,350 **(437.81)**	6,050 **(417.13)**

Catalog Number	Tube Materials	Fits Connection Type	Tube Size Inches (mm) Outside Diameter	Inside Diameter	Wall Thickness	Flow Area in.² (mm²)	Working Pressure psi (bar)* 0 - 100°F -17.8 to - 37.8°C	200°F 93°C	400°F 204°C	600°F 316°C	650°F 343°C
MS15-062	316SS	W375 or SW375	3/8 **(9.53)**	0.250 **(6.35)**	0.062 **(1.57)**	0.049 **(31.61)**	7,500 **(517.10)**	7,500 **(517.10)**	7,200 **(496.41)**	6,800 **(468.84)**	6,300 **(434.36)**
MS15-162†	304SS			0.305 **(7.75)**	0.035 **(0.89)**	0.073 **(47.10)**	3,800 **(262.00)**	3,550 **(244.76)**	3,250 **(224.08)**	3,200 **(220.63)**	3,050 **(210.29)**
MS15-205	316SS	W500 or SW500	1/2 **(12.70)**	0.270 **(6.86)**	0.118 **(3.00)**	0.055 **(35.48)**	10,000 **(689.46)**	10,000 **(689.46)**	9,650 **(665.33)**	9,000 **(620.52)**	8,400 **(579.15)**
MS15-208†	304SS			0.270 **(6.86)**	0.118 **(3.00)**	0.055 **(35.48)**	10,000 **(689.46)**	9,400 **(648.10)**	8,600 **(592.94)**	8,500 **(586.05)**	8,450 **(582.60**
MS15-065	316SS			0.375 **(9.53)**	0.062 **(1.57)**	0.110 **(70.97)**	5,500 **(379.21)**	5,500 **(379.21)**	5,250 **(361.97)**	4,950 **(341.29)**	4,600 **(317.15)**
MS15-165†	304SS			0.402 **(10.21)**	0.048 **(1.22)**	0.127 **(81.94)**	4,000 **(275.79)**	3,750 **(258.55)**	3,400 **(234.42)**	3,400 **(234.42)**	3,200 **(220.63)**

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

†Items are being discontinued. Contact the factory for available stock

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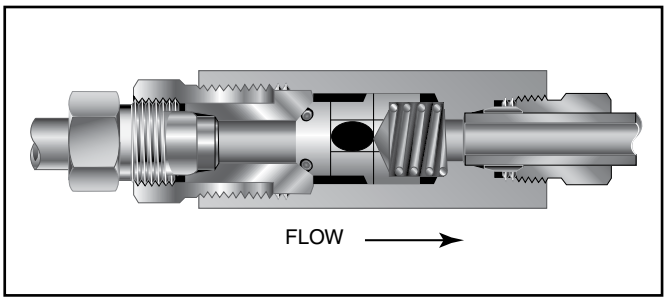
Consult your local representative.

Fittings and Tubing - Low Pressure Check Valves

Pressures to 15,000 psi (1034 bar)

O-Ring Check Valves



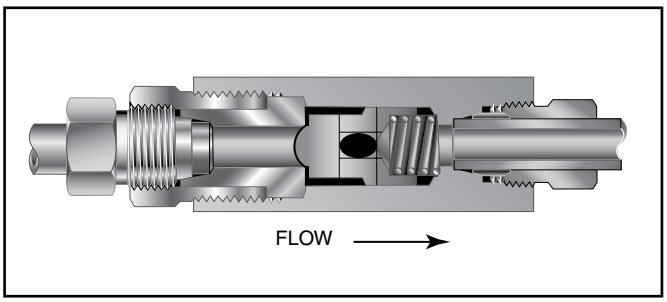
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C).
For low temperature option to -100°F (-73°C) add suffix LTTO (Low temperature spring & PTFE o-ring).

Provide unidirectional flow and tight shut-off for liquids and gases with high reliability. When differential drops below cracking pressure*, valve shuts off. **(Not for use as relief valve.)**

Materials: 316 Stainless Steel: body, cover, poppet and cover gland. 300 Series Stainless Steel: spring
Standard O-ring: Viton, for operation to 400° F (204°C). Buna-N or PTFE available for 250°F (121°C) or 400°F (204°C) respectively; specify when ordering.

***Cracking Pressure:** 20 psi (1.38 bar) ±30%. Springs for higher cracking pressures (up to 100 psi (6.89bar)) available on special order for O-ring style check valves only.

Ball Check Valves



Minimum operating temperature for standard ball check valves 0°F (-17.8°C).
For low temperature option to -100°F (-73°C) add suffix LT (Low temperature spring).

Prevent reverse flow where leak-tight shut-off is not mandatory. When differential drops below cracking pressure, valve closes. With all-metal components, valve can be used up to 650°F (343°C). See Technical Information section for connection temperature limitations. **(Not for use as a relief valve.)**

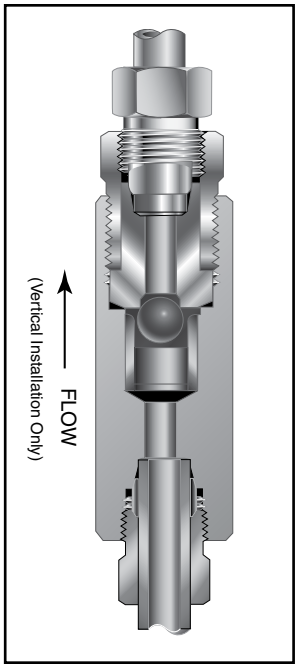
Ball and poppet are an integral design to assure positive, in-line seating without "chatter". Poppet is designed essentially for axial flow with minimum pressure drop.

Materials: 316 Stainless Steel: body, cover, cover gland, ball poppet. 300 Series Stainless Steel: spring

***CAUTION:** While testing has shown O-Rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

***CAUTION:** See Tubing section for proper selection of tubing.*
***NOTE:** For optional material see Needle Valve Options section.*

Ball Type Excess Flow Valves



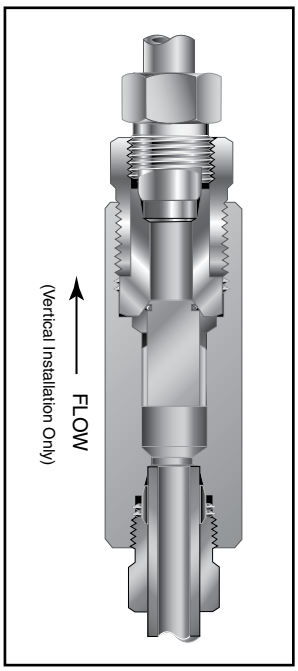
Protects pressure gauges and pressure instrumentation from sudden surges in flow or venting in the event of line failure.

Materials: 316 Stainless Steel: body, cover, gland nut and sleeve. 300 Series Stainless Steel: ball

Vertical Installation: Since this type of check valve employs a non-spring loaded ball, valve MUST be installed in VERTICAL position with arrow on valve body pointing UP. (cover gland up).

Resetting Valve: Equalize the pressure across the ball. The ball will drop and reset automatically.

O-Ring Type Excess Flow Valves



Protects pressure gauges and other pressure instrumentation from sudden surges in flow due to operator error or line failure. This valve provides dependable, tight shut-off.

Materials: 316 Stainless Steel: body, cover and sleeve. O-Ring: Viton for operation to 400°F (204°C). Buna-N or PTFE available for 250°F (121°C) or 400°F (204°C) respectively; specify when ordering.

Vertical Installation: Since this type of check valve employs a non-spring loaded poppet, valve MUST be installed in VERTICAL position with arrow on valve body pointing UP. (cover gland up).

Resetting Valve: Equalize the pressure across the poppet. The poppet will drop and reset automatically.

CAUTION: *While testing has shown O-Rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

CAUTION: *See Tubing section for proper selection of tubing.*
NOTE: *For optional material see Needle Valve Options section.*

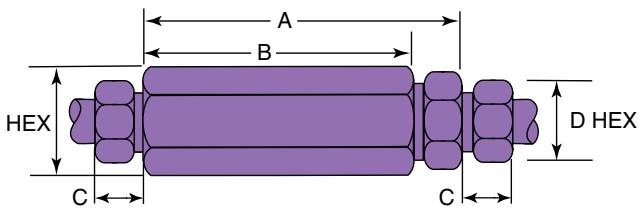
Catalog Number	Fits Connection Type	Pressure Rating psi (bar)*	Orifice inches (mm)	Rated C_V	Dimensions - inches (mm)				
					A	B	C	D Typical	Hex
O-Ring Check Valves									
SW02200	W125	15,000 (1034.19)	0.094 (2.39)	0.15	2.25 (57.15)	1.88 (47.75)	0.31 (7.87)	0.50 (12.70)	0.63 (15.88)
SW04400	SW250	15,000 (1034.19)	0.188 (4.78)	0.63	3.18 (80.77)	2.56 (65.02)	0.44 (11.18)	0.63 (16.00)	0.81 (20.57)
SW06600	SW375	15,000 (1034.19)	0.250 (6.35)	1.70	3.56 (90.42)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)
SW08800	SW500	10,000 (689.46)	0.375 (9.53)	3.40	4.18 (106.17)	3.50 (88.90)	0.53 (13.46)	0.93 (23.62)	1.38 (35.05)
Ball Check Valves									
SWB2200	W125	15,000 (1034.19)	0.094 (2.39)	0.15	2.25 (57.15)	1.88 (47.75)	0.31 (7.87)	0.50 (12.70)	0.63 (15.88)
SWB4400	SW250	15,000 (1034.19)	0.188 (4.78)	0.63	3.18 (80.77)	2.56 (65.02)	0.44 (11.18)	0.63 (16.00)	0.81 (20.57)
SWB6600	SW375	15,000 (1034.19)	0.250 (6.35)	1.70	3.56 (90.42)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)
SWB8800	SW500	10,000 (689.46)	0.375 (9.53)	3.40	4.18 (106.17)	3.50 (88.90)	0.53 (13.46)	0.93 (23.62)	1.38 (35.05)
Ball Type Excess Flow Valves									
SWK2202	W125	15,000 (1034.19)	0.094 (2.39)	0.012†	2.25 (57.15)	1.88 (47.75)	0.31 (7.87)	0.50 (12.70)	0.63 (15.88)
SWK4402	SW250	15,000 (1034.19)	0.188 (4.78)	0.037†	3.18 (80.77)	2.56 (65.02)	0.44 (11.18)	0.63 (16.00)	0.81 (20.57)
SWK6602	SW375	15,000 (1034.19)	0.250 (6.35)	0.104†	3.56 (90.42)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)
SWK8802	SW500	10,000 (689.46)	0.375 (9.53)	0.212†	4.18 (106.17)	3.50 (88.90)	0.53 (13.46)	0.93 (23.62)	1.38 (35.05)
O-Ring Type Excess Flow Valves									
SWK04400	SW-250	15,000 (1034.19)	0.188 (4.78)	3††	3.12 (79.25)	2.56 (65.02)	0.44 (11.18)	0.63 (16.00)	0.81 (20.57)
SWK06600	SW-375	15,000 (1034.19)	0.250 (6.35)	5††	3.50 (88.90)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)
SWK08800	SW-500	10,000 (689.46)	0.375 (9.53)	10††	4.31 (109.47)	3.50 (88.90)	0.53 (13.46)	0.93 (23.62)	1.38 (35.05)

Note:
All check valves are furnished complete with connection components unless otherwise specified.
The 1/16" Tubing System is a complete system for use with all 1/8" components for pressure to 15,000 psi (1034 bar). Consult factory.
† - Check Flow** - water, GPM
†† - Check Flow** - CFM, nitrogen @ 500 psi (34.47 bar), RT
** - For flow using alternate fluids, consult Parker Autoclave Engineers.

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

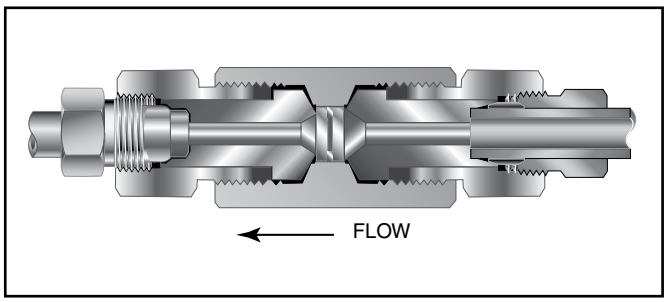
All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave stocks select products. Consult your local representative.

Figure 1



Pressures to 15,000 psi (1034 bar)

Dual-Disc Line Filters

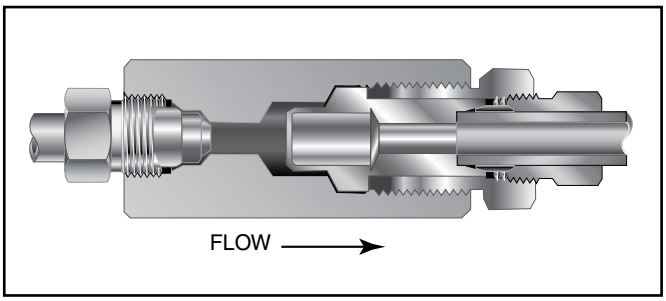


Dual-Disc Line Filters are utilized in numerous industrial, chemical processing, aerospace, nuclear and other applications. With the dual-disc design, large contaminant particles are trapped by the upstream filter element before they can reach and clog the smaller micron-size downstream element. Filter elements can be easily replaced.

Materials: 316 Stainless Steel: Body, covers and gland nuts. Filters: 316L Stainless Steel.

Filter Elements: Downstream/upstream micron size 35/65 is standard. 5/10 or 10/35 also available when specified. Other element combinations available on special order.

Cup-Type Line Filters



High Flow Cup-Type Line Filters are recommended in low pressure systems requiring both high flow rates and maximum filter surface area. Widely used in the industrial and chemical processing fields, the cup design offers as much as six times the effective filter area as compared to disc-type units. In addition, the filter elements can be quickly and easily replaced.

Materials: 316 Stainless Steel: Body, covers and gland nuts. Filter: 316L Stainless Steel.

Filter Elements: 300 Series Stainless Steel sintered cup. Standard elements available in choice of 5, 35 or 65 micron sizes. ***Note:*** *Filter ratings are nominal.*

NOTE 1: *All filters furnished complete with connection components unless otherwise specified. All dimensions for reference only and subject to change. For optional materials, see Needle Valve Options section*

NOTE 2: *Parker Autoclave Engineers disc and cup type filters are designed to filter small amounts of process particles. It is recommended that all fluids are thoroughly cleaned prior to entering the higher pressure system.*

NOTE 3: *Special material filters may be supplied with four flats in place of standard hex.*

NOTE 4: *Pressure differential not to exceed 1,000 psi (69 bar) in a flowing condition.*

NOTE 5: *Larger micron size filter element is installed on the upstream (inlet) side.*

Low Pressure Line Filters

Catalog Number	Pressure Rating psi (bar)*	Orifice inches (mm)	Micron Size**	Connection Size and Type	Effective Filter Element Area in.^{2} (mm^2)	Dimensions - inches (mm)				
						A	B	C	D Typical	Hex

Dual-Disc Line Filters

SLF2200 SLF2200-5/10 SLF2200-10/35	15,000 (1034.19)	.094 **(2.39)**	35/65 5/10 10/35	W125	.06 **(38.70)**	2.31 **(58.67)**	1.25 **(31.75)**	0.31 **(7.87)**	.50 **(12.70)**	0.62 **(15.74)**
SLF4400 SLF4400-5/10 SLF4400-10/35	15,000 (1034.19)	.125 **(3.18)**	35/65 5/10 10/35	SW250	.15 **(96.77)**	2.94 **(75.56)**	1.68 **(42.67)**	0.44 **(11.17)**	.63 **(15.88)**	0.81 **(20.57)**
SLF6600 SLF6600-5/10 SLF6600-10/35	15,000 (1034.19)	.125 **(3.18)**	35/65 5/10 10/35	SW375	.15 **(96.77)**	2.94 **(75.56)**	1.68 **(42.67)**	0.53 **(13.46)**	.75 **(19.05)**	1.00 **(25.40)**
SLF8800 SLF8800-5/10 SLF8800-10/35	10,000 (689.46)	.188 **(4.78)**	35/65 5/10 10/35	SW500	.25 **(161.29)**	3.56 **(90.42)**	1.94 **(49.27)**	0.53 **(13.46)**	.93 **(23.62)**	1.18 **(29.97)**

Cup-Type Line Filters

SWF4-5 SWF4-35 SWF4-65	15,000 (1034.19)	.188 **(4.78)**	5 35 65	SW250	0.81 **(522.57)**	3.18 **(80.77)**	2.56 **(65.02)**	0.44 **(11.17)**	0.63 **(15.88)**	0.81 **(20.57)**
SWF6-5 SWF6-35 SWF6-65	15,000 (1034.19)	.312 **(7.92)**	5 35 65	SW375	0.81 **(522.57)**	3.56 **(90.42)**	3.00 **(76.20)**	0.53 **(13.46)**	0.75 **(19.05)**	1.00 **(25.40)**
SWF8-5 SWF8-35 SWF8-65	10,000 (689.46)	.438 **(11.13)**	5 35 65	SW500	1.53 **(987.09)**	4.18 **(106.17)**	3.50 **(88.90)**	0.53 **(13.46)**	.93 **(23.62)**	1.38 **(35.05)**

** Larger micron size filter element is installed on upstream (inlet) side. All filters furnished complete with connection components unless otherwise specified.

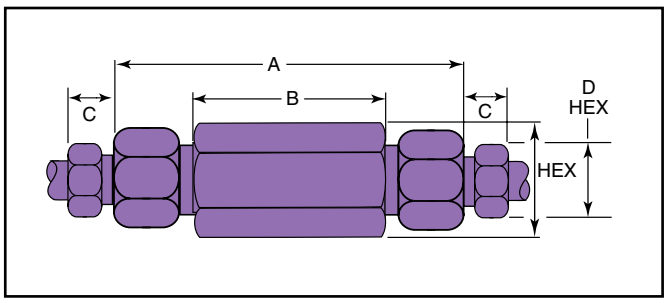
Other micron sizes available on special order. Change last digits of the catalog number accordingly. For optional materials, see Needle Valve Options section.

The 1/16" Tubing System is a complete system for use with all 1/8" components for pressure to 15,000 psi (1034 bar). Consult factory.

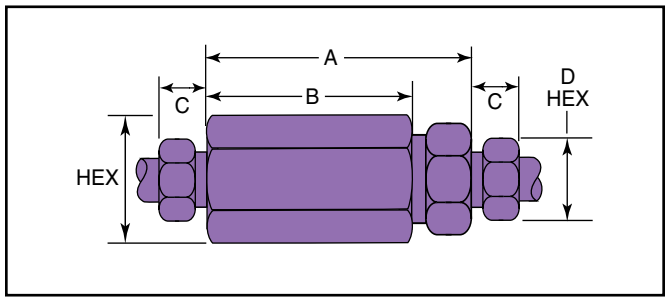
*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Dual-Disc Line Filters



Cup-Type Line Filters



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.

Offer of Sale

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).

02-0123SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Medium Pressure

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, research, and oil and gas industries.

Medium Pressure Fittings, Tubing and Nipples Features:

- Coned-and-Threaded Connection.
- Available sizes are 1/4", 3/8", 9/16", 3/4", 1" and 1-1/2".
- Fittings manufactured from cold worked 316 stainless steel.
- Tubing is manufactured from dual rated 316/316L and 304/304L cold worked stainless steel.
- Operating Temperatures from -423°F (-252°C) to 1200°F (649°C).
- Anti-vibration connection components available.
- All items available in special material.

The medium pressure series uses Parker Autoclave Engineers medium pressure connection. This coned-and-threaded connection features orifice sizes to match the high flow characteristics of this series.

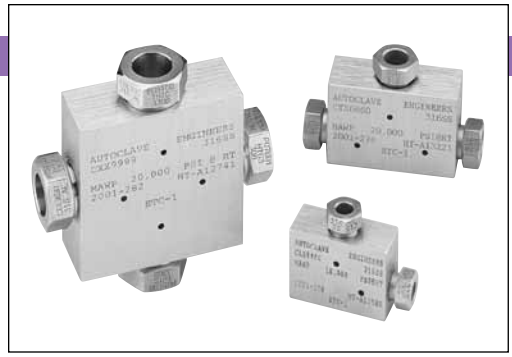
Parker

Autoclave Engineers

www.autoclave.com

Medium Pressure Fittings

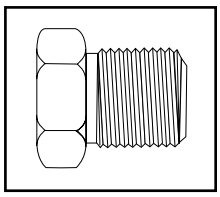
Pressures to 20,000 psi (1379 bar)



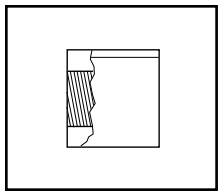
Parker Autoclave Engineers medium pressure fittings, Series SF, are designed for use with Series 20SM medium pressure valves and Parker Autoclave Engineers' medium pressure tubing. They incorporate medium pressure coned-and-threaded connections with orifices sized to match the high-flow Series 20SC valves.

Connection Components

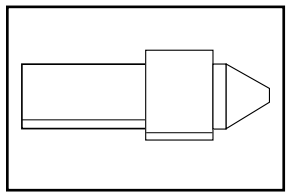
All Parker Autoclave valves and fittings are supplied complete with appropriate glands and collars. To order these components separately, use order numbers listed. When using plug, collar is not required.



Gland
CGLX ( )



Collar
CCLX ( )



Plug
CPX ( )

Add tube size ( )
1/4" - 40
3/8" - 60
9/16" - 90
3/4" - 120
1" - 160
1-1/2" - 240

Example:
1/4" Gland - CGLX 40

To ensure proper fit use Parker Autoclave Engineers tubing.

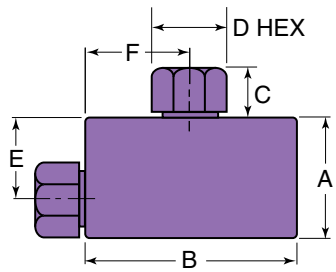
Note: Special material glands may be supplied with four flats in place of standard hex.

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
Elbow													
CLX4400	SF250CX	1/4 **(6.35)**	20,000 **(1378.93)**	0.125 **(3.18)**	1.12 **(28.45)**	1.50 **(38.10)**	0.38 **(9.53)**	0.50 **(12.70)**	0.75 **(19.05)**	0.75 **(19.05)**		0.62 **(15.75)**	**See Figure 1**
CLX6600	SF375CX	3/8 **(9.53)**	20,000 **(1378.93)**	0.219 **(5.56)**	1.38 **(35.05)**	2.00 **(50.80)**	0.44 **(11.10)**	0.62 **(15.75)**	1.00 **(25.40)**	1.00 **(25.40)**		0.75 **(19.05)**	
CLX9900	SF562CX	9/16 **(14.29)**	20,000 **(1378.93)**	0.359 **(9.12)**	1.75 **(44.45)**	2.50 **(63.50)**	0.53 **(13.46)**	0.94 **(23.88)**	1.25 **(31.75)**	1.25 **(31.75)**		1.00 **(25.40)**	
CLX12	SF750CX	3/4 **(19.05)**	20,000 **(1378.93)**	0.516 **(13.11)**	2.25 **(57.15)**	3.00 **(76.20)**	0.62 **(15.75)**	1.19 **(30.23)**	1.50 **(38.10)**	1.50 **(38.10)**		1.38 **(34.93)**	
CLX16	SF1000CX	1 **(25.40)**	20,000 **(1378.93)**	0.688 **(17.48)**	3.00 **(76.20)**	4.12 **(104.65)**	0.72 **(18.29)**	1.38 **(35.05)**	2.06 **(52.32)**	2.06 **(52.32)**		1.75 **(44.45)**	
CLX24	SF1500CX	1-1/2 **(38.10)**	15,000 **(1034.20)**	0.94 **(23.80)**	4.00 **(101.60)**	5.75 **(146.05)**	1.12 **(28.45)**	1.88 **(47.63)**	2.88 **(73.03)**	2.88 **(73.03)**		2.25 **(57.15)**	

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Figure 1



Elbow

For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

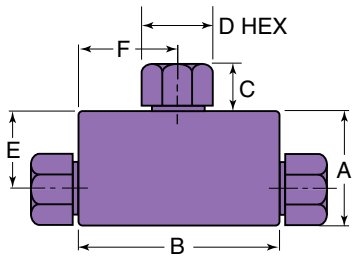
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
Tee													
CTX4440	SF250CX	1/4 **(6.35)**	20,000 **(1378.93)**	0.125 **(3.18)**	1.12 **(28.45)**	1.50 **(38.10)**	0.38 **(9.53)**	0.50 **(12.70)**	0.75 **(19.05)**	0.75 **(19.05)**		0.62 **(15.75)**	**See Figure 2**
CTX6660	SF375CX	3/8 **(9.53)**	20,000 **(1378.93)**	0.219 **(5.56)**	1.38 **(35.05)**	2.00 **(50.80)**	0.44 **(11.10)**	0.62 **(15.75)**	1.00 **(25.40)**	1.00 **(25.40)**		0.75 **(19.05)**	
CTX9990	SF562CX	9/16 **(14.29)**	20,000 **(1378.93)**	0.359 **(9.12)**	1.75 **(44.45)**	2.50 **(63.50)**	0.53 **(13.46)**	0.94 **(23.88)**	1.25 **(31.75)**	1.25 **(31.75)**		1.00 **(25.40)**	
CTX12	SF750CX	3/4 **(19.05)**	20,000 **(1378.93)**	0.516 **(13.11)**	2.25 **(57.15)**	3.00 **(76.20)**	0.62 **(15.75)**	1.19 **(30.23)**	1.50 **(38.10)**	1.50 **(38.10)**		1.38 **(34.93)**	
CTX16	SF1000CX	1 **(25.40)**	20,000 **(1378.93)**	0.688 **(17.48)**	3.00 **(76.20)**	4.12 **(104.65)**	0.72 **(18.29)**	1.38 **(35.05)**	2.06 **(52.32)**	2.06 **(52.32)**		1.75 **(44.45)**	
CTX24	SF1500CX	1-1/2 **(38.10)**	15,000 **(1034.20)**	0.94 **(23.80)**	4.00 **(101.60)**	5.75 **(146.05)**	1.12 **(28.45)**	1.88 **(47.63)**	2.88 **(73.03)**	2.88 **(73.03)**		2.25 **(57.15)**	
Cross													
CXX4444	SF250CX	1/4 **(6.35)**	20,000 **(1378.93)**	0.125 **(3.18)**	1.50 **(38.10)**	1.50 **(38.10)**	0.38 **(9.53)**	0.50 **(12.70)**	0.75 **(19.05)**	0.75 **(19.05)**		0.62 **(15.75)**	**See Figure 3**
CXX6666	SF375CX	3/8 **(9.53)**	20,000 **(1378.93)**	0.219 **(5.56)**	2.00 **(50.80)**	2.00 **(50.80)**	0.44 **(11.10)**	0.62 **(15.75)**	1.00 **(25.40)**	1.00 **(25.40)**		0.75 **(19.05)**	
CXX9999	SF562CX	9/16 **(14.29)**	20,000 **(1378.93)**	0.359 **(9.12)**	2.50 **(63.50)**	2.50 **(63.50)**	0.53 **(13.46)**	0.94 **(23.88)**	1.25 **(31.75)**	1.25 **(31.75)**		1.00 **(25.40)**	
CXX12	SF750CX	3/4 **(19.05)**	20,000 **(1378.93)**	0.516 **(13.11)**	3.00 **(76.20)**	3.00 **(76.20)**	0.62 **(15.75)**	1.19 **(30.23)**	1.50 **(38.10)**	1.50 **(38.10)**		1.38 **(34.93)**	
CXX16	SF1000CX	1 **(25.40)**	20,000 **(1378.93)**	0.688 **(17.48)**	4.12 **(104.65)**	4.12 **(104.65)**	0.72 **(18.29)**	1.38 **(35.05)**	2.06 **(52.32)**	2.06 **(52.32)**		1.75 **(44.45)**	
CXX24	SF1500CX	1-1/2 **(38.10)**	15,000 **(1034.20)**	0.94 **(23.80)**	5.75 **(146.05)**	5.75 **(146.05)**	1.12 **(28.45)**	1.88 **(47.63)**	2.88 **(73.03)**	2.88 **(73.03)**		2.25 **(57.15)**	

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

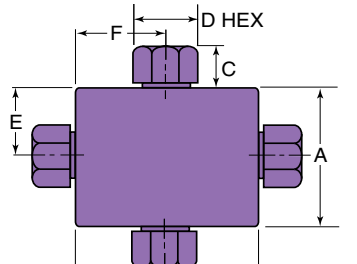
For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

Figure 2



Tee

Figure 3



Cross

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		

Straight Coupling / Union Coupling

20FX4466	SF250CX	1/4	20,000	0.125	0.62	1.62	0.38	0.50	Straight	See Figure 4
20UFX4466		**(6.35)**	**(1378.93)**	**(3.18)**	**(15.75)**	**(41.15)**	**(9.53)**	**(12.70)**	Union	
20FX6666	SF375CX	3/8	20,000	0.219	0.75	1.75	0.44	0.62	Straight	
20UFX6666		**(9.53)**	**(1378.93)**	**(5.56)**	**(19.05)**	**(44.45)**	**(11.10)**	**(15.75)**	Union	
20FX9966	SF562CX	9/16	20,000	0.359	1.00	2.12	0.53	0.94	Straight	
20UFX9966		**(14.29)**	**(1378.93)**	**(9.12)**	**(25.40)**	**(53.85)**	**(13.46)**	**(23.88)**	Union	
20FX12	SF750CX	3/4	20,000	0.516	1.38	2.50	0.62	1.19	Straight	
20UFX12		**(19.05)**	**(1378.93)**	**(13.11)**	**(35.05)**	**(63.50)**	**(15.75)**	**(30.23)**	Union	
20FX16	SF1000CX	1	20,000	0.688	1.75	3.50	0.72	1.38	Straight	
20UFX16		**(25.40)**	**(1378.93)**	**(17.48)**	**(44.45)**	**(88.90)**	**(18.29)**	**(35.05)**	Union	
15FX24	SF1500CX	1-1/2	15,000	0.94	2.25	5.00	1.12	1.88	Straight	
15UFX24		**(38.10)**	**(1034.20)**	**(23.80)**	**(25.15)**	**(127.00)**	**(28.45)**	**(47.63)**	Union	

Bulkhead Coupling

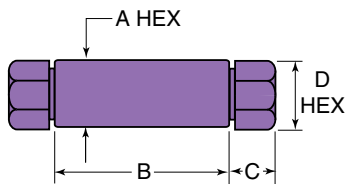
20BFX4466	SF250CX	1/4	20,000	0.125	0.81	1.88	0.38	0.50	0.53	1.00	0.38		See Figure 5
		(6.35)	**(1378.93)**	**(3.18)**	**(20.57)**	**(47.75)**	**(9.53)**	**(12.70)**	**(13.46)**	**(25.40)**	**(9.53)**		
20BFX6666	SF375CX	3/8	20,000	0.219	0.94	2.00	0.44	0.62	0.62	1.00	0.38		
		(9.53)	**(1378.93)**	**(5.56)**	**(23.88)**	**(50.80)**	**(11.10)**	**(15.75)**	**(15.75)**	**(25.40)**	**(9.53)**		
20BFX9966	SF562CX	9/16	20,000	0.359	1.12	2.38	0.53	0.94	0.78	1.38	0.38		
		(14.29)	**(1378.93)**	**(9.12)**	**(28.45)**	**(60.45)**	**(13.46)**	**(23.88)**	**(19.81)**	**(35.05)**	**(9.53)**		
20BFX12	SF750CX	3/4	20,000	0.516	1.69	2.62	0.62	1.19	0.91	1.88	0.38		
		(19.05)	**(1378.93)**	**(13.11)**	**(42.93)**	**(66.55)**	**(15.75)**	**(30.23)**	**(23.11)**	**(47.75)**	**(9.53)**		
20BFX16	SF1000CX	1	20,000	0.688	1.94	3.50	0.72	1.38	1.50	1.88+	0.38		
		(25.40)	**(1378.93)**	**(17.48)**	**(49.28)**	**(88.90)**	**(18.29)**	**(35.05)**	**(38.10)**	**(47.75)**	**(9.53)**		
15BFX24	SF1500CX	1-1/2	15,000	0.94	2.44	5.00	1.12	1.88	2.00	2.50+	0.38		
		(38.10)	**(1034.20)**	**(23.80)**	**(61.85)**	**(127.00)**	**(28.45)**	**(47.63)**	**(50.80)**	**(63.50)**	**(9.53)**		

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.
+ distance across flats

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

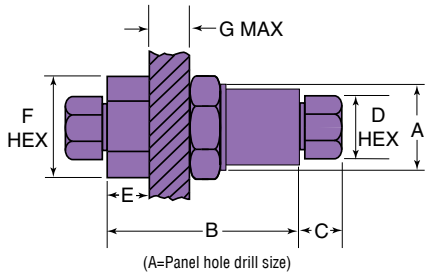
Union Couplings are designed with a removable seat insert allowing disassembly and tubing removal without the necessity of loosening other items in a line.

Figure 4



Straight Coupling / Union Coupling

Figure 5



(A=Panel hole drill size)

Bulkhead Coupling

Medium Pressure Tubing

Pressures to 20,000 psi (1379 bar)

Parker Autoclave Engineers offers a complete selection of austenetic, cold drawn stainless steel tubing designed to match the performance standards of Parker Autoclave valves and fittings. Parker Autoclave Engineers medium pressure tubing is manufactured specifically for high pressure applications requiring both strength and corrosion resistance. The tubing is furnished in random lengths between 20 feet (6 meters) and 26.5 feet (8.0 meters). The average is 24 feet (7.3 meters). Medium Pressure Tubing is available in six sizes and a variety of materials.

Inspection and Testing

Parker Autoclave Engineers' medium pressure tubing is inspected to assure freedom from seams, laps, fissures or other flaws, as well as carburization or intergranular carbide precipitation. The outside and inside diameters of the tubing are subject to special inspection and are controlled within close tolerences to assure proper fit. Sample pieces of tube for each lot are tested to confirm mechanical properties. Hydrostatic testing is also performed on a statistical basis and is conducted at the working pressure of the tube. Parker Autoclave will perform 100% hydrostatic testing at additional cost if desired.

Special Materials

In addition to the type 316/316L and 304/304L stainless steel tubing listed in this section, Autoclave has limited stock of hard-to-obtain special tubing materials:

Monel 400, Inconel 600*, Inconel 625*, Duplex, Super Duplex, Titanium Grade 2*, Nickel 200*, Hastelloy C276** (*Trademark names) Some are available in shorter lengths only. Please consult factory for stock availability.

Tubing Tolerance

Nominal Tubing Size inches (mm)	Tolerance/Outside Diameter inches (mm)
1/4 (6.35)	.248/.243 (6.30/6.17)
3/8 (9.53)	.370/.365 (9.40/9.27)
9/16 (14.27)	.557/.552 (14.15/14.02)
3/4 (19.05)	.745/.740 (18.92/18.80)
1 (25.40)	.995/.990 (25.27/25.14)
1-1/2 (38.10)	1.495/1.490 (37.98/37.85)

Catalog Number	Tube Material	Fits Connection Type	Tube Size Inches (mm)			Flow Area in.² (mm²)	Working Pressure psi (bar)*				
			Outside Diameter	Inside Diameter	Wall Thickness		-423 to 100°F -252 to 37.8°C	200°F 93°C	400°F 204°C	600°F 316°C	800°F 427°C
MS15-092	316SS	SF250CX	1/4 **(6.35)**	0.109 **(2.77)**	0.070 **(1.78)**	0.009 **(5.81)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**	16,800 **(1158.30)**
MS15-192	304SS						20,000 **(1378.93)**	18,950 **(1306.54)**	17,200 **(1185.88)**	17,000 **(1172.09)**	16,150 **(1113.49)**
MS15-093	316SS	SF375CX	3/8 **(9.53)**	0.203 **(5.16)**	0.086 **(2.18)**	0.032 **(20.65)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**	16,800 **(1158.30)**
MS15-193	304SS						20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**	16,800 **(1158.30)**
MS15-085	316SS	SF562CX	9/16 **(14.29)**	0.312 **(7.92)**	0.125 **(3.18)**	0.076 **(49.03)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**	16,800 **(1158.30)**
MS15-187	304SS						20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**	16,800 **(1158.30)**
MS15-097	316SS	SF562CX	9/16 **(14.29)**	0.359 **(9.12)**	0.101 **(2.57)**	0.101 **(65.16)**	15,000 **(1034.16)**	15,000 **(1034.16)**	14,400 **(992.83)**	13,650 **(941.12)**	12,670 **(873.55)**
MS15-194	304SS						15,000 **(1034.16)**	14,170 **(976.97)**	12,900 **(889.41)**	12,750 **(879.07)**	12,670 **(873.55)**
MS15-095	316SS	SF750CX	3/4 **(19.05)**	0.438 **(11.13)**	0.156 **(3.96)**	0.151 **(97.42)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**	16,800 **(1158.30)**
MS15-098	316SS			0.516 **(13.11)**	0.117 **(2.97)**	0.209 **(134.84)**	15,000 **(1034.16)**	15,000 **(1034.16)**	14,400 **(992.83)**	13,650 **(941.12)**	12,670 **(873.55)**
MS15-096	316SS	SF1000CX	**1 (25.40)**	0.562 **(14.27)**	0.219 **(5.56)**	0.248 **(160.00)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**	16,800 **(1158.30)**
MS15-099	316SS			0.688 **(17.48)**	0.156 **(3.96)**	0.371 **(239.35)**	15,000 **(1034.16)**	15,000 **(1034.16)**	14,400 **(992.83)**	13,650 **(941.12)**	12,670 **(873.55)**
13041	316SS	SF1500CX	1-1/2 **(38.10)**	0.937 **(23.80)**	0.281 **(7.15)**	0.589 **(444.88)**	15,000 **(1034.16)**	15,000 **(1034.16)**	14,430 **(994.90)**	13,530 **(932.85)**	12,600 **(868.73)**

Note: Caution should be exercised in proper selection of Medium Pressure Tubing based on actual operating conditions. Two series available: 15,000 psi (1034 bar) and 20,000 psi (1379 bar).
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Medium Pressure Coned-and-Threaded Nipples

Pressures to 20,000 psi (1379 bar)

For rapid system make-up, Parker Autoclave Engineers supplies pre-cut, coned-and-threaded nipples in various sizes and lengths for Parker Autoclave Engineers medium pressure valves and fittings.

Special lengths

In addition to the standard lengths listed in the table below, nipples are available in any custom length. Consult factory.

Materials**

Catalog numbers in table refer to Type 316 Stainless steel. Optional materials available. Consult factory.

Catalog Number Nipple Length In (mm)							Fits Connection Type	Tube Size inches (mm)		Working Pressure at 100°F psi (bar)*
2.75" **(69.85)**	3.00" **(76.20)**	4.00" **(101.60)**	6.00" **(152.40)**	8.00" **(203.20)**	10.00" **(254.00)**	12.00" **(304.80)**		O.D.	I.D.	
CNX4402-316	CNX4403-316	CNX4404-316	CNX4406-316	CNX4408-316	CNX44010-316	CNX44012-316	SF250CX	1/4 **(6.35)**	0.109 **(2.77)**	20,000 **(1378.93)**
	CNX6603-316	CNX6604-316	CNX6606-316	CNX6608-316	CNX66010-316	CNX66012-316	SF375CX	3/8 **(9.53)**	0.203 **(5.16)**	20,000 **(1378.93)**
		CNX9904-316	CNX9906-316	CNX9908-316	CNX99010-316	CNX99012-316	SF562CX	9/16 **(14.29)**	0.312 **(7.92)**	20,000 **(1378.93)**
		CNLX9904-316	CNLX9906-316	CNLX9908-316	CNLX99010-316	CNLX99012-316	SF562CX	9/16 **(14.29)**	0.359 **(9.12)**	15,000 **(1034.16)**
		CNX1204-316	CNX1206-316	CNX1208-316	CNX12010-316	CNX12012-316	SF750CX	3/4 **(19.05)**	0.438 **(11.13)**	20,000 **(1378.93)**
		CNLX1204-316	CNLX1206-316	CNLX1208-316	CNLX12010-316	CNLX12012-316	SF750CX	3/4 **(19.05)**	0.516 **(13.11)**	15,000 **(1034.16)**
			CNX1606-316	CNX1608-316	CNX16010-316	CNX16012-316	SF1000CX	1 **(25.40)**	0.562 **(14.27)**	20,000 **(1378.93)**
			CNLX1606-316	CNLX1608-316	CNLX16010-316	CNLX16012-316	SF1000CX	1 **(25.40)**	0.688 **(17.48)**	15,000 **(1034.16)**
			CNLX2406-316	CNLX2408-316	CNLX24010-316	CNLX24012-316	SF1500CX	1-1/2 **(38.10)**	0.937 **(23.79)**	15,000 **(1034.16)**

Note: Caution should be exercised when selecting medium pressure nipples since two series are available: 15,000 psi (1034.16 bar) and 20,000 psi (1379 bar)

See medium pressure tubing section for pressures at various temperatures.

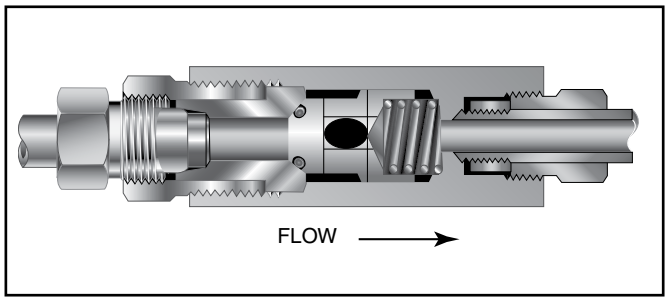
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
**Type 304 Stainless Steel nipples available.

All dimensions for reference only and subject to change.

Medium Pressure Check Valves

Pressures to 20,000 (1379 bar)

O-Ring Check Valves



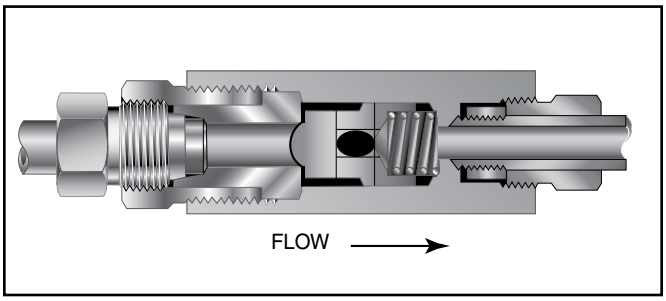
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C).
For low temperature option to -423°F (-252°C) add suffix LTTO (Low temperature spring & PTFE o-ring).

Provides unidirectional flow and tight shut-off for liquids and gas with high reliability. When differential drops below cracking pressure*, valve shuts off. **(Not for use as relief valve.)**

Materials: 316 Stainless Steel: body, cover, poppet, cover gland. 300 Series Stainless Steel: spring
Standard O-ring: Viton, for operation to 400° F (204°C). Buna-N or PTFE available for 250°F (121°C) or 400°F (204°C) respectively; specify when ordering.

***Cracking Pressure:** 20 psi (1.38 bar) ±30%. Springs for higher cracking pressures (up to 100 psi (6.89 bar)) available on special order for O-ring style check valves only.

Ball Check Valves



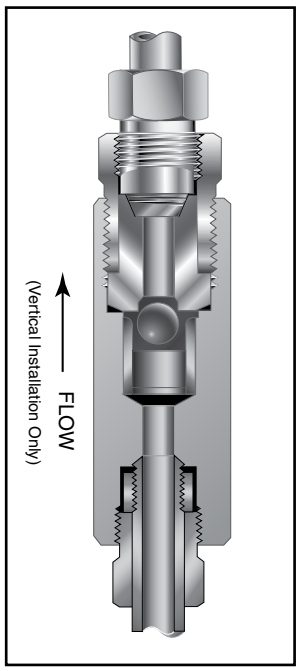
Minimum operating temperature for standard ball check valves -110°F (-79°C).
For low temperature option to -423°F (-252°C) add suffix LT (Low temperature spring).

Prevents reverse flow where **leak-tight shut-off is not mandatory**. When differential drops below cracking pressure, valve closes. With all-metal components, valve can be used up to 1200°F (649°C). See Technical Information section for connection temperature limitations. (Not for use as a relief valve.)

The ball and poppet are an integral design to assure positive, in-line seating without "chatter". Poppet is designed essentially for axial flow with minimum pressure drop.

Materials: 316 Stainless Steel: body, cover, ball poppet, cover gland. 300 Series Stainless Steel: ball, spring.

Ball Type Excess Flow Valves



Protects pressure gauges and pressure instrumentation from surges in flow or sudden venting in the event of line failure.

Materials: 316 Stainless Steel: body, cover, sleeve, cover gland. 300 Series Stainless Steel: ball.

Vertical Installation: Since this type of check valve employs a non-spring loaded ball, valve MUST be installed in VERTICAL position with arrow on valve body pointing UP. (cover gland up).

Resetting Valve: Equalize the pressure across the ball. The ball will drop and reset automatically.

CAUTION: *While testing has shown O-Rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

CAUTION: *See Tubing section for proper selection of tubing.*
NOTE: *For optional material see Needle Valve Options section.*

NOTE: *Special material check valves may be supplied with four flats in place of standard hex.*

Medium Pressure Check Valves

Catalog Number	Fits Connection Type	Pressure Rating psi (bar)*	Orifice inches (mm)	Rated C_V	Dimensions - inches (mm)				
					A	B	C	D Typical	Hex

O-Ring Check Valves

CXO4400	SF250CX	20,000 **(1378.93)**	0.125 **(3.18)**	0.28	2.94 **(74.68)**	2.50 **(63.50)**	0.38 **(9.53)**	0.50 **(12.70)**	0.81 **(20.57)**
CXO6600	SF375CX	20,000 **(1378.93)**	0.218 **(5.54)**	0.84	3.12 **(79.25)**	2.62 **(66.55)**	0.47 **(11.94)**	0.62 **(15.75)**	1.00 **(25.40)**
CXO9900	SF562CX	20,000 **(1378.93)**	0.359 **(9.12)**	2.30	4.18 **(106.17)**	3.50 **(88.90)**	0.53 **(13.46)**	0.94 **(23.88)**	1.38 **(35.05)**
CXO12	SF750CX	20,000 **(1378.93)**	0.516 **(13.11)**	4.70	5.50 **(139.70)**	4.75 **(120.65)**	0.62 **(15.75)**	1.19 **(30.23)**	1.75 **(44.45)**
CXO16	SF1000CX	20,000 **(1378.93)**	0.688 **(17.48)**	7.40	6.63 **(168.40)**	5.75 **(146.05)**	0.72 **(18.29)**	1.38 **(35.05)**	1.88† **(47.75)**
CXO24	SF1500CX	15,000 **(1034.20)**	0.94 **(23.80)**	14.00	9.01 **(228.85)**	7.25 **(184.15)**	1.12 **(28.45)**	1.88 **(47.75)**	3.00† **(76.20)**

Ball Check Valves

CXB4400	SF250CX	20,000 **(1378.93)**	0.125 **(3.18)**	0.28	2.94 **(74.68)**	2.50 **(63.50)**	0.38 **(9.53)**	0.50 **(12.70)**	0.81 **(20.57)**
CXB6600	SF375CX	20,000 **(1378.93)**	0.218 **(5.54)**	0.84	3.12 **(79.25)**	2.62 **(66.55)**	0.47 **(11.94)**	0.62 **(15.75)**	1.00 **(25.40)**
CXB9900	SF562CX	20,000 **(1378.93)**	0.359 **(9.12)**	2.30	4.18 **(106.17)**	3.50 **(88.90)**	0.53 **(13.46)**	0.94 **(23.88)**	1.38 **(35.05)**
CXB12	SF750CX	20,000 **(1378.93)**	0.516 **(13.11)**	4.70	5.50 **(139.70)**	4.75 **(120.65)**	0.62 **(15.75)**	1.19 **(30.23)**	1.75 **(44.45)**
CXB16	SF1000CX	20,000 **(1378.93)**	0.688 **(17.48)**	7.40	6.63 **(168.40)**	5.75 **(146.05)**	0.72 **(18.29)**	1.38 **(35.05)**	1.88† **(47.75)**
CXB24	SF1500CX	15,000 **(1034.20)**	0.94 **(23.80)**	14.00	9.01 **(228.85)**	7.25 **(184.15)**	1.12 **(28.45)**	1.88 **(47.75)**	3.00† **(76.20)**

Ball Type Excess Flow Valves

CXK4402	SF250CX	20,000 **(1378.93)**	0.125 **(3.18)**	0.037+	2.94 **(74.68)**	2.50 **(63.50)**	0.38 **(9.65)**	0.50 **(12.70)**	0.81 **(20.57)**
CXK6602	SF375CX	20,000 **(1378.93)**	0.218 **(5.54)**	0.066+	3.12 **(79.25)**	2.62 **(66.55)**	0.47 **(11.94)**	0.62 **(15.75)**	1.00 **(25.40)**
CXK9902	SF562CX	20,000 **(1378.93)**	0.359 **(9.12)**	.212+	4.18 **(106.17)**	3.50 **(88.90)**	0.53 **(13.46)**	0.94 **(23.88)**	1.38 **(35.05)**
CXK1202	SF750CX	20,000 **(1378.93)**	0.516 **(13.11)**	.368+	5.12 **(130.05)**	4.38 **(111.25)**	0.62 **(15.75)**	1.19 **(30.23)**	1.75 **(44.45)**
CXK1602	SF1000CX	20,000 **(1378.93)**	0.688 **(17.48)**	.864+	6.50 **(165.10)**	5.62 **(142.75)**	0.72 **(18.29)**	1.38 **(35.05)**	1.88† **(47.75)**

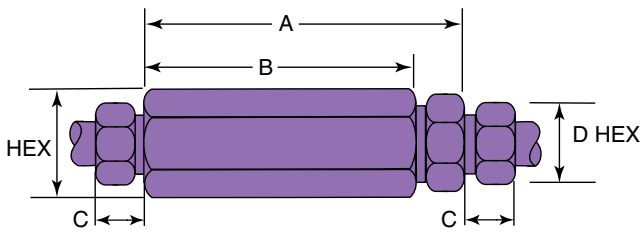
Note:
+ Check Flow - water, GPM
For flow rates using alternate fluids, consult Parker Autoclave Engineers.

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

† distance across flats

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

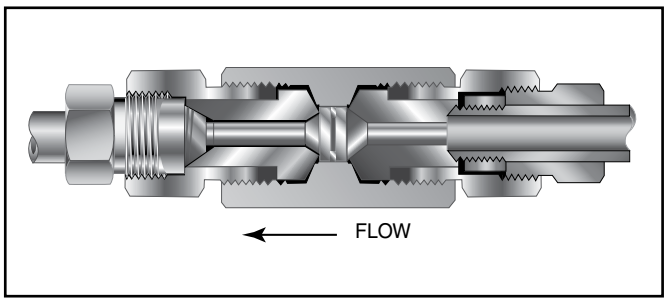
Figure 1



Medium Pressure Line Filters

Pressures to 20,000 psi (1379 bar)

Dual-Disc Line Filters

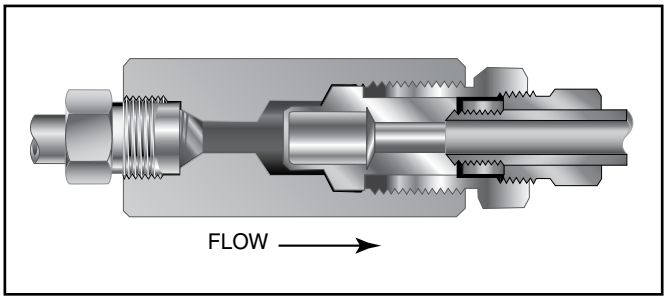


Parker Autoclave Engineers Dual-Disc Line Filters are utilized in numerous industrial, chemical processing, aerospace, nuclear and other applications. With the dual-disc design, large contaminant particles are trapped by the upstream filter element before they can reach and clog the smaller micron-size downstream element. Filter elements can be easily replaced.

Materials: 316 Stainless Steel: body, cover, cover gland. 300 Series Stainless Steel: filter elements.

Filter Elements: Downstream/upstream micron size 35/65 is standard. 5/10 or 10/35 also available when specified. Other element combinations available on special order.

Cup-Type Line Filters



Parker Autoclave Engineers High Flow Cup-Type Line Filters are recommended in high pressure systems requiring both high flow rates and maximum filter surface area. Widely used in the industrial and chemical processing fields, the cup design offers as much as six times the effective filter area as compared to disc-type units. In addition, the filter elements can be quickly and easily replaced.

Materials: 316 Stainless Steel: body, cover, cover gland. 300 Series Stainless Steel: filter element.

Filter Elements: Sintered cup elements available in choice of 5, 35 or 65 micron sizes. ***Note:*** *Filter ratings are nominal.*

NOTE 1: *All filters furnished complete with connection components unless otherwise specified. All dimensions for reference only and subject to change.*

For optional materials, see Needle Valve Options section

NOTE 2: *Parker Autoclave Engineers disc and cup type filters are designed to filter small amounts of process particles. It is recommended that all fluids are thoroughly cleaned prior to entering the higher pressure system.*

NOTE 3: *Special material filters may be supplied with four flats in place of standard hex.*

NOTE 4: *Pressure differential not to exceed 1,000 psi (69 bar) in a flowing condition.*

NOTE 5: *Larger micron size filter element is installed on the upstream (inlet) side.*

Dual-Disc Line Filters

Catalog Number	Pressure Rating psi (bar)*	Orifice inches (mm)	Micron Size**	Connection Size and Type	Effective Filter Element Area in.^{2} (mm^2)	Dimensions - inches (mm) A	B	C	D Typical	Hex
CLFX9900	20,000 **(1378.93)**	0.312 (7.92)	35/65	SF562CX	0.25 **(161.29)**	4.94 **(125.48)**	2.68 **(68.07)**	0.53 **(13.46)**	.94 **(23.88)**	1.38 **(35.05)**
CLFX9900-5/10	20,000 **(1378.93)**	0.312 **(7.92)**	5/10							
CLFX9900-10/35	20,000 **(1378.93)**	0.312 **(7.92)**	10/35							

Cup-Type Line Filters

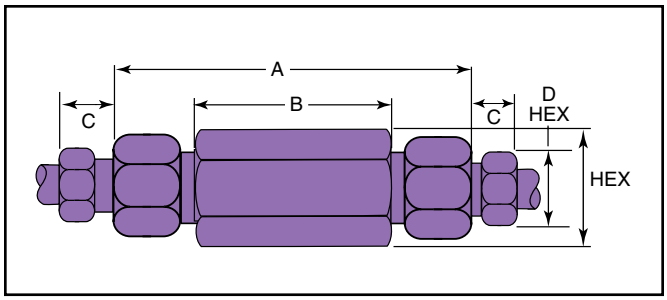
CXF4-5	20,000 **(1378.93)**	0.125 **(3.18)**	5	SF250CX	0.81 **(522.57)**	2.94 **(74.68)**	2.50 **(63.50)**	0.38 **(9.53)**	.50 **(12.70)**	0.81 **(20.57)**
CXF4-35			35							
CXF4-65			65							
CXF6-5	20,000 **(1378.93)**	0.218 **(5.54)**	5	SF375CX	0.81 **(522.57)**	3.12 **(79.25)**	2.62 **(66.55)**	0.47 **(11.99)**	.62 **(15.75)**	1.00 **(25.40)**
CXF6-35			35							
CXF6-65			65							
CXF9-5	20,000 **(1378.93)**	0.359 **(9.12)**	5	SF562CX	1.53 **(987.09)**	4.18 **(106.17)**	3.50 **(88.90)**	0.53 **(13.46)**	.94 **(23.88)**	1.38 **(35.05)**
CXF9-35			35							
CXF9-65			65							
CXF12-10	20,000 **(1378.93)**	0.516 **(13.10)**	10	SF750CX	2.65 **(1709.67)**	5.50 **(139.7)**	4.75 **(120.65)**	.62 **(15.75)**	1.50 **(38.10)**	1.75 **(44.45)**
CXF12-35			35							
CXF16-5	20,000 **(1378.93)**	0.688 **(17.48)**	5	SF1000CX	5.00 **(3225.80)**	6.62 **(168.15)**	5.75 **(146.05)**	0.72 **(18.29)**	1.38 **(35.05)**	2.12 **(53.05)**
CXF16-10			10							
CXF16-35			35							
CXF16-65			65							

Note:
***Other micron sizes available on special order. Change last digits of the catalog number accordingly.*
For optional materials, see Needle Valve Options section.

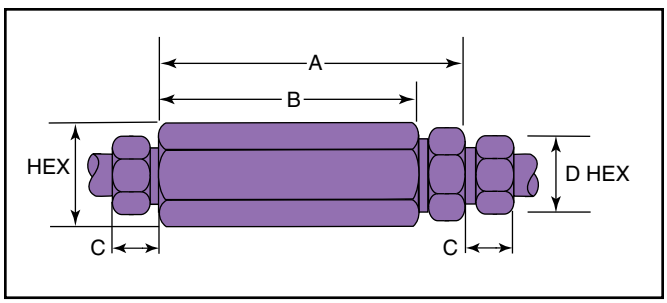
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Dual-Disc Line Filters



Cup-Type Line Filters



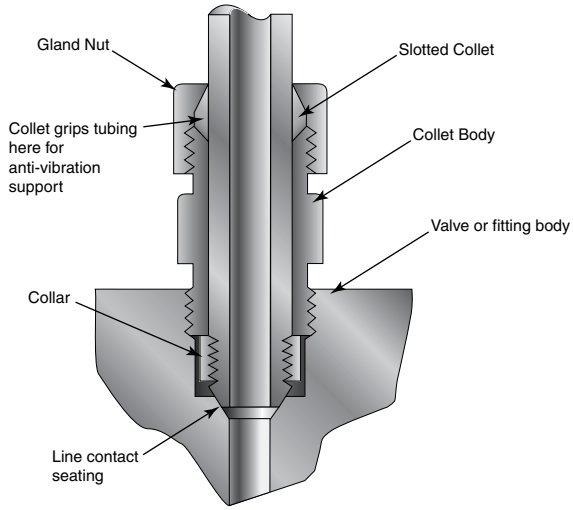
Anti-Vibration Collet Gland Assembly

Pressures to 20,000 psi (1379 bar)

Series KCBGLX Sizes to 1-1/2" (38.10 mm)
For extreme conditions of vibration and/or shock in tubing systems, such as an unsupported line near a compressor, coned-and-threaded connections are offered with the Parker Autoclave anti-vibration collet gland assembly. Completely interchangeable with standard Parker Autoclave Engineers medium pressure connections, the collet gland assembly provides equally effective pressure handling capability.

In standard connection systems, the bending stresses on the threaded area of the tubing imposed by excessive vibration or movement may cause premature fatigue failure of the tubing at the back of the thread. By moving the stress concentration back to the unthreaded part of the tubing and providing a wedge-type gripping action, the Parker Autocalve Engineers anti-vibration collet gland assembly strengthens the entire structure. With stress concentration reduced and overall stress level maintained well below the endurance limit of the material, the result is virtually unlimited vibrational fatigue life.

A less complex and more economical design than other vibration-resistant connections, the collet gland assembly utilizes the same coned-and-threaded features of Parker Autoclave Engineers medium pressure connections. Series KCBGLX extends the gland nut to provide room for the tapered slotted collet. The design provides a slight difference in angles between the collet and the corresponding taper of the gland nut. As the nut is tightened, it acts to wedge the tapered end of the collet into a gripping engagement with the tubing.



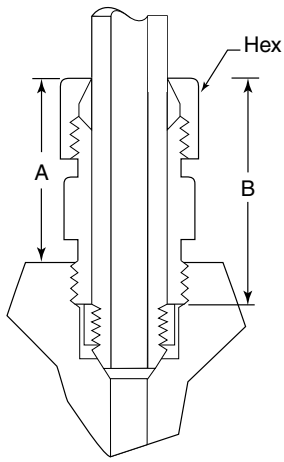
Series KCBGLX
Pressures to 20,000 (1379 bar)

Materials

Type 316 stainless steel with bonded dry film (316 MC) moly lubricant.

Note: 1) To order components with anti-vibration assemblies add -K to catalog numbers.
2) Special material assemblies may be supplied with four flats in place of standard hex.

Catalog Number	Part	Outside Diameter Tubing Size in. (mm)	Dimensions - inches (mm)		
			A	B	Hex
KCBGLX40-316MC	Complete assembly	1/4 (6.35)	0.94 (23.88)	1.19 (30.23)	0.62 (15.75)
KCBLX40-316MC	Collet body				
KCCLX40-316MC	Slotted collet				
KGLX40-316MC	Gland nut				
KCBGLX60-316MC	Complete assembly	3/8 (9.53)	1.19 (30.23)	1.50 (38.10)	0.81 (20.63)
KCBLX60-316MC	Collet body				
KCCLX60-316MC	Slotted collet				
KGLX60-316MC	Gland nut				
KCBGLX90-316MC	Complete assembly	9/16 (14.29)	1.41 (35.81)	1.78 (45.21)	0.94 (23.88)
KCBLX90-316MC	Collet body				
KCCLX90-316MC	Slotted collet				
KGLX90-316MC	Gland nut				
KCBGLX120-316MC	Complete assembly	3/4 (19.05)	1.59 (40.37)	2.00 (50.80)	1.25 (31.75)
KCBLX120-316MC	Collet body				
KCCLX120-316MC	Slotted collet				
KGLX120-316MC	Gland nut				
KCBGLX160-316MC	Complete assembly	1 (25.40)	1.69 (42.93)	2.38 (60.45)	1.50 (38.10)
KCBLX160-316MC	Collet body				
KCCLX160-316MC	Slotted collet				
KGLX160-316MC	Gland nut				
KCBGLX240-316MC	Complete assembly	1-1/2 (38.10)	2.75 (69.85)	3.63 (92.20)	2.25 (57.15)
KCBLX240-316MC	Collet body				
KCCLX240-316MC	Slotted collet				
KGLX240-316MC	Gland nut				



Series KCBGLX
20,000 psi (1379 bar)

Standard Parker Autoclave Engineers collar not included in complete assembly

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

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.

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Fittings and Tubing

QS Series

Medium Pressure

Pressures to 15,000 psi (1034 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, research, and oil and gas industries.

QS Medium Pressure Fittings and Tubing:

- Available sizes are 1/4, 3/8, 9/16, 3/4 and 1".
- Fittings and tubing manufactured from high strength stainless steel.
- Molybdenum disulfide-coated gland nuts to prevent galling.
- Gland nut positioning mark for assembly.
- Single-ferrule compression sleeve.
- Connection weep holes for safety and leak detection.
- Fast easy make-up of connection.
- Operating Temperatures from 0°F (-17.8°C) to 650°F (343°C).
- 1" QS fitting bodies are 2507 Super Duplex standard.

The Medium Pressure QS Series uses Parker Autoclave Engineers' Quick Set compression sleeve design. This single-ferrule compression sleeve connection delivers fast, easy make-up and reliable bubble-tight performance in liquid or gas service.

Parker

Autoclave Engineers®

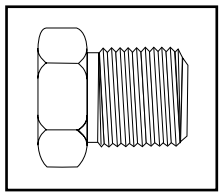
www.autoclave.com

Pressures to 15,000 psi (1034 bar)

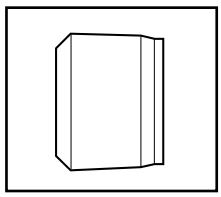
Parker Autoclave Engineers Medium Pressure QS Fittings are designed for use with QS Series valves and medium pressure tubing. These fittings feature improved compression connections with larger orifices for excellent flow capabilities. Parker Autoclave Engineers fittings and components are manufactured of high strength stainless steel.

Connection Components

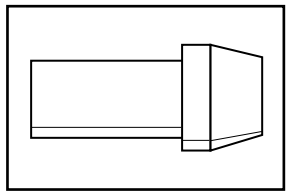
All Parker Autoclave Engineers valves and fittings are supplied complete with appropriate glands and sleeves. To order these components separately, use order numbers listed. When using plug, sleeve is not required.



Gland
QSG ( )



Sleeve
QSS ( )



Plug
QSP ( )

Add tube size ( )
- 1/4" - 40
- 3/8" - 60
- 9/16" - 90
- 3/4" - 120
- 1" - 160

Example:
1/4" Gland - QSG 40

To ensure proper fit use Parker Autoclave Engineers tubing. For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

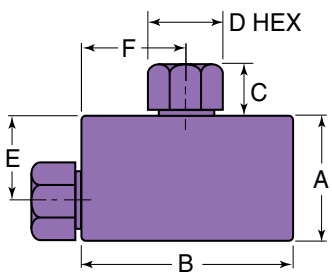
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
Elbow													
QSL4400	QS250	1/4 **(6.35)**	15,000 **(1034.20)**	0.16 **(3.99)**	1.38 **(34.93)**	2.00 **(50.80)**	0.52 **(13.23)**	0.63 **(15.88)**	1.00 **(25.40)**	1.00 **(25.40)**		0.75 **(19.05)**	**See Figure 1**
QSL6600	QS375	3/8 **(9.53)**	15,000 **(1034.20)**	0.25 **(6.35)**	1.50 **(38.10)**	2.00 **(50.80)**	0.55 **(14.00)**	0.75 **(19.05)**	1.00 **(25.40)**	1.00 **(25.40)**		0.81 **(20.62)**	
QSL9900	QS562	9/16 **(14.29)**	15,000 **(1034.20)**	0.36 **(9.12)**	2.19 **(55.58)**	3.00 **(76.20)**	0.82 **(20.83)**	1.19 **(30.18)**	1.50 **(38.10)**	1.50 **(38.10)**		1.25 **(31.75)**	
QSL12	QS750	3/4 **(19.05)**	15,000 **(1034.20)**	0.52 **(13.11)**	2.94 **(74.63)**	4.13 **(104.78)**	1.04 **(26.37)**	1.50 **(38.10)**	2.06 **(52.40)**	2.06 **(52.40)**		1.50 **(38.10)**	
QSL16	QSF1000	1 **(25.4)**	15,000 **(1034.20)**	0.688 **(17.48)**	3.5 **(88.90)**	4.75 **(120.65)**	1.19 **(30.18)**	1.75 **(44.45)**	2.38 **(60.33)**	2.38 **(60.33)**		2.00 **(50.80)**	

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

1" QS fitting bodies are 2507 Super Duplex

Figure 1



Elbow

For mounting hole option add suffix PM to catalog number.
Consult factory for mounting hole dimensions.

Tee

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
QST4440	QS250	1/4 **(6.35)**	15,000 **(1034.20)**	0.16 **(3.99)**	1.38 **(34.93)**	2.00 **(50.80)**	0.52 **(13.23)**	0.63 **(15.88)**	1.00 **(25.40)**	1.00 **(25.40)**		0.75 **(19.05)**	**See Figure 2**
QST6660	QS375	3/8 **(9.53)**	15,000 **(1034.20)**	0.25 **(6.35)**	1.50 **(38.10)**	2.00 **(50.80)**	0.55 **(14.00)**	0.75 **(19.05)**	1.00 **(25.40)**	1.00 **(25.40)**		0.81 **(20.62)**	
QST9990	QS562	9/16 **(14.29)**	15,000 **(1034.20)**	0.36 **(9.12)**	2.19 **(55.58)**	3.00 **(76.20)**	0.82 **(20.83)**	1.19 **(30.18)**	1.50 **(38.10)**	1.50 **(38.10)**		1.25 **(31.75)**	
QST12	QS750	3/4 **(19.05)**	15,000 **(1034.20)**	0.52 **(13.11)**	2.94 **(74.63)**	4.13 **(104.78)**	1.04 **(26.37)**	1.50 **(38.10)**	2.06 **(52.40)**	2.06 **(52.40)**		1.50 **(38.10)**	
QST16	QSF1000	1 **(25.4)**	15,000 **(1034.20)**	0.688 **(17.48)**	3.50 **(88.90)**	4.75 **(120.65)**	1.19 **(30.18)**	1.75 **(44.45)**	2.38 **(60.33)**	2.38 **(60.33)**		2.00 **(50.80)**	

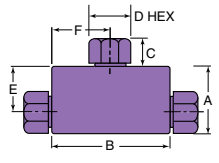
Cross

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
QSX4444	QS250	1/4 **(6.35)**	15,000 **(1034.20)**	0.16 **(3.99)**	2.00 **(50.80)**	2.00 **(50.80)**	0.52 **(13.23)**	0.63 **(15.88)**	1.00 **(25.40)**	1.00 **(25.40)**		0.75 **(19.05)**	**See Figure 3**
QSX6666	QS375	3/8 **(9.53)**	15,000 **(1034.20)**	0.25 **(6.35)**	2.00 **(50.80)**	2.00 **(50.80)**	0.55 **(14.00)**	0.75 **(19.05)**	1.00 **(25.40)**	1.00 **(25.40)**		0.81 **(20.62)**	
QSX9999	QS562	9/16 **(14.29)**	15,000 **(1034.20)**	0.36 **(9.12)**	3.00 **(76.20)**	3.00 **(76.20)**	0.82 **(20.83)**	1.19 **(30.18)**	1.50 **(38.10)**	1.50 **(38.10)**		1.25 **(31.75)**	
QSX12	QS750	3/4 **(19.05)**	15,000 **(1034.20)**	0.52 **(13.11)**	4.13 **(104.78)**	4.13 **(104.78)**	1.04 **(26.37)**	1.50 **(38.10)**	2.06 **(52.40)**	2.06 **(52.40)**		1.50 **(38.10)**	
QSX16	QSF1000	1 **(25.4)**	15,000 **(1034.20)**	0.688 **(17.48)**	4.75 **(120.65)**	4.75 **(104.78)**	1.19 **(30.18)**	1.75 **(44.45)**	2.38 **(60.33)**	2.38 **(60.33)**		2.00 **(50.80)**	

For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

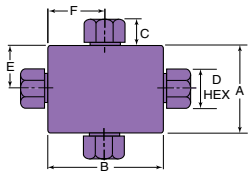
1" QS fitting bodies are 2507 Super Duplex

Figure 2



Tee

Figure 3



Cross

Straight Coupling

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
15F44QQ	QS250	1/4 **(6.35)**	15,000 **(1034.20)**	0.16 **(3.99)**	0.75 **(19.05)**	1.63 **(41.28)**	0.52 **(13.23)**	0.63 **(15.88)**	Straight				**See Figure 4**
15F66QQ	QS375	3/8 **(9.53)**	15,000 **(1034.20)**	0.25 **(6.35)**	0.81 **(20.65)**	1.75 **(44.45)**	0.55 **(14.00)**	0.75 **(19.05)**	Straight				
15F99QQ	QS562	9/16 **(14.29)**	15,000 **(1034.20)**	0.36 **(9.12)**	1.38 **(34.93)**	2.75 **(69.85)**	0.82 **(20.83)**	1.19 **(30.18)**	Straight				
15F12Q	QS750	3/4 **(19.05)**	15,000 **(1034.20)**	0.52 **(13.11)**	1.50 **(38.10)**	3.75 **(95.25)**	1.04 **(26.37)**	1.50 **(38.10)**	Straight				
15F16Q	QSF1000	1 **(25.4)**	15,000 **(1034.20)**	0.688 **(17.48)**	2.75 **(69.85)**	4.50 **(114.30)**	1.19 **(30.23)**	1.75 **(44.45)**	Straight				

Bulkhead Coupling

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
15BF44QQ	QS250	1/4 **(6.35)**	15,000 **(1034.20)**	0.16 **(3.99)**	0.88 **(22.23)**	2.00 **(50.80)**	0.52 **(13.23)**	0.63 **(15.88)**	0.63 **(15.88)**	1.00 **(25.40)**	0.38 **(9.53)**		**See Figure 5**
15BF66QQ	QS375	3/8 **(9.53)**	15,000 **(1034.20)**	0.25 **(6.35)**	1.06 **(27.00)**	2.38 **(60.33)**	0.55 **(14.00)**	0.75 **(19.05)**	0.79 **(19.94)**	1.38 **(34.93)**	0.38 **(9.53)**		
15BF99QQ	QS562	9/16 **(14.29)**	15,000 **(1034.20)**	0.36 **(9.12)**	1.63 **(41.40)**	2.63 **(66.68)**	0.82 **(20.83)**	1.19 **(30.18)**	0.91 **(22.99)**	1.75 **(44.45)**	0.38 **(9.53)**		
15BF12Q	QS750	3/4 **(19.05)**	15,000 **(1034.20)**	0.52 **(13.11)**	1.88 **(47.63)**	3.50 **(88.90)**	1.04 **(26.37)**	1.50 **(38.10)**	1.50 **(38.10)**	2.13 **(53.98)**	0.38 **(9.53)**		
15BF16Q	QSF1000	1 **(25.4)**	15,000 **(1034.20)**	0.688 **(17.48)**	2.38 **(60.33)**	5.00 **(127.00)**	1.19 **(30.23)**	1.75 **(44.45)**	2.00 **(50.80)**	1.88† **(47.63)**	0.38 **(9.53)**		

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

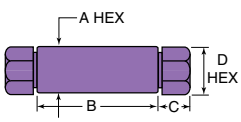
All dimensions for reference only and subject to change. For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Union Couplings are designed with a removable seat insert allowing disassembly and tubing removal without the necessity of loosening other items in a line.

1" QS fitting bodies are 2507 Super Duplex

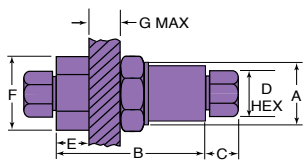
† Distance across flats

Figure 4



Straight Coupling

Figure 5



Bulkhead Coupling

Medium Pressure Tubing

Pressures to 15,000 psi (1034 bar)

Parker Autoclave Engineers offers a complete selection of austenetic, cold drawn stainless steel tubing designed to match the performance standards of Parker Autoclave Engineers valves and fittings. Parker Autoclave Engineers medium pressure tubing is manufactured specifically for high pressure applications requiring both strength and corrosion resistance. The tubing is furnished in random lengths between 20 feet (6 meters) and 26.5 feet (8.0 meters). The average is 24 feet (7.3 meters). Medium Pressure Tubing is available in five sizes and a variety of materials.

Inspection and Testing

Parker Autoclave Engineer's medium pressure tubing is inspected to assure freedom from seams, laps, fissures or other flaws, as well as carburization or intergranular carbide precipitation. The outside and inside diameters of the tubing are subject to special inspection and are controlled within close tolerences to assure proper fit. Sample pieces of tube for each lot are tested to confirm mechanical properties. Hydrostatic testing is also performed on a statistical basis and is conducted at the working pressure of the tube. Parker Autoclave Engineers will perform 100% hydrostatic testing at additional cost if desired.

Special Materials

In addition to the type 316/316L and 304/304L stainless steel tubing listed in this section, Parker Autoclave Engineers has limited stock of hard-to-obtain special tubing materials: *Monel 400*, Inconel 600*, Inconel 625*, Duplex, Super Duplex, Titanium Grade 2*, Nickel 200*, Hastelloy C276** (*Trademark names) Some are available in shorter lengths only. Please consult factory for stock availability.

Tubing Tolerance

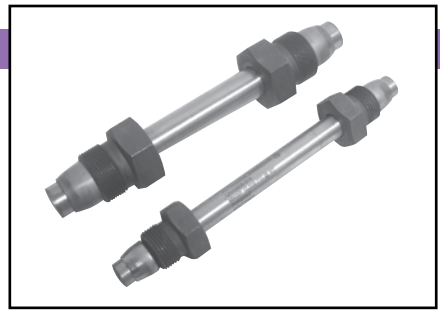
Nominal Tubing Size inches (mm)	Tolerance/Outside Diameter inches (mm)
1/4 (6.35)	.248/.243 (6.30/6.17)
3/8 (9.53)	.370/.365 (9.40/9.27)
9/16 (14.27)	.557/.552 (14.15/14.02)
3/4 (19.05)	.745/.740 (18.92/18.80)
1 (25.4)	.995/.990 (25.27/25.14)

Catalog Number	Tube Material	Fits Connection Type	Tube Size Inches (mm)			Flow Area $in.^2$ (mm^2)	Working Pressure psi (bar)*			
			Outside Diameter	Inside Diameter	Wall Thickness		-425 to 100°F -252 to 37.8°C	200°F 93°C	400°F 204°C	600°F 316°C
MS15-092**	316SS	QS250	1/4 **(6.35)**	0.109 **(2.77)**	0.070 **(1.78)**	0.009 **(5.81)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**
MS15-192**	304SS						20,000 **(1378.93)**	18,950 **(1306.54)**	17,200 **(1185.88)**	17,000 **(1172.09)**
MS15-093**	316SS	QS375	3/8 **(9.53)**	0.203 **(5.16)**	0.086 **(2.18)**	0.032 **(20.65)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**
MS15-193**	304SS						20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**
MS15-097	316SS	QS562	9/16 **(14.29)**	0.359 **(9.12)**	0.101 **(2.57)**	0.101 **(65.16)**	15,000 **(1034.19)**	15,000 **(1034.19)**	14,400 **(992.82)**	13,650 **(941.12)**
MS15-194	304SS									
MS15-098	316SS	QS750	3/4 **(19.05)**	0.516 **(13.11)**	0.117 **(2.97)**	0.209 **(134.84)**	15,000 **(1034.19)**	15,000 **(1034.19)**	14,400 **(992.82)**	13,650 **(941.12)**
MS15-099	316SS	QS1000	1 **(25.4)**	0.688 **(17.48)**	0.156 **(3.96)**	0.371 **(239.35)**	15,000 **(1034.16)**	15,000 **(1034.16)**	14,400 **(992.83)**	13,650 **(941.12)**

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.
**Larger inside diameters are available as special order.

Nipples - QS Series

Pressures to 15,000 psi (1034 bar)



For rapid system make-up, Parker Autoclave Engineers supplies pre-assembled nipples in various sizes and lengths for Parker Autoclave QSS valves and fittings.

Special Lengths

In addition to the standard lengths listed in the table below, nipples are available in any custom length. Consult factory.

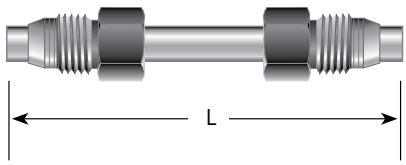
Materials

Catalog numbers in table refer to Type 316 Stainless Steel.

Catalog Numbers					Fits Connection Type	Tube Size Inches (mm)		Working Pressure at 100° psi (bar)
Nipple Length Inches (mm)								
4.00"	6.00"	8.00"	10.00"	12.00"				
(101.60)	(152.40)	(203.20)	(254.60)	(304.80)		OD	ID	
QNA4404-316	QNA4406-316	QNA4408-316	QNA44010-316	QNA44012-316	QS250	1/4"	0.109	15,000
						(6.35)	(2.77)	(1034.16)
QNA6604-316	QNA6606-316	QNA6608-316	QNA66010-316	QNA66012-316	QS375	3/8"	0.203	15,000
						(9.53)	(5.16)	(1034.16)
	QNA9906-316	QNA9908-316	QNA99010-316	QNA99012-316	QS562	9/16"	0.359	15,000
						(14.29)	(9.12)	(1034.16)
		QNA1208-316	QNA12010-316	QNA12012-316	QS750	3/4"	0.516	15,000
						(19.05)	(13.11)	(1034.16)
		QNA1608-316	QNA16010-316	QNA16012-316	QS1000	1"	0.688	15,000
						(25.40)	(17.48)	(1034.16)

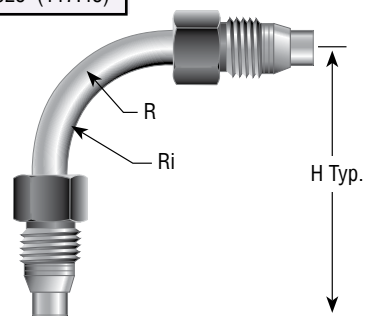
Close Tube Port Connectors

Model	Size Inches (mm)	Fits Connection Type	Dimension "L" Inches (mm)
QTS4403.25	1/4" (6.35)	QS250	3.25 (82.55)
QTS6603.50	3/8" (9.53)	QS375	3.50 (88.90)
QTS9905.25	9/16" (14.29)	QS562	5.25 (133.35)
QTS1206.375	3/4" (19.05)	QS750	6.38 (162.10)



Elbow Tube

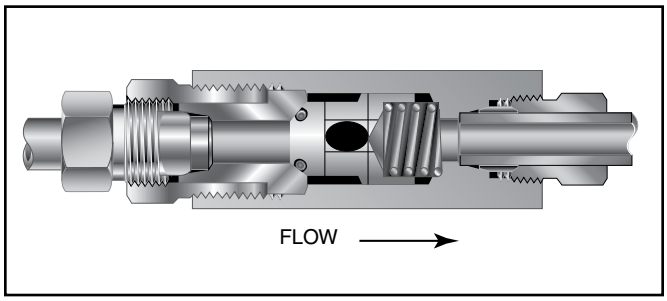
Model	Size Inches (mm)	Fits Connection Type	Dimension "H" Inches (mm)	Mean Radius "R" Inches (mm)	Inside Radius Ri Inches (mm)
QTE44-90	1/4" (6.35)	QS250	3.25 (82.55)	0.563 (14.30)	0.438 (11.13)
QTE66-90	3/8" (9.53)	QS375	3.50 (88.90)	0.938 (23.83)	0.75 (19.05)
QTE99-90	9/16" (14.29)	QS562	7.50 (19.05)	2.906 (73.82)	2.625 (66.68)
QTE12-90	3/4" (19.05)	QS750	10.00 (254.00)	3.875 (98.43)	3.5 (88.9)
QTE16-90	1" (25.40)	QS1000	11.50 (292.10)	5.125 (13.30)	4.625 (117.48)



Check Valves - QS Series

Pressures to 15,000 psi (1034 bar)

O-Ring Check Valves



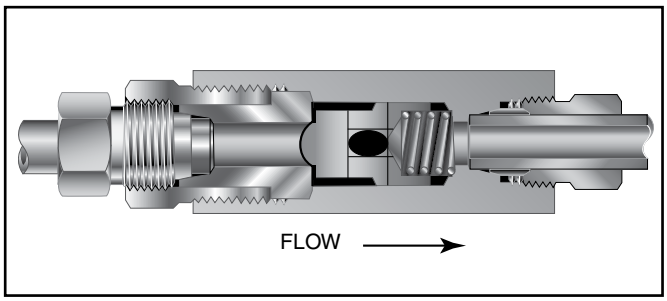
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C)

Provide unidirectional flow and tight shut-off for liquids and gases with high reliability. When differential drops below cracking pressure*, valve shuts off. **(Not for use as relief valve.)**

Materials: 316 Stainless Steel: Body, cover, poppet, cover gland. 300 Stainless Steel: Spring. Except 1" - see note below. Standard O-ring: Viton, for operation to 400° F (204°C). Buna-N or PTFE available for 250°F (121°C) or 400°F (204°C) respectively; specify when ordering.

***Cracking Pressure:** 20 psi (1.38 bar) ±30%. Springs for higher cracking pressures (up to 100 psi (6.89bar)) available on special order for O-ring style check valves only.

Ball Check Valves



Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C)

Prevent reverse flow where leak-tight shut-off is not mandatory. When differential drops below cracking pressure, valve closes. With all-metal components, valve can be used up to 650°F (343°C). See Technical Information section for connection temperature limitations. **(Not for use as a relief valve.)**

Ball and poppet are an integral design to assure positive, in-line seating without "chatter". Poppet is designed essentially for axial flow with minimum pressure drop.

Materials: 316 Stainless Steel: Body, cover, cover gland, ball poppet. 300 Series Stainless Steel: Spring. Except 1" - see note below.

CAUTION: *While testing has shown O-Rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

CAUTION: *See Tubing section for proper selection of tubing.*

Catalog Number	Fits Connection Type	Pressure Rating psi (bar)*	Orifice inches (mm)	Rated C_V	Dimensions - inches (mm) A	B	C	D Typical	Hex	
O-Ring Check Valves										
QSO4400	QS250	15,000 **(1034.20)**	0.188 **(4.78)**	0.15	3.18 **(80.77)**	2.56 **(65.02)**	0.44 **(11.18)**	0.63 **(16.00)**	0.81 **(20.57)**	**See Figure 1**
QSO6600	QS375	15,000 **(1034.20)**	0.312 **(7.93)**	0.63	3.56 **(90.42)**	3.00 **(76.20)**	0.53 **(13.46)**	0.75 **(19.05)**	1.00 **(25.40)**	
QSO9900	QS562	15,000 **(1034.20)**	0.359 **(9.12)**	2.30	5.21 **(132.33)**	4.50 **(114.30)**	0.81 **(20.57)**	1.19 **(30.18)**	1.75 **(44.45)**	
QSO12	QS750	15,000 **(1034.20)**	0.516 **(13.11)**	4.70	6.40 **(162.56)**	5.50 **(139.70)**	1.03 **(26.16)**	1.50 **(38.10)**	1.88† **(47.75)**	
QSO16	QSF1000	15,000 **(1034.20)**	0.688 **(17.48)**	14.00	8.92 **(226.57)**	7.52 **(191.01)**	1.19 **(30.23)**	1.75 **(44.45)**	3.00 **(76.20)**	
Ball Check Valves										
QSB4400	QS250	15,000 **(1034.20)**	0.188 **(4.78)**	0.15	3.18 **(80.77)**	2.56 **(65.02)**	0.44 **(11.18)**	0.63 **(16.00)**	0.81 **(20.57)**	**See Figure 1**
QSB6600	QS375	15,000 **(1034.20)**	0.312 **(7.93)**	0.63	3.56 **(90.42)**	3.00 **(76.20)**	0.53 **(13.46)**	0.75 **(19.05)**	1.00 **(25.40)**	
QSB9900	QS562	15,000 **(1034.20)**	0.359 **(9.12)**	2.30	5.21 **(132.33)**	4.50 **(114.30)**	0.81 **(20.57)**	1.19 **(30.18)**	1.75 **(44.45)**	
QSB12	QS750	15,000 **(1034.20)**	0.516 **(13.11)**	4.70	6.40 **(162.56)**	5.50 **(139.70)**	1.03 **(26.16)**	1.50 **(38.10)**	1.88† **(47.75)**	
QSB16	QS1000	15,000 **(1034.20)**	0.688 **(17.48)**	14.00	8.92 **(226.57)**	7.52 **(191.01)**	1.19 **(30.23)**	1.75 **(44.45)**	3.00 **(76.20)**	

†Distance across flats

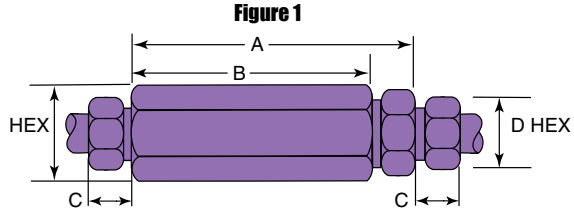
Note:
All check valves are furnished complete with connection components unless otherwise specified.

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave stocks select products. Consult your local representative.

1" check valve bodies, cover, cover gland and poppet is 2507 Super Duplex standard.

Figure 1



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.

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Fittings, Tubing & Nipples

High Pressure

Pressures to 150,000 psi (10342 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, research, and oil and gas, waterjet, and waterblast industries.

High Pressure Fittings, Tubing and Nipples Features:

- Coned-and-Threaded Connection.
- Available sizes are 1/4, 5/16, 3/8, 9/16, and 1".
- Fittings manufactured from 316 cold worked or high strength stainless steel.
- Tubing is manufactured from dual rated 316/316L and 304/304L cold worked stainless steel.
- Operating Temperatures from -423°F (-252°C) to 1200°F (649°C).
- Anti-vibration connection components available.
- Ultra-high pressure components.
- Autofrettaged tubing.
- High pressure high cycle tubing.

The high and ulta-high pressure series uses Parker Autoclave Engineers' high pressure connector. This coned-and-threaded connection provides dependable performance in gas or liquid service.

Parker

Autoclave Engineers

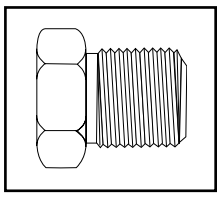
www.autoclave.com

Pressures to 150,000 psi (10342 bar)

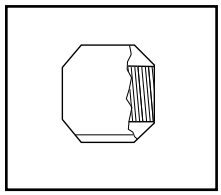
Parker Autoclave Engineers high pressure fittings Series F and SF are the industry standard for pressures to 150,000 psi (10342 bar). Utilizing Parker Autoclave Engineers high pressure coned-and-threaded connections, these fittings are correlated with Series 30SC, 43SC, 30VM, 40VM, 60VM, 100VM, and 150V valves and Parker Autoclave Engineers high pressure tubing.

Connection Components

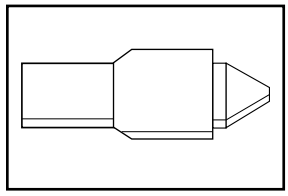
All Parker Autoclave Engineers valves and fittings are supplied complete with appropriate glands and collars. To order these components separately, use order numbers listed. When using plug, collar is not required.



Gland
AGL ( )



Collar
ACL ( )



Plug
AP ( )

Add tube size ( )
1/4" - 40
5/16" - 50
3/8" - 60
9/16" - 90
1" - 160

Example:
9/16" Gland - AGL (90)

To ensure proper fit use Parker Autoclave Engineers tubing.

Note: Special material glands may be supplied with four flats in place of standard hex.

Connection Type	Gland	Collar	Plug	Connection Components (Industry Standard)
F250C F375C F562C	AGL( )	ACL( )	AP( )	Parker Autoclave Engineer's high pressure fittings 1/4, 3/8 and 9/16 connection components to 60,000 psi (4137 bar). For use with 30VM, 40VM, 60VM valves and fittings.
F1000C43	CGLX160	CCLX160	43CP160	Parker Autoclave Engineer's high pressure 1" connection components to 43,000 psi (2965 bar) for use with 30SC, 43Y valves, and fittings.
F312C150	CGL50	CCL50	CP50	Parker Autoclave Engineer's ultra high pressure 5/16 connection components to 150,000 psi (10342 bar) for use with 100VM and 150V valve and fittings.
	100CGL40 100CGL60	100CCL40 100CCL60	100CP40 100CP60	Parker Autoclave Engineer's 100,000 psi (6895 bar) connection components utilize our 5/16" connection for 1/4" and 3/8" tubing. (See Note*)

Elbow

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
CL4400	F250C	1/4 (6.35)	60,000 (4136.79)	0.094 (2.39)	1.00 (25.40)	1.50 (38.10)	0.50 (12.70)	0.63 (15.88)	0.62 (15.75)	0.88 (22.35)		0.75 (19.05)	See Figure 1
100CL4400	F312C150	1/4 (6.35)	100,000 (6894.65)	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CL5500	F312C150	5/16 (7.94)	150,000 (10341.97)	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CL6600	F375C	3/8 (9.53)	60,000 (4136.79)	0.125 (3.18)	1.50 (38.10)	2.00 (50.80)	0.52 (13.21)	0.81 (20.62)	1.00 (25.40)	1.25 (31.75)		1.00 (25.40)	
100CL6600	F312C150	3/8 (9.53)	100,000 (6894.65)	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CL9900	F562C	9/16 (14.29)	60,000 (4136.79)	0.188 (4.78)	1.88 (47.75)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.12 (28.45)	1.88 (47.75)		1.50 (38.10)	
40CL9900	F562C40	9/16 (14.29)	40,000 (2757.86)	0.250 (6.35)	1.88 (47.775)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.12 (28.45)	1.88 (47.75)		1.50 (38.10)	
43CL16	F1000C43	1 (25.40)	43,000 (2964.70)	0.438 (11.13)	3.00 (76.20)	4.12 (104.65)	0.72 (18.29)	1.38 (35.05)	2.06 (52.32)	2.06 (52.32)		1.75 (44.45)	

Tee

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
CT4440	F250C	1/4 (6.35)	60,000 (4136.79)	0.094 (2.39)	1.25 (31.75)	2.00 (50.80)	0.50 (12.70)	0.63 (15.88)	0.88 (22.35)	1.00 (25.40)		1.00 (25.40)	See Figure 2
100CT4440	F312C150	1/4 (6.35)	100,000 (6894.65)	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CT5550	F312C150	5/16 (7.94)	150,000 (10341.97)	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CT6660	F375C	3/8 (9.53)	60,000 (4136.79)	0.125 (3.18)	1.56 (39.62)	2.00 (50.80)	0.52 (13.21)	0.81 (20.62)	1.06 (26.92)	1.00 (25.40)		1.00 (25.40)	
100CT6660	F312C150	3/8 (9.53)	100,000 (6894.65)	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CT9990	F562C	9/16 (14.29)	60,000 (4136.79)	0.188 (4.78)	2.12 (53.85)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.38 (35.05)	1.31 (33.27)		1.50 (38.10)	
40CT9990	F562C40	9/16 (14.29)	40,000 (2757.86)	0.250 (6.35)	2.12 (53.85)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.38 (35.05)	1.31 (33.27)		1.50 (38.10)	
43CT16	F1000C43	1 (25.40)	43,000 (2964.70)	0.438 (11.13)	3.00 (76.20)	4.12 (104.65)	0.72 (18.29)	1.38 (35.05)	2.06 (52.32)	2.06 (52.32)		1.75 (44.45)	

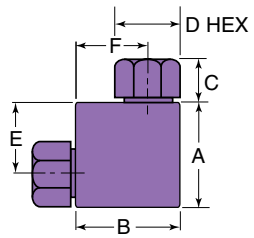
Cross

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
CX4444	F250C	1/4 (6.35)	60,000 (4136.79)	0.094 (2.39)	1.25 (31.75)	2.00 (50.80)	0.50 (12.70)	0.63 (15.88)	0.62 (15.75)	1.00 (25.40)		1.00 (25.40)	See Figure 3
100CX4444	F312C150	1/4 (6.35)	100,000 (6894.65)	0.094 (2.39)	3.00 (76.20)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CX5555	F312C150	5/16 (7.94)	150,000 (10341.97)	0.094 (2.39)	3.00 (76.20)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CX6666	F375C	3/8 (9.53)	60,000 (4136.79)	0.125 (3.18)	2.12 (53.85)	2.00 (50.80)	0.52 (13.21)	0.81 (20.62)	1.06 (26.92)	1.00 (25.40)		1.00 (25.40)	
100CX6666	F312C150	3/8 (9.53)	100,000 (6894.65)	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.50 (38.10)		1.38 (35.05)	
CX9999	F562C	9/16 (14.29)	60,000 (4136.79)	0.188 (4.78)	2.75 (69.85)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.38 (35.05)	1.31 (33.27)		1.50 (38.10)	
40CX9999	F562C40	9/16 (14.29)	40,000 (2757.86)	0.250 (6.35)	2.75 (69.85)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.38 (35.05)	1.31 (33.27)		1.50 (38.10)	
43CX16	F1000C43	1 (25.40)	43,000 (2964.70)	0.438 (11.13)	4.12 (104.65)	4.12 (104.65)	0.72 (18.29)	1.38 (35.05)	2.06 (52.32)	2.06 (52.32)		1.75 (44.45)	

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

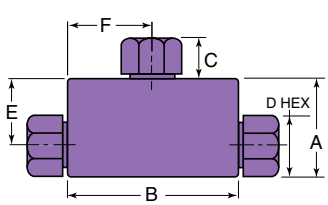
All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave stocks select products. Consult your local representative.

Figure 1



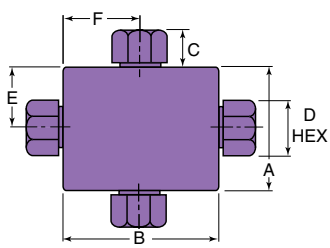
Elbow

Figure 2



Tee

Figure 3



Cross

Note: Fittings such as 45° elbows, reducer elbows, and reducer 45° elbows are available upon request. For mounting hole option add suffix PM to catalog number, consult factory for mounting hole dimensions. Contact your local sales representative for additional information.

Straight Coupling/Union Coupling

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F Hex	G Thickness	Block Thickness	Fitting Pattern
60F4433	F250C	1/4	60,000	0.094	0.75	1.38	0.50	0.63	Straight				
60UF4433		**(6.35)**	**(4136.79)**	**(2.39)**	**(19.05)**	**(35.05)**	**(12.70)**	**(15.88)**	Union				
100F4433	F312C150	1/4	100,000	0.094	1.12	2.62	0.52	0.75	Straight				
100UF4433		**(7.94)**	**(10341.97)**	**(2.39)**	**(28.45)**	**(66.55)**	**(13.21)**	**(19.05)**	Union				
150F5533	F312C150	5/16	150,000	0.094	1.12	2.62	0.52	0.75	Straight				
150UF5533		**(7.94)**	**(10341.97)**	**(2.39)**	**(28.45)**	**(66.55)**	**(13.21)**	**(19.05)**	Union				
60F6633	F375C	3/8	60,000	0.125	1.00	1.75	0.53	0.81	Straight				
60UF6633		**(9.53)**	**(4136.79)**	**(3.18)**	**(25.40)**	**(44.45)**	**(13.46)**	**(20.62)**	Union				**See Figure 4**
100F6633	F312C150	3/8	100,000	0.094	1.12	2.62	0.52	0.75	Straight				
100UF6633		**(9.53)**	**(6894.65)**	**(2.39)**	**(28.45)**	**(66.55)**	**(13.21)**	**(19.05)**	Union				
60F9933	F562C	9/16	60,000	0.188	1.38	2.19	0.81	1.19	Straight				
60UF9933		**(14.29)**	**(4136.79)**	**(4.78)**	**(35.05)**	**(55.63)**	**(20.57)**	**(30.15)**	Union				
40F9933	F562C40	9/16	40,000	0.250	1.38	2.19	0.81	1.19	Straight				
40UF9933		**(14.29)**	**(2757.86)**	**(6.35)**	**(35.05)**	**(55.63)**	**(20.57)**	**(30.15)**	Union				
43F16	F1000C43	1	43,000	0.438	1.75	3.50	0.72	1.38	Straight				
43UF16		**(25.40)**	**(2964.70)**	**(11.13)**	**(44.45)**	**(88.90)**	**(18.29)**	**(35.05)**	Union				

Bulkhead Coupling

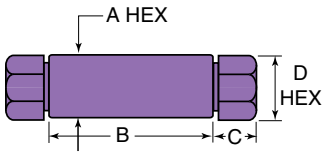
60BF4433	F250C	1/4	60,000	0.094	0.94	1.88	0.50	0.63	0.50	1.00	0.38		
		(6.35)	**(4136.79)**	**(2.39)**	**(23.88)**	**(47.75)**	**(12.70)**	**(15.88)**	**(12.70)**	**(25.40)**	**(9.65)**		
100BF4433	F312C150	1/4	100,000	0.094	2.12	3.25	0.52	0.75	1.38	2.00	0.38		
		(6.35)	**(6894.65)**	**(2.39)**	**(53.85)**	**(82.55)**	**(13.21)**	**(19.05)**	**(35.05)**	**(50.80)**	**(9.65)**		
150BF5533	F312C150	5/16	150,000	0.094	2.12	3.25	0.52	0.75	1.38	2.00	0.38		
		(7.94)	**(10341.97)**	**(2.39)**	**(53.85)**	**(82.55)**	**(13.21)**	**(19.05)**	**(35.05)**	**(50.80)**	**(9.65)**		
60BF6633	F375C	3/8	60,000	0.125	1.12	2.38	0.53	0.81	0.78	1.38	0.38		
		(9.53)	**(4136.79)**	**(3.18)**	**(28.45)**	**(60.45)**	**(13.46)**	**(20.62)**	**(19.81)**	**(35.05)**	**(9.65)**		**See Figure 5**
100BF6633	F312C150	3/8	100,000	0.094	2.12	3.25	0.52	0.75	1.38	2.00	0.38		
		(9.53)	**(6894.65)**	**(2.39)**	**(53.85)**	**(82.55)**	**(13.21)**	**(19.05)**	**(35.05)**	**(50.80)**	**(9.65)**		
60BF9933	F562C	9/16	60,000	0.188	1.69	2.75	0.81	1.19	1.00	1.88	0.38		
		(14.29)	**(4136.79)**	**(4.78)**	**(42.93)**	**(69.85)**	**(20.57)**	**(30.23)**	**(25.40)**	**(47.75)**	**(9.65)**		
40BF9933	F562C40	9/16	40,000	0.250	1.69	2.75	0.81	1.19	1.00	1.88	0.38		
		(14.29)	**(2757.86)**	**(6.35)**	**(42.93)**	**(69.85)**	**(20.57)**	**(30.23)**	**(25.40)**	**(47.75)**	**(9.65)**		
43BF16	F1000C43	1	43,000	0.438	1.94	3.50	0.72	1.38	1.50	2.13	0.50		
		(25.40)	**(2964.70)**	**(11.13)**	**(49.28)**	**(88.90)**	**(18.29)**	**(35.05)**	**(38.10)**	**(54.10)**	**(12.70)**		

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

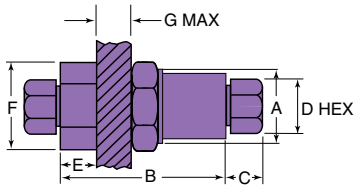
Union Couplings are designed with a removable seat insert allowing disassembly and tubing removal without the necessity of loosening other items in a line.

Figure 4



Straight Coupling / Union Coupling

Figure 5



(A=Panel hole drill size)

Bulkhead Coupling

High Pressure Tubing

Pressures to 150,000 psi (10342 bar)

Parker Autoclave Engineers offers a complete selection of austenetic, cold drawn stainless steel tubing designed to match the performance standards of Parker Autoclave valves and fittings. Parker Autoclave high pressure tubing is manufactured specifically for high pressure applications requiring both strength and corrosion resistance. The tubing is furnished in random lengths between 20 feet (6 meters) and 26.5 feet (8.0 meters). The average is 24 feet (7.3 meters). High pressure tubing is available in five sizes and a variety of materials. Special longer lengths are available. Consult factory.

Inspection and Testing

Parker Autoclave Engineer's high pressure tubing is inspected to assure freedom from seams, laps, fissures or other flaws, as well as carburization or intergranular carbide precipitation. The outside and inside diameters of the tubing are controlled within close tolerences. Sample pieces of tubing for each lot are tested to confirm mechanical properties. Hydrostatic testing is also performed on a statistical basis and is conducted at the working pressure of the tube. Parker Autoclave will perform 100% hydrostatic testing at additional cost if desired.

Special Materials

In addition to the type 316/316L and 304/304L stainless steel tubing listed in this section, Parker Autoclave has limited stock of hard-to-obtain shorter lengths of the following tubing materials in some sizes:
Monel 400, Inconel 600*, Inconel 625*, Duplex, Super Duplex, Titanium Grade 2*, Nickel 200*, Hastelloy C276**
(*Trademark names) Some are available in shorter lengths only. Please consult factory for stock availability.

Tubing Tolerance

Nominal Tubing Size inches (mm)	Tolerance/Outside Diameter inches (mm)
1/4 (6.35)	.248/.243 (6.30/6.17)
5/16 (7.94)	.310/.306 (7.87/7.77)
3/8 (9.53)	.370/.365 (9.40/9.27)
9/16 (14.29)	.557/.552 (14.15/14.02)
1 (25.40)	.995/.990 (25.27/25.14)

Catalog Number	Tube Material	Fits Connection Type	Tube Size Inches (mm) Outside Diameter	Inside Diameter	Wall Thickness	Flow Area in.² (mm²)	Working Pressure psi (bar)* -423 to 100°F -252 to 37.8°C	200°F 93°C	400°F 204°C	600°F 316°C	800°F 427°C
MS15-202	Stainless	.(See note 3)					100,000 **(6894.64)**	100,000 **(6894.64)**	96,210 **(6633.24)**	90,368 **(6230.55)**	84,420 **(5820.46)**
MS15-081	316SS	F250C	1/4 **(6.35)**	0.083 **(2.11)**	0.083 **(2.11)**	0.005 **(3.23)**	60,000 **(4136.79)**	60,000 **(4136.79)**	57,750 **(3981.66)**	54,250 **(3740.35)**	50,700 **(3495.59)**
MS15-182	304SS						60,000 **(4136.79)**	56,800 **(3916.16)**	51,650 **(3561.09)**	50,700 **(3495.59)**	48,450 **(3340.46)**
MS15-082	316SS	F312C150	5/16 **(7.94)**	0.062 **(1.57)**	0.125 **(3.18)**	0.003 **(1.94)**	150,000 **(10341.97)**	150,000 **(10341.97)**	144,400 **(9955.87)**	136,350 **(9400.85)**	126,750 **(8738.97)**
MS15-201	Stainless.....	.(See note 3)					100,000 **(6894.64)**	100,000 **(6894.64)**	96,210 **(6633.24)**	90,368 **(6230.55)**	84,420 **(5820.46)**
MS15-087	316SS	F375C	3/8 **(9.53)**	0.125 **(3.18)**	0.125 **(3.18)**	0.012 **(7.74)**	60,000 **(4136.79)**	60,000 **(4136.79)**	57,750 **(3981.66)**	54,250 **(3740.35)**	50,700 **(3495.59)**
MS15-183	304SS						60,000 **(4136.79)**	56,800 **(3916.16)**	51,650 **(3561.09)**	50,700 **(3495.59)**	48,450 **(3340.46)**
MS15-210	Stainless						100,000 **(6894.64)**	100,000 **(6894.64)**	96,210 **(6633.24)**	90,368 **(6230.55)**	84,420 **(5820.46)**
MS15-083	316SS	F562C	9/16 **(14.29)**	0.188 **(4.78)**	0.187 **(4.75)**	0.028 **(18.06)**	60,000 **(4136.79)**	60,000 **(4136.79)**	57,750 **(3981.66)**	54,250 **(3740.35)**	50,700 **(3495.59)**
MS15-185	304SS						60,000 **(4136.79)**	56,800 **(3916.16)**	51,650 **(3561.09)**	50,700 **(3495.59)**	48,450 **(3340.46)**
MS15-090	316SS	F562C40	9/16 **(14.29)**	0.250 **(6.35)**	0.156 **(3.96)**	0.048 **(30.97)**	40,000 **(2757.86)**	40,000 **(2757.86)**	38,500 **(2654.44)**	36,100 **(2488.96)**	33,800 **(2330.39)**
MS15-209	Stainless	F562C40-312	9/16 **(14.29)**	0.312 **(7.92)**	0.125 **(3.18)**	0.076 **(49.03)**	40,000 **(2757.86)**	40,000 **(2757.86)**	38,500 **(2654.44)**	36,100 **(2488.97)**	33,800 **(2330.39)**
MS15-211	316SS	F1000C43	1 **(25.40)**	0.438 **(11.13)**	0.281 **(7.14)**	0.151 **(97.42)**	43,000 **(2964.70)**	43,000 **(2964.70)**	43,000 **(2964.70)**	41,380 **(2853.01)**	36,330 **(2504.83)**

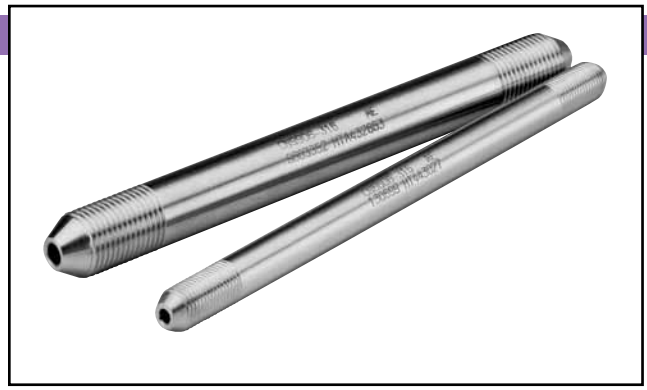
Note:
1. Autofrettaged tubing available (see technical Information section: Pressure Cycling for Autofrettage information)
2. For HighPressure, High Cycle (HPHC) tubing, MS15-201, MS15-202, MS15-209, and MS15-210 are available. (See Technical Information section: Pressure Cycling for additional information)
3. For 100,000 psi rating use F312C150 connection

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

High Pressure Coned-and-Threaded Nipples

Pressures to 150,000 psi (10342 bar)



For rapid system make-up, Parker Autoclave Engineers supplies pre-cut, coned-and-threaded nipples in various sizes and lengths for Parker Autoclave high pressure valves and fittings.

Special lengths

In addition to the standard lengths listed in the table below, nipples are available in any custom length. Consult factory.

Materials**

Catalog numbers in table refer to Type 316 Stainless steel.

Note: Most items available in 304SS. Consult factory for availability.

Material in table is 316 Stainless steel

Catalog Number Nipple Length In (mm)							Fits Connection Type	Tube Size inches (mm)		Working* Pressure at 100°F (37.8°C) psi (bar)
2.75" **(69.85)**	3.00" **(76.20)**	4.00" **(101.60)**	6.00" **(152.40)**	8.00" **(203.20)**	10.00" **(254.00)**	12.00" **(304.80)**		O.D.	I.D.	
CN4402-316	CN4403-316	CN4404-316	CN4406-316	CN4408-316	CN44010-316	CN44012-316	F250C	1/4 **(6.35)**	0.083 **(2.11)**	60,000 **(4136.79)**
		CN5504-316	CN5506-316	CN5508-316	CN55010-316	CN55012-316	F312C150	5/16 **(7.94)**	0.062 **(1.57)**	150,000 **(10341.97)**
	CN6603-316	CN6604-316	CN6606-316	CN6608-316	CN66010-316	CN66012-316	F375C	3/8 **(9.53)**	0.125 **(3.18)**	60,000 **(4136.79)**
		CN9904-316	CN9906-316	CN9908-316	CN99010-316	CN99012-316	F562C	9/16 **(14.29)**	0.188 **(4.78)**	60,000 **(4136.79)**
		40CN9904-316	40CN9906-316	40CN9908-316	40CN99010-316	40CN99012-316	F562C40	9/16 **(14.29)**	0.250 **(6.35)**	40,000 **(2757.86)**
			43CN1606-316	43CN1608-316	43CN16010-316	43CN16012-316	F1000C43	1 **(25.40)**	0.438 **(12.40)**	43,000 **(2964.70)**

Note:
See High pressure tubing section for pressure ratings at various temperatures.

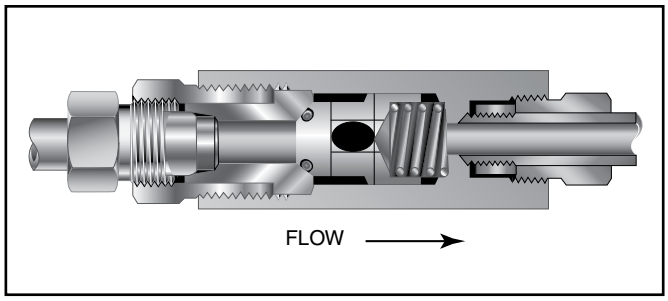
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

High Pressure Check Valves

Pressures to 60,000 psi (4137 bar)

O-Ring Check Valves



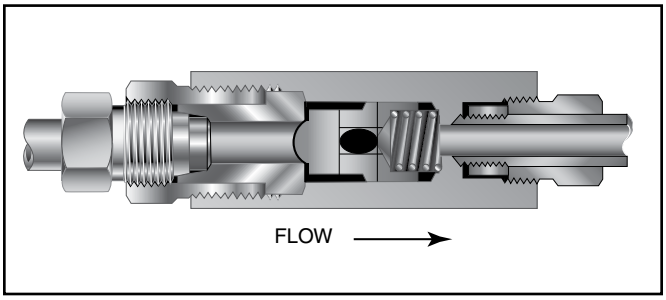
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C).
For low temperature option to -423°F (-252°C) add suffix LTTO (Low temperature spring & PTFE o-ring).

Provides unidirectional flow and tight shut-off for liquids and gas with high reliability. When differential drops below cracking pressure*, valve shuts off. **(Not for use as relief valve.)**

Materials: 316 Stainless Steel: body, cover, poppet, cover gland. 300 Series Stainless Steel: spring. Standard O-ring: Viton, for operation to 400° F (204°C). Buna-N or PTFE available for 250°F (121°C) or 400°F (204°C) respectively; specify when ordering.

***Cracking Pressure:** 20 psi (1.38 bar) ±30%. Springs for higher cracking pressures (up to 100 psi (6.89 bar) available on special order for O-ring style check valves only.

Ball Check Valves



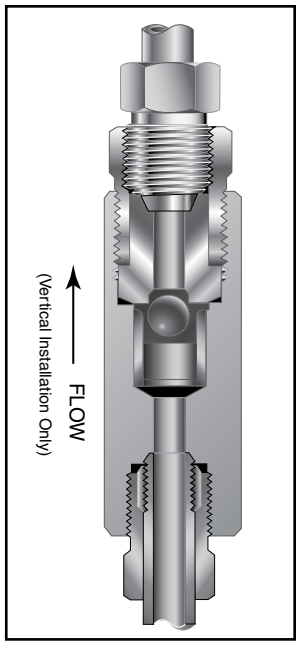
Minimum operating temperature for standard ball check valves -110°F (-79°C).
For low temperature option to -423°F (-252°C) add suffix LT (Low temperature spring).

Prevents reverse flow where **leak-tight shut-off is not mandatory**. When differential drops below cracking pressure, valve closes. With all-metal components, valve can be used up to 1200°F (649°C). See Technical Information section for connection temperature limitations. **(Not for use as a relief valve.)**

Ball and poppet are an integral design to assure positive, in-line seating without "chatter". Poppet is designed essentially for axial flow with minimum pressure drop.

Materials: 316 Stainless Steel: body, cover, ball poppet, cover gland. 300 Series Stainless Steel: spring.

Ball Type Excess Flow Valves



Protects pressure gauges and pressure instrumentation from surges in flow or sudden venting in the event of line failure.

Materials: 316 Stainless Steel: body, cover, sleeve, cover gland. 300 Series Stainless Steel: ball.

Vertical Installation: Since this type of check valve employs a non-spring loaded ball, valve MUST be installed in VERTICAL position with arrow on valve body pointing UP. (cover gland up).

Resetting Valve: Equalize the pressure across the ball. The ball will drop and reset automatically.

CAUTION: *While testing has shown O-Rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

NOTE: *For optional material see Needle Valve Options section.*

High Pressure Check Valves

Catalog Number	Fits Connection Type	Pressure Rating psi (bar)*	Orifice inches (mm)	Rated C_V	Dimensions - inches (mm)				
					A	B	C	D Typical	Hex
O-Ring Check Valves									
CKO4400	F250C	60,000 **(4136.79)**	0.094 **(2.39)**	0.15	3.38 **(85.85)**	2.50 **(63.50)**	0.50 **(12.70)**	0.63 **(16.00)**	1.18 **(29.97)**
CKO6600	F375C	60,000 **(4136.79)**	0.125 **(3.18)**	0.28	3.75 **(95.25)**	2.62 **(66.55)**	0.53 **(13.46)**	0.75 **(19.05)**	1.18 **(29.97)**
CKO9900	F562C	60,000 **(4136.79)**	0.187 **(4.75)**	0.63	4.62 **(117.35)**	3.38 **(85.85)**	0.81 **(20.57)**	1.12 **(28.45)**	1.50 **(38.10)**
40CKO9900	F562C40	40,000 **(2757.85)**	0.250 **(6.35)**	0.78	4.64 **(117.86)**	3.38 **(85.73)**	0.72 **(18.29)**	1.19 **(30.23)**	1.50 **(38.10)**
43CKO16	F1000C43	43,000 **(2964.70)**	0.438 **(11.13)**	4.3	6.54 **(166.11)**	5.63 **(143.00)**	.72 **(18.29)**	1.38 **(35.05)**	1.88† **(47.76)**
Ball Check Valves									
CB4401	F250C	60,000 **(4136.79)**	0.094 **(2.39)**	0.15	3.38 **(85.85)**	2.50 **(63.50)**	0.50 **(12.70)**	0.63 **(16.00)**	1.18 **(29.97)**
100CB4401+	F312C150	100,000 **(6894.65)**	0.0094 **(2.39)**	0.11	4.61 **(117.09)**	3.50 **(88.9)**	0.52 **(13.21)**	1.75† **(44.50)**	.75 **(19.05)**
100CB5501+	F312C150	100,000 **(6894.65)**	0.0094 **(2.39)**	0.11	4.61 **(117.09)**	3.50 **(88.9)**	.52 **(13.21)**	1.75† **(44.50)**	.75 **(19.05)**
CB6601	F375C	60,000 **(4136.79)**	0.125 **(3.18)**	0.28	3.75 **(95.25)**	2.62 **(66.55)**	0.53 **(13.46)**	0.75 **(19.05)**	1.18 **(29.97)**
100CB6601+	F312C150	100,000 **(6894.65)**	0.0094 **(2.39)**	0.11	4.61 **(117.09)**	3.50 **(88.9)**	.52 **(13.21)**	1.75† **(44.50)**	.75 **(19.05)**
CB9901	F562C	60,000 **(4136.79)**	0.187 **(4.75)**	0.63	4.62 **(117.35)**	3.38 **(85.85)**	0.81 **(20.57)**	1.12 **(28.45)**	1.50 **(38.10)**
43CB16	F1000C43	43,000 **(2964.70)**	0.438 **(11.13)**	4.3	6.54 **(166.11)**	5.63 **(143.00)**	.72 **(18.29)**	1.38 **(35.05)**	1.88† **(47.76)**
Ball Type Excess Flow Valves									
CK4402	F250C	60,000 **(4136.79)**	0.094 **(2.39)**		3.38 **(85.85)**	2.50 **(63.50)**	0.50 **(12.70)**	0.63 **(16.00)**	1.18 **(29.97)**
CK6602	F375C	60,000 **(4136.79)**	0.125 **(3.18)**		3.75 **(95.25)**	2.62 **(66.55)**	0.53 **(13.46)**	0.75 **(19.05)**	1.18 **(29.97)**
CK9902	F562C	60,000 **(4136.79)**	0.187 **(4.75)**		4.62 **(117.35)**	3.38 **(85.85)**	0.81 **(20.57)**	1.12 **(28.45)**	1.50 **(38.10)**

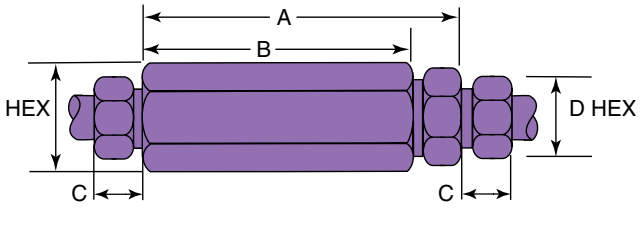
+Body material is 15-5PH

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

† Distance across flats

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

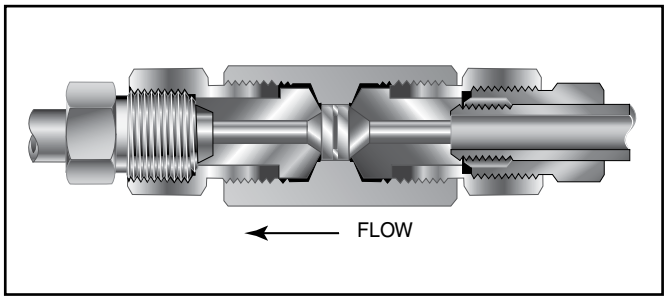
Figure 1



High Pressure Line Filters

Pressures to 60,000 psi (4137 bar)

Dual-Disc Line Filters

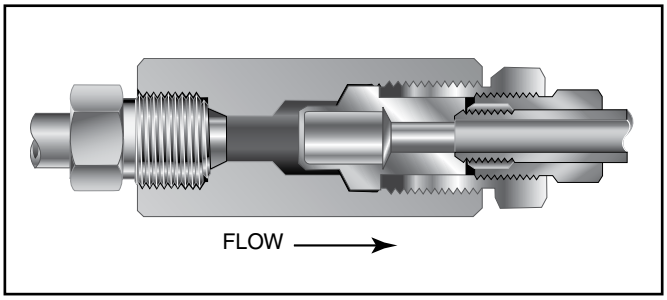


Parker Autoclave Engineers Dual-Disc Line Filters are utilized in numerous industrial, chemical processing, aerospace, nuclear and other applications. With the dual-disc design, large contaminant particles are trapped by the upstream filter element before they can reach and clog the smaller micron-size downstream element. Filter elements can be easily replaced.

Materials: 316 Stainless Steel: body, cover, cover gland. 300 Series Stainless Steel: filter elements.

Filter Elements: Downstream/upstream micron size 35/65 is standard. 5/10 or 10/35 also available when specified. Other element combinations available on special order.

Cup-Type Line Filters



Parker Autoclave Engineers High Flow Cup-Type Line Filters are recommended in high pressure systems requiring both high flow rates and maximum filter surface area. Widely used in the industrial and chemical processing fields, the cup design offers as much as six times the effective filter area as compared to disc-type units. In addition, the filter elements can be quickly and easily replaced.

Materials: 316 Stainless Steel: body, cover, cover gland. 300 Series Stainless Steel: filter element.

Filter Elements: 300 Series Stainless Steel sintered cup. Standard elements available in choice of 5, 35 or 65 micron sizes. ***NOTE:*** *Filter ratings are nominal.*

NOTE 1: *All filters furnished complete with connection components unless specified without. All dimensions for reference only and subject to change.*

NOTE 2: Parker *Autoclave Engineers disc and cup type filters are designed to filter small amounts of process particles. It is recommended that all fluids are thoroughly cleaned prior to entering the higher pressure system.*

For optional materials, see Needle Valve Options section

NOTE 3: *Special material filters may be supplied with four flats in place of standard hex.*

NOTE 4: *Pressure differential not to exceed 1,000 psi (69 bar) in a flowing condition.*

NOTE 5: *Larger micron size filter element is installed on the upstream (inlet) side.*

Dual-Disc Line Filters

Catalog Number	Pressure Rating psi (bar)*	Orifice inches (mm)	Micron Size**	Connection Size and Type	Effective Filter Element Area in.^{2} (mm^2)	Dimensions - inches (mm) A	B	C	D Typical	Hex
CLF4400	60,000	0.094	35/65		0.07	4.75	3.00	0.50	.63	1.12
CLF4400-5/10	**(4136.79)**	**(2.39)**	5/10	F250C	**(45.16)**	**(20.65)**	**(76.20)**	**(12.70)**	**(16.00)**	**(28.45)**
CLF4400-10/35			10/35							
CLF6600	60,000	0.125	35/65		0.07	5.12	3.00	0.53	.75	1.12
CLF6600-5/10	**(4136.79)**	**(3.18)**	5/10	F375C	**(45.16)**	**(130.16)**	**(76.20)**	**(13.46)**	**(19.05)**	**(28.45)**
CLF6600-10/35			10/35							
CLF9900	60,000	0.187	35/65		0.15	5.81	3.38	0.81	1.12	1.38
CLF9900-5/10	**(4136.79)**	**(4.75)**	5/10	F562C	**(96.77)**	**(147.57)**	**(85.85)**	**(20.58)**	**(28.45)**	**(35.05)**
CLF9900-10/35			10/35							

Cup-Type Line Filters

CF4-5	60,000	0.094	5		1.29	4.19	3.38	0.50	.63	1.38
CF4-35	**(4136.79)**	**(2.39)**	35	F250C	**(832.26)**	**(106.42)**	**(85.85)**	**(12.70)**	**(16.00)**	**(35.05)**
CF4-65			65							
CF6-5	60,000	0.125	5		1.29	4.62	3.62	0.53	.75	1.38
CF6-35	**(4136.79)**	**(3.18)**	35	F375C	**(832.26)**	**(117.35)**	**(91.94)**	**(13.46)**	**(19.05)**	**(35.05**
CF6-65			65							
CF9-5	60,000	0.187	5		1.29	5.25	4.06	0.81	1.12	1.50
CF9-35	**(4136.79)**	**(4.75)**	35	F562C	**(832.26)**	**(133.35)**	**(103.12)**	**(20.58)**	**(28.45)**	**(38.10)**
CF9-65			65							

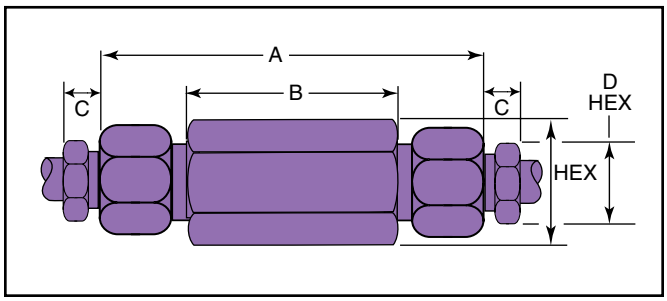
Note:

** *Other micron sizes available on special order. Change last digits of the catalog number accordingly.*
For optional materials, see Needle Valve Options section.

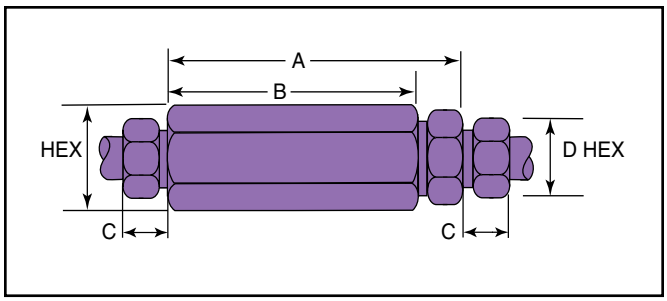
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Dual-Disc Line Filters



Cup-Type Line Filters



High Anti-Vibration Collet Gland Assembly

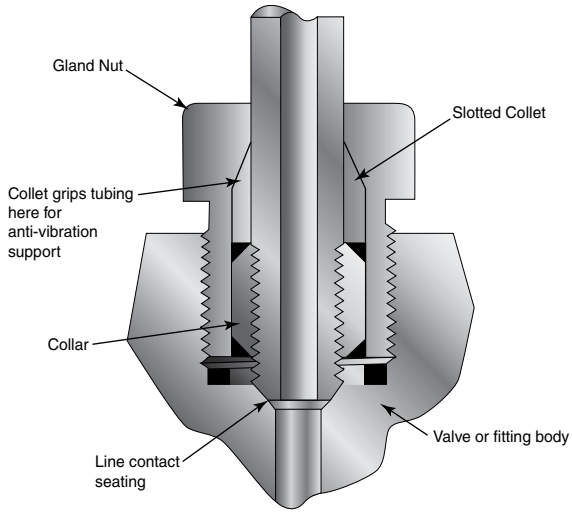
Pressures to 150,000 psi (10342 bar)

Series KCGL Sizes to 9/16" (14.29 mm)

For extreme conditions of vibration and/or shock in tubing systems, such as locating valve or fitting on an unsupported line near a compressor, Parker Autoclave Engineers coned-and-threaded connections are offered with the Anti-Vibration Collet Gland Assemblies. Completely interchangeable with standard Parker Autoclave Engineers high pressure connections, the Collet Gland Assemblies provide equally effective pressure handling capability.

In standard connection systems, the bending stresses on the threaded area of the tubing imposed by excessive vibration or movement may cause premature fatigue failure of the tubing at the back of the thread. By moving the stress concentration back to the unthreaded part of the tubing and providing a wedge-type gripping action, the Parker Autoclave Engineers anti-vibration collet gland assembly strengthens the entire structure. With stress concentration reduced and overall stress level maintained well below the endurance limit of the material, the result is virtually unlimited vibrational fatigue life.

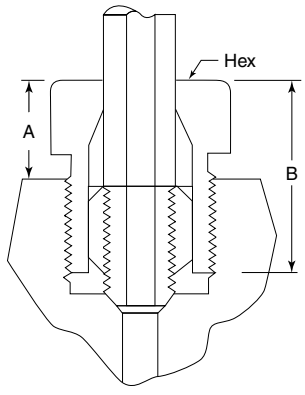
A less complex and more economical design than other vibration-resistant connections, the Collet Gland Assembly utilizes the same coned-and-threaded features of Parker Autoclave Engineers high pressure connections. In Series KCGL the gland nut is recessed to accommodate a tapered, slotted collet that grips the tubing at a point behind the threaded area of the tubing.The design provides a slight difference in angles between the collet and the corresponding taper of the gland nut. As the nut is tightened, it acts to wedge the tapered end of the collet into a gripping engagement with the tubing and, at the same time, forces the collar and tubing assembly into line contact with the connection seat.



Series KCGL
Pressures to 60,000 psi (4137 bar)

Note: 1) To order components with anti-vibration assemblies add -K to catalog numbers.
2) Special material assemblies may be supplied with four flats in place of standard hex.

Catalog Number	Part	Outside Diameter Tubing Size in. (mm)	Dimensions - inches (mm)		
			A	B	Hex
KCGL40-316	Complete assembly	1/4 (6.35)	0.50 (12.70)	0.81 (20.58)	0.62 (15.75)
KCL40-316	Slotted collet				
KGL40-316	Gland nut				
KCGL60-316	Complete assembly	3/8 (9.53)	0.62 (15.75)	1.12 (28.45)	0.81 (20.58)
KCL60-316	Slotted collet				
KGL60-316	Gland nut				
KCGL90-316	Complete assembly	9/16 (14.29)	1.00 (25.40)	1.50 (38.10)	1.19 (30.23)
KCL90-316	Slotted collet				
KGL90-316	Gland nut				



Series KCGL
60,000 psi (4137 bar)

Standard Parker Autoclave Engineers collar not included in complete assembly

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave stocks select products. Consult your local representative.

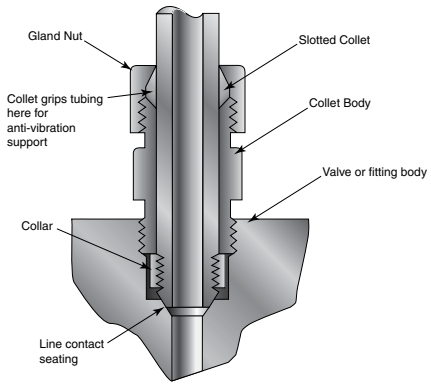
Series KCBGLX - Sizes to 1" (25.40)
Series KCBGL - Sizes to 1/4" (6.35), 5/16" (7.94), 3/8" (9.53)

For extreme conditions of vibration and/or shock in tubing systems, such as locating a valve or fitting on an unsupported line near a compressor, Autoclave coned-and-threaded connections are offered with the Anti-Vibration Collet Gland Assemblies. A less complex and more economical design than other vibration-resistant connections, the collet gland assembly utilizes the same coned-and-threaded features of Autoclave high pressure connections.

Series KCBGLX and KCBGL extends the gland nut to provide room for the tapered, slotted collet and collet nut. The design provides a slight difference in angles between the collet and the corresponding taper of the gland nut. As the nut is tightened, it acts to wedge the tapered end of the collet into a gripping engagement with the tubing.

Materials

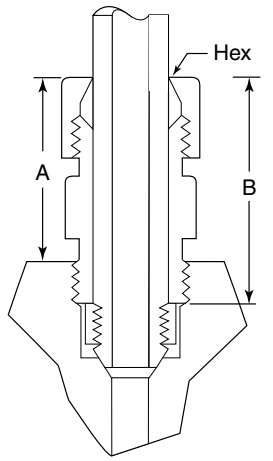
Type 316 stainless steel with bonded dry film (316MC) moly lubricant.



Series KCBGLX - Pressures to 43,000 psi (2965 bar)
Series KCBGL - Pressures to 150,000 psi (10342 bar)

Note: 1) To order components with anti-vibration assemblies add -K to catalog numbers.
2) Special material assemblies may be supplied with four flats in place of standard hex.

Catalog Number	Part	Outside Diameter Tubing Size in. (mm)	Dimensions - inches (mm)		
			A	B	Hex
KCBGLX160-316MC	Complete assembly	1.0 (25.40)	1.69 (25.40)	2.38 (60.45)	1.50 (38.10)
KCBLX160-316MC	Collet body				
KCCLX160-316MC	Slotted collet				
KGLX160-316MC	Gland nut				
KCBGL40-316MC†	Complete assembly	.250 (6.35)	1.38 (34.92)	1.88 (47.62)	.75 (19.05)
KCBL40-316MC	Collet body				
KCCLX40-316MC	Slotted collet				
KGL40-316MC	Gland nut				
KCBGL50-316MC†	Complete assembly	.312 (7.94)	1.38 (34.92)	1.88 (47.62)	.75 (19.05)
KCBL50-316MC	Collet body				
KCCL50-316MC	Slotted collet				
KGL50-316MC	Gland nut				
KCBGL60-316MC†	Complete assembly	.375 (9.53)	1.38 (34.92)	1.88 (47.62)	.75 (19.05)
KCBL60-316MC	Collet body				
KCCLX60-316MC	Slotted collet				
KGL60-316MC	Gland nut				



Series KCBGLX - 43,000 psi (2965 bar)
Series KCBGL - 150,000 psi (10342 bar)

Standard Autoclave Engineers collar not included in complete assembly

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave stocks select products. Consult your local representative.

† KCBGL anti-vibes are for 100,000 and 150,000 psi components.

02-0125SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

P Series Pipe Fittings

Pressures to 15,000 psi (1034 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, research and oil and gas industries.

Pipe Fittings, Tubing and Nipples Features:

- Available sizes are 1/4", 3/8", 1/2", 3/4" and 1"
- Fittings and tubing manufactured from cold worked 316 stainless steel.
- Operating Temperatures from -423°F (-252°C) to 400°F (204°C).

Parker

Autoclave Engineers®

www.autoclave.com

Pipe Fittings

Pressures to 15,000 psi (1034 bar)

Parker Autoclave Engineers pipe fittings, P Series, are designed for liquid and gas applications. Available from 1/4" to 1" NPT to 15,000 psi and temperatures to 400°F (204°C)

Pipe Elbow

Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D	Block Thickness	Fitting Pattern
PL4400	1/4" NPT	15,000 **(1034.20)**	0.42 **(10.67)**	1.13 **(28.58)**	1.50 **(38.10)**	0.75 **(19.05)**	0.75 **(19.05)**	0.75 **(19.05)**	**See Figure 1**
PL6600	3/8" NPT	15,000 **(1034.20)**	0.56 **(14.22)**	1.50 **(38.10)**	2.00 **(50.80)**	1.00 **(25.40)**	1.00 **(25.40)**	1.00 **(25.40)**	
PL8800	1/2" NPT	15,000 **(1034.20)**	0.69 **(17.53)**	1.88 **(47.75)**	3.00 **(76.20)**	1.25 **(31.75)**	1.50 **(38.10)**	1.25 **(31.75)**	
PL12	3/4" NPT	10,000 **(689.46)**	0.89 **(22.61)**	2.18 **(55.37)**	3.00 **(76.20)**	1.50 **(38.10)**	1.50 **(38.10)**	1.38 **(35.05)**	
PL16	1" NPT	10,000 **(689.46)**	1.13 **(28.58)**	2.50 **(63.50)**	4.12 **(104.65)**	1.56 **(39.67)**	2.06 **(52.37)**	1.75 **(44.45)**	

Pipe Tee

PT4440	1/4" NPT	15,000 **(1034.20)**	0.42 **(10.67)**	1.13 **(28.58)**	1.50 **(38.10)**	0.75 **(19.05)**	0.75 **(19.05)**	0.75 **(19.05)**	**See Figure 2**
PT6660	3/8" NPT	15,000 **(1034.20)**	0.56 **(14.22)**	1.50 **(38.10)**	2.00 **(50.80)**	1.00 **(25.40)**	1.00 **(25.40)**	1.00 **(25.40)**	
PT8880	1/2" NPT	15,000 **(1034.20)**	0.69 **(17.53)**	1.88 **(47.75)**	3.00 **(76.20)**	1.25 **(31.75)**	1.50 **(38.10)**	1.25 **(31.75)**	
PT12	3/4" NPT	10,000 **(689.46)**	0.89 **(22.61)**	2.18 **(55.37)**	3.00 **(76.20)**	1.50 **(38.10)**	1.50 **(38.10)**	1.38 **(35.05)**	
PT16	1" NPT	10,000 **(689.46)**	1.13 **(28.58)**	2.50 **(63.50)**	4.12 **(104.65)**	1.56 **(39.67)**	2.06 **(52.37)**	1.75 **(44.45)**	

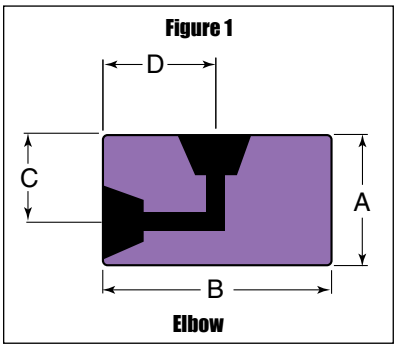
Pipe Cross

PX4444	1/4" NPT	15,000 **(1034.20)**	0.42 **(10.67)**	1.50 **(38.10)**	1.50 **(38.10)**	0.75 **(19.05)**	0.75 **(19.05)**	0.75 **(19.05)**	**See Figure 3**
PX6666	3/8" NPT	15,000 **(1034.20)**	0.56 **(14.22)**	2.00 **(50.80)**	2.00 **(50.80)**	1.00 **(25.40)**	1.00 **(25.40)**	1.00 **(25.40)**	
PX8888	1/2" NPT	15,000 **(1034.20)**	0.69 **(17.53)**	2.50 **(63.50)**	3.00 **(76.20)**	1.25 **(31.75)**	1.50 **(38.10)**	1.25 **(31.75)**	
PX12	3/4" NPT	10,000 **(689.46)**	0.89 **(22.61)**	3.00 **(76.20)**	3.00 **(76.20)**	1.50 **(38.10)**	1.50 **(38.10)**	1.38 **(35.05)**	
PX16	1" NPT	10,000 **(689.46)**	1.13 **(28.58)**	3.13 **(79.38)**	4.12 **(104.65)**	1.56 **(39.67)**	2.06 **(52.37)**	1.75 **(44.45)**	

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by pipe pressure rating, if lower.
All dimensions for reference only and subject to change.

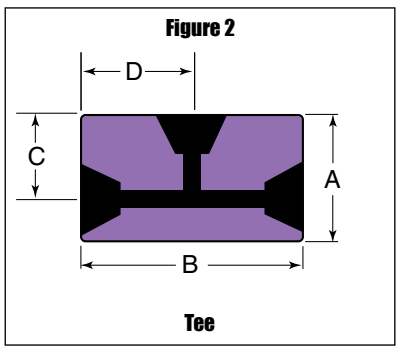
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative. For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

Figure 1



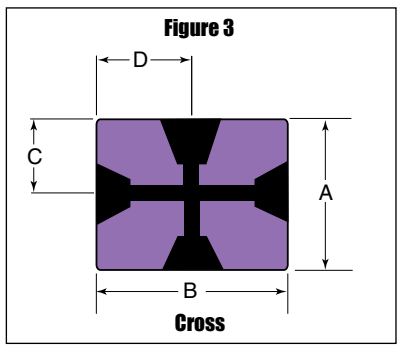
Elbow

Figure 2



Tee

Figure 3



Cross

Pipe Coupling

Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - in.(mm) A	Dimensions - in.(mm) B	Fitting Pattern
15F4488	1/4" NPT	15,000 **(1034.20)**	0.42 **(10.67)**	.075 **(19.05)**	1.50 **(38.10)**	**See Figure 4**
15F6688	3/8" NPT	15,000 **(1034.20)**	0.56 **(14.22)**	1.00 **(25.40)**	1.63 **(41.28)**	
15F8888	1/2" NPT	15,000 **(1034.20)**	0.69 **(17.53)**	1.19 **(30.23)**	2.00 **(50.80)**	
10F121288	3/4" NPT	10,000 **(689.46)**	0.89 **(22.61)**	1.38 **(30.06)**	2.75 **(69.90)**	
10F161688	1" NPT	10,000 **(689.46)**	1.13 **(28.58)**	1.75 **(44.50)**	2.50 **(63.50)**	

Pipe Bulkhead Coupling

Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D	E Max	Fitting Pattern
15BF4488	1/4" NPT	15,000 **(1034.20)**	0.42 **(10.67)**	0.94 **(23.80)**	2.00 **(50.80)**	1.00 **(25.40)**	0.63 **(15.75)**	0.38 **(9.53)**	**See Figure 5**
15BF6688	3/8" NPT	15,000 **(1034.20)**	0.56 **(14.22)**	1.13 **(28.60)**	2.38 **(60.50)**	1.38 **(35.05)**	0.79 **(20.07)**	0.38 **(9.53)**	
15BF8888	1/2" NPT	15,000 **(1034.20)**	0.69 **(17.53)**	1.68 **(42.67)**	2.63 **(66.80)**	1.88 **(47.80)**	0.91 **(23.11)**	0.38 **(9.53)**	
10BF121288	3/4" NPT	10,000 **(689.46)**	0.89 **(22.61)**	1.68 **(42.67)**	2.63 **(66.80)**	1.88 **(47.80)**	0.91 **(23.11)**	0.38 **(9.53)**	
10BF161688	1" NPT	10,000 **(689.46)**	1.13 **(28.58)**	1.94 **(49.28)**	3.50 **(88.90)**	1.87+ **(47.50)**	1.50 **(38.10)**	0.38 **(9.53)**	

Pipe Plugs

Catalog Number	Connection Type	Pressure Rating psi (bar)*	Dimensions - in.(mm) A	Dimensions - in.(mm) B	Fitting Pattern
PP40	1/4" NPT	15,000 **(1034.20)**	0.63 **(16.00)**	1.12 **(28.45)**	**See Figure 6**
PP60	3/8" NPT	15,000 **(1034.20)**	0.75 **(19.05)**	1.12 **(28.45)**	
PP80	1/2" NPT	15,000 **(1034.20)**	1.00 **(25.40)**	1.50 **(38.10)**	
PP120	3/4" NPT	10,000 **(689.46)**	1.38 **(35.05)**	1.50 **(38.10)**	
PP160	1" NPT	10,000 **(689.46)**	1.38 **(35.05)**	1.88 **(47.75)**	

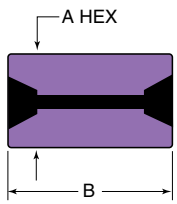
*Maximum pressure rating is based on the lowest rating of any component.
+ distance across flats

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products.
Consult your local representative.

NOTE: NPT (Pipe) Connections:
- NPT threads must be sealed using a high quality PTFE tape and/or paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

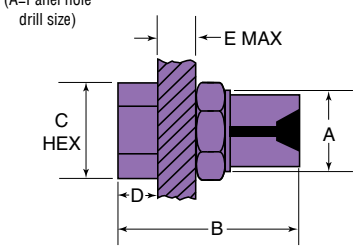
NOTE: Special material components may be supplied with four flats in place of standard hex.

Figure 4



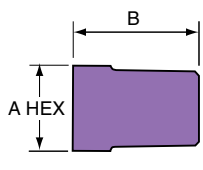
Coupling

Figure 5



Bulkhead Coupling

Figure 6

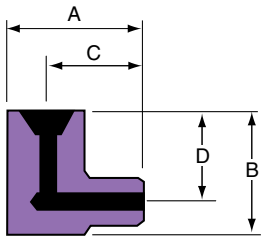


Plugs

Pressures to 15,000 (1034 bar)

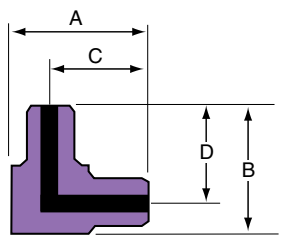
Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)				Block Thickness	Fitting Pattern
				A	B	C	D		
Street Pipe Elbow									
SPL4400	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	1.50 **(38.10)**	1.50 **(38.10)**	1.13 **(28.70)**	1.00 **(25.40)**	0.75 **(19.05)**	**See Figure 1**
SPL6600	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	1.75 **(44.75)**	1.50 **(38.10)**	1.25 **(31.75)**	1.00 **(25.40)**	1.00 **(25.40)**	
SPL8800	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	2.25 **(57.15)**	2.00 **(50.80)**	1.63 **(41.40)**	1.25 **(31.75)**	1.25 **(31.75)**	
SPL12	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	2.50 **(63.50)**	2.62 **(66.55)**	1.75 **(44.45)**	1.31 **(33;27)**	1.50 **(38.10)**	
SPL16	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	4.12 **(104.65)**	2.50 **(63.50)**	2.69 **(68.33)**	1.75 **(44.45)**	1.75 **(44.45)**	
Male Pipe Elbow									
MPL4400	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	1.50 **(38.10)**	1.50 **(38.10)**	1.13 **(28.70)**	1.13 **(28.70)**	0.75 **(19.05)**	**See Figure 2**
MPL6600	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	1.75 **(44.45)**	1.75 **(44.45)**	1.25 **(31.75)**	1.25 **(31.75)**	1.00 **(25.40)**	
MPL8800	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	2.00 **(50.80)**	2.00 **(50.80)**	1.50 **(38.10)**	1.50 **(38.10)**	1.00 **(25.40)**	
MPL12	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	2.62 **(66.55)**	2.62 **(66.55)**	1.75 **(44.45)**	1.75 **(44.45)**	1.50 **(38.10)**	
MPL16	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	3.00 **(76.20)**	3.00 **(76.20)**	2.13 **(54.10)**	2.13 **(54.10)**	1.38 **(35.05)**	
Male Pipe Tee									
MPT4440	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	2.25 **(57.15)**	1.50 **(38.10)**	1.13 **(28.70)**	1.13 **(28.70)**	0.75 **(19.05)**	**See Figure 3**
MPT6660	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	2.50 **(63.50)**	1.75 **(44.45)**	1.75 **(44.45)**	1.25 **(31.75)**	1.00 **(25.40)**	
MPT8880	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	3.00 **(76.20)**	2.00 **(50.80)**	1.50 **(38.10)**	1.50 **(38.10)**	1.00 **(25.40)**	
MPT12	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	3.50 **(88.90)**	2.62 **(66.55)**	1.75 **(44.45)**	1.75 **(44.45)**	1.50 **(38.10)**	
MPT16	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	4.12 **(104.65)**	3.00 **(76.20)**	2.13 **(54.10)**	2.13 **(54.10)**	1.75 **(44.45)**	

Figure 1



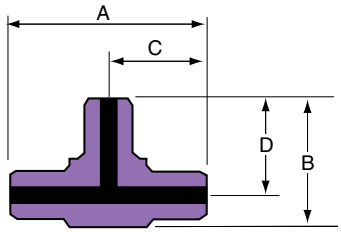
Street Elbow

Figure 2



Male Elbow

Figure 3



Male Tee

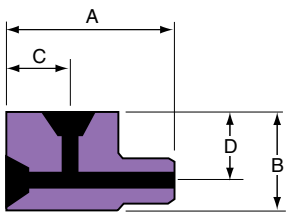
Street Pipe Tee

Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D	Block Thickness	Fitting Pattern
SPT4440	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	2.00 **(50.80)**	1.38 **(35.05)**	0.81 **(20.57)**	1.00 **(25.40)**	0.75 **(19.05)**	**See Figure 4**
SPT6660	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	2.50 **(63.50)**	1.50 **(38.10)**	1.00 **(25.40)**	1.00 **(25.40)**	1.00 **(25.40)**	
SPT8880	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	3.00 **(76.20)**	1.75 **(44.45)**	1.50 **(38.10)**	1.25 **(31.75)**	1.25 **(31.75)**	
SPT12	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	3.12 **(79.25)**	2.62 **(66.55)**	1.38 **(35.05)**	1.31 **(33.27)**	1.50 **(38.10)**	
SPT16	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	4.12 **(104.65)**	3.00 **(76.20)**	2.13 **(54.10)**	2.13 **(54.10)**	1.75 **(44.45)**	

Male Branch Tee

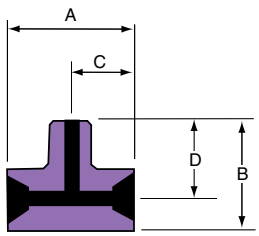
BPT4440	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	2.00 **(50.80)**	1.50 **(38.10)**	1.00 **(25.40)**	1.13 **(28.70)**	0.75 **(19.05)**	**See Figure 5**
BPT6660	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	2.00 **(50.80)**	1.75 **(44.45)**	1.00 **(25.40)**	1.25 **(31.75)**	1.00 **(25.40)**	
BPT8880	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	3.00 **(76.20)**	2.25 **(57.15)**	1.50 **(38.10)**	1.62 **(41.15)**	1.25 **(31.75)**	
BPT12	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	3.00 **(76.20)**	2.50 **(63.50)**	1.50 **(38.10)**	1.75 **(44.45)**	1.38 **(35.05)**	
BPT16	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	4.12 **(104.65)**	3.00 **(76.20)**	2.06 **(52.32)**	2.13 **(54.10)**	1.75 **(44.45)**	

Figure 4



Street Tee

Figure 5



Branch Tee

NOTE: NPT (Pipe) Connections:

- NPT threads must be sealed using a high quality PTFE tape and/or paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

Pipe Hex Nipples

Pressures to 15,000 psi (1034 bar)

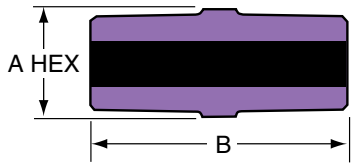
For rapid system make-up, Parker Autoclave Engineers supplies pipe nipples in various sizes and lengths for pipe valves and fittings.

Special lengths

In addition to the standard lengths listed in the table below, nipples are available in custom lengths. Consult factory.

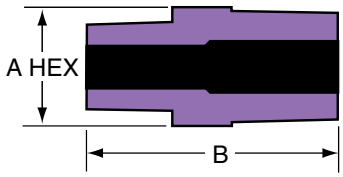
Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - in.(mm) A Hex	Dimensions - in.(mm) B	Fitting Pattern
Pipe Hex Close Nipples						
15MAP4P4	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	0.63 **(16.00)**	1.81 **(46.02)**	**See Figure 1**
15MAP6P6	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	0.75 **(19.05)**	1.88 **(47.63)**	
15MAP8P8	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	0.94 **(23.88)**	2.50 **(63.50)**	
10MAP12P12	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	1.19 **(30.23)**	2.50 **(63.50)**	
10MAP16P16	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	1.38 **(35.05)**	3.19 **(81.03)**	
Pipe Hex Nipples						
15MAP4P4-4	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	0.63 **(16.00)**	4.00 **(101.60)**	**See Figure 1**
15MAP4P4-6	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	0.63 **(16.00)**	6.00 **(152.40)**	
15MAP4P4-8	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	0.63 **(16.00)**	8.00 **(203.20)**	
15MAP6P6-4	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	0.75 **(19.05)**	4.00 **(101.60)**	
15MAP6P6-6	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	0.75 **(19.05)**	6.00 **(152.40)**	
15MAP6P6-8	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	0.75 **(19.05)**	8.00 **(203.20)**	
15MAP8P8-4	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	0.94 **(23.88)**	4.00 **(101.60)**	
15MAP8P8-6	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	0.94 **(23.88)**	6.00 **(152.40)**	
15MAP8P8-8	1/2" NPT	15,000 **(1034.20)**	0.359 **(9.12)**	0.94 **(23.88)**	8.00 **(203.20)**	
10MAP12P12-4	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	1.19 **(30.23)**	4.00 **(101.60)**	
10MAP12P12-6	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	1.19 **(30.23)**	6.00 **(152.40)**	
10MAP12P12-8	3/4" NPT	10,000 **(689.46)**	0.609 **(14.47)**	1.19 **(30.23)**	8.00 **(203.20)**	
10MAP16P16-4	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	1.38 **(35.05)**	4.00 **(101.60)**	
10MAP16P16-6	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	1.38 **(35.05)**	6.00 **(152.40)**	
10MAP16P16-8	1" NPT	10,000 **(689.46)**	0.765 **(19.43)**	1.38 **(35.05)**	8.00 **(203.20)**	
Pipe Hex Reducer Nipples						
15MAP4P6	1/4" to 3/8" NPT	15,000 **(1034.20)**	0.203 **(5.16)**	0.75 **(19.05)**	1.88 **(47.75)**	**See Figure 2**
15MAP4P8	1/4" to 1/2" NPT	15,000 **(1034.20)**	0.203 **(5.16)**	0.94 **(23.88)**	2.31 **(58.67)**	
10MAP8P16	1/2" to 1" NPT	10,000 **(689.46)**	0.375 **(9.53)**	1.38 **(35.05)**	2.88 **(73.15)**	
10MAP12P16	3/4" to 1" NPT	10,000 **(689.46)**	0.500 **(12.70)**	1.38 **(35.05)**	2.94 **(74.68)**	

Figure 1



Pipe Nipple

Figure 2



Reducer Nipple

Special material filters may be supplied with four flats in place of standard hex.

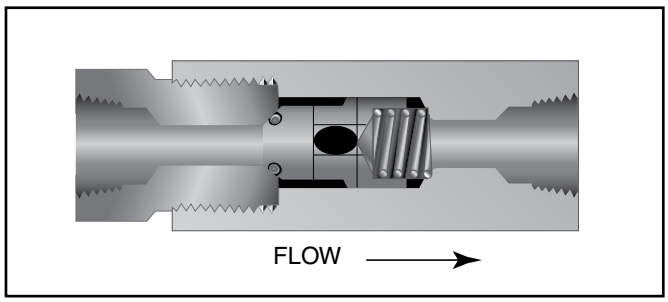
*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.

Pipe Check Valves

Pressures to 15,000 (1034 bar)

Pipe O-Ring Check Valves



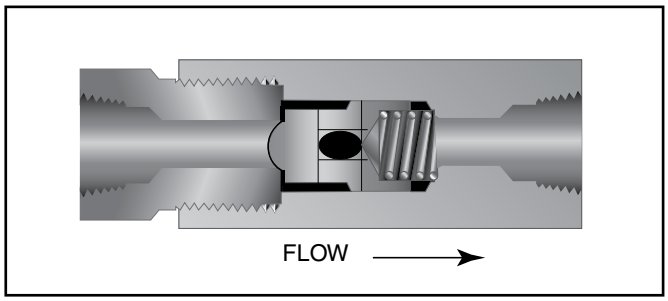
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C).

Provides unidirectional flow and tight shut-off for liquids and gas with high reliability. When differential drops below cracking pressure*, valve shuts off. **(Not for use as relief valve.)**

Materials: 316 Stainless Steel: body, cover, poppet, cover gland. 300 Series Stainless Steel: spring
Standard O-ring: Viton, for operation to 400° F (204°C). Buna-N or PTFE available for 250°F (121°C) or 400°F (204°C) respectively; specify when ordering.

***Cracking Pressure:** 20 psi (1.38 bar) ±30%. Springs for higher cracking pressures (up to 100 psi (6.89 bar)) available on special order for O-ring style check valves only.

Pipe Ball Check Valves



Minimum operating temperature for pipe ball check valves 0°F (-17.8°C).

Prevents reverse flow where **leak-tight shut-off is not mandatory**. When differential drops below cracking pressure, valve closes. With all-metal components, valve can be used up to 400°F (204°C). See Technical Information section for connection temperature limitations. (Not for use as a relief valve.)

Ball and poppet are an integral design to assure positive, in-line seating without “chatter”. Poppet is designed essentially for axial flow with minimum pressure drop.

Materials: 316 Stainless Steel: body, cover, ball poppet, cover gland. 300 Series Stainless Steel: ball, spring.

CAUTION: *While testing has shown O-Rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

Special material check valves may be supplied with four flats in place of standard hex.

Pipe Check Valves

Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Rated Cv	Dimensions - inches (mm)				Fitting Pattern
					A	B	C Hex	D Hex	
Pipe O-Ring Check Valves									
CPO4400	1/4" NPT	15,000 **(1034.20)**	0.12 **(3.05)**	.28	3.37 **(85.60)**	2.38 **(60.33)**	0.81 **(20.57)**	0.81 **(20.57)**	**See Figure 1**
CPO6600	3/8" NPT	15,000 **(1034.20)**	0.22 **(5.59)**	.84	3.95 **(100.33)**	2.88 **(73.15)**	1.00 **(25.40)**	1.00 **(25.40)**	
CPO8800	1/2" NPT	15,000 **(1034.20)**	0.36 **(9.14)**	2.30	5.36 **(136.14)**	3.88 **(98.55)**	1.38 **(35.05)**	1.19 **(30.23)**	
CPO12	3/4" NPT	10,000 **(689.46)**	0.52 **(13.21)**	4.70	6.29 **(159.77)**	4.75 **(120.65)**	1.75 **(44.45)**	1.38 **(35.05)**	
CPO16	1" NPT	10,000 **(689.46)**	0.69 **(17.53)**	7.40	7.71 **(195.83)**	5.75 **(146.05)**	1.88+ **(47.75)**	1.88 **(47.75)**	
Pipe Ball Check Valves									
CPB4400	1/4" NPT	15,000 **(1034.20)**	0.12 **(3.05)**	.28	3.37 **(85.60)**	2.38 **(60.33)**	0.81 **(20.57)**	0.81 **(20.57)**	**See Figure 1**
CPB6600	3/8" NPT	15,000 **(1034.20)**	0.22 **(5.59)**	.84	3.95 **(100.33)**	2.88 **(73.15)**	1.00 **(25.40)**	1.00 **(25.40)**	
CPB8800	1/2" NPT	15,000 **(1034.20)**	0.36 **(9.12)**	2.30	5.36 **(136.14)**	3.88 **(98.55)**	1.38 **(35.05)**	1.19 **(30.23)**	
CPB12	3/4" NPT	10,000 **(689.46)**	0.52 **(13.21)**	4.70	6.29 **(159.77)**	4.75 **(120.65)**	1.75 **(44.45)**	1.38 **(35.05)**	
CPB16	1" NPT	10,000 **(689.46)**	0.69 **(17.53)**	7.40	7.71 **(195.83)**	5.75 **(146.05)**	1.88+ **(47.75)**	1.88 **(47.75)**	

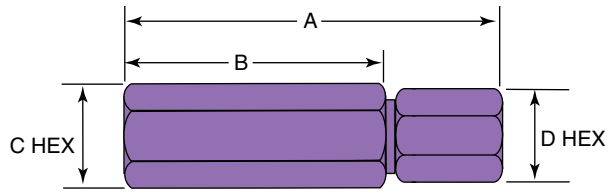
*Maximum pressure rating is based on the lowest rating of any component.
+ distance across flats

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave stocks select products. Consult your local representative.

NOTE: NPT (Pipe) Connections:

- NPT threads must be sealed using a high quality PTFE tape and/or paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

Figure 1



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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Adapters/Couplings

Parker Autoclave Engineers offers a complete line of standard adapters and couplings as well as special designs and materials.

Male/Female Adapters:
Male/female adapters are designed to join a female connection directly to another size and/or type of connection without the need for an additional coupling.

Couplings:
Couplings and reducer/adapter couplings accommodate female-to-female joining of any combination of standard size tubing listed.

Male/Male Adapters:
Male-to-male one piece adapters are designed to join two female connections of any combination listed.

QSS Male/Female Adapters:
Male/female adapters are designed to join a female connection directly to another size and/or type of connection without the need for an additional coupling.

QSS Male/Male Adapters:
Male-to-male one piece adapters are designed to join two female connections of any combination listed.

Male/Male JIC Adapters:
Male-to-male one piece adapters have one end machined with a 37° flare design.

Male/Female JIC Adapters:
Male/female adapters are designed to join a female connection directly to another size and/or type of connection without the need for an additional coupling.

EZ-Union Adapters:
O-ring face seal adapter.
Flat face style o-ring seal permits easy installation or removal of components.

Butt-Weld/Header Coupling Adapters:
Female to male adapters have one end machined for butt-welding to pipe, tubes, and headers.

Bulkhead Adapters:
Male to female adapters designed for panel mounting.

SAE O-Ring Adapters:
Female to male SAE/MS straight thread o-ring seal adapter.

For specials or other adapters not listed contact your local Sales Representative.

Parker

Autoclave Engineers®
www.autoclave.com

Male /female adapters are designed to adapt a female connection to another size and/or type of connection without the need for additional couplings. In selecting an adapter involving two different sized connections, the larger connection should be on the male end where it is possible to maximize the mechanical strength of the adapter.

To use this chart:

1. Locate MALE end in vertical column.
2. Locate desired FEMALE end of adapter across top of chart.
3. Catalog number of required adapter is located at intersection of columns.
4. For one piece adapter add-OP to suffix of part number

Other Adapters

Parker Autoclave Engineers supplies many other types of adapters on special order. These include socketweld to O.D. tube or nominal pipe size, extended or special designs.

Materials

All Parker Autoclave Engineers adapters are precision machined from cold-worked Type 316 stainless steel. Other materials available on special order.

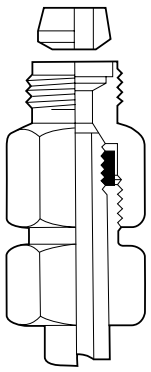
Note: Special material couplings may be supplied with four flats in place of standard hex. Pipe connections are rated 400°F (204°C) to -423°F (-17.8°C).

MALE END				FEMALE END										
				Connection Size and Type	SpeedBite				Medium Pressure					
					1/8" W125	1/4" SW250	3/8" SW375	1/2" SW500	1/4" SF250CX	3/8" SF375CX	9/16" SF562CX	3/4" SF750CX	1" SF1000CX	1-1/2" SF1500CX
		Fits this Female Connection	Pressure Rating PSI (bar)*		15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	10,000 (689.45)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	15,000 (1034.20)
SpeedBite	1/8"	**W125**	15,000 (1034.20)			6M24C2	6M26C2	4M28C2	6M24C6	6M26C6	6M29C6			15M224C6
	1/4"	**SW250**	15,000 (1034.20)	6M42D1		6M46D2	4M48D2	6M44D6	6M46D6	6M49D6	6M412D6			
	3/8"	**SW375**	15,000 (1034.20)	6M62D1	6M64D2		4M68D2	6M64D6	6M66D6	6M69D6	6M612D6	6M616D6	15M624D6	
	1/2"	**SW500**	10,000 (689.46)	4M82D1	4M84D2	4M86D2		4M84D6	4M86D6	4M89D6	4M812D6	4M816D6		
Medium Pressure	1/4"	**SF250CX**	20,000 (1378.93)	15MX42K1	6MX44K2	6MX46K2	4MX48K2	20M44K6	20M46K6	20M49K6	20M412K6	20M416K6		
	3/8"	**SF375CX**	20,000 (1378.93)	15MX62K1	6MX64K2	6MX66K2	4MX68K2	20M64K6	20M66K6	20M69K6	20M612K6	20M616K6		
	9/16"	**SF562CX**	20,000 (1378.93)	15MX92K1	6MX94K2	6MX96K2	4MX98K2	20M94K6	20M96K6	20M99K6	20M912K6	20M916K6		
	3/4"	**SF750CX**	20,000 (1378.93)	15MX122K1	6MX124K2	6MX126K2	4MX128K2	20M124K6	20M126K6	20M129K6	20M1212K6	20M1216K6		
	1"	**SF1000CX**	20,000 (1378.93)	15MX162K1	6MX164K2	6MX166K2	4MX168K2	20M164K6	20M166K6	20M169K6	20M1612K6	20M1616K6		
	1-1/2"	**SF1500CX**	15,000 (1034.20)					15M244K6		15M249K6	15M2412K6	15M2416K6		
High Pressure	1"	**F1000C43**	43,000 (2964.69)											
	1/4"	**F250C**	60,000 (4136.85)	15M42B1	6M44B2	6M46B2	4M48B2	20M44B6	20M46B6	20M49B6	20M412B6			
	5/16"	**F312C150**	150,000 (10342.14)		6M54B2	6M56B2	4M58B2	20M54B6	20M56B6	20M59B6	20M512B6			
	3/8"	**F375C**	60,000 (4136.85)	15M62B1	6M64B2	6M66B2	4M68B2	20M64B6	20M66B6	20M69B6	20M612B6	20M616B6		
	9/16"	**F562C**	60,000 (4136.85)	15M92B1	6M94B2	6M94B2	4M98B2	20M94B6	20M96B6	20M99B6	20M912B6	20M916B6		
	9/16"	**F562C40**	40,000 (2757.90)		6M94G2						20M912G6			
Flat Top Flat Bottom	7/16"	**F437FB**	10,000 (689.45)	15M72E1	6M74E2	6M76E2	4M78E2	15M74E6	15M76E6	15M79E6				
	9/16"	**F562FB**	10,000 (689.45)	15M92E1	6M94E2	6M96E2	4M98E2	15M94E6	15M96E6	15M99E6	15M912E6	15M916E6		
	9/16"	**F562FT**	10,000 (689.45)	15M92R1	6M94R2	6M96R2	4M98R2	15M94R6	15M96R6	15M99R6	15M912R6	15M916R6		
	3/4"	**F750FB**	10,000 (689.45)	15M122E1	6M124E2	6M126E2	4M128E2	15M124E6	15M126E6	15M129E6	15M1212E6	15M1216E6		
National Pipe Thread (NPT)	1/8"	**NPT**	15,000 (1034.20)	15M22N1	15M24N2	15M26N2	10M28N2	15M24N6	15M26N6	15M29N6				
	1/4"	**NPT**	15,000 (1034.20)	15M42N1	15M44N2	15M46N2	10M48N2	15M44N6	15M46N6	15M49N6	15M412N6	15M416N6	15M424N6	
	3/8"	**NPT**	15,000 (1034.20)	15M62N1	15M64N2	15M66N2	10M68N2	15M64N6	15M66N6	15M69N6	15M612N6	15M616N6		
	1/2"	**NPT**	15,000 (1034.20)	15M82N1	15M84N2	15M86N2	10M88N2	15M84N6	15M86N6	15M89N6	15M812N6	15M816N6		
	3/4"	**NPT**	10,000 (689.45)		10M124N2	10M126N2	10M128N2	10M124N6	10M126N6	10M129N6	10M1212N6	10M1216N6		
	1"	**NPT**	10,000 (689.45)			10M166N2	10M168N2		10M166N6	10M169N6	10M1612N6	10M1616N6		

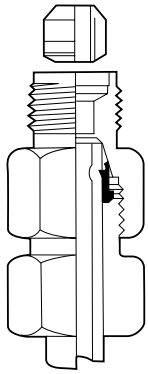
Note:
All Parker Autoclave Engineers adapters are supplied complete with appropriate glands, collars, tube nuts and sleeves unless specified without.

** The maximum pressure rating for an adapter is determined by the connection component with the LOWEST pressure rating; that is, the two end connections and the tubing or pipe used, whichever is LOWER.*

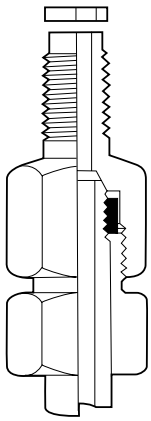
CAUTION: See appropriate pressure section in reference to proper selection of tubing.



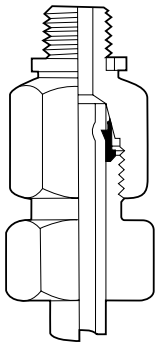
Double Cone Plug
(Medium Pressure shown)



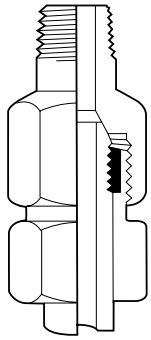
Double Cone Plug
(SpeedBite shown)



Flat Bottom Gasket
(Medium Pressure shown)



Flat Top Gasket
(SpeedBite shown)



Male NPT
(High Pressure shown)

FEMALE END

High Pressure						National Pipe Thread (NPT)					
1" F1000C43	1/4" F250C	5/16" F312C150	3/8" F375C	9/16" F562C	9/16" F562C40	1/8" NPT	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT
43,000 (2964.69)	60,000 (4136.85)	150,000 (10342.14)	60,000 (4136.85)	60,000 (4136.85)	40,000 (2757.90)	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	10,000 (689.45)	10,000 (689.45)
	6M24C3		6M26C3	6M29C3		15M22C8	15M24C8	15M26C8	15M28C8		
	6M44D3		6M46D3	6M49D3		15M42D8	15M44D8	15M46D8	15M48D8	10M412D8	
	6M64D3		6M66D3	6M69D3		15M62D8	15M64D8	15M66D8	15M68D8	10M612D8	10M616D8
	4M84D3		4M86D3	4M89D3		10M82D8	10M84D8	10M86D8	10M88D8	10M812D8	10M816D8
	20M44K3	20M45K3	20M46K3	20M49K3		15MX42K8	15MX44K8	15MX46K8	15MX48K8	10MX412K8	
	20M64K3	20M65K3	20M66K3	20M69K3		15MX62K8	15MX64K8	15MX66K8	15MX68K8	10MX612K8	10MX616K8
	20M94K3	20M95K3	20M96K3	20M99K3		15MX92K8	15MX94K8	15MX96K8	15MX98K8	10MX912K8	10MX916K8
20M1216K3	20M124K3	20M125K3	20M126K3	20M129K3	20M129K40		15MX124K8	15MX126K8	15MX128K8	10MX1212K8	10MX1216K8
	20M164K3		20M166K3	20M169K3			15MX164K8	15MX166K8	15MX168K8	10MX1612K8	10MX1616K8
							15M244K8		15M248K8		
	43M164B3		43M166B3	43M169B3	43M169B40						
43M416B3	60M44B3	60M45B3	60M46B3	60M49B3		15M42B8	15M44B8	15M46B8	15M48B8	10M412B8	10M416B8
	60M54B3		60M56B3	60M59B3					15M58B8	10M512B8	
43M616B3	60M64B3	60M65B3	60M66B3	60M69B3		15M62B8	15M64B8	15M66B8	15M68B8	10M612B8	10M616B8
43M916B3	60M94B3	60M95B3	60M96B3	60M99B3		15M92B8	15M94B8	15M96B8	15M98B8	10M912B8	10M916B8
									15M98G8		
	15M74E3		15M76E3	15M79E3		10M72E8	10M74E8	10M76E8	10M78E8	10M712E8	
	15M94E3		15M96E3			10M92E8	10M94E8	10M96E8	10M98E8	10M912E8	10M916E8
	15M94R3		15M96R3	15M99R3		10M92R8	10M94R8	10M96R8	10M98R8	10M912R8	10M916R8
	15M124E3		15M126E3	15M129E3		10M122E8	10M124E8	10M126E8	10M128E8	10M1212E8	10M1216E8
	15M24N3		15M26N3	15M29N3			15M24N8				
	15M44N3	15M45N3	15M46N3	15M49N3		15M42N8		15M46N8	15M48N8		
	15M64N3		15M66N3	15M69N3	15M69N40		15M64N8		15M68N8		
	15M84N3		15M86N3	15M89N3	15M89N40		15M84N8	15M86N8		10M812N8	
	10M124N3		10M126N3	10M129N3		10M122N8	10M124N8		10M128N8		
			10M166N3	10M169N3					10M168N8		

Parker Autoclave Engineers Male/Female Adapters are available in a "one-piece" design. They are identical to the two piece designs in length and can be ordered by adding the suffix - OP to the two piece adapter part numbers listed.

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

Speed Bite

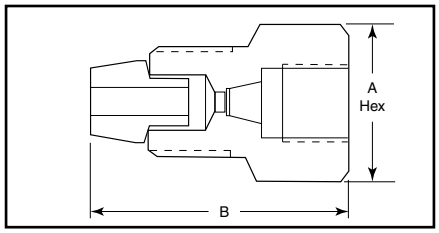
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
W125	W125			
W125	SW250	6M24C2	0.63 (15.9)	1.29 (32.1)
W125	SW375	6M26C2	0.75 (19.1)	1.41 (35.8)
W125	SW500	4M28C2	1.00 (25.4)	1.53 (38.8)
W125	SF250CX	6M24C6	0.63 (15.9)	1.41 (35.8)
W125	SF375CX	6M26C6	0.75 (19.1)	1.41 (35.8)
W125	SF562CX	6M29C6	1.00 (25.4)	1.66 (42.1)
W125	SF750CX			
W125	SF1000CX			
W125	SF1500CX	15M224C6	2.25 (57.15)	3.41 (86.54)
W125	F1000C43			
W125	F250C	6M24C3	0.75 (19.1)	1.16 (29.5)
W125	F312C150			
W125	F375C	6M26C3	1.00 (25.4)	1.34 (34.1)
W125	F562C	6M29C3	1.38 (35.1)	1.59 (40.5)
W125	F562C40			
W125	1/8 NPT	15M22C8	0.63 (15.9)	1.25 (31.8)
W125	1/4 NPT	15M24C8	0.75 (19.1)	1.47 (37.3)
W125	3/8 NPT	15M26C8	1.00 (25.4)	1.53 (38.8)
W125	1/2 NPT	15M28C8	1.18 (30.1)	1.81 (46.0)
W125	3/4 NPT			
W125	1 NPT			
SW250	W125	6M42D1	0.63 (15.9)	1.08 (27.4)
SW250	SW250			
SW250	SW375	6M46D2	0.75 (19.1)	1.64 (41.7)
SW250	SW500	4M48D2	1.00 (25.4)	1.77 (44.9)
SW250	SF250CX	6M44D6	0.63 (15.9)	1.52 (38.5)
SW250	SF375CX	6M46D6	0.75 (19.1)	1.77 (44.9)
SW250	SF562CX	6M49D6	1.00 (25.4)	1.89 (48.0)
SW250	SF750CX	6M412D6	1.38 (35.1)	2.27 (57.7)
SW250	SF1000CX			
SW250	F1000C43			
SW250	F250C	6M44D3	.75 (19.1)	1.27 (32.2)
SW250	F312C150			
SW250	F375C	6M46D3	1.00 (25.4)	1.70 (43.3)
SW250	F562C	6M49D3	1.38 (35.1)	1.77 (44.9)
SW250	F562C40			
SW250	1/8 NPT	15M42D8	0.63 (15.9)	1.39 (35.3)
SW250	1/4 NPT	15M44D8	0.75 (19.1)	1.64 (41.7)
SW250	3/8 NPT	15M46D8	1.00 (25.4)	1.70 (43.3)
SW250	1/2 NPT	15M48D8	1.18 (30.1)	1.95 (49.6)
SW250	3/4 NPT	10M412D8	1.38 (35.1)	2.21 (56.0)
SW250	1 NPT			

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
SW375	W125	6M62D1	0.75 (19.1)	1.16 (29.4)
SW375	SW250	6M64D2	0.75 (19.1)	1.41 (35.7)
SW375	SW375			
SW375	SW500	4M68D2	1.00 (25.4)	1.78 (45.3)
SW375	SF250CX	6M64D6	0.75 (19.1)	1.41 (35.9)
SW375	SF375CX	6M66D6	0.75 (19.1)	1.59 (40.4)
SW375	SF562CX	6M69D6	1.00 (25.4)	1.72 (43.7)
SW375	SF750CX	6M612D6	1.38 (35.1)	2.28 (57.9)
SW375	SF1000CX	6M616D6	1.75 (44.5)	2.78 (70.7)
SW375	SF1500CX	15M624D6	2.25 (57.15)	3.53 (89.71)
SW375	F1000C43			
SW375	F250C	6M64D3	0.75 (19.1)	1.41 (35.7)
SW375	F312C150			
SW375	F375C	6M66D3	1.00 (25.4)	1.66 (42.2)
SW375	F562C	6M69D3	1.38 (35.1)	1.78 (45.3)
SW375	F562C40			
SW375	1/8 NPT	15M62D8	0.75 (19.1)	1.41 (35.7)
SW375	1/4 NPT	15M64D8	0.75 (19.1)	1.66 (42.2)
SW375	3/8 NPT	15M66D8	1.00 (25.4)	1.78 (45.3)
SW375	1/2 NPT	15M68D8	1.18 (30.1)	1.97 (50.0)
SW375	3/4 NPT	10M612D8	1.38 (35.1)	2.28 (57.9)
SW375	1 NPT	10M616D8	1.75 (44.5)	2.78 (70.7)
SW500	W125	4M82D1	0.94 (23.8)	1.22 (31.0)
SW500	SW250	4M84D2	0.94 (23.8)	1.34 (34.1)
SW500	SW375	4M86D2	0.94 (23.8)	1.47 (37.3)
SW500	SW500			
SW500	SF250CX	4M84D6	1.00 (25.4)	1.59 (40.5)
SW500	SF375CX	4M86D6	1.00 (25.4)	1.59 (40.5)
SW500	SF562CX	4M89D6	1.00 (25.4)	1.66 (42.2)
SW500	SF750CX	4M812D6	1.38 (35.1)	2.09 (53.2)
SW500	SF1000CX	4M816D6	1.75 (44.5)	2.72 (69.0)
SW500	F1000C43			
SW500	F250C	4M84D3	0.94 (23.8)	1.41 (35.7)
SW500	F312C150			
SW500	F375C	4M86D3	1.00 (25.4)	1.59 (40.5)
SW500	F562C	4M89D3	1.38 (35.1)	1.72 (43.7)
SW500	F562C40			
SW500	1/8 NPT	10M82D8	1.00 (25.4)	1.34 (34.1)
SW500	1/4 NPT	10M84D8	1.00 (25.4)	1.47 (37.3)
SW500	3/8 NPT	10M86D8	1.00 (25.4)	1.72 (43.7)
SW500	1/2 NPT	10M88D8	1.18 (30.1)	2.16 (54.7)
SW500	3/4 NPT	10M812D8	1.38 (35.1)	2.22 (56.3)
SW500	1 NPT	10M816D8	1.75 (44.5)	2.47 (62.7)

Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see selection chart.

All Dimensions for reference only and subject to change.



For prompt service, Parker Autoclaves Engineers stocks select products. Consult factory.

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
SF250CX	W125	15MX42K1	0.63 (15.9)	1.34 (34.1)
SF250CX	SW250	6MX44K2	0.63 (15.9)	1.59 (40.5)
SF250CX	SW375	6MX46K2	0.75 (19.1)	1.59 (40.5)
SF250CX	SW500	4MX48K2	1.00 (25.4)	1.00 (25.4)
SF250CX	SF250CX	20M44K6	0.63 (15.9)	1.47 (37.3)
SF250CX	SF375CX	20M46K6	0.75 (19.1)	1.59 (40.5)
SF250CX	SF562CX	20M49K6	1.00 (25.4)	1.97 (50.0)
SF250CX	SF750CX	20M412K6	1.38 (35.1)	2.34 (59.5)
SF250CX	SF1000CX	20M416K6	1.75 (44.5)	2.84 (72.2)
SF250CX	F1000C43			
SF250CX	F250C	20M44K3	0.75 (19.1)	1.28 (32.5)
SF250CX	F312C150	20M45K3	1.00 (25.4)	2.09 (53.2)
SF250CX	F375C	20M46K3	1.00 (25.4)	1.59 (40.5)
SF250CX	F562C	20M49K3	1.38 (35.1)	1.97 (50.0)
SF250CX	F562C40			
SF250CX	1/8 NPT	15MX42K8	0.63 (15.9)	1.47(37.3)
SF250CX	1/4 NPT	15MX44K8	0.75 (19.1)	1.59 (40.5)
SF250CX	3/8 NPT	15MX46K8	1.00 (25.4)	1.66 (42.2)
SF250CX	1/2 NPT	15MX48K8	1.18 (30.1)	1.97 (50.0)
SF250CX	3/4 NPT	10MX412K8	1.38 (35.1)	2.09 (53.2)
SF250CX	1 NPT			
SF375CX	W125	15MX62K1	0.63 (15.9)	1.50 (38.1)
SF375CX	SW250	6MX64K2	0.63 (15.9)	1.63 (41.3)
SF375CX	SW375	6MX66K2	1.00 (25.4)	1.82 (46.0)
SF375CX	SW500	4MX68K2	1.00 (25.4)	2.00 (50.8)
SF375CX	SF250CX	20M64K6	0.63 (15.9)	1.39 (35.2)
SF375CX	SF375CX	20M66K6	.75 (19.1)	1.66 (42.2)
SF375CX	SF562CX	20M69K6	1.00 (25.4)	2.06 (52.4)
SF375CX	SF750CX	20M612K6	1.38 (35.1)	2.50 (63.5)
SF375CX	SF1000CX	20M616K6	1.75 (44.5)	3.06 (77.8)
SF375CX	F1000C43			
SF375CX	F250C	20M64K3	0.75 (19.1)	1.44 (36.5)
SF375CX	F312C150	20M65K3	1.00 (25.4)	2.25 (57.2)
SF375CX	F375C	20M66K3	1.00 (25.4)	1.63 (41.3)
SF375CX	F562C	20M69K3	1.38 (35.1)	1.88 (47.6)
SF375CX	F562C40			
SF375CX	1/8 NPT	15MX62K8	0.63 (15.9)	1.75 (44.5)
SF375CX	1/4 NPT	15MX64K8	0.75 (19.1)	1.81 (46.0)
SF375CX	3/8 NPT	15MX66K8	1.00 (25.4)	1.88 (47.6)
SF375CX	1/2 NPT	15MX68K8	1.18 (30.1)	2.12 (54.0)
SF375CX	3/4 NPT	10MX612K8	1.38 (35.1)	2.38 (60.3)
SF375CX	1 NPT	10MX616K8	1.75 (44.5)	2.63 (66.7)

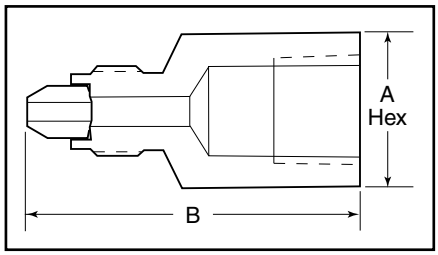
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
SF562CX	W125	15MX92K1	0.81 (20.6)	1.75 (44.5)
SF562CX	SW250	6MX94K2	0.94 (23.8)	1.75 (44.5)
SF562CX	SW375	6MX96K2	0.94 (23.8)	1.75 (44.5)
SF562CX	SW500	4MX98K2	1.00 (25.4)	1.94 (49.2)
SF562CX	SF250CX	20M94K6	0.94 (23.8)	1.34 (34.1)
SF562CX	SF375CX	20M96K6	0.94 (23.8)	1.34 (59.5)
SF562CX	SF562CX	20M99K6	1.00 (25.4)	2.00 (50.8)
SF562CX	SF750CX	20M912K6	1.38 (35.1)	3.12 (79.3)
SF562CX	SF1000CX	20M916K6	1.75 (44.5)	3.75 (95.3)
SF562CX	F1000C43			
SF562CX	F250C	20M94K3	0.81 (20.6)	1.81 (46.0)
SF562CX	F312C150	20M95K3	1.00 (25.4)	2.50 (63.5)
SF562CX	F375C	20M96K3	1.00 (25.4)	2.00 (50.8)
SF562CX	F562C	20M99K3	1.38 (35.1)	2.12 (54.0)
SF562CX	F562C40			
SF562CX	1/8 NPT	15MX92K8	0.94 (23.8)	1.75 (44.5)
SF562CX	1/4 NPT	15MX94K8	0.94 (23.8)	2.18 (55.5)
SF562CX	3/8 NPT	15MX96K8	0.94 (23.8)	2.18 (55.5)
SF562CX	1/2 NPT	15MX98K8	1.18 (30.1)	2.44 (61.9)
SF562CX	3/4 NPT	10MX912K8	1.50 (38.1)	2.50 (63.5)
SF562CX	1 NPT	10MX916K8	1.75 (44.5)	3.00 (76.2)
SF750CX	W125			
SF750CX	SW250	6MX124K2	1.18 (30.1)	2.06 (52.4)
SF750CX	SW375	6MX126K2	1.18 (30.1)	1.97 (50.0)
SF750CX	SW500	4MX128K2	1.18 (30.1)	2.32 (58.72)
SF750CX	SF250CX	20M124K6	1.18 (30.1)	2.06 (52.4)
SF750CX	SF375CX	20M126K6	1.18 (30.1)	2.06 (52.4)
SF750CX	SF562CX	20M129K6	1.18 (30.1)	1.69 (61.9)
SF750CX	SF750CX	20M1212K6	1.38 (35.1)	2.56 (65.0)
SF750CX	SF1000CX	20M1216K6	1.75 (44.5)	3.50 (88.9)
SF750CX	F1000C43	20M1216K3	1.75 (44.5)	3.063 (77.78)
SF750CX	F250C	20M124K3	1.18 (30.1)	2.06 (52.32)
SF750CX	F312C150	20M125K3	1.18 (30.1)	3.12 (79.3)
SF750CX	F375C	20M126K3	1.18 (30.1)	2.06 (52.4)
SF750CX	F562C	20M129K3	1.38 (35.1)	2.32 (58.93)
SF750CX	F562C40	20M129K40	1.38 (35.1)	2.38 (60.4)
SF750CX	1/8 NPT			
SF750CX	1/4 NPT	15MX124K8	1.18 (30.1)	2.50 (63.5)
SF750CX	3/8 NPT	15MX126K8	1.18 (30.1)	2.88 (73.0)
SF750CX	1/2 NPT	15MX128K8	1.18 (30.1)	2.88 (73.0)
SF750CX	3/4 NPT	10MX1212K8	1.38 (35.1)	3.12 (79.3)
SF750CX	1 NPT	10MX1216K8	1.75 (44.5)	3.50 (88.9)

Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see selection chart.

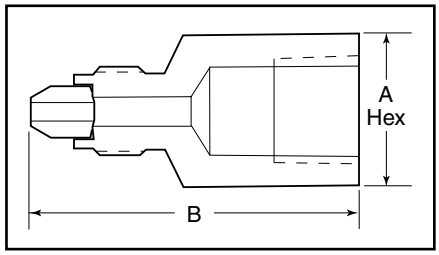
All Dimensions for reference only and subject to change.

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



Adapter configurations may vary from outline shown

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
SF1000CX	W125	6MX162K2	1.38 (35.1)	2.69 (68.3)
SF1000CX	SW250	6MX164K2	1.38 (35.1)	2.63 (66.7)
SF1000CX	SW375	6MX166K2	1.38 (35.1)	2.63 (66.7)
SF1000CX	SW500	4MX168K2	1.18 (30.1)	2.69 (68.25)
SF1000CX	SF250CX	20M164K6	1.38 (35.1)	2.63 (66.7)
SF1000CX	SF375CX	20M166K6	1.38 (35.1)	2.63 (66.7)
SF1000CX	SF562CX	20M169K6	1.38 (35.1)	2.63 (66.7)
SF1000CX	SF750CX	20M1612K6	1.50 (38.1)	2.12 (54.0)
SF1000CX	SF1000CX			
SF1000CX	F1000C43			
SF1000CX	F250C	20M164K3	1.38 (35.1)	2.18 (55.6)
SF1000CX	F312C150			
SF1000CX	F375C	20M166K3	1.38 (35.1)	2.18 (55.6)
SF1000CX	F562C	20M169K3	1.50 (38.1)	2.44 (61.9)
SF1000CX	F562C40			
SF1000CX	1/8 NPT			
SF1000CX	1/4 NPT	15MX164K8	1.50 (38.1)	3.18 (81.0)
SF1000CX	3/8 NPT	15MX166K8	1.75 (44.5)	3.18 (81.0)
SF1000CX	1/2 NPT	15MX168K8	1.75 (44.5)	3.18 (81.0)
SF1000CX	3/4 NPT	10MX1612K8	1.75 (44.5)	3.18 (81.0)
SF1000CX	1 NPT	10MX1616K8	1.75 (44.5)	3.18 (81.0)



Adapter configurations may vary from outline shown

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
SF1500CX	SF250CX	15M244K6	1.88 (47.75)	3.31 (84.12)
SF1500CX	SF562CX	15M249K6	1.88 (47.75)	3.31 (84.12)
SF1500CX	SF750CX	15M2412K6	1.88 (47.75)	3.81 (96.82)
SF1500CX	SF1000CX	15M2416K6	1.88 (47.75)	4.06 (103.17)
SF1500CX	1/4 NPT	15M244K8	1.75 (44.5)	3.56 (90.43)
SF1500CX	1/2 NPT	15M248K8	1.75 (44.5)	3.56 (90.43)

High Pressure

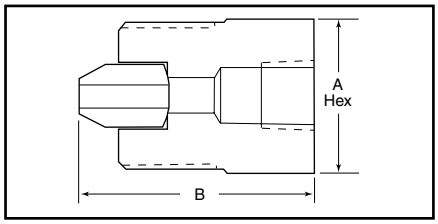
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
F1000C43	W125			
F1000C43	SW250			
F1000C43	SW375			
F1000C43	SW500			
F1000C43	SF250CX			
F1000C43	SF375CX			
F1000C43	SF562CX			
F1000C43	SF750CX			
F1000C43	SF1000CX			
F1000C43	F1000C43			
F1000C43	F250C	43M164B3	1.38 (35.1)	2.31 (58.7)
F1000C43	F312C150			
F1000C43	F375C	43M166B3	1.38 (35.1)	2.31 (58.7)
F1000C43	F562C	43M169B3	1.50 (38.1)	2.56 (65.1)
F1000C43	F562C40	43M169B40	1.50 (38.1)	2.56 (65.1)
F1000C43	1/8 NPT			
F1000C43	1/4 NPT			
F1000C43	3/8 NPT			
F1000C43	1/2 NPT			
F1000C43	3/4 NPT			
F1000C43	1 NPT			

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
F250C	W125	15M42B1	0.63 (15.9)	1.25 (31.7)
F250C	SW250	6M44B2	0.63 (15.9)	1.44 (36.5)
F250C	SW375	6M46B2	0.75 (19.1)	1.56 (39.7)
F250C	SW500	4M48B2	1.00 (25.4)	1.69 (42.8)
F250C	SF250CX	20M44B6	0.63 (15.9)	1.31 (33.3)
F250C	SF375CX	20M46B6	0.75 (19.1)	1.69 (42.8)
F250C	SF562CX	20M49B6	1.00 (25.4)	1.81 (46.0)
F250C	SF750CX	20M412B6	1.38 (35.1)	2.18 (55.5)
F250C	SF1000CX			
F250C	F1000C43	43M416B3	1.75 (44.5)	3.00 (76.2)
F250C	F250C	60M44B3	0.81 (20.6)	1.38 (35.1)
F250C	F312C150	60M45B3	1.00 (25.4)	2.06 (52.4)
F250C	F375C	60M46B3	1.00 (25.4)	1.56 (39.7)
F250C	F562C	60M49B3	1.38 (35.1)	1.81 (46.0)
F250C	F562C40			
F250C	1/8 NPT	15M42B8	0.63 (15.9)	1.38 (34.9)
F250C	1/4 NPT	15M44B8	0.75 (19.1)	1.69 (42.8)
F250C	3/8 NPT	15M46B8	1.00 (25.4)	1.69 (42.8)
F250C	1/2 NPT	15M48B8	1.18 (30.1)	2.00 (50.8)
F250C	3/4 NPT	10M412B8	1.38 (35.1)	2.18 (55.5)
F250C	1 NPT	10M416B8	1.75 (44.5)	2.38 (60.3)

Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see selection chart.

All Dimensions for reference only and subject to change.



Note: Adapter configurations may vary from outline shown

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

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
F312C150	W125			
F312C150	SW250	6M54B2	0.75 (19.1)	2.13 (54.0)
F312C150	SW375	6M56B2	0.75 (19.1)	2.25 (57.2)
F312C150	SW500	4M58B2	1.00 (25.4)	
F312C150	SF250CX	20M54B6	0.75 (19.1)	2.00 (50.8)
F312C150	SF375CX	20M56B6	0.75 (19.1)	2.25 (57.2)
F312C150	SF562CX	20M59B6	1.00 (25.4)	2.38 (60.4)
F312C150	SF750CX	20M512B6	1.38 (35.1)	3.00 (76.2)
F312C150	SF1000CX			
F312C150	F1000C43			
F312C150	F250C	60M54B3	1.00 (25.4)	2.06 (52.4)
F312C150	F312C150			
F312C150	F375C	60M56B3	1.00 (25.4)	2.25 (57.2)
F312C150	F562C	60M59B3	1.38 (35.1)	2.56 (65.1)
F312C150	F562C40			
F312C150	1/8 NPT			
F312C150	1/4 NPT			
F312C150	3/8 NPT			
F312C150	1/2 NPT	15M58B8	1.18 (30.1)	2.69 (68.3)
F312C150	3/4 NPT	10M512B8	1.38 (35.1)	2.88 (73.0)
F312C150	1 NPT			
F375C	W125	15M62B1	0.81 (20.6)	1.44 (36.5)
F375C	SW250	6M64B2	0.81 (20.6)	1.69 (42.8)
F375C	SW375	6M66B2	0.81 (20.6)	1.69 (42.8)
F375C	SW500	4M68B2	1.00 (25.4)	1.75 (44.5)
F375C	SF250CX	20M64B6	0.81 (20.6)	1.75 (44.5)
F375C	SF375CX	20M66B6	0.81 (20.6)	1.88 (47.6)
F375C	SF562CX	20M69B6	1.00 (25.4)	2.00 (50.8)
F375C	SF750CX	20M612B6	1.38 (35.1)	2.25 (57.2)
F375C	SF1000CX	20M616B6	1.75 (44.5)	3.25 (82.6)
F375C	F1000C43	43M616B6	1.75 (44.5)	3.25 (82.6)
F375C	F250C	60M64B3	0.81 (20.6)	1.63 (41.3)
F375C	F312C150	60M65B3	1.00 (25.4)	2.25 (57.2)
F375C	F375C	60M66B3	1.00 (25.4)	1.88 (47.63)
F375C	F562C	60M69B3	1.38 (35.1)	1.63 (41.3)
F375C	F562C40			
F375C	1/8 NPT	15M62B8	0.81 (20.6)	1.50 (38.1)
F375C	1/4 NPT	15M64B8	0.81 (20.6)	1.75 (44.5)
F375C	3/8 NPT	15M66B8	1.00 (25.4)	2.00 (50.8)
F375C	1/2 NPT	15M68B8	1.18 (30.1)	2.25 (57.2)
F375C	3/4 NPT	10M612B8	1.38 (35.1)	2.50 (63.5)
F375C	1 NPT	10M616B8	1.75 (44.5)	2.75 (69.9)

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
F562C	W125	15M92B1	1.18 (30.1)	1.50 (38.1)
F562C	SW250	6M94B2	1.18 (30.1)	1.69 (42.8)
F562C	SW375	6M96B2	1.18 (30.1)	1.69 (42.8)
F562C	SW500	4M98B2	1.18 (30.1)	1.75 (44.5)
F562C	SF250CX	20M94B6	1.18 (30.1)	1.69 (42.8)
F562C	SF375CX	20M96B6	1.18 (30.1)	1.81 (46.0)
F562C	SF562CX	20M99B6	1.18 (30.1)	1.94 (49.2)
F562C	SF750CX	20M912B6	1.38 (35.1)	2.31 (58.7)
F562C	SF1000CX	20M916B6	1.75 (44.5)	3.31 (84.1)
F562C	F1000C43	43M916B3	1.75 (44.5)	3.31 (84.1)
F562C	F250C	60M94B3	1.18 (30.1)	1.69 (42.8)
F562C	F312C150	60M95B3	1.18 (30.1)	2.31 (58.7)
F562C	F375C	60M96B3	1.18 (30.1)	1.88 (47.6)
F562C	F562C	60M99B3	1.38 (35.1)	2.31 (58.7)
F562C	F562C40			
F562C	1/8 NPT	15M92B8	0.94 (23.8)	1.81 (46.0)
F562C	1/4 NPT	15M94B8	0.94 (23.8)	1.81 (46.0)
F562C	3/8 NPT	15M96B8	0.94 (23.8)	1.81 (46.0)
F562C	1/2 NPT	15M98B8	1.18 (30.1)	2.13 (54.0)
F562C	3/4 NPT	10M912B8	1.50 (38.1)	2.31 (58.7)
F562C	1 NPT	10M916B8	1.75 (44.5)	1.69 (42.8)
F562C40	W125			
F562C40	SW250			
F562C40	SW375			
F562C40	SW500			
F562C40	SF250CX			
F562C40	SF375CX			
F562C40	SF562CX			
F562C40	SF750CX	20M912G6	1.38 (35.1)	2.50 (63.5)
F562C40	SF1000CX			
F562C40	F1000C43			
F562C40	F250C			
F562C40	F312C150			
F562C40	F375C			
F562C40	F562C			
F562C40	F562C40			
F562C40	1/8 NPT			
F562C40	1/4 NPT			
F562C40	3/8 NPT			
F562C40	1/2 NPT	15M98G8	1.18 (30.1)	2.13 (54.0)
F562C40	3/4 NPT			
F562C40	1 NPT			

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Note: For pressure rating see selection chart.

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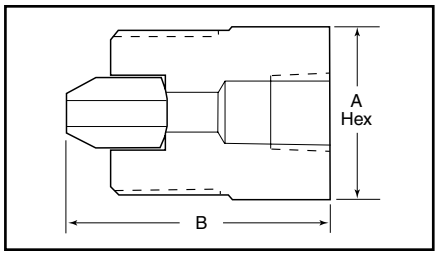

Adapter configurations may vary from outline shown

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

Flat Bottom

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
F437FB	W125	15M72E1	0.50 (12.7)	1.41 (35.8)
F437FB	SW250	6M74E2	0.63 (15.9)	1.53 (38.9)
F437FB	SW375	6M76E2	0.75 (19.1)	1.91 (48.4)
F437FB	SW500	4M78E2	1.00 (25.4)	2.16 (54.8)
F437FB	SF250CX	15M74E6	0.63 (15.9)	1.53 (38.9)
F437FB	SF375CX	15M76E6	0.75 (19.1)	1.78 (45.2)
F437FB	SF562CX	15M79E6	1.00 (25.4)	1.91 (48.4)
F437FB	SF750CX			
F437FB	SF1000CX			
F437FB	F1000C43			
F437FB	F250C	15M74E3	0.75 (19.1)	1.53 (38.9)
F437FB	F312C150			
F437FB	F375C	15M76E3	1.00 (25.4)	1.78 (45.2)
F437FB	F562C	15M79E3	1.38 (35.1)	2.03 (51.6)
F437FB	F562C40			
F437FB	1/8 NPT	10M72E8	0.63 (15.9)	1.59 (40.4)
F437FB	1/4 NPT	10M74E8	0.75 (19.1)	1.78 (45.2)
F437FB	3/8 NPT	10M76E8	1.00 (25.4)	1.91 (48.4)
F437FB	1/2 NPT	10M78E8	1.18 (30.1)	2.16 (54.8)
F437FB	3/4 NPT			
F437FB	1 NPT			
F562FB	W125	15M92E1	0.63 (15.9)	1.44 (36.5)
F562FB	SW250	6M94E2	0.75 (19.1)	2.06 (52.4)
F562FB	SW375	6M96E2	0.75 (19.1)	2.25 (57.2)
F562FB	SW500	4M98E2	1.00 (25.4)	2.18 (55.5)
F562FB	SF250CX	15M94E6	0.63 (15.9)	1.81 (46.0)
F562FB	SF375CX	15M96E6	0.75 (19.1)	2.06 (52.4)
F562FB	SF562CX	15M99E6	1.00 (25.4)	1.18 (30.1)
F562FB	SF750CX	15M912E6	1.38 (35.1)	2.81 (71.4)
F562FB	SF1000CX			
F562FB	F1000C43			
F562FB	F250C	15M94E3	0.81 (20.6)	1.94 (49.2)
F562FB	F312C150			
F562FB	F375C	15M96E3	1.00 (25.4)	2.44 (61.9)
F562FB	F562C			
F562FB	F562C40			
F562FB	1/8 NPT	10M92E8	0.63 (15.9)	1.94 (49.2)
F562FB	1/4 NPT	10M94E8	0.75 (19.1)	2.18 (55.5)
F562FB	3/8 NPT	10M96E8	1.00 (25.4)	2.31 (58.7)
F562FB	1/2 NPT	10M98E8	1.18 (30.1)	1.63 (41.3)
F562FB	3/4 NPT	10M912E8	1.38 (35.1)	2.06 (52.4)
F562FB	1 NPT	10M916E8	1.88 (47.6)	2.25 (57.2)

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
F750FB	W125	15M122E1	0.75 (19.1)	1.69 (42.8)
F750FB	SW250	6M124E2	0.81 (20.6)	2.06 (52.4)
F750FB	SW375	6M126E2	0.75 (19.1)	1.94 (49.2)
F750FB	SW500	4M128E2	1.00 (25.4)	2.18 (55.5)
F750FB	SF250CX	15M124E6	0.81 (20.6)	1.94 (49.2)
F750FB	SF375CX	15M126E6	0.81 (20.6)	2.06 (52.4)
F750FB	SF562CX	15M129E6	1.00 (25.4)	1.31 (33.3)
F750FB	SF750CX	15M1212E6	1.38 (35.1)	1.69 (42.8)
F750FB	SF1000CX	15M1216E6	1.75 (44.5)	3.31 (84.1)
F750FB	F1000C43			
F750FB	F250C	15M124E3	1.00 (25.4)	1.94 (49.2)
F750FB	F312C150			
F750FB	F375C	15M126E3	1.00 (25.4)	2.18 (55.5)
F750FB	F562C	15M129E3	1.38 (35.1)	2.31 (58.7)
F750FB	F562C40			
F750FB	1/8 NPT	10M122E8	0.94 (23.8)	1.81 (46.0)
F750FB	1/4 NPT	10M124E8	1.00 (25.4)	2.31 (58.7)
F750FB	3/8 NPT	10M126E8	1.00 (25.4)	2.18 (55.5)
F750FB	1/2 NPT	10M128E8	1.18 (30.1)	2.69 (68.3)
F750FB	3/4 NPT	10M1212E8	1.38 (35.1)	2.69 (68.3)
F750FB	1 NPT	10M1216E8	1.88 (47.6)	3.18 (81.0)

Flat Top

F562FT	W125	15M92R1	0.75 (19.1)	0.94 (23.9)
F562FT	SW250	6M94R2	0.75 (19.1)	1.50 (38.1)
F562FT	SW375	6M96R2	0.75 (19.1)	1.50 (38.1)
F562FT	SW500	4M98R2	1.00 (25.4)	1.63 (41.3)
F562FT	SF250CX	15M94R6	0.75 (19.1)	1.25 (31.8)
F562FT	SF375CX	15M96R6	0.75 (19.1)	1.50 (38.1)
F562FT	SF562CX	15M99R6	1.00 (25.4)	1.63 (41.3)
F562FT	SF750CX			
F562FT	SF1000CX			
F562FT	F1000C43			
F562FT	F250C	15M94R3	0.75 (19.1)	1.25 (31.8)
F562FT	F312C150			
F562FT	F375C	15M96R3	1.00 (25.4)	1.50 (38.1)
F562FT	F562C	15M99R3	1.38 (35.1)	1.75 (44.5)
F562FT	F562C40			
F562FT	1/8 NPT	10M92R8	0.75 (19.1)	1.25 (31.8)
F562FT	1/4 NPT	10M94R8	0.75 (19.1)	1.44 (36.5)
F562FT	3/8 NPT	10M96R8	0.94 (23.8)	1.56 (39.7)
F562FT	1/2 NPT	10M98R8	1.18 (30.1)	2.00 (50.8)
F562FT	3/4 NPT			
F562FT	1 NPT			

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Note: For pressure rating see selection chart.

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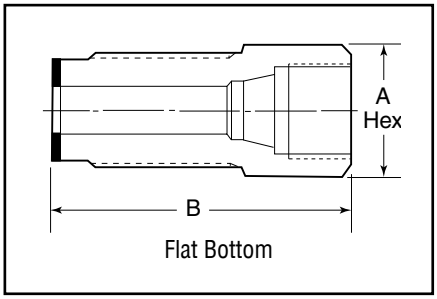
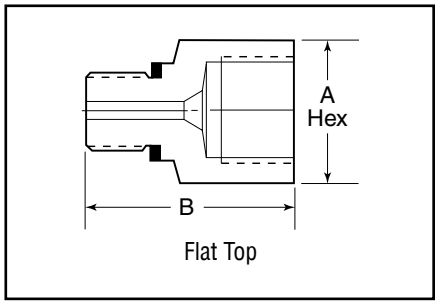


Flat Bottom



Flat Top

National Pipe Thread (NPT)

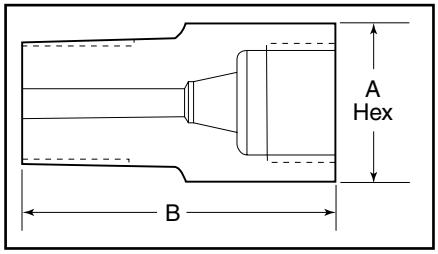
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
1/8 NPT	W125	15M22N1	0.50 (12.7)	1.00 (25.4)
1/8 NPT	SW250	15M24N2	0.63 (15.9)	1.25 (31.8)
1/8 NPT	SW375	15M26N2	0.75 (19.1)	1.44 (36.5)
1/8 NPT	SW500	10M28N2	1.00 (25.4)	1.50 (38.1)
1/8 NPT	SF250CX	15M24N6	0.63 (15.9)	1.81 (46.0)
1/8 NPT	SF375CX	15M26N6	0.75 (19.1)	1.38 (35.1)
1/8 NPT	SF562CX	15M29N6	1.00 (25.4)	1.75 (44.5)
1/8 NPT	SF750CX			
1/8 NPT	SF1000CX			
1/8 NPT	F1000C43			
1/8 NPT	F250C	15M24N3	0.75 (19.1)	1.25 (31.8)
1/8 NPT	F312C150			
1/8 NPT	F375C	15M26N3	1.00 (25.4)	1.50 (38.1)
1/8 NPT	F562C	15M29N3	1.38 (35.1)	1.63 (41.3)
1/8 NPT	F562C40			
1/8 NPT	1/8 NPT			
1/8 NPT	1/4 NPT	15M24N8	0.75 (19.1)	1.38 (35.1)
1/8 NPT	3/8 NPT			
1/8 NPT	1/2 NPT			
1/8 NPT	3/4 NPT			
1/8 NPT	1 NPT			
1/4 NPT	W125	15M42N1	0.63 (15.9)	1.13 (28.6)
1/4 NPT	SW250	15M44N2	0.63 (15.9)	1.38 (35.1)
1/4 NPT	SW375	15M46N2	0.75 (19.1)	1.50 (38.1)
1/4 NPT	SW500	10M48N2	1.00 (25.4)	1.75 (44.5)
1/4 NPT	SF250CX	15M44N6	0.63 (15.9)	1.38 (35.1)
1/4 NPT	SF375CX	15M46N6	0.75 (19.1)	1.56 (39.7)
1/4 NPT	SF562CX	15M49N6	1.00 (25.4)	1.75 (44.5)
1/4 NPT	SF750CX	15M412N6	1.38 (35.1)	2.25 (57.2)
1/4 NPT	SF1000CX	15M416N6	1.75 (44.5)	2.88 (73.0)
1/4 NPT	SF1500CX	15M424N6	2.25 (57.15)	3.48 (88.39)
1/4 NPT	F1000C43			
1/4 NPT	F250C	15M44N3	0.75 (19.1)	1.38 (35.1)
1/4 NPT	F312C150	15M45N3	1.00 (25.4)	2.50 (63.5)
1/4 NPT	F375C	15M46N3	1.00 (25.4)	1.63 (41.3)
1/4 NPT	F562C	15M49N3	1.38 (35.1)	1.75 (44.5)
1/4 NPT	F562C40			
1/4 NPT	1/8 NPT	15M42N8	0.63 (15.9)	1.38 (35.1)
1/4 NPT	1/4 NPT			
1/4 NPT	3/8 NPT	15M46N8	1.00 (25.4)	1.75 (44.5)
1/4 NPT	1/2 NPT	15M48N8	1.18 (30.1)	2.25 (57.2)
1/4 NPT	3/4 NPT			
1/4 NPT	1 NPT			

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
3/8 NPT	W125	15M62N1	0.75 (19.1)	1.13 (28.6)
3/8 NPT	SW250	15M64N2	0.75 (19.1)	1.38 (35.1)
3/8 NPT	SW375	15M66N2	0.75 (19.1)	1.50 (38.1)
3/8 NPT	SW500	10M68N2	1.00 (25.4)	1.75 (44.5)
3/8 NPT	SF250CX	15M64N6	0.75 (19.1)	1.38 (35.1)
3/8 NPT	SF375CX	15M66N6	0.75 (19.1)	1.50 (38.1)
3/8 NPT	SF562CX	15M69N6	1.00 (25.4)	1.75 (44.5)
3/8 NPT	SF750CX	15M612N6	1.38 (35.1)	2.00 (50.8)
3/8 NPT	SF1000CX	15M616N6	1.75 (44.5)	2.88 (73.0)
3/8 NPT	F1000C43			
3/8 NPT	F250C	15M64N3	0.75 (19.1)	1.38 (35.1)
3/8 NPT	F312C150			
3/8 NPT	F375C	15M66N3	1.00 (25.4)	1.63 (41.3)
3/8 NPT	F562C	15M69N3	1.38 (35.1)	1.75 (44.5)
3/8 NPT	F562C40	15M69N40	1.38 (35.1)	1.75 (44.5)
3/8 NPT	1/8 NPT			
3/8 NPT	1/4 NPT	15M64N8	0.75 (19.1)	1.63 (41.3)
3/8 NPT	3/8 NPT			
3/8 NPT	1/2 NPT	15M68N8	1.18 (30.1)	2.25 (57.2)
3/8 NPT	3/4 NPT			
3/8 NPT	1 NPT			
1/2 NPT	W125	15M82N1	1.00 (25.4)	2.50 (63.5)
1/2 NPT	SW250	15M84N2	1.00 (25.4)	1.63 (41.3)
1/2 NPT	SW375	15M86N2	1.00 (25.4)	1.63 (41.3)
1/2 NPT	SW500	10M88N2	1.00 (25.4)	1.88 (47.6)
1/2 NPT	SF250CX	15M84N6	1.00 (25.4)	1.38 (35.1)
1/2 NPT	SF375CX	15M86N6	1.00 (25.4)	1.63 (41.3)
1/2 NPT	SF562CX	15M89N6	1.00 (25.4)	1.94 (49.2)
1/2 NPT	SF750CX	15M812N6	1.38 (35.1)	2.18 (55.5)
1/2 NPT	SF1000CX	15M816N6	1.75 (44.5)	2.81 (71.4)
1/2 NPT	F1000C43			
1/2 NPT	F250C	15M84N3	1.00 (25.4)	1.50 (38.1)
1/2 NPT	F312C150			
1/2 NPT	F375C	15M86N3	1.00 (25.4)	1.75 (44.5)
1/2 NPT	F562C	15M89N3	1.38 (35.1)	1.88 (47.6)
1/2 NPT	F562C40	15M89N40	1.38 (35.1)	1.75 (44.5)
1/2 NPT	1/8 NPT			
1/2 NPT	1/4 NPT	15M84N8	1.00 (25.4)	1.75 (44.5)
1/2 NPT	3/8 NPT	15M86N8	1.00 (25.4)	1.81 (71.4)
1/2 NPT	1/2 NPT			
1/2 NPT	3/4 NPT	10M812N8	1.38 (35.1)	2.25 (57.2)
1/2 NPT	1 NPT			

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see selection chart.

All Dimensions for reference only and subject to change.



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

National Pipe Thread (NPT)

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
3/4 NPT	W125			
3/4 NPT	SW250	10M124N2	1.18 (30.1)	1.75 (44.5)
3/4 NPT	SW375	10M126N2	1.18 (30.1)	1.75 (44.5)
3/4 NPT	SW500	10M128N2	1.18 (30.1)	1.75 (44.5)
3/4 NPT	SF250CX	10M124N6	1.18 (30.1)	1.75 (44.5)
3/4 NPT	SF375CX	10M126N6	1.18 (30.1)	1.75 (44.5)
3/4 NPT	SF562CX	10M129N6	1.38 (35.1)	2.00 (50.8)
3/4 NPT	SF750CX	10M1212N6	1.38 (35.1)	2.25 (57.2)
3/4 NPT	SF1000CX	10M1216N6	1.75 (44.5)	2.88 (73.0)
3/4 NPT	F1000C43			
3/4 NPT	F250C	10M124N3	1.18 (30.1)	1.75 (44.5)
3/4 NPT	F312C150			
3/4 NPT	F375C	10M126N3	1.18 (30.1)	2.00 (50.8)
3/4 NPT	F562C	10M129N3	1.38 (35.1)	2.13 (54.0)
3/4 NPT	F562C40			
3/4 NPT	1/8 NPT	10M122N8	1.18 (30.1)	1.63 (41.3)
3/4 NPT	1/4 NPT	10M124N8	1.18 (30.1)	1.63 (41.3)
3/4 NPT	3/8 NPT			
3/4 NPT	1/2 NPT			
3/4 NPT	3/4 NPT			
3/4 NPT	1 NPT			

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
1 NPT	W125			
1 NPT	SW250			
1 NPT	SW375	10M166N2	1.38 (35.1)	1.75 (44.5)
1 NPT	SW500	10M168N2	1.38 (35.1)	1.75 (44.5)
1 NPT	SF250CX			
1 NPT	SF375CX	10M166N6	1.38 (35.1)	2.00 (50.8)
1 NPT	SF562CX	10M169N6	1.38 (35.1)	2.25 (57.2)
1 NPT	SF750CX	10M1612N6	1.38 (35.1)	2.63 (66.7)
1 NPT	SF1000CX	10M1616N6	1.75 (44.5)	3.06 (77.8)
1 NPT	F1000C43			
1 NPT	F250C			
1 NPT	F312C150			
1 NPT	F375C	10M166N3	1.38 (35.1)	2.00 (50.8)
1 NPT	F562C	10M169N3	1.38 (35.1)	2.25 (57.2)
1 NPT	F562C40			
1 NPT	1/8 NPT			
1 NPT	1/4 NPT			
1 NPT	3/8 NPT			
1 NPT	1/2 NPT	10M168N8	1.38 (35.1)	2.25 (57.2)
1 NPT	3/4 NPT			
1 NPT	1 NPT			

Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

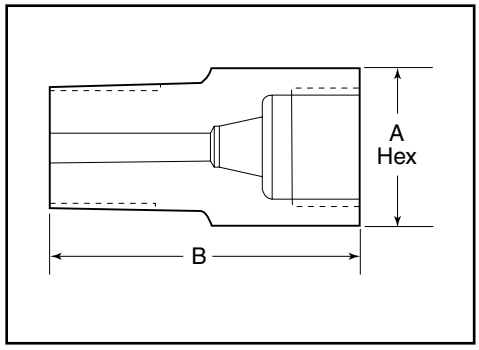
Note: For pressure rating see selection chart.

All Dimensions for reference only and subject to change.

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

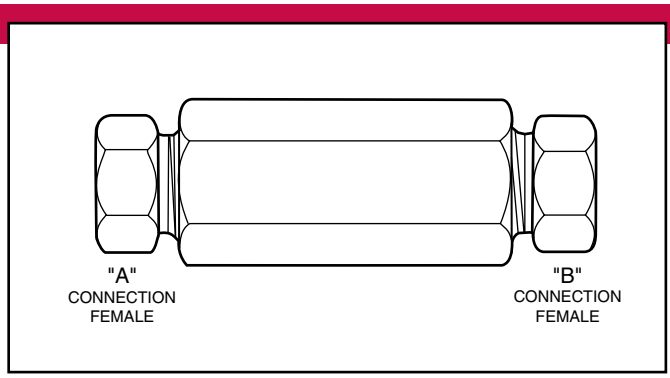
NOTE: NPT (Pipe) connections

- NPT threads must be sealed using a high quality PTFE tape and/or PTFE paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.



The couplings shown here permit the joining of any combination of standard size tubing or tubing and standard pipe with female-to-female couplings. Other couplings available on special order.

Pressure Rating - The pressure rating of Parker Autoclave Engineers couplings is based on the lower rated connection used.



Note: Special material couplings may be supplied with four flats in place of standard hex.

How to use the Ordering Chart below:

1. Locate "A" connection in the vertical column.
2. Locate the desired "B" connection across the top of the chart.
3. The catalog number of the required coupling is located at the intersection of the two columns.

"A" Connection				"B" Connection														
				SpeedBite				Medium Pressure					High Pressure					
	Tube Outside in (mm)	Connector Type	Pressure psi (bar)*	1/8 **W 125**	1/4 **SW 250**	3/8 **SW 375**	1/2** **SW 500**	1/4 **SF 250 CX**	3/8 **SF 375 CX**	9/16 **SF 562 CX**	3/4 **SF 750 CX**	1 **SF 1000 CX**	1 **F 1000 C43**	1/4 **F 250 C**	3/8 **F 375 C**	9/16 **F 562 C**	9/16 **F 562 C40**	5/16 **F 312 C150**
SpeedBite	1/8 (3.18)	**W125**	15,000 **(1034)**	15F 2211	6F 2412	6F 2612	4F 2812	15F 2416	15F 2616	15F 2916		15F 21616		15F 2413	15F 2613	15F 2913		
	1/4 (6.35)	**SW250**	15,000 **(1034)**		6F 4422	6F 4622	4F 4822	6F 4426	6F 4626	6F 4926				6F 4423	6F 4623	6F 4923		
	3/8 (9.52)	**SW375**	15,000 **(1034)**			6F 6622	4F 6822	6F 6426	6F 6626	6F 6926	6F 61226	6F 61626		6F 6423	6F 6623	6F 6923		
	1/2 (12.70)	**SW500**	10,000 **(690)**				4F 8822	4F 8426	4F 8626	4F 8926	4F 81226	4F 81626		4F 8423	4F 8623	4F 8923		
Medium Pressure	1/4 (6.35)	**SF250 CX**	20,000 **(1379)**					20FX 4466	20F 4666	20F 4966	20F 41266	20F 41666	20F 41663	20F 4463	20F 4663	20F 4963		20F 4563
	3/8 (9.52)	**SF375 CX**	20,000 **(1379)**						20FX 6666	20F 6966	20F 61266	20F 61666	20F 61663	20F 6463	20F 6663	20F 6963		20F 6563
	9/16 (14.27)	**SF562 CX**	20,000 **(1379)**							20FX 9966	20F 91266	20F 91666		20F 9463	20F 9663	20F 9963		20F 9563
	3/4 (19.05)	**SF750 CX**	20,000 **(1379)**								20FX 12	20F 121666		20F 12463	20F 12663	20F 12963		20F 12563
	1 (25.40)	**SF1000 CX**	20,000 **(1379)**									20FX 16		20F 16463	20F 16663	20F 16963		20F 16563
High Pressure	1 (25.40)	**F1000 C43**	43,000 **(2965)**										43F 16					
	1/4 (6.35)	**F250 C**	60,000 **(4137)**										43F 41633	60F 4433	60F 4633	60F 4933		60F 4533
	3/8 (9.52)	**F375 C**	60,000 **(4137)**										43F 61633		60F 6633	60F 6933		60F 6533
	9/16 (14.27)	**F562 C**	60,000 **(4137)**										43F 91633			60F 9933		60F 9533
	9/16 (14.27)	**F562 C40**	40,000 **(2760)**														40F 9933	
	5/16 (7.92)	**F312 C150**	15,000 **(1034)**															150F 5533
National Pipe Thread (NPT)	1/8 (3.18)	**NPT**	15,000 **(1034)**	15F 2281	15F 2482	15F 2682	10F 2882	15F 2486	15F 2686	15F 2986	15F 21286			15F 2483	15F 2683	15F 2983		15F 2583
	1/4 (6.35)	**NPT**	15,000 **(1034)**	15F 4281	15F 4482	15F 4682	10F 4882	15F 4486	15F 4686	15F 4986	15F 41286	15F 41686		15F 4483	15F 4683	15F 4983		15F 4583
	3/8 (9.52)	**NPT**	15,000 **(1034)**	15F 6281	15F 6482	15F 6682	10F 6882	15F 6486	15F 6686	15F 6986	15F 61286	15F 61686		15F 6483	15F 6683	15F 6983		15F 6583
	1/2 (12.70)	**NPT**	15,000 **(1034)**	15F 8281	15F 8482	15F 8682	10F 8882	15F 8486	15F 8686	15F 8986	15F 81286	15F 81686		15F 8483	15F 8683	15F 8983		15F 8583
	3/4 (19.05)	**NPT**	10,000 **(1034)**				10F 12882		10F 12686	10F 12986	10F 121286	10F 121686				10F 12983		
	1 (25.40)	**NPT**	10,000 **(1034)**							10F 16986		10F 161686		10F 16483		10F 16983		

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
**1/2 low pressure rated to 10,000 psi.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.CAUTION: See appropriate pressure section in reference to proper selection of tubing.

Coupling Dimensions - Speedbite

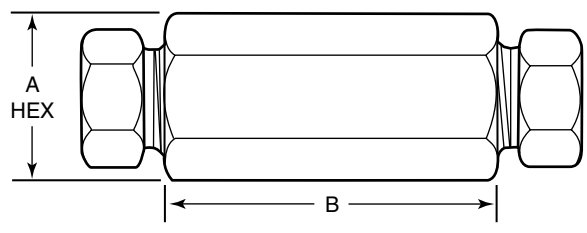
Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
W125	W125	15F2211	0.50 (12.7)	1.25 (31.7)
W125	SW250	6F2412	0.63 (15.9)	1.44 (36.6)
W125	SW375	6F2612	0.75 (19.1)	1.50 (38.1)
W125	SW500	4F2812	1.00 (25.4)	1.63 (41.4)
W125	SF250CX	15F2416	0.63 (15.9)	1.38 (35.1)
W125	SF375CX	15F2616	0.75 (19.1)	1.50 (38.1)
W125	SF562CX	15F2916	1.00 (25.4)	1.75 (44.5)
W125	SF1000CX	15F21616	1.75 (44.5)	2.75 (69.9)
W125	F250C	15F2413	0.75 (19.1)	1.25 (31.7)
W125	F375C	15F2613	1.00 (25.4)	1.50 (38.1)
W125	F562C	15F2913	1.38 (35.1)	1.75 (44.5)
SW250	SW250	6F4422	0.63 (15.9)	1.63 (41.4)
SW250	SW375	6F4622	0.75 (19.1)	1.69 (42.9)
SW250	SW500	4F4822	1.00 (25.4)	1.88 (47.8)
SW250	SF250CX	6F4426	0.63 (15.9)	1.63 (41.4)
SW250	SF375CX	6F4626	0.75 (19.1)	1.75 (44.5)
SW250	SF562CX	6F4926	1.00 (25.4)	2.00 (50.8)
SW250	F250C	6F4423	0.75 (19.1)	1.50 (38.1)
SW250	F375C	6F4623	1.00 (25.4)	1.69 (42.9)
SW250	F562C	6F4923	1.38 (35.1)	2.06 (52.3)

Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
SW375	SW375	6F6622	0.75 (19.1)	1.75 (44.5)
SW375	SW500	4F6822	1.00 (25.4)	1.88 (47.8)
SW375	SF250CX	6F6426	0.75 (19.1)	0.88 (22.2)
SW375	SF375CX	6F6626	0.75 (19.1)	1.75 (44.5)
SW375	SF562CX	6F6926	1.00 (25.4)	2.00 (50.8)
SW375	SF750CX	6F61226	1.38 (35.1)	2.25 (57.2)
SW375	SF1000CX	6F61626	1.75 (44.5)	3.00 (76.2)
SW375	F250C	6F6423	0.75 (19.1)	1.63 (41.4)
SW375	F375C	6F6623	1.00 (25.4)	1.81 (46.0)
SW375	F562C	6F6923	1.38 (35.1)	2.00 (50.8)
SW500	SW500	4F8822	1.00 (25.4)	2.00 (50.8)
SW500	SF250CX	4F8426	1.00 (25.4)	1.63 (41.4)
SW500	SF375CX	4F8626	1.00 (25.4)	1.88 (47.8)
SW500	SF562CX	4F8926	1.00 (25.4)	2.00 (50.8)
SW500	SF750CX	4F81226	1.38 (35.1)	2.25 (57.2)
SW500	SF1000CX	4F81626	1.75 (44.5)	3.00 (76.2)
SW500	F250C	4F8423	1.00 (25.4)	1.69 (42.9)
SW500	F375C	4F8623	1.00 (25.4)	1.88 (47.8)
SW500	F562C	4F8923	1.38 (35.1)	2.06 (52.3)

Coupling Dimensions - Medium Pressure

Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
SF250CX	SF250CX	20FX4466	0.63 (15.9)	1.63 (41.4)
SF250CX	SF375CX	20F4666	0.75 (19.1)	1.75 (44.5)
SF250CX	SF562CX	20F4966	1.00 (25.4)	2.00 (50.8)
SF250CX	SF750CX	20F41266	1.38 (35.1)	2.25 (57.2)
SF250CX	SF1000CX	20F41666	1.75 (44.5)	2.75 (69.9)
SF250CX	F250C	20F4463	0.75 (19.1)	1.38 (35.1)
SF250CX	F375C	20F4663	1.00 (25.4)	1.63 (41.4)
SF250CX	F562C	20F4963	1.38 (35.1)	1.88 (47.8)
SF250CX	F312C150	20F4563	1.00 (25.4)	2.13 (54.1)
SF250CX	F1000C43	43F41663	1.75 (44.5)	2.75 (69.9)
SF375CX	SF375CX	20FX6666	0.75 (19.1)	1.75 (44.5)
SF375CX	SF562CX	20F6966	1.00 (25.4)	2.00 (50.8)
SF375CX	SF750CX	20F61266	1.38 (35.1)	2.25 (57.2)
SF375CX	SF1000CX	20F61666	1.75 (44.5)	2.88 (73.0)
SF375CX	F250C	20F6463	0.75 (19.1)	1.63 (41.4)
SF375CX	F375C	20F6663	1.00 (25.4)	2.00 (50.8)
SF375CX	F562C	20F6963	1.38 (35.1)	2.00 (50.8)
SF375CX	F312C150C	20F6563	1.00 (25.4)	2.25 (57.2)
SF375CX	F1000C43	43F61663	1.75 (44.5)	2.88 (73.0)
SF562CX	SF562CX	20FX9966	1.00 (25.4)	2.13 (54.1)
SF562CX	SF750CX	20F91266	1.38 (35.1)	2.50 (63.5)
SF562CX	SF1000CX	20F91666	1.75 (44.5)	3.00 (76.2)
SF562CX	F250C	20F9463	1.00 (25.4)	2.00 (50.8)
SF562CX	F375C	20F9663	1.00 (25.4)	2.00 (50.8)
SF562CX	F562C	20F9963	1.38 (35.1)	2.25 (57.2)
SF562CX	F312C150C	20F9563	1.00 (25.4)	2.50 (63.5)

Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
SF750CX	SF750CX	20FX12	1.38 (35.1)	2.50 (63.5)
SF750CX	SF1000CX	20F121666	1.75 (44.5)	3.00 (76.2)
SF750CX	F250C	20F12463	1.38 (35.1)	2.50 (63.5)
SF750CX	F375C	20F12663	1.38 (35.1)	2.38 (60.33)
SF750CX	F562C	20F12963	1.38 (35.1)	2.75 (69.9)
SF750CX	F312C150	20F12563	1.38 (35.1)	2.75 (69.9)
SF1000CX	SF1000CX	20FX16	1.75 (44.5)	3.50 (88.9)
SF1000CX	F250C	20F16463	1.75 (44.5)	2.75 (69.9)
SF1000CX	F375C	20F16663	1.75 (44.5)	2.88 (73.0)
SF1000CX	F562C	20F16963	1.75 (44.5)	3.25 (82.6)
SF1000CX	F312C150	20F16563	1.75 (44.5)	3.25 (82.6)

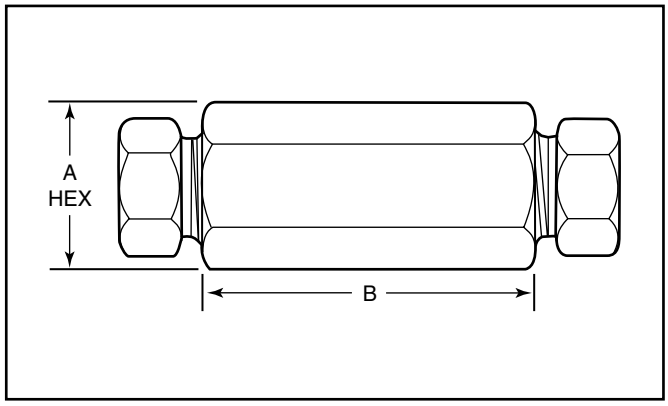


Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products.
Consult your local representative.

Coupling Dimensions - High Pressure

Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
F250C	F250C	60F4433	0.75 (19.1)	1.38 (35.1)
F250C	F375C	60F4633	1.00 (25.4)	1.63 (41.4)
F250C	F562C	60F4933	1.38 (35.1)	1.75 (44.5)
F250C	F312C150	60F4533	1.00 (25.4)	2.00 (50.8)
F250C	F1000C43	43F41633	1.75 (44.5)	2.75 (69.9)
F375C	F375C	60F6633	1.00 (25.4)	1.75 (44.5)
F375C	F562C	60F6933	1.38 (35.1)	2.00 (50.8)
F375C	F312C150	60F6533	1.00 (25.4)	2.25 (57.2)
F375C	F1000C43	43F61633	1.75 (44.5)	2.88 (73.0)
F562C	F562C	60F9933	1.38 (35.1)	2.19 (55.6)
F562C40	F562C40	40F9933	1.38 (35.1)	2.19 (55.6)
F562C	F312C150	60F9533	1.19 (30.1)	2.63 (66.7)
F562C	SF1000C43	43F91633	1.75 (44.5)	3.75 (82.6)
F312C150	F312C150	150F5533	1.38 (35.1)	2.50 (63.5)
F1000C43	F1000C43	43F16	1.75 (44.5)	3.50 (88.9)



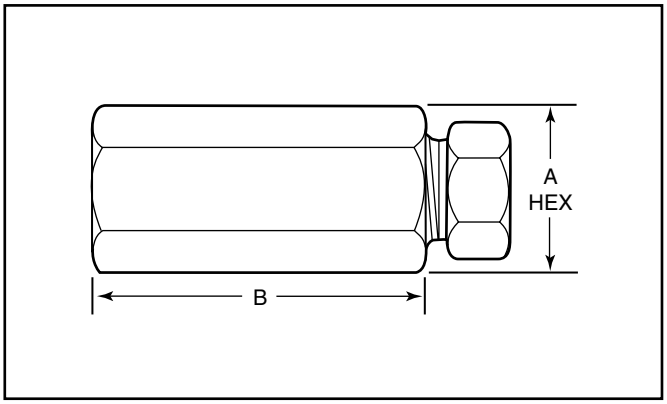
Coupling Dimensions - National Pipe Thread (NPT)

Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
1/8 NPT	W125	15F2281	0.63 (15.9)	1.38 (35.1)
1/8 NPT	SW250	15F2482	0.63 (15.9)	1.50 (38.1)
1/8 NPT	SW375	15F2682	0.75 (19.1)	1.63 (41.4)
1/8 NPT	SW500	10F2882	1.00 (25.4)	1.50 (38.1)
1/8 NPT	SF250CX	15F2486	0.63 (15.9)	1.38 (35.1)
1/8 NPT	SF375CX	15F2686	0.75 (19.1)	1.50 (38.1)
1/8 NPT	SF562CX	15F2986	1.00 (25.4)	1.63 (41.4)
1/8 NPT	SF750CX	15F21286	1.38 (35.1)	1.75 (44.5)
1/8 NPT	F250C	15F2483	0.75 (19.1)	1.38 (35.1)
1/8 NPT	F375C	15F2683	1.00 (25.4)	1.63 (41.4)
1/8 NPT	F562C	15F2983	1.38 (35.1)	1.82 (46.2)
1/8 NPT	F312C150	15F2583	1.00 (25.4)	2.13 (54.1)

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

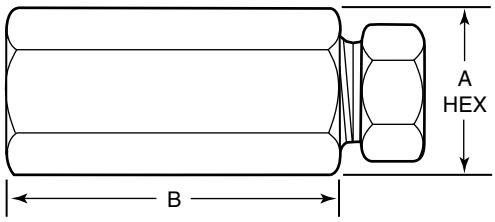
Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
1/4 NPT	W125	15F4281	0.75 (19.1)	1.50 (38.1)
1/4 NPT	SW250	15F4482	0.75 (19.1)	1.63 (41.4)
1/4 NPT	SW375	15F4682	0.75 (19.1)	1.75 (44.5)
1/4 NPT	SW500	10F4882	1.00 (25.4)	2.00 (50.8)
1/4 NPT	SF250CX	15F4486	0.75 (19.1)	1.63 (41.4)
1/4 NPT	SF375CX	15F4686	0.75 (19.1)	1.75 (44.5)
1/4 NPT	SF562CX	15F4986	1.00 (25.4)	2.00 (50.8)
1/4 NPT	SF750CX	15F41286	1.38 (35.1)	1.75 (44.5)
1/4 NPT	SF1000CX	15F41686	1.38 (35.1)	2.38 (60.33)
1/4 NPT	F250C	15F4483	0.75 (19.1)	1.63 (41.4)
1/4 NPT	F375C	15F4683	1.00 (25.4)	1.88 (47.8)
1/4 NPT	F562C	15F4983	1.38 (35.1)	2.00 (50.8)
1/4 NPT	F312C150	15F4583	1.00 (25.4)	2.50 (63.5)



Coupling Dimensions - National Pipe Thread (NPT) - con't

Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
3/8 NPT	W125	15F6281	1.00 (25.4)	1.63 (41.1)
3/8 NPT	SW250	15F6482	1.00 (25.4)	1.75 (44.5)
3/8 NPT	SW375	15F6682	1.00 (25.4)	1.88 (47.8)
3/8 NPT	SW500	10F6882	1.00 (25.4)	2.00 (50.8)
3/8 NPT	SF250CX	15F6486	0.94 (23.9)	1.63 (41.4)
3/8 NPT	SF375CX	15F6686	0.94 (23.9)	1.82 (46.2)
3/8 NPT	SF562CX	15F6986	1.00 (25.4)	2.00 (50.8)
3/8 NPT	SF750CX	15F61286	1.38 (35.1)	2.38 (60.33)
3/8 NPT	SF1000CX	15F61686	1.75 (44.5)	2.50 (63.5)
3/8 NPT	F250C	15F6483	1.00 (25.4)	1.63 (41.4)
3/8 NPT	F375C	15F6683	1.00 (25.4)	1.88 (47.8)
3/8 NPT	F562C	15F6983	1.38 (35.1)	2.00 (50.8)
3/8 NPT	F312C150	15F6583	1.00 (25.4)	2.25 (57.2
1/2 NPT	W125	15F8281	1.88 (47.8)	2.00 (50.8)
1/2 NPT	SW250	15F8482	1.88 (47.8)	2.13 (54.1)
1/2 NPT	SW375	15F8682	1.88 (47.8)	2.13 (54.1)
1/2 NPT	SW500	10F8882	1.19 (30.1)	2.25 (57.2)
1/2 NPT	SF250CX	15F8486	1.19 (30.1)	2.00 (50.8)
1/2 NPT	SF375CX	15F8686	1.19 (30.1)	2.13 (54.1)
1/2 NPT	SF562CX	15F8986	1.19 (30.1)	2.25 (57.2)
1/2 NPT	SF750CX	15F81286	1.38 (35.1)	2.63 (66.7)
1/2 NPT	SF1000CX	15F81686	1.75 (44.5)	3.00 (76.2)
1/2 NPT	F250C	15F8483	1.19 (30.1)	2.00 (50.8)
1/2 NPT	F375C	15F8683	1.19 (30.1)	2.13 (54.1)
1/2 NPT	F562C	15F8983	1.38 (35.1)	2.50 (63.5)
1/2 NPT	F312C150	15F8583	1.19 (30.1)	2.50 (63.5)

Connection "A"	Connection "B"	Catalog Number	Dimension inches (mm)	
			A Hex	B
3/4 NPT	SW500	10F12882	1.38 (35.1)	2.50 (63.5)
3/4 NPT	SF375CX	10F12686	1.38 (35.1)	2.25 (57.2)
3/4 NPT	SF562CX	10F12986	1.38 (35.1)	2.25 (57.2)
3/4 NPT	SF750CX	10F121286	1.50 (38.1)	2.63 (66.7)
3/4 NPT	SF1000CX	10F121686	1.75 (44.5)	3.00 (76.2)
3/4 NPT	F562C	10F12983	1.38 (35.1)	2.38 (60.33)
1 NPT	SF562CX	10F16986	1.75 (44.5)	2.63 (66.7)
1 NPT	SF1000CX	10F161686	1.75 (44.5)	2.88 (73.0)
1 NPT	F250C	10F16483	1.88 (47.8)	2.38 (60.33)
1 NPT	F562C	10F16983	1.75 (44.5)	2.50 (63.5)



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Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.

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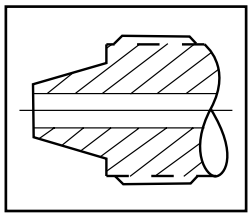
NOTE: NPT (Pipe) connections

- NPT threads must be sealed using a high quality PTFE tape and/or PTFE paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

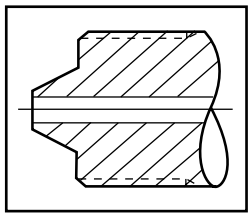
Male/Male Adapters

Parker Autoclave Engineer's standard male-to-male one piece adapters are available in low, medium, and high pressure configurations. Standard male-to-male adapters are machined from cold worked stainless steel. Other materials are available upon request. Contact your local Sales Representative for optional information. The following tables list our standard adapters with dimensions.

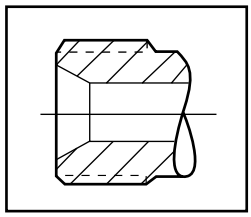
Adapter End Configuration



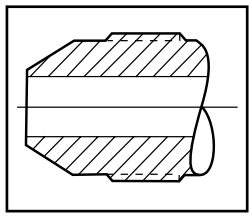
'L' Low Pressure



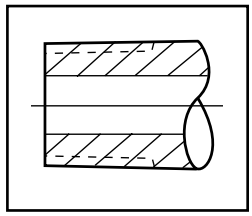
'H' High Pressure



'RH' Reverse High Pressure



'M' Medium Pressure



'P' National Pipe Tapered

Ordering Procedure

Typical catalog number: 20 MA M6 H9

20	MA	M6	H9
Pressure (X 1000 psi)	Male Adapter	Available End Connections	

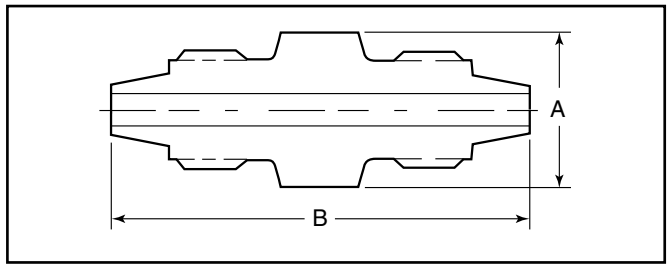
L2 - 1/8" Low Pressure	**M4** - 1/4" Medium Pressure	**H4** - 1/4" High Pressure	**P4** - 1/4" NPT	***RH9** - 9/16" -18 Reverse High
L4 - 1/4" Low Pressure	**M6** - 3/8" Medium Pressure	**H5** - 5/16" High Pressure	**P6** - 3/8" NPT	**RH12** - 3/4" -16 Reverse High
L6 - 3/8" Low Pressure	**M9** - 9/16" Medium Pressure	**H6** - 3/8" High Pressure	**P8** - 1/2" NPT	**RH14** - 7/8" -14 Reverse High
L8 - 1/2" Low Pressure	**M12** - 3/4" Medium Pressure	**H9** - 9/16" High Pressure	**P12** - 3/4" NPT	**RH16** - 1" -12 Reverse High
	M16 - 1" Medium Pressure		**P16** - 1" NPT	**RH21** - 1-5/16" -12 Reverse High

Note: Special material one piece adapters may be supplied with four flats in place of standard hex.

*RH9 & RH14 - 40,000 psi (2758 bar), RH12 - 30,000 psi (2068 bar), RH16 - 26,000 psi (1793 bar), RH21 - 20,000 psi (1379 bar).

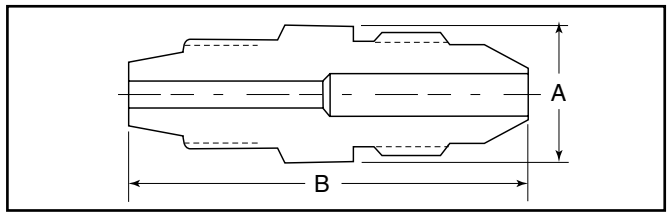
Low-Pressure to Low-Pressure Adapters

Catalog Number	Connection L/P	Connection L/P	Dimension inches (mm)	
			A Hex	B
15MAL2L2	W125	W125	0.50 (12.7)	1.38 (34.9)
15MAL2L4	W125	SW250	0.63 (15.9)	1.63 (41.3)
15MAL4L4	SW250	SW250	0.63 (15.9)	1.88 (47.6)
10MAL6L8	SW375	SW500	1.00 (25.4)	2.25 (57.1)
10MAL8L8	SW500	SW500	1.00 (25.4)	2.13 (54.0)



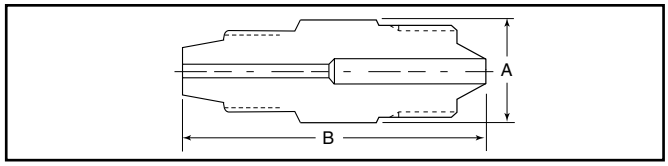
Low-Pressure to Medium-Pressure Adapters

Catalog Number	Connection L/P	Connection M/P	Dimension inches (mm)	
			A Hex	B
15MAL4M4	SW250	SF250CX	0.63 (15.9)	1.86 (47.3)
10MAL8M9	SW500	SF562CX	1.00 (25.4)	2.44 (62.0)



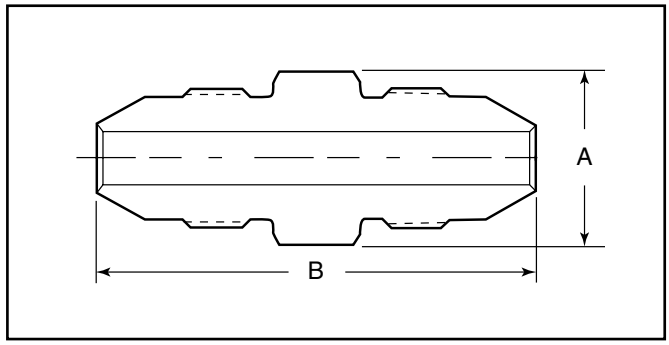
Low-Pressure to High-Pressure Adapters

Catalog Number	Connection L/P	Connection H/P	Dimension inches (mm)	
			A Hex	B
15MAL2H4	W125	F250C	0.63 (15.9)	1.63 (41.3)
15MAL2H6	W125	F375C	0.90 (25.4)	2.00 (50.8)



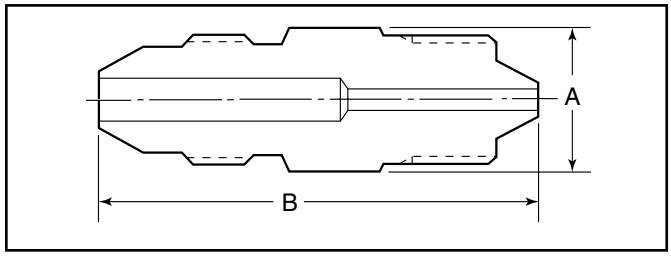
Medium-Pressure to Medium-Pressure Adapters

Catalog Number	Connection M/P	Connection M/P	Dimension inches (mm)	
			A Hex	B
20MAM4M4	SF250CX	SF250CX	0.50 (12.7)	1.69 (42.9)
20MAM4M6	SF250CX	SF375CX	0.63 (15.9)	1.88 (47.6)
20MAM4M9	SF250CX	SF562CX	0.94 (23.8)	2.38 (60.3)
20MAM4M12	SF250CX	SF750CX	1.19 (30.1)	2.69 (68.2)
20MAM4M16	SF250CX	SF1000CX	1.38 (34.9)	3.38 (85.7)
20MAM6M6	SF375CX	SF375CX	0.63 (15.9)	2.25 (57.1)
20MAM6M9	SF375CX	SF562CX	0.94 (23.8)	2.38 (60.3)
20MAM6M12	SF375CX	SF750CX	1.19 (30.1)	2.81 (71.4)
20MAM6M16	SF375CX	SF1000CX	1.38 (34.9)	3.38 (85.7)
20MAM9M9	SF562CX	SF562CX	0.94 (23.8)	2.50 (63.5)
20MAM9M12	SF562CX	SF750CX	1.19 (30.1)	3.00 (76.2)
20MAM9M16	SF562CX	SF1000CX	1.38 (34.9)	3.69 (93.72)
20MAM12M12	SF750CX	SF750CX	1.19 (30.1)	3.13 (79.3)
20MAM12M16	SF750CX	SF1000CX	1.38 (34.9)	3.81 (96.8)
20MAM16M4	SF1000CX	SF250CX	1.38 (34.9)	3.25 (82.6)
20MAM16M16	SF1000CX	SF1000CX	1.38 (34.9)	4.38 (111.1)



Medium-Pressure to High-Pressure Adapters

Catalog Number	Connection M/P	Connection H/P	Dimension inches (mm)	
			A Hex	B
20MAM4H4	SF250CX	F250C	0.63 (15.9)	1.75 (44.5)
20MAM4H6	SF250CX	F375C	0.81 (20.6)	2.13 (54.0)
20MAM4H9	SF250CX	F562C	1.19 (30.1)	2.63 (66.7)
20MAM6H4	SF375CX	F250C	0.63 (15.9)	1.94 (49.2)
20MAM6H6	SF375CX	F375C	0.81 (20.6)	2.38 (60.3)
20MAM6H9	SF375CX	F562C	1.19 (30.1)	2.69 (68.2)
20MAM9H4	SF562CX	F250C	0.81 (20.6)	2.25 (57.1)
20MAM9H6	SF562CX	F375C	0.81 (20.6)	2.56 (65.0)
20MAM9H9	SF562CX	F562C	1.19 (30.1)	2.94 (74.6)
20MAM12H4	SF750CX	F250C	1.19 (30.1)	2.63 (66.7)
20MAM12H6	SF750CX	F375C	1.19 (30.1)	2.88 (73.0)
20MAM12H9	SF750CX	F562C	1.19 (30.1)	3.00 (76.2)
20MAM16H4	SF1000CX	F250C	1.38 (34.9)	3.25 (82.6)
20MAM16H6	SF1000CX	F375C	1.38 (34.9)	3.50 (89.0)
20MAM16H9	SF1000CX	F562C	1.38 (34.9)	3.69 (93.6)



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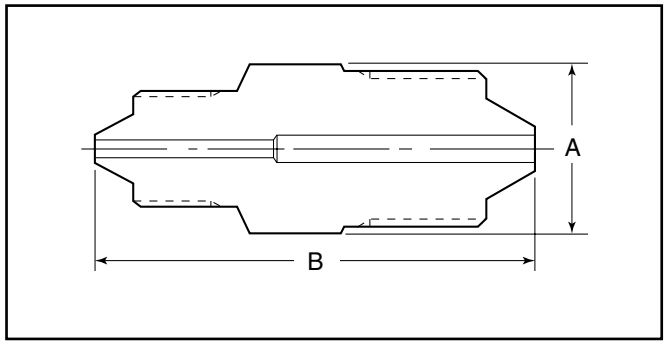
Note: For pressure rating see ordering procedure.
All Dimensions for reference only and subject to change.

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

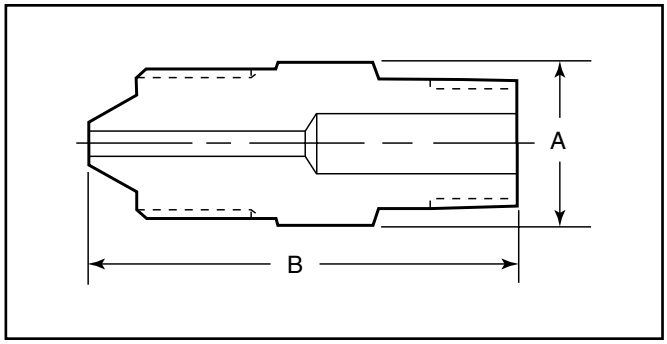
High-Pressure to High-Pressure Adapters

Catalog Number	Connection H/P	Connection H/P	Dimension inches (mm)	
			A Hex	B
40MAH9H9	F562C40	F562C40	1.19 (30.1)	2.94 (74.6)
60MAH4H4	F250C	F250C	0.63 (15.9)	1.69 (42.8)
60MAH4H5	F250C	F312C150	0.75 (19.1)	2.63 (66.7)
60MAH4H6	F250C	F375C	0.81 (20.6)	2.13 (54.0)
60MAH4H9	F250C	F562C	1.19 (30.1)	2.56 (65.0)
60MAH5H6	F312C150	F375C	0.81 (20.6)	2.81 (71.4)
60MAH6H6	F375C	F375C	0.81 (20.6)	2.25 (57.1)
60MAH6H9	F375C	F562C	1.19 (30.1)	2.88 (73.0)
60MAH9H9	F562C	F562C	1.19 (30.1)	3.00 (76.2)
150MAH5H5	F312C150	F312C150	0.75 (19.1)	3.38 (85.7)



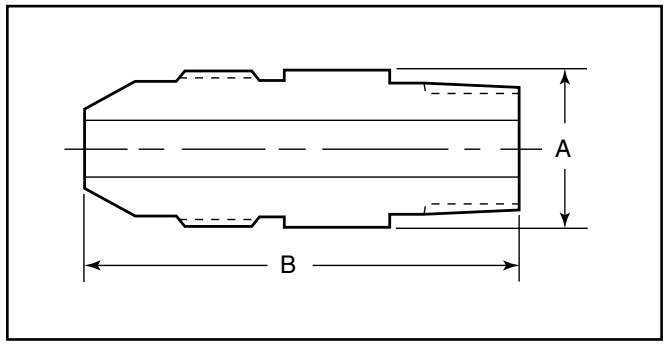
Low-Pressure to NPT Adapters

Catalog Number	Connection L/P	Connection NPT	Dimension inches (mm)	
			A Hex	B
15MAL2P2	W125	1/8”	0.50 (12.7)	1.38 (34.9)
15MAL2P4	W125	1/4”	0.63 (15.9)	1.63 (41.2)
15MAL2P8	W125	1/2”	1.00 (25.4)	2.13 (54.0)
15MAL4P8	SW250	1/2”	1.00 (25.4)	2.25 (57.1)
15MAL4P2	SW250	1/8”	0.63 (15.9)	1.63 (41.2)
15MAL4P4	SW250	1/4”	0.63 (15.9)	1.75 (44.5)
15MAL6P4	SW375	1/4”	0.75 (19.1)	1.88 (47.6)
15MAL6P8	SW375	1/2”	1.00 (25.4)	2.25 (57.1)
10MAL8P6	SW500	3/8”	1.00 (25.4)	2.00 (50.0)
10MAL8P8	SW500	1/2”	1.00 (25.4)	2.31 (58.7)
10MAL8P12	SW500	3/4”	1.19 (30.1)	2.38 (60.3)



Medium-Pressure to NPT Adapters

Catalog Number	Connection M/P	Connection NPT	Dimension inches (mm)	
			A Hex	B
15MAM4P4	SF250CX	1/4”	0.63 (15.9)	1.75 (44.5)
15MAM4P6	SF250CX	3/8”	0.75 (19.1)	1.81 (46.2)
15MAM4P8	SF250CX	1/2”	0.94 (23.8)	2.19 (55.5)
15MAM6P4	SF375CX	1/4”	0.63 (15.9)	1.94 (49.1)
15MAM6P6	SF375CX	3/8”	0.75 (19.1)	2.00 (50.8)
15MAM6P8	SF375CX	1/2”	0.94 (23.8)	2.38 (60.3)
15MAM9P4	SF562CX	1/4”	0.81 (20.6)	2.25 (57.1)
15MAM9P6	SF562CX	3/8”	0.81 (20.6)	2.13 (54.0)
15MAM9P8	SF562CX	1/2”	0.94 (23.8)	2.56 (65.0)
10MAM9P12	SF562CX	3/4”	1.19 (30.1)	2.75 (69.9)
10MAM9P16	SF562CX	1”	1.38 (34.9)	3.00 (76.2)
15MAM12P4	SF750CX	1/4”	1.19 (30.1)	2.63 (66.7)
15MAM12P6	SF750CX	3/8”	1.19 (30.1)	2.63 (66.7)
15MAM12P8	SF750CX	1/2”	1.19 (30.1)	2.81 (71.4)
10MAM12P12	SF750CX	3/4”	1.19 (30.1)	2.81 (71.4)
10MAM12P16	SF750CX	1”	1.19 (30.1)	2.81 (71.4)
15MAM16P4	SF1000CX	1/4”	1.38 (34.9)	3.38 (85.7)
15MAM16P6	SF1000CX	3/8”	1.38 (34.9)	3.31 (84.1)
15MAM16P8	SF1000CX	1/2”	1.38 (34.9)	3.44 (87.3)
10MAM16P12	SF1000CX	3/4”	1.50 (38.1)	3.75 (95.3)
10MAM16P16	SF1000CX	1”	1.50 (38.1)	4.00 (101.6)



NOTE: NPT (Pipe) connections

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- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

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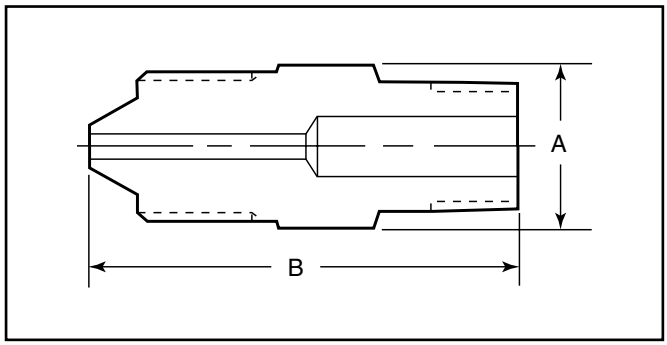
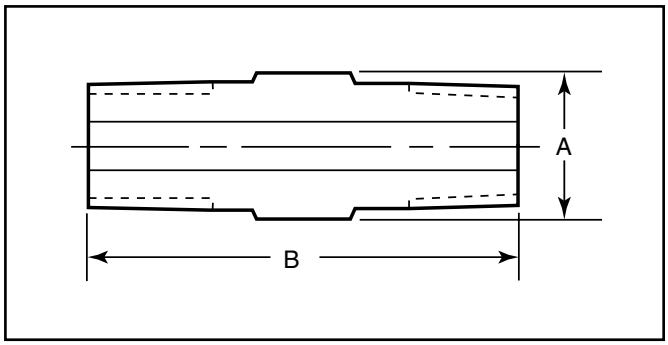
High-Pressure to NPT Adapters

Catalog Number	Connection H/P	Connection NPT	Dimension inches (mm)	
			A Hex	B
15MAH4P4	F250C	1/4”	0.63 (15.9)	1.81 (46.2)
15MAH4P6	F250C	3/8”	0.75 (19.1)	1.88 (47.6)
15MAH4P8	F250C	1/2”	0.94 (23.8)	2.25 (57.1)
15MAH6P4	F375C	1/4”	0.81 (20.6)	2.13 (54.0)
15MAH6P6	F375C	3/8”	0.81 (20.6)	2.13 (54.0)
15MAH6P8	F375C	1/2”	0.94 (23.8)	2.50 (63.5)
15MAH9P4	F562C	1/4”	1.19 (30.1)	2.63 (66.7)
15MAH9P6	F562C	3/8”	1.19 (30.1)	2.56 (65.0)
15MAH9P8	F562C	1/2”	1.19 (30.1)	2.75 (69.9)



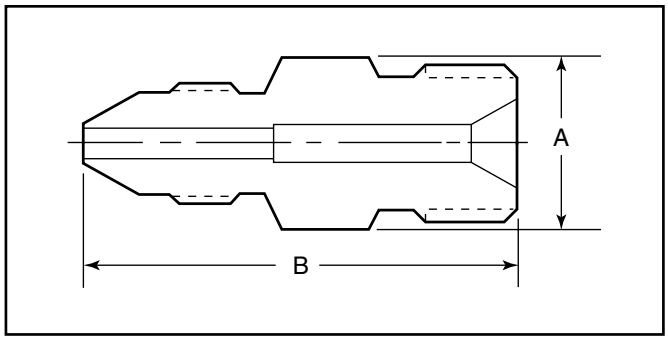
NPT to NPT Adapters

Catalog Number	Connection NPT	Connection NPT	Dimension inches (mm)	
			A Hex	B
15MAP4P4	1/4	1/4”	0.63 (15.9)	1.81 (46.2)
15MAP4P6	1/4	3/8”	0.75 (19.1)	1.88 (47.6)
15MAP4P8	1/4	1/2”	0.94 (23.8)	2.31 (58.7)
15MAP6P6	3/8	3/8”	0.75 (19.1)	1.88 (47.6)
15MAP6P8	3/8	1/2”	0.94 (23.8)	2.31 (58.7)
15MAP8P8	1/2	1/2”	0.94 (23.8)	2.50 (63.5)



Medium-Pressure to Reverse High-Pressure Adapters

Catalog Number	Connection M/P	Connection RH	Dimension inches (mm)	
			A Hex	B
20MAM4RH9	SF250CX	9/16”	0.63 (15.9)	1.56 (39.7)
20MAM4RH12	SF250CX	3/4”	0.81 (20.6)	1.88 (47.6)
20MAM4RH16	SF250CX	1”	1.00 (25.4)	2.13 (54.0)
20MAM6RH9	SF375CX	9/16”	0.63 (15.9)	1.69 (42.8)
20MAM6RH12	SF375CX	3/4”	0.81 (20.6)	1.81 (46.2)
20MAM6RH16	SF375CX	1”	1.00 (25.4)	2.25 (57.1)
20MAM9RH9	SF562CX	9/16”	0.94 (23.8)	2.00 (50.8)
20MAM9RH12	SF562CX	3/4”	0.94 (23.8)	2.13 (54.0)
20MAM9RH14	SF562CX	7/8”	0.94 (23.8)	2.44 (61.9)
20MAM9RH16	SF562CX	1”	1.00 (25.4)	2.25 (57.1)
20MAM9RH21	SF562CX	1-5/16”	1.38 (34.9)	2.38 (60.3)
20MAM12RH9	SF750CX	9/16”	1.19 (30.1)	2.38 (60.3)
20MAM12RH12	SF750CX	3/4”	1.19 (30.1)	2.44 (61.9)
20MAM12RH16	SF750CX	1”	1.19 (30.1)	2.50 (63.5)
20MAM12RH21	SF750CX	1-5/16”	1.50 (38.1)	2.75 (69.9)
20MAM16RH9	SF1000CX	9/16”	1.38 (34.9)	3.13 (79.3)
20MAM16RH12	SF1000CX	3/4”	1.38 (34.9)	3.19 (80.9)
20MAM16RH14	SF1000CX	7/8”	1.38 (34.9)	3.34 (84.9)
20MAM16RH16	SF1000CX	1”	1.38 (34.9)	3.38 (85.7)
20MAM16RH21	SF1000CX	1-5/16”	1.50 (38.1)	3.25 (82.6)



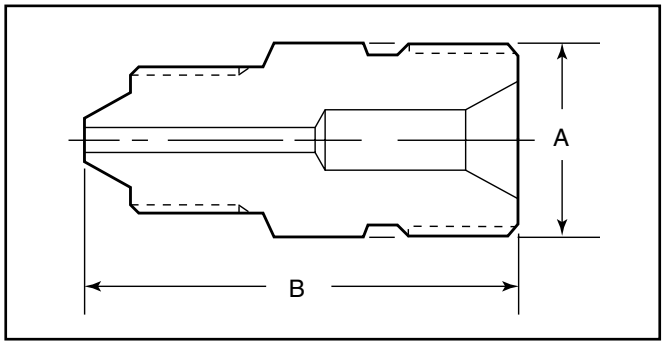
NOTE: NPT (Pipe) connections

- NPT threads must be sealed using a high quality PTFE tape and/or PTFE paste product. Refer to thread sealant manufacturer’s instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see ordering procedure.
All Dimensions for reference only and are subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

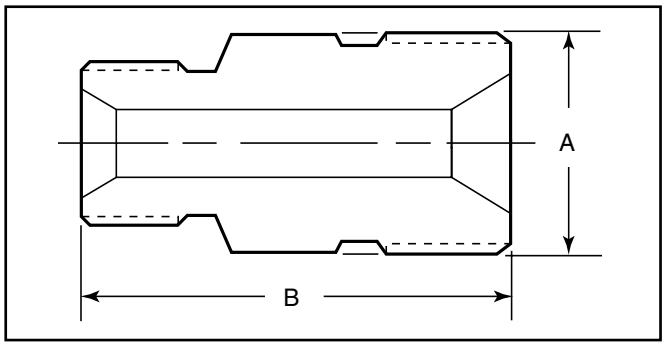
High-Pressure to Reverse High-Pressure Adapters

Catalog Number	Connection H/P	Connection RH	Dimension inches (mm)	
			A Hex	B
26MAH4RH16	F250C	1”	1.00 (25.4)	2.13 (54.0)
26MAH6RH16	F375C	1”	1.00 (25.4)	2.25 (57.1)
26MAH9RH16	F562C	1”	1.19 (30.1)	2.69 (68.2)
30MAH4RH12	F250C	3/4”	0.81 (20.6)	1.88 (47.6)
30MAH6RH12	F375C	3/4”	0.81 (20.6)	2.06 (54.0)
30MAH9RH12	F562C	3/4”	1.19 (30.1)	2.50 (63.5)
40MAH4RH9	F250C	9/16”	0.63 (15.9)	1.56 (39.7)
40MAH6RH9	F375C	9/16”	0.81 (20.6)	1.94 (49.1)
40MAH9RH9	F562C	9/16”	1.19 (30.1)	2.38 (60.3)



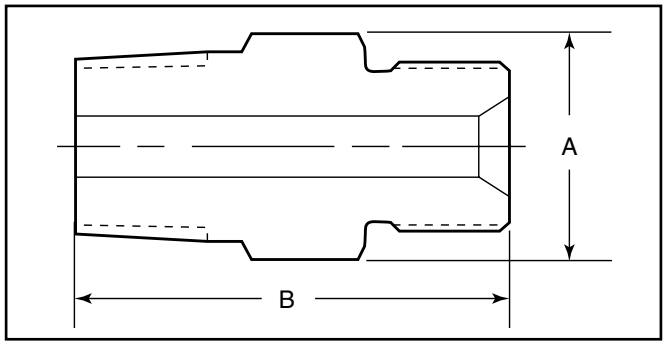
Reverse High-Pressure to Reverse High-Pressure Adapters

Catalog Number	Connection RH	Connection RH	Dimension inches (mm)	
			A Hex	B
20MARH21RH21	1-5/16	1-5/16”	1.38 (34.9)	2.13 (54.1)
26MARH9RH16	9/16	1”	1.00 (25.4)	1.88 (47.6)
26MARH12RH16	3/4	1”	1.00 (25.4)	2.00 (50.8)
26MARH16RH16	1	1”	1.00 (25.4)	2.00 (50.8)
30MARH9RH12	9/16	3/4”	0.81 (20.6)	1.63 (41.2)
30MARH12RH12	3/4	3/4”	0.81 (20.6)	1.75 (44.5)
40MARH9RH9	9/16	9/16”	0.63 (15.9)	1.50 (38.1)



NPT to Reverse High-Pressure Adapters

Catalog Number	Connection NPT	Connection RH	Dimension inches (mm)	
			A Hex	B
15MAP4RH9	1/4	9/16”	0.63 (15.9)	1.63 (41.2)
15MAP4RH12	1/4	3/4”	0.81 (20.6)	1.88 (47.6)
15MAP4RH16	1/4	1”	1.00 (25.4)	2.25 (57.1)
15MAP6RH9	3/8	9/16”	0.75 (19.1)	1.81 (46.2)
15MAP6RH12	3/8	3/4”	0.81 (20.6)	1.94 (49.1)
15MAP6RH16	3/8	1”	1.00 (25.4)	2.13 (54.0)
15MAP8RH9	1/2	9/16”	0.94 (23.8)	2.00 (50.8)
15MAP8RH12	1/2	3/4”	0.94 (23.8)	2.13 (54.0)
15MAP8RH14	1/2	7/8”	1.00 (25.4)	2.25 (57.1)
15MAP8RH16	1/2	1”	1.00 (25.4)	2.31 (58.7)
10MAP12RH12	3/4	3/4”	1.19 (30.1)	2.31 (58.7)
10MAP12RH16	3/4	1”	1.38 (34.9)	2.63 (66.7)
10MAP12RH21	3/4	1-5/16”	1.38 (34.9)	2.63 (66.7)
10MAP16RH9	1	9/16”	1.38 (34.9)	2.25 (57.2)
10MAP16RH16	1	1”	1.38 (34.9)	2.81 (71.4)
10MAP16RH21	1	1-5/16”	1.38 (34.9)	2.68 (68.0)



Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see ordering procedure.

All Dimensions for reference only and are subject to change.

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

Male/Female Adapters - QSS Male/Female Adapters

Male /female adapters are designed to adapt a female connection to another size and/or type of connection without the need for additional couplings. In selecting an adapter involving two different sized connections, the larger connection should be on the male end where it is possible to maximize the mechanical strength of the adapter.

Materials

All Parker Autoclave Engineers adapters are precision machined from cold-worked Type 316 stainless steel.

To use this chart:

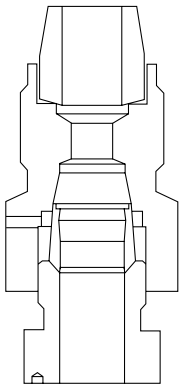
1. Locate MALE end in vertical column.
2. Locate desired FEMALE end of adapter across top of chart.
3. Catalog number of required adapter is located at intersection of columns.
4. For one piece adapter add-OP to suffix of part number.

				FEMALE END								
					Quick Set				Medium Pressure				
MALE END	Connection Size and Type			1/4" QS250	3/8" QS375	9/16" QS562	3/4" QS750	1/4" SF250CX	3/8" SF375CX	9/16" SF562CX	3/4" SF750CX	1" SF1000CX
		Fits this Female Connection	Pressure Rating PSI (bar)*	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)
Quick Set	1/4"	QS250	15,000 (1034.20)		15M46QQ	15M49QQ	15M412QQ	15M44Q6	15M46Q6	15M49Q6	15M412Q6	15M416Q6
	3/8"	QS375	15,000 (1034.20)	15M64QQ		15M69QQ	15M612QQ	15M64Q6	15M66Q6	15M69Q6	15M612Q6	15M616Q6
	9/16"	QS562	15,000 (1034.20)	15M94QQ	15M94QQ		15M912QQ	15M94Q6	15M96Q6	15M99Q6	15M912Q6	15M916Q6
	3/4"	QS750	15,000 (1034.20)	15M124QQ	15M126QQ	15M129QQ		15M124Q6	15M126Q6	15M129Q6	15M1212Q6	15M1216Q6
Medium Pressure	1/4"	SF250CX	20,000 (1378.93)	15M44KQ	15M46KQ	15M49KQ	15M412KQ					
	3/8"	SF375CX	20,000 (1378.93)	15M64KQ	15M66KQ	15M69KQ	15M612KQ					
	9/16"	SF562CX	20,000 (1378.93)	15M94KQ	15M96KQ	15M99KQ	15M912KQ					
	3/4"	SF750CX	20,000 (1378.93)	15M124KQ	15M126KQ	15M129KQ	15M1212KQ					
	1"	SF1000CX	20,000 (1378.93)	15M164KQ	15M166KQ	15M169KQ	15M1612KQ					
High Pressure	1/4"	F250C	60,000 (4136.85)	15M44BQ	15M46BQ	15M49BQ	15M412BQ					
	3/8"	F375C	60,000 (4136.85)	15M64BQ	15M66BQ	15M69BQ	15M612BQ					
	9/16"	F562C	60,000 (4136.85)	15M94BQ	15M96BQ	15M99BQ	15M912BQ					
National Pipe Thread (NPT)	1/4"	NPT	15,000 (1034.20)	15M44NQ	15M46NQ	15M49NQ	15M412NQ					
	3/8"	NPT	15,000 (1034.20)	15M64NQ	15M66NQ	15M69NQ	15M612NQ					
	1/2"	NPT	15,000 (689.45)	15M84NQ	15M86NQ	15M89NQ	15M812NQ					
	3/4"	NPT	10,000 (689.45)	10M124NQ	10M126NQ	10M129NQ	10M1212NQ					
	1"	NPT	10,000 (689.45)	10M164NQ	10M166NQ	10M169NQ	10M1612NQ					

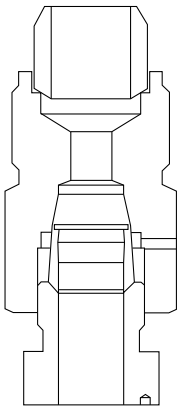
Note:
All Parker Autoclave Engineers adapters are supplied complete with appropriate gland nuts and sleeves unless specified without.
** The maximum pressure rating for an adapter is determined by the connection component with the LOWEST pressure rating; that is, the two end connections and the tubing or pipe used, whichever is LOWER.*
CAUTION: See appropriate pressure section in reference to proper selection of tubing.

NOTE: NPT (Pipe) connections

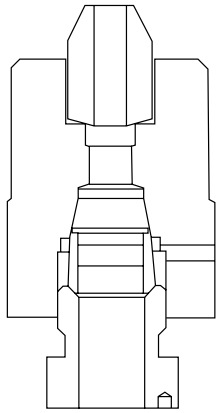
- NPT threads must be sealed using a high quality PTFE tape and/or PTFE paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.



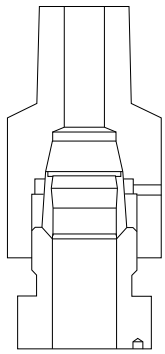
Quick Set Female
to
Quick Set Male



Quick Set Female
to
Medium Pressure Male



Quick Set Female
to
High Pressure Male



Quick Set Female
to
National Pipe Male

FEMALE END							
High Pressure			**National Pipe Thread (NPT)**				
1/4" F250C	3/8" F375C	9/16" F562C	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT
60,000 (4136.85)	60,000 (4136.85)	150,000 (10342.14)	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	10,000 (689.45)	10,000 (689.45)
15M44Q3	15M46Q3	15M49Q3	15M44Q8	15M46Q8	15M48Q8	10M412Q8	10M416Q8
15M64Q3	15M66Q3	15M69Q3	15M64Q8	15M66Q8	15M68Q8	10M612Q8	10M616Q8
15M94Q3	15M96Q3	15M99Q3	15M94Q8	15M96Q8	15M98Q8	10M912Q8	10M916Q8
15M124Q3	15M126Q3	15M129Q3	15M124Q8	15M126Q8	15M128Q8	10M1212Q8	10M1216Q8

AE Male/Female Adapters are available in a "one-piece" design. They are identical to the two piece designs in length and can be ordered by adding the suffix - OP to the two piece adapter part numbers listed.

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

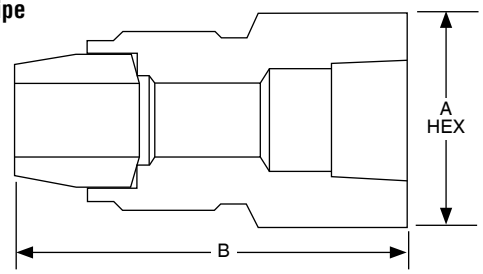
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
QS250	QS250			
QS250	QS375	15M46QQ		
QS250	QS562	15M49QQ	1.38 (34.9)	2.25 (57.1)
QS250	QS750	15M412QQ		
QS250	SF250CX	15M44Q6		
QS250	SF375CX	15M46Q6		
QS250	SF562CX	15M49Q6		
QS250	SF750CX	15M412Q6		
QS250	SF1000CX	15M416Q6		
QS250	F250C	15M44Q3		
QS250	F375C	15M46Q3		
QS250	F562C	10M49Q3		
QS250	1/4 NPT	15M44Q8	0.75 (19.1)	1.69 (42.9)
QS250	3/8 NPT	15M46Q8		
QS250	1/2 NPT	15M48Q8		
QS250	3/4 NPT	10M412Q8		
QS250	1 NPT	10M416Q8		
QS375	QS250	15M64QQ	0.75 (19.1)	1.53 (38.9)
QS375	QS375			
QS375	QS562	15M69QQ		
QS375	QS750	15M612QQ	1.50 (38.1)	2.78 (70.6)
QS375	SF250CX	15M64Q6		
QS375	SF375CX	15M66Q6	0.75 (19.1)	1.66 (42.2)
QS375	SF562CX	15M69Q6	1.00 (25.4)	1.78 (45.2)
QS375	SF750CX	15M612Q6		
QS375	SF1000CX	15M616Q6		
QS375	F250C	15M64Q3		
QS375	F375C	15M66Q3		
QS375	F562C	15M69Q3		
QS375	1/4 NPT	15M64Q8	0.75 (19.1)	1.66 (42.2)
QS375	3/8 NPT	15M66Q8	1.00 (25.4)	1.78 (45.3)
QS375	1/2 NPT	15M68Q8	1.19 (30.1)	2.16 (54.8)
QS375	3/4 NPT	10M612Q8		
QS375	1 NPT	10M616Q8		

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

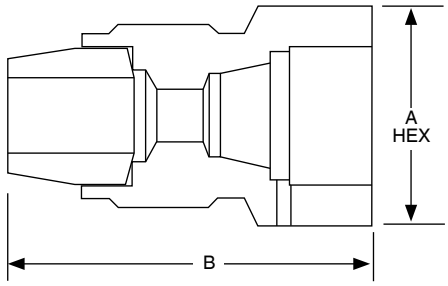
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
QS562	QS250	15M94QQ	1.00 (25.4)	1.85 (46.8)
QS562	QS375	15M96QQ	1.00 (25.4)	1.85 (46.8)
QS562	QS562			
QS562	QS750	15M912QQ	1.50 (38.1)	3.16 (80.3)
QS562	SF250CX	15M94Q6		
QS562	SF375CX	15M96Q6		
QS562	SF562CX	15M99Q6		
QS562	SF750CX	15M912Q6		
QS562	SF1000CX	15M916Q6		
QS562	F250C	15M94Q3		
QS562	F375C	15M96Q3		
QS562	F562C	15M99Q3		
QS562	1/4 NPT	15M94Q8	1.19 (30.1)	2.22 (56.4)
QS562	3/8 NPT	15M96Q8	1.19 (30.1)	2.22 (56.4)
QS562	1/2 NPT	15M98Q8	1.19 (30.1)	2.41 (61.1)
QS562	3/4 NPT	10M912Q8		
QS562	1 NPT	10M916Q8		
QS750	QS250	15M124QQ		
QS750	QS375	15M126QQ	1.50 (38.1)	2.53 (64.1)
QS750	QS562	15M129QQ	1.50 (38.1)	2.53 (64.1)
QS750	QS750			
QS750	SF250CX	15M124Q6		
QS750	SF375CX	15M126Q6		
QS750	SF562CX	15M129Q6		
QS750	SF750CX	15M1212Q6		
QS750	SF1000CX	15M1216Q6		
QS750	F250C	15M124Q3		
QS750	F375C	15M126Q3		
QS750	F562C	15M129Q3		
QS750	1/4 NPT	15M124Q8		
QS750	3/8 NPT	15M126Q8		
QS750	1/2 NPT	15M128Q8	1.50 (38.1)	2.78 (70.5)
QS750	3/4 NPT	10M1212Q8		
QS750	1 NPT	10M1216Q8		

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.
All Dimensions for reference only and subject to change.

QSS to Pipe



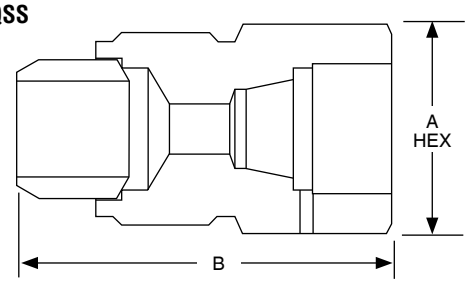
QSS to QSS



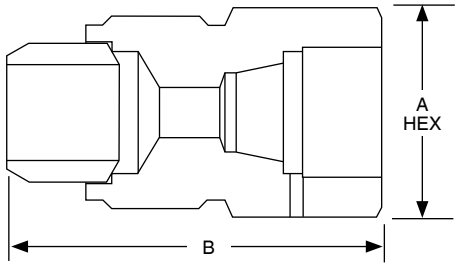
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
SF250CX	QS250	15M44KQ	0.75 (19.1)	1.68 (42.7)
SF250CX	QS375	15M46KQ	0.81 (20.6)	1.68 (42.7)
SF250CX	QS562	15M49KQ	1.19 (30.1)	2.22 (56.4)
SF250CX	QS750	15M412KQ		
SF375CX	QS250	15M64KQ	0.75 (19.1)	1.63 (41.4)
SF375CX	QS375	15M66KQ	0.81 (20.6)	1.81 (46.1)
SF375CX	QS562	15M69KQ		
SF375CX	QS750	15M612KQ	1.50 (38.1)	3.00 (76.20)
SF562CX	QS250	15M94KQ	0.94 (23.8)	1.75 (44.5)
SF562CX	QS375	15M96KQ	0.94 (23.8)	1.75 (44.5)
SF562CX	QS562	15M99KQ	1.38 (34.9)	2.50 (63.5)
SF562CX	QS750	15M912KQ	1.50 (38.1)	3.25 (82.6)
SF750CX	QS250	15M124KQ		
SF750CX	QS375	15M126KQ		
SF750CX	QS562	15M129KQ		
SF750CX	QS750	15M1212KQ	1.50 (38.1)	3.06 (77.7)
SF1000CX	QS250	15M164KQ		
SF1000CX	QS375	15M166KQ		
SF1000CX	QS562	15M169KQ	1.50 (38.1)	2.88 (73.0)
SF1000CX	QS750	15M1612KQ	1.50 (38.1)	3.38 (85.7)

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
F250C	QS250	15M44BQ	0.75 (19.1)	1.31 (33.3)
F250C	QS375	15M46BQ	0.81 (20.6)	1.56 (39.7)
F250C	QS562	15M49BQ		
F250C	QS750	15M412BQ		
F375C	QS250	15M64BQ		
F375C	QS375	15M66BQ	0.81 (20.6)	1.69 (42.9)
F375C	QS562	15M69BQ		
F375C	QS750	15M612BQ		
F562C	QS250	15M94BQ	1.19 (30.1)	1.81(46.1)
F562C	QS375	15M96BQ	1.19 (30.1)	1.69 (42.9)
F562C	QS562	15M99BQ	1.38 (34.9)	2.32 (58.8)
F562C	QS750	15M912BQ	1.50 (38.1)	3.06 (77.7)

MP to QSS



HP to QSS

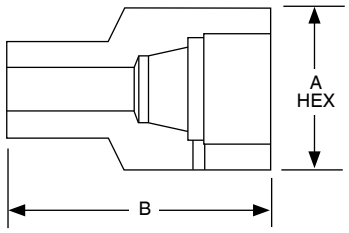


Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.
All Dimensions for reference only and subject to change.
Adapter configurations may vary from outline shown.

FFor prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
1/4 NPT	QS250	15M44NQ	0.75 (19.1)	1.44 (36.5)
1/4 NPT	QS375	15M46NQ	0.81 (20.6)	1.63 (41.3)
1/4 NPT	QS562	15M49NQ		
1/4 NPT	QS750	15M412NQ		
3/8 NPT	QS250	15M64NQ	0.75 (19.1)	1.50 (38.1)
3/8 NPT	QS375	15M66NQ	0.81 (20.6)	1.63 (41.3)
3/8 NPT	QS562	15M69NQ	1.38 (35.1)	2.13 (53.5)
3/8 NPT	QS750	15M612NQ		
1/2 NPT	QS250	15M84NQ	0.94 (23.8)	1.75 (44.5)
1/2 NPT	QS375	15M86NQ	0.94 (23.8)	1.63 (41.3)
1/2 NPT	QS562	15M89NQ	1.38 (35.1)	2.25 (57.2)
1/2 NPT	QS750	15M812NQ	1.50 (38.1)	2.81 (71.4)
3/4 NPT	QS250	10M124NQ		
3/4 NPT	QS375	10M126NQ		
3/4 NPT	QS562	10M129NQ	1.38 (35.1)	2.38 (60.3)
3/4 NPT	QS750	10M1212NQ	1.50 (38.1)	2.81 (71.4)
1 NPT	QS250	10M164NQ		
1 NPT	QS275	10M166NQ		
1 NPT	QS562	10M169NQ	1.50 (38.1)	2.38 (60.3)
1 NPT	QS750	10M1612NQ	1.50 (38.1)	2.38 (60.3)

NPT to QSS

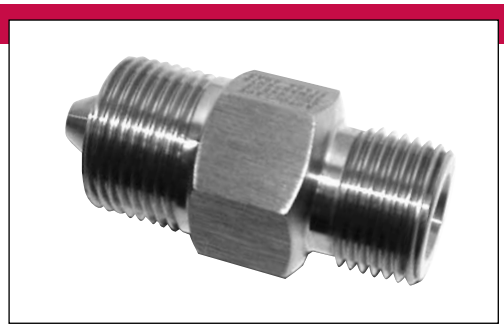


Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.
All Dimensions for reference only and subject to change.
Adapter configurations may vary from outline shown.

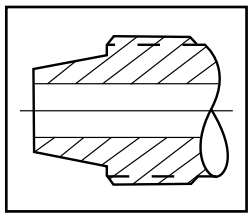
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Male/Male Adapters - QSS Male/Male Adapters

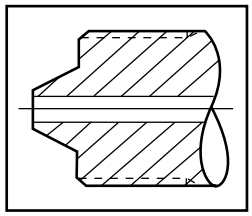
Parker Autoclave Engineer's standard male-to-male one piece adapters are available in multiple configurations. Standard male-to-male adapters are machined from cold worked stainless steel.Contact your local Sales Representative for optional information. The following tables list our standard adapters with dimensions.



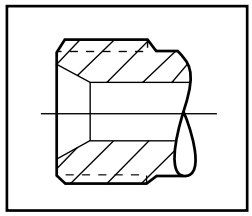
Adapter End Configuration



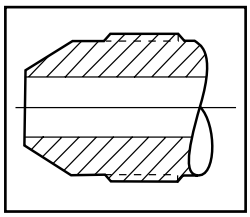
QS Series



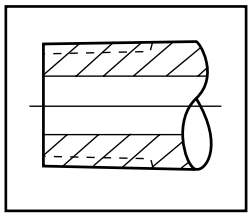
'H' High Pressure



'RH' Reverse High Pressure



'M' Medium Pressure



'P' National Pipe Tapered

Ordering Procedure

Typical catalog number: 15 MA Q4 H9

15 — **Pressure (X 1000 psi)**

MA — **Male Adapter**

Q4 — **Available End Connections**

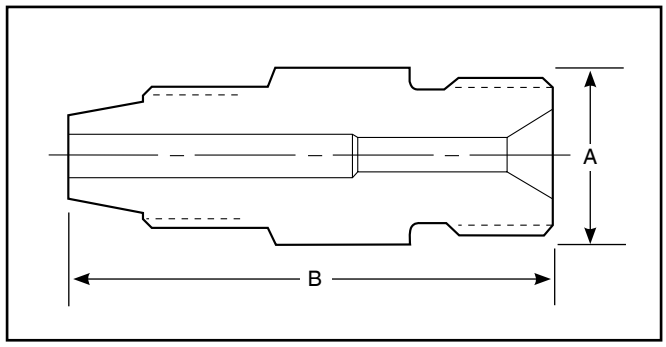
H9 — **Available End Connections**

Q4 - 1/4" QS Series	**M4** - 1/4" Medium Pressure	**H4** - 1/4" High Pressure	**P4** - 1/4" NPT	***RH9** - 9/16" -18 Reverse High
Q6 - 3/8" QS Series	**M6** - 3/8" Medium Pressure	**H5** - 5/16" High Pressure	**P6** - 3/8" NPT	**RH12** - 3/4" -16 Reverse High
Q9 - 9/16" QS Series	**M9** - 9/16" Medium Pressure	**H6** - 3/8" High Pressure	**P8** - 1/2" NPT	**RH14** - 7/8" -14 Reverse High
Q12 - 3/4" QS Series	**M12** - 3/4" Medium Pressure	**H9** - 9/16" High Pressure	**P12** - 3/4" NPT	**RH16** - 1" -12 Reverse High
	M16 - 1" Medium Pressure		**P16** - 1" NPT	**RH21** - 1-5/16" -12 Reverse High

*RH9 & RH14 - 40,000 psi (2758 bar), RH12 - 30,000 psi (2068 bar), RH16 - 26,000 psi (1793 bar), RH21 - 20,000 psi (1379 bar).

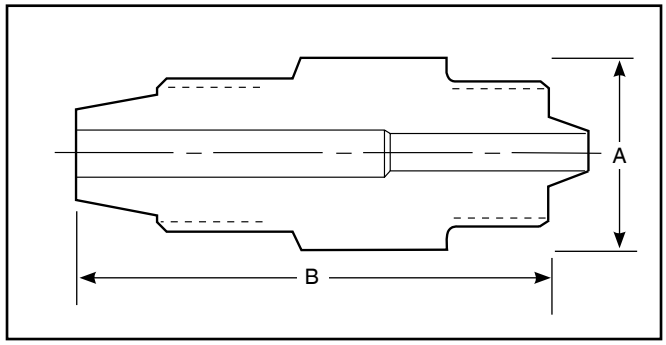
QS Series to Reverse High-Pressure Adapters

Catalog Number	Connection QS	Connection RH	Dimension inches (mm)	
			A Hex	B
15MAQ4RH9	QS250	9/16”	0.63 (15.9)	1.70 (43.2)
15MAQ6RH9	QS375	9/16”	0.75 (19.1)	1.81 (46.2)
15MAQ9RH9	QS562	9/16”	1.19 (30.1)	2.25 (57.1)
15MAQ9RH12	QS562	3/4”	1.19 (30.1)	2.38 (60.3)
15MAQ9RH16	QS562	1”	1.19 (30.1)	2.56 (65.1)



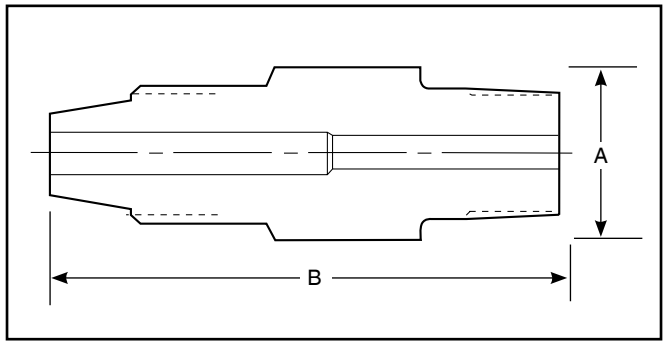
QS Series to High-Pressure Adapter

Catalog Number	Connection QS	Connection H/P	Dimension inches (mm)	
			A Hex	B
15MAQ9H4	QS562	1/4”	0.75 (19.1)	2.00 (50.8)



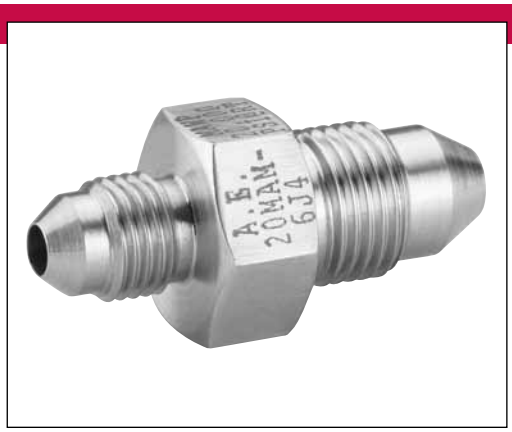
QS Series to NPT Adapter

Catalog Number	Connection QS	Connection NPT	Dimension inches (mm)	
			A Hex	B
15MAQ6P4	QS375	1/4”	0.75 (19.1)	2.00 (50.8)

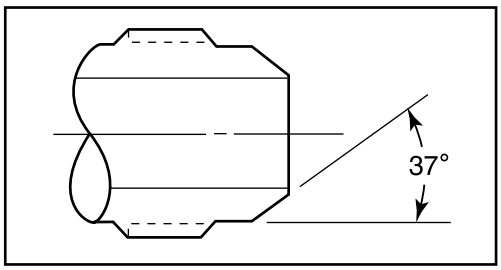


Male/Male JIC Adapters

Parker Autoclave Engineer's male-to-male JIC one-piece adapters are available in low, medium, and high pressure configurations. JIC adapters are machined from cold worked stainless steel. Other materials are available upon request. Contact your local Sales Representative for optional information. The following tables list our standard adapters with dimensions.



Adapter End Configuration



JIC connections consist of a 37° angle.

Ordering Procedure

Typical catalog number: 20 MA M4 J4

20	MA	M4	J4
Pressure (X 1000 psi)	**Male Adapter**	**Available End Connections**	

***J4** - 1/4" JIC	**L4** - 1/4" Low Pressure	**M4** - 1/4" Medium Pressure	**H4** - 1/4" High Pressure	**P4** - 1/4" NPT
J6 - 3/8" JIC	**L6** - 3/8" Low Pressure	**M6** - 3/8" Medium Pressure	**H6** - 3/8" High Pressure	**P6** - 3/8" NPT
J8 - 1/2" JIC	**L8** - 1/2" Low Pressure	**M9** - 9/16" Medium Pressure	**H9** - 9/16" High Pressure	**P8** - 1/2" NPT
J10 - 5/8" JIC		**M12** - 3/4" Medium Pressure		
J12 - 3/4" JIC		**M16** - 1" Medium Pressure		
J16 - 1" JIC				

Note: Special material one piece adapters may be supplied with four flats in place of standard hex.

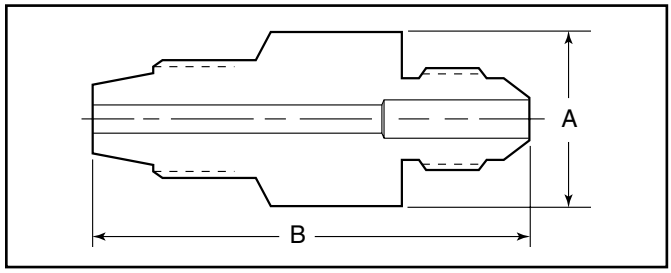
*J4, J6, J8 & J10 - 20,000 psi (1380 bar), J12 & J16 - 15,000 psi (1034 bar)

Thread Sizes

J4 - 7/16-20
J6 - 9/16-18
J8 - 3/4-16
J10 - 7/8-14
J12 - 1-1/16-12
J16 - 1-5/16-12

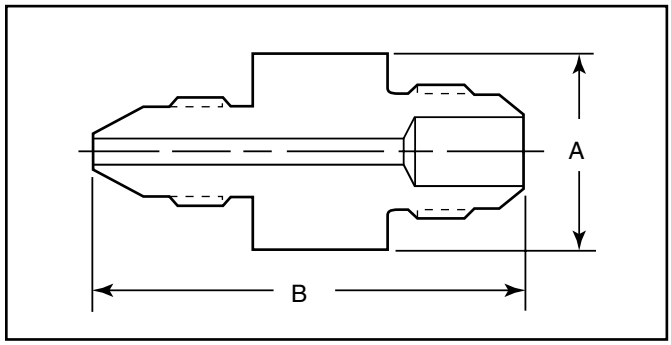
Low-Pressure to JIC Adapters

Catalog Number	Connection L/P	Connection JIC	Dimension inches (mm)	
			A Hex	B
15MAL4J4	SW250	1/4”	0.75 (19.1)	1.88 (47.6)
15MAL6J6	SW375	3/8”	0.81 (20.6)	2.00 (50.8)



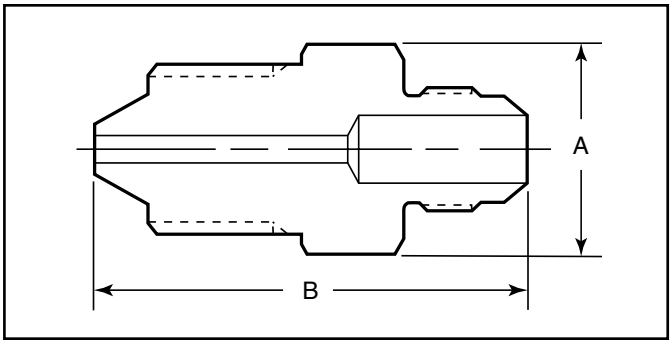
Medium-Pressure to JIC Adapters

Catalog Number	Connection M/P	Connection JIC	Dimension inches (mm)	
			A Hex	B
15MAM4J12	SF250CX	3/4”	1.38 (34.9)	2.25 (57.1)
15MAM4J16	SF250CX	1”	1.50 (38.1)	2.38 (60.3)
15MAM6J12	SF375CX	3/4”	1.38 (34.9)	2.44 (61.3)
15MAM6J16	SF375CX	1”	1.50 (38.1)	2.53 (64.9)
15MAM9J12	SF562CX	3/4”	1.38 (34.9)	2.69 (68.2)
15MAM9J16	SF562CX	1”	1.50 (38.1)	2.78 (70.6)
15MAM12J12	SF750CX	3/4”	1.38 (34.9)	2.88 (73.0)
15MAM12J16	SF750CX	1”	1.50 (38.1)	2.88 (73.0)
15MAM16J12	SF1000CX	3/4”	1.38 (34.9)	3.38 (85.7)
15MAM16J16	SF1000CX	1”	1.50 (38.1)	3.50 (89.0)
20MAM4J4	SF250CX	1/4”	0.75 (19.1)	1.63 (41.3)
20MAM4J6	SF250CX	3/8”	0.81 (20.6)	1.75 (44.5)
20MAM4J8	SF250CX	1/2”	1.00 (25.4)	2.00 (50.8)
20MAM6J4	SF375CX	1/4”	0.75 (19.1)	1.75 (44.5)
20MAM6J6	SF375CX	3/8”	0.81 (20.6)	1.81 (46.0)
20MAM6J8	SF375CX	1/2”	1.00 (25.4)	2.00 (50.8)
20MAM9J4	SF562CX	1/4”	0.94 (23.8)	2.13 (54.0)
20MAM9J6	SF562CX	3/8”	0.94 (23.8)	2.13 (54.0)
20MAM9J8	SF562CX	1/2”	1.00 (25.4)	2.25 (57.1)
20MAM9J10	SF562CX	5/8”	1.19 (30.1)	2.25 (57.1)
20MAM12J4	SF750CX	1/4”	1.19 (30.1)	2.38 (60.3)
20MAM12J6	SF750CX	3/8”	1.19 (30.1)	2.38 (60.3)
20MAM12J8	SF750CX	1/2”	1.19 (30.1)	2.50 (63.5)
20MAM16J4	SF1000CX	1/4”	1.38 (34.9)	3.13 (79.3)
20MAM16J6	SF1000CX	3/8”	1.38 (34.9)	3.13 (79.3)
20MAM16J8	SF1000CX	1/2”	1.38 (34.9)	3.13 (79.3)



High-Pressure to JIC Adapters

Catalog Number	Connection H/P	Connection JIC	Dimension inches (mm)	
			A Hex	B
20MAH4J2	F250C	1/8”	0.63 (15.9)	1.50 (38.1)
20MAH4J4	F250C	1/4”	0.75 (19.1)	1.63 (41.3)
20MAH4J6	F250C	3/8”	0.81 (20.6)	1.63 (41.3)
20MAH4J8	F250C	1/2”	1.00 (25.4)	1.88 (47.6)
20MAH6J4	F375C	1/4”	0.81 (20.6)	1.94 (49.1)
20MAH6J6	F375C	3/8”	0.81 (20.6)	1.94 (49.1)
20MAH6J8	F375C	1/2”	1.00 (25.4)	2.19 (55.5)
20MAH9J4	F562C	1/4”	1.19 (30.1)	2.31 (58.7)
20MAH9J6	F562C	3/8”	1.19 (30.1)	2.31 (58.7)
20MAH9J8	F562C	1/2”	1.19 (30.1)	2.38 (60.3)
20MAH4J10	F250C	5/8”	1.19 (30.1)	2.13 (54.0)

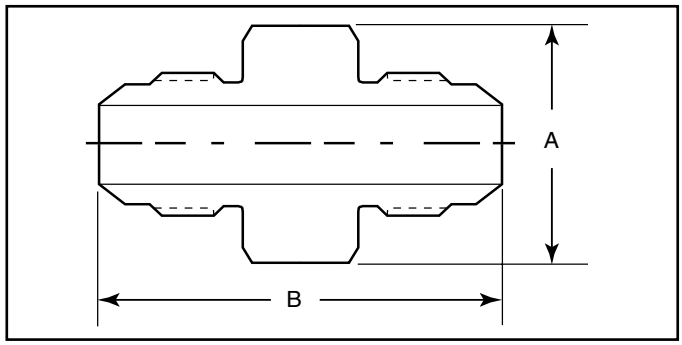


Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see ordering procedure.
All Dimensions for reference only and are subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

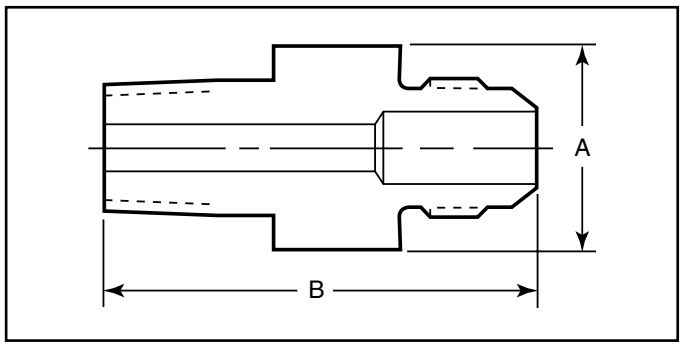
JIC to JIC Adapters

Catalog Number	Connection JIC	Connection JIC	Dimension inches (mm)	
			A Hex	B
20MAJ4J4	1/4	1/4”	0.75 (19.1)	1.56 (39.7)
20MAJ6J6	3/8	3/8”	0.81 (20.6)	1.56 (39.7)
20MAJ6J8	3/8	1/2”	1.00 (25.4)	1.75 (44.5)
20MAJ8J8	1/2	1/2”	1.00 (25.4)	1.81 (46.0)



NPT to JIC Adapters

Catalog Number	Connection NPT	Connection JIC	Dimension inches (mm)	
			A Hex	B
15MAP4J4	1/4	1/4”	0.75 (19.1)	1.69 (42.8)
15MAP4J6	1/4	3/8”	0.81 (20.6)	1.75 (44.5)
15MAP4J8	1/4	1/2”	1.00 (25.4)	1.94 (49.1)
15MAP4J12	1/4	3/4”	1.38 (34.9)	2.25 (57.1)
15MAP6J4	3/8	1/4”	0.75 (19.1)	1.69 (42.8)
15MAP6J6	3/8	3/8”	0.81 (20.6)	1.75 (44.5)
15MAP6J8	3/8	1/2”	1.00 (25.4)	1.81 (46.0)
15MAP6J12	3/8	3/4”	1.38 (34.9)	2.25 (57.1)
15MAP8J4	1/2	1/4”	0.94 (23.8)	2.00 (50.8)
15MAP8J8	1/2	1/2”	1.00 (25.4)	2.13 (54.0)
15MAP8J12	1/2	3/4”	1.38 (34.9)	2.44 (61.9)



Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see ordering procedure.

All Dimensions for reference only and are subject to change.

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

NOTE: NPT (Pipe) connections

- NPT threads must be sealed using a high quality PTFE tape and/or PTFE paste product. Refer to thread sealant manufacturer’s instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

Male/Female JIC Adapters

Male /female adapters are designed to adapt a female connection to another size and/or type of connection without the need for additional couplings. In selecting an adapter involving two different sized connections, the larger connection should be on the male end where it is possible to maximize the mechanical strength of the adapter.

To use this chart:

1. Locate MALE end in vertical column.
2. Locate desired FEMALE end of adapter across top of chart.
3. Catalog number of required adapter is located at intersection of columns.
4. For one piece adapter add-OP to suffix of part number where applicable.

Other Adapters

Parker Autoclave Engineers supplies many other types of adapters on special order. These include Parker Autoclave UniVersa-Lok swaged-type connections, socketweld to O.D. tube or nominal pipe size, male or female AN connections and others.

Materials

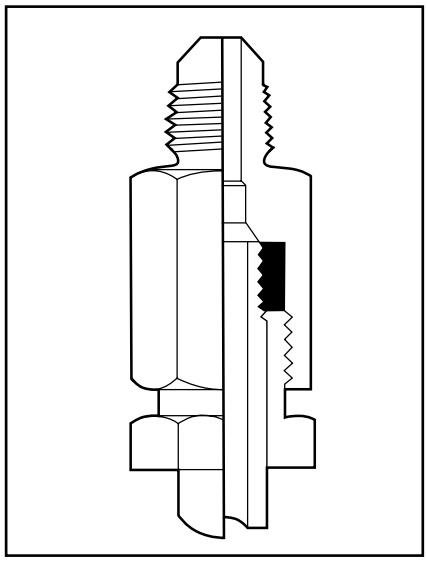
All Parker Autoclave Engineers adapters are precision machined from cold-worked Type 316 stainless steel. Other materials available on special order.

Note: Special material couplings may be supplied with four flats in place of standard hex.

				FEMALE END								
	Connection Size and Type			JIC						Medium Pressure		
				1/4" JIC4	3/8" JIC6	1/2" JIC8	5/8" JIC10	3/4" JIC12	1" JIC16	1/4" SF250CX	3/8" SF375CX	9/16" SF562CX
		Fits this Female Connection	Pressure Rating PSI (bar)*	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	15,000 (1034.20)	15,000 (1034.20)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)
MALE END	JIC 1/4"	JIC4	20,000 (1378.93)							20MFAJ4M4	20MFAJ4M6	20MFAJ4M9
	JIC 3/8"	JIC6	20,000 (1378.93)							20MFAJ6M4	20MFAJ6M6	20MFAJ6M9
	JIC 1/2"	JIC8	20,000 (1378.93)							20MFAJ8M4	20MFAJ8M6	20MFAJ8M9
	JIC 5/8"	JIC10	20,000 (1378.93)									
	JIC 3/4"	JIC12	15,000 (1034.20)							15MFAJ12M4	15MFAJ12M6	15MFAJ12M9
	JIC 1"	JIC16	15,000 (1034.20)							15MFAJ16M4	15MFAJ16M6	15MFAJ16M9
	Medium Pressure 1/4"	SF250CX	20,000 (1378.93)	20MFAM4J4	20MFAM4J6							
	Medium Pressure 3/8"	SF375CX	20,000 (1378.93)									
	Medium Pressure 9/16"	SF562CX	20,000 (1378.93)									
	Medium Pressure 3/4"	SF750CX	20,000 (1378.93)	20MFAM12J4								
	Medium Pressure 1"	SF1000CX	20,000 (1378.93)									
	High Pressure 1/4"	F250C	60,000 (4136.85)	20MFAH4J4								
	High Pressure 3/8"	F375C	60,000 (4136.85)									
	High Pressure 9/16"	F562C	60,000 (4136.85)									
	National Pipe Thread (NPT) 1/4"	NPT	15,000 (1034.20)									
	National Pipe Thread (NPT) 3/8"	NPT	15,000 (1034.20)		15MFAP6J6							
	National Pipe Thread (NPT) 1/2"	NPT	15,000 (1034.20)									
	National Pipe Thread (NPT) 3/4"	NPT	10,000 (689.45)									
	National Pipe Thread (NPT) 1"	NPT	10,000 (689.45)									

Note:
All adapters with Parker Autoclave connections are supplied with appropriate glands, collars, tube nuts and sleeves unless specified without.
JIC connections are not supplied with connection components.

** The maximum pressure rating for an adapter is determined by the connection component with the LOWEST pressure rating; that is, the two end connections and the tubing or pipe used, whichever is LOWER.*
CAUTION: See appropriate pressure section in reference to proper selection of tubing.

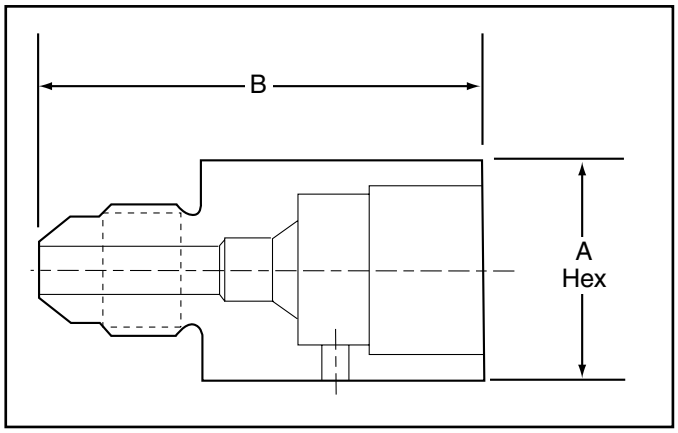


FEMALE END									
Medium Pressure		**High Pressure**			**National Pipe Thread (NPT)**				
3/4" F750CX	1" F1000CX	1/4" F250C	3/8" F375C	9/16" F562C	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT
20,000 (1378.93)	20,000 (1378.93)	60,000 (4136.85)	60,000 (4136.85)	60,000 (4136.85)	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	10,000 (689.45)	10,000 (689.45)
20MFAJ4M12	20MFAJ4M16	20MFAJ4H4	20MFAJ4H6	20MFAJ4H9	15MFAJ4P4		15MFAJ4P8		
20MFAJ6M12	20MFAJ6M16		20MFAJ6H6						
20MFAJ8M12	20MFAJ8M16								
15MFAJ12M12	15MFAJ12M16								
15MFAJ16M12	15MFAJ16M16								

Parker AE Male/Female Adapters are available in a "one-piece" design. They are identical to the two piece designs in length and can be ordered by adding the suffix - OP to the two piece adapter part numbers listed.

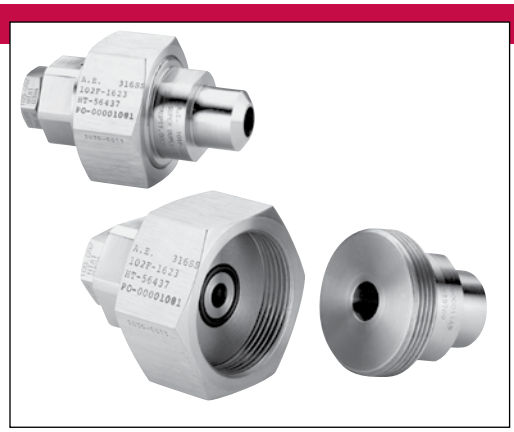
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
JIC to Medium Pressure				
1/4" JIC	SF250CX	20MFAJ4M4	0.63 (15.9)	1.25 (31.8)
1/4" JIC	SF375CX	20MFAJ4M6	0.75 (19.1)	1.50 (38.1)
1/4" JIC	SF562CX	20MFAJ4M9	1.00 (25.4)	1.88 (47.8)
1/4" JIC	SF750CX	20MFAJ4M12	1.38 (35.1)	2.13 (54.0)
1/4" JIC	SF1000CX	20MFAJ4M16	1.75 (44.5)	2.75 (69.9)
3/8" JIC	SF250CX	20MFAJ6M4	0.63 (15.9)	1.25 (31.8)
3/8" JIC	SF375CX	20MFAJ6M6	0.75 (19.1)	1.44 (36.5)
3/8" JIC	SF562CX	20MFAJ6M9	1.00 (25.4)	1.88 (47.8)
3/8" JIC	SF750CX	20MFAJ6M12	1.38 (35.1)	2.13 (54.0)
3/8" JIC	SF1000CX	20MFAJ6M16	1.75 (44.5)	2.62 (66.5)
1/2" JIC	SF250CX	20MFAJ8M4	0.81 (20.6)	1.63 (41.3)
1/2" JIC	SF375CX	20MFAJ8M6	0.81 (20.6)	1.75 (44.5)
1/2" JIC	SF562CX	20MFAJ8M9	1.00 (25.4)	1.88 (47.8)
1/2" JIC	SF750CX	20MFAJ8M12	1.38 (35.1)	2.25 (57.2)
1/2" JIC	SF1000CX	20MFAJ8M16	1.75 (44.5)	2.75 (69.9)
3/4" JIC	SF250CX	15MFAJ12M4	1.38 (35.1)	2.00 (50.8)
3/4" JIC	SF375CX	15MFAJ12M6	1.38 (35.1)	2.00 (50.8)
3/4" JIC	SF562CX	15MFAJ12M9	1.38 (35.1)	2.00 (50.8)
3/4" JIC	SF750CX	15MFAJ12M12	1.38 (35.1)	2.25 (57.2)
3/4" JIC	SF1000CX	15MFAJ12M16	1.75 (44.5)	3.25 (82.6)
1" JIC	SF250CX	15MFAJ16M4	1.50 (38.1)	2.00 (50.8)
1" JIC	SF375CX	15MFAJ16M6	1.50 (38.1)	2.00 (50.8)
1" JIC	SF562CX	15MFAJ16M9	1.50 (38.1)	2.25 (57.2)
1" JIC	SF750CX	15MFAJ16M12	1.38 (35.1)	2.62 (66.5)
1" JIC	SF1000CX	15MFAJ16M16	1.75 (44.5)	3.25 (82.6)
JIC to High Pressure				
1/4" JIC	SF250C	20MFAJ4H4	0.75 (19.1)	1.38 (35.1)
1/4" JIC	SF375C	20MFAJ4H6	1.00 (25.4)	1.50 (38.1)
1/4" JIC	SF562C	20MFAJ4H9	1.38 (35.1)	2.00 (50.8)
3/8" JIC	SF375C	20MFAJ6H6	1.00 (25.4)	1.50 (38.1)
JIC to NPT				
1/4" JIC	1/4" NPT	15MFAJ4P4	0.94 (23.8)	1.50 (38.1)
1/4" JIC	1/2" NPT	15MFAJ4P8	1.19 (30.1)	1.88 (47.8)
Medium Pressure to JIC				
SF250CX	1/4" JIC	20MFAM4J4	0.75 (19.1)	1.56 (39.7)
SF250CX	3/8" JIC	20MFAM4J6	0.81 (20.6)	1.50 (38.1)
SF750CX	1/4" JIC	20MFAJ12J4	1.19 (30.1)	2.00 (50.8)
High Pressure to JIC				
F250C	1/4" JIC	20MFAH4J4	0.75 (19.1)	1.50 (38.1)
NPT to JIC				
3/8" NPT	3/8" JIC	15MFAP6J6	0.81 (20.6)	1.50 (38.1)

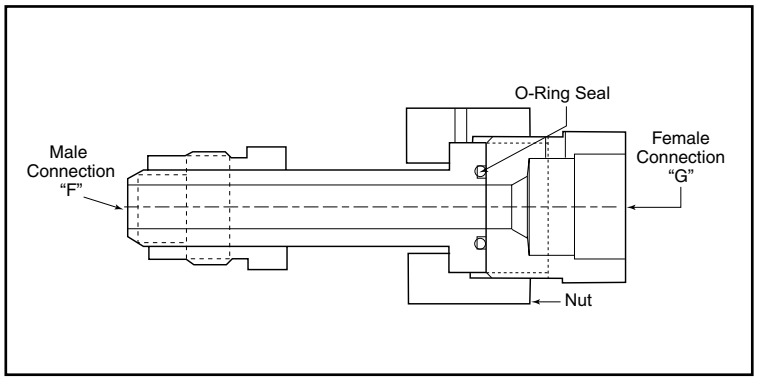


Adapters/Couplings - EZ-Union Adapters

Parker Autoclave Engineers offers an EZ-Union adapter providing a fast and simple way to install or remove components from a pressure system. The face seal o-ring design provides a positive seal with easy and reliable operation. EZ-Union adapters can be provided with any standard or special connection combination. Optional materials available upon request. Contact your local Sales Representative for optional information and sizes not shown. The following tables show the standard adapters with dimensions.



EZ-Union Adapter



Ordering Procedure

Typical catalog number: 20 EZ M4 M4

20	EZ	M4	M4
Pressure (X 1000 psi)	EZ- Male to Female EZMA- Male to Male	"F"	"G"

Available End Connections

For Butt-Weld or specials contact factory.

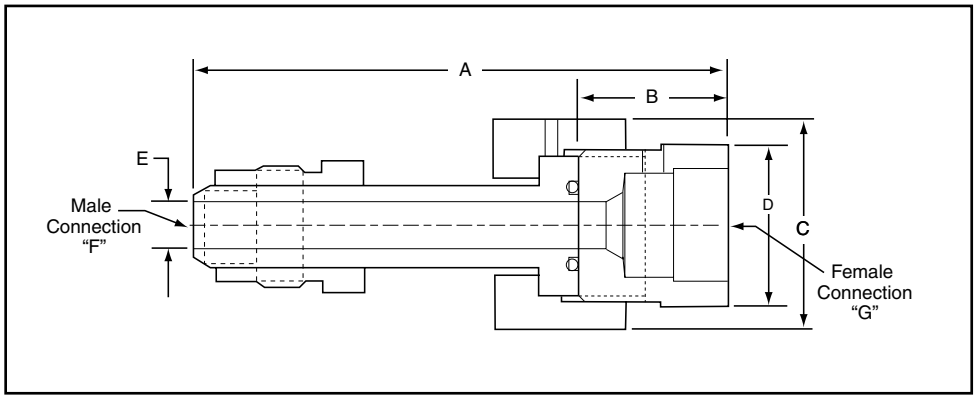
When ordering Male to Female adapters, Male connection is listed first.

M4 - 1/4" Medium Pressure	**H4** - 1/4" High Pressure	**P4** - 1/4" NPT
M6 - 3/8" Medium Pressure	**H6** - 3/8" High Pressure	**P6** - 3/8" NPT
M9 - 9/16" Medium Pressure	**H9** - 9/16" High Pressure	**P8** - 1/2" NPT
M12 - 3/4" Medium Pressure		**P12** - 3/4" NPT
M16 - 1" Medium Pressure		**P16** - 1" NPT

Note: Special material EZ-Unions may be supplied with four flats in place of standard hex.

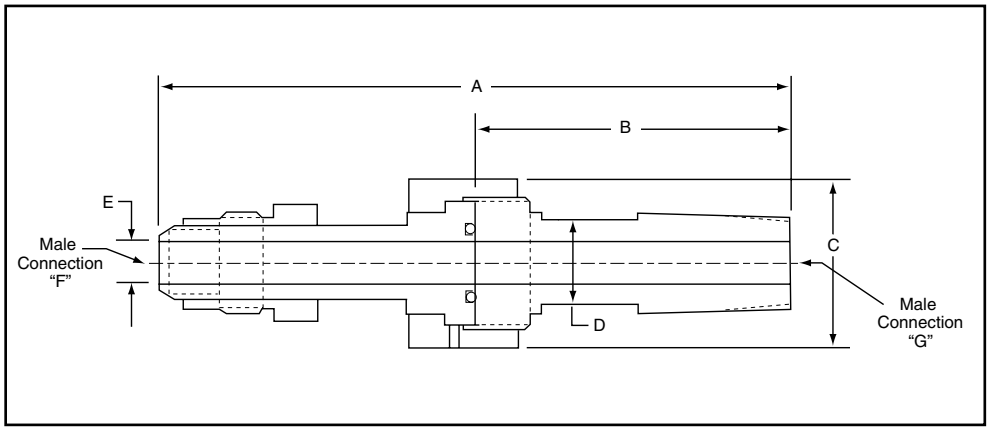
EZ-Union Male to Female Adapters

Catalog Number	Male "F" Connection	Female "G" Connection	Pressure Rating psi (bar)	Dimension inches (mm)				
				A	B	C Hex	D Hex	E Min Opening
20EZM4M4	SM250CX20	SF250CX20	20,000 (1379)	3.13 (79.50)	1.00 (25.40)	1.00 (25.40)	0.81 (20.57)	0.109 (2.77)
10EZM9M9	SM562CX20	SF562CX20	10,000 (690)	4.63 (117.60)	1.63 (41.40)	1.75 (44.45)	1.38 (34.93)	0.31 (7.92)
10EZM12M12	SM750CX20	SF750CX20	10,000 (690)	4.63 (117.60)	1.38 (35.05)	1.75 (44.45)	1.50 (38.10)	0.44 (11.13)
10EZM16M16	SM1000CX20	SF1000CX20	10,000 (690)	6.44 (163.58)	2.31 (58.67)	1.75 (44.45)	1.75 (44.45)	0.56 (14.27)
10EZP12M12	3/4" NPT	SF750CX20	10,000 (690)	4.63 (117.60)	1.38 (35.05)	1.75 (44.45)	1.50 (38.10)	0.44 (11.13)
10EZM16P8	SM1000CX20	1/2" NPT	10,000 (690)	5.38 (136.65)	1.25 (31.75)	1.75 (44.45)	1.38 (35.05)	0.56 (14.27)



EZ-Union Male to Male Adapters

Catalog Number	Male "F" Connection	Male "G" Connection	Pressure Rating psi (bar)	Dimension inches (mm)				
				A	B	C Hex	D Hex	E Min Opening
20EZMAH4H6	M250C	M375C	20,000 (1379)	5.94 (150.88)	3.56 (90.42)	1.00 (25.40)	0.81 (20.57)	0.09 (2.29)
10EZMAP12M12	SM750CX20	3/4" NPT	10,000 (690)	6.50 (165.10)	3.25 (82.55)	1.75 (44.45)	0.87 (22.05)*	0.44 (11.13)



Note1: EZ-Unions are constructed from 316 SS and are supplied with a Viton o-ring as standard.

Note 2: Gland and collar supplied with medium and high pressure connections.

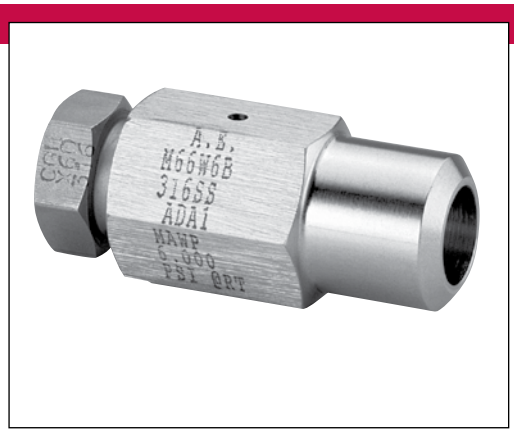
Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

*across flats

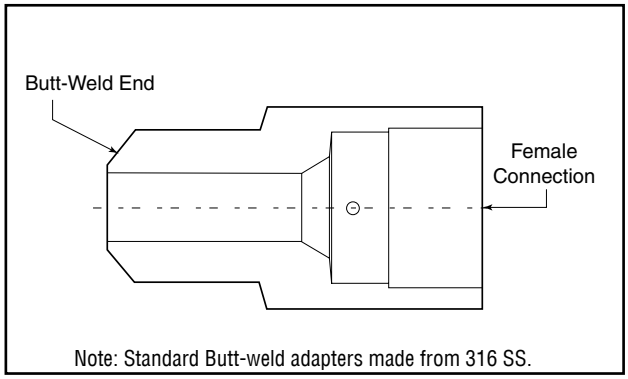
Note: For pressure rating see ordering procedure.
All Dimensions for reference only and subject to change.

FFor prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Parker Autoclave Engineer's Butt-Weld adapters are available in a number of configurations. The following tables show models for all three pressure ranges. Models not shown and special material adapters are available upon request. Contact your local Sales Representative for more information.



Butt-Weld Adapter



Note: Standard Butt-weld adapters made from 316 SS.

Butt-Weld Adapters

Weld Connection Type	Size/Schedule	AE Low Pressure - Female Connection				
		SW250	SW375	SW500		
Pipe Butt-Weld	3/4" / XXS			M128W2B-XXS		

Weld Connection Type	Size/Schedule	AE Medium Pressure - Female Connection				
		SF250CX	SF375CX	SF562CX	SF750CX	SF1000CX
Pipe Butt-Weld	1/8" / 80	M24W6B-XS	M26W6B-XS			
Pipe Butt-Weld	1/4" / 80	M44W6B-XS	M46W6B-XS	M49W6B-XS		
Pipe Butt-Weld	3/8" / 80	M64W6B-XS	M66W6B-XS	M69W6B-XS	M612W6B-XS	
Pipe Butt-Weld	1/2" / 80	M84W6B-XS		M89W6B-XS		
Pipe Butt-Weld	1/2" / XXS			M89W6B-XXS	M812W6B-XXS	M816W6B-XXS
Pipe Butt-Weld	3/4" / 80			M129W6B-XS		
Pipe Butt-Weld	3/4" / 160			M129W6B-160		
Pipe Butt-Weld	3/4" / XXS			M129W6B-XXS	M1212W6B-XXS	M1216W6B-XXS
Pipe Butt-Weld	1" / XXS					M1616W6B-XXS

Weld Connection Type	Size/Schedule	AE High Pressure - Female Connection				
		F250C	F375C	F562C	F562C40	SF1000CX43
Pipe Butt-Weld	1" / XXS			M169W3B-XXS		

Butt-Weld to Low-Pressure

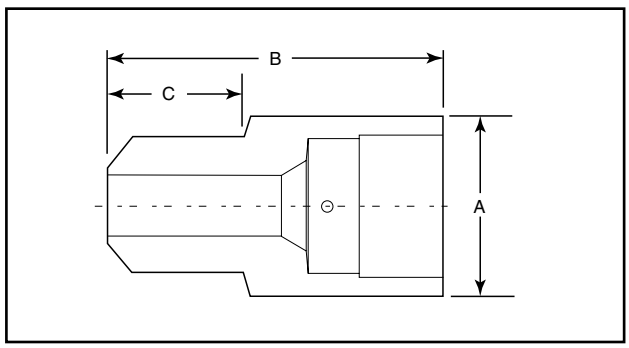
Catalog Number	Male BW	Female LP	Pressure Rating		Dimension inches (mm)		
			psi	bar	A Hex	B	C
M128W2B-XXS	3/4"	SW500	10,000	689.5	1.19 (30.23)	2.00 (50.80)	0.81 (20.57)

Butt-Weld to Medium-Pressure

Catalog Number	Male BW	Female M/P	Pressure Rating		Dimension inches (mm)		
			psi	bar	A Hex	B	C
M24W6B-XS	1/8"	SF250CX	8500	586.0	0.63 (15.88)	1.00 (25.40)	0.38 (9.53)
M26W6B-XS	1/8"	SF375CX	8500	586.0	0.75 (19.05)	1.31 (33.32)	0.38 (9.53)
M44W6B-XS	1/4"	SF250CX	8000	551.6	0.63 (15.88)	1.18 (29.97)	0.56 (14.27)
M46W6B-XS	1/4"	SF375CX	8000	551.6	0.75 (19.05)	1.50 (38.10)	0.56 (14.27)
M49W6B-XS	1/4"	SF562CX	8000	551.6	1.00 (25.40)	1.56 (39.67)	0.56 (14.27)
M64W6B-XS	3/8"	SF250CX	6500	448.2	0.75 (19.05)	1.25 (31.75)	0.63 (15.88)
M66W6B-XS	3/8"	SF375CX	6500	448.2	0.75 (19.05)	1.56 (39.67)	0.63 (15.88)
M69W6B-XS	3/8"	SF562CX	6500	448.2	1.00 (25.40)	1.63 (41.28)	0.63 (15.88)
M612W6B-XS	3/8"	SF750CX	6500	448.2	1.38 (34.93)	1.94 (49.20)	0.63 (15.88)
M84W6B-XS	1/2"	SF250CX	6000	413.7	1.00 (25.40)	1.38 (34.93)	0.81 (20.57)
M86W6B-XXS	1/2"	SF375CX	13000	896.3	1.00 (25.40)	1.75 (44.45)	0.81 (20.57)
M89W6B-XS	1/2"	SF375CX	6000	413.7	1.00 (25.40)	1.81 (45.97)	0.81 (20.57)
M89W6B-XXS	1/2"	SF562CX	10000	689.5	1.00 (25.40)	1.81 (45.97)	0.81 (20.57)
M812W6B-XXS	1/2"	SF750CX	10000	689.5	1.38 (34.93)	2.13 (53.98)	0.81 (20.57)
M816W6B-XXS	1/2"	SF1000CX	10000	689.5	1.75 (44.45)	2.81 (71.37)	0.81 (20.57)
M129W6B-XS	3/4"	SF562CX	5000	344.7	1.19 (30.23)	1.81 (45.97)	0.81 (20.57)
M129W6B-160	3/4"	SF562CX	7500	517.1	1.19 (30.23)	2.00 (50.80)	0.81 (20.57)
M129W6B-XXS	3/4"	SF562CX	10000	689.5	1.19 (30.23)	2.00 (50.80)	0.81 (20.57)
M1212W6B-XXS	3/4"	SF750CX	10000	689.5	1.38 (34.93)	2.06 (52.32)	0.81 (20.57)
M1216W6B-XXS	3/4"	SF1000CX	10000	689.5	1.75 (44.45)	2.69 (68.25)	0.81 (20.57)
M1616W6B-XXS	1"	SF1000CX	10000	689.5	1.75 (44.45)	3.25 (82.55)	1.31 (33.32)

Butt-Weld to High-Pressure

Catalog Number	Male BW	Female LP	Pressure Rating		Dimension inches (mm)		
			psi	bar	A Hex	B	C
M169W3B-XXS	1"	F562C	10000	689.5	1.38 (34.93)	2.44 (61.90)	1.22 (30.99)



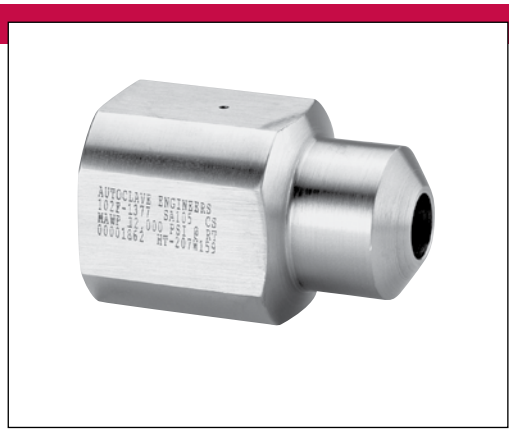
Gland and collar supplied with high pressure connections.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by piping pressure rating, contact factory.

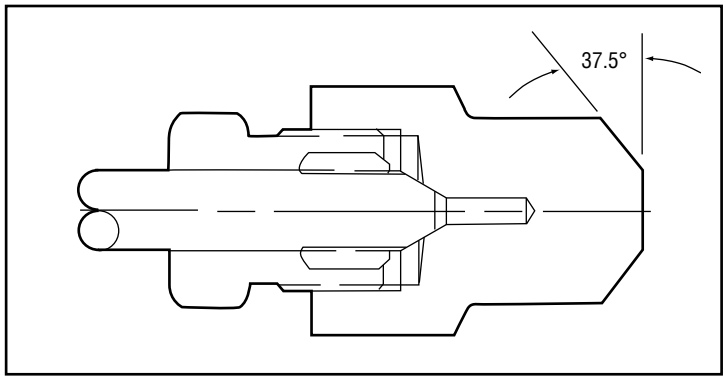
Note: For pressure rating see ordering procedure.
All Dimensions for reference only and are subject to change.

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

Parker Autoclave Engineer's offers weld style Header Couplings in a number of designs and materials. The standard materials are SAE-4130 and Inconel 625. Other materials are listed in the tables. Header couplings are available drilled through or blind drilled, allowing final drill through after welding. The couplings can be supplied with any style of Parker Autoclave Engineers connection or special connections if required. Header couplings come standard with 316 SS glands and collars for our medium and high-pressure connections. Models not shown are available upon request. Contact your local sales representative.



Header Coupling



Ordering Procedure

Typical catalog number: HC F M16 W 625 DT

HC	F	M16	W	625	Option DT
Header Coupling	Female Connection	Available End Connections	Welded		Drilled Through

625

SAE 4130 - 4130
Inconel 625 - 625
2205 Duplex - 2205
316 SS - 316
A105 - 105
A105N - 105 Normalized

M16

M4 - 1/4" Medium Pressure
M6 - 3/8" Medium Pressure
M9 - 9/16" Medium Pressure
M12 - 3/4" Medium Pressure
M16 - 1" Medium Pressure

H4 - 1/4" High Pressure
H6 - 3/8" High Pressure
H9 - 9/16" High Pressure

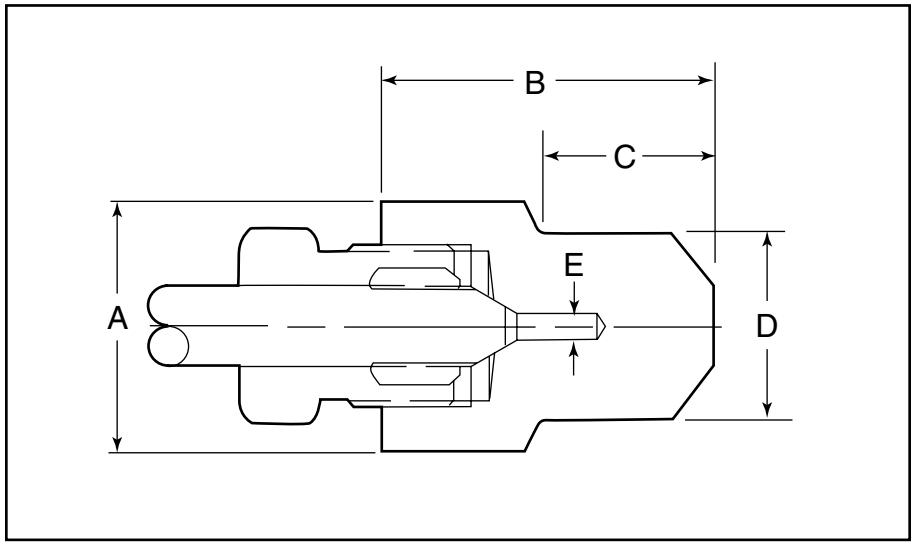
P4 - 1/4" NPT
P6 - 3/8" NPT
P8 - 1/2" NPT
P12 - 3/4" NPT
P16 - 1" NPT

Female Medium-Pressure Header Coupling Blind End

Catalog Number	Material	Pressure psi (bar)	Female M/P	Dimension inches (mm)				
				A Flats	B	C	D	E
HCFM12W316	316 SS	10,000 (690)	SF750CX20	1.75 (44.45)	3.00 (76.2)	1.05 (26.7)	1.32 (33.5)	0.44 (11.2)
HCFM12W105	SA-105	10,000 (690)	SF750CX20	1.75 (44.45)	3.00 (76.2)	1.05 (26.7)	1.32 (33.5)	0.44 (11.2)
HCFM12W4130	SAE-4130	20,000 (1379)	SF750CX20	1.75 (44.45)	3.00 (76.2)	1.05 (26.7)	1.32 (33.5)	0.44 (11.2)
HCFM12W2205	2205 Duplex	15,000 (1034)	SF750CX20	1.75 (44.45)	3.00 (76.2)	1.05 (26.7)	1.32 (33.5)	0.44 (11.2)
HCFM16W316	316 SS	10,000 (690)	SF1000CX20	1.75 (44.45)	2.62 (66.55)	1.00 (25.40)	1.38 (34.93)	0.56 (14.27)
HCFM16W2205	2205 Duplex	15,000 (1034)	SF1000CX20	1.75 (44.45)	3.00 (76.2)	1.05 (26.7)	1.31 (33.27)	0.56 (14.27)

Female High-Pressure Header Coupling Blind End

Catalog Number	Material	Pressure psi (bar)	Female H/P	Dimension inches (mm)				
				A Flats	B	C	D	E
HCFH9W316	316SS	30,000 (2068)	F562C	1.50 (38.10)	2.31 (58.67)	1.19 (30.18)	1.31 (33.27)	0.19 (4.75)
HCFH9W4130	SAE-4130	30,000 (2068)	F562C	1.50 (38.10)	2.31 (58.67)	1.19 (30.18)	1.31 (33.27)	0.19 (4.75)
HCFH9W625	Inconel 625	30,000 (2068)	F562C	1.50 (38.10)	2.31 (58.67)	1.19 (30.18)	1.31 (33.27)	0.19 (4.75)
HCFH16W4130	SAE-4130	20,000 (1379)	F1000C43	1.75 (44.45)	3.00 (76.20)	1.05 (26.59)	1.32 (33.53)	0.44 (11.10)
HCFH16W625	Inconel 625	22,000 (1551)	F1000C43	1.75 (44.45)	3.00 (76.20)	1.05 (26.59)	1.32 (33.53)	0.44 (11.10)



Gland and collar supplied with high pressure connections.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All Dimensions for reference only and are subject to change.

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

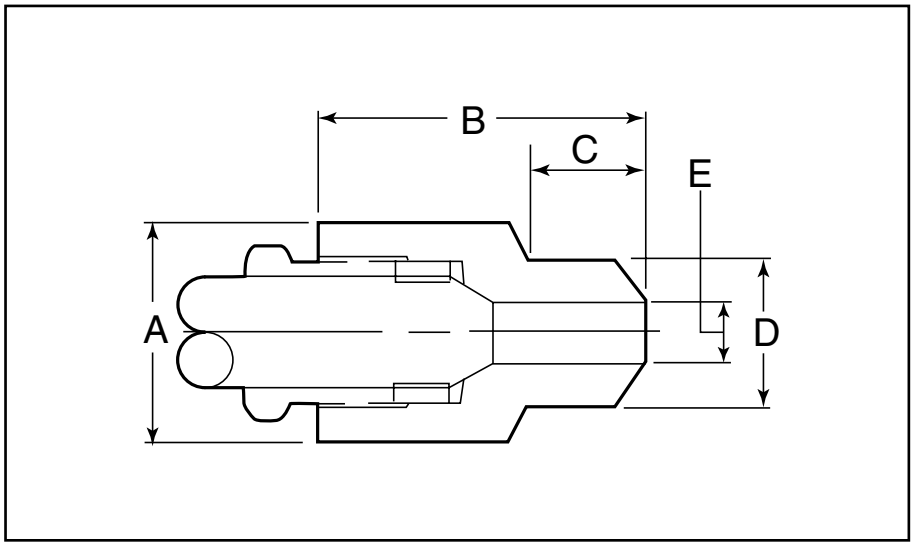
Female Medium-Pressure Header Coupling Drill Through

Catalog Number	Material	Pressure psi (bar)	Female M/P	Dimension inches (mm)				
				A Flats	B	C	D	E
HCFM4W316DT	316 SS	10,000 (690)	SF250CX20	0.63 (16.0)*	1.19 (30.2)	0.56 (14.3)	0.54 (13.6)	0.11 (2.8)
HCFM9W316DT	316 SS	10,000 (690)	SF562CX20	1.38 (35.1)*	2.44 (62.0)	1.13 (28.6)	1.32 (33.5)	0.36 (9.1)
HCFM9W4130DT	SAE-4130	25,000 (1724)	SF562CX20	1.38 (35.1)	2.44 (62.0)	1.13 (28.6)	1.32 (33.5)	0.36 (9.1)
HCFM12W4130DT	SAE-4130	20,000 (1379)	SF750CX	1.38 (35.1)	2.63 (66.68)	1.05 (26.7)	1.32 (33.5)	0.44 (11.2)
HCFM12W2205DT	2205 duplex	15,000 (1034)	SF750CX20	1.75 (44.45)	3.00 (76.20)	1.05 (26.7)	1.32 (33.5)	0.44 (11.2)
HCFM16W316DT	316 SS	10,000 (690)	SF1000CX20	1.75 (44.45)	3.00 (76.20)	1.05 (26.7)	1.32 (33.5)	0.56 (14.2)
HCFM16W316LDT	316L SS	10,000 (690)	SF1000CX20	1.75 (44.45)	3.00 (76.20)	1.05 (26.7)	1.32 (33.5)	0.56 (14.2)
HCFM16W4130DT	SAE-4130	20,000 (1379)	SF1000CX20	1.75 (44.45)	3.00 (76.20)	1.05 (26.7)	1.32 (33.5)	0.56 (14.2)
HCFM16W105DT	SA-105	12,000 (827)	SF1000CX20	1.75 (44.45)	3.00 (76.20)	1.05 (26.7)	1.32 (33.5)	0.56 (14.2)
HCFM16W2205DT	2205 duplex	15,000 (1034)	SF1000CX20	1.75 (44.45)	3.00 (76.20)	1.05 (26.7)	1.32 (33.5)	0.56 (14.2)
HCFM16W625DT	Inconel 625	15,000 (1034)	SF1000CX20	1.75 (44.45)	3.00 (76.20)	1.05 (26.7)	1.32 (33.5)	0.56 (14.2)

*across hex

Female High-Pressure Header Coupling Drill Through

Catalog Number	Material	Pressure psi (bar)	Female H/P	Dimension inches (mm)				
				A Flats	B	C	D	E
HCFH9W316DT	316SS	30,000 (2068)	F562C	1.50 (38.10)	2.31 (58.67)	1.19 (30.18)	1.31 (33.27)	0.19 (4.75)
HCFH9W4130DT	SAE-4130	30,000 (2068)	F562C	1.50 (38.10)	2.31 (58.67)	1.19 (30.18)	1.31 (33.27)	0.19 (4.75)
HCFH9W625DT	Inconel 625	30,000 (2068)	F562C	1.50 (38.10)	2.31 (58.67)	1.19 (30.18)	1.31 (33.27)	0.19 (4.75)
HCFH16W4130DT	SAE-4130	20,000 (1379)	F1000C43	1.75 (44.45)	3.00 (76.20)	1.05 (26.59)	1.32 (33.53)	0.44 (11.10)
HCFH16W625DT	Inconel 625	22,000 (1551)	F1000C43	1.75 (44.45)	3.00 (76.20)	1.05 (26.59)	1.32 (33.53)	0.44 (11.10)



Gland and collar supplied with high pressure adapters.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

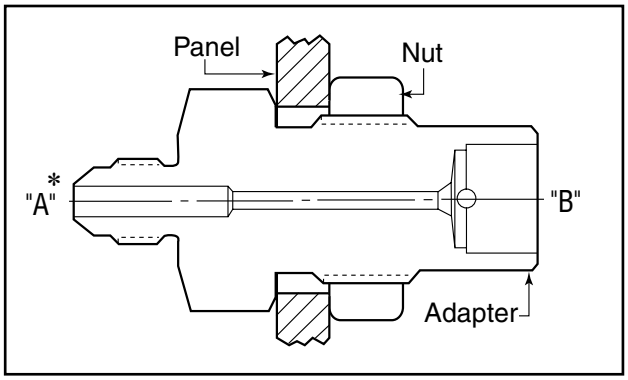
Note: For pressure rating see ordering procedure.

All Dimensions for reference only and are subject to change.

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

Parker Autoclave Engineers bulkhead adapters are used to connect tubing or piping of different sizes and configurations through the panel. Bulkhead adapters are machined from cold worked stainless steel. Other material and connections are available. Contact your local Sales Repersentative for optional information.

Bulkhead Adapter



Ordering Procedure

Typical catalog number: 20 BA M J16* F H4

20	BA	M	J16	F	H4
Pressure (X 1000 psi)	Bulkhead Adapter	*Male Female	Connection	Female Male	Connection

Available End Connections

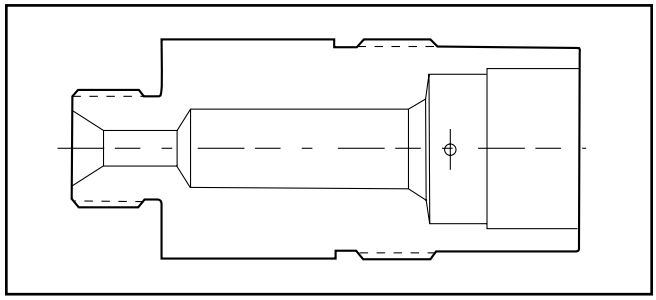
*Note: First connection designation is "A" side.

J4 - 1/4" JIC	**L4** - 1/4" Low Pressure	**M4** - 1/4" Medium Pressure	**H4** - 1/4" High Pressure	**P4** - 1/4" NPT
J6 - 3/8" JIC	**L6** - 3/8" Low Pressure	**M6** - 3/8" Medium Pressure	**H6** - 3/8" High Pressure	**P6** - 3/8" NPT
J8 - 1/2" JIC	**L8** - 1/2" Low Pressure	**M9** - 9/16" Medium Pressure	**H9** - 9/16" High Pressure	**P8** - 1/2" NPT
J10 - 5/8" JIC		**M12** - 3/4" Medium Pressure	**RH9** - 9/16" Reverse High Pressure	
J12 - 3/4" JIC		**M16** - 1" Medium Pressure	**RH12** - 3/4" Reverse High Pressure	
J16 - 1" JIC			**RH16** - 1" Reverse High Pressure	

Note: Special material adapters may be supplied with four flats in place of standard hex.

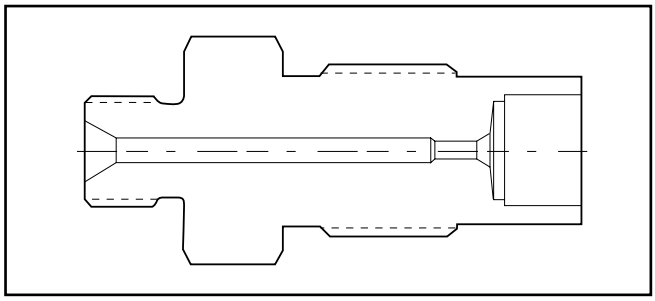
Reverse High to Medium-Pressure

Male Connection R/H	AE Medium Pressure - Female Connection				
	SF250CX	SF375CX	SF562CX	SF750CX	SF1000CX
9/16”	20BAMRH9FM4	20BAMRH9FM6	20BAMRH9FM9		
3/4”			20BAMRH12FM9		20BAMRH12FM16
1”					20BAMRH16FM16



Reverse High to High Pressure

Male Connection R/H	AE High Pressure - Female Connection				
	F250C	F375C	F562C		
9/16”	40BAMRH9FH4		40BAMRH9FH9		
3/4”			30BAMRH12FH9		
1”					

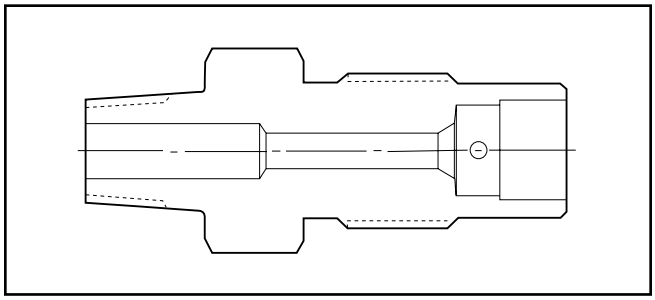


NPT to Medium Pressure

Male Connection NPT	AE Medium Pressure - Female Connection				
	SF250CX	SF375CX	SF562CX	SF750CX	SF1000CX
1/4”	15BAMP4FM4	15BAMP4FM6			
3/8”		15BAMP6FM6			
1”					

Gland and collar supplied with adapter.

Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

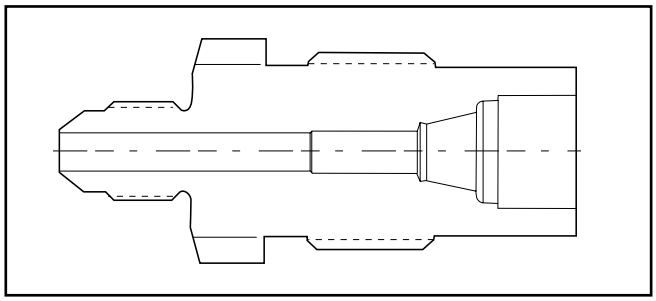


Note: For pressure rating see ordering procedure. *All Dimensions for reference only and are subject to change.*

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

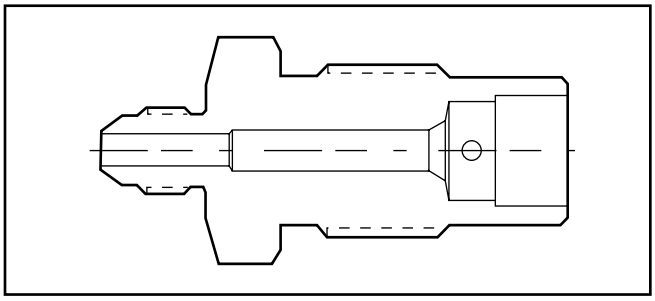
JIC to Low Pressure

Male Connection JIC	AE Low Pressure - Female Connection				
	SW250	SW375	SW500		
1/4”	15BAMJ4FL4				
3/8”					
1/2”					



JIC to Medium Pressure

Male Connection JIC	AE Medium Pressure - Female Connection				
	SF250CX	SF375CX	SF562CX	SF750CX	SF1000CX
1/4”	20BAMJ4FM4	20BAMJ4FM6		20BAMJ4FM12	
3/8”	20BAMJ6FM4	20BAMJ6FM6	20BAMJ6FM9	20BAMJ6FM12	
1/2”		20BAMJ8FM6	20BAMJ8FM9	20BAMJ8FM12	20BAMJ8FM16

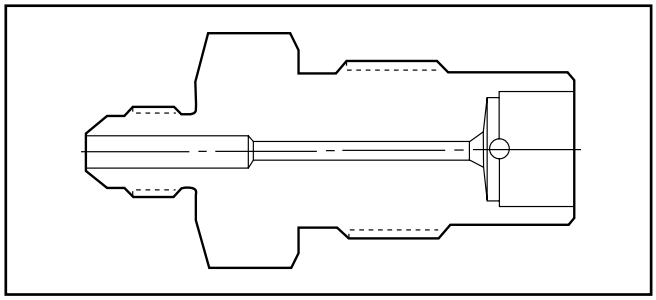


JIC to High Pressure

Male Connection JIC	AE High Pressure - Female Connection				
	F250C	F375C	F562C		
1/4”	20BAMJ4FH4				
3/8”	20BAMJ6H4				
1/2”					

Gland and collar supplied with adapter.

Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.



Note: For pressure rating see ordering procedure. *All Dimensions for reference only and are subject to change.*

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

Reverse High Pressure to Medium Pressure

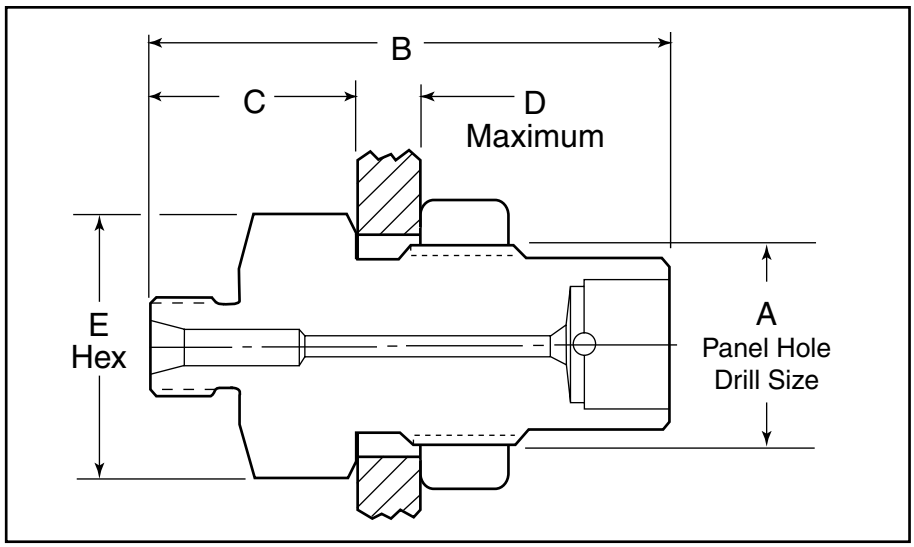
Catalog Number	Male R/H	Female M/P	Dimension inches (mm)				
			A Panel Hole	B	C	D Max	E Hex
20BAMRH9FM4	9/16”	SF250CX	0.81 (20.62)	2.56 (65.0)	1.22 (31.0)	0.38 (9.65)	1.00 (25.40)
20BAMRH9FM6	9/16”	SF375CX	0.94 (23.88)	2.63 (66.80)	1.13 (28.70)	0.38 (9.65)	1.00 (25.40)
20BAMRH9FM9	9/16”	SF562CX	1.13 (28.58)	3.00 (76.20)	1.28 (32.51)	0.38 (9.65)	1.38 (34.93)
20BAMRH12FM9	3/4”	SF562CX	1.13 (28.58)	3.13 (79.50)	1.41 (35.81)	0.38 (9.65)	1.38 (34.93)
20BAMRH12FM16	3/4”	SF1000CX	1.94 (49.28)	4.26 (108.20)	2.13 (54.10)	0.38 (9.65)	2.13 (54.10)
20BAMRH16FM16	1”	SF1000CX	1.94 (49.28)	4.41 (112.01)	2.28 (57.91)	0.38 (9.65)	2.13 (54.10)

Reverse High Pressure to High Pressure

Catalog Number	Male R/H	Female H/P	Dimension inches (mm)				
			A Panel Hole	B	C	D Max	E Hex
40BAMRH9FH4	9/16”	F250C	0.94 (23.88)	2.50 (63.50)	1.00 (25.40)	0.38 (9.65)	1.00 (25.40)
40BAMRH9FH9	9/16”	F562C	1.69 (42.85)	3.38 (85.85)	1.50 (38.10)	0.38 (9.65)	1.88 (47.75)
30BAMRH12FH9	3/4”	F562C	1.69 (42.85)	3.50 (88.90)	1.62 (41.15)	0.38 (9.65)	1.88 (47.75)

Pipe to Medium Pressure

Catalog Number	Male NPT	Female M/P	Dimension inches (mm)				
			A Panel Hole	B	C	D Max	E Hex
15BAMP4FM4	1/4”	SF250CX	0.81 (20.62)	2.56 (65.02)	1.22 (31.01)	0.38 (9.65)	1.00 (25.40)
15BAMP4FM6	1/4”	SF375CX	0.94 (23.88)	2.69 (68.33)	1.31 (33.35)	0.38 (9.65)	1.00 (25.40)
15BAMP6FM6	3/8”	SF375CX	0.94 (23.88)	2.75 (69.85)	1.25 (31.75)	0.38 (9.65)	1.00 (25.40)



Gland and collar supplied with adapter.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see ordering procedure.
All Dimensions for reference only and are subject to change.

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

JIC to Low Pressure

Catalog Number	Male JIC	Female LP	Dimension inches (mm)				
			A Panel Hole	B	C	D Max	E Hex
15BAMJ4FL4	1/4”	SW250	0.94 (23.88)	2.29 (58.04)	0.91 (23.11)	0.38 (9.65)	1.00 (25.40)

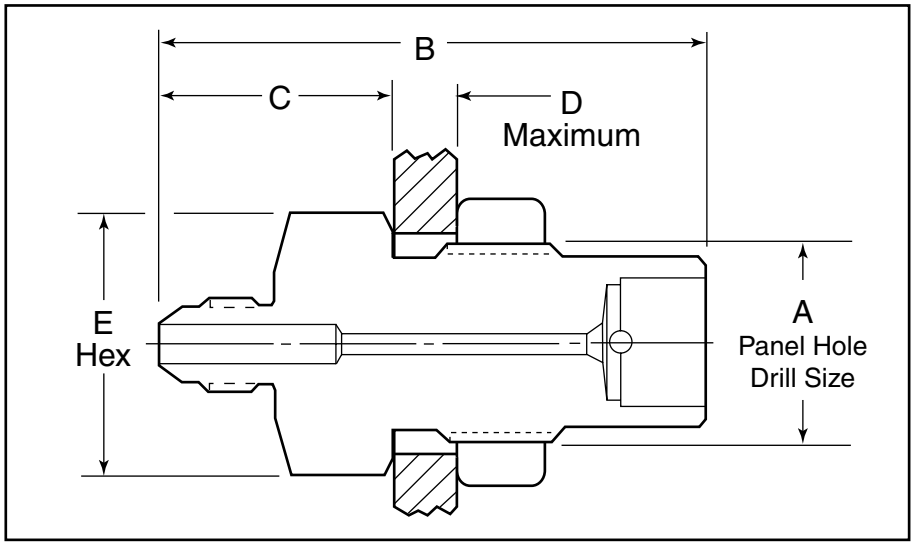
JIC to Medium Pressure

Catalog Number	Male JIC	Female MP	Dimension inches (mm)				
			A Panel Hole	B	C	D Max	E Hex
20BAMJ4FM4	1/4”	SF250CX	0.81 (20.62)	2.25 (57.15)	0.91 (23.11)	0.38 (9.65)	1.00 (25.40)
20BAMJ4FM6	1/4”	SF375CX	0.81 (20.62)	2.44 (61.93)	0.94 (23.88)	0.38 (9.65)	1.00 (25.40)
20BAMJ4FM12	1/4”	SF750CX	1.69 (42.85)	2.94 (74.68)	1.22 (31.0)	0.38 (9.65)	1.88 (47.75)
20BAMJ6FM4	3/8”	SF250CX	0.81 (20.62)	2.25 (57.15)	0.91 (23.11)	0.38 (9.65)	1.00 (25.40)
20BAMJ6FM6	3/8”	SF375CX	0.94 (23.88)	2.44 (61.98)	0.94 (23.88)	0.38 (9.65)	1.00 (25.40)
20BAMJ6FM9	3/8”	SF562CX	1.13 (28.58)	2.75 (69.85)	1.16 (29.46)	0.38 (9.65)	1.38 (34.93)
20BAMJ6FM12	3/8”	SF750CX	1.69 (42.85)	2.94 (74.68)	1.22 (31.0)	0.38 (9.65)	1.88 (47.75)
20BAMJ8FM6	1/2”	SF375CX	0.81 (20.62)	2.53 (64.26)	1.03 (26.16)	0.38 (9.65)	1.00 (25.40)
20BAMJ8FM9	1/2”	SF562CX	1.13 (28.58)	3.00 (76.20)	1.41 (35.69)	0.38 (9.65)	1.38 (34.93)
20BAMJ8FM12	1/2”	SF750CX	1.69 (42.85)	3.13 (79.38)	1.41 (35.69)	0.38 (9.65)	1.88 (47.75)
20BAMJ8FM16	1/2”	SF1000CX	1.94 (49.20)	4.36 (110.72)	2.23 (56.62)	0.50 (12.70)	1.87 (47.50*)

*Dimension across flats

JIC to High Pressure

Catalog Number	Male JIC	Female HP	Dimension inches (mm)				
			A Panel Hole	B	C	D Max	E Hex
20BAMJ4FH4	1/4”	F250C	0.94 (23.80)	2.44 (61.90)	1.06 (26.97)	0.38 (9.65)	1.00 (25.40)
20BAMJ6FH4	3/8”	F250C	0.94 (23.80)	2.47 (62.74)	1.09 (27.79)	0.38 (9.65)	1.00 (25.40)



Gland and collar supplied with adapter.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

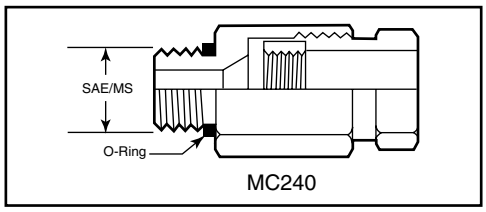
Note: For pressure rating see ordering procedure.
All Dimensions for reference only and are subject to change.

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

Adapters/Couplings - SAE O-Ring Adapters

Parker Autoclave Engineers also offers a line of components that assist in adapting into and out of specialized connections with Parker Autoclave Engineers products. Along with the adapters shown, Parker Autoclave Engineers can provide other special adapters to fill your requirements. Contact your local Sales representative for information.

AE Low, Medium and High Medium Pressure (Female) SAE/MS Male



MC240 (SAE/MS Straight thread Boss)

Note: O-rings are standard Buna-N.

10,000 psi (690 bar) operating pressure.

Connection Type	SAE/MS Thread Size (inches)	AE Low Pressure (Female)			
		W125	SW250	SW 375	SW500
MC240 (SAE/MS)	5/16-24				
	7/16-20		M44MC2B	M46MC2B	
	9/16-18				
	3/4-16				

Connection Type	SAE/MS Thread Size (inches)	AE Medium Pressure (Female)				
		SF250CX	SF375CX	SF562CX	SF750CX	SF1000CX
MC240 (SAE/MS)	5/16-24	M24MC6B	M26MC6B			
	7/16-20	M44MC6B	M46MC6B	M49MC6B		
	9/16-18	M64MC6B	M66MC6B	M69MC6B		
	3/4-16		M86MC6B	M89MC6B	M812MC6B	
	7/8-14				M1012MC6B	M1016MC6B
	1-1/16-12		M126MC6B		M1212MC6B	M1216MC6B
	1-5/16-12					M1616MC6B

Connection Type	SAE/MS Thread Size (inches)	AE High Pressure (Female)			
		F250C	F375C	F562C	
MC240 (SAE/MS)	5/16-24				
	7/16-20	M44MC3B	M46MC3B		
	9/16-18	M64MC3B	M66MC3B		
	3/4-16				

For additional information contact your local sales representative.

Female Tube Caps / Gauge Connectors

Tube Caps

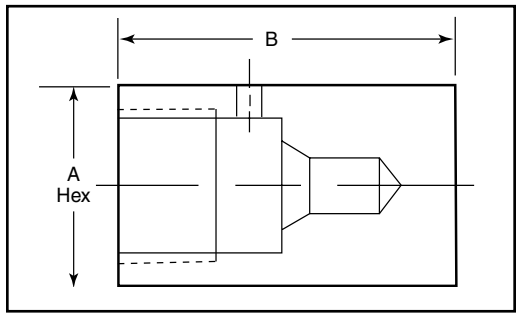
Parker Autoclave Engineers offers a line of tube caps used to seal the ends of tubing. Caps are used when pressure testing lengths of tubes or capping off sections of systems for isolation or pressure tests.

Female Tube Caps - Low Pressure

Catalog Number	Connection Type	Outside Diameter Tube-Inches	Pressure Rating psi (bar)*	Dimension inches (mm)	
				A Hex	B
SWTC2	W125	1/8	15000 (1034.20)	0.50 (12.7)	0.63 (15.9)
SWTC4	SW250	1/4	15000 (1034.20)	0.63 (15.9)	1.00 (25.4)
SWTC6	SW375	3/8	15000 (1034.20)	0.75 (19.1)	1.09 (27.8)
SWTC8	SW500	1/2	10000 (689.5)	1.00 (25.4)	1.25 (31.8)

Female Tube Caps - Medium Pressure

Catalog Number	Connection Type	Outside Diameter Tube-Inches	Pressure Rating psi (bar)*	Dimension inches (mm)	
				A Hex	B
20TC4X	SF250CX	1/4	20000 (1378.9)	0.63 (15.9)	0.81 (20.6)
20TC6X	SF375CX	3/8	20000 (1378.9)	0.75 (19.1)	1.13 (28.6)
20TC9X	SF562CX	9/16	20000 (1378.9)	1.00 (25.4)	1.38 (34.9)
20TC12X	SF750CX	3/4	20000 (1378.9)	1.38 (34.9)	1.75 (44.5)
20TC16X	SF1000CX	1	20000 (1378.9)	1.75 (44.5)	2.25 (57.1)
15TC24X	SF1500CX	1-1/2	15000 (1034.2)	2.25 (57.6)	3.00 (76.2)



Tube cap configuration may vary from outline shown.

Female Tube Caps - High Pressure Tube Caps

Catalog Number	Connection Type	Outside Diameter Tube-Inches	Pressure Rating psi (bar)*	Dimension inches (mm)	
				A Hex	B
43TC16	F1000C	1	43000 (2964.7)	1.75 (44.5)	2.25 (57.1)
60TC4C	F250C	1/4	60000 (4136.7)	0.75 (19.1)	0.75 (19.1)
60TC6C	F375C	3/8	60000 (4136.7)	1.00 (25.4)	1.13 (28.6)
60TC9C	F562C	9/16	60000 (4136.7)	2.25 (57.1)	1.38 (34.9)
150TC5C	F312C-150	5/16	150,000 (10342)	1.19 (30.1)	2.63 (66.8)

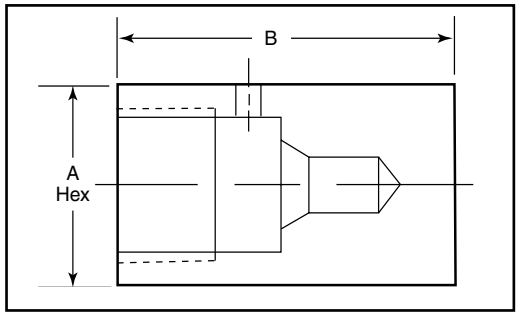
*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.Note: All tube caps are furnished with connection components unless otherwise specified. All dimensions for reference only and subject to change.

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

Female Tube Caps - JIC

Catalog Number	Connection Type	Outside Diameter Tube-Inches	Pressure Rating psi (bar)	Dimension inches (mm)	
				A Hex	B
20JC4	JIC	1/4	20000 (1378.9)	0.75 (19.1)	1.00 (25.4)
20JC6	JIC	3/8	20000 (1378.9)	0.94 (23.8)	1.13 (28.6)
20JC8	JIC	1/2	20000 (1378.9)	1.19 (30.1)	1.31 (58.6)

* Maximum pressure rating must not exceed rating of tubing used.
Note: All tube caps are furnished with connection components unless otherwise specified.
All dimensions for reference only and subject to change.



Tube cap configuration may vary from outline shown.

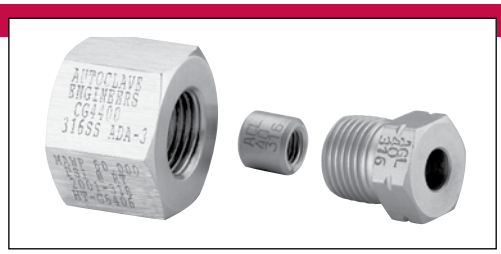
Female Tube Caps and Plugs - Reverse High Pressure (M Style)

Catalog Number	Connection Type	Outside Diameter Tube-Inches	Pressure Rating psi (bar)	Dimension inches (mm)	
				A Hex	B
26RHC16	RHP Cap	1	26000 (1792.6)	1.38 (34.9)	1.13 (28.6)
26RHP16	RHP Plug	1	26000 (1792.6)	---	---

Both caps and plug required.

Gauge Connectors

Parker Autoclave Engineers offers a line of gauge connectorsused to connect pressure lines to pressure gauges. Gauge connectors can be connected to gauges with tapered and straight pipe threads, or high-pressure connections.



Gauge Connectors

To Fit This Gauge Connection			1/4" NPT	1/2" NPT	1/2" NPS
Seal Type			Tube Cone	Tube Cone	Gasket
With This Female Tubing Connection			60,000 PSI (4136.8 bar)	60,000 PSI (4136.8 bar)	60,000 PSI (4136.8 bar)
High Pressure	1/4"	F250C	CG4400	CG4800	CG8400
	9/16"	F562C		CG9800	CG8900

Gauge Connectors

To Fit This Gauge Connection			1/4" High Pressure F250C
Seal Type			H.P. Cone
With This Male Tubing Connection			20,000 PSI (1378.9 bar)
Medium Pressure	9/16"	SF562CX	101F-1707

NPT: National Pipe Thread
NPS: National Straight Pipe Thread

Note: For gauge connector without collars and glands, add the following suffix: **-WO**
For gauge connector for sour gas applications, add the following suffix: **-SOG or -SOGWO**

Gauge Connectors

Catalog Number	Gauge Connection Type	Outside Diameter Tube-Inches	Pressure Rating psi (bar)	Dimension inches (mm)		
				A Hex	B	
CG4400	Tube Cone	1/4	60000 (4136.7)	1.00 (25.4)	.813 (20.6)	See Figure 1
CG4800	Tube Cone	1/4	60000 (4136.7)	1.19 (30.1)	.94 (23.8)	
CG9800	Tube Cone	9/16	60000 (4136.7)	1.50 (38.1)	1.25 (31.8)	
CG8400	Gasket	1/4	60000 (4136.7)	1.19 (30.1)	1.19 (30.1)	See Figure 2
CG8900	Gasket	9/16	60000 (4136.7)	1.38 (34.9)	2.25 (57.1)	
101F-1707	1/4" High Pressure	9/16	20000 (1379)	0.63 (15.9)	2.75 (69.9)	See Figure 3

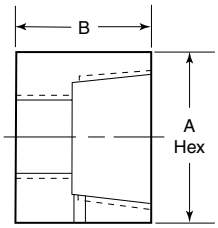


Figure 1
See note 2

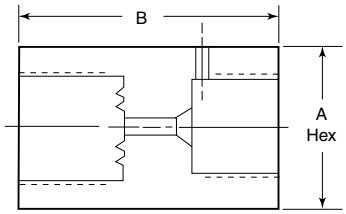


Figure 2

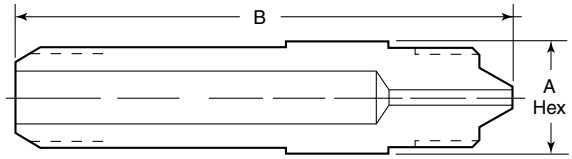


Figure 3

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

Note: 1) For pressure rating see selection chart. These adapters are not intended as couplings.
2) Operation of this connector will depend on the inlet hole configuration in the gauge. Check to see that tubing will seal.

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

02-0127SE January2013

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Autoclave Engineers Operation
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Industrial Estate Whitemill
Wexford, Republic of Ireland
PH: 353 53 914 1566
FAX: 353 53 914 1582

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Ball Valves

2-Way Series

Pressures to 20,000 psi (1379 bar)

Parker Autoclave Engineers high-pressure ball valves have been designed to provide superior quality for maximum performance within a variety of valve styles, sizes, and process connections. Some of the more unique design innovations include an integral one-piece trunnion mounted style ball and stem that eliminates the shear failure common in two piece designs, re-torqueable seat glands that result in longer seat life, and a low friction stem seal that reduces actuation torque and enhances cycle life.

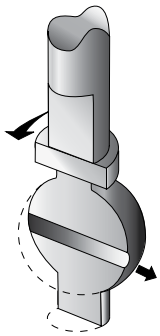
These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models, and valve actuators.

When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance demanded by the high pressure market.

Ball Valve Features:

- One-piece, trunnion mounted style, stem design eliminates shear failure and reduces the effects of side loading found in two piece designs.
- Re-torqueable seat glands for longer seat life.
- PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel construction.
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life and reduces operating torque.
- Quarter turn from open to close with positive stop.
- Viton o-rings for operation from 0°F (-17.8°C) to 400°F (204°C).
- Optional o-rings available for high-temperature applications.
- Optional wetted materials.
- Wide selection of tube and pipe end fittings available.
- Electric and pneumatic actuator options.

Flow Configuration



Two-Way Shut-Off

Applications:

- Laboratories
- Test Stands
- Control Panels
- Chemical Research
- Pilot Plants
- Water Blast Pumping Units
- High volume chemical injection skids.

Parker

Autoclave Engineers

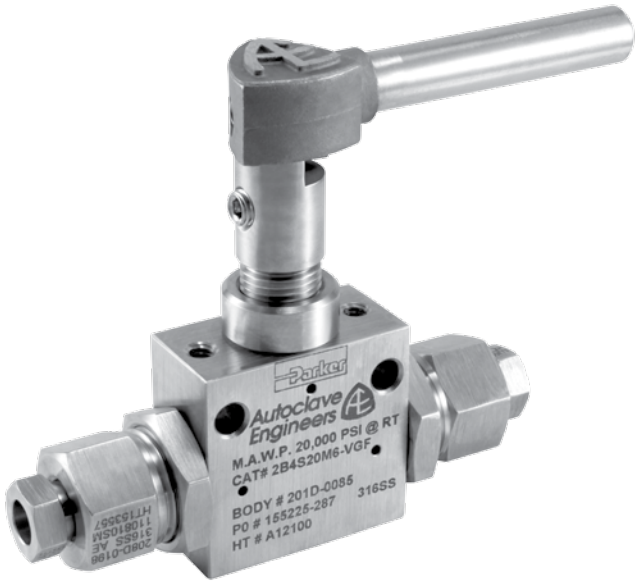
www.autoclave.com

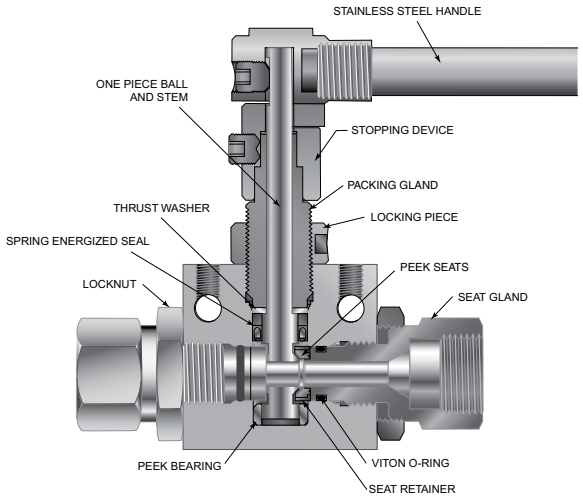
Ball Valves - 2-Way Series (1/4" Orifice)

Pressures to 20,000 psi (1379 bar) .250" (6.35mm) Orifice

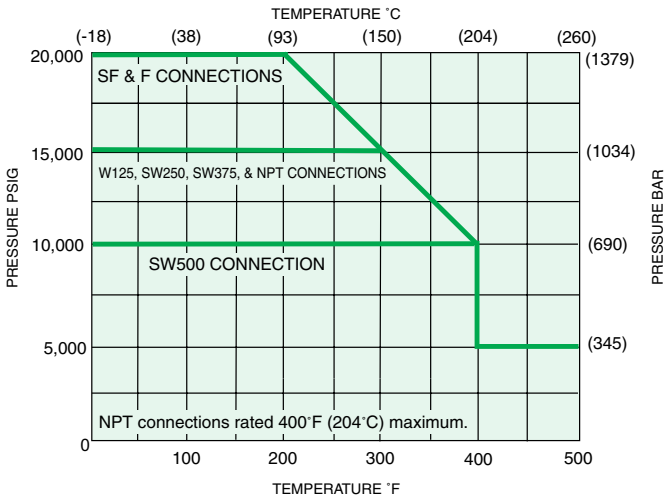
Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
W125	15,000 psi (1034 bar)	.094 (2.39)
SW250	15,000 psi (1034 bar)	.128 (3.25)
SW375	15,000 psi (1034 bar)	.250 (6.35)
SW500	10,000 psi (690 bar)	.250 (6.35)
SF250CX20	20,000 psi (1379 bar)	.109 (2.77)
SF375CX20	20,000 psi (1379 bar)	.203 (5.16)
SF562CX20	20,000 psi (1379 bar)	.250 (6.35)
F250C	20,000 psi (1379 bar)	.094 (2.39)
F375C	20,000 psi (1379 bar)	.125 (3.17)
F562C	20,000 psi (1379 bar)	.188 (4.77)
1/8" NPT	15,000 psi (1034 bar)	.250 (6.35)
1/4" NPT	15,000 psi (1034 bar)	.250 (6.35)
3/8" NPT	15,000 psi (1034 bar)	.250 (6.35)
1/2" NPT	15,000 psi (1034 bar)	.250 (6.35)
	Valve C_V=1.51	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .250 inches only.
Consult factory for C_V of valves with reduced orifice sizes.





PRESSURE TEMPERATURE RATINGS



Pressure ratings are determined by the end connections chosen, see chart.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 2-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **2B 4 S 20 M9 — XXX**

2B — **Valve Series**
2B: 2-way

4 — **Ball Orifice Diameter**
4-1/4" (6.35 mm)

S — **Material**
S -316SS
(For material options contact factory)

20 — **Pressure (X 1000 psi)**

M9 — **End Connection**
M9 - SF562CX20
(See Chart on next page)

XXX — **Options**
HT - High Temperature
(Ball Valve Actuators, see next page)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
2B4S15L2	L2	W125	15,000 psi (1034 bar)	1 (25.40)
2B4S15L4	L4	SW250	15,000 psi (1034 bar)	1 (25.40)
2B4S15L6	L6	SW375	15,000 psi (1034 bar)	1 (25.40)
2B4S10L8	L8	SW500	10,000 psi (690 bar)	1 (25.40)
2B4S20M4	M4	SF250CX20	20,000 psi (1379 bar)	1 (25.40)
2B4S20M6	M6	SF375CX20	20,000 psi (1379 bar)	1 (25.40)
2B4S20M9	M9	SF562CX20	20,000 psi (1379 bar)	1 (25.40)
2B4S20H4	H4	F250C	20,000 psi (1379 bar)	1 (25.40)
2B4S20H6	H6	F375C	20,000 psi (1379 bar)	1 (25.40)
2B4S20H9	H9	F562C	20,000 psi (1379 bar)	1.38 (35.05)
2B4S15P2	P2	1/8” NPT	15,000 psi (1034 bar)	1 (25.40)
2B4S15P4	P4	1/4” NPT	15,000 psi (1034 bar)	1 (25.40)
2B4S15P6	P6	3/8” NPT	15,000 psi (1034 bar)	1 (25.40)
2B4S15P8	P8	1/2” NPT	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.

Ball Valve Options

Pneumatic Actuator

AO - Air-to-open/spring to close
AC - Air-to-close/spring to open
AOC - Air-to-open-and-close (double action)

Electric Actuator

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

See ball valve actuator section for full description, additional information, and options.

Valve Maintenance

Repair Kits: add “**R**” to the front of valve catalog first 4 numbers for proper repair kit. (Example: **R2B4S**)

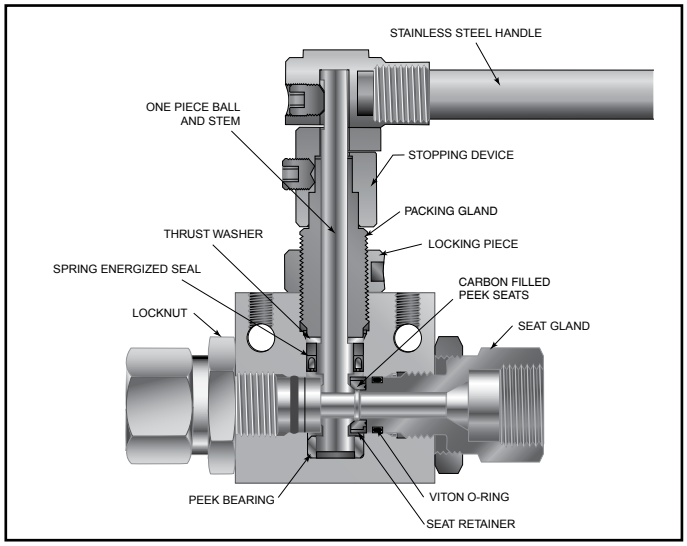
Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

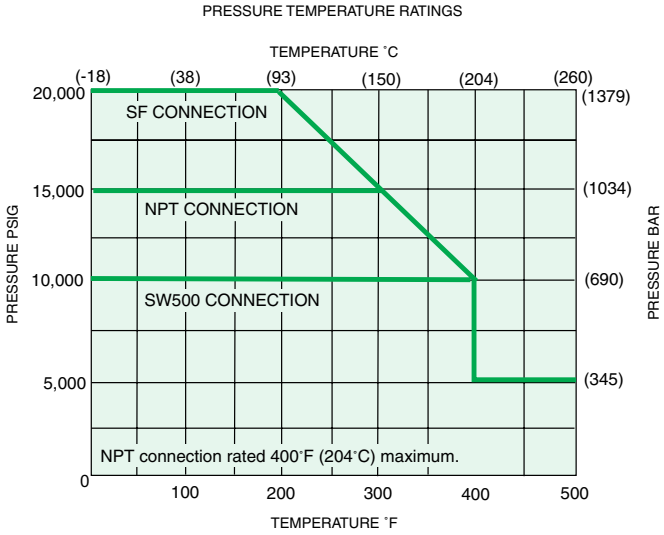
Ball Valves - 2-Way Series (3/8" Orifice)

Pressures to 20,000 psi (1379 bar) .375" (9.52mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SW500	10,000 psi (690 bar)	.375 (9.52)
SF375CX20	20,000 psi (1379 bar)	.203 (5.16)
SF562CX20	20,000 psi (1379 bar)	.312 (7.92)
SF750CX20	20,000 psi (1379 bar)	.328 (8.33)
1/4" NPT	15,000 psi (1034 bar)	.375 (9.52)
3/8" NPT	15,000 psi (1034 bar)	.375 (9.52)
1/2" NPT	15,000 psi (1034 bar)	.375 (9.52)
	Valve C_V=3.51	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .375 inches only.
Consult factory for C_V of valves with reduced orifice sizes.





Pressure ratings are determined by the end connections chosen, see chart.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 2-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **2B 6 S 20 M9 — XXX**

2B — **Valve Series**
2B: 2-way

6 — **Ball Orifice Diameter**
6-3/8" (9.52 mm)

S — **Material**
S - 316SS
(For material options contact factory)

20 — **Pressure (X 1000 psi)**

M9 — **End Connection**
M9 - SF562CX20 (See Chart on next page)

XXX — **Options**
HT - High Temperature (Ball Valve Acutators, see next page.)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
2B6S10L8	L8	SW500	10,000 psi (690 bar)	1.38 (35.05)
2B6S20M6	M6	SF375CX20	20,000 psi (1379 bar)	1.38 (35.05)
2B6S20M9	M9	SF562CX20	20,000 psi (1379 bar)	1.38 (35.05)
2B6S20M12	M12	SF750CX20	20,000 psi (1379 bar)	1.38 (35.05)
2B6S15P4	P4	1/4" NPT	15,000 psi (1034 bar)	1.38 (35.05)
2B6S15P6	P6	3/8" NPT	15,000 psi (1034 bar)	1.38 (35.05)
2B6S15P8	P8	1/2" NPT	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.

Ball Valve Options

Pneumatic Actuator

AO - Air-to-open/spring to close
AC - Air-to-close/spring to open
AOC - Air-to-open-and-close (double action)

Electric Actuator

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

See ball valve actuator section for full description, additional information, and options.

Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog first 4 numbers for proper repair kit. (Example: **R2B6S**)

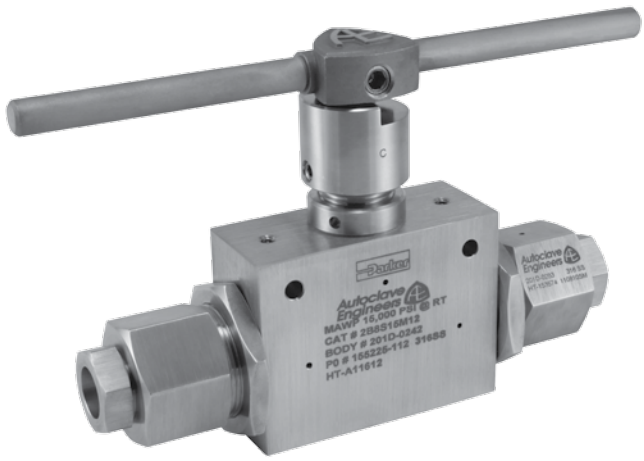
Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

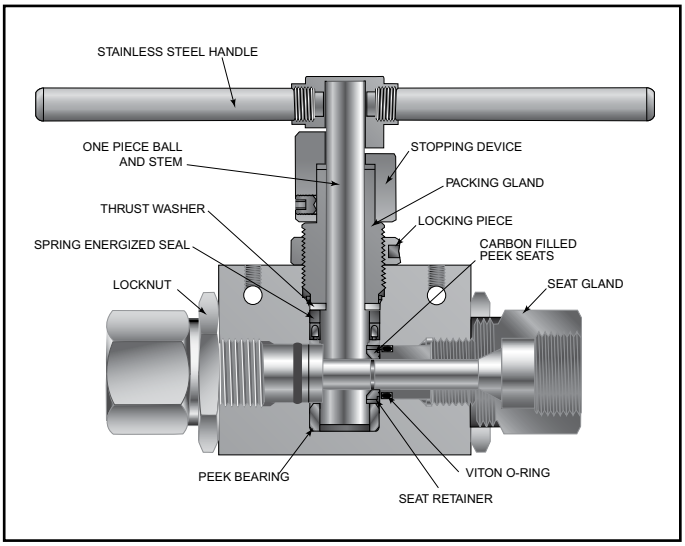
Ball Valves - 2-Way Series (1/2" Orifice)

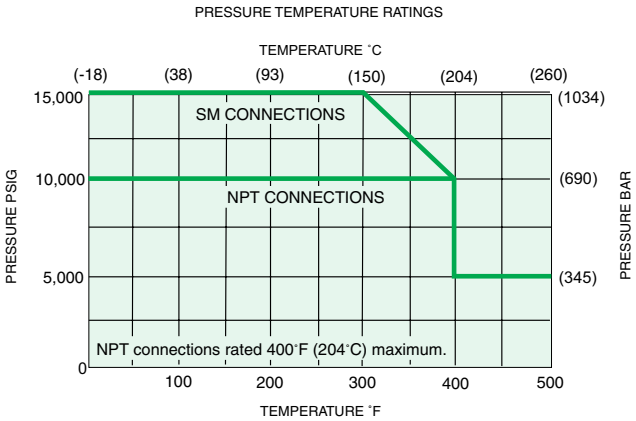
Pressures to 15,000 psi (1034 bar) .500" (12.7mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice Inches (mm)
SF750CX20	15,000 psi (1034 bar)	.500 (12.70)
SF1000CX20	15,000 psi (1034 bar)	.500 (12.70)
3/4" NPT	10,000 psi (690 bar)	.500 (12.70)
1" NPT	10,000 psi (690 bar)	.500 (12.70)
	Valve C_V=10.20	

MAWP: Maximum Allowable Working Pressure







Pressure ratings are determined by the end connections chosen, see chart.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 2-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **2B 8 S 15 M12 — XXX**

2B
Valve Series
2B: 2-way

8
Ball Orifice Diameter
8-1/2" (12.7 mm)

S
Material
S -316SS
(For material options contact factory)

15
Pressure (X 1000 psi)

M12
End Connection
M12 - SF750CX20
(See Chart on next page)

XXX
Options
HT - High Temperature
(Ball Valve Acutators, see next page.)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
2B8S15M12	M12	SF750CX20	15,000 psi (1034 bar)	1.75 (44.5)
2B8S15M16	M16	SF1000CX20	15,000 psi (1034 bar)	1.75 (44.5)
2B8S10P12	P12	3/4" NPT	10,000 psi (690 bar)	1.75 (44.5)
2B8S10P16	P16	1" NPT	10,000 psi (690 bar)	1.75 (44.5)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.

Ball Valve Options

Pneumatic Actuator

AO - Air-to-open/spring to close
AC - Air-to-close/spring to open
AOC - Air-to-open-and-close (double action)

Electric Actuator

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

See ball valve Actuator section for full description, additional information, and options.

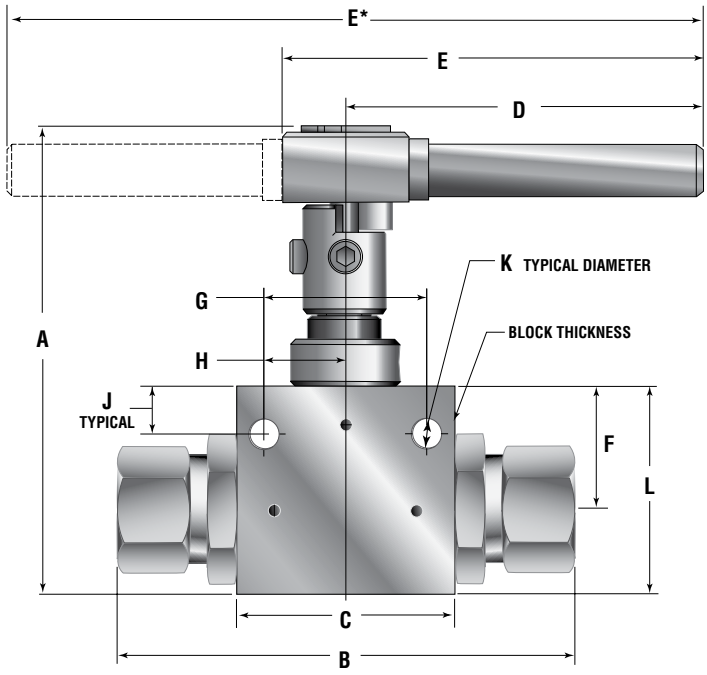
Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog first 4 numbers for proper repair kit. (Example: **R2B8S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

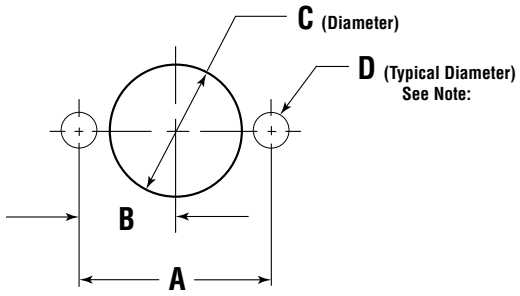
Ball Valve Dimensions - inches (mm)

	VALVE MODELS		
	2B4S	2B6S	2B8S
A	4.33 (109.99)	4.97 (126.30)	5.97 (151.64)
B	4.19 (106.49)	5.53 (140.41)	7.73 (196.46)
C	2.00 (50.80)	3.00 (76.20)	4.13 (104.78)
D	3.37 (85.55)	4.99 (126.82)	5.12 (130.04)
E	3.90 (99.02)	5.52 (140.32)	*10.25 (260.35)
F	1.13 (28.58)	1.38 (34.92)	1.76 (44.70)
G	1.50 (38.10)	2.00 (50.80)	3.00 (76.20)
H	0.75 (19.05)	1.00 (25.40)	1.50 (38.10)
J	0.43 (10.92)	0.41 (10.31)	0.50 (12.70)
K	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)
L	1.91 (48.41)	2.50 (63.50)	3.09 (78.58)
Block Thickness	1.00 (25.40)	1.38 (34.92)	1.75 (44.45)



Ball Valve Panel Mounting Dimensions - inches (mm)

	VALVE MODELS		
	2B4S	2B6S	2B8S
A	1.500 (38.10)	2.000 (50.80)	3.000 (76.20)
B	0.750 (19.05)	1.000 (25.40)	1.500 (38.10)
C	1.06 (26.92)	1.50 (38.10)	1.88 (47.63)
D	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)



All dimensions are for reference only and are subject to change without notice.

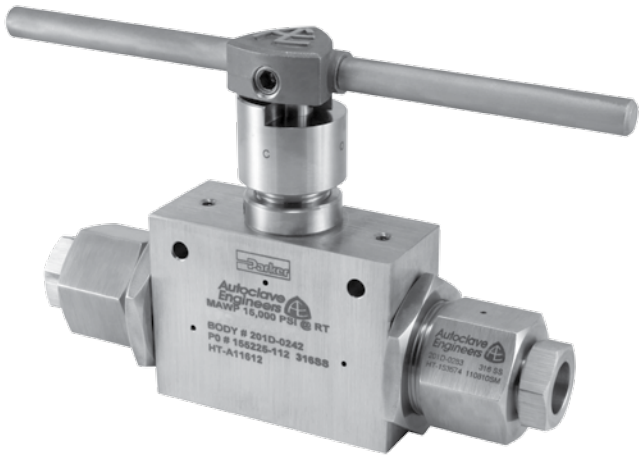
Note: Body mounting 1/4" - 20 thread

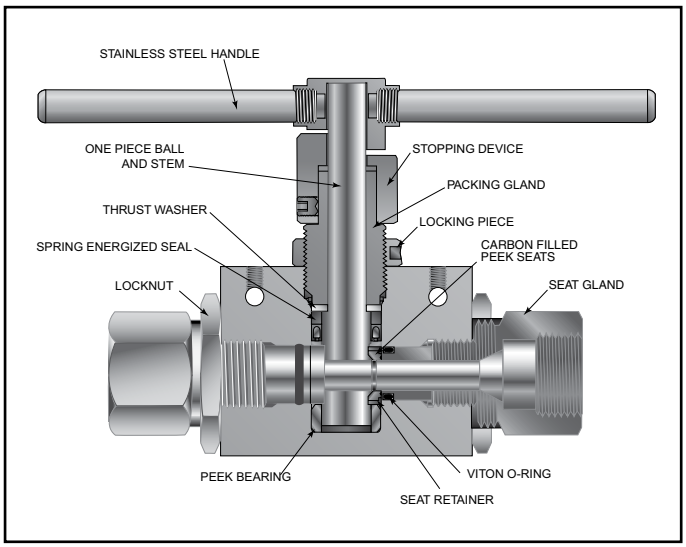
Ball Valves - 2-Way Series (3/4" Orifice)

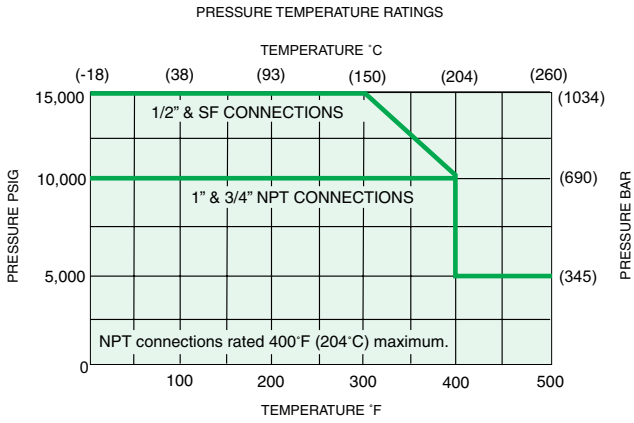
Pressures to 15,000 psi (1034 bar) .750" (19.05mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice Inches (mm)
SF1000CX10	15,000 psi (1034 bar)	.688 (17.48)
1/2" NPT	15,000 psi (1034 bar)	.688 (17.48)
3/4" NPT	10,000 psi (690 bar)	.750 (19.05)
1" NPT	10,000 psi (690 bar)	.750 (19.05)
	Valve C_V=21	

MAWP: Maximum Allowable Working Pressure







Pressure ratings are determined by the end connections chosen, see chart.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 2-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **2B 12 S 15 M16 — XXX**

2B
Valve Series
2B: 2-way

12
Ball Orifice Diameter
12-3/4" (19.05 mm)

S
Material
S -316SS
(For material options contact factory)

15
Pressure (X 1000 psi)

M16
End Connection
M16 - SF1000CX10
(See Chart on next page)

XXX
Options
HT - High Temperature
(Ball Valve Acutators, see next page.)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
2B12S15M16	M16	SF1000CX10	15,000 psi (1034 bar)	1.88 (47.6)
2B12S15P8	P8	1/2" NPT	15,000 psi (1034 bar)	1.88 (47.6)
2B12S10P12	P12	3/4" NPT	10,000 psi (690 bar)	1.88 (47.6)
2B12S10P16	P16	1" NPT	10,000 psi (690 bar)	1.88 (47.6)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.

Ball Valve Options

Valve Actuators

Consult Factory

Actuator Operating Temperature:

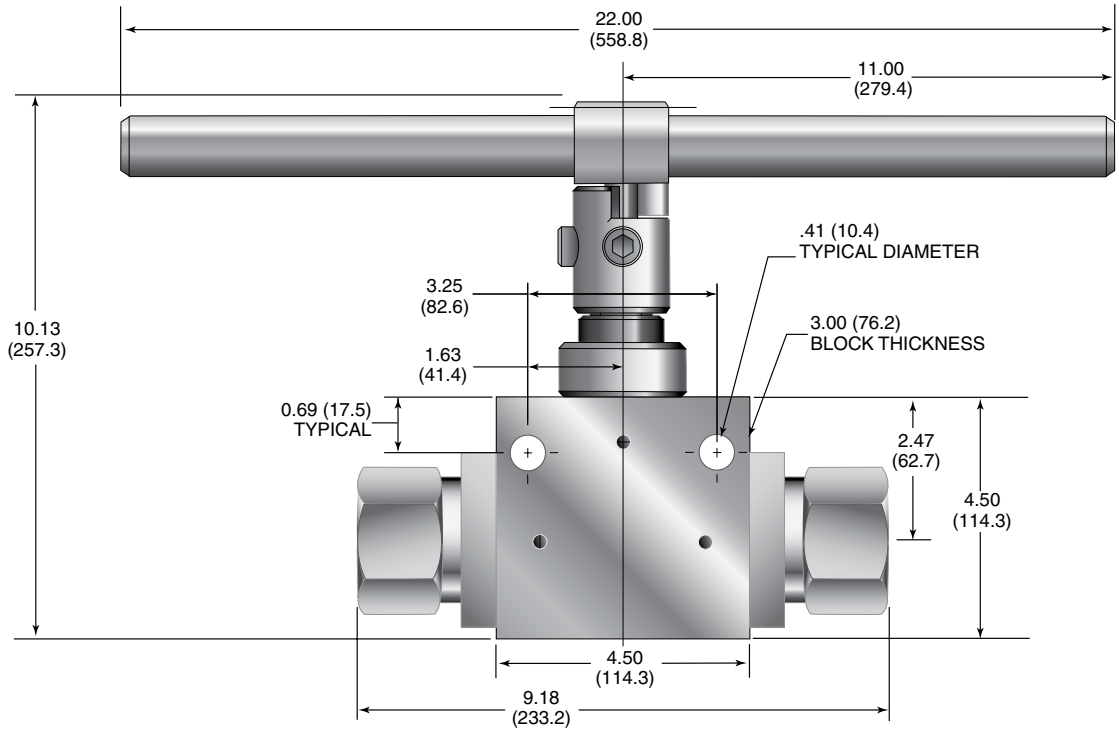
Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

Valve Maintenance

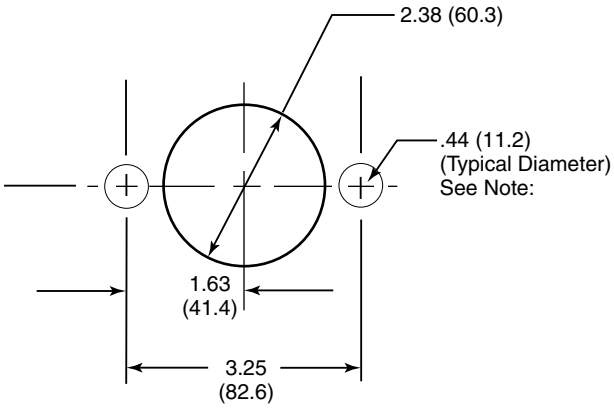
Repair Kits: add "**R**" to the front of valve catalog first 4 numbers for proper repair kit. (Example: **R2B12S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

Ball Valve Dimensions - inches (mm)



Ball Valve Panel Mounting Dimensions - inches (mm)



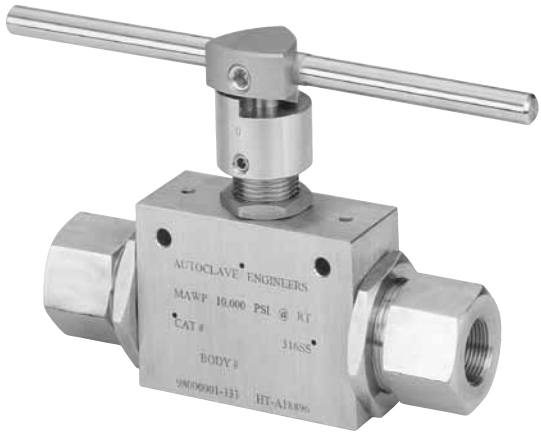
All dimensions are for reference only
and are subject to change without notice.
NOTE: Body mounting 3/8"-16 thread

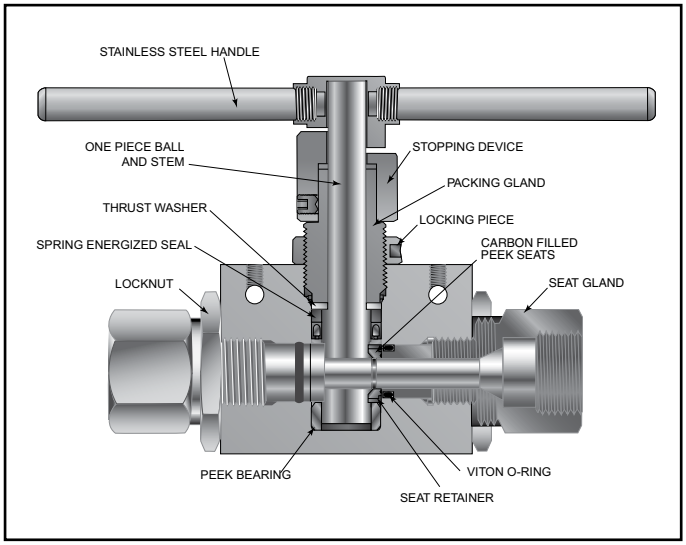
Ball Valves - 2-Way Series (1" Orifice)

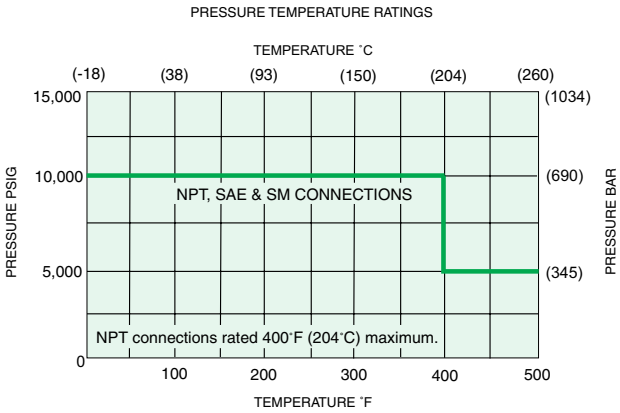
Pressures to 10,000 psi (690 bar) 1.000" (25.40mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice Inches (mm)	Valve C_V
SM1500CX10 (Male)	10,000 psi (690 bar)	.938 (23.83)	30
1" SAE (Female)	10,000 psi (690 bar)	1.00 (25.40)	34
1" NPT (Female)	10,000 psi (690 bar)	1.00 (25.40)	34

MAWP: Maximum Allowable Working Pressure







Pressure ratings are determined by the end connections chosen, see chart.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 2-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **2B 16 S 10 MA24 — XXX**

2B
Valve Series
2B: 2-way

16
Ball Orifice Diameter
16-1.0" (25.40 mm)

S
Material
S -316SS
(For material options contact factory)

10
Pressure (X 1000 psi)

MA24
End Connection
MA24 - SM1500CX10
(See Chart on next page)

XXX
Options
HT - High Temperature
(Ball Valve Acutators, see next page.)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
2B16S10MA24	M24	SM1500CX10 (Male)	10,000 psi (690 bar)	1.88 (47.6)*
2B16S10S16	S16	1" SAE (Female)	10,000 psi (690 bar)	1.88 (47.6)
2B16S10P16	P16	1" NPT (Female)	10,000 psi (690 bar)	1.88 (47.6)

*Square

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.

Ball Valve Options

Valve Actuators

Consult Factory

Actuator Operating Temperature:

Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)

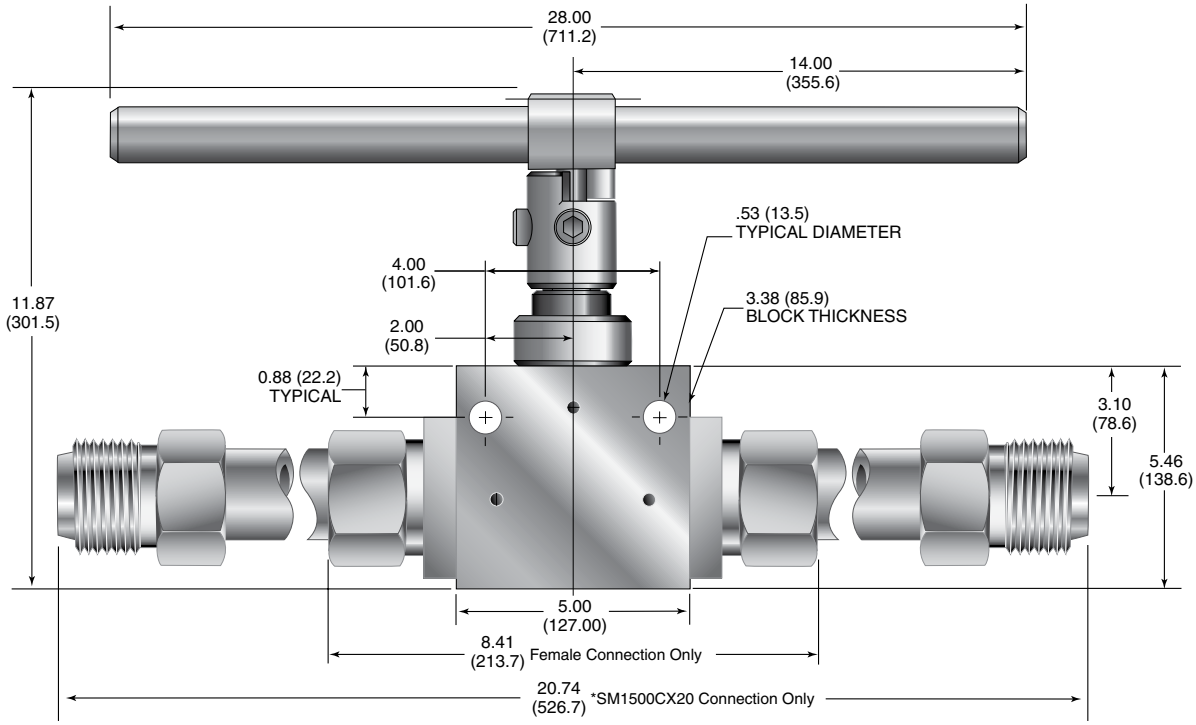
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

Valve Maintenance

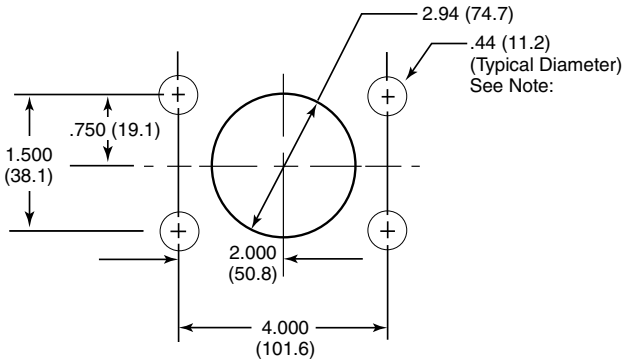
Repair Kits: add "**R**" to the front of valve catalog first 4 numbers for proper repair kit. (Example: **R2B16S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

Ball Valve Dimensions - inches (mm)



Ball Valve Panel Mounting Dimensions - inches (mm)



All dimensions are for reference only
and are subject to change without notice.
NOTE: Body mounting 3/8"-16 thread

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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02-0105SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Ball Valves

3-Way Series

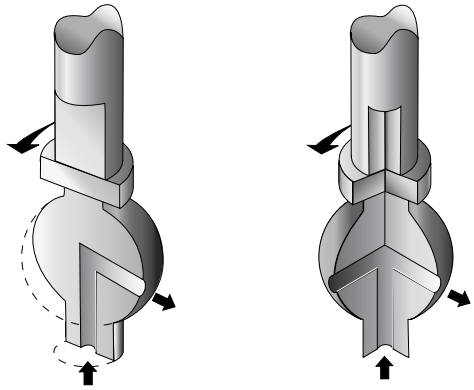
Pressures to 20,000 psi (1379 bar)

Parker Autoclave Engineers high-pressure ball valves have been designed to provide superior quality for maximum performance within a variety of valve styles, sizes, and process connections. Some of the more unique design innovations include an integral one-piece trunnion mounted style ball and stem that eliminates the shear failure common in two piece designs, re-torqueable seat glands that result in longer seat life, and a low friction stem seal that reduces actuation torque and enhances cycle life.

These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models, and valve actuators.

When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance demanded by the high pressure market.

Flow Configuration



3-Way Switching 180° Turn

3-Way Crossover 90° Turn

Ball Valve Features:

- One-piece, trunnion mounted style, stem design eliminates shear failure found in two piece designs and reduces effects of side loading.
- Re-torqueable seat glands for longer seat life.
- Carbon filled PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel construction.
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life and reduces operating torque.
- Available in 90° turn diverter and 180° turn switching models.
- Viton o-rings for operation from 0°F (-17.8°C) to 400°F (204°C).
- Optional o-rings available for high-temperature applications.
- Optional wetted materials.
- Wide selection of tube and pipe end fittings available.
- Electric and pneumatic actuator options.

Applications:

- Laboratories
- Test Stands
- Control Panels
- Chemical Research
- Pilot Plants
- Water Blast Pumping Units
- High volume chemical injection skids.

Parker

Autoclave Engineers

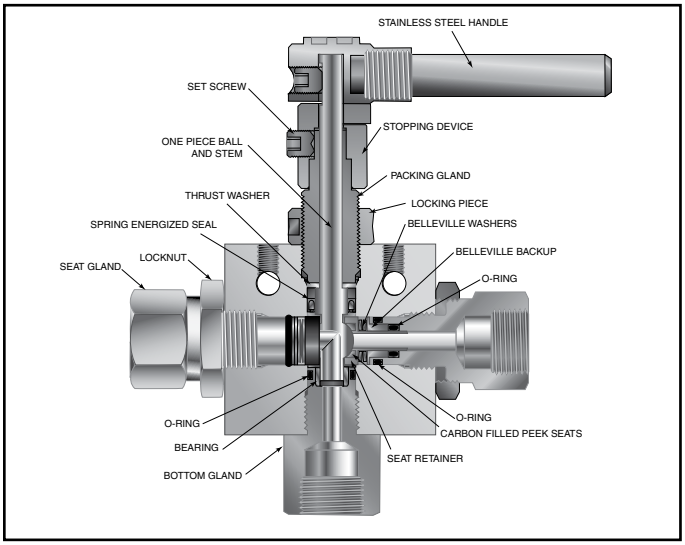
www.autoclave.com

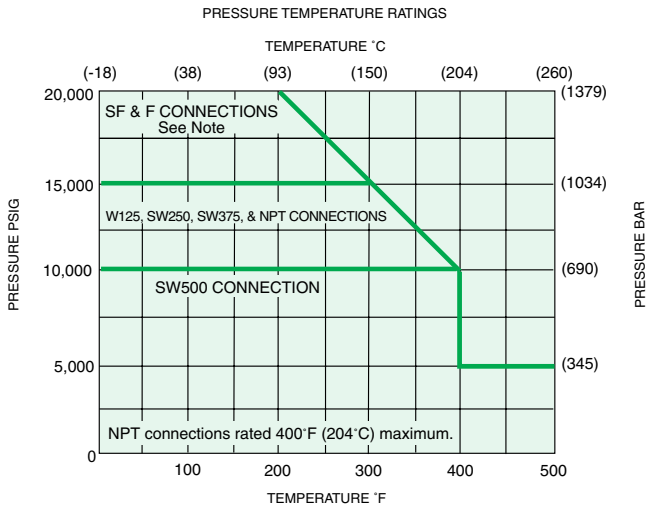
Ball Valves - 3/16" 3-Way Series

Pressures to 20,000 psi (1379 bar) .187" (4.77mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
W125	15,000 psi (1034 bar)	.094 (2.39)
SW250	15,000 psi (1034 bar)	.128 (3.25)
SW375	15,000 psi (1034 bar)	.188 (4.77)
SW500	10,000 psi (690 bar)	.188 (4.77)
SF250CX20	20,000 psi (1379 bar)	.109 (2.77)
SF375CX20	20,000 psi (1379 bar)	.188 (4.77)
SF562CX20	20,000 psi (1379 bar)	.188 (4.77)
F250C	20,000 psi (1379 bar)	.094 (2.39)
F375C	20,000 psi (1379 bar)	.125 (3.17)
F562C	20,000 psi (1379 bar)	.188 (4.77)
1/8" NPT	15,000 psi (1034 bar)	.188 (4.77)
1/4" NPT	15,000 psi (1034 bar)	.188 (4.77)
3/8" NPT	15,000 psi (1034 bar)	.188 (4.77)
1/2" NPT	15,000 psi (1034 bar)	.188 (4.77)
	Valve C_V=.50	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .188 inches only.
Consult factory for C_V of valves with reduced orifice sizes.





Pressure ratings are determined by the end connections chosen, see chart.
Note: Maximum side connection inlet pressure 15,000 psi (1034 bar)

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 3-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **3B 3 S 20 M9 — XXX**

3B — **Valve Series**
3B: 3-way
3BD: 3-way diverter

3 — **Ball Orifice Diameter**
3-3/16" (4.77 mm)

S — **Material**
S -316SS
(For material options contact factory)

20 — **Pressure (X 1000 psi)**

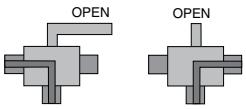
M9 — **End Connection**
M9 - SF562CX20 (See Chart on next page)

XXX — **Options**
HT - High Temperature (Ball Valve Actuators, see next page)

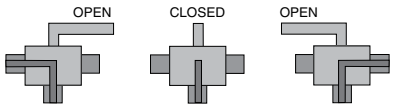
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Hex Inches(mm)
3B3S15L2 3BD3S15L2	L2	W125	15,000 psi (1034 bar)	1 (25.40)
3B3S15L4 3BD3S15L4	L4	SW250	15,000 psi (1034 bar)	1 (25.40)
3B3S15L6 3BD3S15L6	L6	SW375	15,000 psi (1034 bar)	1 (25.40)
3B3S10L8 3BD3S10L8	L8	SW500	10,000 psi (690 bar)	1 (25.40)
3B3S20M4 3BD3S20M4	M4	SF250CX20	20,000 psi (1379 bar)	1 (25.40)
3B3S20M6 3BD3S20M6	M6	SF375CX20	20,000 psi (1379 bar)	1 (25.40)
3B3S20M9 3BD3S20M9	M9	SF562CX20	20,000 psi (1379 bar)	1 (25.40)
3B3S20H4 3BD3S20H4	H4	F250C	20,000 psi (1379 bar)	1 (25.40)
3B3S20H6 3BD3S20H6	H6	F375C	20,000 psi (1379 bar)	1 (25.40)
3B3S20H9 3BD3S20H9	H9	F562C	20,000 psi (1379 bar)	1.38 (35.05)
3B3S15P2 3BD3S15P2	P2	1/8” NPT	15,000 psi (1034 bar)	1 (25.40)
3B3S15P4 3BD3S15P4	P4	1/4” NPT	15,000 psi (1034 bar)	1 (25.40)
3B3S15P6 3BD3S15P6	P6	3/8” NPT	15,000 psi (1034 bar)	1 (25.40)
3B3S15P8 3BD3S15P8	P8	1/2” NPT	15,000 psi (1034 bar)	1.38 (35.05)

See ball valve option/detail section for end connection details, material, and high temperature options.



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

AO - Air-to-open/Spring to close (diverter style only)
AC - Air-to-close/Spring to open (diverter style only)
AOC - Air-to-open-and-close (double action)

Electric Actuator:

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

Valve Maintenance

Repair Kits: add “**R**” to the front of valve catalog numbers for proper repair kit. (Example: **R3B3S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

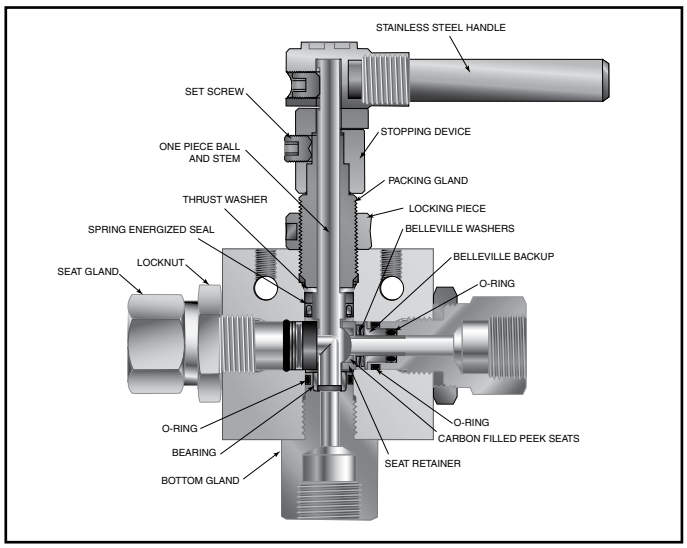
See ball valve actuator section for full description, additional information, and options.

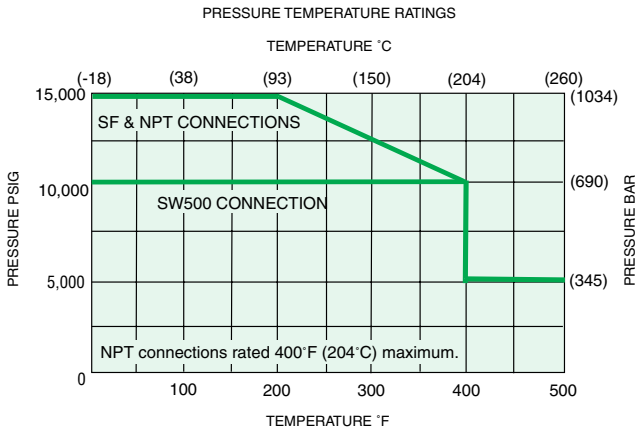
Ball Valves - 3/8" 3-Way Series

Pressures to 15,000 psi (1034 bar) .328" (8.33mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SW500	10,000 psi (690 bar)	.328 (8.33)
SF375CX20	15,000 psi (1034 bar)	.203 (5.16)
SF562CX20	15,000 psi (1034 bar)	.312 (7.92)
SF750CX20	15,000 psi (1034 bar)	.328 (8.33)
1/4" NPT	15,000 psi (1034 bar)	.328 (8.33)
3/8" NPT	15,000 psi (1034 bar)	.328 (8.33)
1/2" NPT	15,000 psi (1034 bar)	.328 (8.33)
	Valve C_V=2.1	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .328 inches only.
Consult factory for C_V of valves with reduced orifice sizes.





Pressure ratings are determined by the end connections chosen, see chart.
Side connection pressure not recommended.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 3-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **3B 6 S 15 M9 — XXX**

3B — **Valve Series**
3B: 3-way
3BD: 3-way diverter

6 — **Ball Orifice Diameter**
6-3/8" (9.52 mm)

S — **Material**
S -316SS
(For material options contact factory)

15 — **Pressure (X 1000 psi)**

M9 — **End Connection**
M9 - SF562CX20
(See Chart on next page)

XXX — **Options**
HT - High Temperature
(Ball Valve Actuators, see next page)

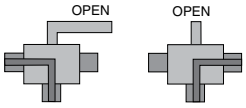
All general terms and conditions of sale, including limitations of our liability, apply to all products and services sold.

End Connection Options

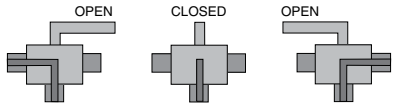
Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Hex Inches(mm)
3B6S10L8 3BD6S10L8	L8	SW500	10,000 psi (690 bar)	1.38 (35.05)
3B6S15M6 3BD6S15M6	M6	SF375CX20	15,000 psi (1034 bar)	1.38 (35.05)
3B6S15M9 3BD6S15M9	M9	SF562CX20	15,000 psi (1034 bar)	1.38 (35.05)
3B6S15M12 3BD6S15M12	M12	SF750CX20	15,000 psi (1034 bar)	1.38 (35.05)
3B6S15P4 3BD6S15P4	P4	1/4" NPT	15,000 psi (1034 bar)	1.38 (35.05)
3B6S15P6 3BD6S15P6	P6	3/8" NPT	15,000 psi (1034 bar)	1.38 (35.05)
3B6S15P8 3BD6S15P8	P8	1/2" NPT	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

AO - Air-to-open/Spring to close (diverter style only)
AC - Air-to-close/Spring to open (diverter style only)
AOC - Air-to-open-and-close (double action)

Electric Actuator:

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog numbers for proper repair kit.

(Example: **R3B6S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

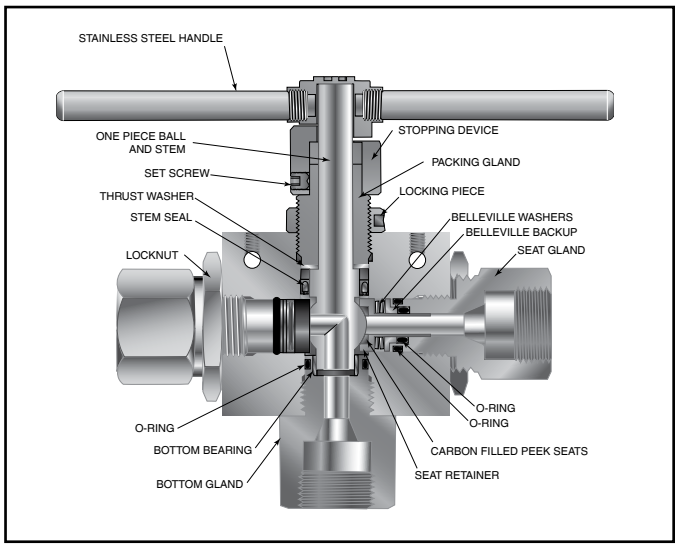
See ball valve actuator section for full description, additional information, and options.

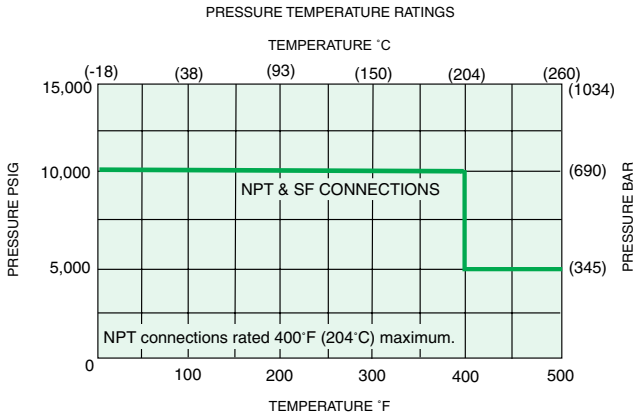
Ball Valves - 1/2" 3-Way Series

Pressures to 10,000 psi (690 bar) .500" (12.7mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SF750CX20	10,000 psi (690 bar)	.500 (12.70)
SF1000CX20	10,000 psi (690 bar)	.500 (12.70)
3/4" NPT	10,000 psi (690 bar)	.500 (12.70)
1" NPT	10,000 psi (690 bar)	.500 (12.70)
	Valve C_V=4.4	

MAWP: Maximum Allowable Working Pressure





Pressure ratings are determined by the end connections chosen, see chart.
Note: Maximum side connection inlet pressure 10,000 psi (690 bar)

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 3-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **3B 8 S 10 M12** — **XXX**

3B — **Valve Series**
3B: 3-way
3BD: 3-way diverter

8 — **Ball Orifice Diameter**
8-1/2" (12.7 mm)

S — **Material**
S -316SS
(For material options contact factory)

10 — **Pressure (X 1000 psi)**

M12 — **End Connection**
M12 - SF750CX20
(See Chart on next page)

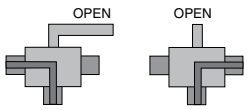
XXX — **Options**
HT - High Temperature
(Ball Valve Actuators, see next page)

End Connection Options

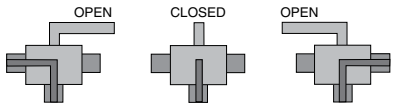
Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Hex Inches(mm)
3B8S10M12 3BD8S10M12	M12	SF750CX20	10,000 psi (690 bar)	1.75 (44.5)
3B8S10M16 3BD8S10M16	M16	SF1000CX20	10,000 psi (690 bar)	1.75 (44.5)
3B8S10P12 3BD8S10P12	P12	3/4" NPT	10,000 psi (690 bar)	1.75 (44.5)
3B8S10P16 3BD8S10P16	P16	1" NPT	10,000 psi (690 bar)	1.75 (44.5)

MAWP: Maximum Allowable Working Pressure

See ball valve options for end connection details, material, and high temperature options.



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

AO - Air-to-open/Spring to close (diverter style only)
AC-Air-to-open/Spring to close (diverter style only)
AOC - Air-to-open-and-close (double action)

Electric Actuator:

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
E03 - 24 VDC

Actuator Operating Temperature:

Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

Valve Maintenance

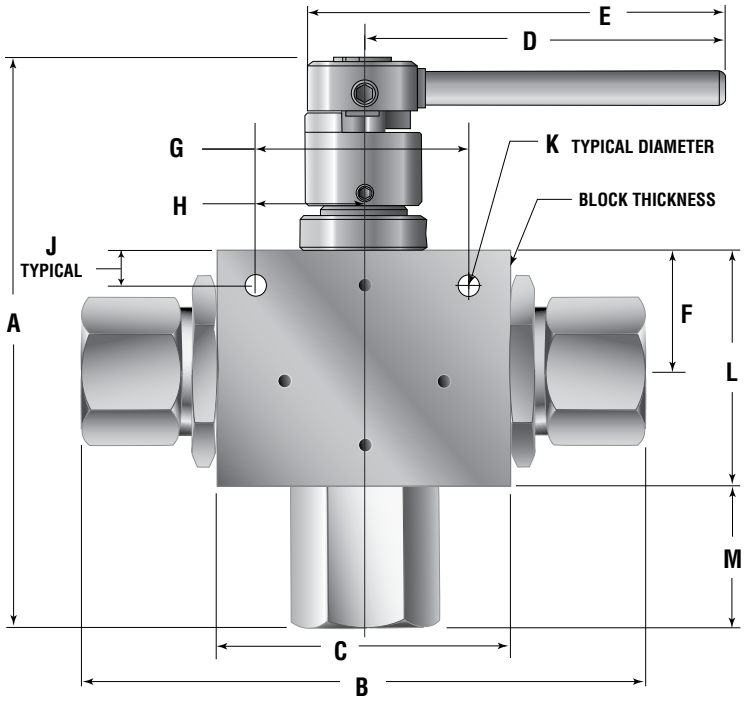
Repair Kits: add "**R**" to the front of valve catalog numbers for proper repair kit. (Example: **R3B8S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

See ball valve actuator section for full description, additional information, and options.

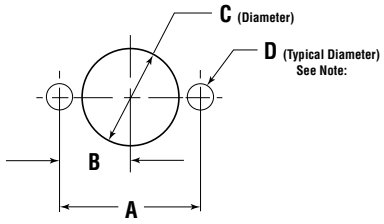
Ball Valve Dimensions - inches (mm)

	VALVE MODELS		
	3B3S/3BD3S	3B6S/3BD6S	3B8S/3BD8S
A	5.64 (143.35)	6.55 (166.37)	7.83 (198.79)
B	4.72 (119.94)	5.74 (145.79)	7.77 (197.36)
C	2.50 (63.50)	3.00 (76.20)	4.13 (104.78)
D	3.37 (85.55)	4.99 (126.82)	5.12 (130.04)
E	3.90 (99.02)	5.52 (140.32)	10.25 (260.35)
F	1.13 (28.58)	1.38 (34.93)	1.66 (42.16)
G	1.50 (38.10)	2.00 (50.80)	3.00 (76.20)
H	0.75 (19.05)	1.00 (25.40)	1.50 (38.10)
J	0.43 (10.92)	0.41 (10.31)	0.50 (12.70)
K	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)
L	2.25 (57.15)	2.88 (73.03)	3.34 (84.94)
M	0.97 (24.64)	1.19 (30.22)	1.70 (43.18)
Block Thickness	1.00 (25.40)	1.38 (34.92)	1.75 (44.45)



Ball Valve Panel Mounting Dimensions - inches (mm)

	VALVE MODELS		
	3B3S/3BD3S	3B6S/3BD6S	3B8S/3BD8S
A	1.500 (38.10)	2.000 (50.80)	3.000 (76.20)
B	0.750 (19.05)	1.000 (25.40)	1.500 (38.10)
C	1.06 (26.92)	1.50 (38.10)	1.88 (47.63)
D	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)



All dimensions are for reference only and are subject to change without notice.
Note: Body mounting 1/4" - 20 thread

WARNING

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02-0106SE January2013

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Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Ball Valves

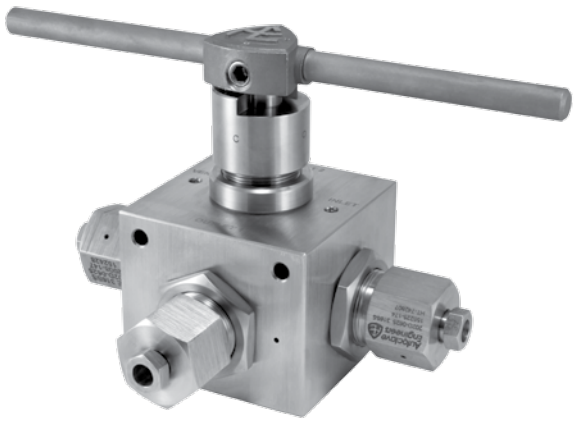
4-Way Series

Pressures to 10,000 psi (690 bar)

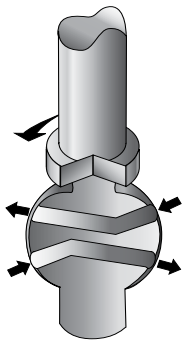
Parker Autoclave Engineers high-pressure ball valves have been designed to provide superior quality for maximum performance within a variety of valve styles, sizes, and process connections. Some of the more unique design innovations include an integral one-piece trunnion mounted style ball and stem that eliminates the shear failure common in two piece designs, re-torqueable seat glands that result in longer seat life, and a low friction stem seal that reduces actuation torque and enhances cycle life.

These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models, and valve actuators.

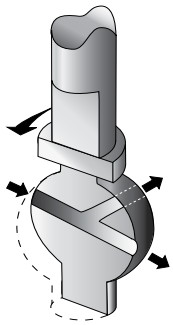
When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance demanded by the high pressure market.



Flow Configuration



4-Way
Crossover
90° Turn



4-Way
Switching
180° Turn

Ball Valve Features:

- One-piece, trunnion mounted style, stem design eliminates shear failure found in two piece designs and reduces the effects of side loading.
- Re-torqueable seat glands for longer seat life.
- Carbon filled PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel construction.
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life and reduces operating torque.
- Quarter turn crossover, and the half turn four way switching models available.
- Viton o-rings for operation from 0°F (-17.8°C) to 400°F (204°C).
- Optional o-rings available for high-temperature applications.
- Optional wetted materials.
- Wide selection of tube and pipe end fittings available.
- Electric and pneumatic actuator options.

Applications:

- Laboratories
- Test Stands
- Control Panels
- Chemical Research
- Pilot Plants
- Water Blast Pumping Unit
- High volume chemical injection skids.

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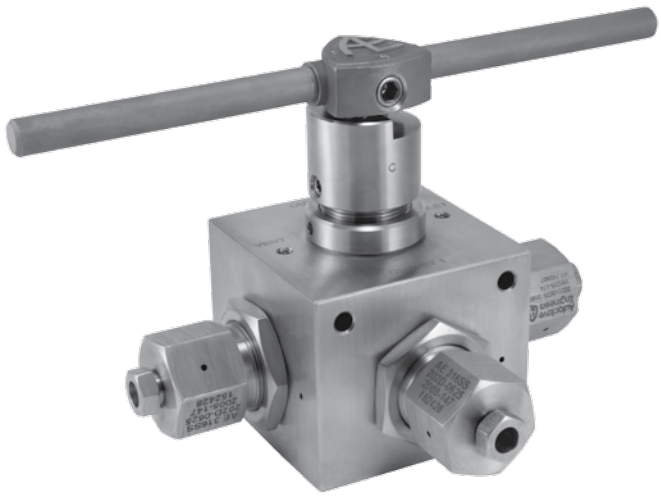
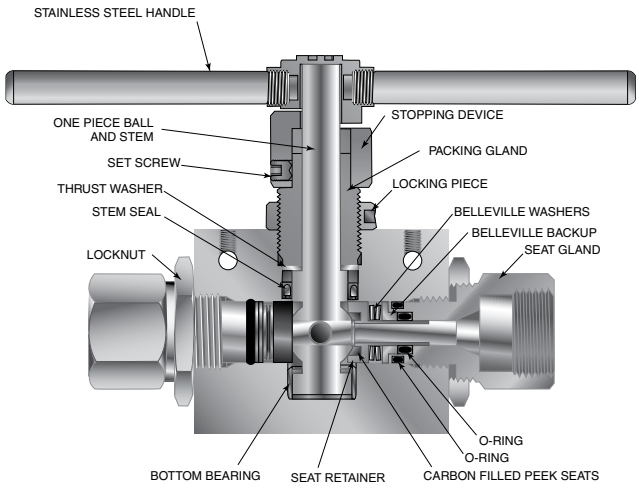
Ball Valves - 4-Way Series (3/8" Orifice)

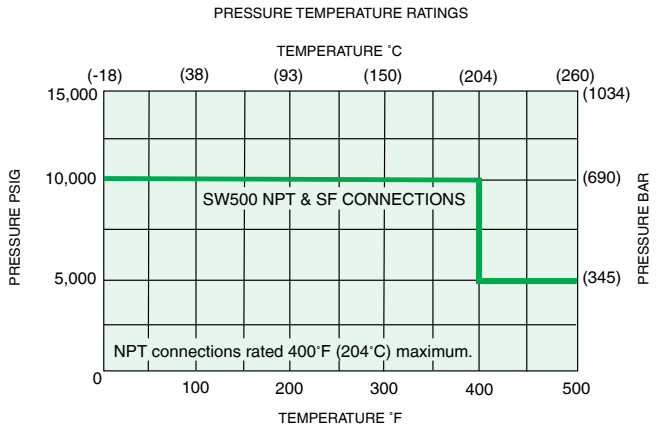
Pressures to 10,000 psi (690 bar) .375" (9.52mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SW500	10,000 psi (690 bar)	.375 (9.52)
SF375CX20	10,000 psi (690 bar)	.203 (5.16)
SF562CX20	10,000 psi (690 bar)	.312 (7.92)
SF750CX20	10,000 psi (690 bar)	.375 (9.52)
1/4" NPT	10,000 psi (690 bar)	.375 (9.52)
3/8" NPT	10,000 psi (690 bar)	.375 (9.52)
1/2" NPT	10,000 psi (690 bar)	.375 (9.52)
	Valve C_V=2.5	

MAWP: Maximum Allowable Working Pressure







Pressure ratings are determined by the end connections chosen, see chart.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections and material options, see next page. 4-way ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **4B 6 S 10 M9** — **XXX**

4B
Valve Series
4B: 4-way crossover
4BS: 4-way switching

6
Ball Orifice Diameter
6-3/8" (9.52 mm)

S
Material
S -316SS
(For material options contact factory)

10
Pressure (X 1000 psi)

M9
End Connection
M9 - SF562CX20
(See Chart on next page)

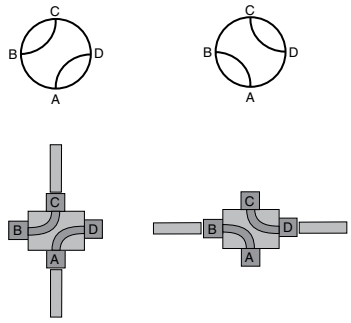
XXX
Options
HT - High Temperature
(Ball Valve Actuators, see next page)

End Connection Options

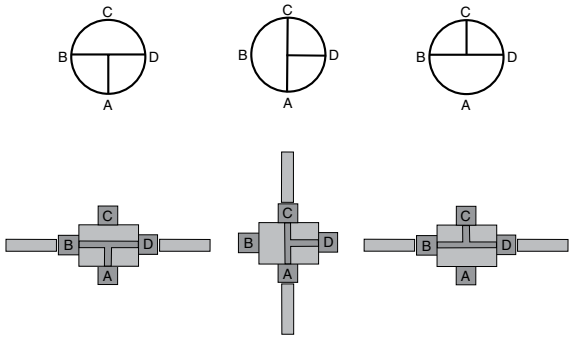
Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Hex Inches(mm)
4B6S10L8 4BS6S10L8	L8	SW500	10,000 psi (690 bar)	1.38 (35.05)
4B6S10M6 4BS6S10M6	M6	SF375CX20	10,000 psi (690 bar)	1.38 (35.05)
4B6S10M9 4BS6S10M9	M9	SF562CX20	10,000 psi (690 bar)	1.38 (35.05)
4B6S10M12 4BS6S10M12	M12	SF750CX20	10,000 psi (690 bar)	1.38 (35.05)
4B6S10P4 4BS6S10P4	P4	1/4" NPT	10,000 psi (690 bar)	1.38 (35.05)
4B6S10P6 4BS6S10P6	P6	3/8" NPT	10,000 psi (690 bar)	1.38 (35.05)
4B6S10P8 4BS6S10P8	P8	1/2" NPT	10,000 psi (690 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.



4-Way Crossover
90° Turn



4-Way Switching
180° Turn
(supplied with "D" port plugged)

Ball Valve Options

Pneumatic Actuator:

AO - Air-to-open/Spring to close
AC - Air-to-close/Spring to open
AOC - Air-to-open-and-close (double action)

Electric Actuator:

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: 0˚F to 175˚F (-17˚C to 79˚C)
Electric: 0˚F to 160˚F (-17˚C to 71˚C)

Note: Consult factory for additional actuator information.

High Temperature Option: HT for media temperatures up to 500°F (260°)

HT - for media temperature up to 500˚F (260˚C)

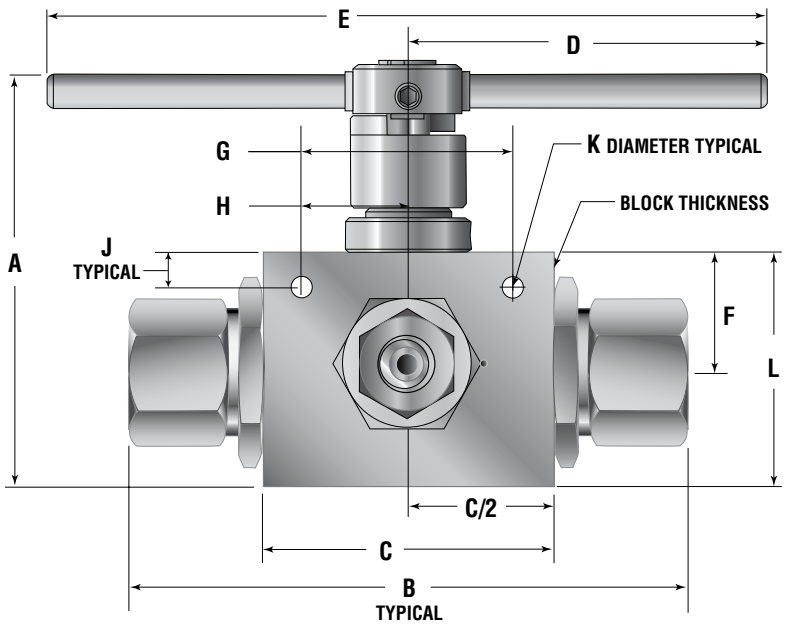
Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog first 4 (5 for switching) numbers for proper repair kit.
(Example: **R4B6S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

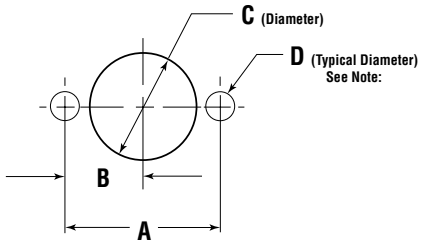
Ball Valve Dimensions - inches (mm)

VALVE MODELS	
4B6S/4BS6S	
A	5.81 (147.57)
B	6.79 (172.47)
C	3.50 (88.90)
D	5.13 (130.18)
E	10.25 (260.35)
F	1.63 (41.28)
G	2.63 (66.68)
H	1.13 (33.34)
J	0.41 (10.32)
K	0.28 (7.11)
L	2.97 (75.39)
Block Thickness	3.50 (88.90)



Ball Valve Panel Mounting Dimensions - inches (mm)

VALVE MODELS	
4B6S/4BS6S	
A	2.63 (66.68)
B	1.31 (33.34)
C	1.88 (47.63)
D	0.28 (7.11)



All dimensions are for reference only and are subject to change without notice.

Note: Body mounting 1/4" - 20 threads

WARNING

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02-0107SE January2013

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ISO-9001 Certified

Ball Valves

Double Block and Bleed

6DB Series

Pressures to 15,000 psi (1035 bar)

Parker Autoclave Engineers series 6DB double block valve is a two-stem ball valve providing an economical and convenient method of blocking and bleeding in applications such as pressure monitoring and test, chemical injection and drain line isolation. This full port quarter turn double ball valve is designed for operation up to 15,000 psi (1034 bar).

Double Block and Bleed Features:

- One piece, trunnion mounted stem design eliminates shear failure and reduces the effects of side loading found in two piece designs.
- Re-torqueable seat glands for longer seat life.
- Carbon filled PEEK seats offer excellent resistance to chemicals, heat and wear/abrasion.
- Vee-stem vent valve.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel construction.
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life and reduces operating torque.
- Quarter turn from open to close with positive stop.
- Viton o-rings for operation from 0°F (-17.8°C) to 400°F (204°C).

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubings and accessories. The 6DB Series is available with various connections and options.

Parker

Autoclave Engineers

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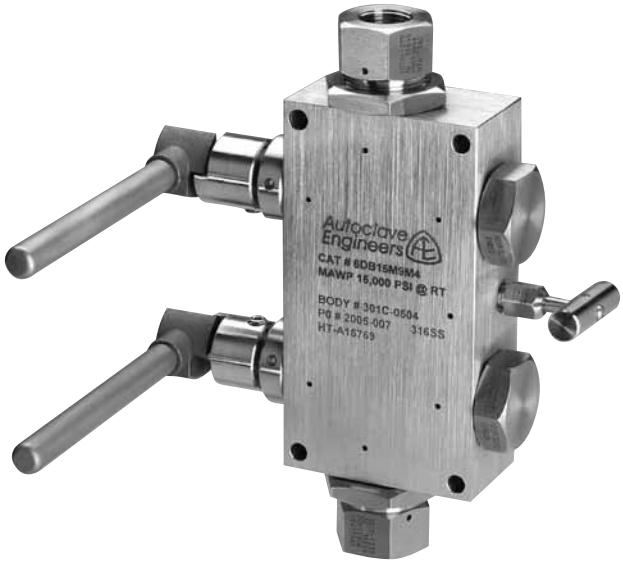
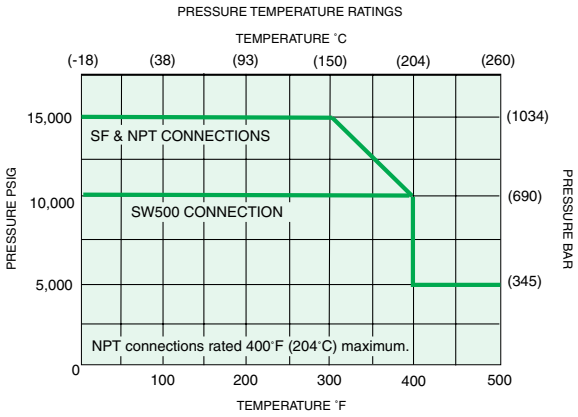
Ball Valves - 6DB Series

Pressures to 15,000 psi (1034 bar) .328" (8.33mm) Orifice

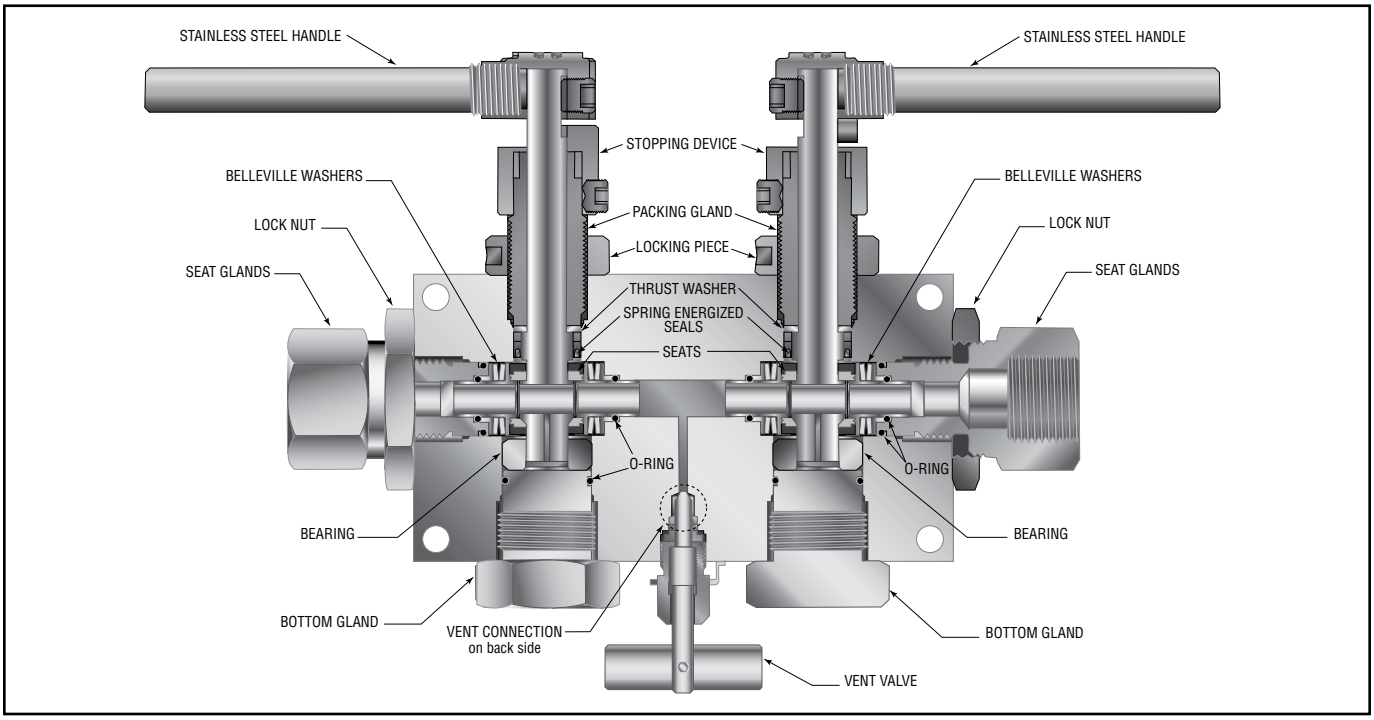
Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SW500	10,000 psi (690 bar)	.328 (8.33)
SF375CX20	15,000 psi (1034 bar)	.203 (5.16)
SF562CX20	15,000 psi (1034 bar)	.312 (7.92)
SF750CX20	15,000 psi (1034 bar)	.328 (8.33)
1/4" NPT	15,000 psi (1034 bar)	.328 (8.33)
3/8" NPT	15,000 psi (1034 bar)	.328 (8.33)
1/2" NPT	15,000 psi (1034 bar)	.328 (8.33)
	Valve C_V=2.3	

MAWP: Maximum Allowable Working Pressure
C_V calculated with both ball valves open and the needle valve closed.
C_V listed is for maximum orifice size of .328 inches only.
Consult factory for C_V of valves with reduced orifice sizes.





Pressure ratings are determined by the end connections chosen, see chart.

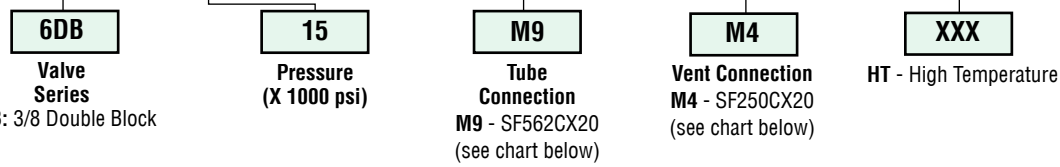


NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see end connections options below. 6DB Series ball valves are furnished complete with tube or pipe connections.

Typical catalog number: **6DB 15 M9 M4 -XXX**



6DB
Valve Series
6DB: 3/8 Double Block

15
Pressure (X 1000 psi)

M9
Tube Connection
M9 - SF562CX20 (see chart below)

M4
Vent Connection
M4 - SF250CX20 (see chart below)

XXX
HT - High Temperature

Connection Options

Catalog Number	Tube Connection Number	Connection	MAWP @ Room Temperature	Hex Inches(mm)	Vent Connection Number	Vent Connection
6DB10L8P4	L8	SW500	10,000 psi (690 bar)	1.38 (35.05)	P4	1/4" NPT
6DB15M4M4	M4	SF250CX20	15,000 psi (1034 bar)	1.38 (35.05)	M4	SF250CX20
6DB15M6M4	M6	SF375CX20	15,000 psi (1034 bar)	1.38 (35.05)	M4	SF250CX20
6DB15M9M4	M9	SF562CX20	15,000 psi (1034 bar)	1.38 (35.05)	M4	SF250CX20
6DB15M12M4	M12	SF750CX20	15,000 psi (1034 bar)	1.38 (35.05)	M4	SF250CX20
6DB15M9P4	M9	SF562CX20	15,000 psi (1034 bar)	1.38 (35.05)	P4	1/4" NPT
6DB15M16P4	M16	SF1000CX20	15,000 psi (1034 bar)	1.75 (44.45)	P4	1/4" NPT
6DB15P4P4	P4	1/4" NPT	15,000 psi (1034 bar)	1.38 (35.05)	P4	1/4" NPT
6DB15P6P4	P6	3/8" NPT	15,000 psi (1034 bar)	1.38 (35.05)	P4	1/4" NPT
6DB15P8P4	P8	1/2" NPT	15,000 psi (1034 bar)	1.38 (35.05)	P4	1/4" NPT

MAWP: Maximum Allowable Working Pressure

Ball Valve Options

High Temperature Option:
HT - for media temperature up to 500˚F (260˚C)

See ball valve options/details for full description, connection details and high temperature options.

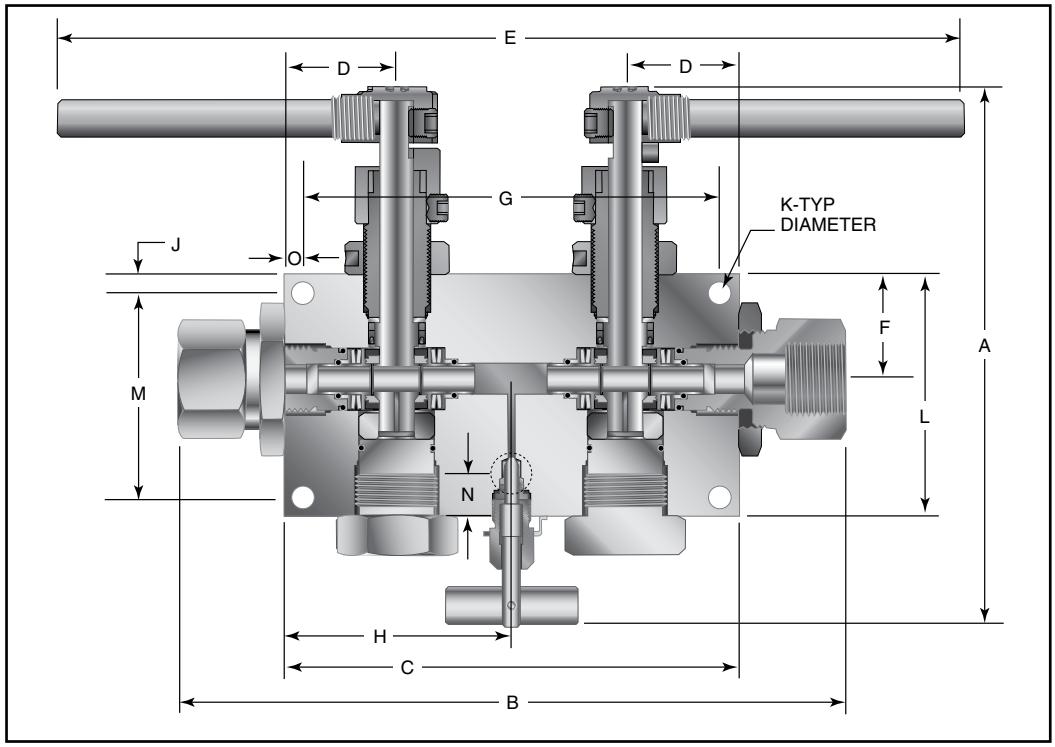
For material options consult factory.

Valve Maintenance

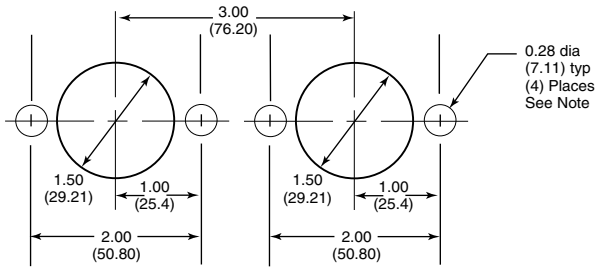
Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

Ball Valve Dimensions - inches (mm)

VALVE MODEL 6DB	
A	7.14 (181.36)
B	8.81 (223.77)
C	6.00 (152.40)
D	1.50 (38.10)
E	12.94 (328.68)
F	1.38 (34.92)
G	5.00 (127.00)
H	3.00 (76.2)
J	0.41 (10.30)
K	0.28 (7.14)
L	3.19 (81.03)
M	2.38 (60.40)
N	0.65 (16.51)
O	0.50 (12.70)
Block Thickness	1.75 (44.45)



Ball Valve Panel Mounting Dimensions - inches (mm)



All dimensions are for reference only
and are subject to change without notice.

NOTE: Body Top Mounting 1/4-20 Thread

02-1258SE January2013

Instrumentation Products Division
Autoclave Engineers Operation
8325 Hessinger Drive
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Parker Hannifin Manufacturing Ltd.
Instrumentation Products Division, Europe
Industrial Estate Whitemill
Wexford, Republic of Ireland
PH: 353 53 914 1566
FAX: 353 53 914 1582

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

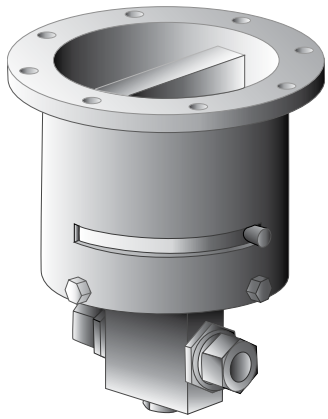
Ball Valves

Subsea Series

Internal Pressures to 20,000 psi (1379 bar)
Water Depths to 12,500 ft (3810 meters)

Parker Autoclave Engineers subsea ball valves have been designed to fulfill the ever growing demand in the petroleum industry as well as the need for externally pressurized components in other markets. Utilizing the same design technology as the standard ball valve, the subsea design incorporates the necessary design alterations to provide a reliable externally pressurized valve for the subsea industry.

With the availability of fittings, tubing, and related equipment our ball valves can provide all your needs on high-pressure applications above or below the surface.



Adaptable for Remote Operated Vehicle (ROV) operation by customer

Ball Valve Features:

- One-piece, trunnion mounted style, stem design eliminates shear failure found in two-piece designs.
- Re-torqueable seat glands for longer seat life.
- PEEK seats which offer excellent resistance to chemicals, heat, and wear/abrasion.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel construction.
- Buna-N o-ring standard 250°F (121°C) max.
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life.
- Wide selection of tube and pipe end fittings available.
- Available to NACE MR-01-75.
- Optional wetted materials.
- Available in a number of flow configurations and port sizes.

Applications:

- Subsea hydraulic manifolds
- Subsea control panels
- Subsea trees

Parker

Autoclave Engineers

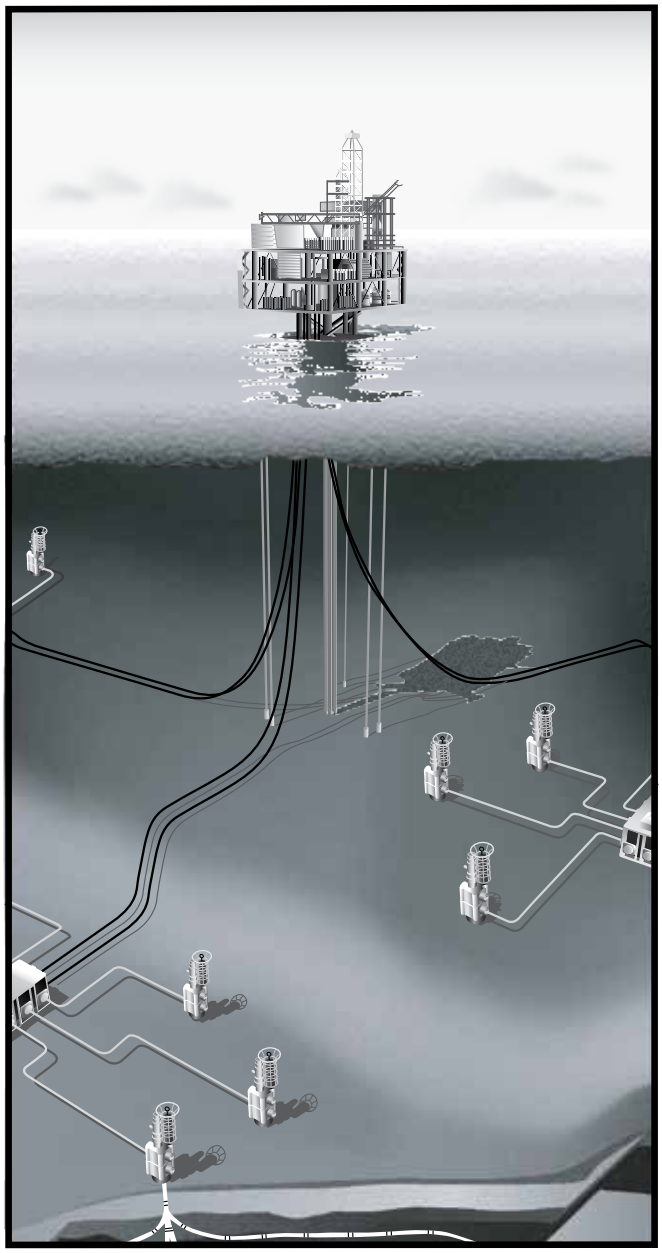
www.autoclave.com

The Parker Autoclave Engineers ball valves can be utilized to switch or isolate flow. The standard material of construction of the valve is 316 cold worked stainless steel with PEEK seats, graphite filled PTFE stem seal, and o-ring material as required by the process fluid.

The subsea ball valve design incorporates additional o-ring seals, which prevent the ingress of seawater into the valve which would adversely affect the operation of the valve as well as contaminate the process fluid. A significant feature of the subsea design is a thrust washer positioned under the stem preventing outside sea water from moving the stem from it's aligned position.

Subsea ball valves are designed to facilitate operation by a Remote Operated vehicle (ROV). ROV operator assemblies are used for valve mounting and to provide positive stopping for precise 90° operation.

Various tube and pipe connections are available throughout a variety of valve configurations with standard port sizes from 3/16" to 1". Contact Parker Autoclave Engineers technical sales support or your local distributor for more information on optional materials of construction, seal materials and ROV operator designs to fit your application requirements.

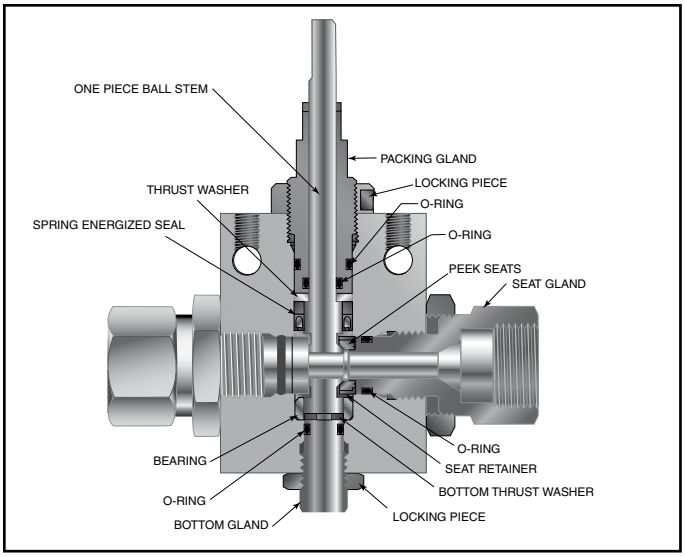


Ball Valves - 2-Way Subsea Series (1/4" Orifice)

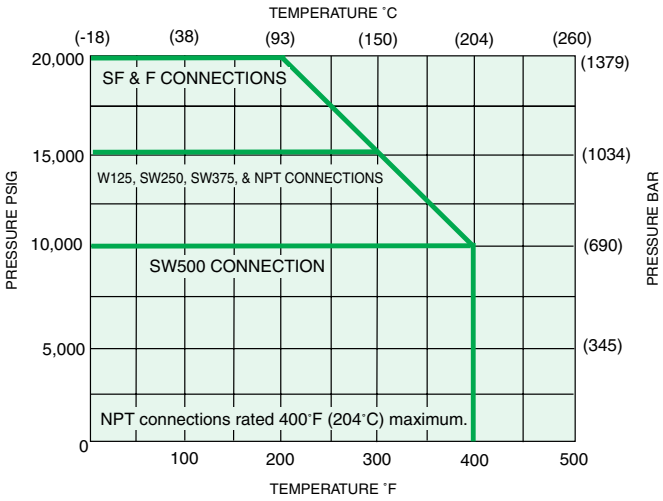
Pressures to 20,000 psi (1379 bar) .250" (6.35mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
W125	15,000 psi (1034 bar)	.094 (2.39)
SW250	15,000 psi (1034 bar)	.128 (3.25)
SW375	15,000 psi (1034 bar)	.250 (6.35)
SW500	10,000 psi (690 bar)	.250 (6.35)
SF250CX20	20,000 psi (1379 bar)	.109 (2.77)
SF375CX20	20,000 psi (1379 bar)	.203 (5.16)
SF562CX20	20,000 psi (1379 bar)	.250 (6.35)
F250C	20,000 psi (1379 bar)	.094 (2.39)
F375C	20,000 psi (1379 bar)	.125 (3.17)
F562C	20,000 psi (1379 bar)	.188 (4.77)
1/8" NPT	15,000 psi (1034 bar)	.250 (6.35)
1/4" NPT	15,000 psi (1034 bar)	.250 (6.35)
3/8" NPT	15,000 psi (1034 bar)	.250 (6.35)
1/2" NPT	15,000 psi (1034 bar)	.250 (6.35)
	Valve C_V=1.51	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .250 inches only.
Consult factory for C_V of valves with reduced orifice sizes.



PRESSURE TEMPERATURE RATINGS



Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 4 S 20 M9** — **XXX**

S2B — **Valve Series** — **Subsea**-2-way

4 — **Ball Orifice Diameter** — **4**-1/4" (6.35mm)

S — **Material** — **S** - 316SS (For material options contact factory)

20 — **Pressure (X 1000 psi)**

M9 — **End Connection** — **M9** - SF562CX20 (See Chart on next page)

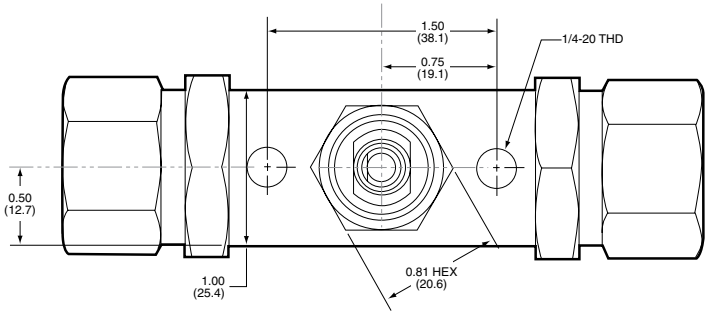
XXX — **Options** — **V** - Viton: 400°F (204°C) max; **EPDM** - Ethylene Propylene: 250°F (121°C) max

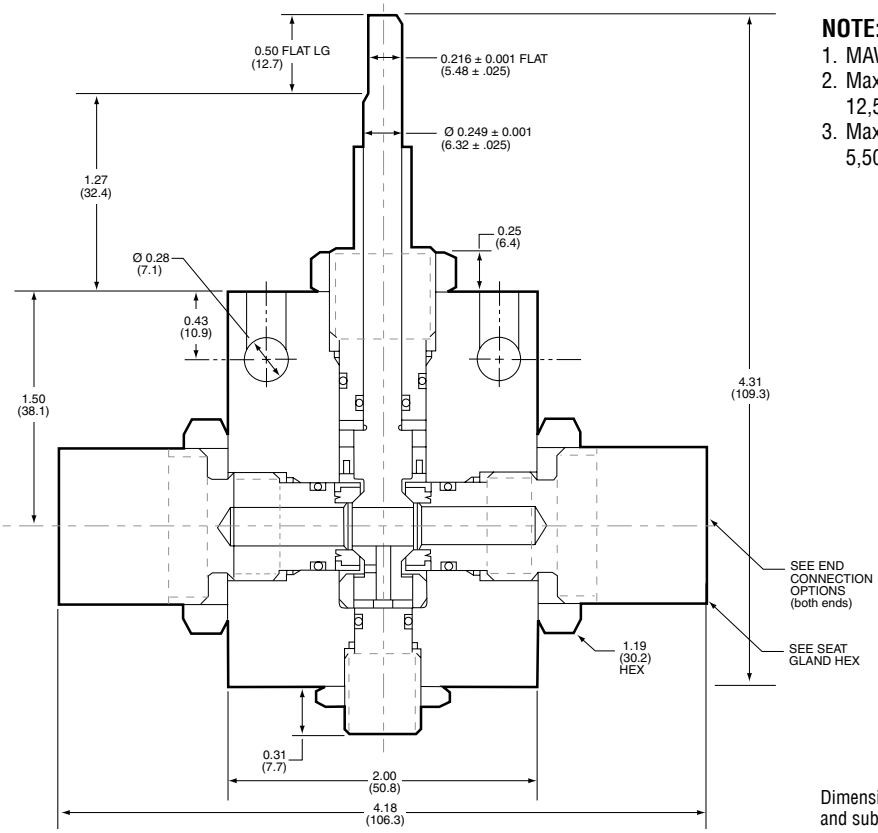
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B4S15L2	L2	W125	15,000 psi (1034 bar)	1 (25.40)
S2B4S15L4	L4	SW250	15,000 psi (1034 bar)	1 (25.40)
S2B4S15L6	L6	SW375	15,000 psi (1034 bar)	1 (25.40)
S2B4S10L8	L8	SW500	10,000 psi (690 bar)	1 (25.40)
S2B4S20M4	M4	SF250CX20	20,000 psi (1379 bar)	1 (25.40)
S2B4S20M6	M6	SF375CX20	20,000 psi (1379 bar)	1 (25.40)
S2B4S20M9	M9	SF562CX20	20,000 psi (1379 bar)	1 (25.40)
S2B4S20H4	H4	F250C	20,000 psi (1379 bar)	1 (25.40)
S2B4S20H6	H6	F375C	20,000 psi (1379 bar)	1 (25.40)
S2B4S20H9	H9	F562C	20,000 psi (1379 bar)	1.38 (35.05)
S2B4S15P2	P2	1/8" NPT	15,000 psi (1034 bar)	1 (25.40)
S2B4S15P4	P4	1/4" NPT	15,000 psi (1034 bar)	1 (25.40)
S2B4S15P6	P6	3/8" NPT	15,000 psi (1034 bar)	1 (25.40)
S2B4S15P8	P8	1/2" NPT	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.





NOTE:

1. MAWP (See Table)
2. Maximum Sea Depth 12,500 FT (3811 meters)
3. Maximum External Pressure 5,500 psi (379 bar)

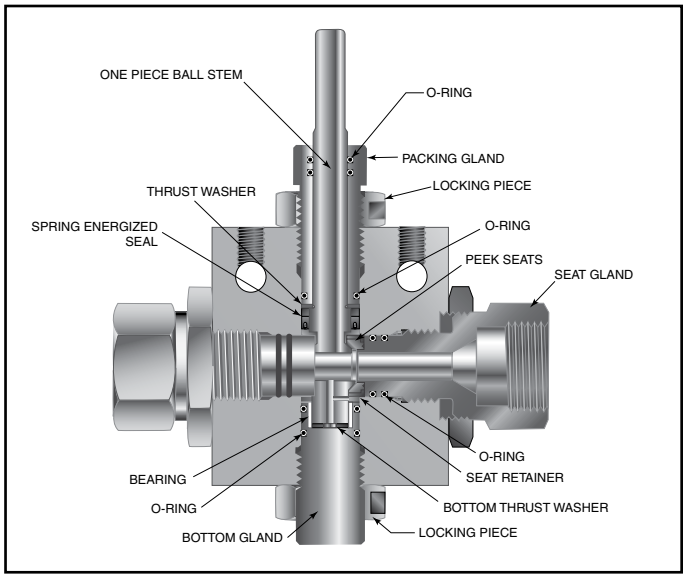
Dimensions for reference only and subject to change.

Ball Valves - 2-Way Subsea Series (3/8" Orifice)

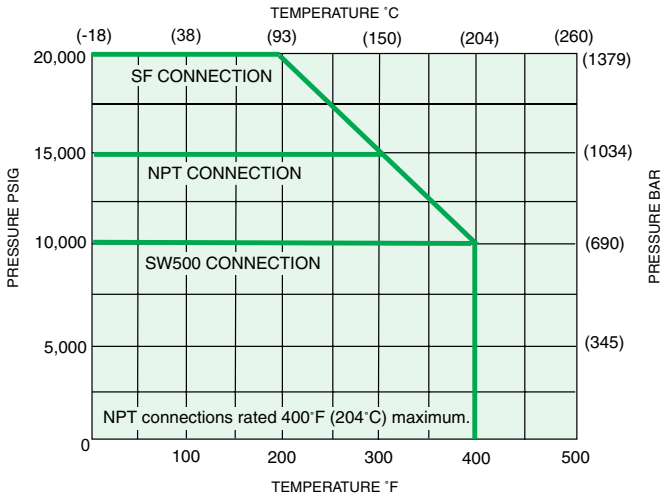
Pressures to 20,000 psi (1379 bar) .375" (9.52mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SW500	10,000 psi (690 bar)	.375 (9.52)
SF375CX20	20,000 psi (1379 bar)	.203 (5.16)
SF562CX20	20,000 psi (1379 bar)	.312 (7.92)
SF750CX20	20,000 psi (1379 bar)	.375 (9.52)
1/4" NPT	15,000 psi (1034 bar)	.375 (9.52)
3/8" NPT	15,000 psi (1034 bar)	.375 (9.52)
1/2" NPT	15,000 psi (1034 bar)	.375 (9.52)
	Valve C_V=3.51	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .375 inches only.
Consult factory for C_V of valves with reduced orifice sizes.



PRESSURE TEMPERATURE RATINGS



Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 6 S 20 M9**

S2B — **Valve Series** **Subsea**-2-way

6 — **Ball Orifice Diameter**
6-3/8" (9.52 mm)

S — **Material**
S - 316SS
(For material options contact factory)

20 — **Pressure (X 1000 psi)**

M9 — **End Connection**
M9 - SF562CX20 (See Chart on next page)

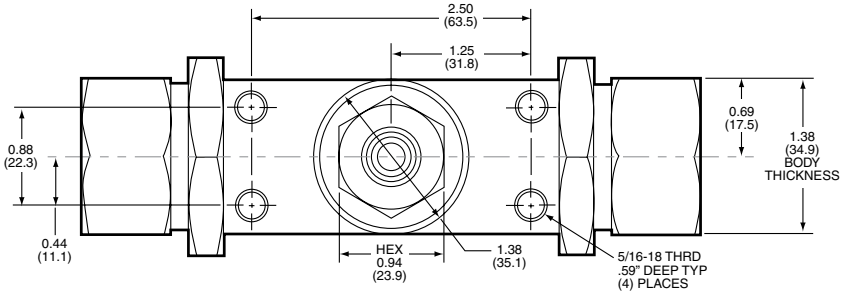
— **XXX** — **Options**
V - Viton: 400°F (204°C) max
EPDM - Ethylene Propylene: 250°F (121°C) max

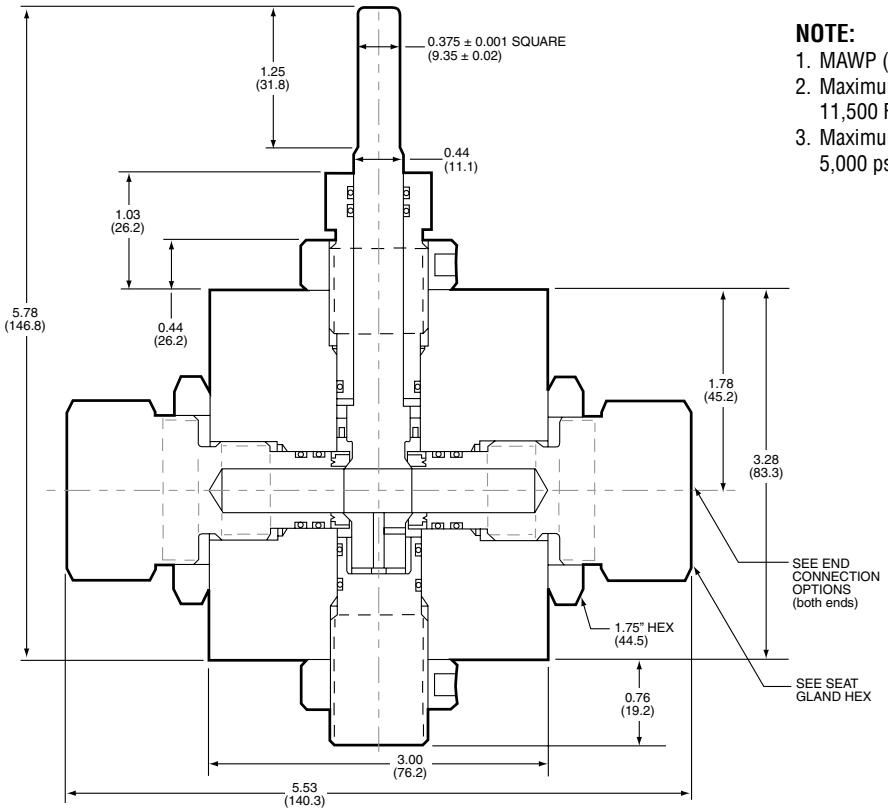
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B6S10L8	L8	SW500	10,000 psi (690 bar)	1.38 (35.05)
S2B6S20M6	M6	SF375CX20	20,000 psi (1379 bar)	1.38 (35.05)
S2B6S20M9	M9	SF562CX20	20,000 psi (1379 bar)	1.38 (35.05)
S2B6S20M12	M12	SF750CX20	20,000 psi (1379 bar)	1.38 (35.05)
S2B6S15P4	P4	1/4” NPT	15,000 psi (1034 bar)	1.38 (35.05)
S2B6S15P6	P6	3/8” NPT	15,000 psi (1034 bar)	1.38 (35.05)
S2B6S15P8	P8	1/2” NPT	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.





NOTE:
1. MAWP (See Table)
2. Maximum Sea Depth 11,500 FT (3505 meters)
3. Maximum External Pressure 5,000 psi (345 bar)

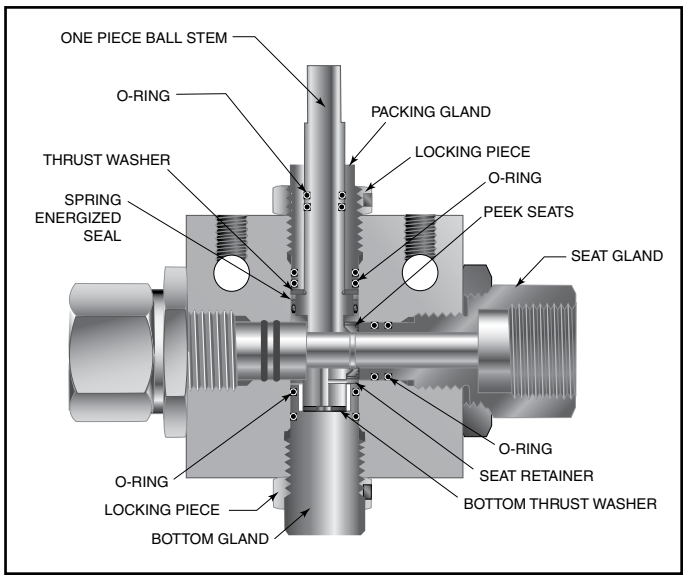
Dimensions for reference only and subject to change.

Ball Valves - 2-Way Subsea Series (1/2" Orifice)

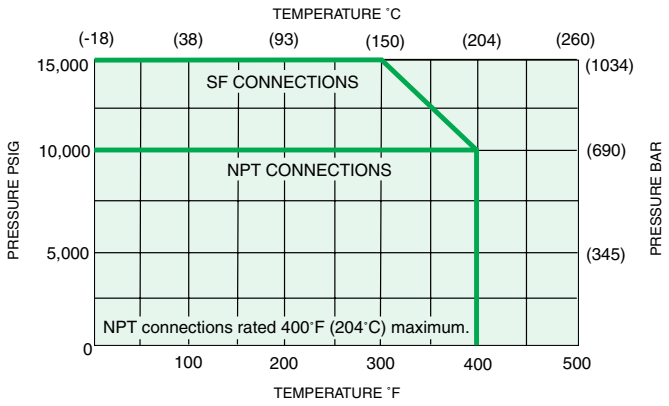
Pressures to 15,000 psi (1034 bar) .500" (12.7mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice Inches (mm)
SF750CX20	15,000 psi (1034 bar)	.500 (12.70)
SF1000CX20	15,000 psi (1034 bar)	.500 (12.70)
3/4" NPT	10,000 psi (690 bar)	.500 (12.70)
1" NPT	10,000 psi (690 bar)	.500 (12.70)
	Valve C_V=10.20	

MAWP: Maximum Allowable Working Pressure



PRESSURE TEMPERATURE RATINGS



Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 8 S 15 M12**

S2B — **Valve Series Subsea-2-way**

8 — **Ball Orifice Diameter**
8-1/2" (12.7 mm)

S — **Material**
S - 316SS
(For material options contact factory)

15 — **Pressure (X 1000 psi)**

M12 — **End Connection**
M12 - SF750CX20 (See Chart on next page)

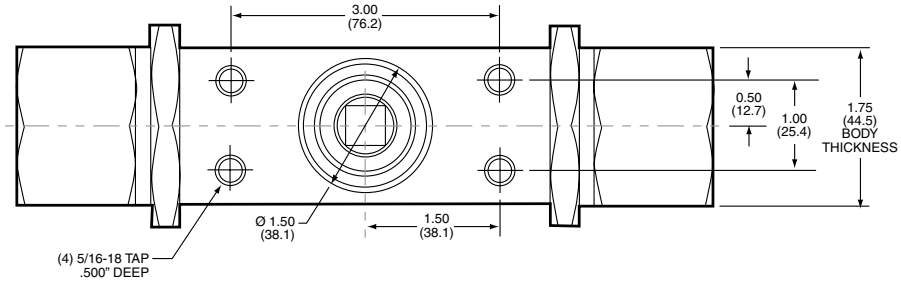
— **XXX** — **Options**
V - Viton: 400°F (204°C) max
EPDM - Ethylene Propylene: 250°F (121°C) max

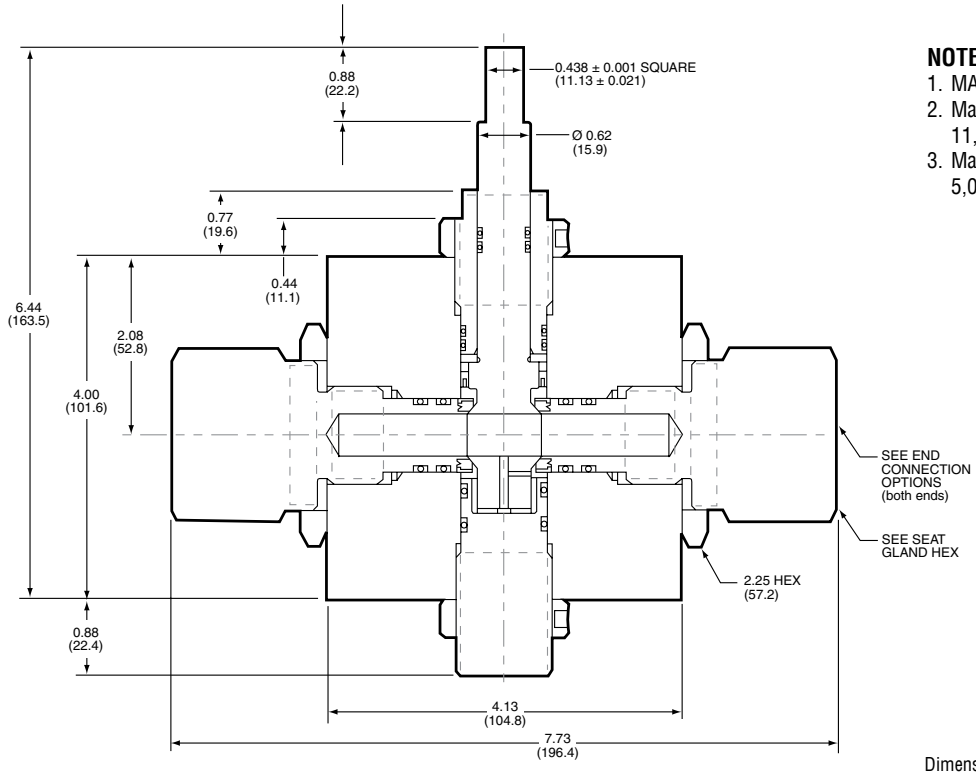
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B8S15M12	M12	SF750CX20	15,000 psi (1034 bar)	1.75 (44.5)
S2B8S15M16	M16	SF1000CX20	15,000 psi (1034 bar)	1.75 (44.5)
S2B8S10P12	P12	3/4” NPT	10,000 psi (690 bar)	1.75 (44.5)
S2B8S10P16	P16	1” NPT	10,000 psi (690 bar)	1.75 (44.5)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.





NOTE:
1. MAWP (See Table)
2. Maximum Sea Depth
   11,500 FT (3505 meters)
3. Maximum External Pressure
   5,000 psi (345 bar)

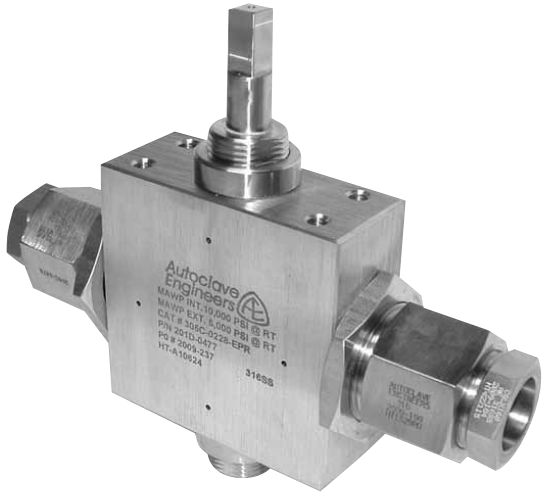
Dimensions for reference only and subject to change.

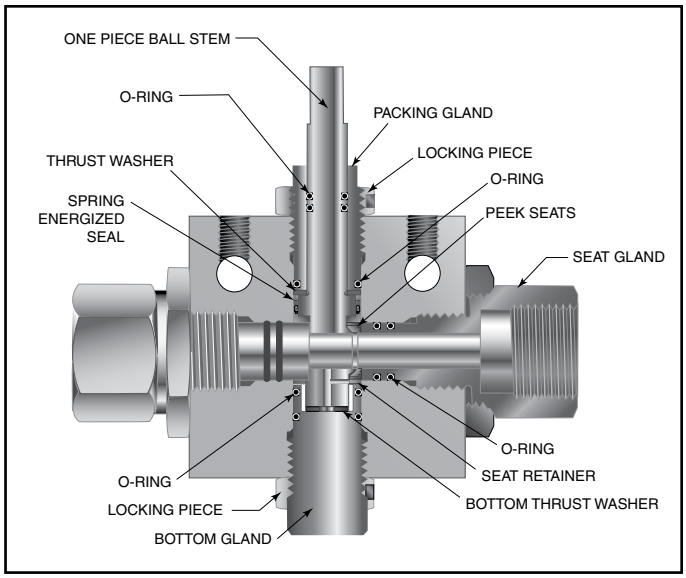
Ball Valves - 2-Way Subsea Series (3/4" Orifice)

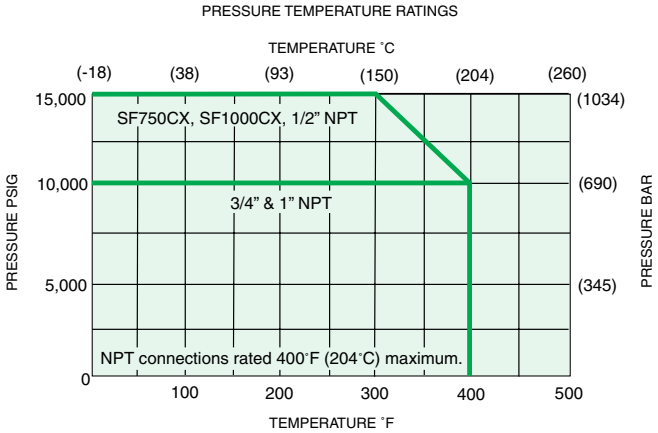
Pressures to 15,000 psi (1034 bar) .750" (19mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice Inches (mm)
SF750CX10	15,000 psi (1034 bar)	.516 (13.10)
SF1000CX10	15,000 psi (1034 bar)	.688 (17.47)
1/2" NPT	15,000 psi (1034 bar)	.688 (17.47)
3/4" NPT	10,000 psi (690 bar)	.75 (19.05)
1" NPT	10,000 psi (690 bar)	.75 (19.05)
	Valve C_V=21	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .750 inch only.
Consult factory for C_V of valves with reduced orifice sizes.







Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 12 S 15 M12** — **XXX**

S2B — **Valve Series**
Subsea-2-way

12 — **Ball Orifice Diameter**
12-3/4" (19.05 mm)

S — **Material**
S - 316SS
(For material options contact factory)

15 — **Pressure (X 1000 psi)**

M12 — **End Connection**
M12 - SF750CX10 (See Chart on next page)

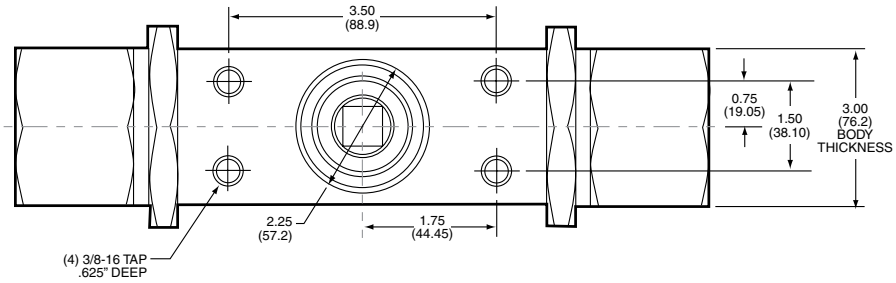
XXX — **Options**
V - Viton: 400°F (204°C) max
EPDM - Ethylene Propylene: 250°F (121°C) max

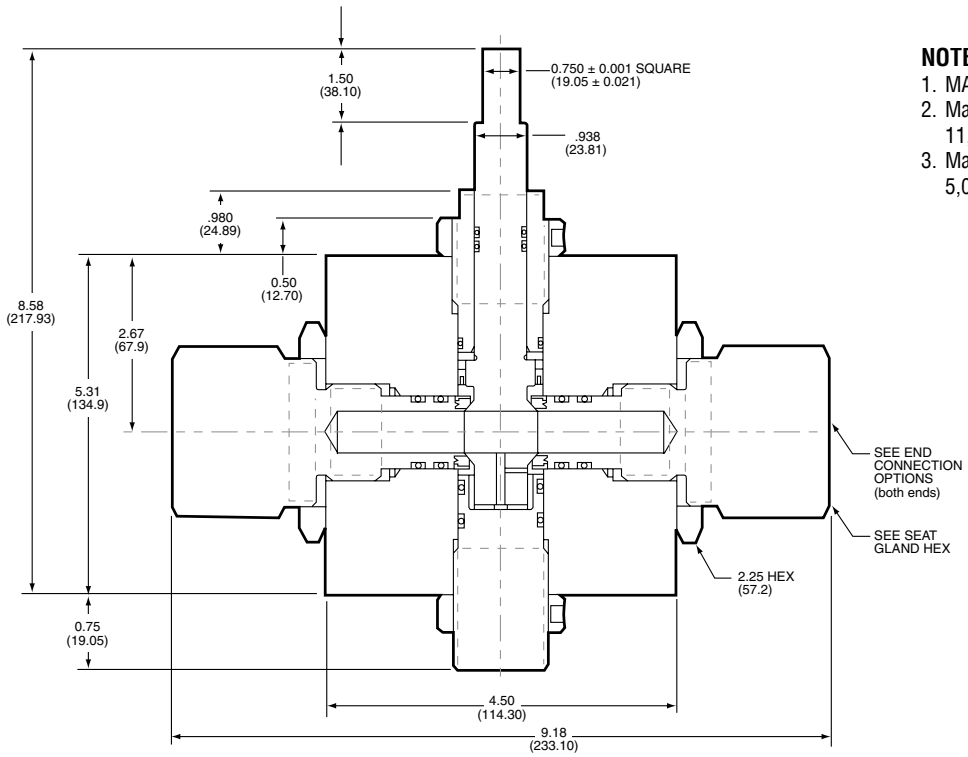
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B12S15M12	M12	SF750CX20	15,000 psi (1034 bar)	1.88 (47.8)
S2B12S15M16	M16	SF1000CX20	15,000 psi (1034 bar)	1.88 (47.8)
S2B12S15P8	P8	1/2” NPT	15,000 psi (1034 bar)	1.88 (47.8)
S2B12S10P12	P12	3/4” NPT	10,000 psi (690 bar)	1.88 (47.8)
S2B12S10P16	P16	1” NPT	10,000 psi (690 bar)	1.88 (47.8)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.





NOTE:

1. MAWP (See Table)
2. Maximum Sea Depth
   11,500 FT (3505 meters)
3. Maximum External Pressure
   5,000 psi (345 bar)

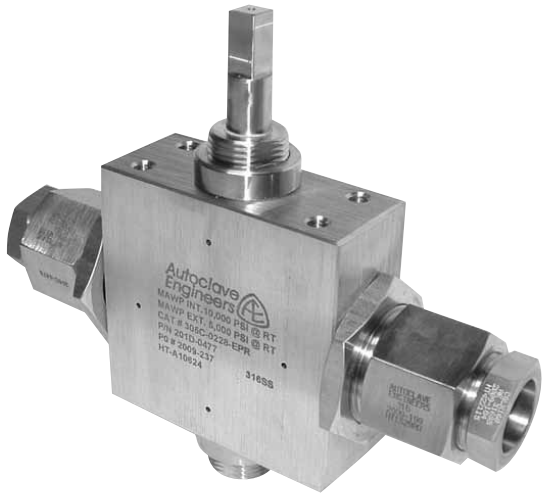
Dimensions for reference only and subject to change.

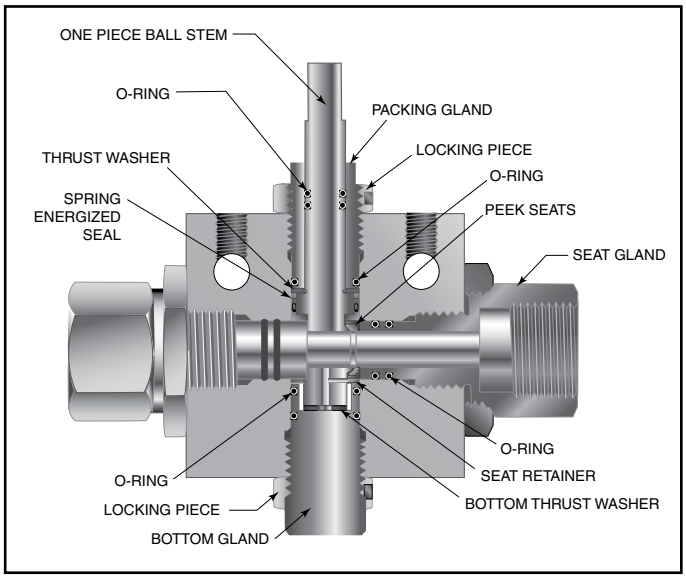
Ball Valves - 2-Way Subsea Series (1" Orifice)

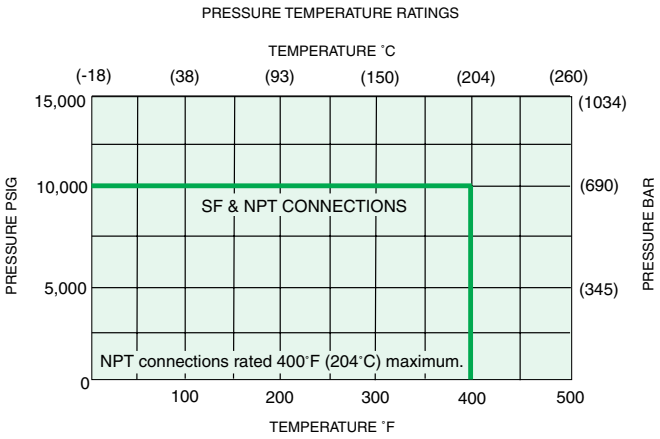
Pressures to 10,000 psi (690 bar) 1.00" (25.4mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice Inches (mm)	Valve C_V
SF1500CX	10,000 psi (690 bar)	.938 (23.83)	30
3/4" NPT	10,000 psi (690 bar)	1.00 (25.40)	34
1" NPT	10,000 psi (690 bar)	1.00 (25.40)	34

MAWP: Maximum Allowable Working Pressure







Pressure ratings are determined by the end connections chosen, see chart.

Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see next page. 2-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S2B 16 S 10 P16**

S2B — **Valve Series** — **Subsea**-2-way

16 — **Ball Orifice Diameter** — **16**-1" (25.4 mm)

S — **Material** — **S** - 316SS (For material options contact factory)

10 — **Pressure (X 1000 psi)**

P16 — **End Connection** — **P16** - 1" NPT (See Chart on next page)

— **XXX** — **Options**

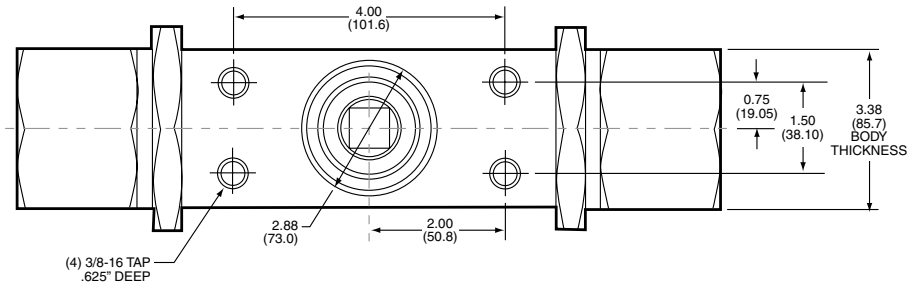
V - Viton: 400°F (204°C) max
EPDM - Ethylene Propylene: 250°F (121°C) max

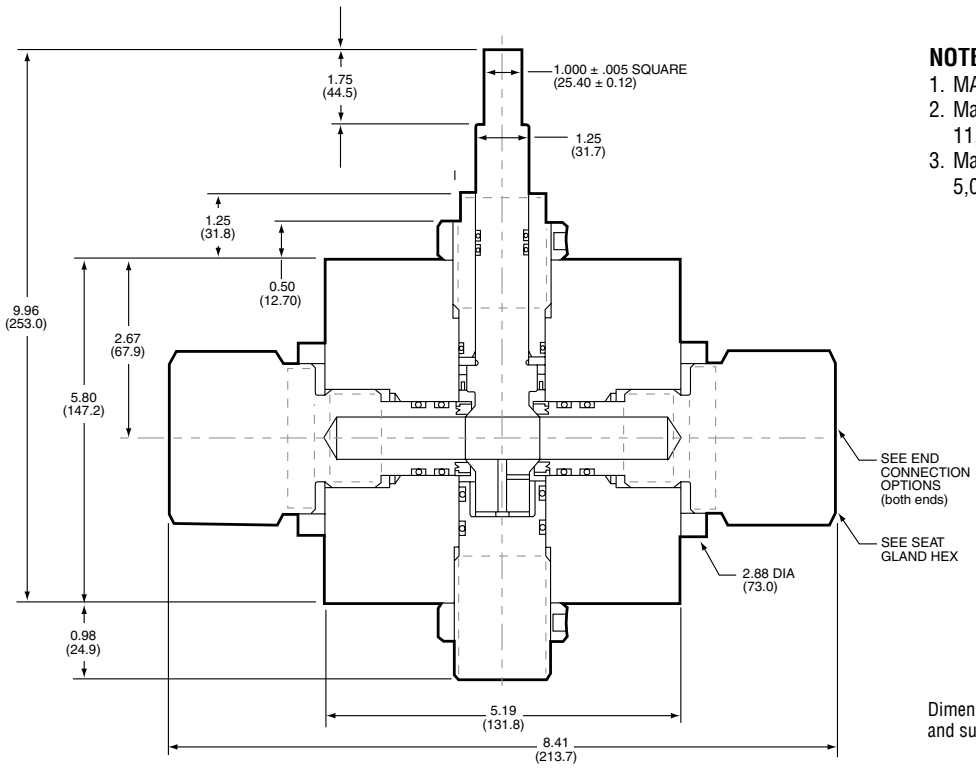
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S2B16S10M24	M24	SF1500CX	10,000 psi (690 bar)	1.88 (47.75)
S2B16S10P12	P12	3/4” NPT	10,000 psi (690 bar)	1.88 (47.75)
S2B16S10P16	P16	1” NPT	10,000 psi (690 bar)	1.88 (47.75)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.





NOTE:
1. MAWP (See Table)
2. Maximum Sea Depth 11,500 FT (3505 meters)
3. Maximum External Pressure 5,000 psi (345 bar)

Dimensions for reference only and subject to change.

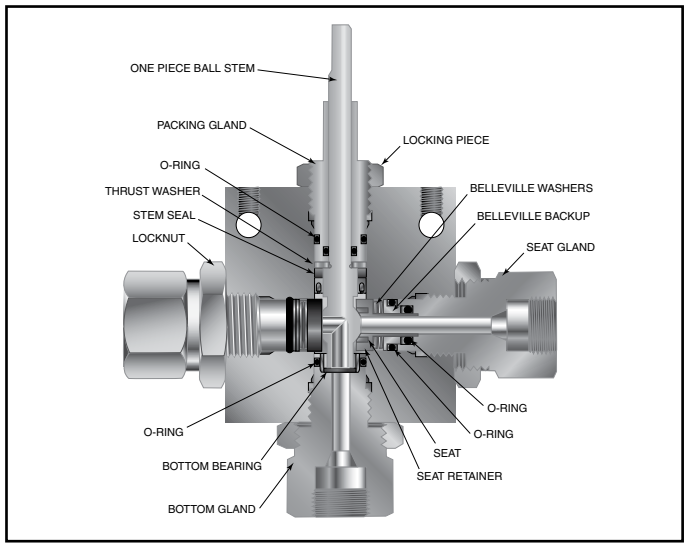
Dimensions for P12 and P16 connections only. Contact facotry for M16 dimensions.

Ball Valves - 3-Way Subsea Series (3/16" Orifice)

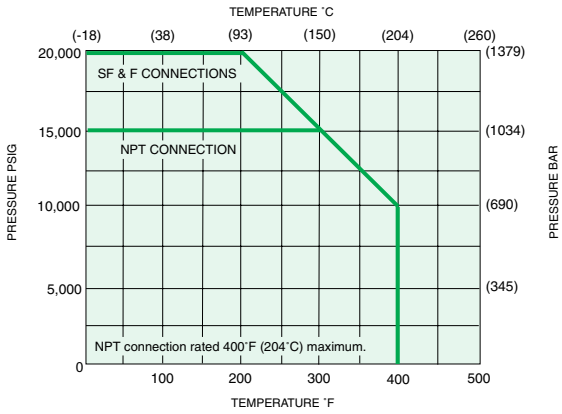
Pressures to 20,000 psi (1379 bar) .187" (4.77mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SF250CX20	20,000 psi (1379 bar)	.109 (2.77)
SF375CX20	20,000 psi (1379 bar)	.188 (4.77)
SF562CX20	20,000 psi (1379 bar)	.188 (4.77)
F250C	20,000 psi (1379 bar)	.094 (2.39)
F375C	20,000 psi (1379 bar)	.125 (3.17)
1/4" NPT	15,000 psi (1034 bar)	.188 (4.77)
3/8" NPT	15,000 psi (1034 bar)	.188 (4.77)
	Valve C_V=.50	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .188 inches only.
Consult factory for C_V of valves with reduced orifice sizes.



PRESSURE TEMPERATURE RATINGS



*pressure ratings are determined by the end connections chosen, see chart.
NOTE: Maximum side connection inlet pressure 15,000 psi (1034 bar).
Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

Note: Side inlet pressure not recommended. Bottom inlet pressure only.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see next page. 3-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S3BD 3 S 20 M9**

S3BD
Valve Series
S3B Subsea-3-way
S3BD Subsea-3-way diverter

3
Ball Orifice Diameter
3-3/16" (4.77 mm)

S
Material
S -316SS
(For material options contact factory)

20
Pressure (X 1000 psi)

M9
End Connection
M9 - SF562CX20 (See Chart on next page)

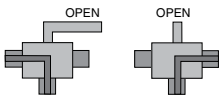
—

XXX
Options
V - Viton: 400°F (204°C) max
EPDM - Ethylene Propylene: 250°F (121°C) max

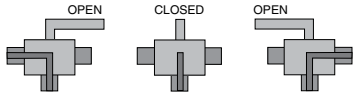
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S3B3S15M4 S3BD3S20M4	M4	SF250CX20	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15M6 S3BD3S20M6	M6	SF375CX20	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15M9 S3BD3S20M9	M9	SF562CX20	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15H4 S3BD3S20H4	H4	F250C	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15H6 S3BD3S20H6	H6	F375C	15,000 psi (1034 bar) 20,000 psi (1379 bar)	1 (25.40)
S3B3S15P4 S3BD3S15P4	P4	1/4" NPT	15,000 psi (1034 bar)	1 (25.40)
S3B3S15P6 S3BD3S15P6	P6	3/8" NPT	15,000 psi (1034 bar)	1 (25.40)

See ball valve option/detail section for end connection details, material, and high temperature options.

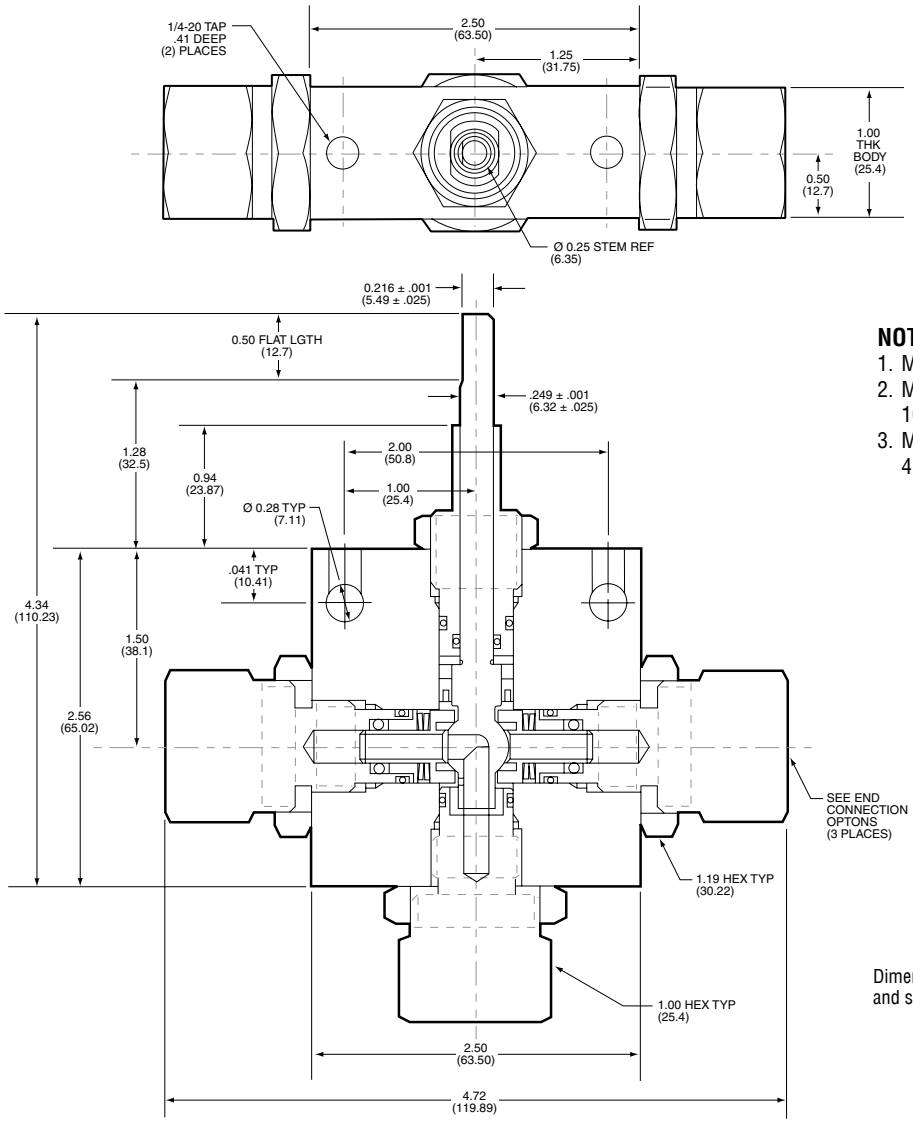


*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.



NOTE:
1. MAWP (See Table)
2. Maximum Sea Depth
   10,300 FT (3140 meters)
3. Maximum External Pressure
   4,500 psi (310 bar)

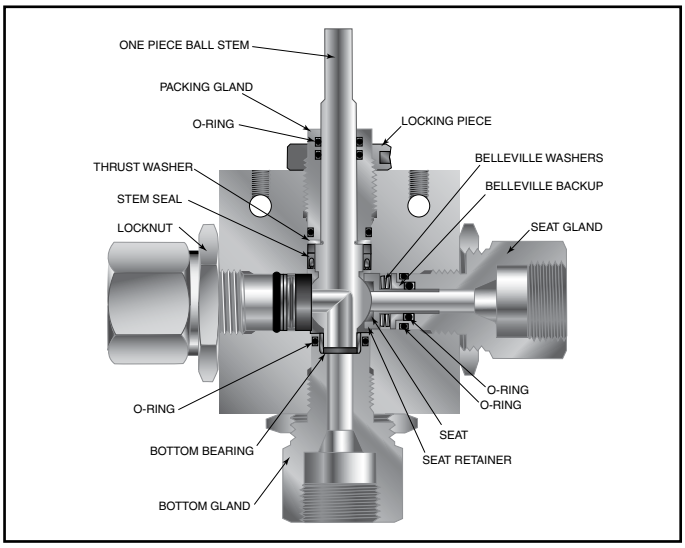
Dimensions for reference only
and subject to change.

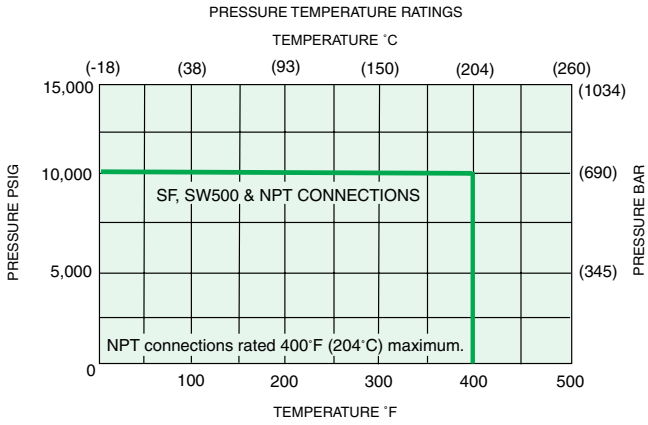
Ball Valves - 3-Way Subsea Series (3/8" Orifice)

Pressures to 10,000 psi (689 bar) .328" (8.33mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SW500	10,000 psi (690 bar)	.328 (8.33)
SF375CX20	10,000 psi (690 bar)	.203 (5.16)
SF562CX20	10,000 psi (690 bar)	.312 (7.92)
SF750CX20	10,000 psi (690 bar)	.328 (8.33)
1/4" NPT	10,000 psi (690 bar)	.328 (8.33)
3/8" NPT	10,000 psi (690 bar)	.328 (8.33)
1/2" NPT	10,000 psi (690 bar)	.328 (8.33)
	Valve C_V=2.1	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .328 inches only.
Consult factory for C_V of valves with reduced orifice sizes.





Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

Note: Side inlet pressure not recommended. Bottom inlet pressure only.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see next page. 3-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S3B 6 S 10 M9**

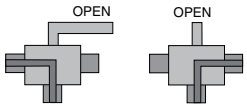
S3B	6	S	10	M9	—	XXX
Valve Series	**Ball Orifice Diameter**	**Material**	**Pressure (X 1000 psi)**	**End Connection**		**Options**
S3B Subsea-3-way **S3BD Subsea**-3-way diverter	**6**-3/8" (9.52 mm)	**S** -316SS (For material options contact factory)		**M9** - SF562CX20 (See Chart on next page)		**V** - Viton: 400°F (204°C) max **EPDM** - Ethylene Propylene: 250°F (121°C) max

End Connection Options

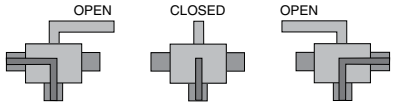
Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S3B6S10L8 S3BD6S10L8	L8	SW500	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10M6 S3BD6S10M6	M6	SF375CX20	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10M9 S3BD6S10M9	M9	SF562CX20	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10M12 S3BD6S10M12	M12	SF750CX20	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10P4 S3BD6S10P4	P4	1/4" NPT	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10P6 S3BD6S10P6	P6	3/8" NPT	10,000 psi (690 bar)	1.38 (35.05)
S3B6S10P8 S3BD6S10P8	P8	1/2" NPT	10,000 psi (690 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

See ball valve option/details section for end connection details, material, and high temperature options.

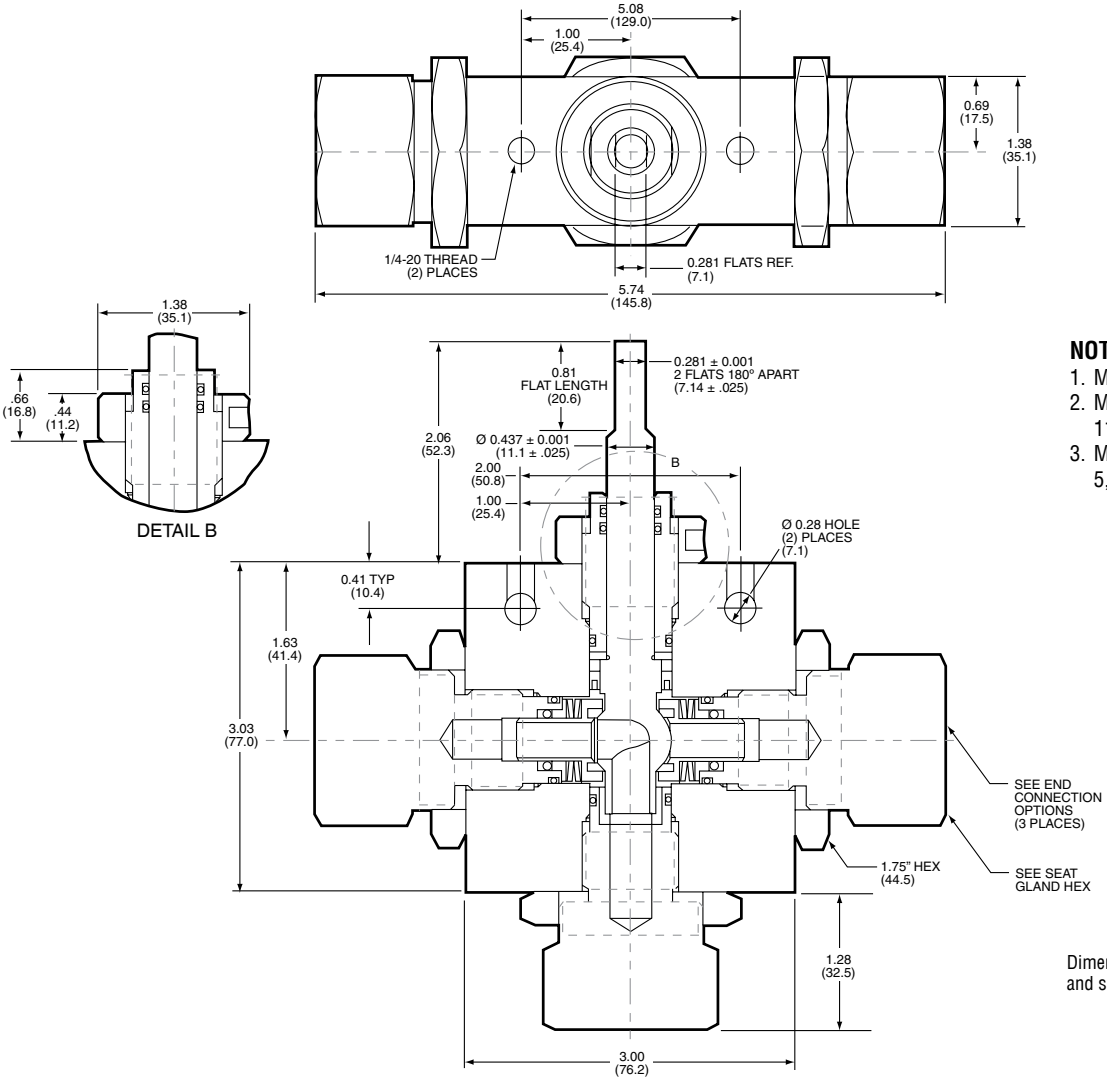


*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.



NOTE:

1. MAWP (See Table)
2. Maximum Sea Depth
   11,500 FT (3505 meters)
3. Maximum External Pressure
   5,000 psi (345 bar)

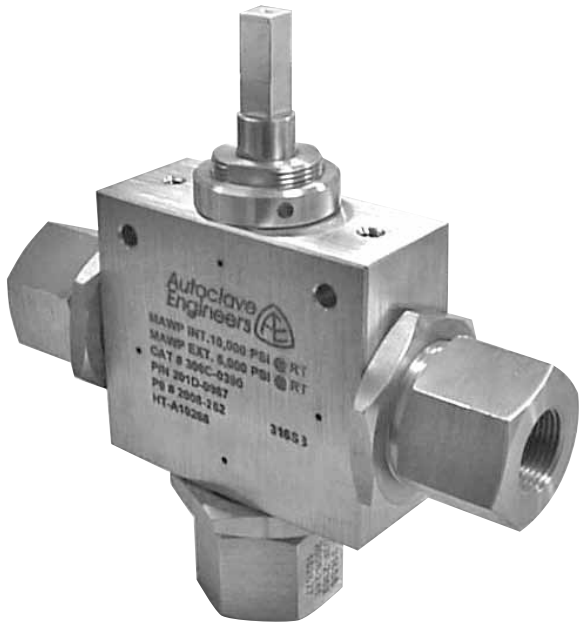
Dimensions for reference only and subject to change.

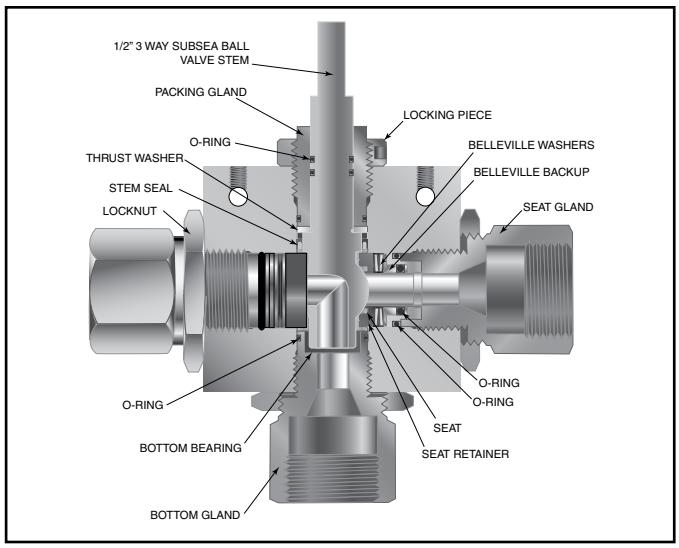
Ball Valves - 3-Way Subsea Series (1/2" Orifice)

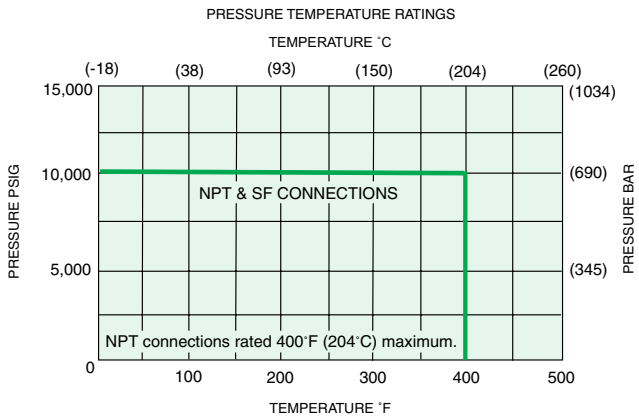
Pressures to 10,000 psi (690 bar) .500" (12.7mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
SF750CX20	10,000 psi (690 bar)	.500 (12.70)
SF1000CX20	10,000 psi (690 bar)	.500 (12.70)
3/4" NPT	10,000 psi (690 bar)	.500 (12.70)
1" NPT	10,000 psi (690 bar)	.500 (12.70)
	Valve C_V=4.4	

MAWP: Maximum Allowable Working Pressure







Maximum temperature rating is determined by the o-ring material (see descriptions below).

Maximum pressure rating is determined by the end connection (see table above).

Note: Side inlet pressure not recommended. Bottom inlet pressure only.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections, see next page. 3-way ball valves are furnished complete with tube or pipe connections. Standard valve has Buna-N o-rings [250°F (121°C)] max.

Typical catalog number: **S3B 8 S 10 M12**

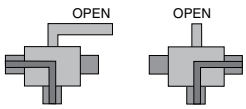
S3B	8	S	10	M12	—	XXX
Valve Series	**Ball Orifice Diameter**	**Material**	**Pressure (X 1000 psi)**	**End Connection**		**Options**
S3B Subsea-3-way **S3BD Subsea**-3-way diverter	**8**-1/2" (12.7 mm)	**S** -316SS (For material options contact factory)		**M12** - SF750CX20 (See Chart on next page)		**V** - Viton: 400°F (204°C) max **EPDM** - Ethylene Propylene: 250°F (121°C) max

End Connection Options

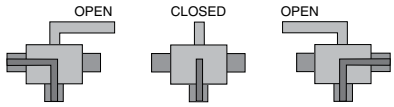
Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
S3B8S10M12 S3BD8S10M12	M12	SF750CX20	10,000 psi (690 bar)	1.75 (44.5)
S3B8S10M16 S3BD8S10M16	M16	SF1000CX20	10,000 psi (690 bar)	1.75 (44.5)
S3B8S10P12 S3BD8S10P12	P12	3/4” NPT	10,000 psi (690 bar)	1.75 (44.5)
S3B8S10P16 S3BD8S10P16	P16	1” NPT	10,000 psi (690 bar)	1.75 (44.5)

MAWP: Maximum Allowable Working Pressure

See ball valve options for end connection details, material, and high temperature options.

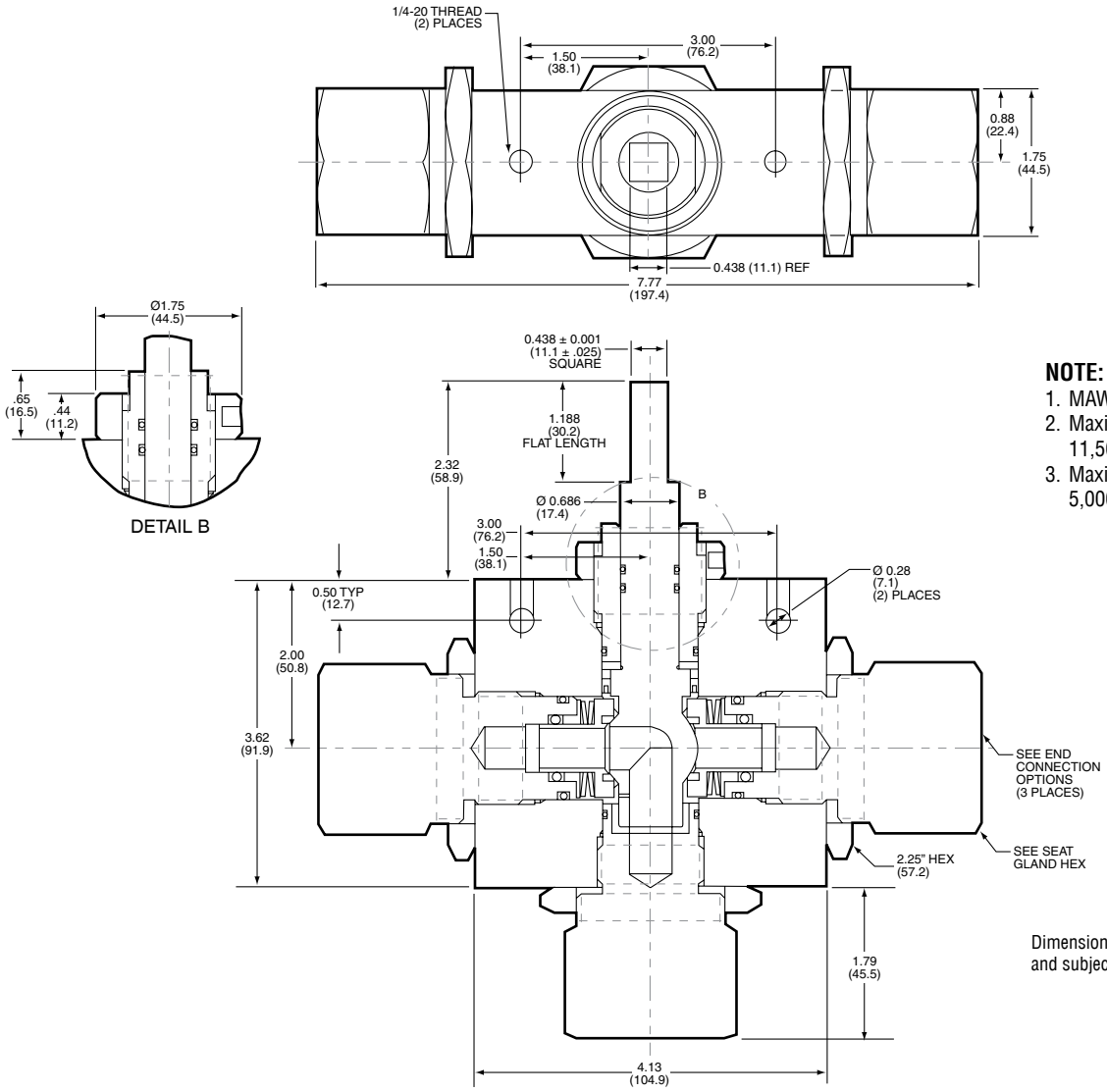


*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.



NOTE:

1. MAWP (See Table)
2. Maximum Sea Depth
   11,500 FT (3505 meters)
3. Maximum External Pressure
   5,000 psi (345 bar)

Dimensions for reference only and subject to change.

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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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02-0108SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Ball Valves
Actuators

Pneumatic Actuators
Electric Actuators

Parker Autoclave Engineers ball valves can be supplied with either pneumatic or electric operators for automated or remote operation.

Pneumatic and electric operators can be supplied with a variety of features and options. Operators are sized for each valve series to provide reliable and trouble free operation. Listed below are the operator features and available options.

Ball Valve Actuator Features/Options:

Pneumatic Operators

- Used for remote and automatic operation
- Air-to-open/spring-to-close
- Air-to-close/spring-to-open
- Air-to-open and close (double acting)
- Limit switches or limit switches with visual indicators available
- High temperature option available.
- Stainless steel housing for corrosive applications available.
- Optional solenoid valve available
- Standard anodized aluminum housing
- Optional epoxy coated housing available

Electric Operators

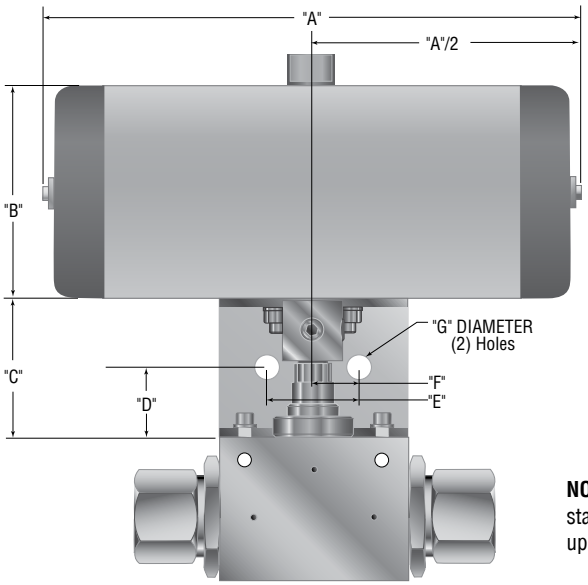
- Interface with control systems for automated operation and monitoring
- 120 & 220 VAC, 50/60 Hz standard
- 24VDC
- Explosion proof available
- CE mark available

Pneumatic Operated Ball Valves

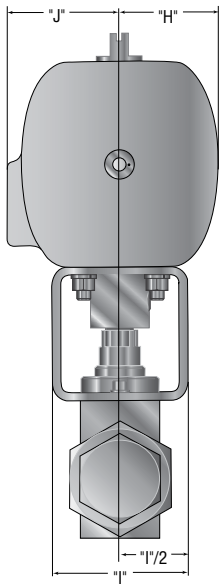
Add the suffix **-AO**, **-AC** or **-AOC** to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	DIMENSION DATA - Inches (mm)										MINIMUM REQUIRED AIR PRESSURE
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	
2B4-AO/AC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
2B6-AO/AC	9.84 (249.93)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.87 (47.49)	3.00 (76.20_)	2.24 (56.89)	80 psi (5.51 bar)
2B8-AO/AC *	11.65 (259.91)	4.57 (116.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.17 (55.11)	3.00 (76.20)	2.48 (62.99)	80 psi (5.51 bar)
3BD3-AO/AC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
3BD6-AO/AC *	9.84 (249.93)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.87 (47.49)	3.00 (76.20_)	2.24 (56.89)	80 psi (5.51 bar)
3BD8-AO/AC	11.65 (259.91)	4.57 (116.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.17 (55.11)	3.00 (76.20)	2.48 (62.99)	80 psi (5.51 bar)
2B4-AOC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
2B6-AOC	7.95 (201.93)	3.07 (77.97)	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	1.40 (35.56)	3.00 (76.20_)	1.77 (44.95)	80 psi (5.51 bar)
2B8-AOC	9.84 (249.91)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.87 (47.49)	3.00 (76.20)	2.24 (56.89)	80 psi (5.51 bar)
3BD3-AOC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
3BD6-AOC	7.95 (201.93)	3.07 (77.97)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.40 (35.56)	3.00 (76.20_)	1.77 (44.95)	80 psi (5.51 bar)
3BD8-AOC	9.84 (249.91)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.87 (47.49)	3.00 (76.20)	2.24 (56.89)	80 psi (5.51 bar)

NOTE:
- Maximum allowable air pressure is 150 psi (10.34)
- 1/8" NPT female air connector (*= 1/4" NPT)
- AO: Air to open/spring to close
- AC: Air to close/spring to open
- AOC: Air to open/air to close (double acting)
- Actuators operating temperature: 0°F to 175°F (-17°C to 79°C)
- High temperature actuator option available, consult factory
- Stainless steel housing actuator models available, consult factory
- Actuators available with limit switches and visual indicators.
- Corrosion resistant anodized aluminum housing.
- Epoxy coated housing available.
- Solenoids availabe, direct or nipple mount.



NOTE: Operators 90° rotations standard. 180° options available upon request.

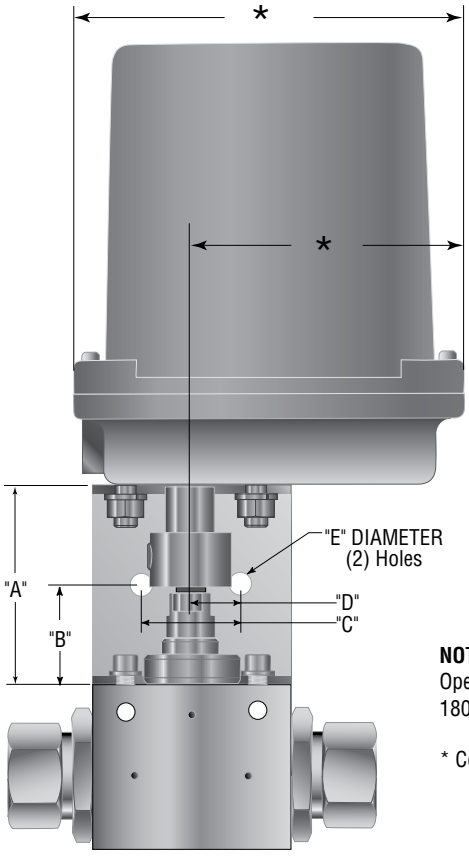


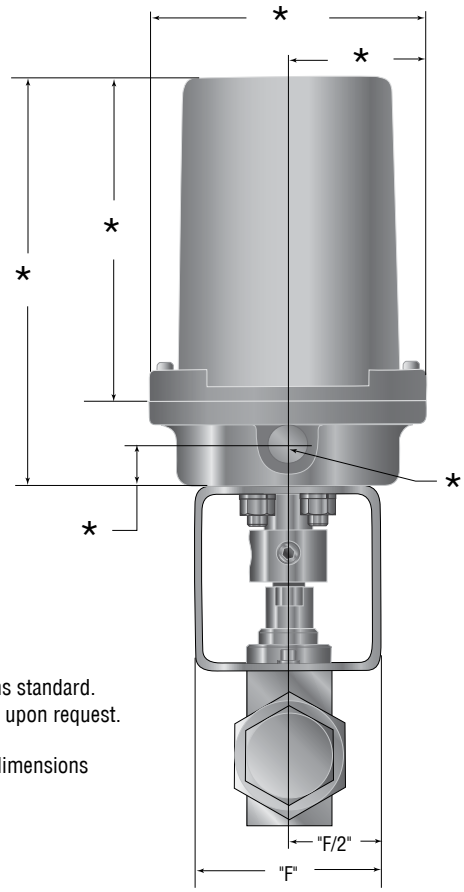
Electric Operated Ball Valves

Add the suffix **-EO1**, **-EO2** or **-EO3** to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	DIMENSION DATA - Inches (mm)						VOLTAGE	
	"A"	"B"	"C"	"D"	"E"	"F"		
2B4-EO1 2B4-EO2	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	120 VAC 240 VAC	50/60 Hz
2B6-EO1 2B6-EO2	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	120 VAC 240 VAC	50/60 Hz
3BD3-EO1 3BD3-EO2	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	120 VAC 240 VAC	50/60 Hz
3BD6-EO1 3BD6-EO2	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	120 VAC 240 VAC	50/60 Hz
2B4-EO3	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	24 VDC	
2B6-EO3	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	24 VDC	
3BD3-EO3	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	24 VDC	
3BD6-EO3	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	24 VDC	

NOTE:
- EO1: Electric 120 VAC
- EO2: Electric 220 VAC
- EO3: Electric 24 VDC
- CSA approved for NEMA 4 & 4X
- For other voltages consult factory
- Actuator operating temperature: 0°F to 160°F (-17°C to 71°C)
- Corrosive resistant Zytel housing
- Consult factory for epoxy option





NOTE:
Operators 90° rotations standard.
180° options available upon request.

* Contact factory for dimensions

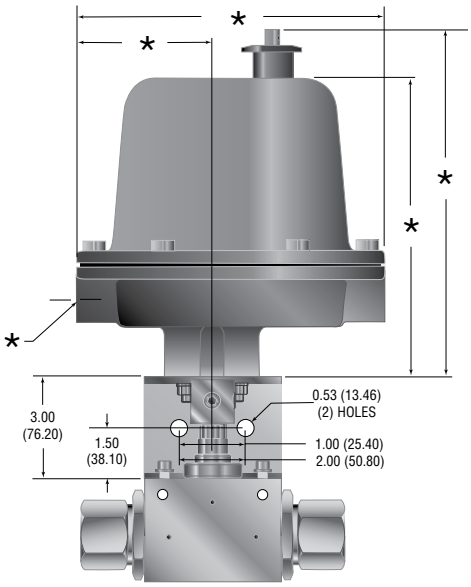
Electric Operated Ball Valves

Add the suffix **-EO1**, **-EO2** or **-EO3** to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	VOLTAGE 50/60 HZ	VALVE SERIES	VOLTAGE
2B8-EO1	120 VAC	2B8-EO3	24 VDC
3BD8-EO1	120 VAC	3BD8-EO3	24 VDC
2B8-EO2	220 VAC	2B8-EO3	24 VDC
3BD8-EO2	220 VAC	3BD8-EO3	24 VDC

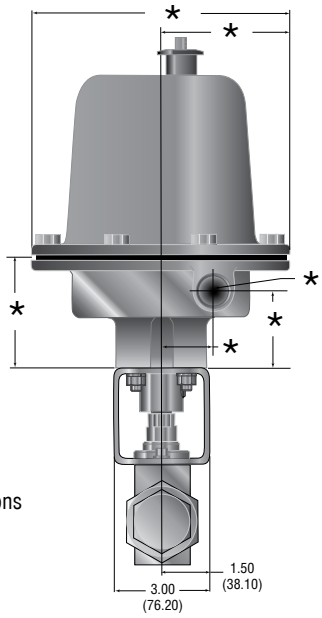
NOTE:

- EO1: Electric 120 VAC
- EO2: Electric 220 VAC
- EO3: Electric 24 VDC
- Explosion proof
- Actuator operating temperature: 0°F to 160°F (-17°C to 71°C)
- Powder coated aluminum housing
- CE marked
- UL listed & CSA approved for NEMA 4, 4x, 7 & 9
- For other voltages consult factory



NOTE:

* Contact factory for dimensions



WARNING

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

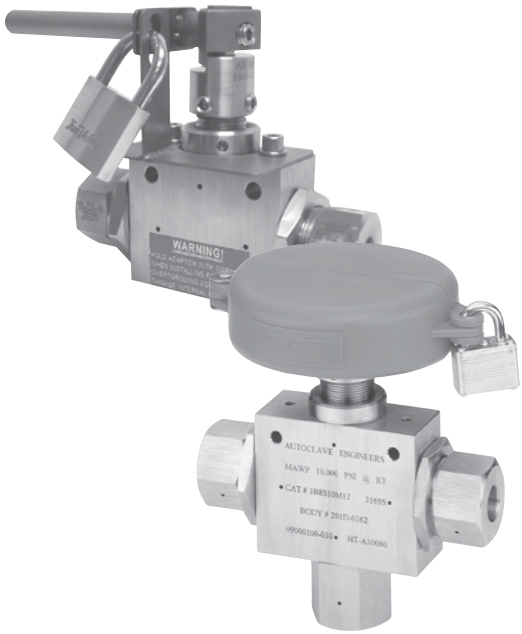
ISO-9001 Certified

Ball Valves
Options / Details

Parker Autoclave Engineers ball valves can be supplied with a number of options to meet your requirements. Options consist of different materials of construction, seal material, high temperature seals, handle colors, handle lockouts, limit switches or limit switches with visual indicators for pneumatic actuators.

Replacement of the old style ball valve with the new style is also addressed with complete ordering information.

The following pages provide details on the available options, as well as tube connection dimensions. For additional information on these options, or technical information not found in this or any other section, consult the factory or local distributor.



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High Temperature Option

Ball valves are available with alternate o-rings for high temperature operation. Standard Viton o-rings are replaced with Kalrez o-rings to increase the operating temperature to 500°F (260°C). To specify this option, add "-HT" to the catalog number as shown in the ball valve sections.

High temperature pneumatic valve actuators are also available. Consult factory with your application and for specific information.

Material Options

Standard ball valves are constructed of 316 stainless steel. Other materials are available for specific applications upon request. NACE (MR0175-2002) approved materials for sour service can be supplied upon request. Consult factory for later NACE revisions and for the materials available as well as the temperature and pressure ratings.

Limit Switches or Limit Switches with Visual Indicators

Pneumatic actuators are available with limit switches or limit switches with visual indicators. Consult the factory for information on these items or questions concerning your applications.

Handle Lockouts

Handle lockouts are available to lockout ball valves in the open or closed position preventing unauthorized personnel from actuating valves during shutdowns or emergency situations.
Note: To purchase ball valves with lockouts add -L to part number.

Part numbers to purchase lockout separately:

2-Way Ball Valves	3-Way Ball Valves
1/4" 2B4-L	3/16" 3B3-L
3/8" 2B6-L	3/8" 3B6-L
1/2" 2B8-L	1/2" 3B8-L

For 3-way switching ball valves, consult factory.
For 6DB (double block and bleed) valves use two 2B6-L lockouts.

Obsolete Ball Valves

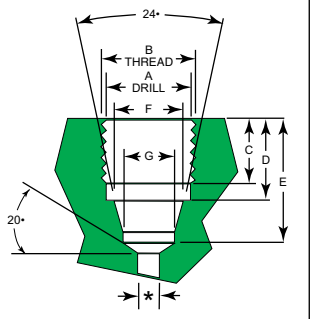
Ball valves complete with connection adapters are available for direct replacement of our older obsolete ball valve. The ball valve seat glands are designed to permit replacement without having to modify your existing tubing. To order valves for direct replacement add "-OS" to the end of the standard ball valve catalog number.
Note: This applies only to the 1/4" 2-way ball valve.

Connection Detail Dimensions

The following are reference dimensions for the tube connections used in the ball valves. For complete connection information see the Tools, Installation, Operation and Maintenance section in the Parker Autoclave Engineers Fluid Components complete catalog.

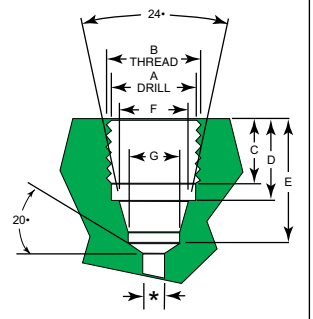
Tube Connection Dimensions - AE SpeedBite SW *

Tube Outside Diameter inches (mm)	Connection Type	Dimensions - Inches (mm)						
		A	B	C	D	E	F	G
1/4 (6.35)	SW250	29/64 (11.50)	1/2 -20 (12.7) -20	0.34 (8.64)	0.44 (11.20)	0.69 (17.50)	0.35 (8.89)	"F" 0.257 "F" (6.53)
3/8 (19.50)	SW375	37/64 (14.70)	5/8 -18 (15.90) -18	0.38 (9.65)	0.47 (11.90)	0.75 (19.10)	0.48 (12.20)	"W" 0.386 "W" (9.80)
1/2 (12.70)	SW500	3/4 (19.10)	13/16 -16 (20.60) -16	0.41 (10.50)	0.50 (12.70)	0.81 (20.60)	0.60 (15.20)	0.514 (13.100)



Tube Connection Dimensions - AE SpeedBite W *

Tube Outside Diameter inches (mm)	Connection Type	Dimensions - Inches (mm)						
		A	B	C	D	E	F	G
1/8 (3.18)	W125	"Q" 0.332 "Q" (8.43)	3/8 -24 (9.53) -24	0.22 (5.59)	0.31 (7.87)	0.47 (11.90)	0.19 (4.83)	#30 0.128 #30 (3.25)
1/4 (6.35)	W250	11/16 (17.50)	3/4 -16 (19.10) -16	0.38 (9.65)	0.44 (11.20)	0.69 (17.50)	0.35 (8.89)	"F" 0.257 "F" (6.53)
3/8 (9.53)	W375	11/16 (17.50)	3/4 -16 (19.10) -16	0.38 (9.65)	0.44 (11.20)	0.69 (17.50)	0.48 (12.20)	"W" 0.386 "W" (9.80)



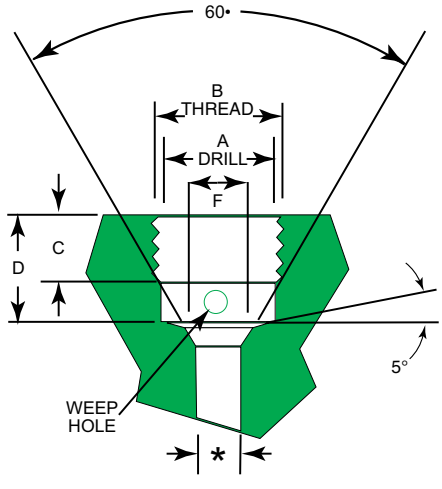
Note: All dimensions are shown for reference only and should not be considered as actual machine dimensions.

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

** For port diameter please see orifice sizes for specific valves and fittings. All threads are manufactured to a class 2A or 2B fit.*

Tube Connection Dimensions - AE Medium Pressure SFCX **

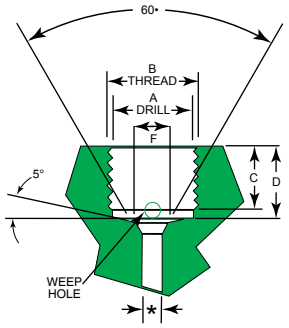
Tube Outside Diameter inches (mm)	Connection Type	Dimensions - Inches (mm)				
		A	B	C	D	F
1/4 (6.35)	SF250CX20	25/64 (9.92)	7/16 -20 (11.10) -20	0.28 (7.11)	0.50 (12.70)	0.19 (4.83)
3/8 (9.53)	SF375CX20	33/64 (13.10)	9/16 -18 (14.30) -18	0.38 (9.65)	0.62 (15.70)	0.31 (7.87)
9/16 (14.30)	SF562CX20	3/4 (19.10)	13/16 -16 (20.60) -16	0.44 (11.20)	0.75 (19.10)	0.50 (12.70)
3/4 (19.10)	SF750CX20	61/64 (24.20)	3/4 -14 Z (19.10) -14 Z	0.50 (12.70)	0.94 (23.90)	0.62 (15.70)
1 (25.40)	SF100CX20	1 -19/64 (32.90)	1-3/8 -12 (34.90) -12	0.81 (20.60)	1.31 (33.30)	0.88 (22.40)
1-1/2 (38.10)	SF1500CX	1-25/32 (45.24)	1-7/8-12 (47.63)-12	1.00 (25.40)	1.59 (40.49)	1.38 34.93)



Z = NPS Male Tap

Tube Connection Dimensions - AE HighPressure FC **

Tube Outside Diameter inches (mm)	Connection Type	Dimensions - Inches (mm)				
		A	B	C	D	F
1/4 (6.35)	F250C	33/64 (13.10)	9/16 -18 (14.30) -18	0.38 (9.65)	0.44 (11.20)	0.17 (4.32)
3/8 (9.53)	F375C	11/16 (17.50)	3/4 -16 (19.10) -16	0.53 (13.50)	0.62 (15.70)	0.26 (6.60)
9/16 (14.30)	F562C	1-3/64 (26.60)	1-1/8 -12 (28.60) -12	0.62 (15.70)	0.75 (19.10)	0.38 (9.65)



Note: All dimensions are shown for reference only and should not be considered as actual machine dimensions.

** For port diameter please see orifice sizes for specific valves and fittings.*

*** For male tubing end preparation, please see pages "Tools, Installation" section in main catalog.*

All threads are manufactured to a class 2A or 2B fit.

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ISO-9001 Certified

Relief Valve

Pressures to 75,000 psi (5171 bar)

RVP Metal Seat Relief Valves

Series RVP relief valves provide reliable venting of gases or liquids for set pressures from 3,000 psi (206.8 bar) minimum to 75,000 psi (5171 bar). The standard temperature range for all models is -423° to 400° (-252° to 204°C). A high temperature option to 750°F (399°C) is also available.

These precision valves are designed for pressure gas systems, cryogenic systems, petrochemical applications and other special systems. Capable of handling air, gases, steam, vapor and liquids, they are however, **not recommended for steam boiler applications nor are they ASME code stampable.**

RVS Soft Seat Relief Valves

Series RVS relief valves utilize a soft seat design for reliable venting of gases at set pressures from 1,500 psi (103 bar) to 20,000 psi (1378 bar). The operating temperature range is 32°F (0°C) to 400°F (204°C).

The soft seat design provides bubble tight sealing, repeatable pop-off, and reseat. Additionally, soft seat valves provide a higher cycle life than metal seat relief valves.

These precision valves are designed for pressure gas systems, where zero leakage is critical. They are not recommended for liquid nitrogen or liquid carbon dioxide, which produce gas at cryogenic temperatures upon relief.

Relief valves are designed to open proportionally to increasing pressure. Therefore, they are not recommended for applications requiring immediate full valve flow at set pressure (such as decompositions, polymerizations, etc.). Full flow of relief valve is defined at 10% over set pressure.

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AE Relief Valves Features

Materials: Standard models of Relief Valves are constructed of 316 stainless steel with selected components made of anti-galling stainless steel material for optimum economy and ruggedness.

Connections: All models except 30, 60, & 75 RVP series are designed with 9/16" Parker Autoclave Engineers Medium Pressure inlet connections. The 30 & 60 RVP have 3/8" high pressure connection, while the 75 RVP has a 5/16" high pressure connections. The outlet connection on all models is a female 3/4" NPT. While adapters to other sizes and connection types are available, they must be sized for specific flow requirements. See Adapter section.

Orifice Sizes: Orifice diameters range from .062 (1.57mm) to .312" (7.92mm).

Full Lift for Full Flow: These relief valves are designed to open as a function of increasing system pressure. Proper spring selection assures repeatability of opening, full lift and flow, and reseat pressures.

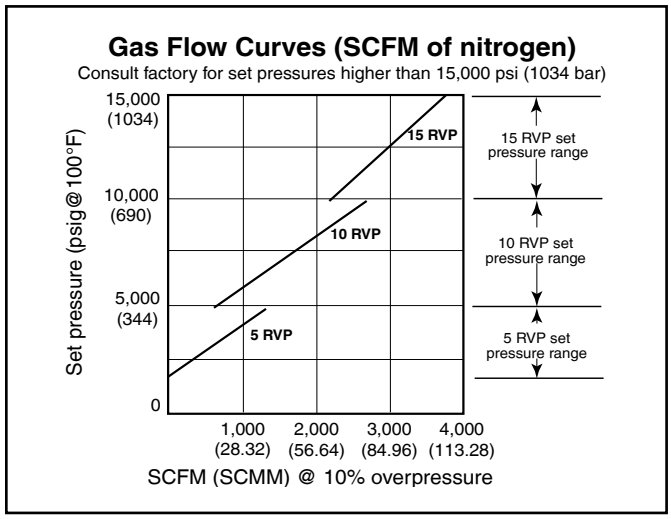
Reliability and Long Service Life: Materials engineering and stringent quality control procedures combine to assure the highest quality, reliability and service life. Each valve is preset and factory sealed to ensure proper valve operation.

High Set Pressure Capability: Unique seat construction plus over-the-nozzle guiding and proper selection of materials permits standard set pressures to 75,000 psi. (5171 bar)

Dependable Shut-off: Series RVP relief valves are designed to provide shut-off of liquids and gases under pressure to commercial tightness standards. Series RVS relief valves are designed to provide bubble tight shut off of gases.

Fewer Parts, Ease of Maintenance: Engineered to perform with fewer basic components, both RVP and RVS valves facilitate minimum stocking of spare parts and ease of maintenance. The combined angle seat in the RVP series eliminates the need for lapping in rework.

Special Requirements: Most models available with CE Mark. SOG option available upon request.



All RVP models are designed primarily for thermal expansion or low volume relief applications at high pressures where flow is not critical. Thus, liquid curves for these models are not shown.

Note: Curves on this page are based on capacities of valves only and do not take tubing into account.

Caution should be exercised in proper selection of medium pressure tubing based on actual operating conditions. Two series available: 15,000 (1034.20 bar) and 20,000 (1380 bar).

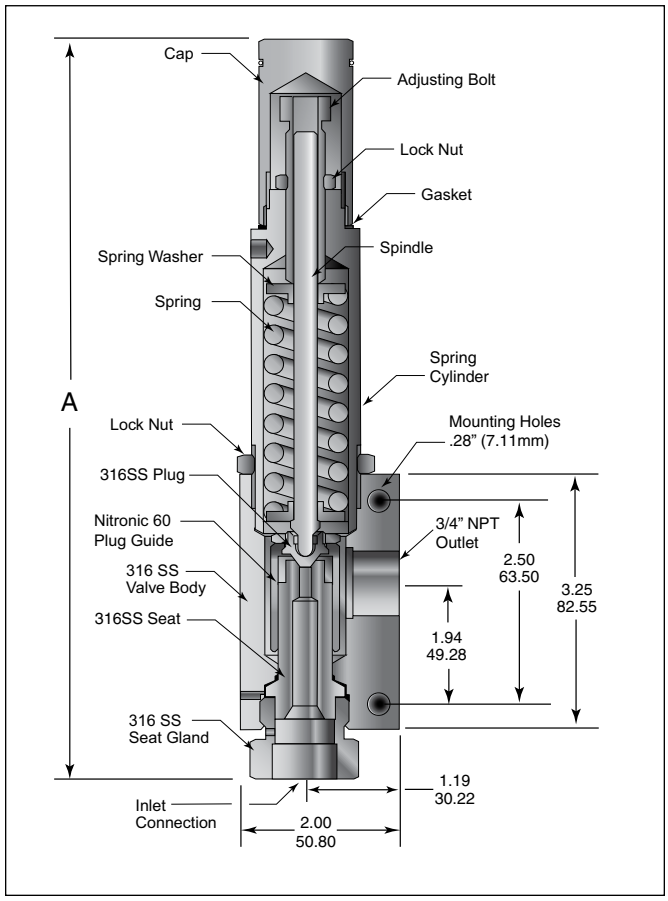


Figure 1 - RVP Series

Note: See back cover for options and ordering information.

Ordering Table and Specifications

RVP Series - See Figure 1

Catalog* Number	Connection Size and Type		Orfice Diameter inches (mm)	Pressure Rating psi (bar) @100°F (38°C)*			Dimension Inches (mm)
	Inlet Connection	Outlet Connection NPT		Minimum Setting	Maximum Setting	Maximum Back Pressure	A
5RVP9072	SF562CX	3/4	0.312 (7.92)	3,000 (206.84)	5,000 (344.73)	500 (34.47)	9.40 (238.76)
10RVP9072	SF562CX	3/4	0.250 (6.35)	5,000 (344.73)	10,000 (689.46)	500 (34.47)	9.40 (238.76)
15RVP9072	SF562CX	3/4	0.188 (4.78)	10,000 (689.46)	15,000 (1034.20)	500 (34.47)	9.40 (238.76)
20RVP9072	SF562CX	3/4	0.156 (3.96)	15,000 (1034.20)	20,000 (1378.93)	500 (34.47)	9.40 (238.76)
30RVP6072	F375C	3/4	0.125 (3.18)	20,000 (1378.93)	30,000 (2068.39)	500 (34.47)	9.52 (241.81)
45RVP9072	F562C	3/4	0.093 (2.36)	25,000 (1723.66)	45,000 (3102.59)	500 (34.47)	9.52 (241.81)
60RVP6072	F375C	3/4	0.078 (1.98)	30,000 (2068.39)	60,000 (4136.79)	500 (34.47)	9.52 (241.81)
75RVP5072	F312C150	3/4	0.062 (1.57)	37,000 (2551.02)	75,000 (5170.99)	500 (34.47)	9.83 (249.68)

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

Note: For pressure rating see selection chart.

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

Ordering Table and Specifications

Options: Parker Autoclave Engineers can supply various options on special order. A high temperature option is also available for temperatures to 750°F (399°C) for RVP models. Low temperature options are available for the soft seat valves.

To specify high temperature option:
Add suffix "HT" for 750°F (399°C) high temperature option (RVP series only)

Caution:

1. AE relief valves are preset and factory sealed. Warranty is voided if seal is broken by customer.
2. Maximum system operating pressure should not exceed 90% of relief valve set pressure.
   Operating pressures in excess of this may cause weep age resulting in damage to the plug and seat.

Ordering Instructions: To permit prompt and correct responses to your order, we will require the following information: quantity, valve catalog number, service requirements (liquid, gas & vapor), set pressure (PSIG - bar), and service temperature range.

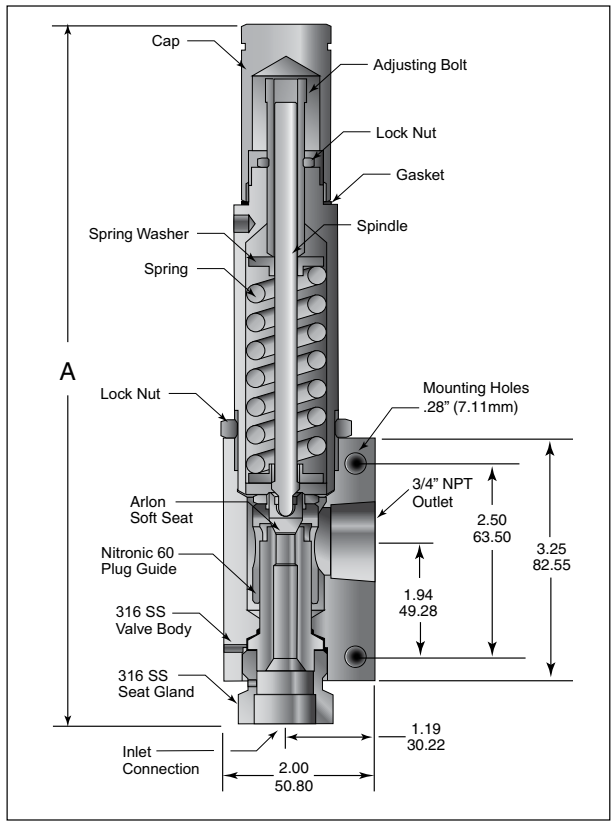


Figure 2 - RVS Series

RVS Series - See Figure 2

Catalog* Number	Connection Size and Type		Orfice Diameter inches (mm)	Pressure Rating psi (bar) @100°F (38°C)			Dimension Inches (mm)
	Inlet Connection	Outlet Connection NPT		Minimum Setting	Maximum Setting	Maximum Back Pressure	A
5RVS9072	SF562CX	3/4	0.312 (7.92)	1,500 (103.42)	5,000 (344.73)	500 (34.47)	9.40 (238.76)
10RVS9072	SF562CX	3/4	0.25 (6.35)	5,000 (344.73)	10,000 (689.46)	500 (34.47)	9.40 (238.76)
20RVS9072	SF562CX	3/4	0.156 (3.96)	10,000 (689.46)	20,000 (1378.93)	500 (34.47)	9.40 (238.76)

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.

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

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Custom Valves, Adapters & Manifolds

Parker Autoclave Engineer's offers special components designed to meet customer specific requirements.

The following pages provide a brief outline of our optional connections and valve styles. Other styles of connections are available such as flange, SAE, AE Easy-Union, or metric, upon request.

Manifolds are well suited for particular applications such as termination of common lines as a distribution source from a large line to several smaller ones. Parker Autoclave Engineers manifolds are made to customer specifications and can be rated up to 100,000 psi (6895 bar). Manifolds can be supplied with any number and variety of connections, including our medium and high-pressure connections, NPT, SAE, BSP, clamp-style, and others.

Components are available in non-standard materials, and can be supplied with special testing, cleaning or other requirements.

Specialty components such as adapters and dielectric fittings are available upon request.

Contact your local sales representative for availability and pricing of custom components.

Parker

Autoclave Engineers®

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Custom Valves, Adapters & Manifolds

Parker Autoclave Engineers offers a product line of non-standard valves and fittings with alternate style connections.

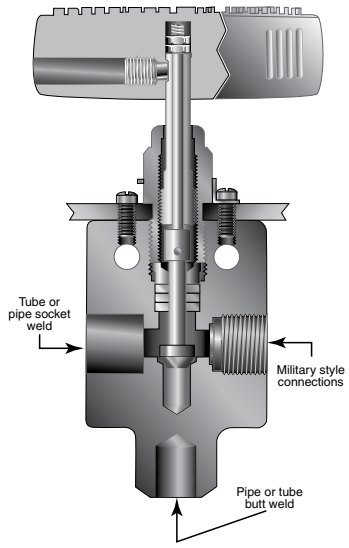
Military Style Connections
According to military standards
- MS16142
- MS33649
- MS33656

Up to 1” (25.4mm) in size.

Tube or Pipe Socket Weld
Weld connections up to 1” (25.4mm) in size.

Tube or Pipe Butt Weld
Weld connections up to 1” (25.4mm) in size.

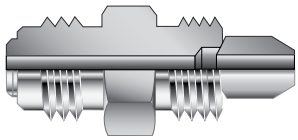
British Standard Pipe Threads



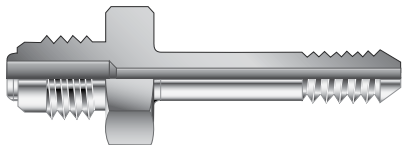
Special Adapters

Parker Autoclave Engineers also offers a line of components that assist in adapting into and out of specialized connections with Parker Autoclave Engineers medium pressure products. Along with the adapters shown, Parker Autoclave Engineers can provide other special adapters to fill requirements. Contact your local sales representative for information.

AE Medium Pressure (Male)



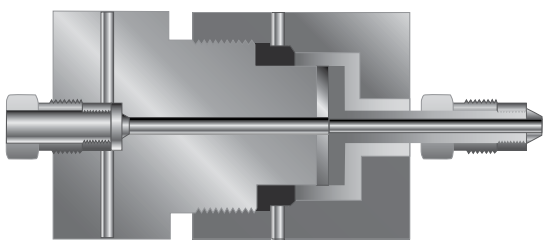
KC105 - 2 Piece



KC105 - 1 Piece

Dielectric Fittings

Dielectric couplings isolate components from the effects of electrical current. Available as male/female coupling rated to 15,000 psi (1034 bar) with selected connection sizes. For more information contact local sales or the factory



Metric, Special Material & Special Configuration Valves, Fittings & Tubing

Parker Autoclave Engineers medium and high pressure valves and fittings are available in a variety of special materials and configurations to satisfy most process requirements. Please refer to the Valve Options section for types of materials available and ordering information.

Other custom valves available include large port valves for ammonia, urea and polyethylene production service, and Y style straight-thru valves designed to minimize pressure drop.

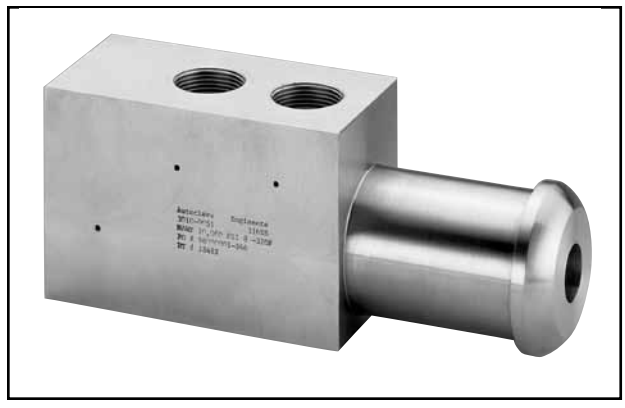
Contact your local sales representative to find out more about these custom products. See the metric section in this catalog for our complete line of metric valves, fitting and tubing line.

Manifold Block

Specialty pressure manifolds minimize space requirements and reduce the installation time necessary to plumb a pressure system. In addition, by reducing the number of components used in a system, manifolds also reduce the number of potential leak joints. Parker Autoclave Engineers will design and build pressure manifolds to meet specific installation, layout, and pressure requirements. These manifolds are capable of withstanding pressures from vacuum to 100,000 psi (6895 bar), and are available in a variety of materials and sizes. Among the pressure connections that can be incorporated are Parker Autoclave Engineers low, medium and high pressure, NPT, SAE, BSP and others. Transitions in system line sizes and tubing pressure can be accomplished through a specialty manifold. These manifolds are appropriate wherever pressure tubing systems are utilized.

Clamp Style Manifolds

Parker Autoclave Engineers will design and build manifolds with clamp-type metal to metal seats to meet customer specific applications. Manifolds can be designed with various sizes of clamp type closure are rated in accordance with the maximum rating of the clamp type closure or other connections, whichever is lower. A wide variation of connections can be supplied to meet required applications. These manifolds are used anywhere multiple ports are needed. They are often used on high pressure liquid nitrogen pumping systems or other gas/liquid handling systems requiring high flow capacities with dependable seal integrity.



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).

02-0131SE January2013

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ISO-9001 Certified

Accessories

Parker Autoclave Engineers offers a complete selection of accessories to complete your system requirements.

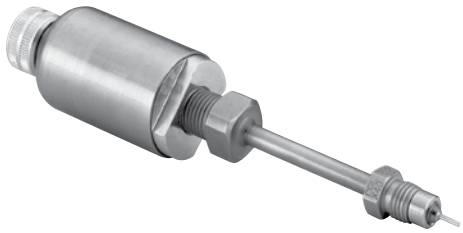
Components such as thermocouples and thermowells are used for monitoring and controlling temperatures in systems with operating pressures up to 100,000 psi (6895 bar).

Safety head assemblies are used to protect systems and pressure vessels from over-pressure conditions. Rupture discs are available in various pressure ranges and material options suitable for the application.

Pressure gauges are used to monitor and control pressure. Pressure gauges are available in two sizes, 4-1/2” and 6” (114.3 mm and 152.4 mm), and ranges from 0 to 80,000 psi (0 to 5116 bar). Optional electrical contact faces for pressure control are used to set high and low limits. Gauges are standard panel mount or can be flush mounted with an optional flush mount kit.

Gauge/instrument snubbers provide superior protection without compromising instrument accuracy or reaction time. Available with male and female connections in 1/4" and 3/8" sizes.

Accessories are also available as specials or non-standard items. Contact your local sales representative for more information.



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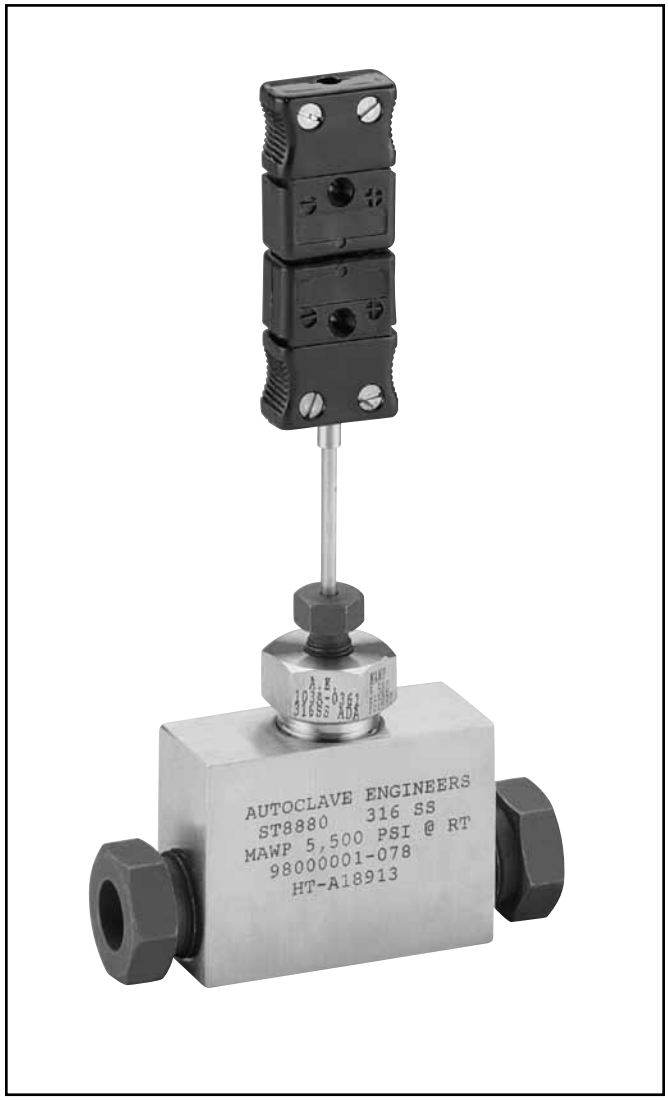
Accessories - Pencil-type Thermocouples

Pressures to 15,000 psi (1034 bar)

Thermocouples provide reliable temperature measurement within a system.

The design permits installation of the element in direct contact with the fluid stream, thereby providing reliable temperature measurement. The quick-connector affords system flexibility. The thermocouple tip has a grounded-type junction.



Materials

Precision-molded plastic connectors have heavy duty, spring-loaded jack inserts for positive contact. The sheath is type 316 stainless steel with 316 SS ferrule and gland. We offer a choice of iron constantan (J) or chromel-alumel (K) type elements (please specify when ordering). Basic assembly includes 1/8" Parker Autoclave Engineers Speedbite connection with adapters for other connection sizes.

Pressure/Temperature Ratings

Ratings to 15,000 psi (1034 bar) maximum working pressure. Temperature rating based on connection style. Low pressure Speedbite connection not recommended below 0°F (-17.8C) or above 650°F (343°C)

Ordering Information

Catalog order numbers in the table refer to the complete assembly. Add suffix"J" for iron constantan element or "K" for chromel-alumel. To order a basic thermocouple with plug/jack assembly and connection **(without through or angle block)**, change last digit in order number to "0" and specify sheath length if different from standard 3.62" (91.94 mm) length.

Ordering examples: TP4400K 6" (152.4 mm) denotes basic thermocouple to fit into a 1/4" Parker Autoclave Engineers SpeedBite connection with chromel-alumel element and 6" (152.4 mm) sheath. TP 4401K denotes the above unit complete with through-type block and standard 3.62" (91.94 mm) sheath.

Thermocouple Specification Table

Calibration Type	Type of Thermocouple	Temperature Range	Comments
J	Iron (+) Constantan (-)	32 - 1400°F (0 - 760°C)	Reducing atmoshphere recommended. Iron leg subject to oxidation to elevated temperatures-use larger gauge to compensate.
K	Chromel (+) Alumel (-)	-328 - 2300°F (-200 - 1260°)	Well suited for oxidizing atmosphere. Most commonly used calibration type.

Accessories - Pencil-type Thermocouples

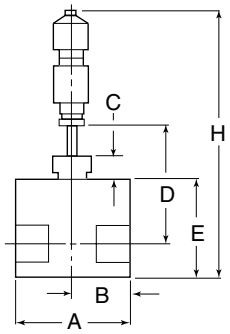
Catalog Number	Fits Connection Type	Tubing Size Inches (mm)	Dimensions - inches (mm)						Block Thickness	Fitting Pattern
			A	B	C	D	E	H		
Through-Type										
TP2201	W125	1/8	1.38	0.69	0.31	3.62	1.00	7.18	0.50	See Figure 1
		(3.18)	(35.05)	(17.53)	(7.87)	(91.95)	(25.40)	(182.37)	(12.70)	
TP4401	SW250	1/4	1.75	0.88	0.44	3.62	1.19	7.25	0.62	
		(6.35)	(44.45)	(22.35)	(11.18)	(91.95)	(30.23)	(184.15)	(15.75)	
TP6601	SW375	3/8	2.00	1.00	0.53	3.62	1.38	7.31	0.75	
		(9.52)	(50.80)	(25.40)	(13.46)	(91.95)	(35.05)	(185.67)	(19.05)	
TP8801	SW500	1/2	2.50	1.25	0.53	3.62	1.75	7.44	1.00	
		(12.70)	(63.50)	(31.75)	(13.46)	(91.95)	(44.45)	(188.98)	(25.40)	
Angle-Type										
TP2202	W125	1/8	1.00	0.75	0.31	3.62	1.38	7.62	0.50	See Figure 2
		(3.18)	(25.40)	(19.05)	(7.87)	(91.95)	(35.05)	(193.55)	(12.70)	
TP4402	SW250	1/4	1.19	0.88	0.44	3.62	1.75	7.81	0.62	
		(6.35)	(30.23)	(22.35)	(11.18)	(91.95)	(44.45)	(198.37)	(15.75)	
TP6602	SW375	3/8	1.38	1.00	0.53	3.62	2.00	7.94	0.75	
		(9.52)	(35.05)	(25.40)	(13.46)	(91.95)	(50.80)	(201.68)	(19.05)	
TP8802	SW500	1/2	1.75	1.25	0.53	3.62	2.50	8.19	1.00	
		(12.70)	(44.45)	(31.75)	(13.46)	(91.95)	(63.50)	(208.03)	(25.40)	

Note: All thermocouples are furnished complete with connection components unless otherwise specified.

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

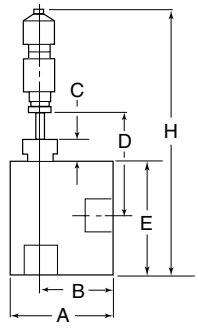
All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Figure 1



Through-Type

Figure 2



Angle-Type

Note: Tee or elbow is included in standard catalog number.

Accessories - Sheath-type Thermocouples

Pressures to 60,000 psi (4137 bar)

Thermocouples provide reliable temperature measurement within a fluid system.

Similar to low pressure thermocouples, this design also permits direct temperature monitoring at any point in a fluid system. The sheath type thermocouple features grounded junction and rapid response - 100 milliseconds or less at 63.3% of a step charge.

Temperature Rating

Rating to 2,000°F (1093°C) at tip of thermocouple. (Refer to adjacent Pressure/Temperature chart for elevated temperatures.) Minimum operating temperature 0°F (-17.8°C)

Sheath Length

Differs for each size connection for optimum tip contact with fluid stream.

Materials

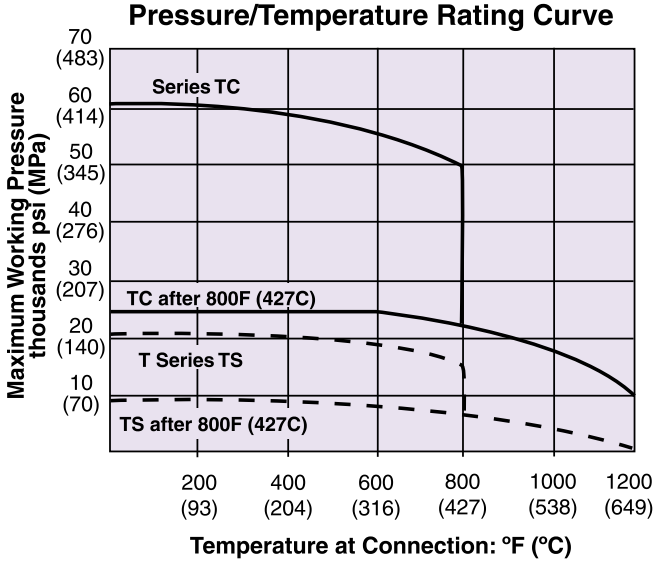
Bodies are 15-5PH stainless steel. 316 sheath brazed into body with gold-nickel alloy brazing material. An aluminum terminal housing is threaded into the body for ready access to terminals. An o-ring seal provides moisture protection.

Ordering Information

To order thermocouples for use in standard Parker Autoclave Engineers tees or crosses, use order numbers listed in table (**fittings not included as standard)**. For custom length sheaths, to extend through a vessel wall or cover, calculate sheath length as follows:

1. Add vessel wall or cover thickness to the distance the sheath will extend into vessel.
2. When using a basic 1/4" Autoclave connection, subtract dimension "M" for proper sheath length to order.
3. For all other connection sizes, add dimension "N" to measurement obtained in step 1.
4. Order a custom length sheath by adding desired length in inches as suffix to order number.

Pressure/Temperature Rating Curve



Standard collar and gland are cold worked 316 SS for use up to 1200°F (649°C). When cold worked 316 SS collar and gland are used, the physical properties are permanently altered after use above 800°F (427°C).

CAUTION: While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling, and age of the O-ring. FREQUENT INSPECTION SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.

CAUTION: See appropriate pressure section in reference to proper selection of tubing.

Accessories - Sheath-type Thermocouples

Catalog Number	Fits Connection Type	Tubing Size Inches (mm)	Element Type	Dimensions - inches (mm)				Fitting Pattern
				L	M	N	H	

Series TS 20,000 psi (1379 bar)

TSJ4	SF250CX	1/4	iron constantan	0.28	0.50		5.78	See Figure 1
TSK4		(3.18)	chromel-alumel	(7.11)	(12.70)		(146.81)	
TSJ6	SF375CX	3/8	iron constantan	1.19		0.19	6.67	
TSK6		(9.52)	chromel-alumel	(30.23)		(4.83)	(166.88)	
TSJ9	SF562CX	9/16	iron constantan	1.19		0.13	6.50	
TSK9		(14.28)	chromel-alumel	(30.23)		(3.30)	(165.10)	See
TSJ12	SF750CX	3/4	iron constantan	2.00		0.50	6.88	Figure 2
TSK12		(19.05)	chromel-alumel	(50.80)		(12.70)	(174.75)	
TSJ16	SF1000CX	1	iron constantan	2.62		0.57	6.94	
TSK16		(25.4)	chromel-alumel	(66.55)		(14.48)	(176.28)	
TSJ24	SF1500CX	1-1/2	iron constantan	3.25		.688	7.062	(See note below)
TSK24		(38.10)	chromel-alumel	(82.55)		(17.48)	(179.38)	

Series TC 60,000 psi (4137 bar)

TCJ4	F250C	1/4	iron constantan	0.38	0.50		5.88	See Figure 1
TCK4		(3.18)	chromel-alumel	(9.65)	(12.70)		(149.35)	
TCJ6	F375C	3/8	iron constantan	1.38		0.32	6.69	
TCK6		(9.52)	chromel-alumel	(35.05)		(8.13)	(169.93)	See
TCJ9	F562C	9/16	iron constantan	1.62		0.25	6.62	Figure 2
TCK9		(14.28)	chromel-alumel	(41.15)		(6.35)	(168.15)	

Note: All thermocouples are furnished complete with connection components unless otherwise specified.
Basic assembly includes 1/4" connection with adapters for other O.D. tube sizes.

TSJ24 and TSK24 do not extend past the wall of the bore.

Maximum pressure rating is based on the lowest rating of any component.
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Figure 1

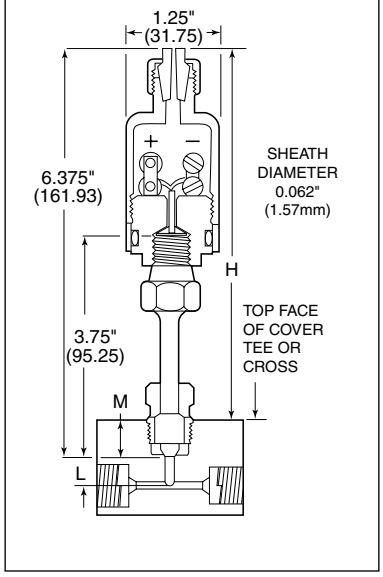
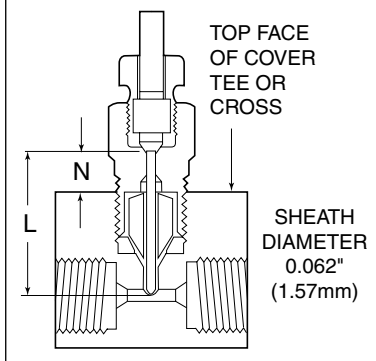


Figure 2



Note: The tee shown in both figures are for reference only. Tee is not included.

Accessories - Thermowells

Pressures to 20,000 psi (1379 bar)

Thermowells are used to provide isolation between a temperature sensor and the environment, such as liquid or gas. Thermowells protect the sensor from pressure, corrosion, abrasion or vibration caused by the process medium. Thermowells allow the temperature sensor to be removed and replaced without compromising either the ambient region or the process.

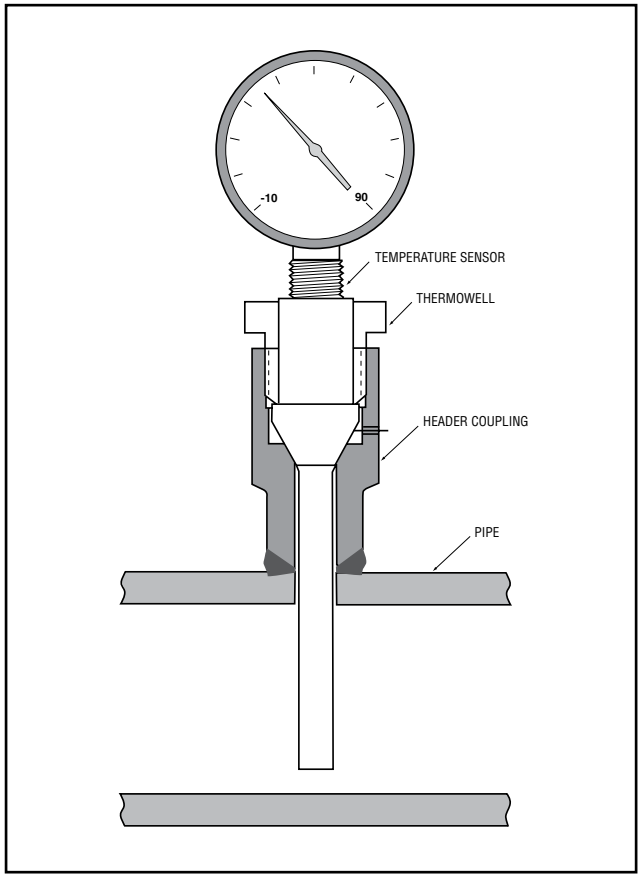
Parker Autoclave Engineers manufactures thermowells from solid bar stock to accommodate applications in the petro-chemical, chemical, refining, power and other process industries for many years.

Parker Autoclave Engineers manufactures 316SS thermowells capable of connecting to a 1" (SF1000CX) Parker Autoclave Engineers female medium pressure connection.

Care must be taken in determining the material used for the thermowell as well as other factors. Parker Autoclave Engineers offers design assistance that includes pressure, temperature and vibration effect of the fluids. This vibration can cause well stem failure.
Standard and special thermowell materials available:

- 316 Stainless Steel
- Hastelloy
- Inconel
- Connection gland included

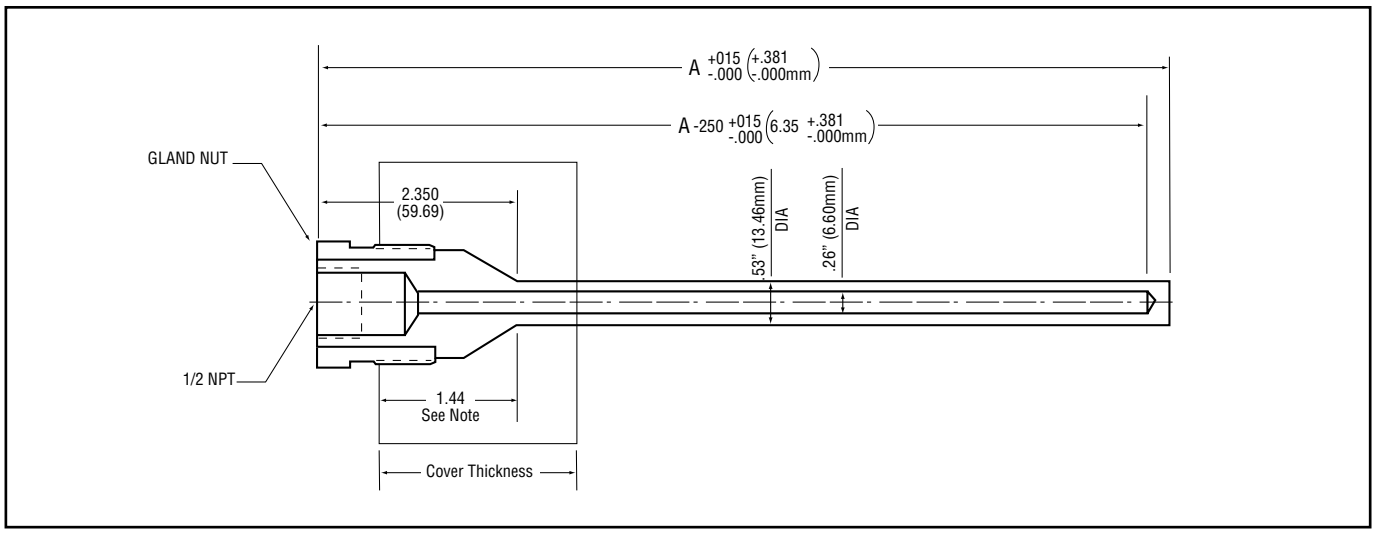
To order Parker Autoclave Engineers thermowell assemblies, please refer to our order guide to assist in determining your needs. Contact your local representative or the factory for technical assistance and application suggestions.



Typical Thermowell Assembly

Ordering Information

Catalog Number	Dimesion "A" in (mm)	Pressure Rating PSI (bar)
TW02.75	2.75 (70.68)	20,000 (1379)
TW03.12	3.12 (79.25)	20,000 (1379)
TW03.86	3.86 (98.04)	20,000 (1379)
TW04.25	4.25 (107.95)	20,000 (1379)
TW04.50	4.50 (114.30)	20,000 (1379)
TW05.50	5.50 (139.70)	20,000 (1379)
TW05.75	5.75 (146.05)	20,000 (1379)
TW06.25	6.25 (158.75)	20,000 (1379)
TW07.00	7.00 (177.80)	20,000 (1379)
TW07.50	7.50 (190.50)	20,000 (1379)
TW010.00	10.00 (254.00)	20,000 (1379)
TW012.00	12.00 (304.80)	20,000 (1379)



Note: Thermowells fit Autoclave's 1" medium pressure connection. (SF1000-CX). 1" connection insertion length is 1.44" (36.76).

Accessories - Universal Safety Heads

Pressures to 110,000 psi (7584 bar)

Safety Heads/Rupture Discs - Safety Heads and Rupture Discs offer an economical and dependable relief port to guard against system over-pressure.

Parker Autoclave Engineers offers universal safety heads in three series compatible in orifice size and maximum pressure rating with Parker Autoclave Low Pressure, Medium Pressure and High Pressure valves, fittings and tubing.

Parker Autoclave Engineers Low Pressure Series SS: Parker Autoclave SpeedBite Ermeto-type tube connection, maximum rupture pressures to 15,000 psi (1034 bar).

Parker Autoclave Engineers Medium Pressure Series CSX: Parker Autoclave Medium-Pressure coned-and-threaded tube connection, maximum rupture pressures to 20,000 psi (1379 bar).

Parker Autoclave Engineers High Pressure Series CS: Parker Autoclave High Pressure coned-and-threaded tube connection, maximum rupture pressure to 110,000 psi (7584 bar).

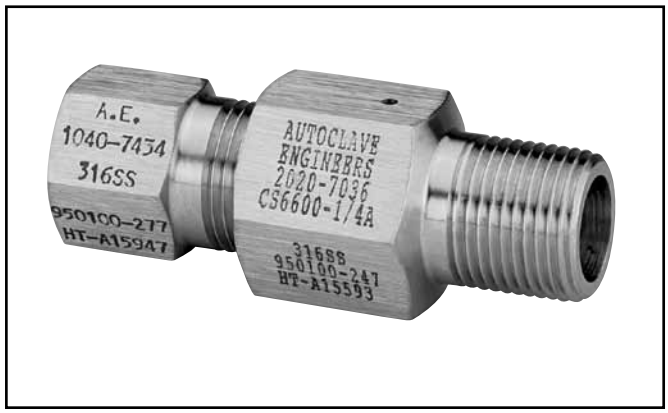
The 3/16F style features a 3/16" blow-out diameter and a flat seat which can be ordered in pressure range from 200 to 27,000 psi (13.8 to 1862 bar).

The 1/4A style features a 1/4" blow-out diameter and an angular seat which can be ordered in pressures from 900 to 60,000 psi (62 to 4137 bar).

The 1/4F style features a 1/4" blow-out diameter and a flat seat which is used for pressure above 60,000 psi (4137 bar).

The 1/2F style features a 1/2" blow-out diameter and a flat seat which can be ordered in pressures from 500 to 10,000 psi (35 to 690 bar).

ASME Safety Head - Parker Autoclave Engineers now has an ASME Section VIII Div. 3 safety head assembly rated to 115,000 psi (7929 bar).
Contact the factory or your local sales representative for details and ordering information.



Materials and Features

• Non-rotating double-cone plug design avoids galling and scoring of safety head or connection during installation. Reduces likelihood of leakage.

• Interchangeable hold-down rings permit use of several different sizes and types of rupture discs in a single safety head. Accommodates discs with rupture pressures as low as 90 psi (6.2 bar) and ranging to 60,000 psi (4137 bar) and above.

• Installs in any standard Parker Autoclave Engineers coupling, elbow, cross or tee.

• Cold-worked Type 316 SS body hold down gland and plug, all series.

• Hold down rings are corrossion resistant stainless steel.

Consult Local Sales Representative for safety head assemblies rated above 60,000 psi (4137 bar).

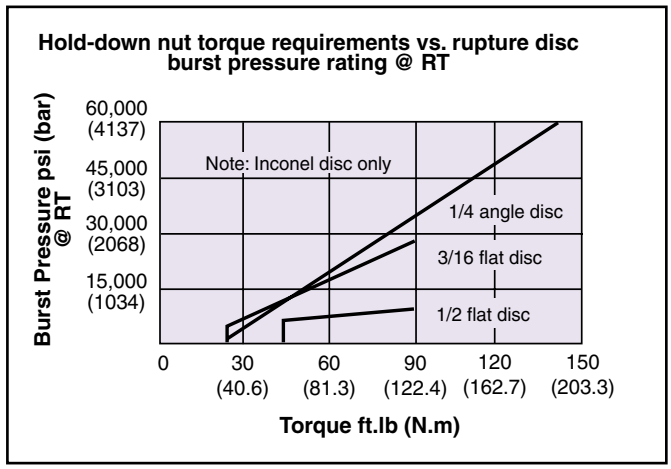
Ordering Information

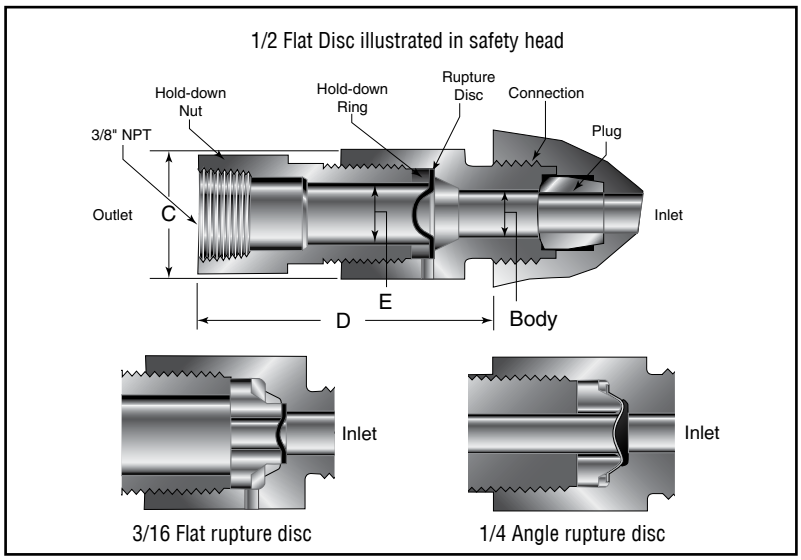
To order an Parker Autoclave Engineers Universal Safety Head, use the catalog order number from table. ADD THE SIZE OF THE RUPTURE DISC YOU WANT AS A SUFFIX TO THE CATALOG NUMBER; SUCH AS CS6600-1/4A. Then order desired rupture discs from rupture disc section. (This is important since the disc size determines which hold-down ring will be furnished with the safety head.) Note: Plug is included.

Hold-down nut torque values

Torque@ Minimum Pressure		Torque@ Maximum Pressure		Rupture Disc inches	Hold-down Ring Part Number
Ft. lb. (N.m)	psi (bar)	Ft. lb. (N.m)	psi (bar)		
20 (27.1)	5,000 (345)	90 (122.0)	26,500 (1827)	3/16 Flat†	112A-0439
40 (54.2)	4,000 (276)	90 (122.0)	10,000 (690)	1/2 Flat	1050-7434
20 (27.1)	4,000 (276)	140 (189.8)	60,000 (4137)	1/4 Angle	108A-0439

† 3/16 flat seat disc cannot be used with safety head assemblies SS6600, SS8600, 40CS9600 and CSX9600. Torque values for intermediate pressures may be linearily interpolated. Use minimum torque value for pressures lower than those shown.





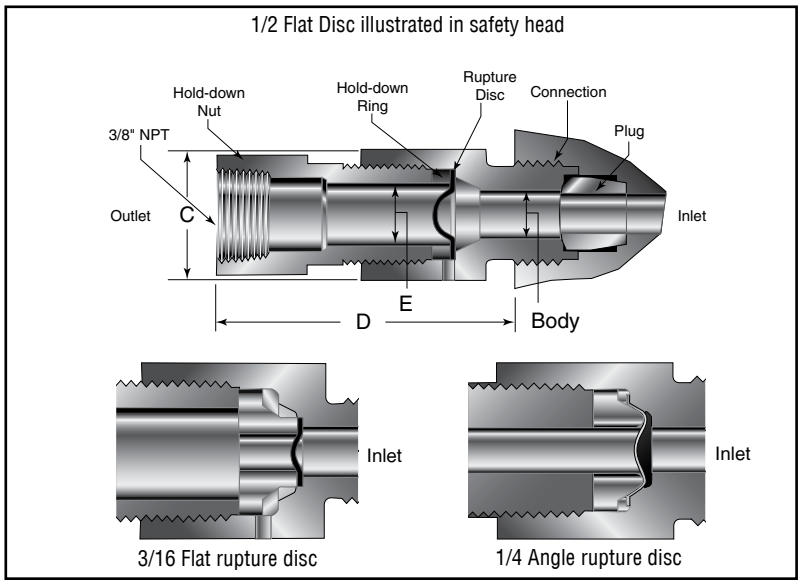
Catalog Number Without Disc	Body Part Number	Plug Part Number	Hold-down Gland Part Number	Fits Connection Type	Fitting Pressure Rating psi (bar)	Body Torque Ft.lb. (N.m)	Plug Orifice inches (mm)	Body Orifice inches (mm)	Rupture Disc Size inches (mm)			Dimensions inches (mm)	
									3/16F Port E*	1/4A Port E*	1/2F Port E*	C	D
Low-Pressure													
SS2600	2010-7035	101A-0434	3/16 & 1/2 Flat 1040-7434	W125	15,000 (1034.2)	15 (20.3)	0.094 (2.39)	0.125 (3.15)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.13 (53.96)
SS4600	2020-7035	102A-0434		SW250	15,000 (1034.2)	15 (20.3)	0.125 (3.18)	0.250 (6.35)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.13 (53.96)
SS6600	2030-7035	103A-0434	1/4 Angle 1030-0241	SW375	15,000 (1034.2)	15 (20.3)	0.250 (6.35)	0.375 (9.53)	NA	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.13 (53.96)
SS8600	2040-7035	104A-0434		SW500	10,000 (690.0)	20 (22.1)	0.375 (9.53)	0.375 (9.53)	NA	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.13 (53.96)

Port E* - Minimum disc blow-out diameter of hold down ring

Note: Interchangeable hold-down rings permit use of several different sizes and types of rupture disc in a single safety head.

Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.



Catalog Number Without Disc	Body Part Number	Plug Part Number	Hold-down Gland Part Number	Fits Connection Type	Fitting Pressure Rating psi (bar)	Body Torque Ft.lb. (N.m)	Plug Orifice inches (mm)	Body Orifice inches (mm)	Rupture Disc Size inches (mm)			Dimensions inches (mm)	
									3/16F Port E*	1/4A Port E*	1/2F Port E*	C	D
Medium-Pressure													
CSX4600	101A-1731	2010-7823	3/16 & 1/2 Flat 1040-7434	SF250CX	20,000 (1378.9)	15 (20.3)	0.094 (2.39)	0.141 (3.58)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.19 (55.63)
CSX6600	102A-1731	2010-7844		SF375CX	20,000 (1378.9)	20 (27.1)	0.171 (4.34)	0.250 (6.35)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.19 (55.63)
CSX9600	101A-0438	102A-0438	1/4 Angle 1030-0241	SF562CX	20,000 (1378.9)	30 (40.6)	0.312 (7.92)	0.375 (9.53)	NA	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.19 (55.63)
High-Pressure													
CS4600	2010-7036	1030-4877	3/16 & 1/2 Flat 1040-7434	F250C	60,000 (4136.8)	20 (2.8)	0.082 (2.08)	0.125 (3.18)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.25 (57.15)
CS6600	2020-7036	1030-6096		F375C	60,000 (4136.8)	40 (5.5)	0.125 (3.18)	0.219 (5.56)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.00 (25.4)	2.25 (57.15)
CS9600	2030-7036	1030-6097		F562C	60,000 (4136.8)	80 (11.1)	0.188 (4.78)	0.281 (7.13)	0.188 (4.78)	0.25 (6.35)	0.50 (12.7)	1.19 (30.23)	2.25 (57.15)
40CS9600	2030-7036	101C-7192	1/4 Angle 1030-0241	F562C40	40,000 (2757.9)	80 (11.1	0.250 (6.35)	0.281 (7.13)	NA	0.25 (6.35)	0.50 (12.7)	1.19 (30.23)	2.25 (57.15)

Port E* - Minimum disc blow-out diameter of hold down ring

Note: Interchangeable hold-down rings permit use of several different sizes and types of rupture disc in a single safety head.

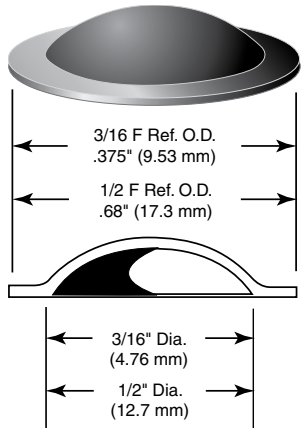
Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

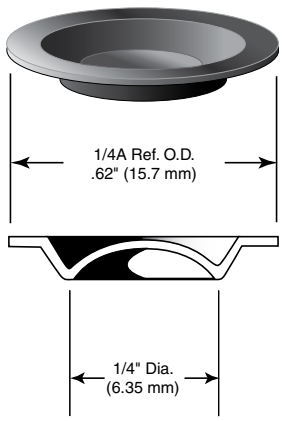
Ordering Information

- Specify quantity, disc size, type, material and temperature.
- Indicate desired rupture rating which should be at least 110% of operating pressure. The burst rating tolerance is +/- 5% of the furnished tag rating. Discs are rated at 72°F (22°C).
- 0% optional manufacturing range is available upon request. 0% option provides the burst pressure requested with a +/-5% burst tolerance.
- Minimum order of 6 discs required for materials other than Inconel.
- See next page for standard part numbers.

Note: Inconel disc normally available from stock.



Flat Seat Rupture Disc



30° Angular Seat Rupture Disc

Disc Material	Disc Size Seat Type	Rupture Pressures Standard Available Range ± 5%	Maximum Temperature Rating
	Inches	psi (bar)	°F (°C)
Aluminum	3/16 flat	220 to 1,750 (15.2 to 120.7)	250 (121)
	1/4 angle	160 to 2,000 (11.0 to 137.9)	250 (121)
	1/2 flat	90 to 1,000 (6.2 to 68.9)	250 (121)
Silver	3/16 flat	500 to 4,500 (34.5 to 310.3)	250 (121)
	1/4 angle	360 to 6,000 (24.8 to 413.7)	250 (121)
	1/2 flat	190 to 1,700 (13.1 to 117.2)	250 (121)
Hastelloy C	3/16 flat	4,400 to 65,000 (303.4 to 4481.5)	1,000 (538)
	1/4 angle	3,300 to 70,000 (227.5 to 4826.3)	1,000 (538)
	1/2 flat	1,000 to 11,500 (68.9 to 792.9)	1,000 (538)
Nickel	3/16 flat	770 to 20,000 (53.1 to 1378.9)	750 (399)
	1/4 angle	550 to 35,000 (37.9 to 2413.1)	750 (399)
	1/2 flat	300 to 7,500 (20.7 to 517.1)	750 (399)
Monel	3/16 flat	2,650 to 20,000 (182.7 to 1378.9)	800 (427)
	1/4 angle	2,000 to 40,000 (137.9 to 2757.9)	800 (427)
	1/2 flat	1,000 to 7,500 (68.5 to 517.1)	800 (427)
Inconel 600 (Standard)	3/16 flat	1,250 to 20,000 (86.2 to 1378.9)	900 (482)
	1/4 angle	900 to 75,000 (62.1 to 5171.0)	900 (482)
	1/2 flat	500 to 10,000 (34.5 to 690.0)	900 (482)
Type 316 Stainless Steel	3/16 flat	1,750 to 20,000 (120.7 to 1378.9)	900 (482)
	1/4 angle	1,250 to 60,000 (86.2 to 4136.8)	900 (482)
	1/2 flat	700 to 10,000 (48.3 to 690.0)	900 (482)

PTFE coating available on one or both sides to increase minimum rupture rating.

CAUTION: High pressure-to-rupture ratios, severe pressure or temperature cycling, corrosion and metal fatigue affect disc life and rupture pressure. Frequent disc replacement may be desirable to avoid premature rupture. Rupture disc manufacturers recommended a 140 to 170 percent margin on disc ratings for extended disc life.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Rupture Disc Stock Part List - 3/16 Flat Disc

Part Number	Description	Material	Pressure Range (psi)	Pressure Range (bar)
P-7003	3/16F DISC	Inconel	1940-2120	134-146
P-7674	3/16F DISC	Inconel	2231-2438	154-168
P-7005	3/16F DISC	Inconel	2910-3180	201-219
P-7007	3/16F DISC	Inconel	3201-3498	221-241
P-7009	3/16F DISC	Inconel	3880-4240	268-292
P-7011	3/16F DISC	Inconel	4365-4700	301-324
P-7013	3/16F DISC	Inconel	4850-5300	334-365
P-7015	3/16F DISC	Inconel	5141-5618	355-387
P-7017	3/16F DISC	Inconel	5335-5830	368-402
P-7018	3/16F DISC	Inconel	5626-6148	388-424
P-7019	3/16F DISC	Inconel	5723-6254	395-431
P-7020	3/16F DISC	Inconel	5820-6360	401-439
P-7021	3/16F DISC	Inconel	6014-6572	415-453
P-7022	3/16F DISC	Inconel	6111-6678	421-460
P-7024	3/16F DISC	Inconel	6305-6890	435-475
P-7026	3/16F DISC	Inconel	6790-7420	468-512
P-7028	3/16F DISC	Inconel	7275-7950	502-548
P-7030	3/16F DISC	Inconel	7760-8480	535-585
P-7032	3/16F DISC	Inconel	8245-9010	568-621
P-7034	3/16F DISC	Inconel	8730-9540	602-658
P-7040	3/16F DISC	Inconel	10185-11130	702-767
P-7044	3/16F DISC	Inconel	11155-12190	769-840
P-7046	3/16F DISC	Inconel	11640-12720	803-877
P-7048	3/16F DISC	Inconel	12125-13250	836-914
P-7050	3/16F DISC	Inconel	12610-13780	869-950
P-7052	3/16F DISC	Inconel	13095-14310	903-987
P-7054	3/16F DISC	Inconel	13580-14840	936-1023
P-7056	3/16F DISC	Inconel	14065-15370	970-1060
P-7058	3/16F DISC	Inconel	14550-15900	1003-1096
P-7060	3/16F DISC	Inconel	15035-16430	1037-1133
P-7062	3/16F DISC	Inconel	15520-16960	1070-1169
P-7064	3/16F DISC	Inconel	16005-17490	1103-1206
P-7068	3/16F DISC	Inconel	16975-18550	1170-1279
P-7072	3/16F DISC	Inconel	17945-19610	1237-1352
P-7074	3/16F DISC	Inconel	18430-20140	1271-1389
P-7080	3/16F DISC	Inconel	19885-21730	1371-1498
P-7082	3/16F DISC	Inconel	20370-22260	1404-1535
P-7084	3/16F DISC	Inconel	20885-22790	1440-1571
P-7086	3/16F DISC	Inconel	21340-23320	1471-1608
P-7088	3/16F DISC	Inconel	21825-23850	1505-1644
P-7094	3/16F DISC	Inconel	23280-25440	1605-1754
P-7096	3/16F DISC	Inconel	24250-26500	1672-1827
P-7098	3/16F DISC	Inconel	24735-27030	1705-1864

Rupture Disc Stock Part List - 1/4 Angle Disc

Part Number	Description	Material	Pressure Range (psi)	Pressure Range (bar)
P-7301	1/4A DISC	Inconel	970-1060	67-73
P-7303	1/4A DISC	Inconel	1164-1272	80-88
P-7305	1/4A DISC	Inconel	1445-1590	100-110
P-7307	1/4A DISC	Inconel	1697-1855	117-128
P-7309	1/4A DISC	Inconel	1940-2120	134-146
P-7311	1/4A DISC	Inconel	2425-2650	167-183
P-7313	1/4A DISC	Inconel	2910-3180	201-219
P-7315	1/4A DISC	Inconel	3395-3710	234-256
P-7317	1/4A DISC	Inconel	3880-4240	268-292
P-7319	1/4A DISC	Inconel	4365-4770	301-329
P-7321	1/4A DISC	Inconel	4850-5300	334-365
P-7323	1/4A DISC	Inconel	5335-5830	368-402
P-7325	1/4A DISC	Inconel	5820-6360	401-438
P-7327	1/4A DISC	Inconel	6305-6890	435-475
P-7329	1/4A DISC	Inconel	6790-7420	468-512
P-7331	1/4A DISC	Inconel	7275-7950	502-548
P-7333	1/4A DISC	Inconel	7760-8480	535-585
P-7335	1/4A DISC	Inconel	8245-9010	568-621
P-7337	1/4A DISC	Inconel	8730-9540	602-658
P-7339	1/4A DISC	Inconel	9215-10070	635-694
P-7341	1/4A DISC	Inconel	9700-10600	669-731
P-7343	1/4A DISC	Inconel	10185-11130	702-767
P-7345	1/4A DISC	Inconel	10670-11660	736-804
P-7347	1/4A DISC	Inconel	11155-12190	769-841
P-7349	1/4A DISC	Inconel	11640-12720	803-877
P-7351	1/4A DISC	Inconel	12125-13250	836-914
P-7353	1/4A DISC	Inconel	12610-13780	869-950
P-7355	1/4A DISC	Inconel	13095-14310	903-987
P-7357	1/4A DISC	Inconel	13580-14840	936-1023
P-7361	1/4A DISC	Inconel	14550-15900	1003-1096
P-7363	1/4A DISC	Inconel	15035-16430	1037-1133
P-7365	1/4A DISC	Inconel	15520-16960	1070-1169
P-7367	1/4A DISC	Inconel	16005-17490	1103-1206
P-7369	1/4A DISC	Inconel	16490-18020	1137-1242
P-7371	1/4A DISC	Inconel	16975-18550	1170-1279
P-7373	1/4A DISC	Inconel	17460-19080	1204-1315
P-7375	1/4A DISC	Inconel	17945-19610	1237-1352
P-7377	1/4A DISC	Inconel	18915-20670	1304-1425
P-7379	1/4A DISC	Inconel	19400-21200	1338-1462
P-7381	1/4A DISC	Inconel	19885-21730	1371-1498
P-7382	1/4A DISC	Inconel	21000-22000	1448-1517
P-7383	1/4A DISC	Inconel	21825-23850	1505-1644
P-7385	1/4A DISC	Inconel	24250-26500	1672-1827

Rupture Disc Stock Part List - 1/4 Angle Disc - con't

Part Number	Description	Material	Pressure Range (psi)	Pressure Range (bar)
P-7387	1/4A DISC	Inconel	25220-27560	1739-1900
P-7389	1/4A DISC	Inconel	26190-28620	1806-1973
P-7391	1/4A DISC	Inconel	27160-29680	1873-2046
P-7393	1/4A DISC	Inconel	29100-31800	2006-2192
P-7395	1/4A DISC	Inconel	30070-32860	2073-2266
P-7397	1/4A DISC	Inconel	31525-34450	2174-2375
P-7399	1/4A DISC	Inconel	33950-37100	2341-2558
P-7401	1/4A DISC	Inconel	36375-39750	2508-2741
P-7403	1/4A DISC	Inconel	38880-42400	2681-2923
P-7405	1/4A DISC	Inconel	41255-45050	2844-3106
P-7407	1/4A DISC	Inconel	43650-47700	3010-3289
P-7409	1/4A DISC	Inconel	48500-53000	3344-3654
P-7411	1/4A DISC	Inconel	53350-58300	3678-4020
P-7413	1/4A DISC	Inconel	58200-63600	4013-4385
P-7415	1/4A DISC	Inconel	62155-66000	4285-4550
P-7417	1/4A DISC	Inconel	65960-72080	4548-4970
P-7419	1/4A DISC	Inconel	68870-75260	4748-5189

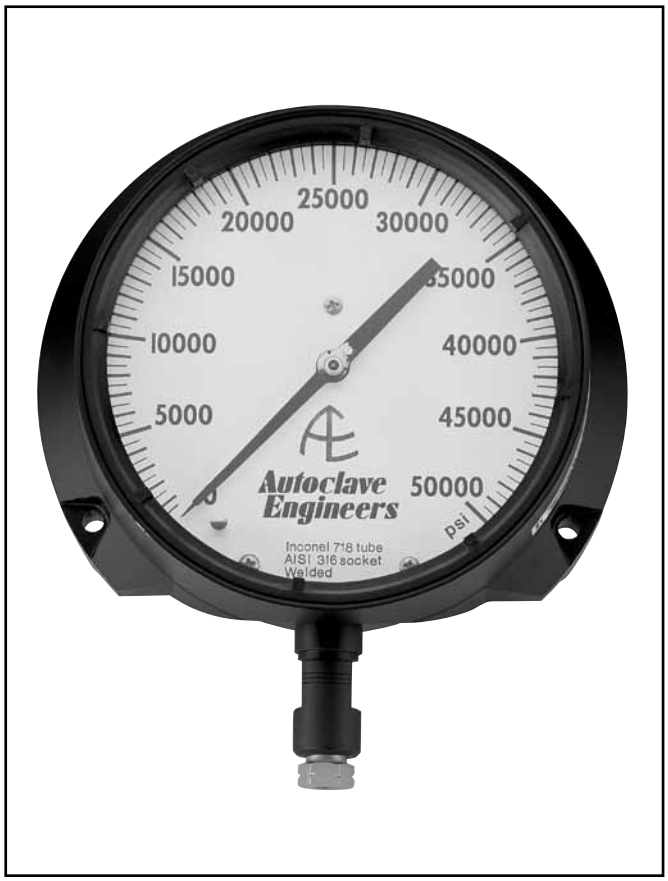
Rupture Disc Stock Part List - 1/2 Flat Disc

Part Number	Description	Material	Pressure Range (psi)	Pressure Range (bar)
P-7601	1/2F DISC	Inconel	485-530	33-37
P-7603	1/2F DISC	Inconel	679-742	47-51
P-7605	1/2F DISC	Inconel	727-795	50-55
P-7607	1/2F DISC	Inconel	873-954	60-73
P-7609	1/2F DISC	Inconel	970-1060	67-75
P-7610	1/2F DISC	Inconel	1006-1100	69-76
P-7611	1/2F DISC	Inconel	1164-1272	80-88
P-7613	1/2F DISC	Inconel	1213-1323	84-91
P-7615	1/2F DISC	Inconel	1358-1484	94-102
P-7617	1/2F DISC	Inconel	1455-1590	100-110
P-7619	1/2F DISC	Inconel	1552-1696	107-117
P-7621	1/2F DISC	Inconel	1697-1855	117-128
P-7623	1/2F DISC	Inconel	1746-1908	120-132
P-7625	1/2F DISC	Inconel	1940-2120	134-146
P-7627	1/2F DISC	Inconel	2183-2385	151-164
P-7629	1/2F DISC	Inconel	2271-2438	157-168
P-7631	1/2F DISC	Inconel	2425-2650	167-183
P-7633	1/2F DISC	Inconel	2619-2862	181-197
P-7635	1/2F DISC	Inconel	2716-2968	187-204
P-7637	1/2F DISC	Inconel	2910-3180	201-219
P-7639	1/2F DISC	Inconel	3104-3392	214-234
P-7641	1/2F DISC	Inconel	3395-3710	234-256
P-7643	1/2F DISC	Inconel	3589-3922	247-270
P-7645	1/2F DISC	Inconel	3637-3975	251-274
P-7647	1/2F DISC	Inconel	3880-4240	268-292
P-7649	1/2F DISC	Inconel	4365-4770	301-329
P-7651	1/2F DISC	Inconel	4462-4876	308-336
P-7653	1/2F DISC	Inconel	4850-5300	334-365
P-7655	1/2F DISC	Inconel	5335-5830	368-402
P-7657	1/2F DISC	Inconel	5626-6148	388-424
P-7659	1/2F DISC	Inconel	5820-6360	401-438
P-7661	1/2F DISC	Inconel	6305-6890	435-475
P-7663	1/2F DISC	Inconel	6790-7420	468-512
P-7665	1/2F DISC	Inconel	7275-7950	502-548
P-7667	1/2F DISC	Inconel	7760-8480	535-585
P-7669	1/2F DISC	Inconel	8245-9010	568-621
P-7671	1/2F DISC	Inconel	8730-9540	602-658
P-7673	1/2F DISC	Inconel	9700-10600	669-731

Accessories - Instrument Quality Pressure Gauges

Pressures to 80,000 psi (5116 bar)

Gauges - Pressure gauges are offered for use in low, medium and high pressure systems. Instrument quality gauges are available to pressure of 80,000 psi (5115.7 bar).



Materials and Features

- Accuracy within ±0.5% of full scale range
- 1/4" F250C Autoclave high pressure connection
- Plastic dial cover/solid front aluminum alloy case
- Blow-out back panel for pressure relief in the event of Bourdon tube failure
- 316 Stainless steel Bourdon tubes**
- Gauges available with bottom and back connections
- Precision stainless steel movement for accuracy and resistance to atmospheric corrosion
- Pointer zero adjustment located on front of gauge behind dial cover for convenience
- Gauges are commercially cleaned when shipped
- Gauges up to 20,000 psi (1379 bar) oxygen cleaned upon request
- Gauges glycerin filled upon request
- Gauges available with dual scale face plates
- Standard gauges are rated from -20°F (-30°C) to 150°F (65°C)

Instrument quality gauges

- **Flush panel mounting** - Panel mounting kits are stocked to permit flush panel mounting of any instrument quality gauge. These will be furnished at an additional charge when specified - add “PM” to order number.
  To order gauge panel mount kit separate:
  P-8559 4.5" Flush mount
  P-8560 6.0" Flush mount

- **Optional electrical contact face** - Available for all instrument quality gauges. With adjustable low and high electrical contacts, this option permits gauges to provide pressure control for automatic or remote operation, or for fail-safe set points.

**Bourdon tube material for 0-30,000 psi (0-2068 bar) gauge is K Monel. Bourdon tube material for 0-50,000 psi (0-3447 bar) and 0-80,000 psi (0-5116 bar) gauge is Inconel 718.

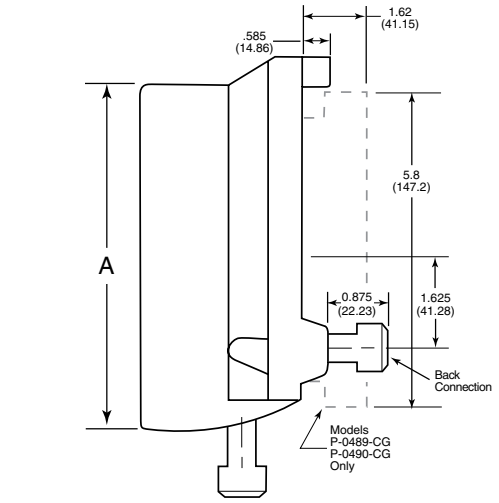
Note: Gauge connections are 1/4" (F250C) coned-and-threaded connection. Furnished with collar and gland.

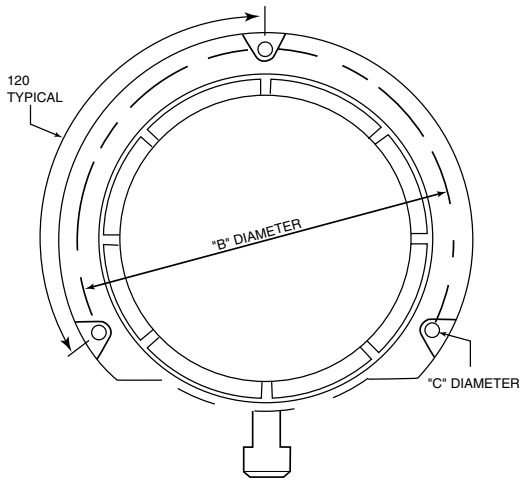
Bottom connection calibrated in psi only			
Catalog Number	Pressure Range psi (bar)	Minor Interval Value psi (bar)	Dial Diameter inches (mm)
P-0499-CG	0-1,000 (0-69)	10 (.69)	4-1/2 (114.3)
P-0479-CG	0-1,500 (0-103)	10 (.69)	4-1/2 (114.3)
P-0480-CG	0-3,000 (0-207)	20 (1.38)	4-1/2 (114.3)
P-0481-CG	0-5,000 (0-345)	50 (3.44)	4-1/2 (114.3)
P-0482-CG	0-10,000 (0-690)	100 (6.89)	4-1/2 (114.3)
P-0483-CG	0-15,000 (0-1034)	100 (6.89)	4-1/2 (114.3)
P-0487-CG	0-20,000 (0-1379)	200 (13.79)	4-1/2 (114.3)
P-0488-CG**	0-30,000 (0-2068)	250 (17.24)	6 (152.4)
P-0489-CG**	0-50,000 (0-3447)	500 (34.47)	6 (152.4)
P-0490-CG**	0-80,000 (0-5116)	1,000 (68.94)	6 (152.4)

Back connection gauges calibrated in psi only			
Catalog Number	Pressure Range psi (bar)	Minor Interval Value psi (bar)	Dial Diameter inches (mm)
P-0482B-CG	0-10,000 (0-690)	100 (6.89)	4-1/2 (114.3)
P-0483B-CG	0-15,000 (0-1034)	100 (6.89)	4-1/2(114.3)
P-0487B-CG	0-20,000 (0-1379)	200 (13.79)	4-1/2 (114.3)
P-0488B-CG	0-30,000 (0-2068)	250 (17.24)	6 (152.4)
P-0489B-CG	0-50,000 (0-3447)	500 (34.47)	6 (152.4)

Optional Electrical Contact Face	
Catalog Number	Fits Gauge Dial Diameter inches - (mm)
P-0713	4-1/2 (114.3)
P-0714	6 (152.4)

**Bourdon tube material for 0-30,000 psi (0-2068 bar) gauge is K Monel. Bourdon tube material for 0-50,000 psi (0-3447 bar) and 0-80,000 psi (0-5116 bar) gauge is Inconel 718.





Gauge Size inches - (mm)	"A" cutout inches - (mm)	"B" inches - (mm)	"C" inches - (mm)
4-1/2" (114.3)	4.937 (125.39)	5.375 (136.52)	.218 (5.54)
6" (152.4)	6.437 (163.49)	7.0 (177.80)	.218 (5.54)

Accessories - Gauge/Instrument Snubbers

Pressures to 60,000 psi (4137 bar)

Parker Autoclave Engineers Pressure Snubbers provide protection to gauges and instrumentation from pressure surges, pulsation and shock. The unique snubber design provides superior instrument protection while not compromising instrument accuracy or reaction time. This is accomplished by the use of existing technology from our excess flow check valve with additional design features.

When sudden flow is seen, the poppet will rise, blocking the pressure surge and a small bleed hole in the poppet will allow pressure to slowly equalize. When the pressure is equalized, the poppet will then drop back down allowing normal flow to the gauge. A filter is used to prevent the hole in the plug from becoming plugged. The snubber must be mounted in the vertical position as indicated on the unit.

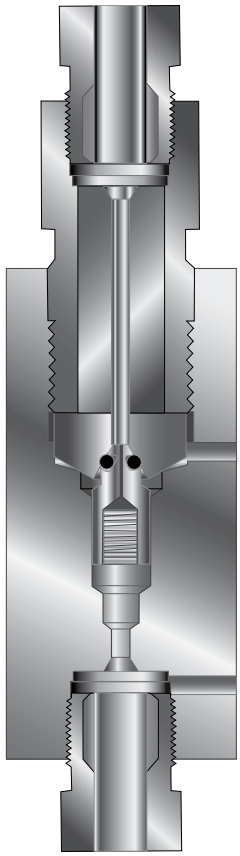
Snubbers are offered in 316SS as standard, with either male, female or male/female connections in 1/4" and 3/8" sizes. Optional materials available upon request.

Typical catalog number: **SNB F H4 F H4**

SNB	F	H4	F	H4
Gauge Snubber	Female	Inlet Connection	Female	Outlet Connection

Available End Connections

H4 - 1/4" High Pressure - F250C
H6 - 3/8" High Pressure - F375C



INLET

Catalog Number	Pressure Rating psi (bar)	Dimensions – Inches (mm)					Fig
		A	B	C	D	Hex	
SNBFH4FH4	60,000 (4137)	3.36 (85.34)	2.50 (63.50)	0.50 (12.70)	0.63 (15.33)	1.19 (30.15)	1
SNBFH4MH4	60,000 (4137)	4.05 (102.87)	2.50 (63.50)	0.50 (12.70)	0.63 (15.33)	1.19 (30.15)	2
SNBMH6MH4	60,000 (4137)	3.68 (93.47)	2.13 (54.10)	1.50 (38.10)	0.75 (19.05)	1.19 (30.15)	3

Figure 1

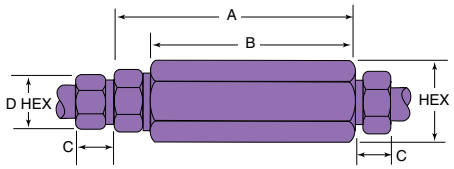


Figure 2

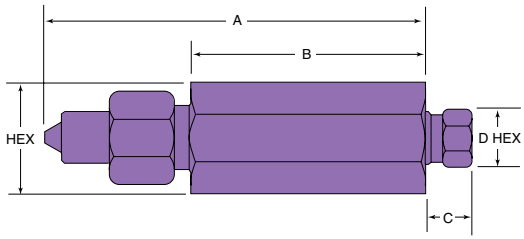
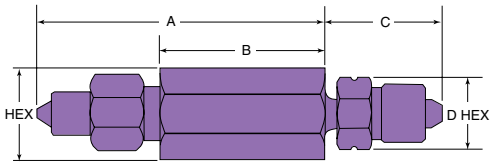


Figure 3



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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02-0134SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

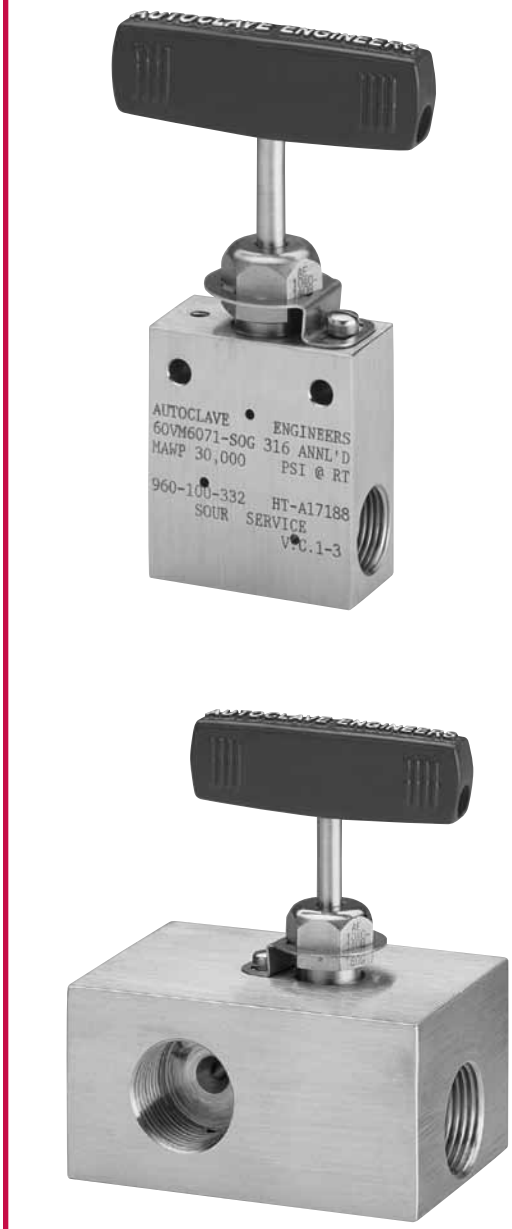
ISO-9001 Certified

Sour Service Products

Pressures to 30,000 psi (2068 bar)

For over 50 years Parker Autoclave Engineers has designed and built premium quality valves, fittings and tubing. This commitment to engineering and manufacturing excellence has earned Parker Autoclave a reputation for reliable, efficient product performance and has established Autoclave as the worldwide leader in high pressure fluid components for the oil and gas industry.

Parker Autoclave Engineers designs and builds high pressure valves, fittings and tubing for use with sour oil and gas (H_2S). Parker Autoclave Engineers "SOG" components meet or exceed all requirements of NACE MR0175-2002.



High Pressure Valve Features:

- 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.
- PTFE encapsulated packing provides dependable stem and body sealing.
- Solid, one-piece stem provides an economical valve for SOG service.
- Optional non-rotating stem assembly available.
- Stem and packing gland materials have been selected to optimize thread cycle life.

Parker Autoclave Engineers valves are complemented by a complete line of high pressure fittings, tubing and check valves. All high pressure valves and fittings use Parker Autclave Engineers' high pressure coned-and-threaded connections for dependable performance under widely varying conditions.

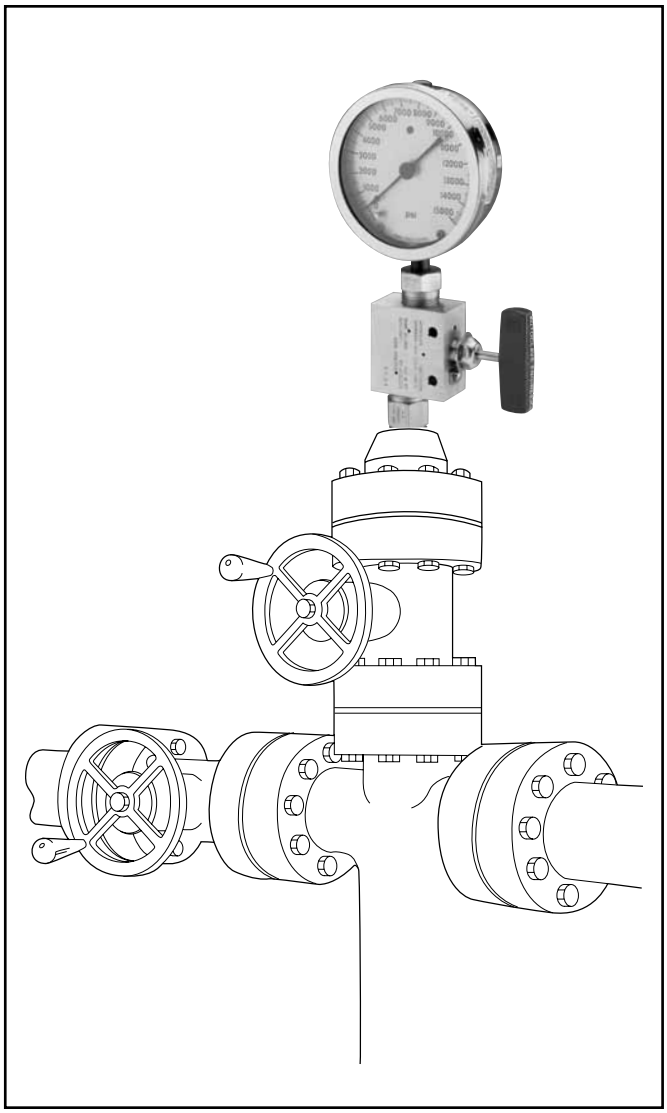
Parker

Autoclave Engineers®

www.autoclave.com

Oil and Gas Service Valves and Fittings

Parker Autoclave Engineers offers a complete series of high pressure valves and fittings for wellhead christmas trees. Parker Autoclave Engineers components are designed and manufactured to meet or exceed API and other applicable specifications for wellhead equipment, as well as Parker Autoclave Engineers' own exacting standards for safety, reliability and service life under high pressure operation.



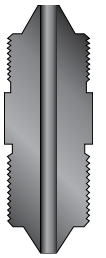
Sour Oil and Gas Service (H_2S) or Standard Service

Parker Autoclave Engineers' oil field components are offered for standard oil field service where H_2S is not present and type "SOG" for service where H_2S is present. Parker Autoclave Engineers' SOG components are manufactured with materials and procedures specified for optimum resistance to H_2S. These material specifications and manufacturing procedures are continually updated to incorporate the latest advances and customer requirements. All pressure-containing materials comply with the requirements of NACE MR0175.

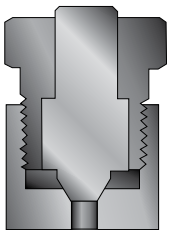
Pressure/Temperature Ratings: Valves and fittings for standard service are rated for working pressure up to 60,000 psi (4137 bar) at 100°F (38°C). Type SOG components are rated up to 30,000 psi (2068 bar) at 100°F (38°C).

Sizes: Parker Autoclave Engineers' type SOG valves and fittings are supplied with standard API test and gauge connections (Parker Autoclave Engineers' F562C). Coned-and-threaded tubing connections in other sizes are available to meet individual requirements. Parker Autoclave Engineers stocks a wide selection of sizes for immediate shipment.

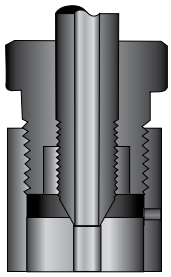
Materials: Parker Autoclave Engineers standard series valves and fittings are type 316 stainless steel, cold worked material. Type SOG valves and fittings are 316 stainless steel annealed material with PTFE packing below the stem threads on all needle valves. If required, complete material specifications are provided. All pressure-containing materials used are in accordance with NACE MR0175.



API Type I connector



API Type II connector



API Type III connector

Note:
For connection torque values, see tools section, special material connection torque table.

All sour oil and gas valves and fittings supplied without collars and glands unless otherwise specified.

Sour Service Products - Wellhead Gauge and Bleed Valves

Pressures to 20,000 psi (1379 bar)

Series	Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_v	Pressure/ Temperature Rating psi (bar) @ Room Temperature
Wellhead Gauge Valve					
20GV	3/8	SF375CX	0.125 (3.18)	0.23	10,000 (690)
20GV	9/16	SF562CX	0.125 (3.18)	0.23	10,000 (690)
30GV	9/16	F562C	0.125 (3.18)	0.33	20,000 (1379)
Bleed Valve					
20BV	3/8	SM375CX	0.093 (2.36)	-	10,000 (690)
20BV	9/16	SM562CX	0.093 (2.36)	-	10,000 (690)
30BV	9/16	M562C	0.093 (2.36)	-	20,000 (1379)*

Notes:
** Rating shown is in closed position.*
Rating @ 15,000 psi (1034 bar) in open position.

Parker Autoclave Engineers' Wellhead Gauge valves are designed for reliable shut-off service at a maximum working pressure of 20,000 psi (1379 bar). The Wellhead Gauge and Bleed Valves are standard in 316 stainless steel annealed material and comply with NACE MR0175. Special materials available on request.

Applications:

Wellhead Gauge Valve
- Sample Lines
- Instrument calibration

Bleed Valve
- Pressure bleed

Gauge Valve Features:
- One inlet, three outlet ports, all ports are 9/16" API test and gauge connection ports.
- Metal-to-metal bubble tight shut-off
- Packing below stem threads
- Two piece non-rotating stem on standard service and SOG valves
- Optional use of long nipples in the inlet for installation on headers that are insulated.

Bleed Valve Features:
- One piece hex construction allows easy installation
- Vent port tapped for plumbing to safe area
- Tee handle for easy operation
- Positive blow out prevention on stem
- Compatible with standard API test and gauge connections for 15,000 psi (1034 bar) service.

Ordering Procedure

Wellhead Gauge Valve - 30GV-SOGWO valves are furnished without collars and glands unless otherwise specified.

Typical catalog number: **30GV9078 - SOGWO**

30GV	9	07	8	—	SOGWO
Valve Series	**Outside Diameter Tube Size**	**Stem Type**	**Body Pattern**		
20GV **30GV**	**6**-3/8" **9**-9/16"	**00** - one piece VEE stem **07**- non-rotating VEE stem	**8** - 4 ports, 1 inlet, 3 outlets		Sour gas without glands and collars

Bleed Valve

Typical catalog number: **30BV9002- SOG**

30BV	9	00	2	—	SOG
Valve Series	**Outside Diameter Tube Size**	**Stem Type**	**Body Pattern**		
20BV **30BV**	**6**-3/8" **9**-9/16"	**00** - one piece VEE stem	**2** -Angle		Sour gas

Wellhead Gauge Valve

Catalog Number	Connection Type	Connection Size	Pressure Rating psi (bar)	Dimensions - inches (mm)									Valve Pattern
				A	B	C	D	E	F	G	H	J	
20GV6078-SOG	SF375CX	3/8	10,000	2.00	3.12	2.00	4.75	1.13	1.00	0.50	0.94	3.00	See Figure 1
			(690)	(50.80)	(79.25)	(50.80)	(120.65)	(28.58)	(25.40)	(12.70)	(23.83)	(76.20)	
20GV9078-SOG	SF562CX	9/16	10,000	2.00	3.88	2.75	4.54	1.31	1.38	0.66	0.94	3.00	
			(690)	(50.80)	(98.55)	(69.85)	(115.31)	(33.27)	(34.93)	(16.76)	(23.83)	(76.20)	
30GV9078-SOG	F562C	9/16	20,000	2.00	3.88	2.75	4.75	1.31	1.38	0.66	0.94	3.00	
			(1379)	(50.80)	(98.55)	(69.85)	(120.65)	(33.27)	(34.93)	(16.76)	(23.83)	(76.20)	

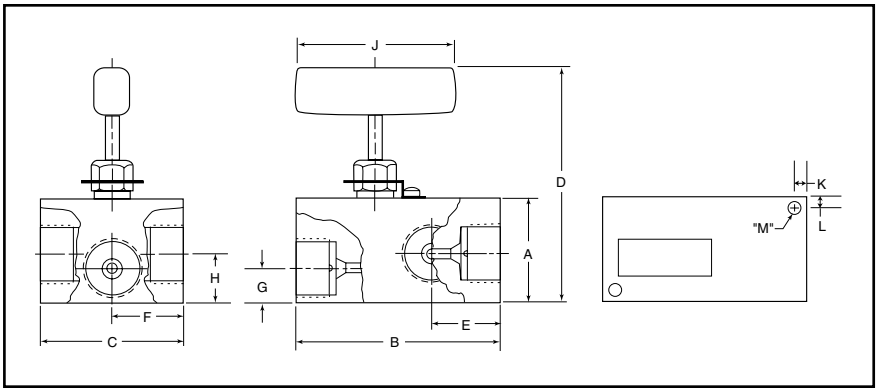
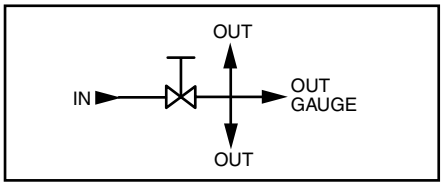


Figure 1 - Wellhead Gauge Valve

Mounting Dimensions			
	K	L	"M" Dia.
20GV6078-SOG	.25 (6.4)	.25 (6.4)	.28 (7.1)
20GV9078-SOG	.38 (9.7)	.38 (9.7)	.28 (7.1)
30GV9078-SOG	.38 (9.7)	.38 (9.7)	.28 (7.1)



Bleed Valve

Catalog Number	Connection Type	Connection Size	Pressure Rating psi (bar)	Dimensions - inches (mm)									Valve Pattern
				A	B	C	D	E	F	G	H	J	
20BV6002-SOG	SM375CX	3/8	10,000	3.23	2.42	1.12	1.38	1.50					See Figure 2
			(690)	(82.04)	(61.47)	(28.45)	(35.05)	(38.10)					
20BV9002-SOG	SM562CX	9/16	10,000	3.68	2.86	1.13	1.38	1.50					
			(690)	(93.47)	(76.64)	(28.70)	(35.05)	(38.10)					
30BV4002-SOG	M250C	1/4	20,000	3.06	2.24	1.12	1.38	1.50					
			(1379)	(77.72)	(56.90)	(28.45)	(35.05)	(38.10)					
30BV9002-SOG	M562C	9/16	20,000	3.44	2.61	1.12	1.38	1.50					
			(1379)	(87.38)	(66.29)	(28.45)	(35.05)	(38.10)					

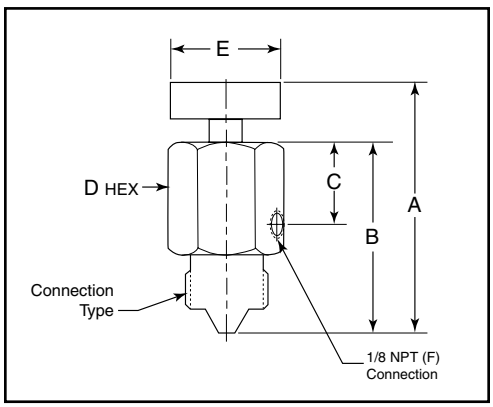


Figure 2 - Bleed Valve

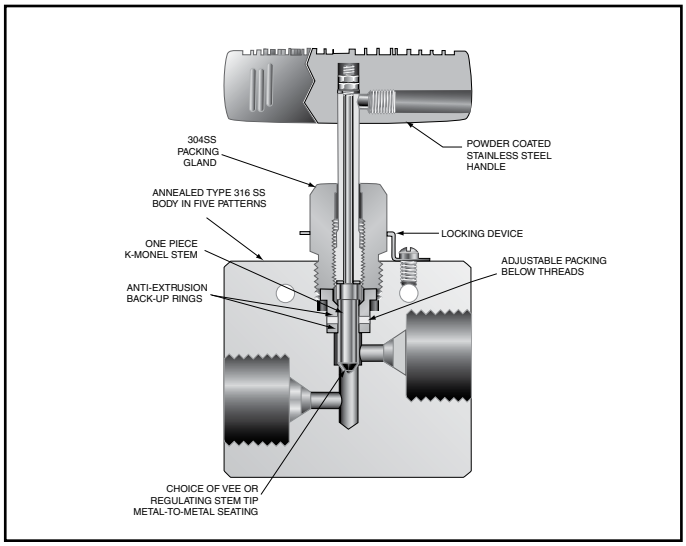
Sour Service Products - 30VM-SOGWO Series

Pressures to 20,000 psi (1379 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure/ Temperature Rating psi (bar) @ Room Temperature**
1/4	F250C	0.094 (2.39)	0.12	20,000 (1379)
3/8	F375C	0.125 (3.18)	0.23	20,000 (1379)
9/16	F562C	0.125 (3.18)	0.33	20,000 (1379)

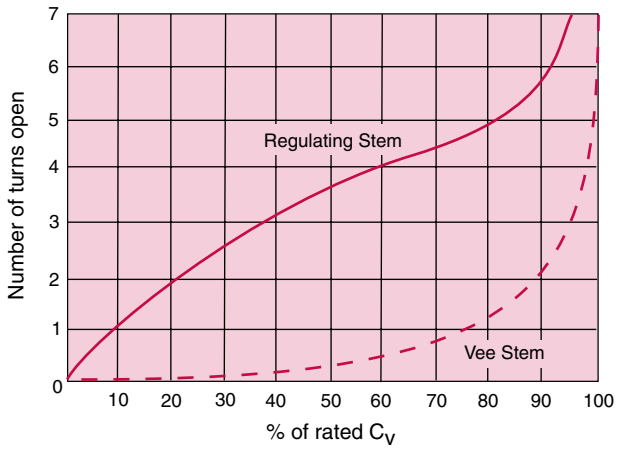
Notes:
** C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%.*

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



Note: For information on standard 30VM valves, refer to the Needle Valve Section.

Generalized Flow Coefficient Curves (C_V)



Ordering Procedure

The 30VM-SOGWO Series valves are furnished **without** collars and glands, unless otherwise specified.

Typical catalog number: **30VM4001-SOGWO**

30VM	4	00	1	—	SOGWO
Valve Series	**Outside Diameter Tube Size**	**Stem/Seat Type**	**Body Pattern**		
	4-1/4" **6**-3/8" **9**-9/16"	**00** - One piece rotating Vee stem **01** - One piece rotating Regulating stem **07** - non-rotating Vee stem (on-off service) **08** - non-rotating Regulating stem (tapered tip for regulating and shutoff) **80** - One piece Vee stem with replaceable seat **81** - One piece Regulating 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		**SOG**-Sour Gas **SOGWO**-Sour Gas without glands & collars

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R30VM4001-SOGWO**)

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

Note:
All sour service valves and fittings supplied without collars and glands unless otherwise specified.

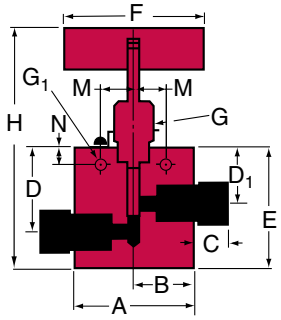
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
2-Way Straight																	
30VM4001-SOGWO	VEE	1/4	0.094	2.00	1.00	0.50	1.50	1.12	2.00	3.00	1.00	0.22	4.62	0.69	0.38	1.00	
30VM4081-SOGWO	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)	
30VM6001-SOGWO	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	See
30VM6081-SOGWO	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)	Figure 1
30VM9001-SOGWO	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-SOGWO	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																	
30VM4002-SOGWO	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	
30VM4082-SOGWO	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)	
30VM6002-SOGWO	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	See
30VM6082-SOGWO	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)	Figure 2
30VM9002-SOGWO	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-SOGWO	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																	
30VM4003-SOGWO	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	
30VM4083-SOGWO	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)	
30VM6003-SOGWO	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	See
30VM6083-SOGWO	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)	Figure 3
30VM9003-SOGWO	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-SOGWO	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_1 - 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.*

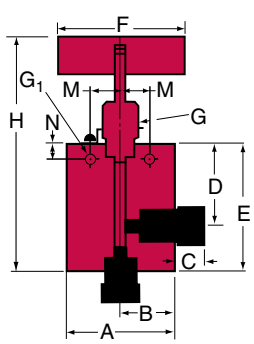
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Figure 1



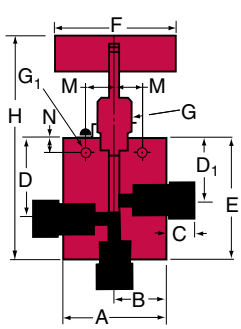
2-Way Straight

Figure 2



2-Way Angle

Figure 3



3-Way / 2 on Pressure

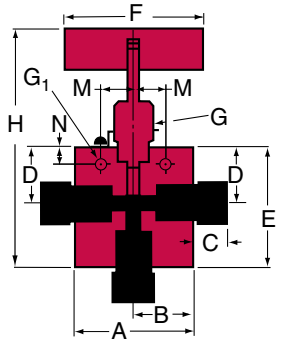
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
3-Way / 1 on Pressure																	
30VM4004-SOGWO	VEE	1/4	0.094	2.00	1.00	0.50	1.12		2.00	3.00	1.00	0.22	4.62	0.69	0.38	1.00	
30VM4084-SOGWO	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)	
30VM6004-SOGWO	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	**See**
30VM6084-SOGWO	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)	**Figure 4**
30VM9004-SOGWO	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-SOGWO	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																	
30VM4802-SOGWO	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	
30VM4882-SOGWO	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)	
30VM6802-SOGWO	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	**See**
30VM6882-SOGWO	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)	**Figure 5**
30VM9802-SOGWO	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-SOGWO	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																	
30VM4005-SOGWO	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	
30VM4085-SOGWO	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)	
30VM6005-SOGWO	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	**See**
30VM6085-SOGWO	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)	**Figure 6**
30VM9005-SOGWO	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-SOGWO	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_1 - 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.*

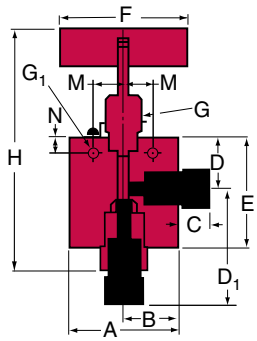
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Figure 4



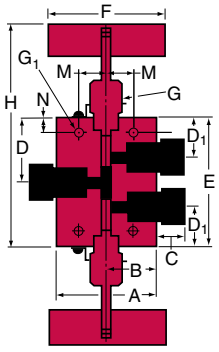
3-Way / 1 on Pressure

Figure 5



2-Way Angle / Replacable Seat

Figure 6



3-Way / 2-Stem Manifold

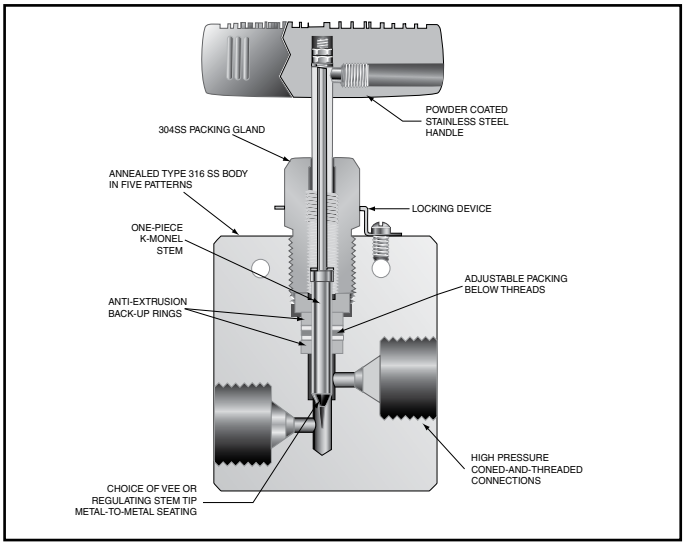
Sour Service Products - 60VM-SOGWO Series

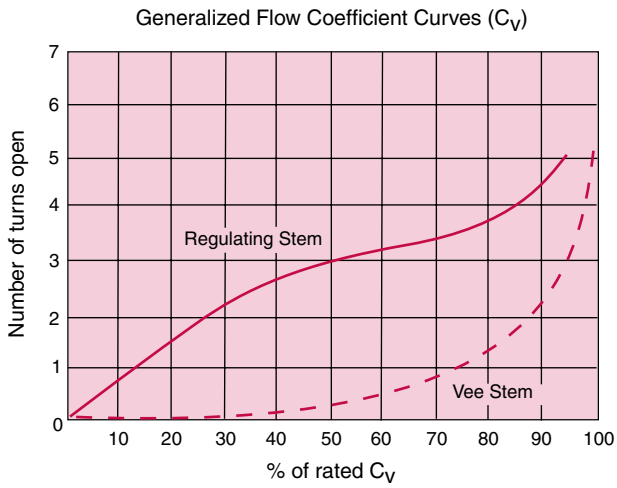
Pressures to 30,000 psi (2068 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure/ Temperature Rating psi (bar) @ Room Temperature**
1/4	F250C	0.062 (1.57)	0.08	30,000 (2068)
3/8	F375C	0.062 (1.57)	0.09	30,000 (2068)
9/16	F562C	0.078 (1.98)	0.14	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.*





Note: For information in standard 60VM valves refer to the Needle Valve Section.

Ordering Procedure

The 60VM-SOGWO Series valves are furnished **without** glands and collars, unless otherwise specified.

Typical catalog number: **60VM4071-SOGWO**

60VM — Valve Series

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

07 — Stem/Seat Type
- **07** - non-rotating Vee stem (on-off service)
- **08** - non-rotating regulating stem (tapered tip for regulating and shutoff)
- **81** - Regulating one piece stem with replaceable seat
- **87** - Vee stem with replaceable seat
- **88** - Regulating stem with replaceable seat

1 — 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

—

SOGWO
- **SOG**-Sour Gas
- **SOGWO**-Sour Gas without glands & collars

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

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

Note: All sour service valves and fittings supplied without collars and glands unless otherwise specified.

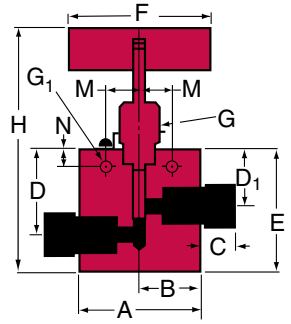
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thickness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
2-Way Straight																	
60VM4071-SOGWO	VEE	1/4	0.062	2.00	1.00	0.50	1.69	1.31	2.12	3.00	1.00	0.22	4.75	0.69	0.38	1.00	See Figure 1
60VM4081-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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 3
60VM4083-SOGWO	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)	
60VM6073-SOGWO	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	
60VM6083-SOGWO	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)	
60VM9073-SOGWO	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	
60VM9083-SOGWO	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)	

G - Packing gland mounting hole drill size
G_1 - 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.*

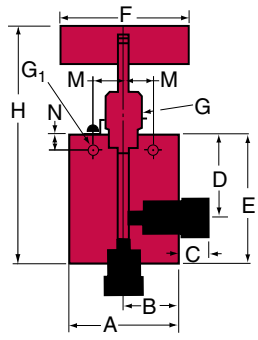
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Figure 1



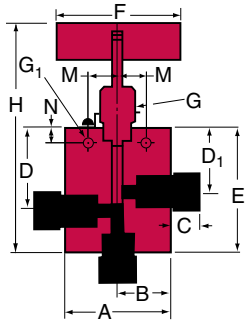
2-Way Straight

Figure 2



2-Way Angle

Figure 3



3-Way / 2 on Pressure

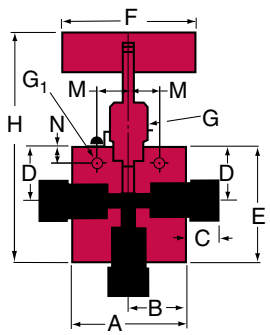
Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm)												Block Thick-ness	Valve Pattern
				A	B	C	D	D_1	E	F	G	G_1	H*	M	N		
3-Way / 1 on Pressure																	
60VM4074-SOGWO	VEE	1/4	0.062	2.00	1.00	0.50	1.31		2.38	3.00	1.00	0.22	5.00	0.69	0.38	1.00	See Figure 4
60VM4084-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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-SOGWO	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_1 - 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.*

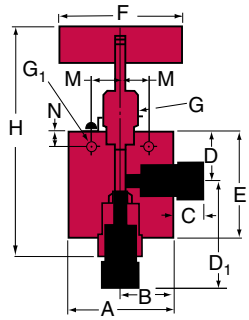
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

Figure 4



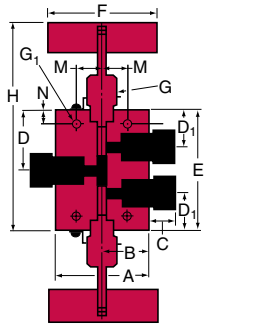
3-Way / 1 on Pressure

Figure 5



2-Way Angle / Replaceable Seat

Figure 6



3-Way / 2 Stem Manifold

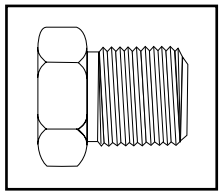
Sour Service Products - High Pressure Fittings

Pressures to 30,000 psi (2068 bar)

Parker Autoclave Engineers manufactures high pressure fittings for both standard oil field service where H_2S is not present and type SOGWO for service where H_2S is present. Utilizing Parker Autoclave Engineers high pressure coned-and-threaded connections, the SOGWO fittings detailed on this page are correlated for use with series 30VM-SOGWO and 60VM-SOGWO valves. Standard service fittings are correlated for use with series 30VM and 60VM valves. For complete information on standard service fittings, refer to Fitting and Tubing High Pressure Section.

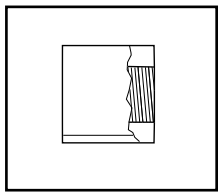
Connection Components

Type SOGWO valves and fittings are furnished **without** glands and collars. To order these components separately, use order numbers listed. When using plug, collar is not required.



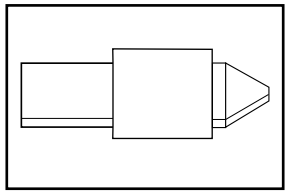
Gland

CGL ( )- 316 SOG



Collar

CCL ( )- 316 SOG



Plug

CP ( )- 316 SOG

Add tube size ( )

1/4" - 40
3/8" - 60
9/16" - 90

Example:

1/4" Gland - CGL (40) - 316 SOG

To ensure proper fit use Parker Autoclave Engineers tubing.

Connection Type	Gland	Collar	Plug	Connection Components (Industry Standard)
F250C F375C F562C	CGL40-316SOG CGL60-316SOG CGL90-316SOG	CCL40-316SOG CCL60-316SOG CCL90-316SOG	CP40-316SOG CP60-316SOG CP90-316SOG	Parker Autoclave Engineer's high pressure SOG fittings 1/4, 3/8 and 9/16 connection components to 30,000 psi (2068 bar). For use with 30VM-SOGWO, 60VM-SOGWO valves and fittings.

Associated Products

A complete line of high pressure anti-vibration collet gland assemblies is available. Please refer to high pressure fitting and tubing section.

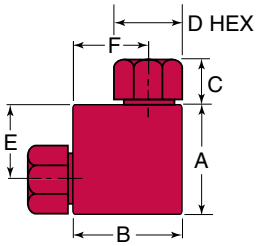
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
Elbow													
CL4400-SOGWO	F250C	1/4 **(6.35)**	30,000 **(2068.39)**	0.094 **(2.39)**	1.00 **(25.40)**	1.50 **(38.10)**	0.50 **(12.70)**	0.63 **(15.88)**	0.62 **(15.75)**	0.88 **(22.35)**		0.75 **(19.05)**	**See Figure 1**
CL6600-SOGWO	F375C	3/8 **(9.53)**	30,000 **(2068.39)**	0.125 **(3.18)**	1.50 **(38.10)**	2.00 **(50.80)**	0.53 **(13.46)**	0.81 **(20.62)**	1.00 **(25.40)**	1.25 **(31.75)**		1.00 **(25.40)**	
CL9900-SOGWO	F562C	9/16 **(14.29)**	30,000 **(2068.39)**	0.188 **(4.78)**	1.88 **(47.75)**	2.62 **(66.55)**	0.81 **(20.57)**	1.19 **(30.23)**	1.12 **(28.45)**	1.88 **(47.75)**		1.50 **(38.10)**	
Tee													
CT4440-SOGWO	F250C	1/4 **(6.35)**	30,000 **(2068.39)**	0.094 **(2.39)**	1.25 **(31.75)**	2.00 **(50.80)**	0.50 **(12.70)**	0.63 **(15.88)**	0.88 **(22.35)**	1.00 **(25.40)**		1.00 **(25.40)**	**See Figure 2**
CT6660-SOGWO	F375C	3/8 **(9.53)**	30,000 **(2068.39)**	0.125 **(3.18)**	1.56 **(39.62)**	2.00 **(50.80)**	0.53 **(13.46)**	0.81 **(20.62)**	1.06 **(26.92)**	1.00 **(25.40)**		1.00 **(25.40)**	
CT9990-SOGWO	F562C	9/16 **(14.29)**	30,000 **(2068.39)**	0.188 **(4.78)**	2.12 **(53.85)**	2.62 **(66.55)**	0.81 **(20.57)**	1.19 **(30.23)**	1.38 **(35.05)**	1.31 **(33.27)**		1.50 **(38.10)**	
Cross													
CX4444-SOGWO	F250C	1/4 **(6.35)**	30,000 **(2068.39)**	0.094 **(2.39)**	1.25 **(31.75)**	2.00 **(50.80)**	0.50 **(12.70)**	0.63 **(15.88)**	0.62 **(15.75)**	1.00 **(25.40)**		1.00 **(25.40)**	**See Figure 3**
CX6666-SOGWO	F375C	3/8 **(9.53)**	30,000 **(2068.39)**	0.125 **(3.18)**	2.12 **(53.85)**	2.00 **(50.80)**	0.53 **(13.46)**	0.81 **(20.62)**	1.06 **(26.92)**	1.00 **(25.40)**		1.00 **(25.40)**	
CX9999-SOGWO	F562C	9/16 **(14.29)**	30,000 **(2068.39)**	0.188 **(4.78)**	2.75 **(69.85)**	2.62 **(66.55)**	0.81 **(20.57)**	1.19 **(30.23)**	1.38 **(35.05)**	1.31 **(33.27)**		1.50 **(38.10)**	

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

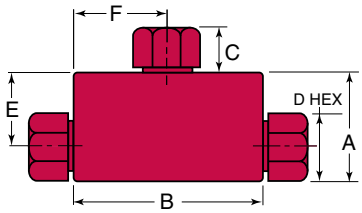
***NOTE:** All sour oil and gas valves and fittings supplied without collars and glands unless otherwise specified.*

Figure 1



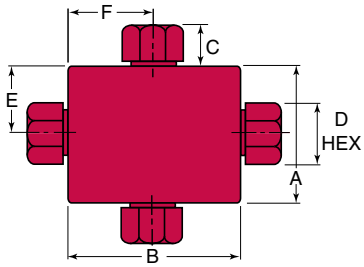
Elbow

Figure 2



Tee

Figure 3



Cross

Note: Fittings such as 45° elbows, reducer elbows, and reducer 45° elbows are available upon request.
For mounting hole option add suffix PM to catalog number, consult factory for mounting hole dimensions.
Contact your local sales representative for additional information.

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		

Straight Coupling/Union Coupling

60F4433-SOGWO	F250C	1/4 **(6.35)**	30,000 **(2068.39)**	0.094 **(2.39)**	0.75 **(19.05)**	1.38 **(35.05)**	0.50 **(12.70)**	0.63 **(15.88)**	Straight	**See Figure 4**
60UF4433-SOGWO									Union	
60F6633-SOGWO	F375C	3/8 **(9.53)**	30,000 **(2068.39)**	0.125 **(3.18)**	1.00 **(25.40)**	1.75 **(44.45)**	0.53 **(13.46)**	0.81 **(20.62)**	Straight	
60UF6633-SOGWO									Union	
60F9933-SOGWO	F562C	9/16 **(14.29)**	30,000 **(2068.39)**	0.188 **(4.78)**	1.38 **(35.05)**	2.19 **(55.63)**	0.81 **(20.57)**	1.19 **(30.15)**	Straight	
60UF9933-SOGWO									Union	

Bulkhead Coupling

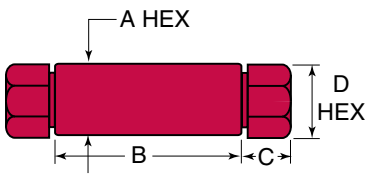
60BF4433-SOGWO	F250C	1/4 **(6.35)**	30,000 **(2068.39)**	0.094 **(2.39)**	0.094 **(23.88)**	1.88 **(47.75)**	0.50 **(12.70)**	0.63 **(15.88)**	0.50 **(12.70)**	1.00 **(25.40)**	0.38 **(9.65)**		**See Figure 5**
60BF6633-SOGWO	F375C	3/8 **(9.53)**	30,000 **(2068.39)**	0.125 **(3.18)**	1.12 **(28.45)**	2.38 **(60.45)**	0.53 **(13.46)**	0.81 **(20.62)**	0.78 **(19.81)**	1.38 **(35.05)**	0.38 **(9.65)**		
60BF9933-SOGWO	F562C	9/16 **(14.29)**	30,000 **(2068.39)**	0.188 **(4.78)**	1.69 **(42.93)**	2.75 **(69.85)**	0.81 **(20.57)**	1.19 **(30.23)**	1.00 **(25.40)**	1.88 **(47.75)**	0.38 **(9.65)**		

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

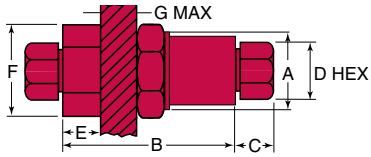
***NOTE:** All sour oil and gas valves and fittings supplied without collars and glands unless otherwise specified.*

Figure 4



Straight Coupling / Union Coupling

Figure 5



Bulkhead Coupling

Union Couplings are designed with a removable seat insert allowing disassembly and tubing removal without the necessity of loosening other items in a line.

Sour Service Products - High Pressure Tubing

Pressures to 30,000 psi (2068 bar)

Parker Autoclave Engineers offers a complete selection of seamless annealed stainless steel tubing designed to match the performance standards of Parker Autoclave Engineers valves and fittings for sour oil and gas service. Parker Autoclave Engineers high pressure tubing is manufactured specifically for high pressure applications requiring both strength and corrosion resistance. The tubing is furnished in random lengths between 20 feet (6 meters) and 27 feet (8.2 meters). The average is 24 feet (7.3 meters). Sour service tubing is available in three sizes.

Inspection and Testing

Parker Autoclave Engineer's high pressure tubing is inspected to assure freedom from seams, laps, fissures or other flaws, as well as carburization or intergranular carbide precipitation. The outside and inside diameters of the tubing are controlled within close tolerences. Sample pieces of tubing for each lot are tested to confirm mechanical properties. Hydrostatic testing is also performed on a statistical basis and is conducted at the working pressure of the tube. Autoclave will perform 100% hydrostatic testing at additional cost if desired.

Tubing Tolerance

Nominal Tubing Size inches (mm)	Tolerance/Outside Diameter inches (mm)
1/4 (6.35)	.248/.243 (6.30/6.17)
3/8 (9.53)	.370/.365 (9.40/9.27)
9/16 (14.29)	.557/.552 (14.15/14.02)

Catalog Number	Tube Material	Fits Connection Type	Tube Size Inches (mm)			Flow Area $in.^2$ (mm^2)	Working Pressure psi (bar)*				
			Outside Diameter	Inside Diameter	Wall Thickness		-325 to 100°F -198 - 37.8°C	200°F 93°C	400°F 204°C	600°F 316°C	800°F 427°C
MS15-254	316SS	F250C	1/4 **(6.35)**	0.083 **(2.11)**	0.083 **(2.11)**	0.005 **(3.23)**	30,000 **(2068.39)**	30,000 **(2068.39)**	28,750 **(1982.21)**	27,000 **(1861.56)**	25,250 **(1741.00)**
MS15-252	316SS	F375C	3/8 **(9.53)**	0.125 **(3.18)**	0.125 **(3.18)**	0.012 **(0.30)**	30,000 **(2068.39)**	30,000 **(2068.39)**	28,750 **(1982.21)**	27,000 **(1861.56)**	25,250 **(1741.00)**
MS15-251	316SS	F562C	9/16 **(14.29)**	0.188 **(4.78)**	0.187 **(4.75)**	0.028 **(0.71)**	30,000 **(2068.39)**	30,000 **(2068.39)**	28,750 **(1982.21)**	27,000 **(1861.56)**	25,250 **(1741.00)**

NOTE: *All sour oil and gas valves and fittings supplied without collars and glands unless otherwise specified.*

* 316SS annealed material complies with NACE MR0175 material requirements.

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Sour Service Products - High Pressure Coned-and-Threaded Nipples

Pressures to 30,000 psi (2068 bar)

For rapid system make-up, Parker Autoclave Engineers supplies pre-cut, coned-and-threaded nipples in various sizes and lengths for Parker Autoclave Engineers high pressure valves and fittings.

Special lengths

In addition to the standard lengths listed in the table below, nipples are available in any custom length. Consult factory.

Materials

Catalog numbers in table refer to Type 316 Stainless steel. Catalog numbers with suffix 316SOG denote 316SS annealed in compliance with NACE MR0175.

Material in table is 316 Stainless steel

Catalog Number Nipple Length In (mm)							Fits Connection Type	Tube Size inches (mm)		Working Pressure at 100°F (37.8°C) psi (bar)
2.75" **(69.85)**	3.00" **(76.20)**	4.00" **(101.60)**	6.00" **(152.40)**	8.00" **(203.20)**	10.00" **(254.00)**	12.00" **(304.80)**		O.D.	I.D.	
CN4402-316SOG	CN4403-316SOG	CN4404-316SOG	CN4406-316SOG	CN4408-316SOG	CN44010-316SOG	CN44012-316SOG	F250C	1/4 **(6.35)**	0.083 **(2.11)**	30,000 **(2068.39)**
	CN6603-316SOG	CN6604-316SOG	CN6606-316SOG	CN6608-316SOG	CN66010-316SOG	CN66012-316SOG	F375C	3/8 **(9.53)**	0.125 **(3.18)**	30,000 **(2068.39)**
		CN9904-316SOG	CN9906-316SOG	CN9908-316SOG	CN99010-316SOG	CN99012-316SOG	F562C	9/16 **(14.29)**	0.188 **(4.78)**	30,000 **(2068.39)**

Note:
1. See Sour Service tubing section for pressure ratings at various temperatures.
2. Parker Autocalve Engineers does not recommend bending of SOG tubing.

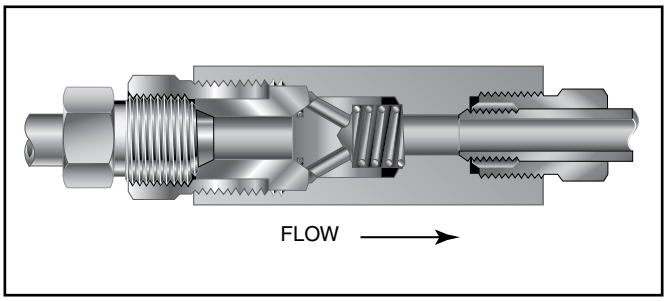
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Sour Service Products - High Pressure Check Valves

Pressures to 30,000 (2068 bar)

O-Ring Check Valves

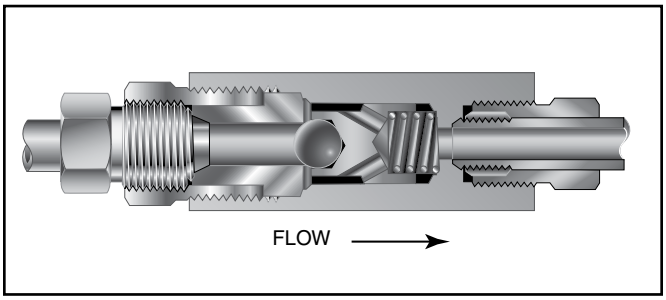


Provides unidirectional flow and tight shut-off for liquids and gas with high reliability. When differential drops below cracking pressure*, valve shuts off. **(Not for use as relief valve.)**

Materials: Body, cover, poppet: 316 Annealed Stainless Steel, Cover gland: Annealed Stainless Steel, Spring: High Nickel Alloy, Standard O-ring: Viton, for operation to 400° F (204°C). Buna-N or PTFE available for 250°F (121°C) or 400°F (204°C) respectively; specify when ordering.

***Cracking Pressure:** 20 psi (1.38 bar) ±30%. Springs for higher cracking pressures (up to 100 psi (6.89 bar)) available on special order for O-ring style check valves only.

Ball Check Valves

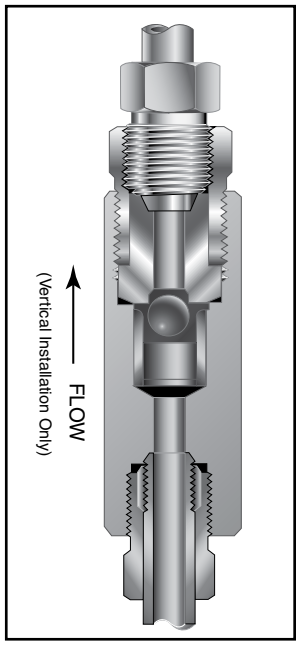


Prevents reverse flow where **leak-tight shut-off is not mandatory**. When differential drops below cracking pressure, valve closes. With all-metal components, valve can be used up to 1200°F (649°C). See Technical Information section for connection temperature limitations. **(Not for use as a relief valve.)**

Ball and poppet are an integral design to assure positive, in-line seating without "chatter". Poppet is designed essentially for axial flow with minimum pressure drop.

Materials: Body, cover, poppet: 316 Annealed Stainless Steel, Cover gland: Annealed Stainless Steel, Ball, Spring: High Nickel Alloy

Ball Type Excess Flow Valves



Protects pressure gauges and pressure instrumentation from surges in flow or sudden venting in the event of line failure.

Materials: Body, cover, sleeve: Type 316 Annealed Stainless Steel, Ball: 300 Series Annealed Stainless Steel, Cover gland: annealed stainless steel.

Vertical Installation: Since this type of check valve employs a non-spring loaded ball, valve MUST be installed in VERTICAL position with arrow on valve body pointing UP. (cover gland up).

Resetting Valve: Equalize the pressure across the ball. The ball will drop and reset automatically.

NOTE: *All sour oil and gas valves and fittings supplied without collars and glands unless otherwise specified.*

CAUTION: *While testing has shown O-Rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

Catalog Number	Fits Connection Type	Pressure Rating psi (bar)*	Orifice inches (mm)	Rated C_V	Dimensions - inches (mm)					
					A	B	C	D Typical	Hex	

O-Ring Check Valves

CKO4400-SOGWO	F250C	30,000 (2068.39)	0.094 (2.39)	0.15	3.38 (85.85)	2.50 (63.50)	0.50 (12.70)	0.63 (16.00)	1.18 (29.97)	See Figure 1
CKO6600-SOGWO	F375C	30,000 (2068.39)	0.125 (3.18)	0.28	3.75 (95.25)	2.62 (66.55)	0.53 (13.46)	0.75 (19.05)	1.18 (29.97)	
CKO9900-SOGWO	F562C	30,000 (2068.39)	0.187 (4.75)	0.63	4.62 (117.35)	3.38 (85.85)	0.81 (20.57)	1.12 (28.45)	1.50 (38.10)	

Ball Check Valves

CB4401-SOGWO	F250C	30,000 (2068.39)	0.094 (2.39)	0.15	3.38 (85.85)	2.50 (63.50)	0.50 (12.70)	0.63 (16.00)	1.18 (29.97)	See Figure 1
CB6601-SOGWO	F375C	30,000 (2068.39)	0.125 (3.18)	0.28	3.75 (95.25)	2.62 (66.55)	0.53 (13.46)	0.75 (19.05)	1.18 (29.97)	
CB9901-SOGWO	F562C	30,000 (2068.39)	0.187 (4.75)	0.63	4.62 (117.35)	3.38 (85.85)	0.81 (20.57)	1.12 (28.45)	1.50 (38.10)	

Ball Type Excess Flow Valves

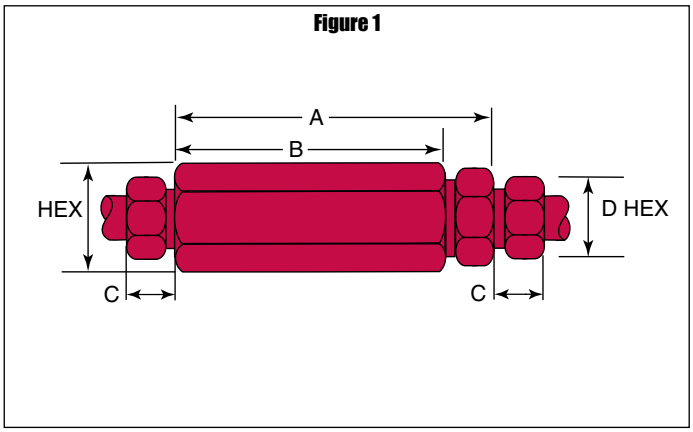
CK4402-SOGWO	F250C	30,000 (2068.39)	0.094 (2.39)		3.38 (85.85)	2.50 (63.50)	0.50 (12.70)	0.63 (16.00)	1.18 (29.97)	See Figure 1
CK6602-SOGWO	F375C	30,000 (2068.39)	0.125 (3.18)		3.75 (95.25)	2.62 (66.55)	0.53 (13.46)	0.75 (19.05)	1.18 (29.97)	
CK9902-SOGWO	F562C	30,000 (2068.39)	0.187 (4.75)		4.62 (117.35)	3.38 (85.85)	0.81 (20.57)	1.12 (28.45)	1.50 (38.10)	

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

***NOTE:** All sour oil and gas valves and fittings supplied without collars and glands unless otherwise specified.*

Figure 1

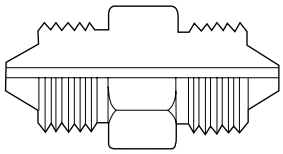


Sour Service Products - Adapters/Couplings

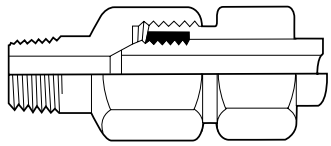
Pressures to 30,000 psi (2068 bar)

How to use the Ordering Chart below:

1. Locate Male or Female end in horizontal heading.
2. Locate desired Female or Male emd of adapter down the side of chart.
3. Catalog number of required adapter is located at intersection of columns.



Male By Male
(w/High-Pressure shown)



Male NPT
(w/High-Pressure shown)

			"A" Connection					
			Male			Female		
		Connection "A"	**1/4" M250C**	**3/8" M375C**	**9/16" M562C**	**1/4" F250C**	**3/8" F375C**	**9/16" F562C**
		Connection "B"						
AE High Pressure 30,000 psi @100°F	Male	**1/4" M250C**	60MAH4H4-SOG	60MAH4H6-SOG	60MAH4H9-SOG		60M46B3-SOGWO	60M49B3-SOGWO
		3/8" M375C		60MAH6H6-SOG	60MAH6H9-SOG	60M64B3-SOGWO		60M69B3-SOGWO
		9/16" M562C			60MAH9H9-SOG	60M94B3-SOGWO	60M96B3-SOGWO	
	Female	**1/4" F250C**		60M64B3-SOGWO	60M94B3-SOGWO	60F4433-SOGWO	60F4633-SOGWO	
		3/8" F375C	60M46B3-SOGWO		60M96B3-SOGWO	60F4633-SOGWO	60F6633-SOGWO	60F6933-SOGWO
		9/16" F562C	60M49B3-SOGWO	60M69B3-SOGWO		60F4933-SOGWO	60F6933-SOGWO	60F9933-SOGWO
NPT 10,000 psi* @100°F	Male	**1/4" NPT**	15MAH4P4-SOG	15MAH6P4-SOG	15MAH9P4-SOG	15M44N3-SOGWO	15M46N3-SOGWO	15M49N3-SOGWO
		3/8" NPT		15MAH6P6-SOG	15MAH9P6-SOG	15M64N3-SOGWO	15M66N3-SOGWO	15M69N3-SOGWO
		1/2" NPT	15MAH4P8-SOG	15MAH6P8-SOG	15MAH9P8-SOG	15M84N3-SOGWO	15M86N3-SOGWO	15M89N3-SOGWO
		3/4" NPT			10MAH9P12-SOG	10M124N3-SOGWO	10M126N3-SOGWO	10M129N3-SOGWO
		1" NPT			10MAH9P16-SOG	10M164N3-SOGWO	10M166N3-SOGWO	10M169N3-SOGWO
	Female	**1/4" NPT**	15M44B8-SOG	15M64B8-SOG	15M94B8-SOG	15F4483-SOGWO	15F4683-SOGWO	15F4983-SOGWO
		3/8" NPT	15M46B8-SOG	15M66B8-SOG	15M96B8-SOG	15F6483-SOGWO	15F6683-SOGWO	15F6983-SOGWO
		1/2" NPT	15M48B8-SOG	15M68B8-SOG	15M98B8-SOG	15F8483-SOGWO	15F8683-SOGWO	15F8983-SOGWO
		3/4" NPT	10M412B8-SOG	10M612B8-SOG	10M912B8-SOG	10F12483-SOGWO	10F12683-SOGWO	10F12983-SOGWO
		1" NPT		10M616B8-SOG	10M916B8-SOG	10F16483-316SOG	10F16683-316SOG	10F16983-316SOG

*The maximum pressure for an adapter coupling is determined by the connection component with the LOWEST pressure rating; that is, the two end connections and the tubing or pipe used, whichever is LOWER.

In selecting an adapter involving two different sized connections, the larger connection should be on the male end where maximum the mechanical strength of the adapter.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.
CAUTION: See appropriate pressure section in reference to proper selection of tubing.

***NOTE:** All sour oil and gas valves and fittings supplied without collars and glands unless otherwise specified.*

***NOTE:** -OP is one piece adapter.*

Sour Service Products - Severe Service Valve

Pressures to 10,000 psi (690 bar)

Valve Size (inches)	Orifice inches (mm)	Rated Cv	Maximum Working Pressure psi (bar)
1/4	.188 (4.76)	.61	10,000 (690)
1/2	.250 (6.35)	.78	10,000 (690)
3/4	.375 (9.53)	1.79	7,500 (517)

Operating temperature: -20°F to 275°F (-29°C to 135°C)

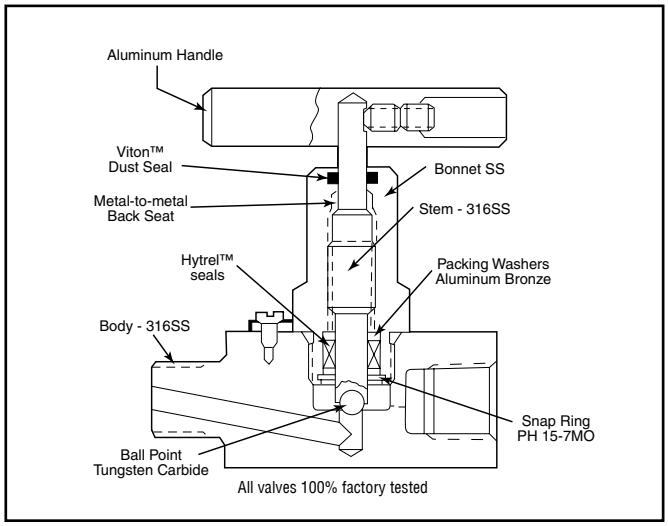
Parker Autoclave Engineers' severe service valve is designed for reliable shut-off service with maximum working pressure to 10,000 psi (690 bar). They are suitable for a wide range of severe duty applications and comply with NACE MR0175. The valve's unique stem design includes a non-rotation ball point as well as blow-out protection.

Applications:

- All areas where reliable shut-off is required in severe service including abrasive, erosive, corrosive and sour fluids.
- Sampling and blowdown lines.
- Blow-out preventers
- Wireline service equipment
- Chemical processing industry

Parker Autoclave Engineers service valves feature:

- Low operating torque
- Non-rotating tungsten carbide (ball point) stem
- Stem back seat for blow-out prevention
- Dust seal prevents stem thread contamination
- Stem packing adjustment not required
- Complies with NACE MR0175
- Moly lubricated stem threads
- Panel mount option available

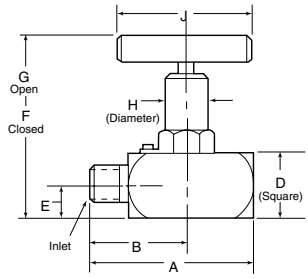


Catalog Number	End Connection		Dimensions - inches (mm)									Valve Pattern
	Inlet N.P.T.	Outlet N.P.T.	A	B	C	D	E	F	G	H	J	
2-Way Straight												
SSV71M4F4	1/4" male	1/4" Female	3.00	1.75	-	1.25	.625	3.25	3.41	0.75	2.50	**See Figure 1**
			(76.20)	(44.45)	-	(31.75)	(15.88)	(82.55)	(86.51)	(19.05)	(63.50)	
SSV71F4	1/4" Female	1/4" Female	3.00	1.50	-	1.25	0.63	3.25	3.41	0.75	2.50	
			(76.20)	(38.10)	-	(31.75)	(15.88)	(82.55)	(86.51)	(19.05)	(63.50)	
SSV71M8F8	1/2" Male	1/2" Female	3.81	2.22	-	1.50	0.75	4.25	4.41	1.00	3.25	
			(96.82)	(56.34)	-	(38.10)	(19.05)	(107.95)	(111.91)	(25.40)	(82.55)	
SSV71F8	1/2" Female	1/2" Female	3.81	1.91	-	1.50	0.75	4.25	4.41	1.00	3.25	
			(96.82)	(48.41)	-	(38.10)	(19.05)	(107.95)	(111.91)	(25.40)	(82.55)	
SSV71M12F12	3/4" Male	3/4" Female	3.81	2.19	-	1.75	0.88	4.94	5.13	1.00	3.25	
			(96.82)	(55.55)	-	(44.45)	(22.23)	(125.40)	(130.18)	(25.40)	(82.55)	
SSV71F12	3/4" Female	3/4" Female	3.81	1.91	-	1.75	0.88	4.94	5.13	1.00	3.25	
			(96.82)	(48.41)	-	(44.45)	(22.23)	(125.40)	(130.18)	(25.40)	(82.55)	
2-Way Angle												
SSV72M4F4	1/4" Female	1/4" Male	3.75	1.63	1.16	1.25	0.63	3.25	3.41	0.75	2.50	**See Figure 2**
			(95.25)	(41.28)	(29.36)	(31.75)	(15.88)	(82.55)	(86.51)	(19.05)	(63.50)	
SSV721F4	1/4" Female	1/4" Female	3.00	1.63	1.16	1.25	0.63	3.25	3.41	0.75	2.50	
			(76.20)	(41.28)	(29.63)	(31.75)	(15.88)	(82.55)	(86.51)	(19.05)	(63.50)	
SSV72M8F8	1/2" Female	1/2" Male	4.25	2.03	1.28	1.50	0.75	4.25	4.41	1.00	3.25	
			(107.95)	(51.59)	(32.54)	(38.10)	(19.05)	(107.95)	(111.91)	(25.40)	(82.55)	
SSV72F8	1/2" Female	1/2" Female	3.81	2.00	1.28	1.50	0.75	4.25	4.41	1.00	3.25	
			(96.82)	(50.80)	(32.54)	(38.10)	(19.05)	(107.95)	(111.91)	(25.40)	(82.55)	
SSV72M12F12	3/4" Female	3/4" Male	4.94	2.75	2.00	1.75	0.88	4.94	5.13	1.00	3.25	
			(125.40)	(69.85)	(50.80)	(44.45)	(22.23)	(125.40)	(130.18)	(25.40)	(82.55)	
SSV72F12	3/4" Female	3/4" Female	4.50	2.75	2.00	1.75	0.88	4.94	5.13	1.00	3.25	
			(114.30)	(69.85)	(50.80)	(44.45)	(22.23)	(125.40)	(130.18)	(25.40)	(82.55)	

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.

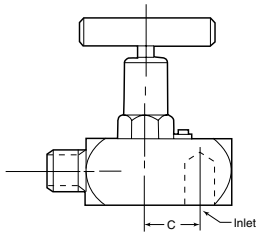
All general terms and conditions of sale, including limitations of our liability, apply to all products and service sold.

Figure 1



2-Way Straight

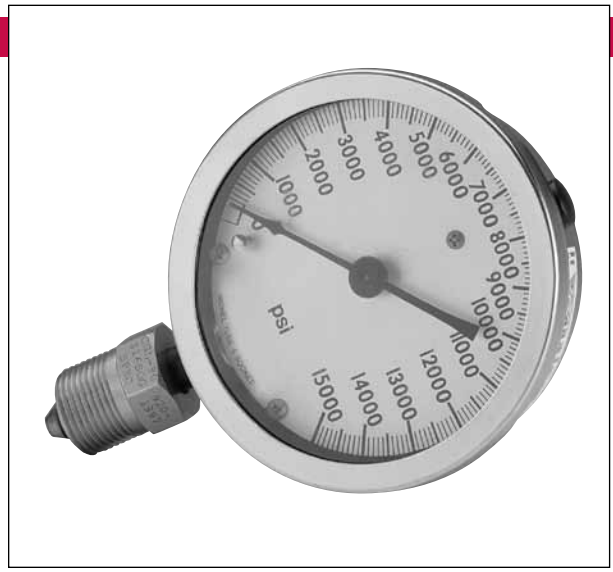
Figure 2



2-Way Angle

Sour Service Products - Pressure Gauges

Pressures to 20,000 psi (1379 bar)



Material and Features:

- Accuracy within 1.0% of full scale range
- Stainless steel case and ring
- K-Monel Bourdon tube and socket
- M562C male 9/16" tube connection in bottom (API Type III)
- Precision stainless steel movement for accuracy and resistance to atmospheric corrosion.
- Pointer zero adjustment located on front of gauge behind dial cover for convenience.
- Gauges can be liquid filled (Add - LF to Catalog #)*
- All gauges furnished with SOG collar and gland
- Gauges are NACE MR175-2002

Calibrated in PSI Only			
Catalog Number	Pressure psi (bar)	Minor Interval Value psi (bar)	Dial Diameter inches (mm)
H-0380	0-5000 (345)	50 (3.45)	4-1/2 (114.30)
H-0336	0-10,000 (690)	100 (6.90)	4-1/2 (114.30)
H-0071	0-15,000 (1034)	100 (6.90)	4-1/2 (114.30)
H-0304	0-20,000 (1379)	200 (13.79)	4-1/2 (114.30)
H-0360	0-30,000 (2068)	500 (34.5)	4-1/2 (114.30)

* Glycerine is standard liquid fill for "LF" option.

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.

Offer of Sale

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).

02-0136SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

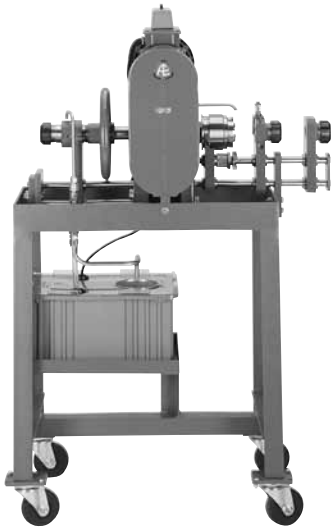
ISO-9001 Certified

Tools, Installation, Operation and Maintenance

Safe, efficient operation of any product is inherently dependent upon its proper installation. In this section the preparation and assembly of low, medium and high pressure connections is explained. Also covered is the assembly procedure for medium and high pressure anti-vibration collet gland assemblies.

Correct installation procedures are further promoted by providing dimensional information associated with a variety of Parker Autoclave Engineers tube connections as well as the torque required to properly seat numerous Parker Autoclave Engineers components. Several tools developed by Parker Autoclave Engineers are presented to help accomplish proper valve, fitting and tubing installation and maintenance.

When installing or maintaining any pressure component, common practice dictates the use of proper safety equipment at all times.



Parker

Autoclave Engineers®

www.autoclave.com

Parker Autoclave Engineers Speedbite Connections

Fast, Positive Sealing for Pressures up to 15,000 psi* (1034 bar)

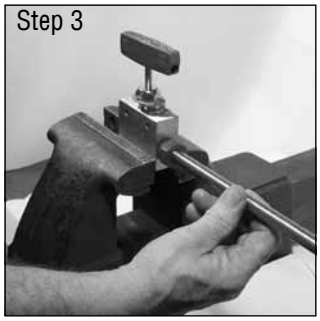
1. Cut tubing to length and deburr. Allow extra length for proper engagement (per table below).

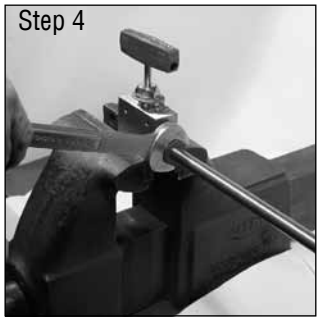
Outside Diameter Tube Size inches (mm)	Extra Allowance** for Engagement inches (mm)
1/16 (1.59)	0.50 (12.70)
1/8 (3.18)	0.50 (12.70)
1/4 (6.35)	0.75 (19.05)
3/8 (9.53)	0.75 (19.05)
1/2 (12.70)	0.88 (22.35)

2. Lubricate male threads. (Lubrication not necessary if tube nut has Bonded Dry-Film Lubricant.) Slip gland and sleeve onto tubing.
Note: Be sure to remove gland and sleeve from components and slide them onto the tubing before inserting the tubing into the components. **Make sure larger end of sleeve is toward gland.** Push tubing into valve or fitting until it bottoms. If process tolerable, a slight amount of inert grease on the nose of the compression sleeve will improve sealability.

3. TIGHTEN GLAND UNTIL SLEEVE BEGINS TO GRIP TUBING.

4. Note starting position of wrench. Tighten gland approximately 1-1/4 turns for the SW and 1/8" W connection. For 1/4" and 1/2" W connections tighten glands approximately 1 turn.



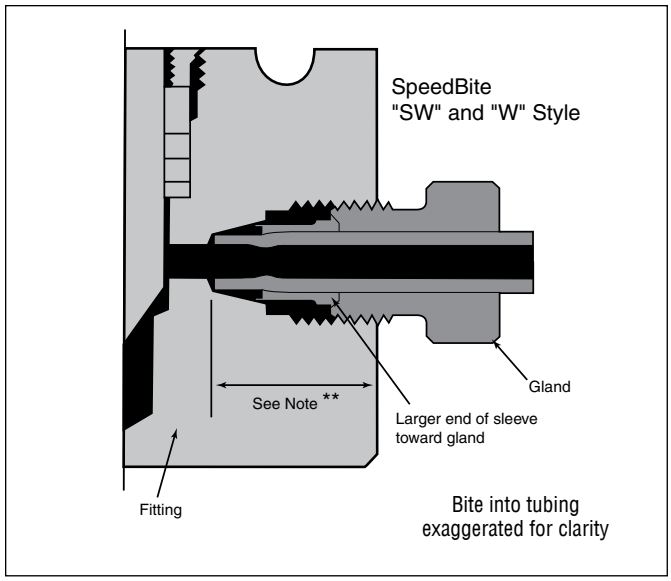


Complete Connection

The illustration below shows the condition of sleeve and tubing after completion of "sleeve seating." The sleeve has cut into the tubing as it moved forward into the tapered seat, upsetting material ahead of it and establishing a shoulder on the tubing to provide positive mechanical support for the tubing end-load. A properly seated sleeve cannot be displaced back and forth along the tubing but may be rotated around the tubing.

Reassembly

To reassemble a connection, insert tubing with sleeve and gland into valve or fitting. Tighten gland "finger-tight". Tighten gland with a wrench approximately 3/8 of a turn for a gas-tight seal. After frequent reassemblies, it may take less than 3/8 turn to effect a gas-tight seal, and as little as 1/8 of a turn may be sufficient.



* No special torque wrenches or mandrels required.

** Distance tubing protrudes into connection from face of fitting.

Fully annealed tubing with proper outside diameter tolerences is recommended for these connection components.

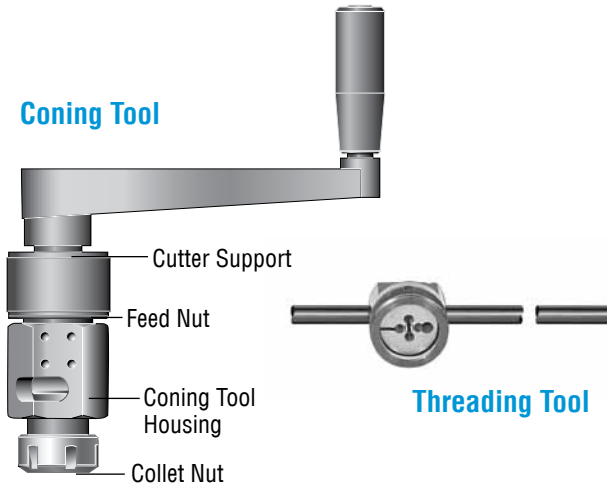
Manual Coning & Threading Tools

Parker Autoclave Engineers manufactures a manual coning and threading tool for optimum performance with tubing sizes up to 9/16" (14.3 mm) outside diameter. These precision quality manual tools permit on-site end preparation for Parker Autoclave Engineers medium and high pressure tubing installations. One coning and one threading tool with optional sizes of collets, blades dies and guide bushings eliminates the need of multiple tools for different size tubing.

Interchangeable collets for each size tubing provides proper centering of tubing. The cutting feed arrangement permits the operator to control the length of the cut. Interchangeable tool steel cutting blades are used in pairs to assure more accurate and faster coning, and are designed to square-off and finish the tube as the cone is completed. There is a provision for applying metal cutting lubricants to the cutting zone.

For coning tool with optional support arm (for holding in vise) and chip/oil catch reservoir, add RS to suffix of model number. Example: MCTM4-RS

For threading operations the threading die holder is designed to hold the appropriate die for any of the standard Parker Autoclave Engineers tubing sizes through 9/16" (14.3 mm) outside diameter. Interchangeable guide bushings properly guide the tool for accurate thread cutting.



Note: Collet nut wrench (not shown) supplied with coning tool.

	Tube Size		Coning Tools and Components Catalog Number			Threading Tools and Components Catalog Number				
	Outside Diameter in.(mm)	Inside Diameter in.(mm)	Tool with Collet & Blades	Collet	Coning Blades (set of 2)	Tool with Die & Bushing	Tool Only	Threading Die		Guide Bushing
								Order No.	Size-type*	
Parker AE Medium Pressure	1/4 (6.35)	.109 (2.77)	MCTM4	90248	101F-1577	402A	402	P-0214	1/4-28	1010-0343
	3/8 (9.53)	.203 (5.16)	MCTM6	90250	101F-1601	402C	402	P-0215	3/8-24	1010-0344
	9/16 (14.3)	.312 (7.92)	MCTM920	90251	1010-5218	402E	402	P-0216	9/16-18	1010-0345
	9/16 (14.3)	.359 (9.12)	MCTM910	90251	101A-1897	402E	402	P-0216	9/16-18	1010-0345
Parker AE High Pressure	1/4 (6.35)	.083 (2.11)	MCTH4	90248	101F-3939	402A	402	P-0214	1/4-28	1010-0343
	5/16 (7.92)	.062 (1.57)	MCTH5	90249	101F-3939	402B	402	P-0205	5/16-24	1030-0343
	3/8 (9.53)	.125 (3.18)	MCTH6	90250	101F-1578	402C	402	P-0215	3/8-24	1010-0344
	9/16 (14.3)	.188 (4.78)	MCTH960	90251	1010-0883	402E	402	P-0216	9/16-18	1010-0345
	†9/16 (14.3)	.250 (6.35)	MCTH940	90251	101C-7214	402E	402	P-0216	9/16-18	1010-0345

Options: **Cutting Oil: P-8784**
90286: Instructions
MCT-SA: Support Arm Assembly
MCT-RES: Reservoir Assembly

** All threads for Parker AE medium pressure and high pressure tubing are LH national fine (class 2). † 9/16 (14.3) x .312 (7.92) ID 40,000 psi (2758 bar), use MCTM920.*

Note: Manual coning and threading tools for 3/4" (19.1 mm) and 1" (25.4 mm) outside diameter medium pressure tubing are not available. Model AEGCTM-2 Power Coning-and-Threading Machine is recommended for this tubing. A minimum of 3" (76 mm) straight length is required to perform coning and threading operation with manual coning tool.

Coning and Coning and Threading Tool Kits

Parker Autoclave Engineers offers coning kits as well as coning and threading tool kits. Each kit consists of the required tools, and other items necessary for your coning or coning and threading needs. All kit items are placed in a hand-carry tool case with top tray. The coning tools supplied in the tool kits come complete with the vise stand and chip/oil reservoir standard. The following is a list of items included in each kit.

Included with all kits: Coning tool assembly, three collets, collet nut wrench, three sets of coning blades, tool box with tray, de-burring tool, one quart of cutting oil, 3/32 Allen wrench, four spare set screws, and laminated instruction sheet.

Coning Kit:

Medium pressure kit

KMCT-M Coning tool with vise stand and reservoir
1/4, 3/8 and 9/16" collets
1/4, 3/8 and 9/16" blades
(9/16" blades for 20,000 psi tubing only)

High pressure kit

KMCT-H Coning tool with vise stand and reservoir
1/4, 3/8 and 9/16" collets
1/4, 3/8 and 9/16" blades
(5/16" collets not included)
(9/16" blades for 60,000 psi tubing only)

Coning and Threading Kit:

Included with all kits: Coning tool assembly, three collets, collet nut wrench, three sets of coning blades, tool box with tray, de-burring tool, one quart of cutting oil, 3/32 Allen wrench, four spare set screws, threading tool, three guide bushings, three threading dies, and laminated instruction sheet.

Medium pressure kit

KMCT-MT Coning tool with vise stand and reservoir
1/4, 3/8 and 9/16" collets
1/4, 3/8 and 9/16" blades
(9/16" blades for 20,000 psi tubing only)
Threading tool
1/4, 3/8 and 9/16" guide bushing
1/4, 3/8 and 9/16" dies

High pressure kit

KMCT-HT Coning tool with vise stand and reservoir
1/4, 3/8 and 9/16" collets
1/4, 3/8 and 9/16" blades
(5/16" collets not included)
(9/16" blades for 60,000 psi tubing only)
Threading tool
1/4, 3/8 and 9/16" guide bushing
1/4, 3/8 and 9/16" dies

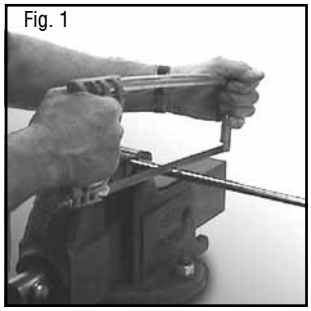
***Note**: Additional blades available for other sizes of tubing. See manual coning and threading tool on page 3 for sizes and part numbers.*

Coning and Threading Installation

Manual Kit:

1. **Fig. 1** Cut tubing to length and square off the end as close to the required length as possible. Allow extra length for proper engagement into the connection as listed in Table 1. A small amount of extra length should be allowed to finish the end of the tube, but excessive amounts require additional cutting time and premature blade wear. ***Note**: When cutting tubing with abrasive cut off wheel, tubing should not be over heated effecting material properties.*

Fig. 1



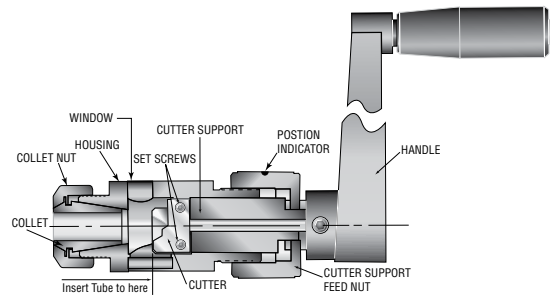
2. Install the collet and collet nut into the bottom of the coning tool housing. Remove the cutter support feed nut from the coning tool housing and install the cutters. This can be done by backing out the four set screws in the cutter support. ***Note**: When installing new blades, be sure the blades are flat against the holder. There should be no space between the blades and the holder.*

TABLE 1

	Tube Size	Connection Type	Extra Allowance** for Engagement inches (mm)
Medium Pressure	1/4"	SF250CX	0.55 (13.97)
	3/8"	SF375CX	0.69 (17.53)
	9/16"	SF562CX	0.84 (21.34)
	3/4"	SF750CX	1.00 (25.4)
	1"	SF1000CX	1.44 (36.6)
	1-1/2"	SF1500CX	1.875" (47.63)
High Pressure	1/4"	F250C	0.50 (12.70)
	5/16"	F312C150	1.25 (31.75)
	3/8"	F375C	0.69 (17.53)
	9/16"	F562C	0.84 (21.34)
	9/16"	F562C40	0.81 (20.57)
	1"	F1000C-43	1.62 (41.1)

** See Note on page 2.

TABLE 2



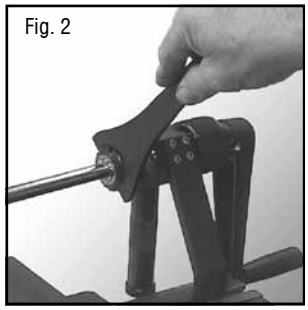
Medium Pressure Tubing		
	Cone Length inches (mm)	No. of Turns
1/4"	0.11 (2.79)	2
3/8"	0.13 (3.30)	3-1/2
9/16"(CX-20)	0.16 (4.06)	3
9/16"(CX-10)	0.13 (3.30)	2-1/2

High Pressure Tubing		
Tube O.D. (inches)	Cone Length inches (mm)	No. of Turns
1/4"	0.13 (3.30)	3
5/16"	0.19 (4.83)	3-1/2
3/8"	0.16 (4.06)	3
9/16"	0.28 (7.11)	5-1/2
9/16"(C40)	0.21 (5.33)	4-1/2

Manual coning and threading tools are not available for 3/4" and 1" tubing, see page 13 Coning and Threading Machine.

3. **Fig. 2** Place the coning tool housing (or optional support arm), without the feed nut/cutter support assembly, in a vise. The vise should be equipped with soft jaws, and the housing should be placed in the vise to allow lubricant to flow to the cutters and cone.

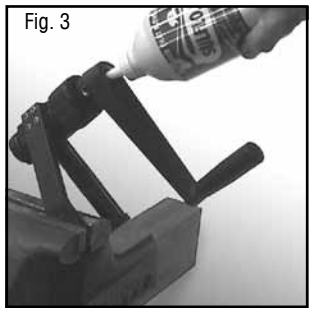
Fig. 2



4. **Fig. 2** Slide the tubing through the collet until the end of the tube appears in the coning tool housing window. Line the end of the tube with the edge of the window and tighten the collet nut firmly in place using the collet nut wrench (see Table 2).

5. **Fig. 3** Install the feed nut/cutter support assembly into the coning tool housing. Rotate the feed nut clockwise until the top of the cutters just contact the top of the tube. **Do not** rotate the feed nut any further at this point.

Fig. 3



6. **Fig. 3** Apply cutting oil through the lubricant opening in the end of the cutter holder or directly through the housing window. A medium weight high sulphur content cutting fluid is recommended. Use the cutting oil freely during the coning operation.

7. a. The distance the feed nut travels from it's start position can be used to gauge the amount of travel to properly cone the tube. The amount of travel is shown in Table 2 and is labeled "Cone Length".

b. Another method to determine proper cone length is to count the number of turns of the feed nut. The number of turns is listed in Table 2 under the heading "Number of Turns". This includes enough advancement of the feed nut to face off the tube. This assumes the tube is cut to length in accordance with these instructions. The feed nut is supplied with a position indicator (drilled hole) to help determine the number of turns.

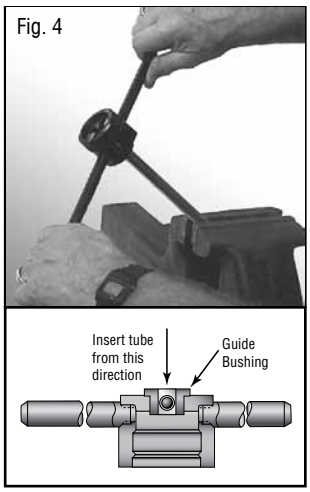
8. Rotate the handle in a clockwise direction while simultaneously **slowly** turning the feed nut in a clockwise direction. Rotate the feed nut slowly and evenly to smoothly cone the tube. Loosen collet nut, remove tubing and visually inspect the cone. Use deburring tool to remove any burr on inside edge of tube after coning.

Manual Threading:

9. **Fig. 4** Clamp the tubing in a soft jaw vise. Do not over tighten. Slide the threading tool over the tube through the guide bushing.

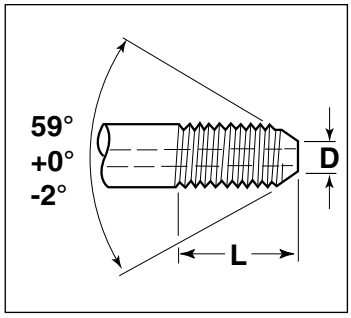
10. Apply a medium weight, high sulphur cutting oil to threading area.

Fig. 4



All dimensions for reference only and subject to change.

11. Apply pressure to the top of the threading tool to start the cutting action. The threads are left handed, so turn the threader **counterclockwise** to thread the tube. The threading tool may need to be periodically rotated clockwise to break and discharge metal chips. Apply lubricant freely during the threading process. ***Note**: The lead in chamfer (larger chamfer) on the die flutes toward guide bushing.*



12. Continue to rotate die holder counterclockwise while applying cutting oil generously throughout the process until threads of the following lengths have been cut.

13. After tube is coned, threaded and deburred, check for proper thread fit and length with a new collar of the proper size. ***Note**: Rememebr to flush all tubing prior to installation with a fluid that is compatiable with the process fluid being used.*

TABLE 3

Male Connection Type	Tube Size Outside Diameter x Inside Diameter inches (mm)	Dimensions inches (mm) D	Dimensions inches (mm) L (max)	Thread size* and type (inches)
SM250CX20	1/4" x 0.109 (6.35 x 2.77)	0.141 (3.58)	0.344 (8.74)	1/4" - 28
SM375CX20	3/8" x 0.203 (9.53 x 5.16)	0.25 (6.35)	0.438 (11.13)	3/8" - 24
SM562CX20	9/16 x 0.312 (14.29 x 7.92)	0.406 (10.31)	0.500 (12.70)	9/16" - 18
SM562CX10	9/16" x 0.359 (14.29 x 9.12)	0.438 (11.13)	0.500 (12.70)	9/16" - 18
SM750CX20	3/4" x 0.438 (19.05 x 11.13)	0.562 (14.27)	0.625 (15.88)	3/4" - 16
SM750CX10	3/4" x 0.516 (19.05 x 13.11)	0.578 (14.68)	0.625 (15.88)	3/4" - 16
SM1000CX20	1" x 0.562 (25.4 x 14.27)	0.719 (18.26)	0.781 (19.84)	1" - 14
SM1000CX10	1" x 0.688 (25.4 x 17.48)	0.812 (20.62)	0.781 (19.84)	1" - 14
SM1500CX	1-1/2" x 0.937 (38.10 x 23.78)	1.062 (26.97)	1.000 (25.40)	1-1/2" - 12
M250C	1/4" x 0.083 (6.35 x 2.10)	0.125 (3.18)	0.562 (14.27)	1/4" - 28
M250C100 (see note)	1/4" x 0.083 (6.35 x 2.10)	0.125 (3.18)	0.625 (15.88)	1/4" - 28
M312C150	5/16" x 0.062 (7.94 x 1.57)	0.125 (3.18)	0.687 (17.45)	5/16" - 24
M375C100 (see note)	3/8" X 0.125 (9.53 x 3.18)	0.219 (5.56)	0.562 (14.27)	3/8" - 24
M375C	3/8" x 0.125 (9.53 x 3.18)	0.219 (5.56)	0.75 (19.05)	3/8" - 24
M562C	9/16" x 0.187 (14.29 x 4.78)	0.281 (7.14)	0.938 (23.83)	9/16" - 18
M562C40	9/16" x 0.250 (14.29 x 6.35)	0.312 (7.92)	0.938 (23.83)	9/16" - 18
M562C40-312	9/16" x .312 (14.29 x 7.92)	0.406 10.31	0.940 23.88	9/16" - 18
M1000C43	1" x 0.438 (25.4 x 11.13)	0.562 (14.27)	0.91 (23.11)	1" - 14

*Thread is left-hand national fine (Class 2). All dimensions for reference only and subject to change.

NOTE: M250C100 and M375C100 used in F312C150 connection at 100,000 psi (6895 bar).

Approximate Number of Turns to Thread Tubing

Male Connection	Number of Turns
SM250CX20	6-1/2
SM375CX20	7-1/2
SM562CX20	6
SM562CX10	6-3/4
M250C	12
M312C150	12
M375C	14
M562C	12
M562C40	13

Assembly and Makeup of Connection

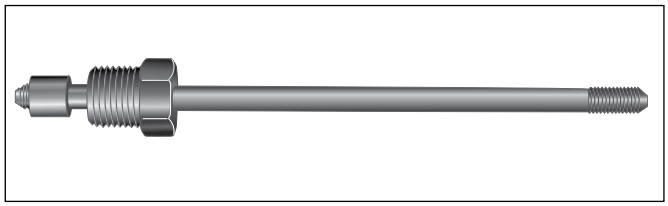
1. Lubricate male threads of gland with a metal based thread lubricant.† Slip gland on tubing as shown and thread collar on tubing until one to two threads are exposed between collar and cone.

2. A small amount of process tolerable lubricant, such as silicone grease, on the cone tip will help with the sealing process. Insert tubing in connection, engage gland and tighten "fingertight".

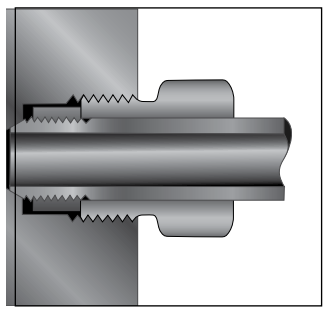
3. Tighten gland with torque wrench to specified values on page 13. When tightening, the use of an additional wrench is recommended to hold the fitting.

† Copper Anti-Seize Lubricant:
P-3580 (1 pound can)
P-3580-8 (1/2 pound can)

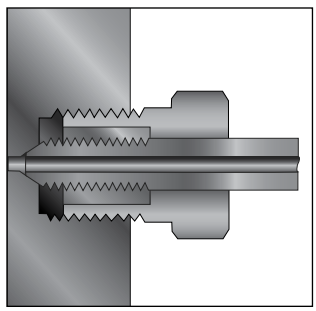
Moly Anti-Seize Lubricant:
P-9766 (1 pound can)



Step 1, 2



Completed Autoclave Engineers Medium Pressure Connection.



Completed Autoclave Engineers High Pressure Connection.

QSS Assembly Procedure

Fast, Positive Sealing for Pressures up to 15,000 psi (1034 bar)

1/4" & 3/8" Tubing Size (Standard setting operation)

See next page for setting with hydraulic tool.

(Setting with hydraulic tool is recommended but not required).

1. Cut tubing to length and deburr. Allow extra length for proper engagement (per table below).

Outside Diameter Tube Size inches (mm)	Extra Allowance** for Engagement inches (mm)
1/4 (6.35)	0.75 (19.05)
3/8 (9.53)	0.81 (20.64)

2. Slip gland and sleeve onto tubing.

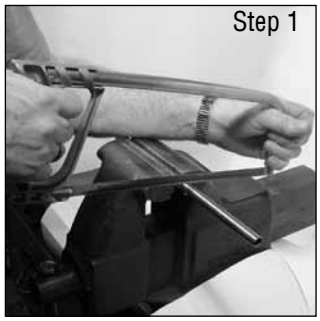
Note: *Be sure to remove gland and sleeve from components and slide them onto the tubing before inserting the tubing into the components.*

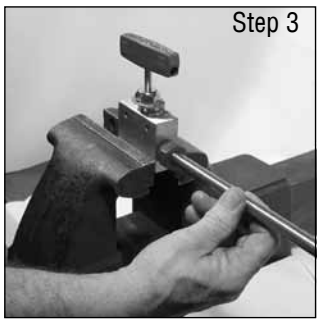
Make sure larger end of sleeve is toward gland.

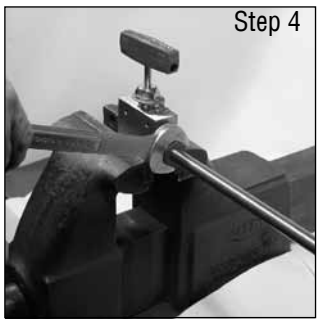
Push tubing into valve or fitting until it bottoms. Lubricate gland nut threads to aid in assembly. If process tolerable, a slight amount of inert grease on the nose of the compression sleeve is recommended to improve sealability.

3. TIGHTEN GLAND NUT UNTIL SLEEVE BEGINS TO GRIP TUBING.

4. Note starting position of wrench.† Tighten gland nut 1-1/4 turns to complete the QSS connection.*





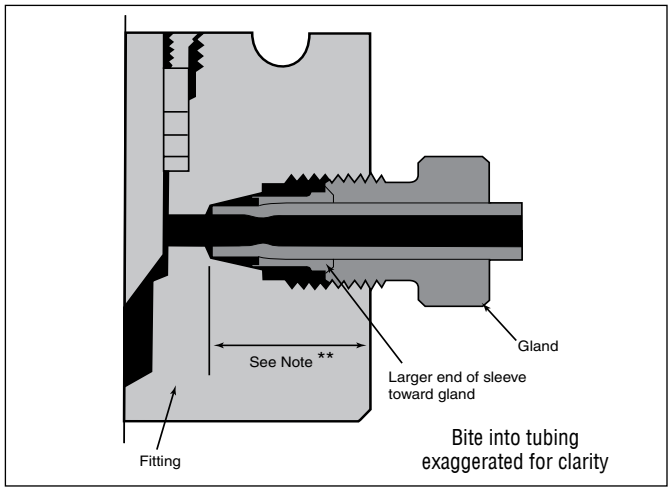


Torque values can be used for both initial setting and reassembly connections. See the following page for reassembly values and ranges.

	Initial setting torque ft-lbs (NM)
1/4"	40 (54.3)
3/8"	80 (108.5)

Completed Connection

The illustration below shows the condition of sleeve and tubing after completion of "sleeve setting." The sleeve has cut into the tubing as it moved forward into the tapered seat, upsetting material ahead of it and establishing a shoulder on the tubing to provide positive mechanical support for the tubing end-load. A properly set sleeve cannot be displaced back and forth along the tubing but may be rotated around the tubing.



Reassembly

To reassemble a 1/4 or 3/8 connection, insert tubing with sleeve and gland nut into valve or fitting. Tighten gland nut until the sleeve begins to grip tubing. Tighten gland with a wrench 1/4 of a turn for a gas-tight seal. After frequent reassemblies, it may take less than 1/4 turn to affect a gas-tight seal and as little as 1/8 of a turn may be sufficient.

* No special torque wrenches or mandrels required.

** Distance tubing protrudes into connection from face of fitting.

† A small blind hole on the face of the gland is provided for a starting position reference.

Parker Autoclave Engineers Medium Pressure tubing is r equired for these connection components.

When assembling tubing into fittings such as in rack systems, alignment of tubing is critical in connection make up. Do not force tubing into alignment with connections as bending stress will effect the sealing capability of the connections.

QSS Assembly Procedure

Fast, Positive Sealing for Pressures up to 15,000 psi (1034 bar)

Hydraulic Set Tool Assembly

1. Cut tubing to length and deburr. Allow extra length for proper engagement (per table below).

Outside Diameter Tube Size inches (mm)	Extra Allowance for Engagement** inches (mm)
1/4 (6.35)	0.75 (19.05)
3/8 (9.53)	0.81 (20.64)
9/16 (14.27)	1.25 (31.75)
3/4 (19.04)	1.63 (41.28)
1 (25.40)	1.75 (44.45)

2. Slip gland nut and sleeve onto tubing. Lubricate the nose of the compression sleeve or the tapered die surface with a metal to metal lubricant. We recommend Jetlube MP-50. Make sure larger end of sleeve is toward gland nut. Push tubing into hydraulic set tool until it bottoms into the setting die. For the 1" size only, assemble the split nut (2A-1) around the tubing between the sleeve and gland with the larger counter bore towards the gland and thread into the cap. Be sure both the split nut and cap have been tightened down and neither can be moved by hand. The cap should always be flush with the top of the housing (2A-2) while the split nut will not. Skip step 3.

3. Thread gland nut into cap until the hex touches the top surface.

4. Pressurize cylinder up to the set pressure (per table below.)

DO NOT EXCEED THE SET PRESSURE.

AS WITH ALL HIGH PRESSURE EQUIPMENT, USE CAUTION DURING OPERATION. SET TOOL MAWP IS 10,000 PSI (690 BAR).

Outside Diameter Tube Size inches (mm)	Set Pressure for Full Tubing Bite psi (bar)
1/4 (6.35) 3/8 (9.53) 9/16 (14.27)	4500 (310) to 5000 (344)
3/4 (19.04)	8000 (552) to 10000 (690)
1 (25.4)	9000 (620) to 9500 (655)

Vent all presssure from hydraulic cylinder. Remove gland assembly from preset tool and inspect biting end of sleeve. Looking inside the biting end of the sleeve you should see a shoulder pushed up from the tubing material. A properly set sleeve must spin freely to achieve a seal. If the sleeve is seized in place after setting, discard and make another. **Do not set a sleeve more than once.**

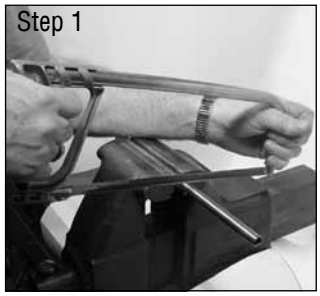
5. Install gland assembly into valve/fitting. If process tolerable, a slight amount of inert grease on the nose of the compression sleeve should be used to aid sealing. Lubrication of gland threads will also aid in assembly.

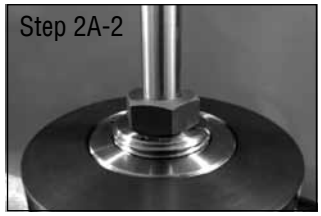
TIGHTEN GLAND NUT UNTIL SLEEVE BEGINS TO GRIP TUBING.

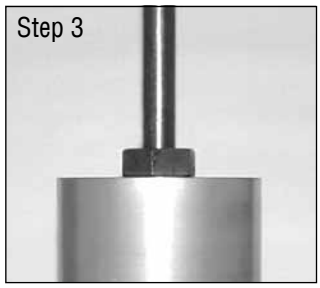
6. Note starting position of wrench.† Tighten gland nut 1/4 turn to complete the QSS connection. Since the mechanical bite has already been completed with the hydraulic set tool, it is permissible to vary the torque to achieve sealing.

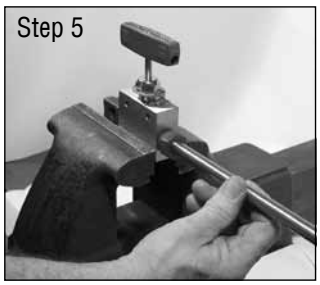
If torque values are required, use the following:

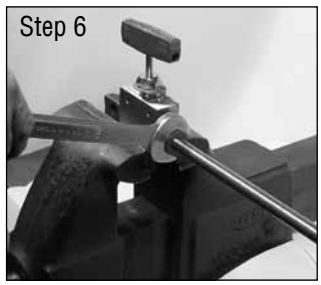
Size (in)	Required Torque ft-lbs (Nm)	Max. Torque ft-lbs (Nm)	Torque Wrench Adapter Size	Adapter Part #
1/4"	30 (40.7)	50 (67.8)	5/8"	P-1683
3/8"	35 (47.5)	75 (101.6)	3/4"	P-9813
9/16"	90 (122.0)	135 (183.0)	1-3/16"	P-1689
3/4"	175 (237.3)	250 (339.0)	1-1/2"	P-6040
1"	375 (508.4)	500 (677.9)	1-3/4"	91269











Completed Connection

The hydraulically set sleeve has cut into the tubing as it moved forward into the tapered seat, upsetting material ahead of it and establishing a shoulder on the tubing to provide positive mechanical support for the tubing end-load. A properly set sleeve cannot be displaced back and forth along the tubing but may be rotated around the tubing.

Reassembly

To reassemble a connection, insert tubing with sleeve and gland nut into valve or fitting. Install gland into valve/fitting.

TIGHTEN GLAND NUT UNTIL SLEEVE BEGINS TO GRIP TUBING.

Note starting position of wrench.† Tighten gland nut 1/4 turn to complete the QSS connection.

** Distance tubing protrudes into connection from face of fitting.

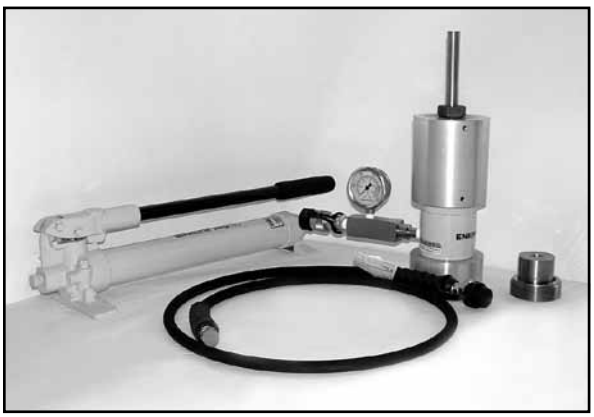
† A small blind hole on the face of the gland is provided for a starting position reference.

Parker Autoclave Engineers Medium Pressure tubing is required for these connection components.

When assembling tubing into fittings such as in rack systems, alignment of tubing is critical in connection make up. Do not force into alignment with connections as bending stress will effect the sealing capability of the connections.

Hydraulic Sleeve Set Tool

The Parker Autoclave Engineers hydraulic sleeve set tool is designed for use with the QS Series glands, sleeves and Autoclave tubing. This tool is required to set the sleeve for the 9/16” and 3/4” sizes and suggested for the 1/4” and 3/8” sizes. It not only produces the required bite into the tubing, it is much easier than trying to set the sleeve the conventional method. The tool comes in a self contained portable, lockable case complete with hand or air pump, cap and dies for all sizes.



Features

Case Dimensions: 28”W x 14.25”H x 13.75”D (711cm x 362cm x 292cm)

Total Weight: 69 lbs. (31 Kg)

Hand Pump: Single stage hydraulic (standard)

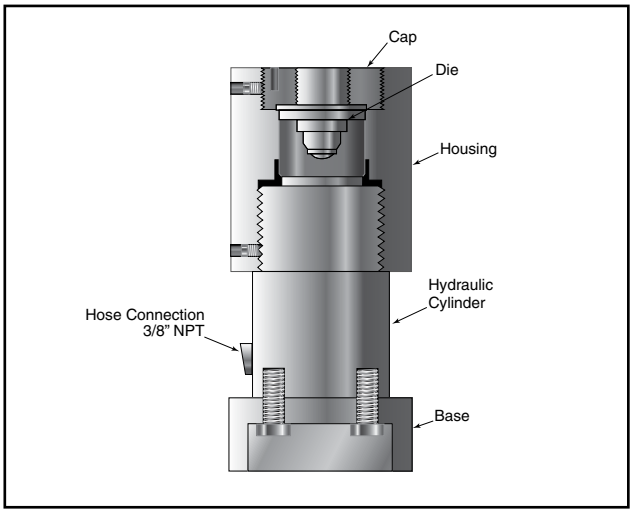
Hydraulic Cylinder: 10,000 psi, 2.5” 25 ton

Base & Housing: Aluminum anodized

Die and Cap: Precision hardened steel

Gauge: 15,000 psi (1034 bar)

Air-operated hydraulic pump option can be furnished in place of standard hand pump. (Add “-A” to order number). Operating pressure 0 to 10,000 psi (0 to 690 bar). Required air presssure, 30 psi (2.1 bar) minimum 120 psi (8.3 bar) maximum. Reservoir capacity: 24 cu. in. (393cm^3). Air lubricator/air separator is recommended for air operated units.



Tooling Installation and Changing Sizes

To change tooling to another size only requires interchanging 2 parts.

1. Loosen the 5/16" set screw that locks the threaded cap from rotating.
2. Using a 5/32" hex key to rotate and remove the threaded steel cap from the aluminum housing.
3. Turn the tool assembly upside down to remove the die from inside the housing.
4. Install the die of the appropriate connection size you wish to use. The solid side of the die should be facing down towards the hydraulic cylinder.
5. Install the appropriate size cap to match the size of the die. Insert cap with the 5/32" hex up. Rotate with a 5/32" hex key until it bottoms out on the shoulder side of the housing.
6. Thread in the 5/16" set screw until it bottoms out on the cap threads. Tighten set screw to prevent movement during use.

Ordering Information

HST-912: Complete tool kit with hand pump (shown in photo)

HST-912TW: Complete tool kit with torque wrench and adapters

HST-912A: Complete tool kit with air-operated pump (Air operated pump #P-1948)

HST-912ATW: Complete tool kit with torque wrench and adapters

HST-S: Complete table mounted system that includes everything in the HST-912ATW plus the required tooling for the 1" size connections. Not shown. Consult factory for replacement parts.

Description	Part #
Hydraulic Cylinder	90588
Gauge	90594
Adapter	90593
Base	101F-3407
Housing	101F-3408
Hydraulic Pump	P-1893
Hose	P-1894
3/4” Die	HSTD12
9/16” Die	HSTD9
3/4” Cap	HSTC12
9/16” Cap	HSTC9
Tool Chest	P-10011
Moly Paste	P-9766
1/4” Die	HSTD4
1/4” Cap	HSTC4
3/8” Die	HSTD6
3/8” Cap	HSTC6
(TW) Kits with torque and adapters	
20 to 150 ft-lbs (27-203 Nm) Torque Wrench	P-1680
75 to 250 ft-lbs (102-339 Nm) Torque Wrench	91020
5/8” wrench adapter	P-1683
3/4” wrench adapter	P-9813
1-3/16” wrench adapter	P-1689
1-1/2” wrench adapter	P-6040

Anti-Vibration Collet Gland

Assembly Procedure

Anti-vibration collet gland assembly replaces the standard gland nut.

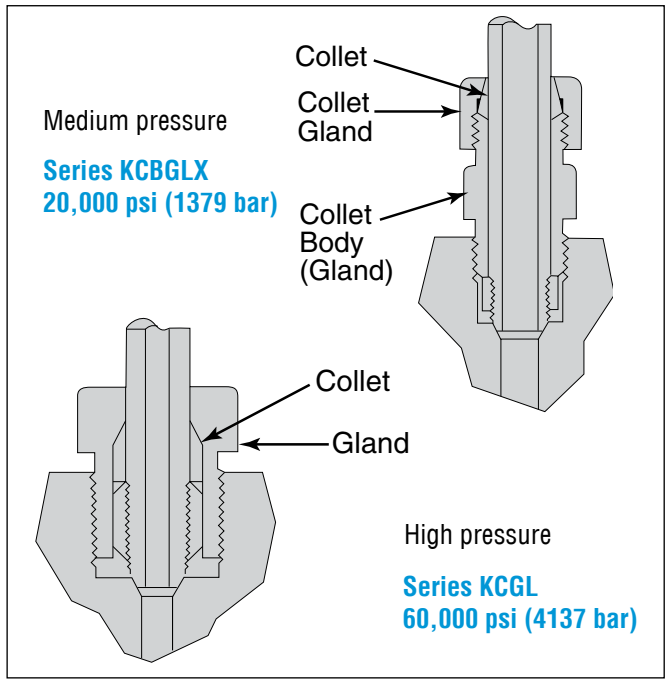
1. Cone and thread tubing as defined on pages 5 and 6.

2. Slide collet assembly onto tube and install collar as described in the assembly and makeup of connections on page 6. One or two threads should be exposed between the collar and cone.

3. Lubricate male threads on glands (medium pressure anti-vibration assemblies supplied with a baked on dry film lubricant. Lubrication not required.)

4. Tighten gland or collet body to specified torque on page 13. The high pressure collet will grip the tube when the connection gland is tightened.

5. For the medium pressure collet gland assembly, hand tighten the collet gland in place and further tighten 1-1/4 turns with a wrench. When tightening the medium pressure anti-vibe collet nut, hold the collet body with a wrench to prevent the body from turning and over tightening. This will lock the collet against the tube. For subsequent retightening of the medium pressure anti-vibration collet gland, use 3/4 turns past finger tight.



***Note**: Always use a back-up wrench on collet body to prevent over tightening of collet body into connection.*

Reseating tool - For female tubing connection cone seat

1. Clamp fitting in soft-jawed vise.

2. Thread gland nut into connection and tighten to 10 ft. lbs. (13.6 N.m).

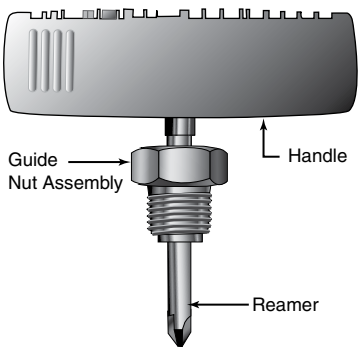
3. Apply a medium weight high sulfur cutting oil generously through opening in nut. Cutting oil P-8784.

4. Insert reamer through guide bushing and press down firmly while rotating clockwise approximately two full turns, relieving pressure gradually toward end of second turn.

5. Remove reamer, guide nut and bushing and inspect cone seat.

6. Repeat steps 2,3,4 and 5, if necessary, until cone surface has been restored and finish is smooth.

7. Clean fitting thoroughly to remove all chips and residue.



Connection Type	Reamer Complete	Guide Nut Assembly	Reamer	Handle
SF250CX	P-0270CX	A101A-2005	P-0270	202D-0596
SF375CX	P-0271CX	A2020-7310	P-0271	202D-0596
SF562CX	P-0272CX	A2030-7310	P-0896	202D-0596
SF750CX	P-1726CX	A102A-3376	P-1726	201D-0595
SF1000CX	P-1727CX	A102A-3375	P-1727	201D-0595
F250C	P-0270C	A1010-0453	P-0270	202D-0596
F312C150	P-0271C150	A2040-7310	P-0271	202D-0596
F375C	P-0271C	A1020-0453	P-0271	202D-0596
F562C / C40	P-0272C	A1030-0453	P-0272	202D-0596
43F1000C	P-1727CX	A102A-3375	P-1727	201D-0595

Coning and Threading Machine

Benefits

- Coning and Threading of Parker Autoclave Engineers Medium and High Pressure Tubing.
- Separate heads for coning and threading are powered by a single motor and drive system.
- New design collet / support system allows for easier coning and threading of long tube lengths.
- New design tube depth gauge eliminates movement of tubing during the threading operation.

Features

- 1/2-HP TEFC motor, capacitor start
- Pop-Open die prevents thread damage; no reversing necessary on threading
- Complete tooling available; order separately
- Supplied with oil pump and reservoir
- Optional oil reservoir heater for operation below 65° F (18.3°C)
- CE marked on 220 VAC units standard
- Unit mounted on stand with locking casters for ease of mobility and stability
- Guard option - see next page

Ordering Procedure

(Tooling must be ordered separately see Table).

Model	Description
AEGCTM-2	115 VAC 60Hz
AEGCTM-2E-CE	220 VAC 50Hz
AEGCTM-2WOH	Standard units "with oil heater"
AEGCTM-2EWOH-CE	

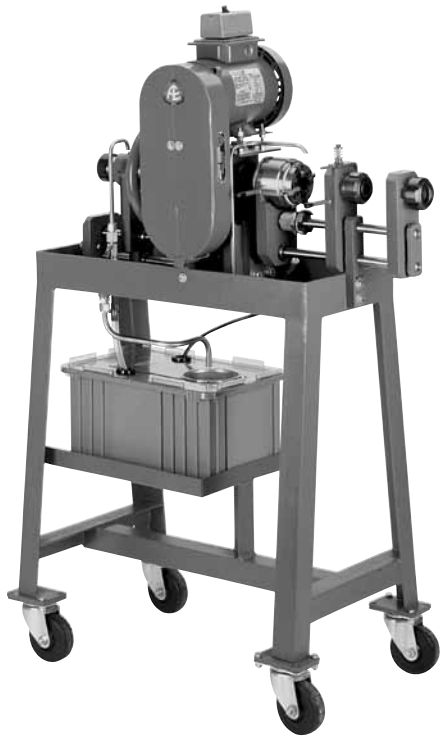
Approximate Dimensions:
56"h x 28"w x 20"d (142cm x 71cm x 51cm)

Shipping Weight:
350 pounds (158.7 Kg)

Cutting Oil:
Part number: P-8699: 3-1/2 Gal (11.36 Liter) Reservoir Capacity

Note 1:
A minimum of 5" (127mm) straight length of tubing is required to perform coning & threading operations.

Video Aids Available:
Coning & Threading CD P-9930-D



Tube Size Inches (mm)	Collet Only (set)	Cutters Only (set)	Die Chasers (set)	Complete Set
1/4" x 0.109 (6.35 x 2.77)	CTM4C-2	CTM4BX	AEGCTM4D	AEGCTM4X-2
1/4" x 0.083 (6.35 x 2.10)	CTM4C-2	CTM4B	AEGCTM4D	AEGCTM4-2
5/16" x 0.062 (7.94 x 1.57)	CTM5C-2	CTM5B	AEGCTM5D	AEGCTM5-2
3/8" x 0.203 (9.53 x 5.16)	CTM6C-2	CTM6BX	AEGCTM6D	AEGCTM6X-2
3/8" x 0.125 (9.53 x 3.18)	CTM6C-2	CTM6B	AEGCTM6D	AEGCTM6-2
9/16" x 0.359 (14.29 x 9.12)	CTM9C-2	CTM9BXX	AEGCTM9D	AEGCTM9XX-2
9/16" x 0.312 (14.29 x 7.92)	CTM9C-2	CTM9BX	AEGCTM9D	AEGCTM9X-2
9/16" x 0.187 (14.29 x 4.78)	CTM9C-2	CTM9B	AEGCTM9D	AEGCTM9-2
9/16" x 0.250 (14.29 x 6.35)	CTM9C-2	CTM9B40	AEGCTM9D	AEGCTM940-2
3/4" x 0.516 (19.05 x 13.11)	CTM12C-2	CTM12BX	AEGCTM12D	AEGCTM12X-2
3/4" x 0.438 (19.05 x 11.13)	CTM12C-2	CTM12B	AEGCTM12D	AEGCTM12-2
1" x 0.688 (25.4 x 17.48)	CTM16C-2	CTM16BX	AEGCTM16D	AEGCTM16X-2
1" x 0.562 (25.4 x 14.27)	CTM16C-2	CTM16B	AEGCTM16D	AEGCTM16-2
1" x 0.438 (25.4 x 11.13)	CTM16C-2	CTM16BXX	AEGCTM16D	AEGCTM16XX-2

Coning and Threading Machine

Optional Oil/Chip Guard

A threading die oil/chip guard is available as an option on our AEGCTM machines.

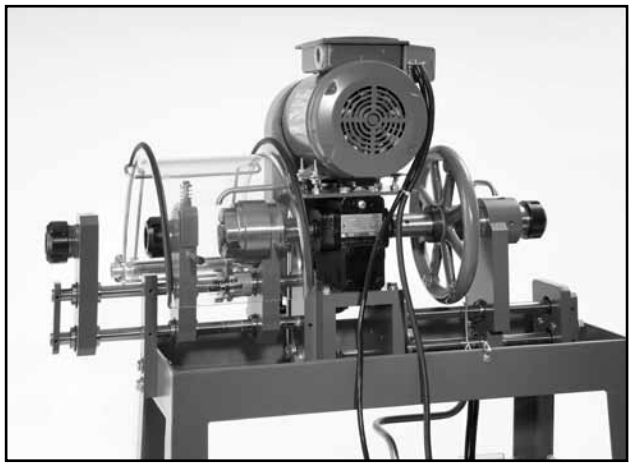
The guard is a swing away Plexiglas design providing protection from splashing oil or thrown chips while allowing full access to the die head. The guard's sole purpose is the prevention of flying chips and oil not the prevention of operator access.

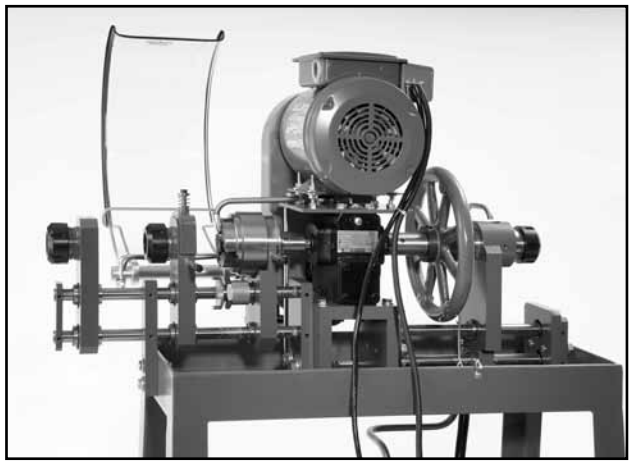
A guard option will also be available in a retrofit kit for our new existing machines (-2 models). The kit will contain all required items along with instructions.

To order a guard with a model, just add a G to the catalog number.

AEGCTM-2G
AEGCTM-2E-CEG
AEGCTM-2GK Retrofit kit catalog number

***Note**: Detailed operational instructions are supplied with the machine in two forms, printed and DVD. Refer to these instructions for tooling installation, machine adjustment, and maintenance instructions.*





Torque Values

Autoclave Micrometer Adjustable Torque Wrenches

P-1680 20 to 150 ft. lbs. (27 to 203 Nm)
91020 75 to 250 ft. lbs. (102 to 339 Nm)

Accurate tightening for all Parker Autoclave Engineers valve packing glands and tube nuts is essential. The wrench can be adjusted to the ranges shown above and is used with interchangeable wrench adapters for hex sizes from 1/2" through 1-7/8". Part numbers for wrench adapters are listed below. *Wrench adapters sold separately.*

Standard Wrench Adapters

Wrench Adapter Number	Packing Gland or Tube Nut Hex Size (inches)
P-1681	1/2
P-1682	9/16
P-1683	5/8
P-9813	3/4
P-1685	13/16
P-1686	7/8
P-1687	15/16
P-9901	1
P-1688	1-1/16
P-1689	1-3/16
P-1690	1-3/8
P-6040	1-1/2
P-10076	1-7/8

Parker AE Tube Connection Glands

	Tube Connection Size (Inches)	Tube Nut Hex Size (Inches)	Required Torque ft.-lbs. (N.m)	Required Torque Moly Coated
Medium Pressure	1/4	1/2	20 (27.1)	15 (20.4)
	3/8	5/8	30 (40.6)	20 (27.1)
	9/16	15/16	55 (74.5)	40 (54.4)
	3/4	1-3/16	90 (122.0)	70 (95.2)
	1	1-3/8	125 (170)	100 (136.0)
	1-1/2	1-7/8	200 (271.2)	160 (217.0)
High Pressure	1/4	5/8	25 (33.9)	—
	1/4 (100K)	3/4	50 (68)	—
	3/8	13/16	50 (68)	—
	5/16	3/4	70 (94.9)	—
	3/8 (100K)	3/4	105 (142.8)	—
	9/16 (40K)	1-3/16	60 (81.4)	—
	9/16	1-3/16	75 (101.7)	—
	9/16 (100K)	1-3/16	125 (169.5)	—
	1" (See Note **)	1-3/8	150 (203.3)	—
	1" (See Note ***)	1-3/8	180 (244.0)	—

** Torque for 1" tubing @ 30,000 psi (2068 bar).
*** Torque for 1" tubing @ 43,000 psi (2965 bar).
Torque wrench not required for Parker Autoclave Engineers SpeedBite tube connection-see page 2.
All dimensions for reference only and subject to change.

Valve Stem Maximum Running and Seating Torques* (Typical Values)

Valve Series	Tube Size (Inches)	Running Torque in.-lbs. (N.m)	Seating Torque in.-lbs. (N.m)	Pressure psi (bar)
10V	1/8	25 (2.80)	35 (3.90)	15,000 (1034)
	1/4	40 (4.50)	50 (5.60)	15,000 (1034)
	3/8	40 (4.50)	50 (5.60)	15,000 (1034)
	1/2	60 (6.80)	80 (9.10)	10,000 (690)
SW	1/4	25 (2.80)	35 (3.90)	15,000 (1034)
	3/8	40 (4.50)	50 (5.60)	15,000 (1034)
	1/2	70 (7.90)	90 (10.20)	10,000 (690)
10SM	9/16	60 (6.80)	80 (9.10)	10,000 (690)
	3/4	210(23.80)	240 (27.20)	10,000 (690)
	1	180 (20.40)	540 (61.10)	10,000 (690)
20SM	1/4	40 (4.50)	55 (6.20)	20,000 (1379)
	3/8	40 (4.50)	55 (6.20)	20,000 (1379)
	9/16	60 (6.80)	90 (10.20)	20,000 (1379)
	3/4	300 (33.90)	360 (40.70)	20,000 (1379)
	1	360 (40.70)	600 (67.90)	20,000 (1379)
30SC	1	360 (40.70)	1000 (113.0)	30,000 (2068)
43SC	1	720 (82.0)	840 (95.0)	43,000 (2965)
30VM	1/4	40 (4.50)	55 (6.20)	30,000 (2068)
	3/8	45 (5.00)	55 (6.20)	30,000 (2068)
	9/16	50 (5.60)	55 (6.20)	30,000 (2068)
40VM	9/16	40 (4.50)	55 (6.20)	40,000 (2758)
60VM	1/4	65 (7.30)	70 (7.90)	60,000 (4137)
	3/8	65 (7.30)	70 (7.90)	60,000 (4137)
	9/16	65 (7.30)	70 (7.90)	60,000 (4137)
100VM	5/16	100 (11.3)	120 (13.6)	100,000 (6895)

* These are not specifications.

Note: All valve stem torques are based on standard PTFE packing. For valves with option "TG" (PTFE Glass) or "GY" (graphite - yarn packing), the following equations should be used to estimate torques.

Running Torque "GY" = 2 x running torque
Seating Torque "GY" = 2 x running torque + seating torque - running torque
Running Torque "TG" = 1.1 x running torque
Seating Torque "TG" = 1.1 x running torque + seating torque - running torque

Parker AE Flat Top/Bottom Adapters

	Size inches	Maximum Working Pressure psi (bar)	Connection	Required Torque ft. - lbs. (N.m)
Flat Top Gasket	9/16	10,000 (690)	F562FT	60 (81.3)
Flat Bottom Gasket	7/16	10,000 (690)	F437FB	25 (33.9)
	9/16	10,000 (690)	F562FB	40 (54.2)
	3/4	5,000 (345)	F750FB	60 (81.3)

Torque Values

Parker AE Packing Glands

Valve Series	Outside Diameter Size (inches)	Packing Gland Hex (Inches)	Required Torque[1] ft.-lbs. (N.m)
10V	1/8	1/2	12 (16.3)
	1/4	13/16	40 (54.2)
	3/8	13/16	40 (54.2)
	1/2	13/16	30 (40.7)
SW	1/4	5/8	30 (40.7)
	3/8	5/8	4 (54.2)
	1/2	13/16	50 (67.8)
10SM & 20SM	1/4	5/8	40 (54.2)
	3/8	5/8	40 (54.2)
	9/16	13/16	80 (108.5)
	3/4	13/16	Note: [2]
	1	1-3/8	20 (27.1)
30SC	1	1-3/8	230 (311.8)
30VM	1/4	13/16	60 (81.3)
	3/8	13/16	60 (81.3)
	9/16	13/16	60 (81.3)

Parker AE Packing Glands

Valve Series	Outside Diameter Size (Inches)	Packing Gland Hex (Inches)	Required Torque[1] ft.-lbs. (N.m)
40VM	9/16	13/16	40 (54.2)
60VM	1/4	13/16	60 (81.3)
	3/8	13/16	60 (81.3)
	9/16	13/16	60 (81.3)
100VM	5/16	15/16	60 (81.3)
150V	5/16	1-3/8	150 (203.3)
15Y	3/4	15/16	130 (176.3)
	1	1-1/16	150 (203.3)
50Y	9/16	15/16	85 (115.2)
10VRMM	9/16	9/16	20 (27.1)
30VRMM	3/4	13/16	50 (67.8)
60VRMM	1/4	13/16	50 (67.8)
	3/8	13/16	50 (67.8)

1 - Torque may vary ±10%. Torque values apply to standard PTFE packing. For graphite yarn packing, add 25% to tthe above values.

2 - 3/4 turn past finger tight with hex wrench.

Special Material Connection Torque Table Pressure psi (bar) vs. Torque ft.-lbs. (N.m)

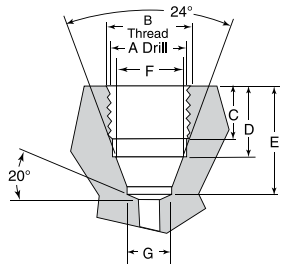
Note: Use the recommended torque value for special material valves and fittings based on the maximum allowable working pressure of the valve or fitting

Connection	Pressure psi (bar)										
	Minumum	2,500 (172)	5,000 (345)	10,000 (690)	15,000 (1034)	20,000 (1379)	25,000 (1724)	30,000 (2068)	40,000 (2758)	50,000 (3447)	60,000 (4137)
SF250CX	10 (13.6)	10 (13.6)	10 (13.6)	10 (13.6)	15 (20.3)	20 (27.1)	—	—	—	—	—
SF375CX	10 (13.6)	10 (13.6)	10 (13.6)	15 (20.3)	25 (33.9)	30 (40.7)	—	—	—	—	—
SF562CX10	20 (27.1)	20 (27.1)	30 (40.7)	55 (74.6)	—	—	—	—	—	—	—
SF562CX20	15 (20.3)	15 (20.3)	15 (20.3)	30 (40.7)	40 (54.2)	55 (74.6)	—	—	—	—	—
SF750CX10	25 (33.9)	25 (33.9)	40 (54.2)	75 (101.7)	—	—	—	—	—	—	—
SF750CX20	20 (27.1)	20 (27.1)	25 (33.9)	45 (61.0)	70 (94.9)	90 (122.0)	—	—	—	—	—
SF1000CX10	40 (54.2)	40 (54.2)	65 (88.1)	125 (169.5)	—	—	—	—	—	—	—
SF1000CX20	35 (47.5)	35 (47.5)	50 (67.8)	100 (135.6)	115 (156.0)	125 (169.5)	—	—	—	—	—
F1000C43	30 (40.7)	30 (40.7)	50 (67.8)	65 (88.1)	75 (101.7)	100 (135.6)	125 (169.5)	150 (203.3)	180 (244.0)	—	—
F250C	10 (13.6)	10 (13.6)	10 (13.6)	10 (13.6)	10 (13.6)	10 (13.6)	15 (20.3)	15 (20.3)	20 (27.1)	25 (33.9)	25 (33.9)
F375C	10 (13.6)	10 (13.6)	10 (13.6)	10 (13.6)	15 (20.3)	20 (27.1)	25 (33.9)	25 (33.9)	35 (47.5)	45 (61.0)	50 (67.8)
F562C	15 (20.3)	15 (20.3)	15 (20.3)	15 (20.3)	20 (27.1)	25 (33.9)	35 (47.5)	40 (54.2)	50 (67.86)	65 (88.1)	75 (101.7)
F562C40	15 (20.3)	15 (20.3)	15 (20.3)	15 (20.3)	25 (33.9)	30 (40.7)	40 (54.2)	45 (61.0)	60 (81.3)	—	—

Tube Connection Dimensions

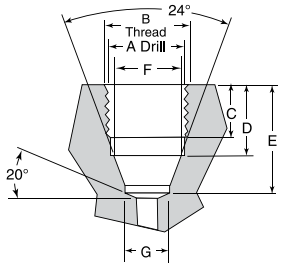
Parker Autoclave SpeedBite SW*

Tube Outside Diameter (inches)	Connection Type	Dimensions inches (mm)						
		A	B	C	D	E	F	G
1/4	SW250	29/64 (11.5)	1/2 -20	0.34 (8.6)	0.44 (11.1)	0.69 (17.5)	0.34 (8.6)	"F" 0.257 (6.5)
3/8	SW375	37/64 (14.7)	5/8 -18	0.38 (9.7)	0.47 (11.9)	0.75 (19.1)	0.48 (12.1)	"W" 0.386 (9.8)
1/2	SW500	3/4 (19.1)	13/16 -16	0.41 (10.4)	0.50 (12.7)	0.81 (20.6)	0.60 (15.21)	0.514 (13.1)



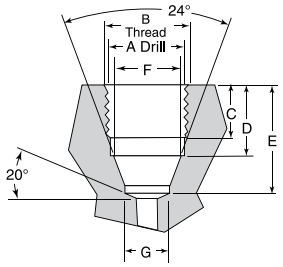
Parker Autoclave SpeedBite W*

Tube Outside Diameter (inches)	Connection Type	Dimensions inches (mm)						
		A	B	C	D	E	F	G
1/16 1/8	W062 W125	"Q" 0.332 (8.4)	3/8 -24	0.22 (5.6)	0.31 (7.9)	0.47 (11.9)	0.19 (4.8)	#30 0.128 (3.3)
1/4	W250	11/16 (17.4)	3/4 -16	0.38 (9.7)	0.44 (11.1)	0.69 (17.7)	0.35 (8.9)	"F" 0.257 (6.5)
3/8	W375	11/16 (17.4)	3/4 -16	0.38 (9.7)	0.44 (11.1)	0.69 (17.7)	0.48 (12.1)	"W" 0.386 (9.8)



QSS

Tube Outside Diameter (inches)	Connection Type	Dimensions inches (mm)						
		A	B	C	D	E	F	G
1/4	QSF250	29/64 (11.5)	1/2 -20	0.34 (8.6)	0.44 (11.1)	0.69 (17.5)	0.34 (8.6)	"F" 0.257 (6.5)
3/8	QSF375	37/64 (14.7)	5/8 -18	0.38 (9.7)	0.47 (11.9)	0.75 (19.1)	0.48 (12.1)	.038" (9.7)
9/16	QSF562	7/8 (22.2)	15/16 -16	0.57 (14.5)	0.704 (17.9)	1.25 (31.8)	0.712 (18.1)	0.57 (14.5)
3/4	QSF750	1-3/16 (30.15)	1-1/4 -18	0.83 (21.08)	1.00 (25.40)	1.56 (39.62)	0.95 (24.13)	0.76 (19.30)
1	QSF1000	1-9/16 (39.70)	1-5/8 -16	.75 (19.1)	.88 (22.2)	1.56 (39.62)	1.24 (31.5)	1.02 (26.0)



Note: All dimensions are shown for reference only and should not be considered as actual machining dimensions.

**For port diameter please see orifice sizes for specific valves and fittings.*

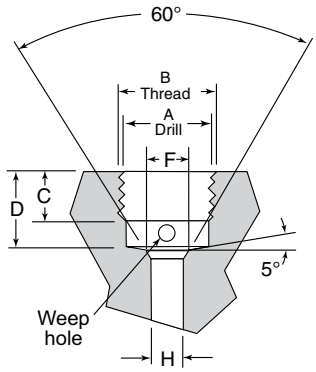
All threads are manufactured to a class 2A or 2B fit.

For prompt service. Parker Autoclave Engineers stocks select products. Consult factory. All general terms and conditions of sale, including limitations of our liability, apply to all products and service sold.

Tube Connection Dimensions

Parker Autoclave Medium Pressure SFCX **

Tube Outside (inches)	Connection Type	Dimensions inches (mm)					
		A	B	C	D	F	H
1/4	SF250CX20	25/64 (9.9)	7/16 -20	0.28 (7.1)	0.50 (12.7)	0.19 (4.8)	0.109 (2.8)
3/8	SF375CX20	33/64 (13.1)	9/16 -18	0.38 (9.7)	0.62 (15.7)	0.31 (7.9)	0.203 (5.2)
9/16	*SF562CX10 SF562CX20	3/4 (19.1)	13/16 -16	0.44 (11.1)	0.75 (19.1)	0.50 (12.7)	0.359 (9.1) 0.312 (7.9)
3/4	*SF750CX10 SF750CX20	61/64 (24.2)	3/4 -14z	0.50 (12.7)	0.94 (23.9)	0.62 (15.7)	0.516 (13.1) 0.438 (11.1)
1	*SF1000CX10 SF1000CX20	1-19/64 (32.9)	1-3/8 -12	0.81 (20.6)	1.31 (33.3)	0.88 (22.4)	0.688 (17.5) 0.562 (14.3)
1-1/2	SF1500CX	1.790 (45.47)	1-7/8 -12	1.00 (25.4)	1.594 (40.49)	1.375 (34.93)	.937 (23.80)

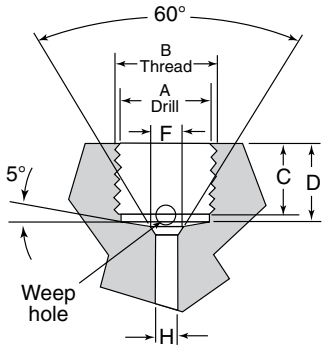


Z = NPS Male Tap

* Connection used in fittings rated for 20,000 psi (1379 bar) .

Parker Autoclave High Pressure FC**

Tube Outside (inches)	Connection Type	Dimensions inches (mm)					
		A	B	C	D	F	H
1/4	F250C	33/64 (13.1)	9/16 -18	0.38 (9.7)	0.44 (11.1)	0.17 (4.3)	0.094 (2.4)
3/8	F375C	11/16 (17.4)	3/4 -16	0.53 (13.5)	0.62 (15.7)	0.26 (6.6)	0.125 (3.2)
9/16	F562C	1-3/64 (26.6)	1-1/8 -12	0.62 (15.7)	0.75 (19.1)	0.38 (9.7)	0.188 (4.8)
9/16	F562C40	1-3/64 (26.6)	1-1/8 -12	0.62 (15.7)	0.75 (19.1)	0.38 (9.7)	0.250 (6.4)
5/16	F312C150	37/64 (14.7)	5/8 -18	0.62 (15.7)	1.06 (26.9)	0.25 (6.4)	0.094 (2.4)
1	F1000C43	1-19/64 (32.9)	1-3/8 -12	0.81 (20.6)	1.31 (33.3)	0.88 (22.4)	0.438 (11.1)



Note: All dimensions are shown for reference only and should not be considered as actual machining dimensions.

**For port diameter please see orifice sizes for specific valves and fittings.*

***For male tubing end preparation, please see pages 5 and 6.*

All threads are manufactured to a class 2A or 2B fit.

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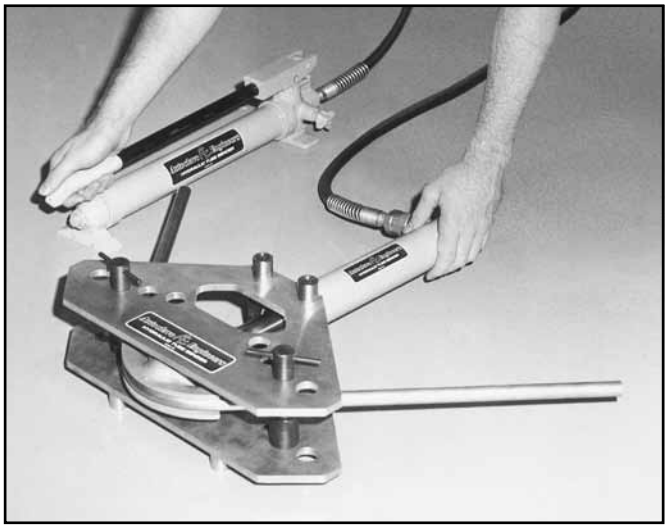
Hydraulic Tube Bender

For Single Pass Bending of High Pressure Tubing

The Parker Autoclave Engineers hydraulic tube bender is designed to bend heavy wall tubing and provide fast, accurate and reliable bending with only one setup. The tube bender is complete with pump, cylinder, frame and bending shoes which are self contained in a portable, lockable case.
(Order number: HTB)



Features

Dimensions: 27.5”W x 14.0”H x 14.0”D (69.9cm x 35.6cm x 35.6cm).

Weight: 55 lbs. (29.9 Kg)

Single-stage hydraulic hand pump (standard)

Ram retractor valve relieves system pressure after bending. The spring loaded ram retracts for easy removal of tubing after bending is completed.

Quick release pivot pins lock and unlock easily for tube removal.

One-piece shoe locking pin locks bending shoe securely but allows for quick release to interchange shoes.

Rugged bending frame is lightweight, aircraft quality, aluminum alloy.

Precision one-piece bending shoes are permanent mold, heat-treated, aircraft quality, aluminum alloy.

Air-operated hydraulic pump option can be furnished in place of standard hand pump. (Add “-A” to order number) Operating pressure 0 to 10,000 psi (0 to 690 bar). Required air pressure 30 psi (2.1 bar) minimum 120 psi (8.3 bar) maximum. Reservoir capacity 24 cu. in. (393cm^3). Available with optional hydraulic pressure gauge and gauge adapter. A lubricator/air separator is recommended for air operated units.

Minimum Bend (Mandrel) Radius

Shoe* Catalog Number	Tube Size Inches (mm)		†† Rated Pressure (bar)	†† Minimum Bend Inside Radius Inches (mm)	Minimum Length Required 90° Bend Inches (cm)
	Outside Diameter	Inside Diameter			
201A-6016	9/16 (14.29)	0.359 (9.12)	15,000 (1034)	2.62 (66.5)	14 (35.6)
201A-6018	3/4 (19.05)	0.516 (13.11)	15,000 (1034)	3.50 (88.9)	16 (40.6)
201A-6020	1 (25.4)	0.688 (17.48)	15,000 (1034)	4.62 (117.3)	22 (55.8)
201A-6014†	1/4 (6.35)	0.109 (2.77)	20,000 (1379)	1.25† (31.8)	8 (20.3)
201A-6014	3/8 (9.53)	0.203 (5.16)	20,000 (1379)	1.75 (44.5)	8 (20.3)
201A-6016	9/16 (14.29)	0.312 (7.92)	20,000 (1379)	2.62 (66.5)	14 (35.6)
201A-6018	3/4 (19.05)	0.438 (11.13)	20,000 (1379)	3.50 (88.9)	16 (40.6)
201A-6020	1 (25.4)	0.562 (14.27)	20,000 (1379)	4.62 (117.3)	22 (55.8)
201A-6020	1 (25.4)	0.438 (11.13)	43,000 (2965)	4.62 (117.3)	22 (55.8)
201A-6014†	1/4 (6.35)	0.083 (2.10)	60,000 (4137)	1.25 (31.8)	8 (20.3)
201A-6014	3/8 (9.53)	0.125 (3.18)	60,000 (4137)	1.75 (44.5)	8 (20.3)
201A-6016	9/16 (14.29)	0.250 (6.35)	40,000 (2758)	2.62 (66.5)	14 (35.6)
201A-6016	9/16 (14.29)	0.188 (4.78)	60,000 (4137)	2.62 (66.5)	14 (35.6)
N/A**	5/16 (7.94)	0.062 (1.57)	150,000 (10342)	6.00 (152.4)	8 (20.3)

Annealed Parkre Autoclave Engineeers pressure tubing may also be bent on HTB tube bender using bending shoe sizes specified above.

* HTB bending shoes are constructed of heat-treated aluminum alloy and designed specifically for use with Parker Autoclave Engineers’ heavy wall stainless tubing. They are not intended for bending such components as commercial pipe. Because of diameter differences, such misuse could fracture the bending shoe.

** Information on bending 150,000 psi (10342 bar) tubing is included here for reference only. This tubing should not be bent on HTB hydraulic tube bender because of the 6” required minimum radius.

† Value shown is mimimum bend radius of the tubing; bending shoe furnished (201A-6014) will bend tubing to 1.75” (44.5).

†† Pressure rating of the bent tube will be reduced. Consult the Technical Application section for pressure rating at various bend radii.

All dimensions for reference only and subject to change.

Lubrication Guide

General Information

For reliable operation and long life of hand valves, air valves, relief valves, check valves and safety heads, Parker Autoclave Engineers strongly recommends proper lubrication of all components that are subject to friction during assembly and / or operation. This is especially important where metal to metal contact occurs such as on connection gland threads, packing gland threads and stem threads. Without proper lubrication, the high loads imposed on these threads may cause the parts to weld (or gall) together from the high metal to metal contact forces and friction heat. Lubrication is also essential for the effective sealing and long life of o-rings, especially those that are used in dynamic sealing applications. The performance of metal to metal seals will be improved with lubrication but, they do not absolutely require it.

Lubricant selection is strongly dependent on the application of the given component. Process fluids, fluid temperature, ambient environment temperature, materials and other factors are important in selecting a lubricant. This manual gives some basic guidelines in the proper selection and application of lubricants. The end user must ultimately determine the suitability of a lubricant based on process requirements.

Note: Parker Autoclave Engineers assumes no liability in selecting lubricant for customer applications.

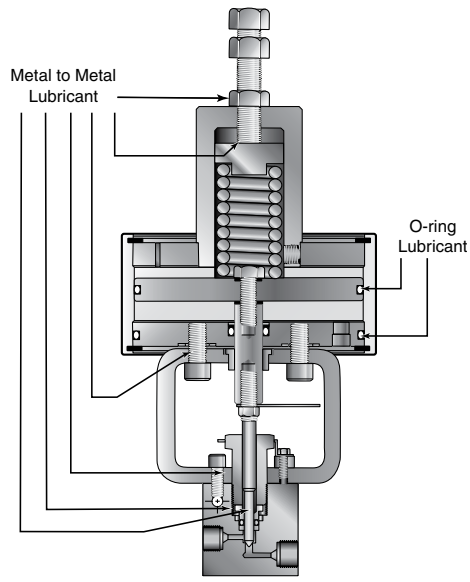


Figure 2
Air Valve Piston
Lubrication Sites

Lubrication Sites

1. Speedbite, Slimline and High Pressure Connections in all valves and fittings - Prior to assembly, the connection gland should be lubricated on the threads and on the area that is in contact with the sleeve or collar. Parker AE provides as standard a dry molybdenum disulfide lubricant on Speedbite glands unless specified otherwise. If process tolerable, a small amount of any lubricant (or process fluid) on the end of the tube cone or connection sleeve will help to maximize the metal-to-metal sealing process. This inherently provides for better sealing of gases.

2. Hard Valves - Ideally, the non-rotating stem should be lubricated along the shank that fits into the threaded stem sleeve as well as on the surfaces that are in contact with the stem washers. The threaded stem sleeve should be lubricated on the stem threads and at the ends (see Figure 1). The packing gland should be lubricated on the external threads and on the end that is in contact with the packing washer. For valves with replacement seats, the external threads on the seat retainer and the portion of the seat retainer in contact with the seat should be lubricated.

3. Air Valves - The packing gland and seat retainer (if the valve has a replaceable seat) should be lubricated in the same manner as the hand valve. Threads should also be lubricated on all of the yoke screws (for yoke style valves) and on the retainer insert (on other air operated valves).

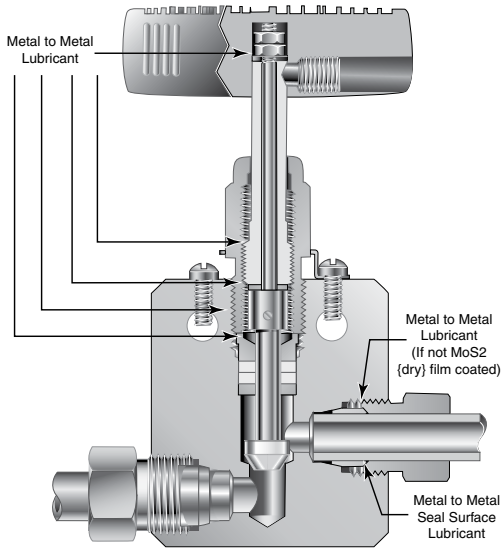


Figure 1
Hand Valve
Lubrication Sites

For piston type air operators, o-ring lubricant should be applied to the inside of the operator housing, on the center rod and on all the o-rings, on the pistons and divider plates. On air-to-open diaphragm operators, the o-ring on the stem should be lubricated. The threads and end of the spring adjustment screw should be lubricated on all air-to-open valves. Refer to Figure 2 and 3 for lubrication sites on piston and diaphragm style operators.

4. Check Valves - The gland nut should be lubricated on the external threads and at the end where it contacts the cover. The cover should be lubricated at the sealing surface where it contacts the body. For o-ring check valves, a small amount of o-ring lubricant on the o-ring will help swell the elastomer and aid sealing. Refer to Figure 4 for lubrication sites on check valves.

5. Relief Valves - Threads should be lubricated on the cap, spring cylinder, adjustment bolt and on the seat gland. Refer to Figure 5 for lubrication sites on the relief valve.

6. Safety Heads - The threads and end of the hold down nut should be lubricated. Refer to figure 6 for lubrication sites on the safety head.

For any part not covered in the above statements, the general rule is that parts that will move against each other during assembly or operation should be lubricated at the points/areas of contact.

Recommended Lubricants

Note: This information is provided for reference only. The manufacture of the lubricant should be contacted for specific information based on your application. Refer to the material safety data sheets for information on safe usage and storage methods for these lubricants.

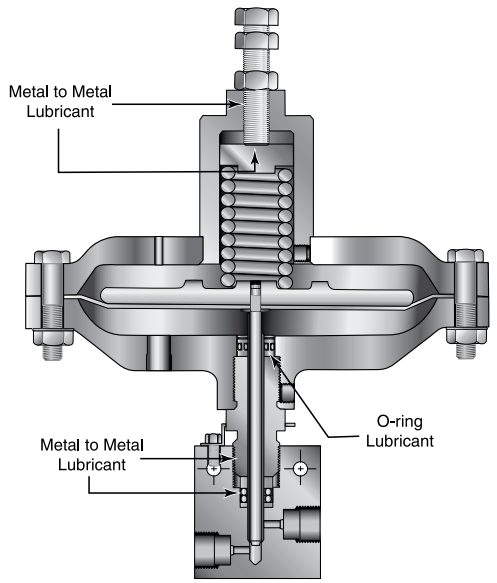


Figure 3
Air Valve (Diaphragm)
Lubrication Sites

1. Jet Lube SS-30[1] - This lubricant consists of pure copper flakes that are homogenized into a non-melting, nonvolatile viscous carrier. It is fortified with anti-oxidants, rust and corrosion inhibitors. Jet Lube SS-30 is the standard lubricant for Parker Autoclave VFT components with sliding metal to metal contact surfaces. The surfaces are copper coated and prevents seizure, galling and heat freeze. SS-30 comes in the form of a thick oil that can be easily brushed on the surfaces to be lubricated. The absolute service temperature range is from 0 to 1800°F (-17.8 to 982°C). Jet Lube SS-30 is not recommended for extreme low temperature applications or processes that will not tolerate the presence of copper.

2. Jet Lube MP-50 Moly Paste[1] - This is a thick paste that contains molybdenum disulfide (MoS). This lubricant is suitable for preventing seizure and galling of parts at absolute temperatures of -300 to 750°F (-184 to 399°C). It is recommended for metal to metal components that are exposed to temperatures of less than 0ºF. Other lubricants may solidify under these conditions and prevent the effective operation of dynamic components.

3. DuPont Krytox 240AC[2] - Krytox is a non-flammable fluorinated grease used for metal to metal lubrication in valves that are cleaned and designated for oxygen service. It comes in the form of a white grease and has a recommended absolute service temperature range of -15 to 500°F (-26.1 to 260°C).

4. Molycoat 55M4 (Dow Corning) - This grease is used for static lubrication between rubber and metal parts in ball valves and o-ring check valves. It is a silicone based lubricant and meets Military Specifications MIL-G-4343. It is not recommended for use on silicone rubber o-rings and seals. It has a recommended absolute service temperature range of -85 to 350°F (-65 to 177°C).

5. Neolube DAG 156[3] - This is a dry film lubricant for valves used in Navy Nuclear service. It consists of graphite particles in a thermoplastic resin and ispropanol and meets Military Specification MIL-L-24131B. The dry film form allows tight control of impurities that are required for these applications. It has an absolute service temperature of -100 to 400°F.

6. LubriPlate-NSF H-1 Registered, Extremely Tacky, Food Grade Greases - This grease is used for dynamic lubrication between rubber and metal parts in pneumatic systems such as piston style air operators. A tacky, adhesive, highly water resistant grease for medium to slow dynamic speeds. It has a recommended absolute service temperature range of -0 to 350°F (-17.8 tp 177°C).

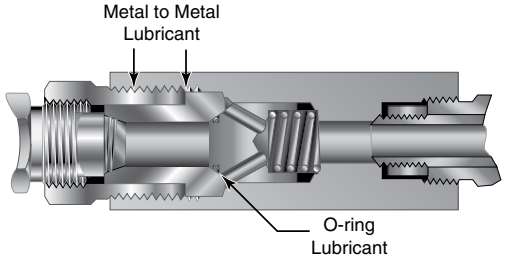


Figure 4
Check Valve
Lubrication Sites

Services

For service, contact the Parker Autoclave Engineers' Representative in your area, or FAX Parker Autoclave Engineers' Customer Support Services at 1-814-860-5703.

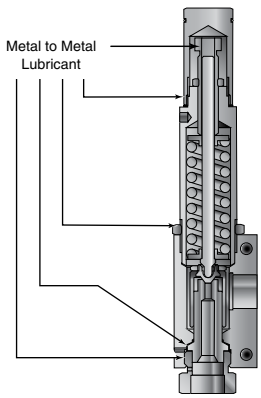


Figure 5
Relief Valve
Lubrication Sites

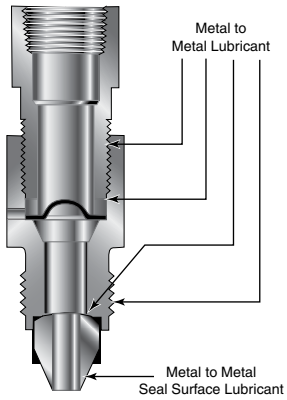


Figure 6
Safety Head
Lubrication Sites

Lubrication Selection Chart

Lubrication	Part No.	Application	Absolute Service Temperature Range
Jet-Lube SS-30	P-3580	Metal to Metal, Standard Application	0°F to 1800°F (-18°C to 982°C)
Jet-Lube Moly Paste MP-50	P-9766	Metal to Metal, Low Temperature Application	-300°F to 750°F (-185°C to 398°C)
Krytox 240 AC	53893	Metal to Metal, Oxygen Clean Components	-15°F to 500°F (-26°C to 260°C)
MolyKote 55 Dow Corning	90085	Check Valve Ball and Poppet Lubricant	-85°F to 350°F (-65°C to 177°C)
Neolube DAG 156	90406	Metal to Metal, Nuclear Service	-100°F to 400°F (-73°C to 204°C)
LubriPlate Pure Tac	P-9981	Dynamic O-ring Seals-Air Operator Housing	0°F to 350°F (-18°C to 177°C)

Notes: Specific applications may require other service temperature ranges.

[1]SS-30 and MP-50 Moly Paste are registered trademarks of Jet Lube Inc.
[2]Krytox is a registered trademark of E.I.duPont de Nemours & Co., Inc.
[3]DAG is a registered trademark of Acheson Industries, Inc.
[4]Molycoat and Dow Corning are registered trademarks of Dow Corning Corp

02-0140SE January2013

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Parker Hannifin Manufacturing Ltd.
Instrumentation Products Division, Europe
Industrial Estate Whitemill
Wexford, Republic of Ireland
PH: 353 53 914 1566
FAX: 353 53 914 1582

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

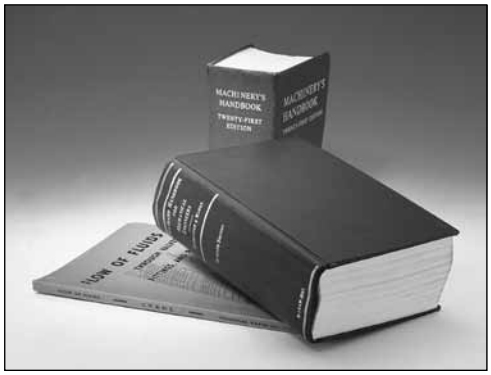
Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Technical Information

The information presented in this section is intended to assist designers in the proper selection of Parker Autoclave Engineers' valves, fittings and tubing for fluid handling systems. This technical data does not represent product specifications but rather guidelines for direction in the proper application of the referenced equipment. These guidelines are general in nature because of the many process variables.

For severe service applications, selection of the appropriate valves, fittings and tubing is essential in order to optimize the service life of these products. Parker Autoclave Engineers' technical staff is available to assist in the interpretation of this information.



Parker

Autoclave Engineers®

www.autoclave.com

Technical and Application Information

Materials:

Widely varying conditions frequently require that valves, fittings and tubing be constructed of materials other than conventional stainless steel. Since many variables affect the corrosion resistance of metallic materials, it is Parker Autoclave Engineers' policy not to recommend materials based on corrosion resistance for specific fluid applications. We can, however, suggest materials based on mechanical strength and also indicate materials generally used in a specific application. Other materials not listed in this section are also available.

Pressure:

Included in this section are the standard pressure ratings for several common materials for valves and fittings as well as tubing. Parker Autoclave Engineers stocks a select quantity of special material tubing for immediate delivery.

Temperature:

Also contained in this section are pressure reduction factors at various temperatures for several materials. To obtain the maximum pressure rating at an elevated temperature, multiply the maximum pressure rating of the item at room temperature by the elevated temperature factor (% of RT).

High and low temperatures or high heat up and/or cool down rates can affect the capability of a metal-to-metal seal. When selecting a valve series, consideration should not only be given to static pressure rating, but also static and dynamic temperature conditions. Generally, the smaller the seal diameter of a metal-to-metal seal, the more reliable the seal will be.

Gas or Liquid Service:

Light gases such as hydrogen and helium are more difficult to seal than liquids. When selecting a valve series, consideration should be given to the fluid application and not just pressure and temperature requirements. The higher the rating of the valve or fitting, the less the likelihood of weepage problems with light gases. Tubing selections should also consider the service requirements, since thicker wall, smaller outside diameter tube sizes will produce a more reliable connection seal. Handling of fittings and tubing during installation will make a difference in sealability of light gases as well as liquids. Do not handle the tube or fitting in such a way as to damage the sealing surfaces. If it is process tolerable, a small amount of lubrication (or even process fluid) on the seal area during installation will help the sealing process. Refer to the Tools, Installation, Operation and Maintenance section for further information.

Valve Stem Packing Materials:

The considerations listed thus far should be applied when selecting a suitable valve stem packing material (PTFE, PTFE glass or Graphite yarn). Where possible, PTFE packing is the most reliable, low maintenance, packing choice; PTFE/glass is the second. While graphite yarn packing is a reliable packing material for the majority of extremely high temperature applications, some gases may permeate more readily through graphite yarn packing than through the PTFE packing in a valve with an extended stuffing box. The packing material must be kept below the maximum permitted temperature listed on page 5.

Valve Stem Seating:

Abrasive flow or high cycle service will require more frequent maintenance. Special materials and the proper valve series selection may extend service life. For example, if flow is not critical, a 30VM valve with an **N-Dura** stem will require less maintenance than an SW series valve used in a low pressure, high cycle, abrasive flow application. Although all application parameters cannot be considered in this section, the user can generally expect several thousand cycles in a liquid application and several hundred cycles for gas service. The packing gland may require adjustment, however, to achieve these results.

Pressure Cycling:

In medium and high pressure applications, static as well as dynamic (cyclic) pressure must be considered when selecting an appropriate valve series. If fatigue life is a concern, Parker Autoclave Engineers can supply tubing which has been autofrettaged for improved fatigue resistance. For internally pressurized tubing, **autofrettaging** is a method by which the inner wall of the tube is precompressed to reduce the tube operating bore stresses. By applying sufficient internal pressure, greater than the maximum working pressure of the tube, the inner wall is plastically deformed by a controlled amount. The remaining outer portion of the wall acts elastically, and when the pressure is released, a positive compressive load at the bore will exist. As mentioned previously, the result is reduced bore stress and increased fatigue life. In addition to the autofrettaging method to increase cycle life, Parker Autoclave Engineers offers HP-HC (high-pressure — high cycle) tubing, rated to 100,000 psi (6895 bar). This tubing can be substituted for our standard 60,000 psi (4137 bar) tubing providing longer life at 60,000 psi (4137 bar) operation.

Vacuum Service:

The high, medium and low pressure series of Parker Autoclave Engineers' standard valves, fittings and tubing can be used in light vacuum services to 10^{-2} torr. For high vacuums to 10^{-5} or 10^{-6} torr, Parker Autoclave Engineers' high pressure series is recommended. Extreme care and proper seal lubrication is required (as mentioned in the Gas or Liquid Service paragraph) to achieve these degrees of vacuum. The pump type and size will determine the final vacuum pressure.

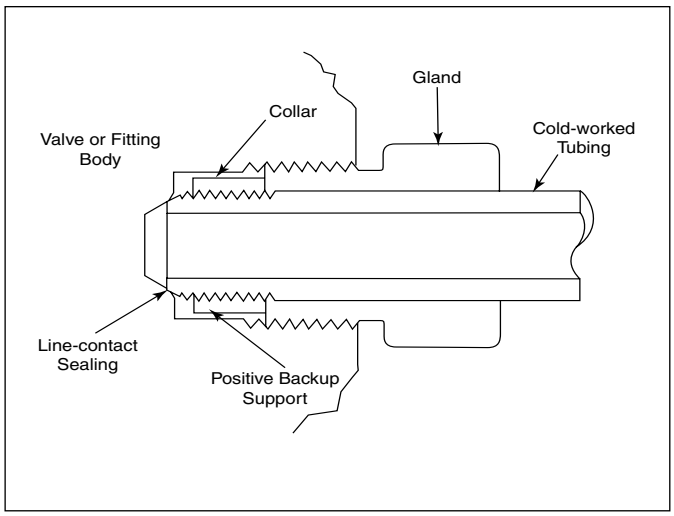
Parker Autoclave Engineers Medium & High Pressure Coned and Threaded Connections

Parker Autoclave Engineers' Medium Pressure Coned and Threaded Connections

Features:

- Pressures to 20,000 psi (1379 bar)
- Uncompromised reliability under rigorous thermal and pressure cycling.
- Design is a more compact version of the original Parker Autoclave Engineers High Pressure connections.
- Well suited to installations which require repeated assembly and disassembly with consistent reliability.
- Available in tube outside diameter sizes from 1/4"(6.35 mm) through 1-1/2" (38.10 mm) and bore sizes from .109"(2.77 mm) to .938"(23.83 mm).

Note: 1" 43,000 psi (2965 bar) utilizes the medium pressure coned and threaded connection.

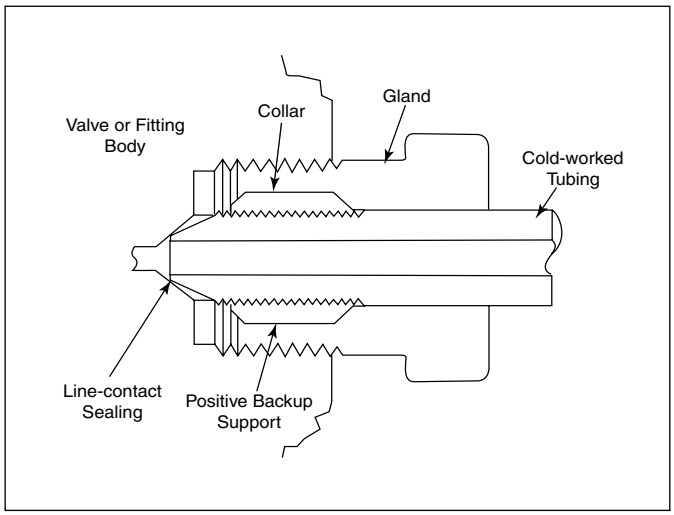


Differences in angles exaggerated for clarity.

Parker Autoclave Engineers' High Pressure Coned and Threaded Connections

Features:

- Pressures to 60,000 psi (4137 bar)
- Increased pressure handling capabilities
- Uncompromised reliability under rigorous thermal and pressure cycling
- Well suited to installations which require repeated assembly and disassembly with consistent reliability.
- Available in tube outside diameter sizes of 1/4" (6.35mm), 3/8"(9.53mm) and 9/16"(14.27mm) and bore sizes of .083(2.11mm), .125"(3.18mm), .188"(4.78mm) and .250"(6.35mm).



Differences in angles exaggerated for clarity.

Design Considerations - Why Coning and threading?

High-pressure designs require a superior joining technique for valves, fitting and tubing. Conventional joining methods fall short of the reliability needed for pressures above 10,000 - 15,000 psi (690-1034 bar) and tube sizes above 1/4" outside diameter. Dissimilar angles between the body and the tube cone provide line contact sealing along the perimeter of a contact circle. The sealing contact area is therefore, maintained at its practical minimum for the given tube size and a reliable seal is produced due to high sealing stresses that occur at low sealing loads. When process tolerable, a small amount of lubricant (or even process fluid) on the seal area will help improve the reliability of the metal to metal seals, especially when light molecule gases are to be sealed. The metal to metal seal also eliminates the need for elastomers in the connections.

Positive backup support occurs with the collar threaded (left-handed) directly onto the tubing to form a positive integral retaining surface. This allows for a consistent connection make up that is required at higher pressures and temperatures. When the gland nut is threaded into the connection, the tubing is locked securely in place and the possibility for the ejection of the tubing from a properly assembled and used connection is extremely remote.

Remarks:

Since the glands and threaded collars can be removed from the tubing, properly lubricated Parker Autoclave Engineers Medium-Pressure and High-Pressure connections can be disassembled and reassembled repeatedly without loss of relability. These connections are used with cold-worked valve and fitting bodies which can withstand many repeated sealings. Therefore, valves, fittings and accessories can be inserted or removed from the pressure system or the system can be altered or expanded in a fraction of the time and cost that may be imposed by welded, screwed, flared or other types of connections.

Vacuum Service:

Parker Autoclave Engineers' Medium-Pressure connections can be reliably used in light vacuum service to 10^{-2} torr. Parker Autocalve Engineers' High-Pressure connections are recommended for vacuum to 10^{-5} torr. Extreme care and proper seal lubrication are required to successfully achieve these levels of vacuum.

Pressure Cycling:

Since the metal to metal seal is pre-torqued to a specified value greater than the end load generated from the pressure, fatigue concerns of the connection due to pressure cycling are minimal.

Thermal Cycling:

Because of the threaded on collar design, Parker Autoclave Engineers' Medium and High-Pressure connections can take repeated thermal cycling under pressure with no loss in reliability. These connections can also handle a wider range of temperatures than swaged or bite type connections and are designed to maintain integrity from -423°F to 1200°F (-252°C to 649°C).

Pre-Rated Systems:

Valves, fittings and tubing with Parker Autoclave Engineers' Medium and High-Pressure connections provide a fully engineered, pre-rated system of components that are interchangeable from assembly to assembly. They are not over sensitive to abuse or careless assembly and no special gauges or tools are needed to check the connection. Weep holes are provided in every connection to permit fast visual inspection for leakage, and prevent pressure build up in the threads.

Materials:

Parker Autoclave Engineers' standard gland and collar material is type 316 cold-worked stainless steel. This material provides high strength and good impact resistance over the temperature range mentioned above. A bonded dry film lubricant, to be used as an anti-galling agent, is available.

Pipe Thread Information

In some applications pipe threads may be preferred in place of standard Parker Autoclave Engineers connections. Pipe threads for pressure seals are tapered or combination of taper and straight. A number of factors apply to pipe threads for high-pressure sealing. Thread form or the quality of the thread, which refers to the gauging or thread dimensions. Another is the actual machining of the thread producing the required finish to prevent thread galling.
Pipe threads can be used up to 15,000 psi (1034 bar) safely if proper installation procedures are followed. The following should be adhered to when using pipe threads.

NOTE: NPT (Pipe) connections

- NPT threads must be sealed using a high quality PTFE tape and/or PTFE paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.

Temperature limitations for pipe threads are based on material strength and thread sealant. Parker Autoclave Engineers limits it's pipe thread components to 0°F (17.8°C) to 400°F (204°C) and pressures as stated in the components sections.

Pressure/temperature Rating Guide

Information in this rating guide is furnished to approximate the pressure/temperature capabilities of Parker Autoclave Engineers valves and fittings with various options.

To determine approximate ratings, the following factors should be considered:

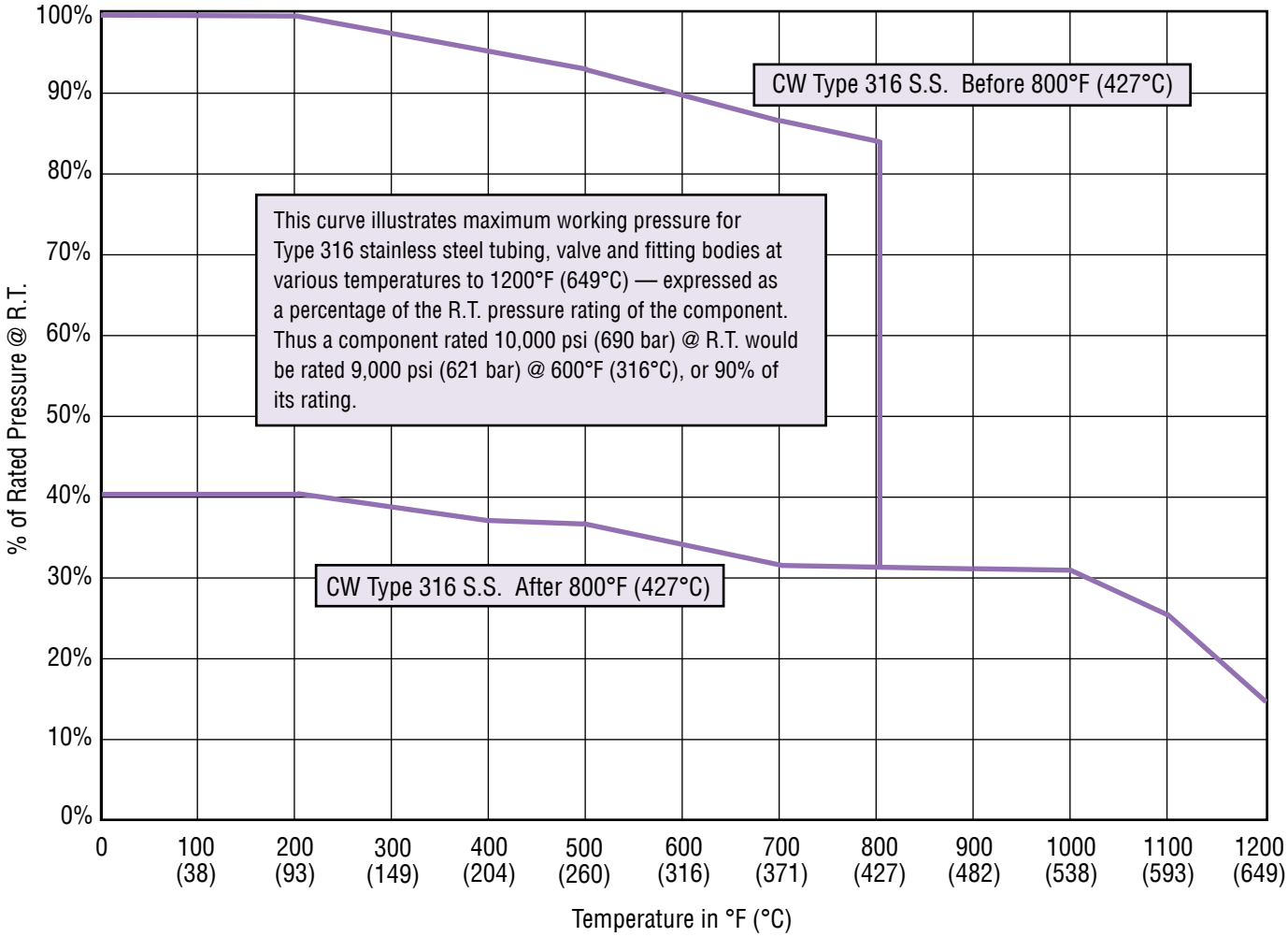
- Refer to valve or fitting ordering pages for the base pressure rating of component at room temperature (R.T.).
- Refer to Technical Information section for pressure ratings of materials at elevated temperatures.
- Refer to appropriate tubing section for pressure ratings of standard Parker Autoclave Engineers' tubing at various temperatures to 800°F (427°C).
- Note maximum temperature ratings for Parker Autoclave Engineers' valves with various packing and stem options in table below.
- Note pressure/temperature curve on page 6 for type 316 stainless steel bodies and tubing.
- Note temperature information checklist on page 6.

Valve Stem	Stem Type	Packing Temperature: °F (°C)								
		Standard PTFE Packing		Standard Nylon-Leather		Optional PTFE Glass[2]		Optional Graphite Yarn[1]		Optional Extended Stuffing Box
		Min	Max	Min	Max	Min	Max	Min	Max	
10V	Vee or Reg., Metal-to-Metal	-100 (-73)	450 (232)	NA	NA	-100 (-73)	600 (316)	0 (-17.8)	800[2] (427)	See page 2 of Extreme Temperature Series Needle Valve Section for information on extended stuffing box.
SW	Vee or Reg., Metal-to-Metal	-100 (-73)	450 (232)	NA	NA	-100 (-73)	600 (316)	0 (-17.8)	800[2] (427)	
10SM/20SM	Vee or Reg., Metal-to-Metal	-100 (-73)	450 (232)	NA	NA	-100 (-73)	600 (316)	0 (-17.8)	800 (427)	
30SC	Vee or Reg., Metal-to-Metal	-100 (-73)	450 (232)	NA	NA	-100 (-73)	600 (316)	NA	NA	
30VM	Vee or Reg., Metal-to-Metal	-100 (-73)	450 (232)	NA	NA	-100 (-73)	600 (316)	0 (-17.8)	800 (427)	
40VM	Vee or Reg., Metal-to-Metal	NA	NA	40 (4.4)	230 (110)	-100 (-73)	600 (316)	0 (-17.8)	800 (427)	
60VM	Vee or Reg., Metal-to-Metal	NA	NA	40 (4.4)	230 (110)	-100 (-73)	600 (316)	0 (-17.8)	800 (427)	
100VM	Vee Stem, Metal-to-Metal	NA	NA	40 (4.4)	230 (110)	NA	NA	NA	NA	
15Y	Vee or Reg., Metal-to-Metal	-100 (-73)	450 (232)	NA	NA	-100 (-73)	600 (316)	0 (-17.8)	800 (427)	
50Y	Vee or Reg., Metal-to-Metal	-100 (-73)	450 (232)	NA	NA	NA	NA	0 (-17.8)	800 (427)	
10VRMM	Micrometering	-100 (-73)	450 (232)	NA	NA	-100 (-73)	600 (316)	0 (-17.8)	800[2] (427)	
30VRMM	Micrometering	-100 (-73)	450 (232)	NA	NA	-100 (-73)	600 (316)	0 (-17.8)	800 (427)	
60VRMM	Micrometering	NA	NA	40 (4.4)	230 (110)	-100 (-73)	600 (316)	0 (-17.8)	800 (427)	
		(No Suffix Required)				(Add "TG" to Order Number)		(Add "GY" to Order Number)		

Caution: While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTION SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.

Note:
1. Optional graphite-yarn packing not recommended for hydrogen or helium service.
2. 40VM, 60VM and 60VRMM valves use Peak/PTFE/Peak for the PTFE glass option.
3. Compression sleeve-type connections such as Parker Autoclave Engineers' UniVersaLok, Parker Autoclave Engineers' SpeedBite or other swaged or bite-type connections are not recommended for service above 650°F (343°C) or below 0°F (-17.8°C). For such applications, Parker Autoclave Engineers recommends its medium pressure components with Parker Autoclave Engineers Medium Pressure coned-and -threaded connections, offering excellent thermal cycling capability.
4. Pressure Limitations: Consult factory on 3/4 and 1 inch sizes.

Pressure/Temperature Rating Curve: 316 SS & 304 SS



Note:

Curves and ratings presented here are average values for reference only, and can be significantly affected by pressure and temperature characteristics of trim and packing materials. For unusual pressure/temperature requirements, please consult factory for recommended body, trim and packing specifications.

For pressure temperature information on components supplied in materials other than Type 316 stainless steel, refer to pages 9-10.

* Curve is valid for cold-worked Type 316 stainless steel components as long as operating temperature does not exceed 800°F (427°C). When exceeding this temperature, the cold worked effect is PERMANENTLY altered, and the components should be considered as annealed material, using 40% of its cold-worked rating for future operation of the components.

Temperature Information Checklist

	-423° to -100°F (-253° to -73°C)	-100° to 0°F (-73° to -17.8°C)	0° to 650°F (-17.8° to 343°C)	650° to 800°F (343° to 427°C)	800° to 1200°F (427° to 649°C)
Compression Type Connections	Not Recommended	Recommended	Recommended	Not Recommended	Not Recommended
Coned-and-Threaded Connections	Required	Recommended	Recommended	Required	Required
Extended Stuffing Box	Required (PTFE Packing)*	May be Required**	May be Required**	May be Required**	Required (Graphite-Yarn Packing)†

† Packing temperature not to exceed 800°F (427°C)
* Packing temperature not to go below -100°F (-73°C)

** Extended stuffing box required for operation below -100°F (-73°C) and above 450°F (232°C) (with PTFE packing) or 600°F (316°C) (with PTFE glass packing).

For prompt service, Parker Autoclavce Engineers stocks select products. Consult factory.

Parker Autocalve Engineers Valves, Fittings and Tubing

Valves & Fittings

Valve Series	Connection Type	Tube Size (in.)	Material vs. Pressure Rating psi (bar) @ Room Temperature *							
			316CW (Std.)	Hastelloy C276	Inconel 600	Inconel 625	Monel 400	Nickel 200	Titanium Gr2	Titanium 6AL4V
10V	W125	1/8	15,000 (1034)	11,000 (758)	11,000 (758)	11,000 (758)	9,900 (683)	6,000 (414)	7,500 (531)	11,000 (758)
	W250	1/4	15,000 (1034)	11,500 (793)	11,500 (793)	11,500 (793)	9,900 (683)	6,000 (414)	7,500 (531))	11,500 (793)
	W375	3/8	15,000 (1034)	7,500 (517)	7,500 (517)	7,500 (517)	6,300 (434)	3,800 (262)	4,800 (331)	7,500 (517)
	W500	1/2	10,000 (690)	5,500 (379)	5,500 (379)	5,500 (379)	4,600 (317)	2,700 (186)	3,400 (234)	5,500 (379)
SW	SW250	1/4	15,000 (1034)	9,600 (662)	7,700 (531)	12,500 (862)	6,300 (434)	3,800 (262)	4,800 (331)	11,500 (793)
	SW375	3/8	15,000 (1034)	7,500 (517)	7,500 (517)	7,500 (517)	6,300 (434)	3,800 (262)	4,800 (331)	7,500 (517)
	SW500	1/2	10,000 (690)	5,500 (379)	5,500 (379)	5,500 (379)	4,600 (317)	2,700 (186)	3,400 (234)	5,500 (379)
10SM	SF562CX10	9/16	10,000 (690)	10,000 (690)	9,300 (641)	10,000 (690)	6,600 (455)	4,000 (276)	6,600 (455)	10,000 (690)
	SF70CX10	3/4	10,000 (690)	10,000 (690)	9,300 (641)	10,000 (690)	6,600 (455)	4,000 (276)	6,600 (455)	10,000 (690)
	SF1000CX10	1	10,000 (690)	10,000 (690)	9,300 (641)	10,000 (690)	6,600 (455)	4,000 (276)	6,600 (455)	10,000 (690)
20SM	SF250CX	1/4	20,000 (1379)	12,200 (841)	9,300 (641)	15,000 (1034)	6,600 (455)	4,000 (276)	6,600 (455)	20,000 (1379)
	SF375CX	3/8	20,000 (1379)	12,200 (841)	9,300 (641)	15,000 (1034)	6,600 (455)	4,000 (276)	6,600 (455)	20,000 (1379)
	SF562CX20	9/16	20,000 (1379)	12,200 (841)		15,000 (1034)				20,000 (1379)
	SF750CX20	3/4	20,000 (1379)	12,200 (841)		15,000 (1034)				20,000 (1379)
	SF1000CX20	1	20,000 (1379)	12,200 (841)		15,000 (1034)				20,000 (1379)
30VM	F250C	1/4	30,000 (2068)	22,400 (1544)	17,300 (1193)	22,500 (1551)	13,000 (896)	8,200 (565)	15,200 (1048)	30,000 (2068)
	F375C	3/8	30,000 (2068)	22,400 (1544)	17,300 (1193)	22,500 (1551)	13,000 (896)	8,200 (565)	15,200 (1048)	30,000 (2068)
	F562C	9/16	30,000 (2068)	22,400 (1544)	17,300 (1193)	22,500 (1551)	13,000 (896)	8,200 (565)	15,200 (1048)	30,000 (2068)
40VM	F562C40	9/16	40,000 (2758)	23,500 (1620)	18,400 (1269)	27,000 (1862)	13,800 (951)	8,700 (600)	16,200 (1117)	40,000 (2758)
60VM	F250C	1/4	60,000 (4137)	35,900 (2475)	27,700 (1910)	35,900 (2475)	20,800 (1434)	13,100 (903)	24,300 (1675)	60,000 (4137)
	F375C	3/8	60,000 (4137)	35,900 (2475)	27,700 (1910)	35,900 (2475)	20,800 (1434)	13,100 (903)	24,300 (1675)	60,000 (4137)
	F562C	9/16	60,000 (4137)	35,900 (2475)	27,700 (1910)	35,900 (2475)	20,800 (1434)	13,100 (903)	24,300 (1675)	60,000 (4137)

* For ratings at elevated temperatures see P/T Rating Curves on pages 9 and 10.

♦Use 10SM Series

Note: Hastelloy C276 values for SW are based on the valve ratings.

Tubing, connection type and/or packing material may limit maximum temperature rating. See pages 5 and 6 for further temperature limitations.

Tubing (Seamless) - Low Pressure**

Valve Series	Tubing Size Outside x Inside Diameter Inches (mm)	Material vs. Pressure Rating psi (bar) @ Room Temperature ††*						
		316CW†	Hastelloy C276	Inconel 600	Inconel 625	Monel 400	Nickel 200	Titanium Gr2
Low Pressure	1/16 x 0.026 **(1.59 x 0.66)**	15,000 **(1034.20)**	15,000 **(1034.20)**	15,000 **(1034.20)**	15,000 **(1034.20)**	11,500 **(792.88)**	7,100 **(489.52**	11,500 **(792.88**
	1/8 x 0.052 **(3.19 x 1.32)**	15,000 **(1034.20)**	15,000 **(1034.20)**	15,000 **(1034.20)**	15,000 **(1034.20)**	12,000 **(827.36)**	7,200 **(496.41)**	12,000 **(827.36)**
	1/8 x 0.062 **(3.19 x 1.57)**	11,650 **(803.23)**	14,000 **(965)**	11,000 **(758.41)**	11,650 **(803.23)**	9,900 **(682.57)**	6,000 **(413.68)**	7,500 **(517.10)**
	1/8 x 0.069 **(3.19 x 1.75)**	9,950 **(686.02)**	11,000 **(758.41)**	10,600 **(730.83)**	11,500 **(792.88)**	9,300 **(641.26)**	5,300 **(365.42)**	6,650 **(458.49)**
	1/8 x 0.085 **(3.19 x 2.16)**	6,850 **(472.28)**	7,750 **(534.34)**	7,300 **(503.31)**	10,000 **(689.46)**	6,400 **(441.26)**	3,650 **(251.65)**	4,450 **(306.81)**
	1/4 x 0.125 **(6.35 x 3.18)**	11,650 **(803.23)**	11,500 **(792.88)**	11,500 **(792.88)**	12,500 **(861.83)**	9,900 **(682.57)**	6,000 **(413.68)**	7,500 **(517.10)**
	1/4 x 0.180 **(6.35 x 4.57)**	5,450 **(375.76)**	6,650 **(458.49)**	6,300 **(434.36)**	9,000 **(620.52)**	5,500 **(379.21)**	3,150 **(217.18)**	3,900 **(268.89)**
	1/4 x 0.194 **(6.35 x 4.93)**	4,600 **(317.15)**	5,200 **(358.52)**	4,900 **(337.84)**	7,200 **(496.41)**	4,300 **(296.47)**	2,450 **(168.92)**	3,050 **(210.29)**

Tubing (Seamless) - Low Pressure, continued on page 8

†† The tubing pressure rating in some instances is lower than the rating of the valve and fitting. Tubing connection type and/or packing material may limit maximum temperature rating. See pages 5 & 6 for further temperature limitations.

† Except low pressure series which is 316 annealed.
* For ratings at elevated temperatures see P/T Rating Curves on pages 9 & 10.
** Except Hastelloy C276 which is welded and drawn or seamless.

Tubing (Seamless) - Low Pressure** - continued

Valve Series	Tubing Size Outside x Inside Diameter Inches (mm)	Material vs. Pressure Rating psi (bar) @ Room Temperature ††*						
		316CW†	Hastelloy C276	Inconel 600	Inconel 625	Monel 400	Nickel 200	Titanium Gr2
Low Pressure	3/8 x 0.195 **(9.53 x 4.95)**	10,000 **(689.46)**	10,000 **(689.46)**	10,000 **(689.46)**	7,500 **(517.10)**	8,800 **(606.73)**	5,300 **(365.42)**	6,600 **(455.05)**
	3/8 x 0.250 **(9.53 x 6.35)**	7,500 **(517.10)**	7,500 **517.10)**	7,500 **(517.10)**	7,500 **(517.10)**	6,300 **(434.36)**	3,800 **(262.00)**	4,800 **(330.94)**
	3/8 x 0.277 **(9.53 x 7.04)**	5,450 **(375.76)**	6,150 **(424.02)**	5,800 **(399.89)**	7,500 **(517.10)**	5,100 **(351.63)**	2,900 **(199.942)**	3,600 **(248.21)**
	3/8 x 0.305 **(9.53 x 7.75)**	3,800 **(262.00)**	4,250 **(293.02)**	4,000 **(275.79)**	5,000 **(344.73)**	3,500 **(241.31)**	2,100 **(144.79)**	2,500 **(172.37)**
	1/2 x 0.375 **(12.70 x 9.53)**	5,500 **(379.21)**	5,500 **(379.21)**	5,500 **(379.21)**	5,500 **(379.21)**	4,600 **(317.15)**	2,700 **(186.16)**	3,450 **(237.87)**
	1/2 x 0.402 **(12.70 x 10.21)**	4,000 **(275.79)**	4,500 **(310.26)**	4,250 **(293.02)**	5,000 **(344.73)**	3,700 **(255.10)**	2,100 **(144.79)**	2,650 **(182.71)**

†† The tubing pressure rating in some instances is lower than the rating of the valve and fitting. Tubing connection type and/or packing material may limit maximum temperature rating. See pages 5 & 6 for further temperature limitations.

† Except low pressure sereis which is 316 annealed.
* For ratings at elevated temperatures see P/T Rating Curves on pages 9 & 10.
** Except Hastelloy C276 which is welded and drawn or seamless.

Tubing (Seamless) - Medium Pressure

Valve Series	Tubing Size Outside x Inside Diameter Inches (mm)	Material vs. Pressure Rating psi (bar) @ Room Temperature ††*						
		316CW	Hastelloy C276	Inconel 600	Inconel 625	Monel 400	Nickel 200	Titanium Gr2
Medium Pressure	1/4 x 0.109 **(6.35 x 2.77)**	20,000 **(1378.93)**	15,000 **(1034.20)**	8,450 **(582.60)**	15,000 **(1034.20)**	6,600 **(455.05)**	3,600 **(248.21)**	6,600 **(455.05)**
	3/8 x 0.203 **(9.53 x 5.16)**	20,000 **(1378.93)**	15,000 **(1034.20)**	8,450 **(582.60)**	15,000 **(1034.20)**	6,600 **(455.05)**	3,600 **(248.21)**	6,600 **(455.05)**
	9/16 x 0.312 **(14.29 x 7.92)**	20,000 **(1378.93)**	15,000 **(1034.20)**	8,450 **(582.60)**	15,000 **(1034.20)**	6,600 **(455.05)**	3,600 **(248.21)**	6,600 **(455.05)**
	9/16 x 0.359 **(14.29 x 9.12)**	15,000 **(1034.20)**	10,000 **(689.46)**	5,175 **(356.80)**	12,000 **(827.36)**	4,150 **(286.13)**	2,225 **(153.41)**	5,925 **(408.51)**
	3/4 x 0.438 **(19.05 x 11.13)**	20,000 **(1378.93)**	15,000 **(1034.20)**	8,450 **(582.60)**	15,000 **(1034.20)**	6,600 **(455.05)**	3,600 **(248.21)**	6,600 **(455.05)**
	3/4 x 0.516 **(19.05 x 13.11)**	15,000 **(1034.20)**	10,000 **(689.46)**	5,175 **(356.80)**	12,000 **(827.36)**	4,150 **(286.13)**	2,225 **(153.41)**	5,925 **(408.51)**
	1.00 x 0.562 **(25.40 x 14.27)**	20,000 **(1378.93)**	15,000 **(1034.20)**	8,450 **(582.60)**	15,000 **(1034.20)**	6,600 **(455.05)**	3,600 **(248.21)**	6,600 **(455.05)**
	1.00 x 0.688 **(25.40 x 17.48)**	15,000 **(1034.20)**	10,000 **(689.46)**	5,175 **(356.80)**	12,000 **(827.36)**	4,150 **(286.13)**	2,225 **(153.41)**	5,925 **(408.51)**

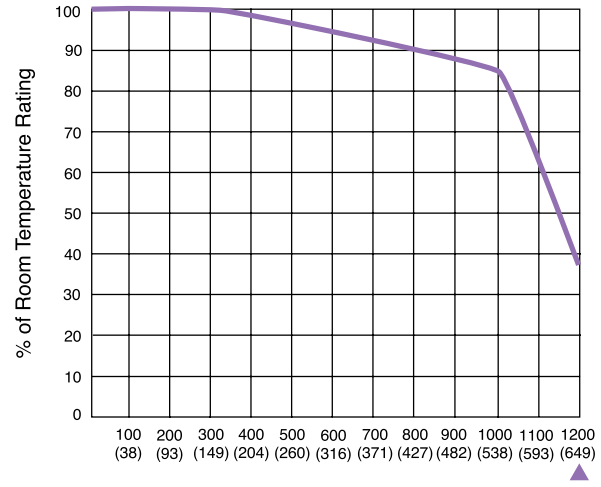
Tubing (Seamless) - High Pressure

Valve Series	Tubing Size Outside x Inside Diameter Inches (mm)	Material vs. Pressure Rating psi (bar) @ Room Temperature ††*						
		316CW	Hastelloy C276	Inconel 600	Inconel 625	Monel 400	Nickel 200	Titanium Gr2
High Pressure	1/4 x 0.083 **(6.35 x 2.11)**	60,000 **(4136.79)**	30,000 **(1934.98)**	21,300 **(1468.56)**	35,900 **(2475.18)**	17,025 **(1173.81)**	9,125 **(629.14)**	24,300 **(1675.40)**
	3/8 x 0.125 **(9.53 x 3.18)**	60,000 **(4136.79)**	30,000 **(1934.98)**	21,300 **(1468.56)**	35,900 **(2475.18)**	17,025 **(1173.81)**	9,125 **(629.14)**	24,300 **(1675.40)**
	9/16 x 0.188 **(14.27 x 4.78)**	60,000 **(4136.79)**	30,000 **(1934.98)**	21,300 **(1468.56)**	35,900 **(2475.18)**	17,025 **(1173.81)**	9,125 **(629.14)**	24,300 **(1675.40)**
	9/16 x 0.250 **(14.27 x 6.35)**	40,000 **(2757.86)**	23,000 **(1483.48)**	15,400 **(1061.78)**	27,000 **(1861.56)**	11,000 **(758.41)**	6,600 **(455.05)**	17,600 **(1213.46)**
	1 x 0.438 **(25.40 x 11.13)**	43,000 **(2964.70)**	23,000 **(1483.48)**	15,900 **(1096.25)**	28,000 **(1930.50)**	11,300 **(779.10)**	6,800 **(468.84)**	18,200 **(1254.83)**

†† The tubing pressure rating in some instances is lower than the rating of the valve and fitting. Tubing connection type and/or packing material may limit maximum temperature rating. See pages 5 & 6 for further temperature limitations.

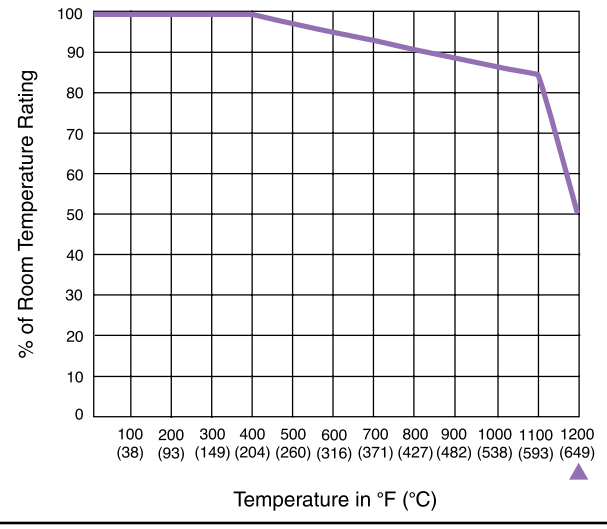
† Except low pressure series which is 316 annealed.
* For ratings at elevated temperatures see P/T Rating Curves on pages 9 & 10.

Hastelloy C276



▲ Maximum Coincident Metal Temperature

Inconel 625

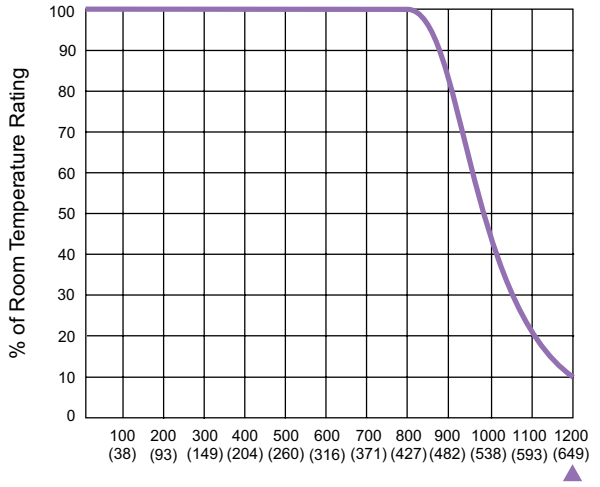


▲ Maximum Coincident Metal Temperature

Curves and ratings presented here are average values for reference only and can be significantly affected by pressure and temperature characteristics of trim materials, stem packing materials (or o-rings), and connection type. Other options such as an extended stuffing box will be required to achieve the maximum temperature rating. See pages 5 and 6 for further temperature limitations. For unusual pressure/temperature requirements, please consult factory for recommended body, trim and packing specifications.

To obtain the maximum pressure rating at an elevated temperature, multiply the maximum pressure rating of the item (in special material) at room temperature, by the elevated temperature factor (% of RT).

Inconel 600



▲ Maximum Coincident Metal Temperature

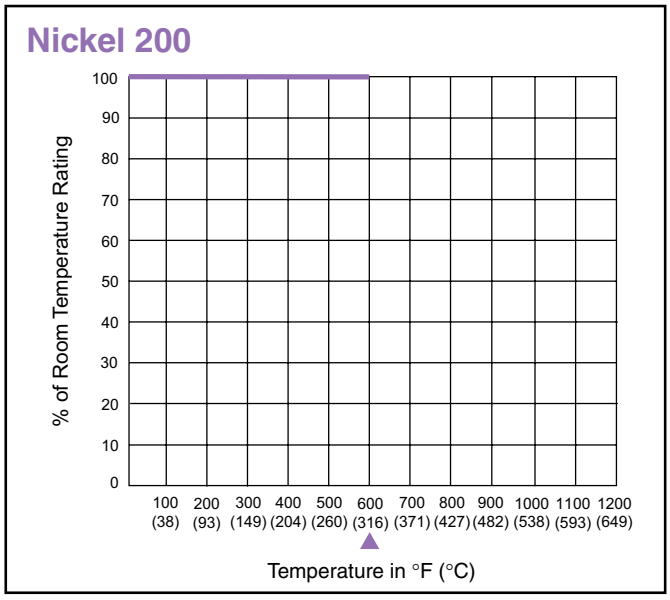
Example: What would be the pressure rating of a 30VM 1/4 inch valve constructed of Hastelloy C276 at 600°F (316°C)?

From the Material vs. Pressure rating chart on pages 7 & 8 for valves and fittings, the maximum pressure rating for a 30VM 1/4 inch valve constructed of Hastelloy C276 would be 22,400 psi (1544 bar).

To determine the approximate pressure rating at 600°F (316°C), the Pressure vs. Temperature Rating Curves will be used. A vertical line on the x-axis (Temperature) is traced at 600°F (316°C) [on the Hastelloy C276 graph], until it intersects the curve. A horizontal line is then drawn to the y-axis (% of rated pressure @ RT) and read as 93%. The room temperature rating of the Hastelloy C276 valve is multiplied by the temperature reduction factor (.93) 22,400 psi (1544 bar) to approximate the temperature corrected pressure of 20,800 psi (1434 bar).

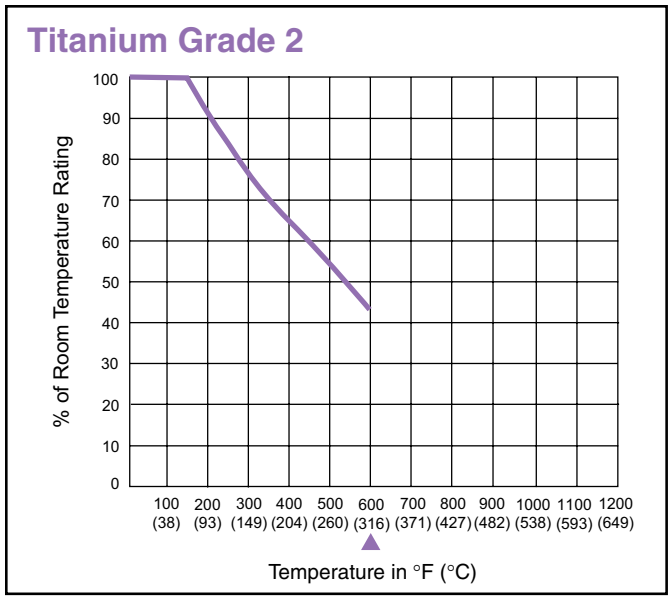
See page 5 for further packing temperature limitations.

Nickel 200



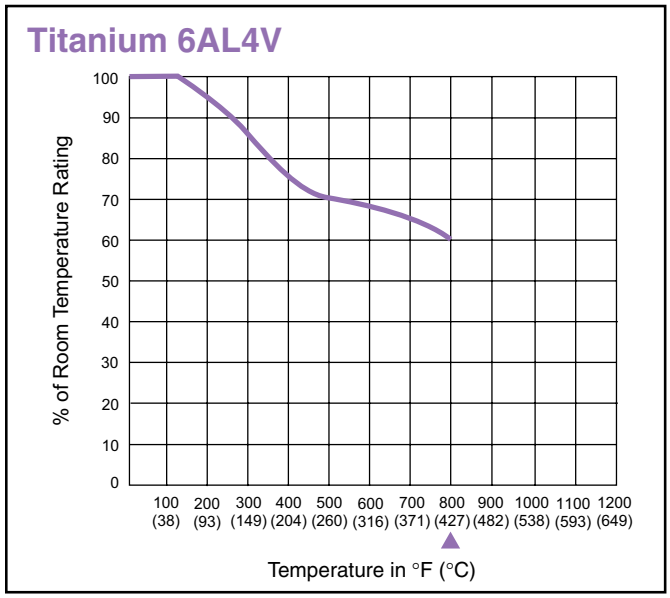
▲ Maximum Coincident Metal Temperature

Titanium Grade 2



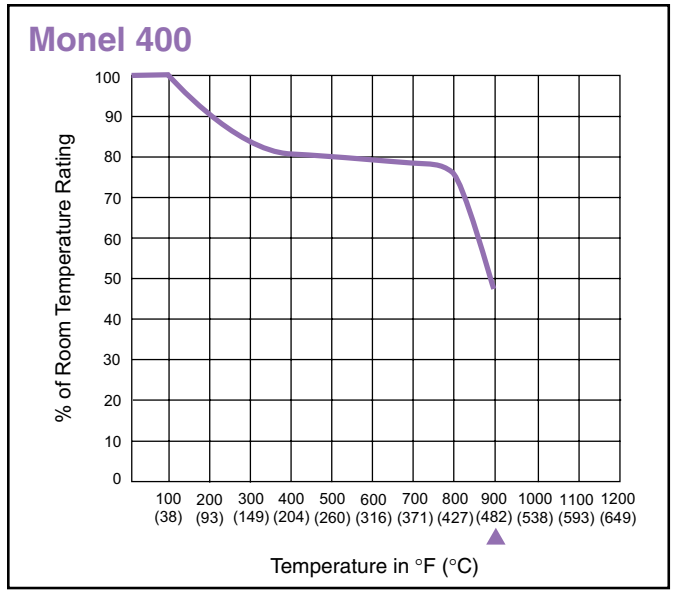
▲ Maximum Coincident Metal Temperature

Titanium 6AL4V



▲ Maximum Coincident Metal Temperature

Monel 400



▲ Maximum Coincident Metal Temperature

Curves and ratings presented here are average values for reference only and can be significantly affected by pressure and temperature characteristics of trim materials, stem packing materials (or o-rings), and connection type. Other options such as an extended stuffing box will be required to achieve the maximum temperature rating. See pages 5 and 6 for further temperature limitations. For unusual pressure/temperature requirements, please consult factory for recommended body, trim and packing specifications.

To obtain the maximum pressure rating at an elevated temperature, multiply the maximum pressure rating of the item (in special material) at room temperature, by the elevated temperature factor (% of RT).

Example: What would be the pressure rating of a 30VM 1/4 inch valve constructed of Titanium Grade 2 at 600°F (316°C)?

From the Material vs. Pressure rating chart on pages 7 & 8 for valves and fittings, the maximum pressure rating for a 30VM 1/4 inch valve constructed of Titanium Grade 2 would be 15,200 psi (1048 bar).

To determine the approximate pressure rating at 600°F (316°C), the Pressure vs. Temperature Rating Curves will be used. A vertical line on the x-axis Temperature) is traced at 600°F (316°C) [on the Titanium Grade 2 graph], until it intersects the curve. A horizontal line is then drawn to the y-axis (% of rated pressure @ RT) and read as 44%. The room temperature rating of the Titanium Grade 2 valve is multiplied by the temperature reduction factor (.44) 15,200 psi (1048 bar) to approximate the temperature corrected pressure of 6,688 psi (461 bar).

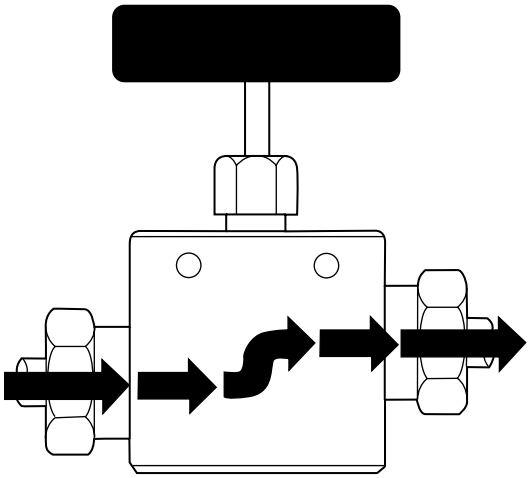
See page 5 for further packing temperature limitations.

Liquids & Gases

Coefficient of flow (C_v) for a valve is the volume of water, in U.S gallons per minute at room temperature, which will flow through the valve with the stem fully open with a pressure drop of 1 psi (.069 bar) across the valve. C_v is the valve sizing factor that permits selection of the appropriate valve to meet flow requirements of a given fluid system

The flow capacity curves presented in the ordering pages for each series of Parker Autoclave Engineers valves show the C_v for all series, sizes and stem types per number of turns of the stem. These curves also illustrate the relative flow patterns for a vee on-off stem and a regulating stem.

The C_v values shown on the valve ordering pages represent the full-open C_v for that valve. In determining estimated capacity, this C_v value should be used in the formulas which follow.



For 2 way angle patterns, increase Cv value 50%

Specific Gravity (Sg)
Typical Gases

Gas	S_G@RT Relative to Air
Acetylene	0.897
Air	1.000
Ammonia	0.587
Argon	1.377
Butane	2.070
Carbon Dioxide	1.516
Ethylene	0.967
Helium	0.138
Hydrogen	0.0695
Methane	0.553
Nitrogen	0.966
Oxygen	1.103
Propane	1.562
Sulphur Dioxide	2.208

Specific Gravity (Sgf)
Typical Liquid

Liquid	S_{GF}@RT Relative to Water
Acetone	0.792
Alcohol	0.792
Benzine	0.902
Gasoline	0.751
Gasoline, nat.	0.680
Kerosene	0.815
Pentane	0.624
Water	1.000

Flow Formulas

Liquids

☐ Flow, U.S. gal./min.

$$V = \frac{C_V \sqrt{P_1 - P_2}}{\sqrt{S_{GF}}}$$

☐ Flow, lb./hr.

$$V = 500\ C_V \sqrt{(P_1 - P_2)\ /S_{GF}}$$

Gases

☐ Flow, SCFH

$$Q = \frac{42.2\ C_V \sqrt{(P_1 - P_2)\ (P_1 + P_2)}}{\sqrt{S_{GF}}}\ *\dagger$$

☐ Flow, SCFH (temperature corrected)

$$Q = \frac{963\ C_V \sqrt{(P_1 - P_2)\ (P_1 + P_2)}}{\sqrt{S_G\ T_F}}\ \dagger$$

☐ Flow, lb./hr.

$$W = 3.22\ C_V \sqrt{(P_1 - P_2)\ (P_1 + P_2)/\ S_G}\ \dagger$$

Saturated Steam

☐ Flow, lb./hr.

$$W = 2.1\ C_V \sqrt{(P_1 - P_2)\ (P_1 + P_2)}\ \dagger$$

Super Heated Steam

☐ Flow, lb./hr.

$$W = \frac{2.1\ C_V \sqrt{(P_1 - P_2)\ (P_1 + P_2)}}{(1 + 0.0007\ T_S)}\ \dagger$$

Formula Nomenclature

V = Flow, U.S. gallons per minute (GPM)
Q = Flow, standard cu.ft. per hr. (SCFH)
W = Flow, pounds per hour (lb./hr.)
P1 = Inlet pressure, psia (14.7 + psig)
P2 = Outlet pressure, psia (14.7 + psig)
Sgf = Liquid specific gravity (water = 1.0)
Sg = Gas specific gravity (air = 1.0)
Tf = Flowing temp., °R absolute (460 + °F)
Ts = Superheat in °F
Cv = Valve coefficient of flow, full open

** Effect of flowing temperatures on gas flow are minimal for temperatures between 30°F (-1.1°C) and 150°F (66°C). Correction should be included if temperatures are higher or lower.*

† Where outlet pressure P_2 is equal to or less than 1/2 inlet pressure P_1, the term:

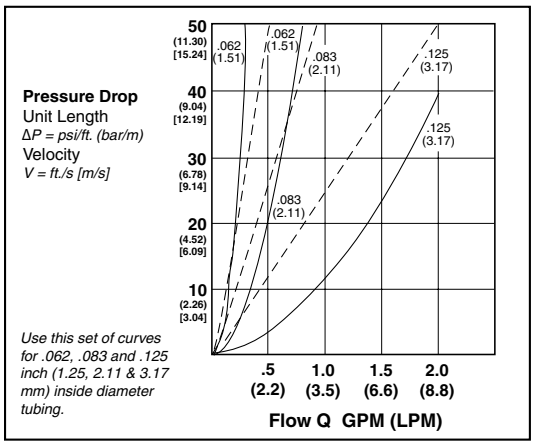
$$\sqrt{(P_1 - P_2)\ (P_1 + P_2)}\ \textit{becomes}\ 0.87\ P_1$$

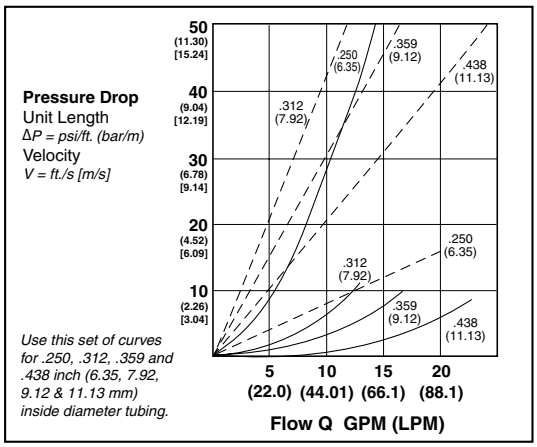
Note: Maximum Cv values in this catalog have been determined in accordance with the Fluid Controls Institute report FCI58-2. "Recommended Voluntary Standards for Measurement Procedure for Determining Control Valve Flow Capacity," including procedure, design of the test stand and evaluation of the data.

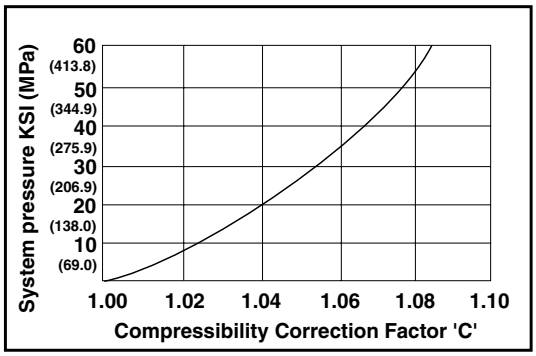
Tubing

Theoretical Pressure Drop & Fluid Velocity vs. Flow, Parker Autoclave Engineers Medium and High Pressure Tubing. (Based on water @ RT)

Legend		
	Pressure drop	ΔP = psi/ft. (bar/m)
	Velocity	V = Ft./s (m/s)

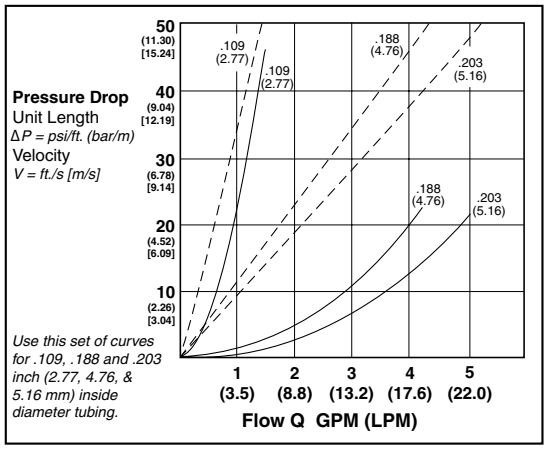


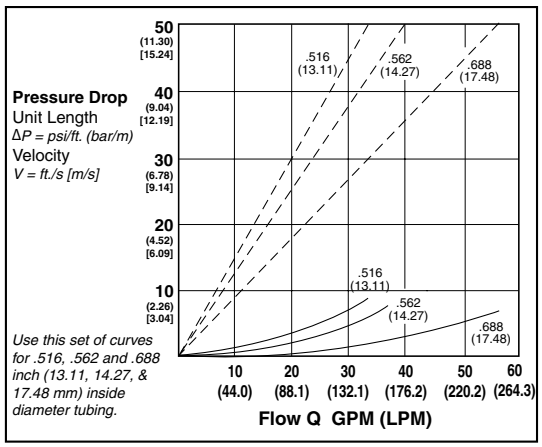




Note: Multiply pressure drop (ΔP/ft) from graph above by factor 'C' to correct for system pressure above atmospheric. Higher system pressure increases the fluid density resulting in higher system pressure loss.

Instructions: To determine the expected pressure drop, per foot of tube length, select the appropriate curves based on tube Inside Diameter. Follow the graph vertically at the design flow rate (X-axis) until it intersects the solid line, then move horizontally to read the expected pressure drop per foot (Y-axis). Multiply this by the total tube length to obtain the total pressure loss. See note below to correct for system pressures above atmospheric. To determine the average fluid velocity, repeat the above procedure, but use the dashed line. The pressure drop is for straight lengths of tube only.





Example: What would be the expected pressure drop and average fluid velocity at 1 gallon (4.4 liter) per minute of water through 100 feet (30.48 meters) of 3/8 outside diameter x .125 inside diameter tubing at 30,000 psi (2068 bar) will be used. This curve lists .125 inch (.317mm) inside diameter data.

From the x-axis (Flow "Q" GPM (LPM) at 1 GPM (3.5 LPM) a vertical line is drawn until it intersects the solid line labeled ".125 (3.17mm)". A horizontal line is then traced to the y-axis)Pressure Drop/Unit Length) and is read 12 psi/ft. (2.71 bar/m).

Since the system pressure is 30,000 psi (2068 bar), a correction must be made to this value 12 psi/ft. (2.71 bar/m). The small graph in the lower left corner is used to determine this correction factor. A horizontal line on this graph is drawn from the y-axis System Pressure KSI (MPa) until it intersects the curve. It is then traced vertically to the x-axis (Compressibility Correction Factor 'C') and is read as 1.054.

To determine the total pressure drop, multiply the total tube length by the expected pressure drop per foot and by the correction factor 'C' (100) (12) (1.054) = 1,265 psi [(30.48m)(2.71 bar/m) (1.054)=87.10 bar].

The average fluid velocity is determined in a similar way except that on the original graph, the dashed line is used instead of the solid line. the average fluid velocity at 1 GPM (4.4 LPM) would be 25 ft/s (7.62 m/s). No correction needs to be made for elevated system pressures.

Temperature Equivalents

Fahrenheit °F	Celcius °C	Rankine°R	Kelvin°K
0	-18	460	255
32	0	492	273
-460	-273	0	0

Degrees Fahrenheit = °F

Degrees Celcius = 5/9 (°F - 32)

Degrees Kelvin = °C + 273.15

Degrees Rankine = °F + 459.67

Linear Equivalents

foot	inch	meter	centimeter	millimeter	micron	angstrom
1	12	0.3048	30.48	304.800	$3.048x10^{5}$	$3.048x10^{9}$
0.08333	1	0.0254	2.54	25.4	$2.54x10^{4}$	$2.54x10^{8}$
3.28083	39.37	1	100	1000	$1x10^{6}$	$1x10^{10}$
0.03281	0.3937	0.01	1	10	$1x10^{4}$	$1x10^{8}$
$3.281x10^{-3}$	0.03937	0.001	0.1	1	1000	$1x10^{7}$
$3.281x10^{-6}$	$3.937x10^{-5}$	$1x10^{-6}$	$1x10^{-4}$	$1x10^{-3}$	1	$1x10^{4}$
$3.281x10^{-10}$	$3.937x10^{-9}$	$1x10^{-10}$	$1x10^{-8}$	$1x10^{-7}$	$1x10^{-4}$	1

Pressure Equivalents

Pa	MPa	atm	bar	kg/cm²	psi	inches Hg	Microns Hg
1	$1x10^{-6}$	$9.8692x10^{-6}$	$1x10^{-5}$	$1.0197x10^{-5}$	$1.4504x10^{-4}$	$2.9530x10^{-4}$	7.50059
$1x10^{-6}$	1	9.8692	10	10.1971	145.04	295.30	$7.5006x10^{6}$
101325	0.101325	1	1.01325	1.0332	14.696	29.921	$760x10^{3}$
100000	0.1	0.98692	1	1.01971	14.504	29.53	$750.059x10^{3}$
98066.5	0.098067	0.96784	0.98067	1	14.223	28.959	$735.56x10^{3}$
6894.757	$6.8948x10^{-3}$	0.06805	0.06895	0.07031	1	2.036	$51.715x10^{6}$
3386.389	$3.3864x10^{-3}$	0.03342	0.03386	0.03453	0.49116	1	$2.54x10^{4}$
0.133322	$1.3332x10^{-7}$	$1.3158x10^{-6}$	$1.3332x10^{-6}$	$1.3595x10^{-6}$	$19.337x10^{-6}$	$39.37x10^{-6}$	1

PSIG = lb./in.² Gage

PSIG = lb./in.² absolute

PSIA = PSIG plus atmospheric pressure

1Torr = 133.322Pa

Volume Equivalents

meter³	foot³	gallon*	liter	quart	inch³	cc
1	35.31	264.2	1000	1056.8	61023	$1x10^{6}$
$28.317x10^{-3}$	1	7.4822	28.317	29.92	1728	$28.317x10^{3}$
$3.785x10^{-3}$	0.1337	1	3.785	4	231	3785
$1x10^{-3}$	0.03531	0.2642	1	1.057	61.023	1000
$9.463x10^{-4}$	0.03342	0.25	0.9463	1	57.75	946.25
$1.638x10^{-5}$	$5.787x10^{-4}$	$43.29x10^{-4}$	0.01639	0.01732	1	16.387
$1x10^{-6}$	$35.31x10^{-6}$	$2.642x10^{-4}$	$1x10^{-3}$	$10.568x10^{-4}$	0.06102	1

**U.S. Gallons*

US. gallon = 0.833 British Imperial gallon

British Imperial gallon = 1.201 US. gallon

US. gallon water = 8.345 pounds

British Imperial gallon water= 10.022 pounds

US. fluid ounce = 29.573 centimeters³

British Imperial fluid ounce = 28.413 centimeters³

Density Equivalents

pound/inch³	pound/ft³	kg/meter*	pound/gallon³	gram/cm³
1	1728	231	$27.68x10^{3}$	27.6797
$5.787x10^{-4}$	1	0.1337	16.018	0.01602
$4.33x10^{-3}$	7.48	1	119.8257	0.11983
$3.613x10^{-5}$	0.06243	$8.3445x10^{-3}$	1	.001
0.03613	62.43	8.3445	1000	1

**U.S. Gallons*

Fluid Flow Equivalents

*gal/hr	*gal/min	cu ft/hr	cu ft/min	liters/hr	liters/min	cc/min
1	0.01667	0.1337	$2.228x10^{-3}$	3.7848	0.06308	63.08
60	1	8.022	0.1337	227.1	3.7848	3784.8
7.48	0.1247	1	0.01667	28.32	0.472	472
448.8	7.48	60	1	1698.6	28.32	$28.32x10^{3}$
0.26418	$4.403x10^{-3}$	0.03531	$5.886x10^{-4}$	1	0.01667	16.67
15.8502	$264.18x10^{-3}$	2.11887	0.03531	60	1	1000
.01585	$264.2x10^{-6}$	$2.1187x10^{-3}$	$35.3145x10^{-6}$	.06	0.001	1

**U.S. Gallons*

Technical Information - Conversion Tables

Area Equivalents

ft^2	in^2	m^2	cm^2	mm^2
1	144	0.09291	929.034	$9.29x10^{4}$
$6.944x10^{-3}$	1	$6.451x10^{-4}$	6.4516	645.1625
10.7639	1550	1	$1x10^{-4}$	$1x10^{6}$
$1.0764x10^{-3}$	0.155	$1x10^{-4}$	1	100
$1.076x10^{-5}$	$1.55x10^{-3}$	$1x10^{-6}$	.01	1

Weight Equivalents

pound	ounce	kilogram	gram	grain
1	16	.45351	453.592	7000
0.0625	1	.02836	28.345	437.5
2.205	35.27	1	1000	$15.435x10^{3}$
$2.205x10^{-3}$	0.03527	0.001	1	15.435
$1.428x10^{-4}$	0.002285	$64.8x10^{-6}$	0.0648	1

Power Equivalents

kilowatt	horsepower*	ft lbs/sec	ft lbs/min	ft lbs/hr	Btu/sec	Btu/min	Btu/hr
1	1.341	738	44.280	$2.653x10^{6}$	0.948	56.9	3413
.7457	1	550	$33x10^{3}$	$1.99x10^{6}$	0.707	42.41	25.44
$13.55x10^{-4}$	$18.18x10^{-4}$	1	60	3600	$12.84x10^{-4}$	0.0771	4.62
$22.59x10^{-6}$	$0.303x10^{-4}$	0.01667	1	60	$21.41x10^{-6}$	$12.84x10^{-4}$	0.0771
$0.376x10^{-6}$	$0.505x10^{-6}$	$2.78x10^{-4}$	0.01667	1	$0.357x10^{-6}$	$21.41x10^{-6}$	$12.84x10^{-4}$
1.055	1.416	778	$46.7x10^{3}$	$2.802x10^{-6}$	1	60	3600
0.01759	0.02359	12.98	778	$46.7x10^{3}$	0.01667	1	60
$2.925x10^{-4}$	$3.933x10^{-4}$	0.2163	12.98	778	$2.778x10^{-4}$	0.01667	1

**U.S. Horsepower*

US. horsepower = 1.014 metric horsepower

Metric. horsepower = 0.986 US. horsepower

Work or Energy Equivalents

kilowatt-hours	horsepower* hours	foot-pounds	inch-pounds	Btu	kilogram-meters	kilogram-calories	joules Newton meters
1	1.342	$2.655x10^{6}$	$31.86x10^{6}$	3415	$367.1x10^{3}$	860.238	$3.6x10^{6}$
.7457	1	$1.98x10^{6}$	$23.76x10^{6}$	2546.5	$273.546x10^{3}$	641.477	$2.685x10^{6}$
$0.376x10^{-6}$	$0.505x10^{-6}$	1	12	$1.286x10^{-3}$	0.13826	$3.239x10^{-4}$	1.3562
$0.313x10^{-7}$	$0.458x10^{-7}$	0.08333	1	$0.107x10^{-3}$	$11.522x10^{-3}$	$0.27x10^{-4}$	0.11302
$2.928x10^{-4}$	$3.929x10^{-4}$	778	9336	1	107.5	0.2519	1054.8
$2.717x10^{-6}$	$3.653x10^{-6}$	7.233	86.796	$9.302x10^{-3}$	1	$23.43x10^{-4}$	9.804
$1.161x10^{-3}$	$1.558x10^{-3}$	3088.26	37059.12	3.9683	427.32	1	4189.48
$2.774x10^{-7}$	$3.7229x10^{-7}$	0.7373	8.8476	$9.478x10^{-4}$	0.10194	$2.39x10^{-4}$	1

**U.S. Horsepower*

Velocity Equivalents

cm/sec	meter/sec	meter/min	kilometer/hr	feet/sec	feet/min	mile/hr
1	0.01	0.6	0.036	0.03281	1.9685	0.02237
100	1	60	3.6	3.281	196.85	2.2369
1.667	0.01667	1	0.06	0.05468	3.281	.03728
27.78	0.2778	16.67	1	0.91134	54.681	0.62137
30.48	0.3048	18.29	1.0973	1	60	0.68182
0.508	$508x10^{-3}$	0.3048	0.01829	0.01667	1	0.01136
44.704	0.44704	26.82	1.6093	1.4667	88	1

Statute mile/hour = .8684 knot

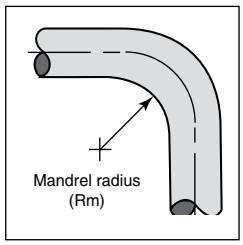
Knot = 1.1516 mile/hour = 1.689 feet/second

1 Statue Mile = 5280 feet

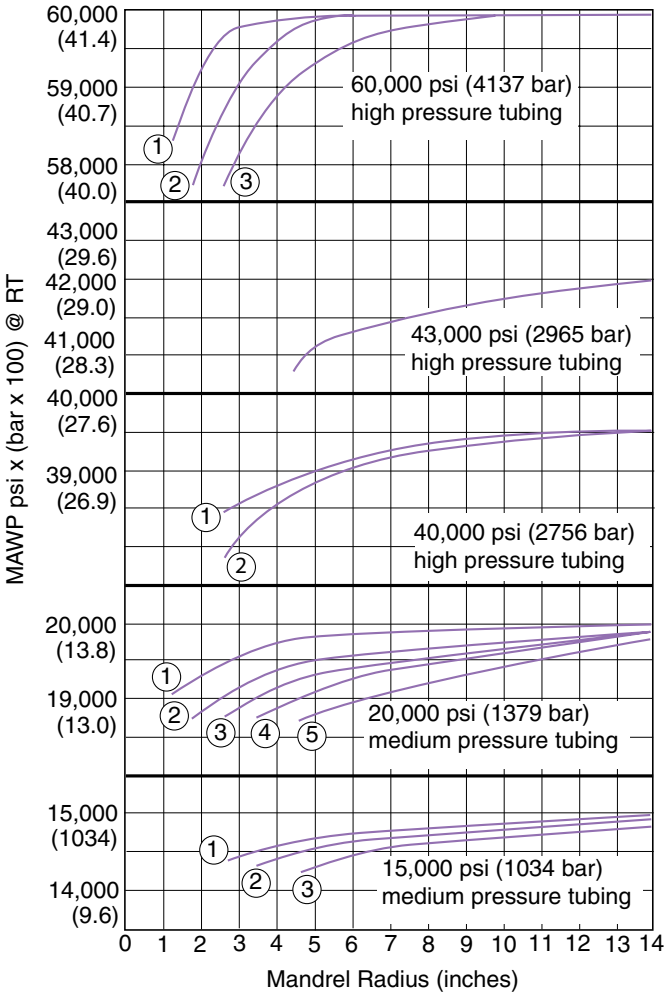
1 Nautical Mile = 6076 feet

Tubing

Allowable Pressure vs. Bend (Mandrel) Radius



Parker Autoclave Engineers Medium & High Pressure tubing (316 & 304 SS)



60,000 and 100,000 psi (4137 & 6895 bar)
High Pressure Tubing

	Size Inches	Rm (min.) inches (mm)
①	1/4 x .083	1.25 (31.8)
②	3/8 x .125	1.75 (44.5)
③	9/16 x .188	2.625 (66.7)

43,000 psi (2965 bar)
High Pressure Tubing

Size Inches	Rm (min.) inches (mm)
1 x .438	4.625 (117.5)

40,000 psi (2758 bar)
High Pressure Tubing

	Size Inches	Rm (min.) inches (mm)
①	9/16 x .250	2.625 (66.7)
②	9/16 x .312	

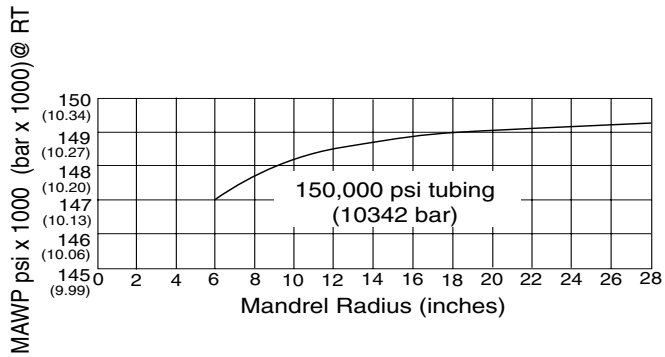
20,000 psi (1379 bar)
Medium Pressure Tubing

	Size Inches	Rm (min.) inches (mm)
①	1/4 x .109	1.25 (31.8)
②	3/8 x .203	1.75 (44.5)
③	9/16 x .312	2.625 (66.7)
④	3/4 x .438	3.5 (89.9)
⑤	1 x .562	4.625 (117.5)

15,000 psi (1034 bar)
Medium Pressure Tubing

	Size Inches	Rm (min.) inches (mm)
①	9/16 x .359	2.625 (66.7)
②	3/4 x .516	3.5 (89.9)
③	1 x .688	4.625 (117.5)
④	1 1/2 x .938	4.50 (114.3) (Curved not shown)

Parker Autoclave Engineers Ultra High Pressure tubing (316SS)



150,000 psi (10342 bar)
Ultra High Pressure Tubing

Size Inches	Rm (min.) inches (mm)
5/16 x 1/16	6 (152.4)

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.

Offer of Sale

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).

02-0142SE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Autoclave Engineers
Fluid Components
Division of Snap-tite, Inc.

VFT Lubrication Guide

General Information

For reliable operation and long life of hand valves, air valves, relief valves, check valves and safety heads, Autoclave Engineers strongly recommends proper lubrication of all components that are subject to friction during assembly and /or operation. This is especially important where metal to metal contact occurs such as on connection gland threads, packing gland threads and stem threads. Without proper lubrication, the high loads imposed on these threads may cause the parts to weld (or gall) together from the high metal to metal contact forces and friction heat. Lubrication is also essential for the effective sealing and long life of o-rings, especially those that are used in dynamic sealing applications. The performance of metal to metal seals will be improved with lubrication but, they do not absolutely require it.

Lubricant selection is strongly dependent on the application of the given component. Process fluids, fluid temperature, ambient environment temperature, materials and other factors are important in selecting a lubricant. This manual gives some basic guidelines in the proper selection and application of lubricants. The end user must ultimately determine the suitability of a lubricant based on process requirements.

Note: Autoclave Engineers assumes no liability in selecting lubricant for customer applications.

Caution: While testing has shown o-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling, and age of the o-ring. Frequent inspection should be made to detect any deterioration and o-rings replaced as required.

ISO-9001 Certified

Lubrication Sites

1. Speedbite, Slimline and High Pressure Connections in all valves and fittings - Prior to assembly, the connection gland should be lubricated on the threads and on the area that is in contact with the sleeve or collar. AE provides as standard a dry molybdenum disulfide lubricant on Speedbite glands unless specified otherwise. If process tolerable, a small amount of any lubricant (or process fluid) on the end of the tube cone or connection sleeve will help to maximize the metal-to-metal sealing process. This inherently provides for better sealing of gases.

2. Hard Valves - Ideally, the non-rotating stem should be lubricated along the shank that fits into the threaded stem sleeve as well as on the surfaces that are in contact with the stem washers. The threaded stem sleeve should be lubricated on the stem threads and at the ends (see Figure 1). The packing gland should be lubricated on the external threads and on the end that is in contact with the packing washer. For valves with replacement seats, the external threads on the seat retainer and the portion of the seat retainer in contact with the seat should be lubricated.

3. Air Valves - The packing gland and seat retainer (if the valve has a replaceable seat) should be lubricated in the same manner as the hand valve. Threads should also be lubricated on all of the yoke screws (for yoke style valves) and on the retainer insert (on other air operated valves).

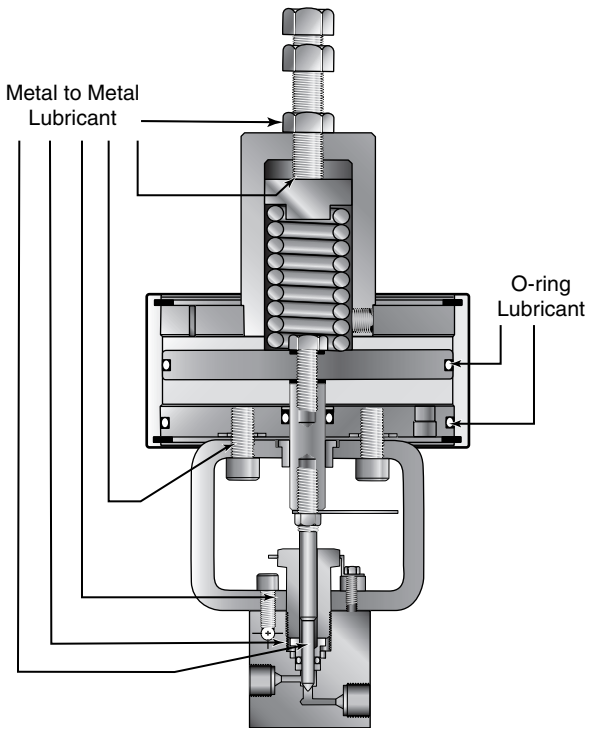

Figure 2
Air Valve Piston
Lubrication Sites

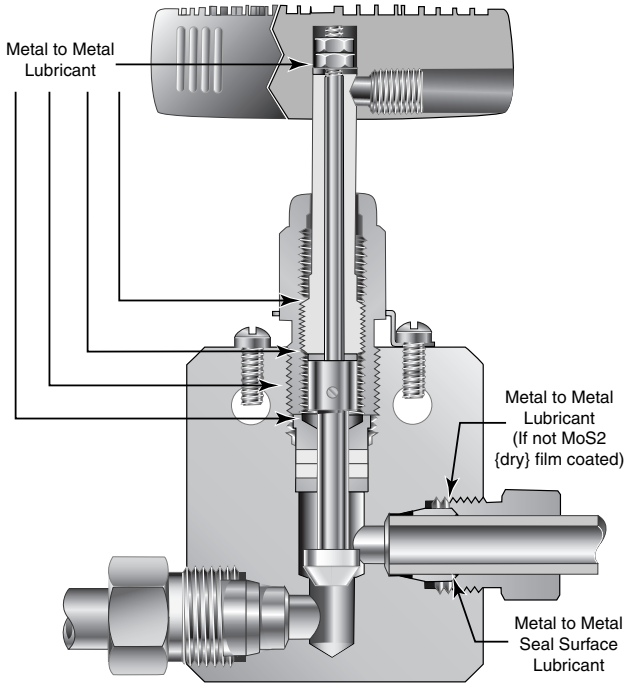

Figure 1
Hand Valve
Lubrication Sites

For piston type air operators, o-ring lubricant should be applied to the inside of the operator housing, on the center rod and on all the o-rings, on the pistons and divider plates. On air-to-open diaphragm operators, the o-ring on the stem should be lubricated. The threads and end of the spring adjustment screw should be lubricated on all air-to-open valves. Refer to Figure 2 and 3 for lubrication sites on piston and diaphragm style operators.

4. Check Valves - The gland nut should be lubricated on the external threads and at the end where it contacts the cover. The cover should be lubricated at the sealing surface where it contacts the body. For o-ring check valves, a small amount of o-ring lubricant on the o-ring will help swell the elastomer and aid sealing. Refer to Figure 4 for lubrication sites on check valves.

5. Relief Valves - Threads should be lubricated on the cap, spring cylinder, adjustment bolt and on the seat gland. Refer to Figure 5 for lubrication sites on the relief valve.

6. Safety Heads - The threads and end of the hold down nut should be lubricated. Refer to figure 6 for lubrication sites on the safety head.

For any part not covered in the above statements, the general rule is that parts that will move against each other during assembly or operation should be lubricated at the points/areas of contact.

Recommended Lubricants

Note: This information is provided for reference only. The manufacture of the lubricant should be contacted for specific information based on your application. Refer to the material safety data sheets for information on safe usage and storage methods for these lubricants.

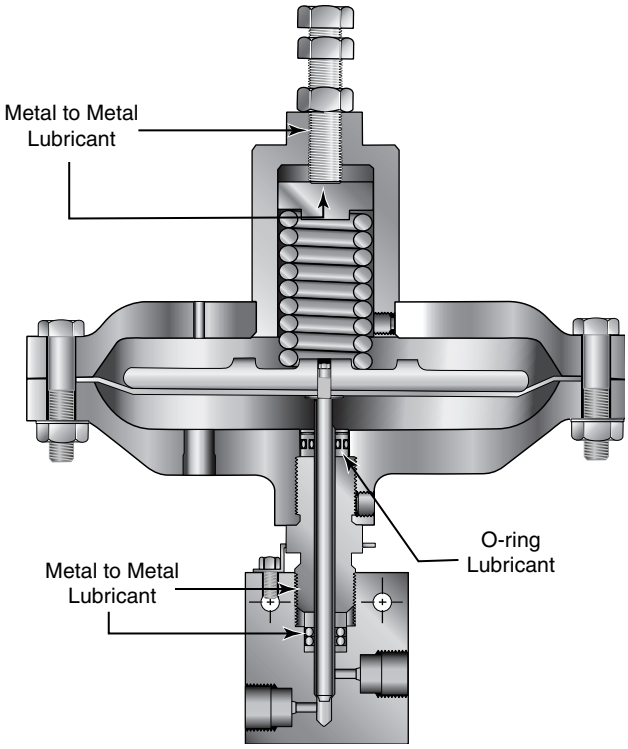

Figure 3
Air Valve (Diaphragm)
Lubrication Sites

1. Jet Lube SS-30[1] - This lubricant consists of pure copper flakes that are homogenized into a non-melting, nonvolatile viscous carrier. It is fortified with anti-oxidants, rust and corrosion inhibitors. Jet Lube SS-30 is the standard lubricant for Autoclave VFT components with sliding metal to metal contact surfaces. The surfaces are copper coated and prevents seizure, galling and heat freeze. SS-30 comes in the form of a thick oil that can be easily brushed on the surfaces to be lubricated. The absolute service temperature range is form 0 to 1800ºF. Jet Lube SS-30 is not recommended for extreme low temperature applications or processes that will not tolerate the presence of copper.

2. Jet Lube MP-50 Moly Paste[1] - This is a thick paste that contains molybdenum disulfide (MoS). This lubricant is suitable for preventing seizure and galling of parts at absolute temperatures of -300ºF to 750ºF. It is recommended for metal to metal components that are exposed to temperatures of less than 0ºF. Other lubricants may solidify under these conditions and prevent the effective operation of dynamic components.

3. DuPont Krytox 240AC[2] - Krytox is a non-flammable fluorinated grease used for metal to metal lubrication in valves that are cleaned and designated for oxygen service. It comes in the form of a white grease and has a recommended absolute service temperature range of -15 to 500ºF.

4. Hallocarbon 25-5S - This is a silica thickened chlorotrifluorethylene grease that is recommended for use on check valve balls and o-rings. It is not recommended for use on magnesium and aluminum alloys and in contact with sodium potassium, amines, liquid flurine and liquid chlorine trifluoride. It has a recommended absolute service temperature range of 0 to 350ºF.

5. Neolube DAG 156[3] - This is a dry film lubricant for valves used in Navy Nuclear service. It consists of graphite particles in a thermoplastic resin and ispropanol and meets Military Specification MIL-L-24131B. The dry film form allows tight control of impurities that are required for these applications. It has an absolute service temperature of -100 to 400ºF.

6. Dow Corning Molycoat 55M[4] - This grease is used for dynamic lubrication between rubber and metal parts in pneumatic systems such as piston style air operators. It is a silicone based lubricant and meets Military Specifications MIL-G-4343. It is not recommended for use on silicone rubber o-rings and seals. It has a recommended absolute service temperature range of -85 to 350ºF.

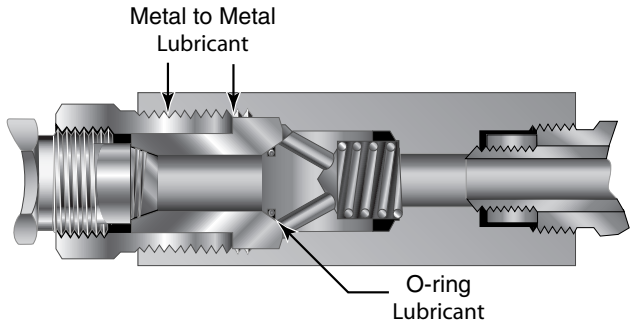

Figure 4
Check Valve
Lubrication Sites

Services

For service, contact the Autocalve Engineers' Representative in you area, or FAX Autoclave Engineers' Customer Support Services at 1-814-860-5703.

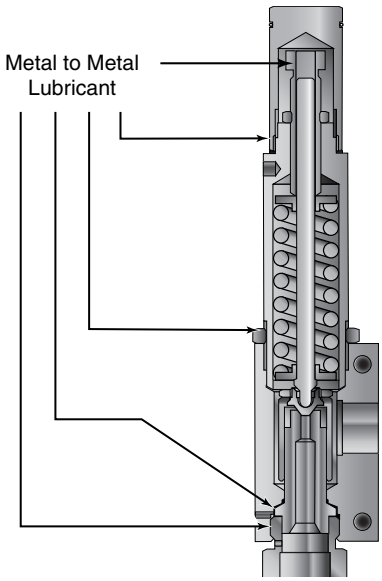

Figure 5
Relief Valve
Lubrication Sites

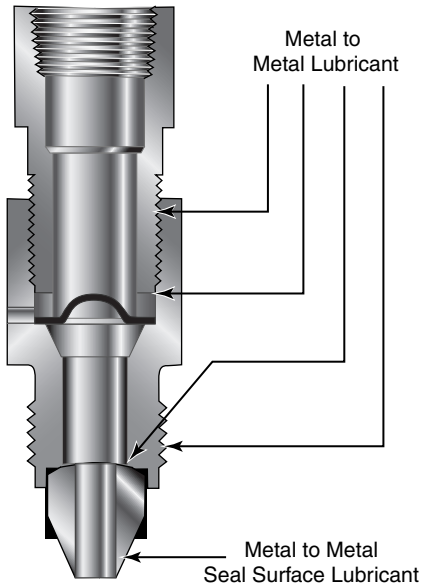

Figure 6
Safety Head
Lubrication Sites

Lubricant Selection Chart

Lubricant	Application	Absolute Service Temperature Range
Jet-Lube SS-30	Metal to Metal, Standard Application	0ºF to 1800ºF (-18ºC to 982ºC)
Jet-Lube Moly Paste MP-50	Metal to Metal, Low Temperature Application	-300ºF to 750ºF (-185ºC to 398ºC)
Krytox 240 AC	Metal to Metal, Oxygen Clean Components	-15ºF to 500ºF (-26ºC to 260ºC)
Hallocarbon 25-5S	Check Valve Ball and Poppet Lubricant	0ºF to 350ºF (-18ºC to 177ºC)
Neolube DAG 156	Metal to Metal, Nuclear Service	-100ºF to 400ºF (-73ºC to 204ºC)
Dow Corning M55	Dynamic O-ring Seals	-85ºF to 350ºF (-65ºC to 177ºC)

Notes: Specific applications may require other service temperature ranges.

[1]SS-30 and MP-50 Moly Paste are registered trademarks of Jet Lube Inc.
[2]Krytox is a registered trademark of E.I.duPont de Nemours & Co., Inc.
[3]DAG is a registered trademark of Acheson Industries, Inc.
[4]Molycoat and Dow Corning are registered trademarks of Dow Corning Corp.

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QSS Quick Set System Product Catalog

Compression Sleeve Valves and Fittings to 15,000 psi (1034 bar)

Parker

Autoclave Engineers

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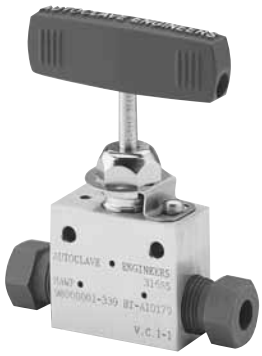
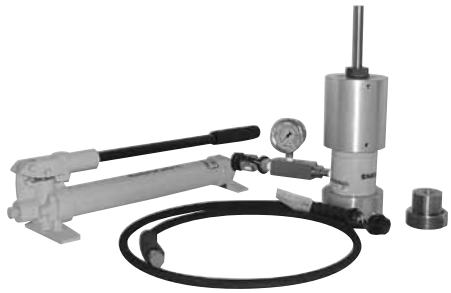
QSS-Quick Set System

Index





QSS-Quick Set System

Safe, Reliable, Cost Effective...

Parker Autoclave Engineers, the recognized world leading designer and manufacturer of high pressure equipment up to 150,000 psi (10342 bar), has engineered an advanced single ferrule fitting system called the QSS-Quick Set System. This 1/4" through 3/4" O.D. heavy-walled, high flowing tubing system operates in all sizes up to 15,000 psi (1034 bar).

The single compression sleeve design will provide leak free, vibration resistant service from 0° to 650°F (-17.8° to 343°C). Its design reduces the risk of lost parts and incorrect installation common with the more complex 2-ferrule conceptions and is much easier to handle, reducing assembly errors.

In certain applications, this ferrule style fitting may be an advantage for your installation. With only a wrench needed for the smaller sizes and a hydraulic set tool for the larger sizes, no special training or knowledge is needed to create safe, re-settable tube end connections.

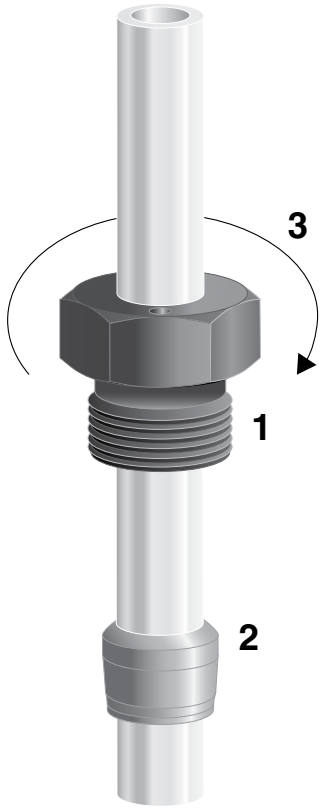
QSS-Quick Set System

As Simple as 1, 2, 3...

Assembly of Parker Autoclave Engineers' QS Series fittings couldn't be more simple.

1) Slide on our inverted gland nut
2) Slide on our single ferrule
3) Insert into fitting body and tighten using the positioning mark on the outside of the gland nut for reference

For our larger sizes our hydraulic set tool is required to ensure a complete and superior tube bite.



Features

- Proprietary single sleeve design provides superior tubing bite reducing failure from vibration
- Fewer parts to lose, reduced assembly errors
- Long tube-support area provides resistance to vibration and "tube stress"
- Components manufactured from high strength Stainless Steel
- Molybdenum Disulfide coated gland nuts help prevent galling and allow for multiple remakes.

Pressure Ratings

Pressure ratings for a fluid system are determined by the fitting or system component (including tubing) with the lowest pressure rating. Maximum pressure ratings are marked on all QS Series valves and fittings.

System Components Flow/Pressure			Working Pressure (bar)**
Connection	**Orifice Diameter in (mm)**	**Flow Area* in^2 (mm^2)**	**Temperature 0° to 650°F (-17.8° to 343°C)**
1/4"	0.109 (2.77)	0.009 (5.81)	15,000 (1034)
3/8"	0.203 (5.16)	0.032 (20.65)	15,000 (1034)
9/16"	0.359 (9.12)	0.101 (65.16)	15,000 (1034)
3/4"	0.516 (13.11)	0.209 (134.84)	15,000 (1034)

* Flow area shown is minimum "system" flow area including tubing.
** Maximum Working pressure is based on lowest rating of any system component.

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Needle Valves

QS Series

Medium Pressure

Pressures to 15,000 psi (1034 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:

- Compression Sleeve to 15,000 psi (1034 bar).
- Tubing sizes available from 1/4" to 3/4".
- Rising stem/barstock body design.
- Non-rotating stem prevents stem/seat galling.
- Anti-galling molybdenum disulfide coated gland nuts.
- Gland nut positioning mark for assembly.
- Connection weep holes for safety and leak detection.
- 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 (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 two body patterns.

Parker Autoclave Engineers valves are complemented by a complete line of fittings, tubing, check valves and line filters. The QS Series uses Parker Autoclave Engineers' Quick Set compression sleeve design, providing fast easy make-up and reliable bubble-tight performance in liquid or gas service.

Needle Valves - QS Series

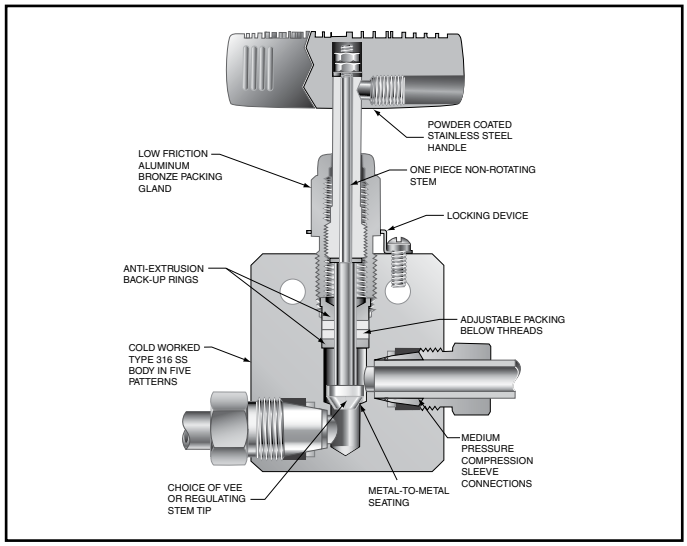
Pressures to 15,000 psi (1034 bar)

Tube Outside Diameter Size Inches	Connection Type	Orifice Size Inches (mm)	Rated C_V*	Pressure/ Temperature Rating psi (bar) @ Room Temperature**
1/4	QS 250	0.125 (3.18)	0.31	15,000 (1034)
3/8	QS 375	0.219 (5.56)	0.75	15,000 (1034)
9/16	QS 562	0.359 (9.12)	2.80	15,000 (1034)
3/4	QS 750	0.516 (13.10)	5.20	15,000 (1034)

Notes:

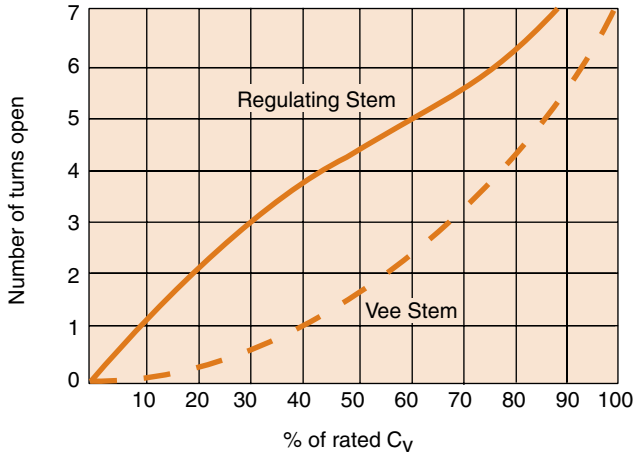
** C_V values shown are for 2-way straight valve pattern. For 2-way angle patterns, increase C_V value 50%. (Based on water)*

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



To ensure proper fit use Parker Autoclave Engineers 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. QS Series valves are furnished complete with connection components, unless otherwise specified.

Typical catalog number: **15QS4071**

15QS — Valve Series
- 15QS

4 — Outside Diameter Tube Size
- **4**-1/4"
- **6**-3/8"
- **9**-9/16"
- **12**-3/4"

07 — 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
- **88** - Regulating stem with replaceable seat

1 — 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

—

Options — Options

For extreme temperature and other options, see Valve Options.

Valve Options

Extreme Temperatures
Standard Parker Autoclave Engineers valves with PTFE packing may be operated to 450°F (232°C). High temperature packing and/or extended stuffing box are available for service from 0°F (-17.8°C) to 650°F (343°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 650°F (343°C).

†Parker Autoclave Engineers does not recommend compression sleeve connections below 0°F (-17.8°C) or above 650°F (343°C). For additional valve options, contact your Sales Representative.

Valve Maintenance

Repair Kits: add "R" to the front of valve catalog number for proper repair kit. (Example: **R15QS4071**)

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

Consult your Parker Autoclave Engineers representative for pricing on repair kits and valve bodies.

2-Way Straight

Catalog Number	Stem Type	Outside Diameter Tube	Orifice Diameter	Dimensions - inches (mm) A	B	C	D	D_1	E	F	G	G_1	H*	M	N	Block Thickness	Valve Pattern
15QS4071	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
15QS4081	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.53)	(41.15)	(30.23)	(50.80)	(76.20)	(19.05)	(5.59)	(119.13)	(15.75)	(9.65)	(19.05)	
15QS6071	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	0.81	
15QS6081	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(41.15)	(30.23)	(50.80)	(76.20)	(19.05)	(5.59)	(117.60)	(15.75)	(9.65)	(20.57)	
15QS9071	VEE	9/16	0.359	3.00	1.50	0.53	2.38	1.75	3.00	4.00	1.00	0.34	6.05	0.69	0.50	1.25	
15QS9081	REG	(14.29)	(9.12)	(76.20)	(38.10)	(13.46)	(60.45)	(44.45)	(76.20)	(101.60)	(25.40)	(8.64)	(153.67)	(17.53)	(12.70)	(31.75)	
15QS12071	VEE	3/4	0.516	4.12	2.06	0.62	3.00	2.25	3.88	10.25	1.12	0.44	7.13	0.88	0.63	1.50	
15QS12081	REG	(19.05)	(13.11)	(104.65)	(52.32)	(15.75)	(76.20)	(57.15)	(98.43)	(260.35)	(28.45)	(11.18)	(180.98)	(22.35)	(16.00)	(38.10)	

2-Way Angle

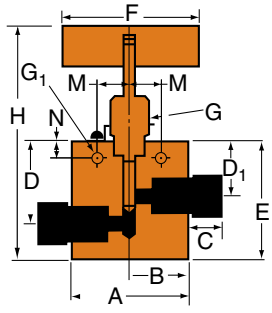
15QS4072	VEE	1/4	0.125	2.00	1.00	0.38	1.19		2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75	See Figure 2
15QS4082	REG	(6.35)	(3.18)	(50.80)	(25.40)	(9.53)	(30.23)		(61.98)	(76.20)	(19.05)	(5.59)	(122.17)	(15.75)	(9.65)	(19.05)	
15QS6072	VEE	3/8	0.219	2.00	1.00	0.47	1.20		2.56	3.00	0.75	0.22	4.93	0.62	0.38	0.81	
15QS6082	REG	(9.53)	(5.56)	(50.80)	(25.40)	(11.94)	(30.48)		(65.02)	(76.20)	(19.05)	(5.59)	(125.22)	(15.75)	(9.65)	(20.62)	
15QS9072	VEE	9/16	0.359	3.00	1.50	0.53	1.69		3.50	4.00	1.00	0.36	6.55	0.69	0.50	1.25	
15QS9082	REG	(14.29)	(9.12)	(76.20)	(38.10)	(13.46)	(42.88)		(88.90)	(101.60)	(25.40)	(9.14)	(166.37)	(17.53)	(12.70)	(31.75)	
15QS12072	VEE	3/4	0.516	4.12	2.06	0.62	2.19		4.63	10.25	1.12	0.44	7.88	0.88	0.63	1.50	
15QS12082	REG	(19.05)	(13.11)	(104.65)	(52.32)	(15.75)	(55.58)		(117.48)	(260.35)	(28.45)	(11.18)	(200.15)	(22.35)	(16.00)	(38.10)	

G - Packing gland mounting hole drill size
G_1 - Bracket mounting hole size
Panel mounting drill size: 0.22" all valves.

** H Dimension is with stem in closed position.*
***1/8" straight and 3-Way/2 on pressure valves have offset tube connections*

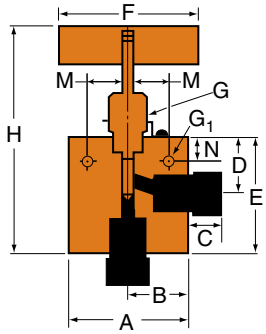
For prompt service, Parker Autoclave Engineers stocks select products. Consult factory.
All dimensions for reference only and subject to change.

Figure 1



2-Way Straight

Figure 2



2-Way Angle

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Ball Valves

2-Way QS Series

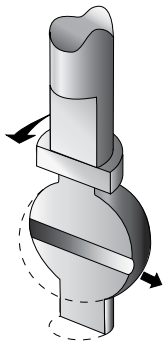
Pressures to 15,000 psi (1034 bar)

Parker Autoclave Engineers high-pressure ball valves have been designed to provide superior quality for maximum performance within a variety of valve styles, sizes, and process connections. Some of the more unique design innovations include an integral one-piece trunnion mounted style ball and stem that eliminates the shear failure common in two piece designs, re-torqueable seat glands that result in longer seat life, and a low friction stem seal that reduces actuation torque and enhances cycle life.

These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models, and valve actuators.

When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance demanded by the high pressure market.

Flow Configuration



Two-Way
Shut-Off

AE Ball Valve Features:

- One-piece, trunnion mounted style, stem design eliminates shear failure and reduces the effects of side loading found in two piece designs.
- Re-torqueable seat glands for longer seat life.
- PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel valve construction.
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life and reduces operating torque.
- Quarter turn from open to close with positive stop.
- Viton o-rings for operation from 0°F (-17.8°C) to 400°F (204°C).
- Optional o-rings available for high-temperature applications.
- Electric and pneumatic actuator options.

Applications:

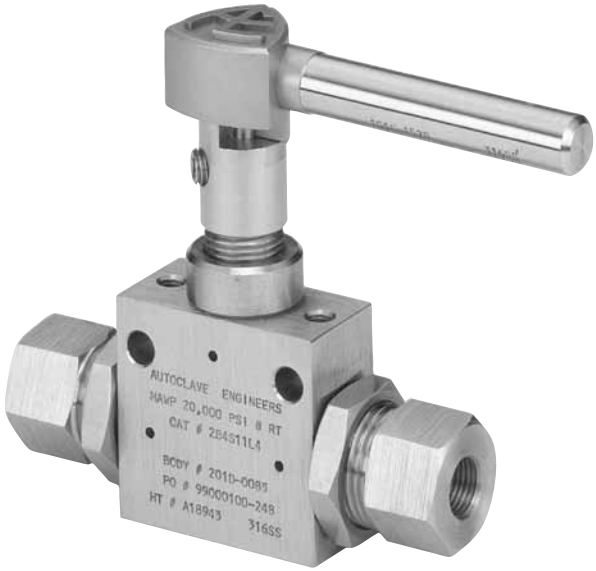
- Laboratories
- Test Stands
- Control Panels
- Chemical Research
- Pilot Plants
- Water Blast Pumping Units
- High volume chemical injection skids.

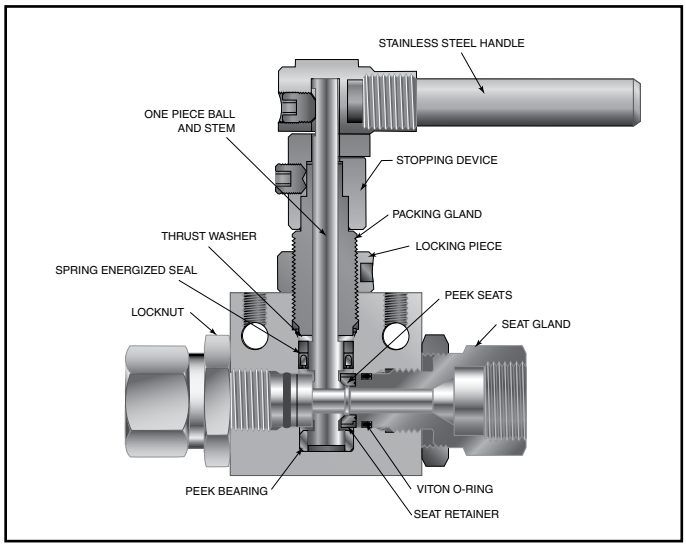
Ball Valves - 1/4" 2-Way QS Series

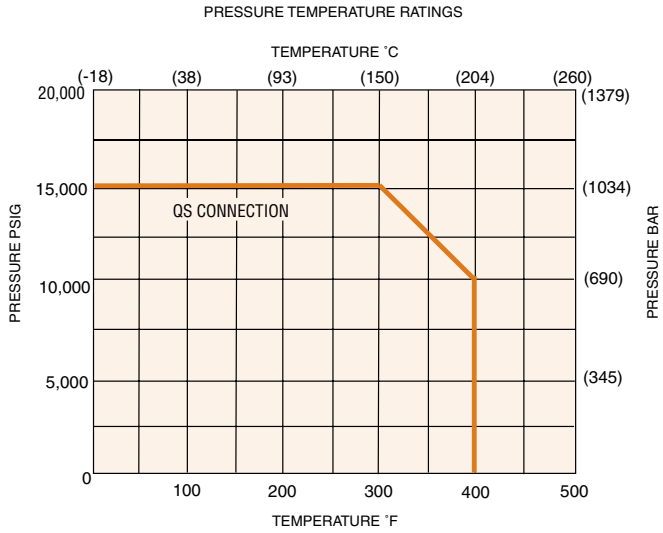
Pressures to 15,000 psi (1034 bar) .250" (6.35mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
QS250	15,000 psi (1034 bar)	.157 (3.99)
QS375	15,000 psi (1034 bar)	.250 (6.35)
	Valve C_V=1.51	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .250 inches only.
Consult factory for C_V of valves with reduced orifice sizes.







NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections see complete catalog.

Typical catalog number: **2B 4 S 15 Q4** — **XXX**

2B — **Valve Series**
2B: 2-way

4 — **Ball Orifice Diameter**
4-1/4" (6.35 mm)

S — **Material**
S -316SS

15 — **Pressure (X 1000 psi)**

Q4 — **End Connection**
Q4 - QS 250
(See Chart on next page)

XXX — **Options**
HT - High Temperature
(Ball Valve Actuators, see next page)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
2B4S15Q4	Q4	QS250	15,000 psi (1034 bar)	1 (25.40)
2B4S15Q6	Q6	QS375	15,000 psi (1034 bar)	1 (25.40)

MAWP: Maximum Allowable Working Pressure

Ball Valve Options

Pneumatic Actuator

AO - Air-to-open/spring to close
AC - Air-to-close/spring to open
AOC - Air-to-open-and-close (double action)

Electric Actuator

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: -20˚F to 175˚F (-29˚C to 79˚C)
Electric: -20˚F to 160˚F (-29˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

See ball valve actuator section for full description, additional infomation, and options.

Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog first 4 numbers for proper repair kit. (Example: **R2B4S**)

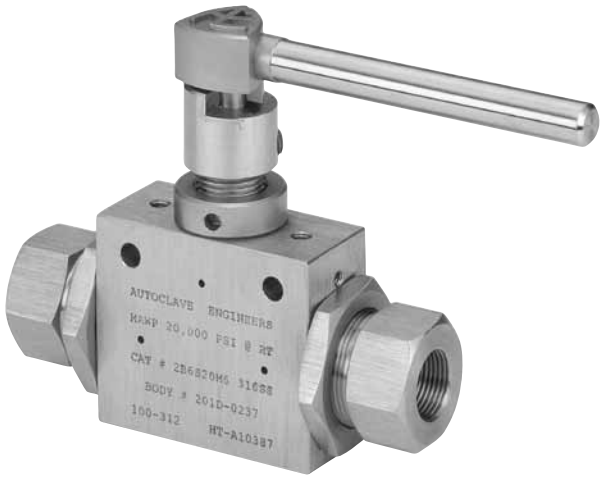
Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

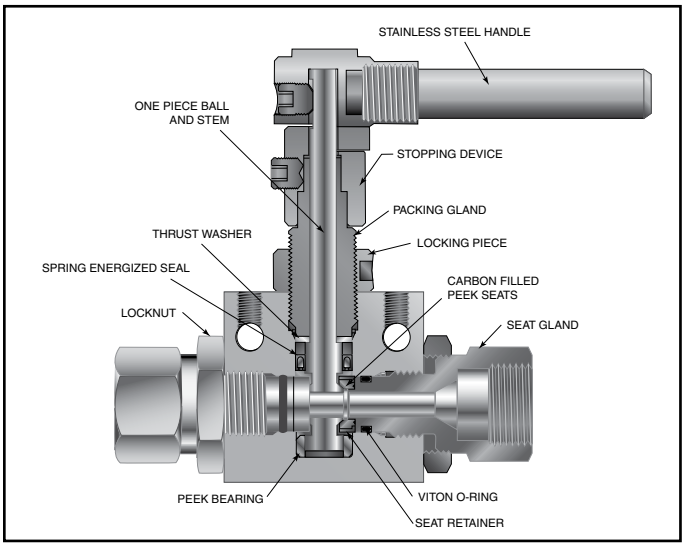
Ball Valves - 3/8" 2-Way QS Series

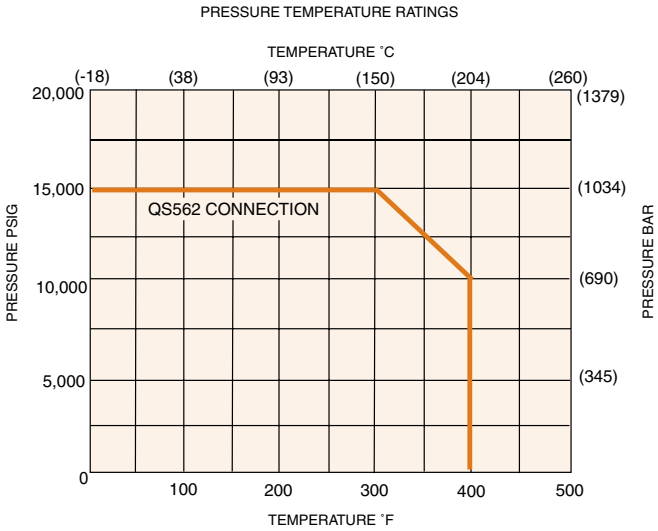
Pressures to 15,000 psi (1034 bar) .359" (9.12mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
QS562	15,000 psi (1034 bar) Valve C_V=3.09	.359 (9.12)

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .359 inches only.
Consult factory for C_V of valves with reduced orifice sizes.







NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections see complete catalog.

Typical catalog number: **2B 6 S 15 Q9** — **XXX**

2B
Valve Series
2B: 2-way

6
Ball Orifice Diameter
6-3/8" (9.52 mm)

S
Material
S - 316SS

15
Pressure (X 1000 psi)

Q9
End Connection
Q9 - QS562 (See Chart on next page)

XXX
Options
HT - High Temperature (Ball Valve Acutators, see next page.)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Hex Inches(mm)
2B6S15Q9	Q9	QS562	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure

Ball Valve Options

Pneumatic Actuator

AO - Air-to-open/spring to close
AC - Air-to-close/spring to open
AOC - Air-to-open-and-close (double action)

Electric Actuator

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: -20˚F to 175˚F (-29˚C to 79˚C)
Electric: -20˚F to 160˚F (-29˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

See ball valve actuator section for full description, additional information, and options.

Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog first 4 numbers for proper repair kit. (Example: **R2B6S**)

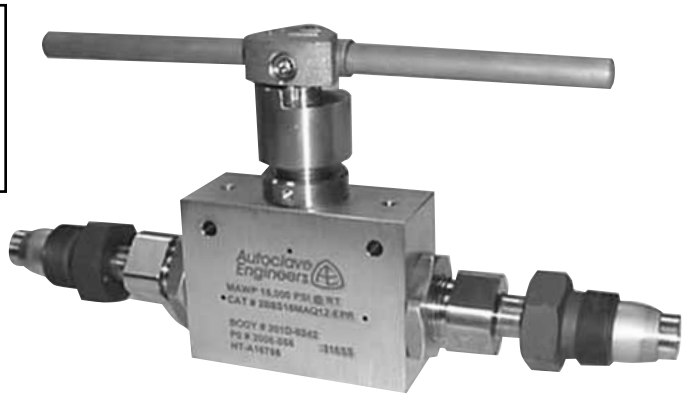
Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

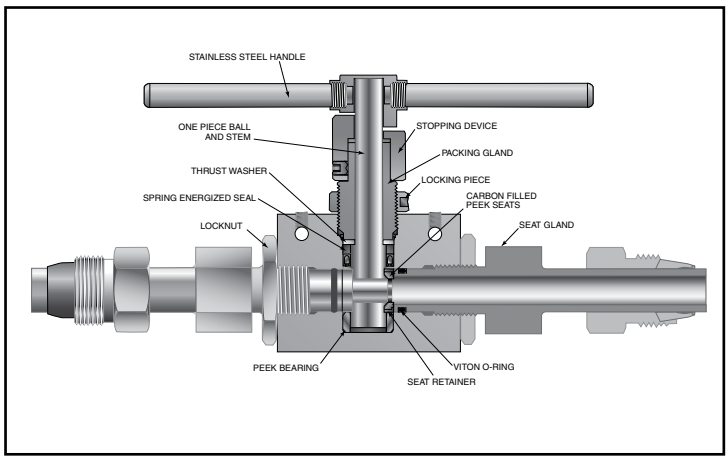
Ball Valves - 1/2" 2-Way QS Series

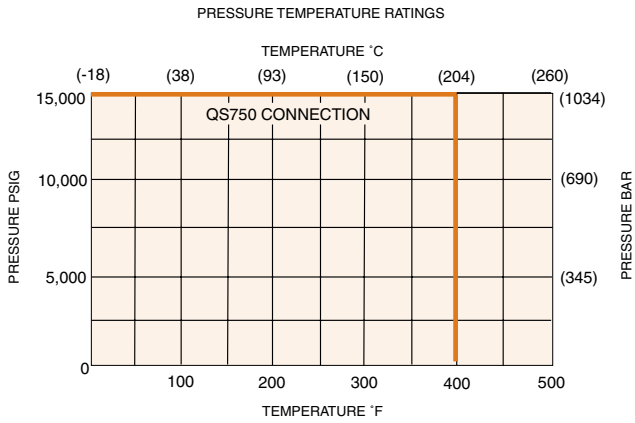
Pressures to 15,000 psi (1034 bar) .500" (12.7mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice Inches (mm)
Male QS750	15,000 psi (1034 bar)	.500 (12.70)
	Valve C_V=10.20	

MAWP: Maximum Allowable Working Pressure







NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections see complete catalog.

Typical catalog number: **2B 8 S 15 MAQ12 — XXX**

2B
Valve Series
2B: 2-way

8
Ball Orifice Diameter
8-1/2" (12.7 mm)

S
Material
S -316SS

15
Pressure (X 1000 psi)

MAQ12
End Connection
MAQ12 - Male QS750
(See Chart on next page)

XXX
Options
HT - High Temperature
(Ball Valve Acutators, see next page.)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Seat Gland Square Inches(mm)
2B8S15MAQ12	MAQ12	Male QS750	15,000 psi (1034 bar)	1.19 (30.2)

MAWP: Maximum Allowable Working Pressure

Ball Valve Options

Pneumatic Actuator

AO - Air-to-open/spring to close
AC - Air-to-close/spring to open
AOC - Air-to-open-and-close (double action)

Electric Actuator

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: -20˚F to 175˚F (-29˚C to 79˚C)
Electric: -20˚F to 160˚F (-29˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

See ball valve Actuator section for full description, additional information, and options.

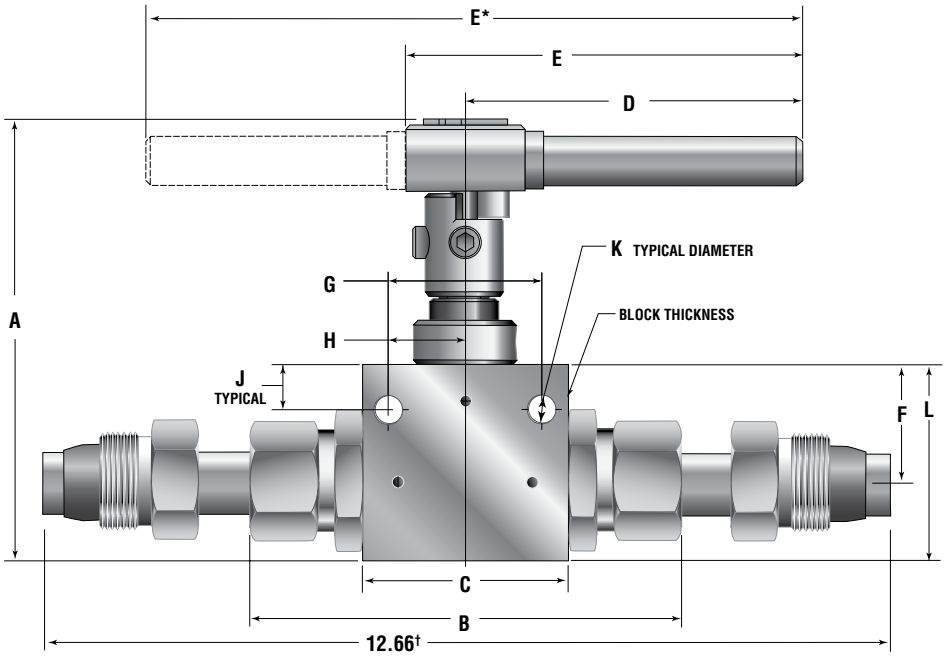
Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog first 4 numbers for proper repair kit. (Example: **R2B8S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

Ball Valve Dimensions - inches (mm)

	VALVE MODELS		
	2B4S	2B6S	2B8S
A	4.33 (109.99)	4.97 (126.30)	5.97 (151.64)
B	4.19 (106.49)	5.53 (140.41)	6.85 (173.99)
C	2.00 (50.80)	3.00 (76.20)	4.13 (104.78)
D	3.37 (85.55)	4.99 (126.82)	5.12 (130.04)
E	3.90 (99.02)	5.52 (140.32)	✱10.25 (260.35)
F	1.13 (28.58)	1.38 (34.92)	1.76 (44.70)
G	1.50 (38.10)	2.00 (50.80)	3.00 (76.20)
H	0.75 (19.05)	1.00 (25.40)	1.50 (38.10)
J	0.43 (10.92)	0.41 (10.31)	0.50 (12.70)
K	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)
L	1.91 (48.41)	2.50 (63.50)	3.09 (78.58)
Block Thickness	1.00 (25.40)	1.38 (34.92)	1.75 (44.45)

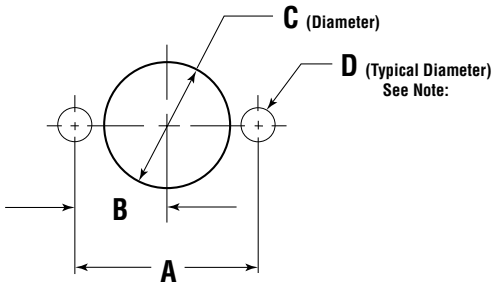


†2B8S15MAQ12 Valve Only

Ball Valve Panel Mounting Dimensions - inches (mm)

	VALVE MODELS		
	2B4S	2B6S	2B8S
A	1.500 (38.10)	2.000 (50.80)	3.000 (76.20)
B	0.750 (19.05)	1.000 (25.40)	1.500 (38.10)
C	1.06 (26.92)	1.50 (38.10)	1.88 (47.63)
D	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)

Note: Body mounting 1/4" - 20 thread



All dimensions are for reference only and are subject to change without notice.

Ball Valves

3-Way QS Series

Pressures to 15,000 psi (1034 bar)

Parker Autoclave Engineers high-pressure ball valves have been designed to provide superior quality for maximum performance within a variety of valve styles, sizes, and process connections. Some of the more unique design innovations include an integral one-piece trunnion mounted style ball and stem that eliminates the shear failure common in two piece designs, re-torqueable seat glands that result in longer seat life, and a low friction stem seal that reduces actuation torque and enhances cycle life.

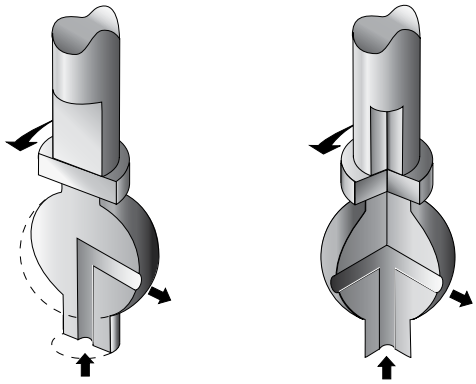
These ball valves can also be modified to incorporate the use of special materials, seals for high temperature applications, subsea models, and valve actuators.

When it comes to high-pressure applications, these ball valves with the associated high-pressure components, provide the critical performance demanded by the high pressure market.

AE Ball Valve Features:

- One-piece, trunnion mounted style, stem design eliminates shear failure found in two piece designs and reduces effects of side loading.
- Re-torqueable seat glands for longer seat life.
- Carbon filled PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion.
- Full-port flow path minimizes pressure drop.
- 316 cold worked stainless steel valve construction.
- Low friction pressure assisted graphite filled PTFE stem seal increases cycle life and reduces operating torque.
- Available in 90° turn diverter and 180° turn switching models.
- Viton o-rings for operation from 0°F (-17.8°C) to 400°F (204°C).
- Optional o-rings available for high-temperature applications.
- Electric and pneumatic actuator options.

Flow Configuration



3-Way Switching 180° Turn

3-Way Crossover 90° Turn

Applications:

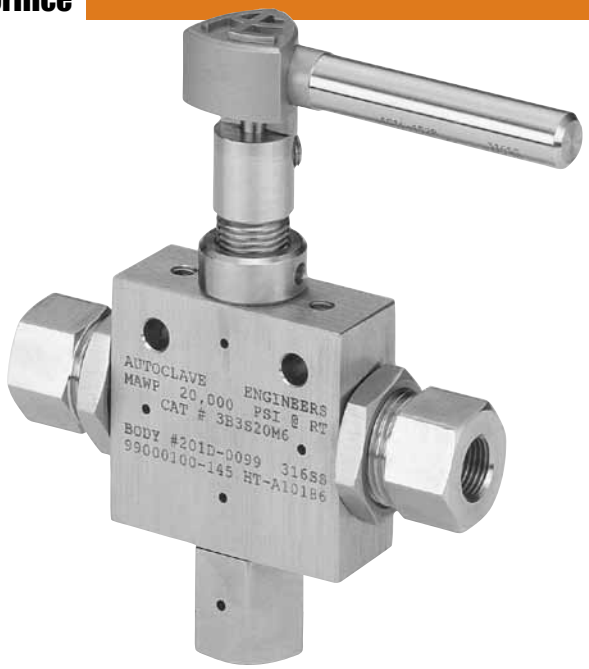
- Laboratories
- Test Stands
- Control Panels
- Chemical Research
- Pilot Plants
- Water Blast Pumping Units
- High volume chemical injection skids.

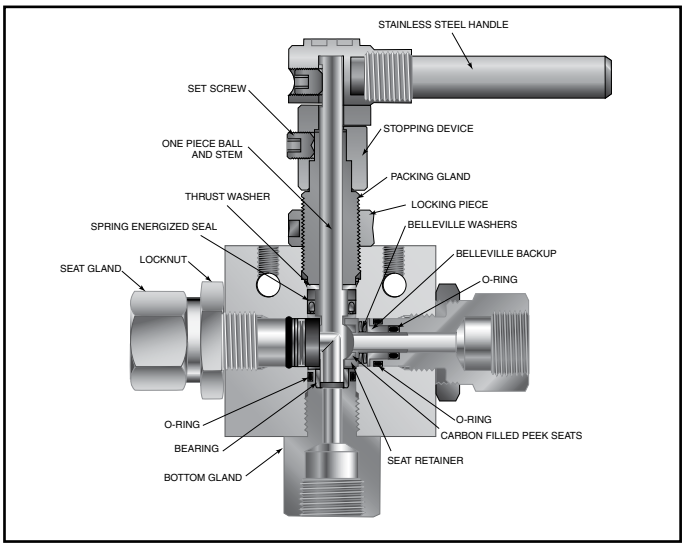
Ball Valves - 3/16" 3-Way QS Series

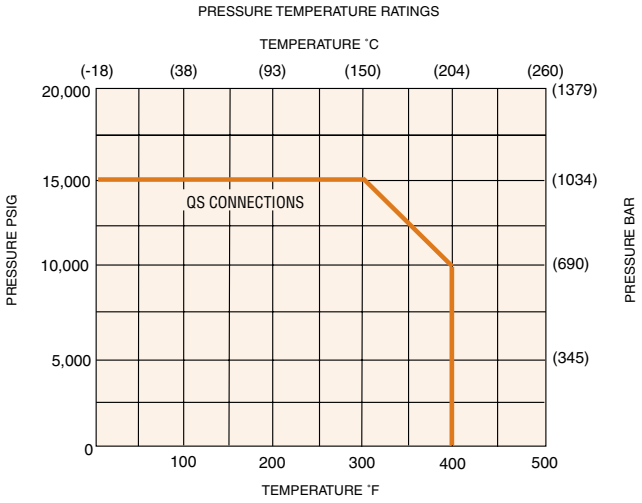
Pressures to 20,000 psi (1379 bar) .187" (4.77mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
QS250	15,000 psi (1034 bar)	.157 (3.99)
QS375	15,000 psi (1034 bar)	.188 (4.77)
	Valve C_V=.50	

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .188 inches only.
Consult factory for C_V of valves with reduced orifice sizes.







NOTE: Maximum side connection inlet pressure 15,000 psi (1034 bar).

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections see complete catalog

Typical catalog number: **3B 3 S 15 Q4 — XXX**

3B — **Valve Series**
3B: 3-way
3BD: 3-way diverter

3 — **Ball Orifice Diameter**
3-3/16"
(4.77 mm)

S — **Material**
S -316SS

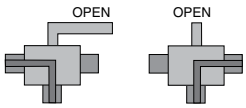
15 — **Pressure (X 1000 psi)**

Q4 — **End Connection**
Q4 - QS250
(See Chart on next page)

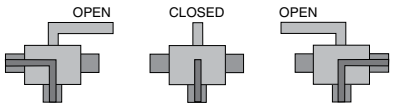
XXX — **Options**
HT - High Temperature
(Ball Valve Actuators, see next page)

End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Hex Inches(mm)
3B3S15Q4 3BD3S15Q4	Q4	QS250	15,000 psi (1034 bar)	1 (25.40)
3B3S15Q6 3BD3S15Q6	Q6	QS375	15,000 psi (1034 bar)	1 (25.40)



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

AO - Air-to-open/Spring to close (diverter style only)
AC - Air-to-close/Spring to open (diverter style only)
AOC - Air-to-open-and-close (double action)

Electric Actuator:

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: -20˚F to 175˚F (-29˚C to 79˚C)
Electric: -20˚F to 160˚F (-29˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog numbers for proper repair kit. (Example: **R3B3S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

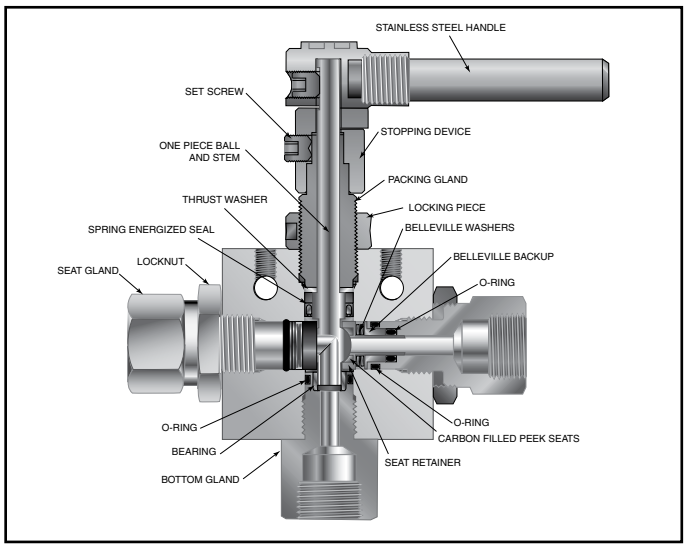
See ball valve actuator section for full description, additional information, and options.

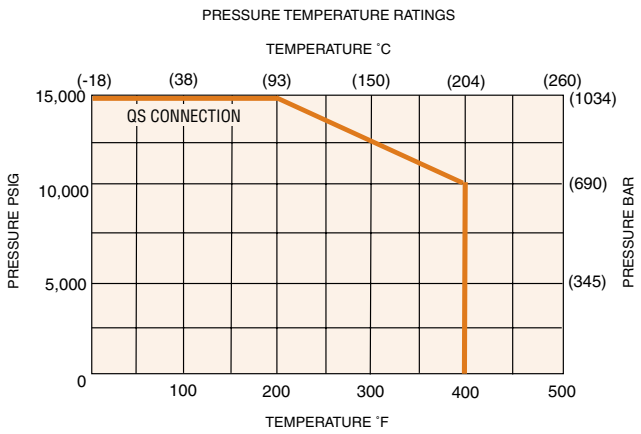
Ball Valves - 3/8" 3-Way QS Series

Pressures to 15,000 psi (1034 bar) .328" (8.33mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
QS562	15,000 psi (1034 bar) Valve C_V=2.1	.328 (8.33)

MAWP: Maximum Allowable Working Pressure
C_V listed is for maximum orifice size of .328 inches only.
Consult factory for C_V of valves with reduced orifice sizes.





Side connection pressure not recommended.

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections see complete catalog.

Typical catalog number: **3B 6 S 15 Q9 — XXX**

3B
Valve Series
3B: 3-way
3BD: 3-way diverter

6
Ball Orifice Diameter
6-3/8"
(9.52 mm)

S
Material
S -316SS

15
Pressure (X 1000 psi)

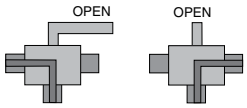
Q9
End Connection
Q9 - QS562
(See Chart on next page)

XXX
Options
HT - High Temperature
(Ball Valve Actuators, see next page)

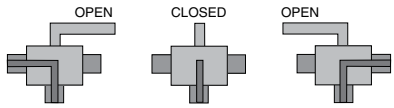
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Hex Inches(mm)
3B6S15Q9 3BD6S15Q9	Q9	QS562	15,000 psi (1034 bar)	1.38 (35.05)

MAWP: Maximum Allowable Working Pressure



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

AO - Air-to-open/Spring to close (diverter style only)
AC - Air-to-close/Spring to open (diverter style only)
AOC - Air-to-open-and-close (double action)

Electric Actuator:

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
EO3 - 24 VDC

Actuator Operating Temperature:

Pneumatic: -20˚F to 175˚F (-29˚C to 79˚C)
Electric: -20˚F to 160˚F (-29˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

Valve Maintenance

Repair Kits: add "**R**" to the front of valve catalog numbers for proper repair kit.

(Example: **R3B6S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

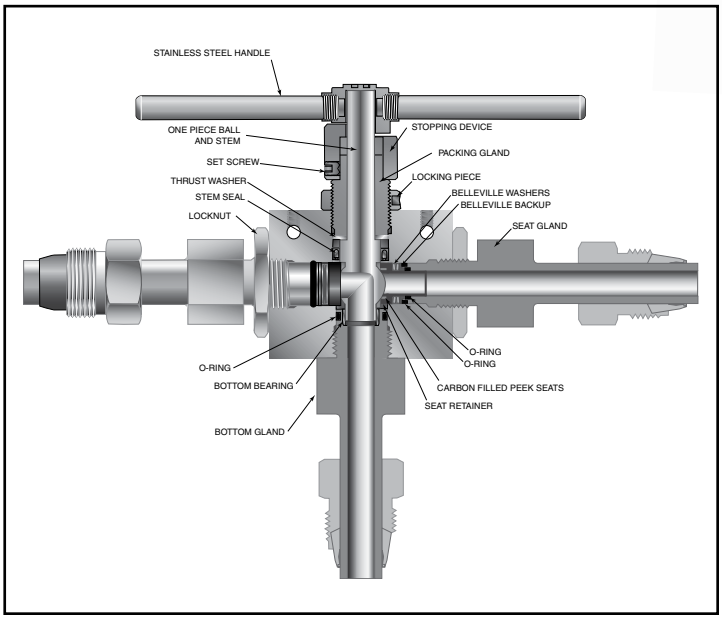
See ball valve actuator section for full description, additional information, and options.

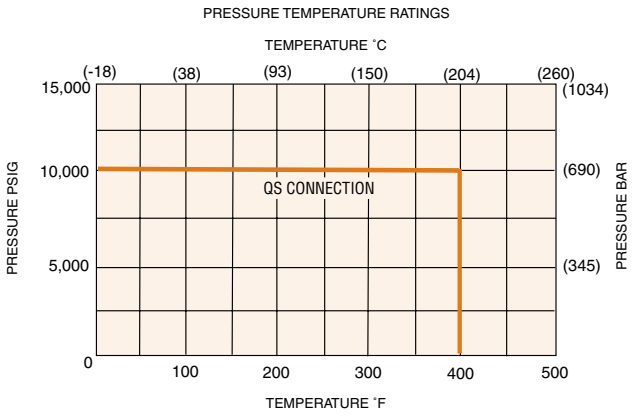
Ball Valves - 1/2" 3-Way QS Series

Pressures to 10,000 psi (690 bar) .500" (12.7mm) Orifice

Connection	MAWP @ Room Temperature	Minimum Orifice inches(mm)
Male QS750	10,000 psi (690 bar)	.500 (12.70)
	Valve C_V=4.4	

MAWP: Maximum Allowable Working Pressure





Maximum side connection inlet pressure 10,000 psi (690 bar)

NOTE: Ball valves are not recommended for critical gas applications such as Hydrogen, Helium or other small molecular gases.

Ordering Procedure

For complete information on available end connections see complete catalog.

Typical catalog number: **3B 8 S 10 MAQ12**

3B
Valve Series
3B: 3-way
3BD: 3-way diverter

8
Ball Orifice Diameter
8-1/2" (12.7 mm)

S
Material
S -316SS
(For material options contact factory)

10
Pressure (X 1000 psi)

MAQ12
End Connection
MAQ12 - Male QS750
(See Chart on next page)

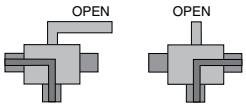
—

XXX
Options
HT - High Temperature
(Ball Valve Actuators, see next page)

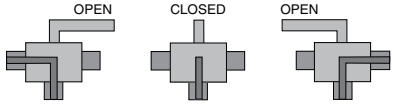
End Connection Options

Catalog Number	End Connection Number	Connection	MAWP @ Room Temperature	Square Inches(mm)
3B8S10MAQ12 3BD8S10MAQ12	MAQ12	Male QS750	10,000 psi (690 bar)	1.19 (30.2)

MAWP: Maximum Allowable Working Pressure



*3-Way Diverter Valve
90° Turn



3-Way Ball Valve
180° Turn

*The Diverter Valve design permits inlet flow through the bottom port. Outlet flow may be diverted to either valve side port.

Ball Valve Options

Pneumatic Actuator:

AO - Air-to-open/Spring to close (diverter style only)
AC - Air-to-open/Spring to close (diverter style only)
AOC - Air-to-open-and-close (double action)

Electric Actuator:

EO1 - 120 volt AC 50/60 Hz
EO2 - 220 volt AC 50/60 Hz
E03 - 24 VDC

Actuator Operating Temperature:

Pneumatic: -20˚F to 175˚F (-29˚C to 79˚C)
Electric: -20˚F to 160˚F (-29˚C to 71˚C)

High Temperature Option:

HT - for media temperature up to 500˚F (260˚C)

Valve Maintenance

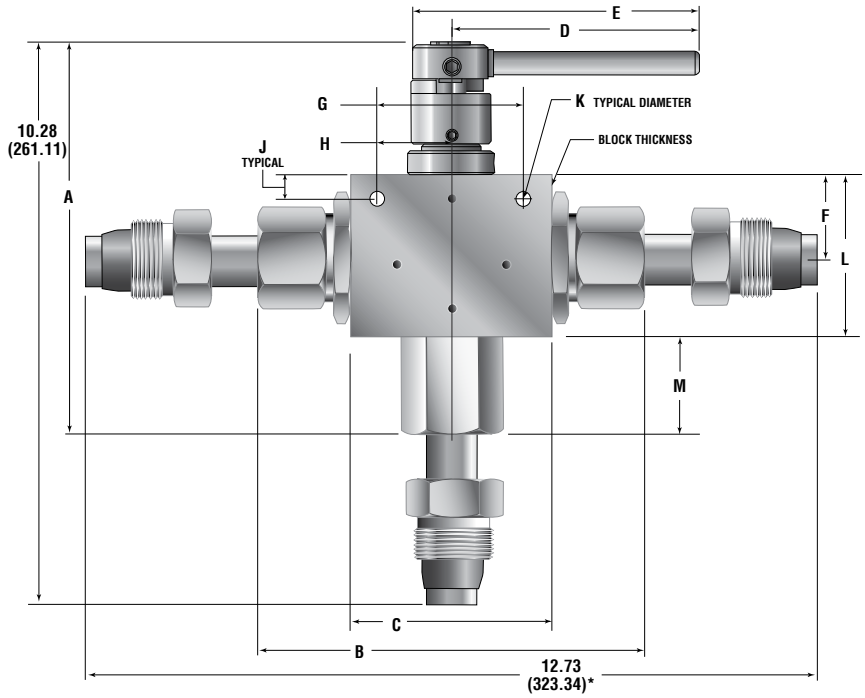
Repair Kits: add "**R**" to the front of valve catalog numbers for proper repair kit. (Example: **R3B8S**)

Consult your Parker Autoclave Engineers representative for pricing on repair kits. Refer to the Operation and Maintenance manual for proper maintenance procedures.

See ball valve actuator section for full description, additional information, and options.

Ball Valve Dimensions - inches (mm)

	VALVE MODELS		
	3B3S/3BD3S	3B6S/3BD6S	3B8S/3BD8S
A	5.64 (143.35)	6.55 (166.37)	7.37 (187.20)
B	4.72 (119.94)	5.74 (145.79)	6.92 (175.77)
C	2.50 (63.50)	3.00 (76.20)	4.13 (104.78)
D	3.37 (85.55)	4.99 (126.82)	5.12 (130.04)
E	3.90 (99.02)	5.52 (140.32)	*10.25 (260.35)
F	1.13 (28.58)	1.38 (34.93)	1.66 (42.16)
G	1.50 (38.10)	2.00 (50.80)	3.00 (76.20)
H	0.75 (19.05)	1.00 (25.40)	1.50 (38.10)
J	0.43 (10.92)	0.41 (10.31)	0.50 (12.70)
K	0.28 (7.11)	0.28 (7.11)	0.28 (7.11)
L	2.25 (57.15)	2.88 (73.03)	3.34 (84.94)
M	0.97 (24.64)	1.19 (30.22)	1.25 (31.75)
Block Thickness	1.00 (25.40)	1.38 (34.92)	1.75 (44.45)

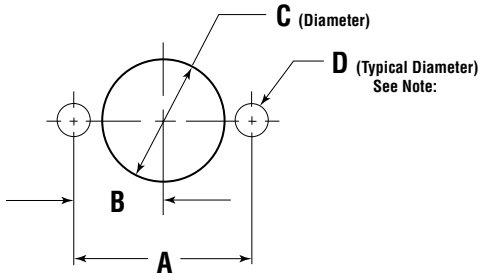


*3B8S10MAQ12 and 3BD8S10MAQ12 Valves Only

Ball Valve Panel Mounting Dimensions - inches (mm)

	VALVE MODELS		
	3B3S/3BD3S	3B6S/3BD6S	3B8S/3BD8S
A	1.500 (38.10	2.000 (50.80)	3.000 (76.20)
B	0.750 (19.05)	1.000 (25.40)	1.500 (38.10)
C	1.06 (26.92)	1.50 (38.10)	1.88 (47.63)
D	0.28 (7.11)	0.28 (7.11	0.28 (7.11)

Note: Body mounting 1/4" - 20 thread



All dimensions are for reference only
and are subject to change without notice.

Ball Valves

Actuators

Pneumatic Actuators
Electric Actuators

Parker Autoclave Engineers ball valves can be supplied with either pneumatic or electric operators for automated or remote operation.

Pneumatic and electric operators can be supplied with a variety of features and options. Operators are sized for each valve series to provide reliable and trouble free operation. Listed below are the operator features and available options.

AE Ball Valve Actuator Features/Options:

Pneumatic Operators

- Used for remote and automatic operation
- Air-to-open/spring-to-close
- Air-to-close/spring-to-open
- Air-to-open and close (double acting)
- Limit switches or limit switches with visual indicators available
- High temperature option available.
- Stainless steel housing for corrosive applications available.
- Optional solenoid valve available
- Standard anodized aluminum housing
- Optional epoxy coated housing available

Electric Operators

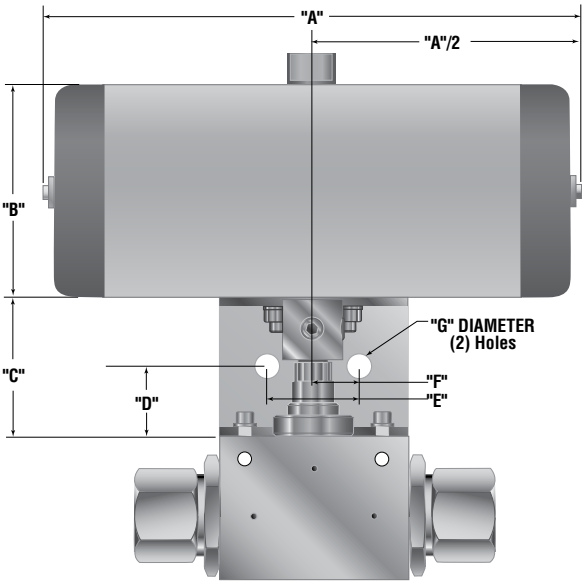
- Interface with control systems for automated operation and monitoring
- 120 & 220 VAC, 50/60 Hz standard
- 24VDC
- Explosion proof available
- CE mark available

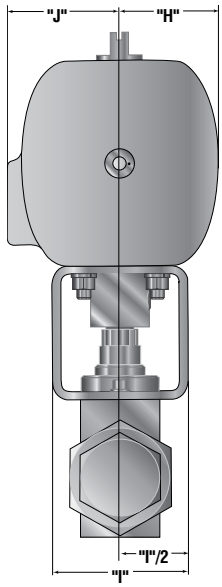
Pneumatic Operated Ball Valves

Add the suffix **-AO**, **-AC** or **-AOC** to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	DIMENSION DATA - Inches (mm)										MINIMUM REQUIRED AIR PRESSURE
	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"	"I"	"J"	
2B4-AO/AC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
2B6-AO/AC	9.84 (249.93)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.87 (47.49)	3.00 (76.20_)	2.24 (56.89)	80 psi (5.51 bar)
2B8-AO/AC *	11.65 (259.91)	4.57 (116.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.17 (55.11)	3.00 (76.20)	2.48 (62.99)	80 psi (5.51 bar)
3BD3-AO/AC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
3BD6-AO/AC *	9.84 (249.93)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.87 (47.49)	3.00 (76.20_)	2.24 (56.89)	80 psi (5.51 bar)
3BD8-AO/AC	11.65 (259.91)	4.57 (116.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	2.17 (55.11)	3.00 (76.20)	2.48 (62.99)	80 psi (5.51 bar)
2B4-AOC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
2B6-AOC	7.95 (201.93)	3.07 (77.97)	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	1.40 (35.56)	3.00 (76.20_)	1.77 (44.95)	80 psi (5.51 bar)
2B8-AOC	9.84 (249.91)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.87 (47.49)	3.00 (76.20)	2.24 (56.89)	80 psi (5.51 bar)
3BD3-AOC	6.69 (169.92)	2.56 (65.02)	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	1.14 (28.95)	2.50 (63.50)	1.58 (40.13)	80 psi (5.51 bar)
3BD6-AOC	7.95 (201.93)	3.07 (77.97)	3.00 (76.20)	1.50 (38.10)	1.50 (25.40)	0.75 (19.05)	0.34 (8.63)	1.40 (35.56)	3.00 (76.20_)	1.77 (44.95)	80 psi (5.51 bar)
3BD8-AOC	9.84 (249.91)	3.94 (100.07)	3.00 (76.20)	1.50 (38.10)	2.00 (50.80)	1.00 (25.40)	0.53 (13.46)	1.87 (47.49)	3.00 (76.20)	2.24 (56.89)	80 psi (5.51 bar)

NOTE:
- Maximum allowable air pressure is 150 psi (10.34)
- 1/8" NPT female air connector (*= 1/4" NPT)
- AO: Air to open/spring to close
- AC: Air to close/spring to open
- AOC: Air to open/air to close (double acting)
- Actuators operating temperature: -20°F to 175°F (-29°C to 79°C)
- High temperature actuator option available, consult factory
- Stainless steel housing actuator models available, consult factory
- Actuators available with limit switches and visual indicators.
- Corrosion resistant anodized aluminum housing.
- Epoxy coated housing available.
- Solenoids availabe, direct or nipple mount.



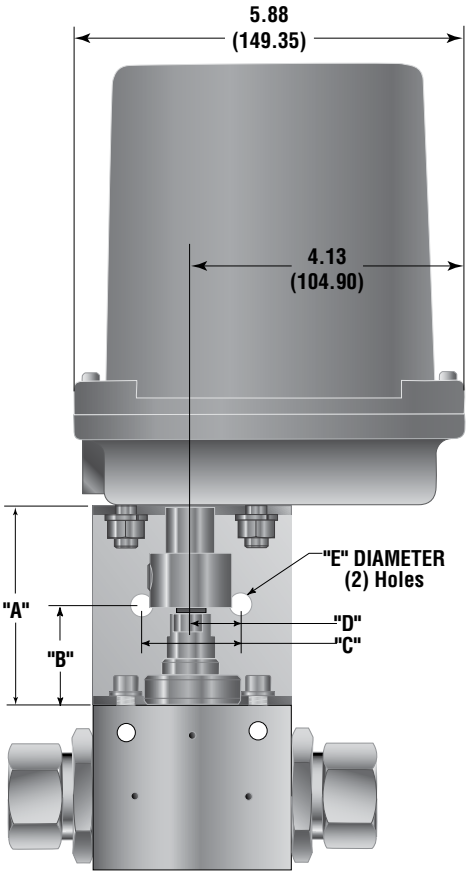


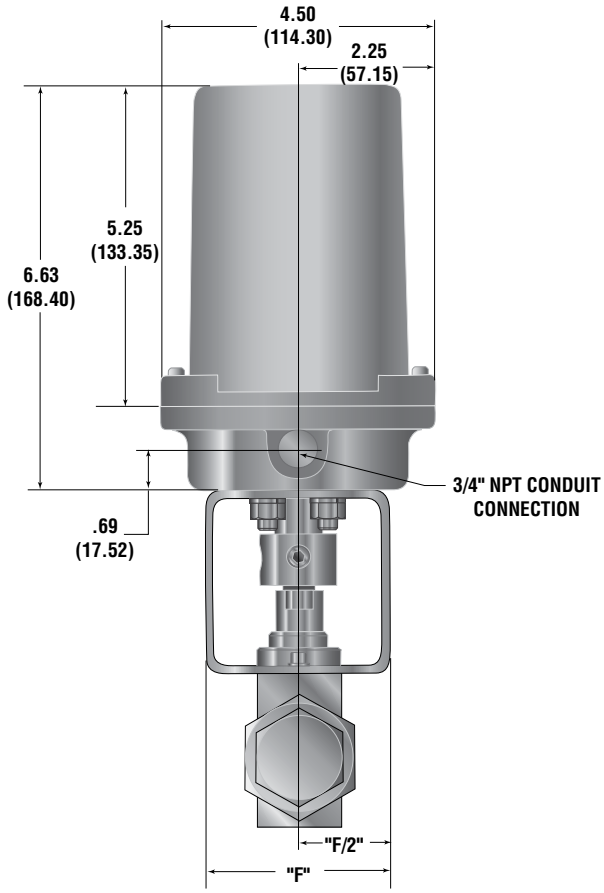
Electric Operated Ball Valves

Add the suffix **-EO1**, **-EO2** or **-EO3** to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	DIMENSION DATA - Inches (mm)						VOLTAGE	
	"A"	"B"	"C"	"D"	"E"	"F"		
2B4-EO1 2B4-EO2	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	120 VAC 240 VAC	50/60 Hz
2B6-EO1 2B6-EO2	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	120 VAC 240 VAC	50/60 Hz
3BD3-EO1 3BD3-EO2	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	120 VAC 240 VAC	50/60 Hz
3BD6-EO1 3BD6-EO2	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	120 VAC 240 VAC	50/60 Hz
2B4-EO3	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	24 VDC	
2B6-EO3	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	24 VDC	
3BD3-EO3	2.50 (63.50)	1.25 (31.75)	1.00 (25.40)	0.50 (12.70)	0.28 (7.11)	2.50 (63.50)	24 VDC	
3BD6-EO3	3.00 (76.20)	1.50 (38.10)	1.50 (38.10)	0.75 (19.05)	0.34 (8.63)	3.00 (76.20)	24 VDC	

NOTE:
- EO1: Electric 120 VAC
- EO2: Electric 220 VAC
- EO3: Electric 24 VDC
- CSA approved for NEMA 4 & 4X
- For other voltages consult factory
- Actuator operating temperature: -20°F to 160°F (-29°C to 71°C)
- Corrosive resistant Zytel housing
- Consult factory for epoxy option



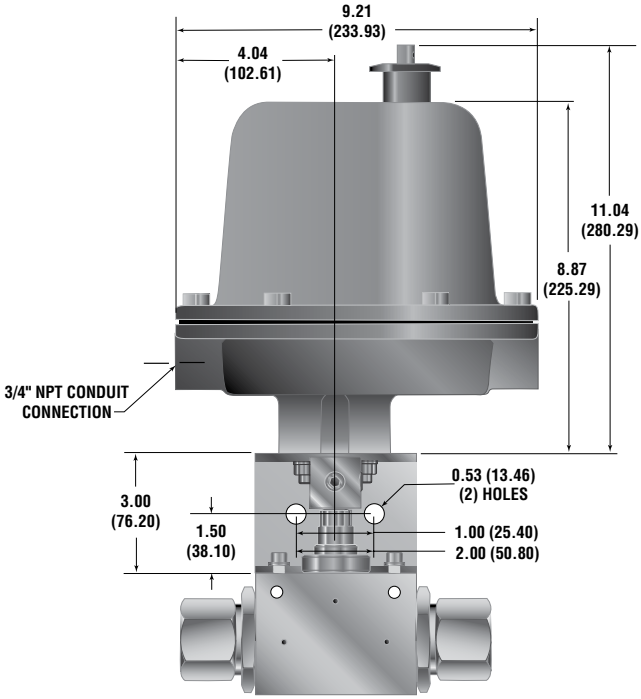


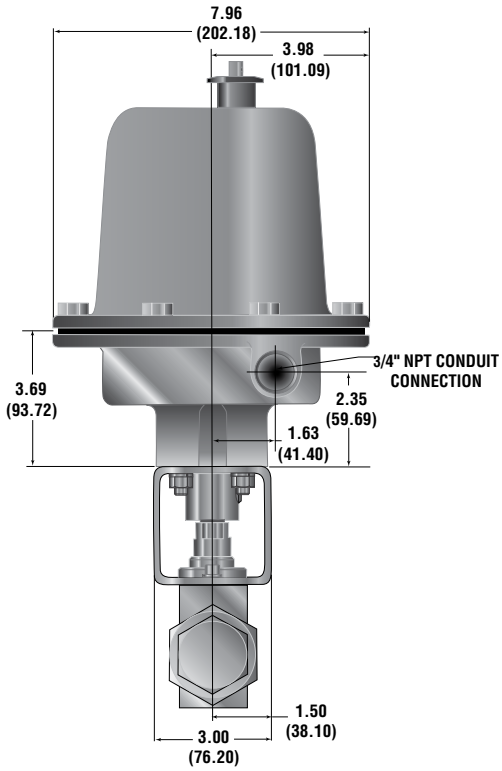
Electric Operated Ball Valves

Add the suffix **-EO1**, **-EO2** or **-EO3** to the appropriate valve catalog number for a complete valve assembly

VALVE SERIES	VOLTAGE 50/60 HZ	VALVE SERIES	VOLTAGE
2B8-EO1	120 VAC	2B8-EO3	24 VDC
3BD8-EO1	120 VAC	3BD8-EO3	24 VDC
2B8-EO2	220 VAC	2B8-EO3	24 VDC
3BD8-EO2	220 VAC	3BD8-EO3	24 VDC

NOTE:
- EO1: Electric 120 VAC
- EO2: Electric 220 VAC
- EO3: Electric 24 VDC
- For other voltages consult factory
- Actuator operating temperature: -20°F to 160°F (-29°C to 71°C)
- Powder coated aluminum housing
- CE marked.
- UL listed & CSA approved for NEMA 4, 4x, 7 & 9
- Explosion proof





QS Series

Medium Pressure

Pressures to 15,000 psi (1034 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, research, and oil and gas industries.

QS Medium Pressure Fittings and Tubing:

- Available sizes are 1/4, 3/8, 9/16 and 3/4".
- Fittings and tubing manufactured from high strength stainless steel.
- Molybdenum disulfide-coated gland nuts to prevent galling.
- Gland nut positioning mark for assembly.
- Single-ferrule compression sleeve.
- Connection weep holes for safety and leak detection.
- Fast easy make-up of connection.
- Operating Temperatures from 0°F (-17.8°C) to 650°F (343°C).

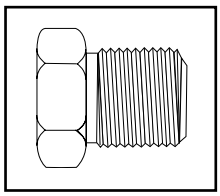
The Medium Pressure QS Series uses Parker Autoclave Engineers' Quick Set compression sleeve design. This single-ferrule compression sleeve connection delivers fast, easy make-up and reliable bubble-tight performance in liquid or gas service.

Pressures to 15,000 psi (1034 bar)

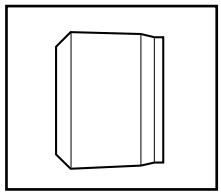
Parker Autoclave Engineers Medium Pressure QS Fittings are designed for use with QS Series valves and medium pressure tubing. These fittings feature improved compression connections with larger orifices for excellent flow capabilities. Autoclave fittings and components are manufactured of high strength stainless steel.

Connection Components

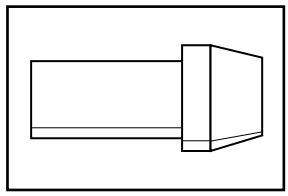
All Parker Autoclave Engineers valves and fittings are supplied complete with appropriate glands and sleeves. To order these components separately, use order numbers listed. When using plug, sleeve is not required.



Gland
QSG ( )



Sleeve
QSS ( )



Plug
QSP ( )

Add tube size ( )
- 1/4" - 40
- 3/8" - 60
- 9/16" - 90
- 3/4" - 120

Example:
1/4" Gland - QSG 40

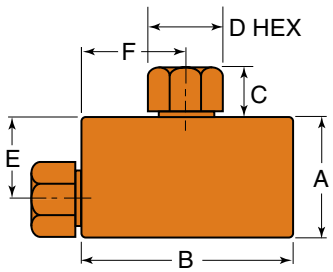
To ensure proper fit use Parker Autoclave Engineers tubing. For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
Elbow													
QSL4400	QS250	1/4 (6.35)	15,000 (1034,20)	0.16 (3.99)	1.38 (34.93)	2.00 (50.80)	0.52 (13.23)	0.63 (15.88)	1.00 (25.40)	1.00 (25.40)		0.75 (19.05)	See Figure 1
QSL6600	QS375	3/8 (9.53)	15,000 (1034,20)	0.25 (6.35)	1.50 (38.10)	2.00 (50.80)	0.55 (14.00)	0.75 (19.05)	1.00 (25.40)	1.00 (25.40)		0.81 (20.62)	
QSL9900	QS562	9/16 (14.29)	15,000 (1034,20)	0.36 (9.12)	2.19 (55.58)	3.00 (76.20)	0.82 (20.83)	1.19 (30.18)	1.50 (38.10)	1.50 (38.10)		1.25 (31.75)	
QSL12	QS750	3/4 (19.05)	15,000 (1034,20)	0.52 (13.11)	2.94 (74.63)	4.13 (104.78)	1.04 (26.37)	1.50 (38.10)	2.06 (52.40)	2.06 (52.40)		1.50 (38.10)	

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

Figure 1



Elbow

For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

Tee

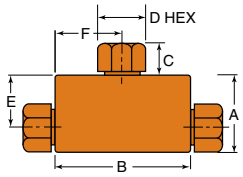
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
QST4440	QS250	1/4 (6.35)	15,000 (1034,20)	0.16 (3.99)	1.38 (34.93)	2.00 (50.80)	0.52 (13.23)	0.63 (15.88)	1.00 (25.40)	1.00 (25.40)		0.75 (19.05)	See Figure 2
QST6660	QS375	3/8 (9.53)	15,000 (1034,20)	0.25 (6.35)	1.50 (38.10)	2.00 (50.80)	0.55 (14.00)	0.75 (19.05)	1.00 (25.40)	1.00 (25.40)		0.81 (20.62)	
QST9990	QS562	9/16 (14.29)	15,000 (1034,20)	0.36 (9.12)	2.19 (55.58)	3.00 (76.20)	0.82 (20.83)	1.19 (30.18)	1.50 (38.10)	1.50 (38.10)		1.25 (31.75)	
QST12	QS750	3/4 (19.05)	15,000 (1034,20)	0.52 (13.11)	2.94 (74.63)	4.13 (104.78)	1.04 (26.37)	1.50 (38.10)	2.06 (52.40)	2.06 (52.40)		1.50 (38.10)	

Cross

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
QSX4444	QS250	1/4 (6.35)	15,000 (1034,20)	0.16 (3.99)	2.00 (50.80)	2.00 (50.80)	0.52 (13.23)	0.63 (15.88)	1.00 (25.40)	1.00 (25.40)		0.75 (19.05)	See Figure 3
QSX6666	QS375	3/8 (9.53)	15,000 (1034,20)	0.25 (6.35)	2.00 (50.80)	2.00 (50.80)	0.55 (14.00)	0.75 (19.05)	1.00 (25.40)	1.00 (25.40)		0.81 (20.62)	
QSX9999	QS562	9/16 (14.29)	15,000 (1034,20)	0.36 (9.12)	3.00 (76.20)	3.00 (76.20)	0.82 (20.83)	1.19 (30.18)	1.50 (38.10)	1.50 (38.10)		1.25 (31.75)	
QSX12	QS750	3/4 (19.05)	15,000 (1034,20)	0.52 (13.11)	4.13 (104.78)	4.13 (104.78)	1.04 (26.37)	1.50 (38.10)	2.06 (52.40)	2.06 (52.40)		1.50 (38.10)	

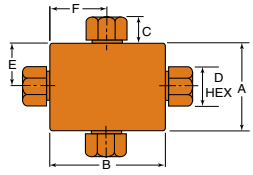
For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

Figure 2



Tee

Figure 3



Cross

Straight Coupling

Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
15F44QQ	QS250	1/4 (6.35)	15,000 (1034,20)	0.16 (3.99)	0.75 (19.05)	1.63 (41.28)	0.52 (13.23)	0.63 (15.88)	Straight				See Figure 4
15F66QQ	QS375	3/8 (9.53)	15,000 (1034,20)	0.25 (6.35)	0.81 (20.65)	1.75 (44.45)	0.55 (14.00)	0.75 (19.05)	Straight				
15F99QQ	QS562	9/16 (14.29)	15,000 (1034,20)	0.36 (9.12)	1.38 (34.93)	2.75 (69.85)	0.82 (20.83)	1.19 (30.18)	Straight				
15F12Q	QS750	3/4 (19.05)	15,000 (1034,20)	0.52 (13.11)	1.50 (38.10)	3.75 (95.25)	1.04 (26.37)	1.50 (38.10)	Straight				

Bulkhead Coupling

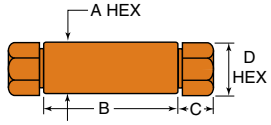
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D Typical	E	F	G Thickness	Block Thickness	Fitting Pattern
15BF44QQ	QS250	1/4 (6.35)	15,000 (1034,20)	0.16 (3.99)	0.88 (22.23)	2.00 (50.80)	0.52 (13.23)	0.63 (15.88)	0.63 (15.88)	1.00 (25.40)	0.38 (9.53)		See Figure 5
15BF66QQ	QS375	3/8 (9.53)	15,000 (1034,20)	0.25 (6.35)	1.06 (27.00)	2.38 (60.33)	0.55 (14.00)	0.75 (19.05)	0.79 (19.94)	1.38 (34.93)	0.38 (9.53)		
15BF99QQ	QS562	9/16 (14.29)	15,000 (1034,20)	0.36 (9.12)	1.63 (41.40)	2.63 (66.68)	0.82 (20.83)	1.19 (30.18)	0.91 (22.99)	1.88 (47.75)	0.38 (9.53)		
15BF12Q	QS750	3/4 (19.05)	15,000 (1034,20)	0.52 (13.11)	1.88 (47.63)	3.50 (88.90)	1.04 (26.37)	1.50 (38.10)	1.50 (38.10)	2.13 (53.98)	0.38 (9.53)		

*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change. For prompt service, Autoclave stocks select products. Consult your local representative.

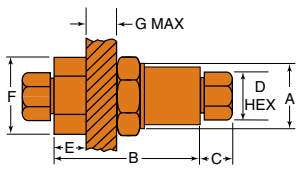
Union Couplings are designed with a removable seat insert allowing disassembly and tubing removal without the necessity of loosening other items in a line.

Figure 4



Straight Coupling

Figure 5



Bulkhead Coupling

Medium Pressure Tubing

Pressures to 15,000 psi (1034 bar)

Parker Autoclave Engineers offers a complete selection of austenetic, cold drawn stainless steel tubing designed to match the performance standards of Parker Autoclave Engineers valves and fittings. Parker Autoclave Engineers medium pressure tubing is manufactured specifically for high pressure applications requiring both strength and corrosion resistance. The tubing is furnished in random lengths between 20 feet (6 meters) and 27 feet (8.2 meters). The average is 24 feet (7.3 meters). Medium Pressure Tubing is available in four sizes and a variety of materials.

Inspection and Testing

Parker Autoclave Engineer's medium pressure tubing is inspected to assure freedom from seams, laps, fissures or other flaws, as well as carburization or intergranular carbide precipitation. The outside and inside diameters of the tubing are subject to special inspection and are controlled within close tolerences to assure proper fit. Sample pieces of tube for each lot are tested to confirm mechanical properties. Hydrostatic testing is also performed on a statistical basis and is conducted at the working pressure of the tube. Parker Autoclave Engineers will perform 100% hydrostatic testing at additional cost if desired.

Tubing Tolerance

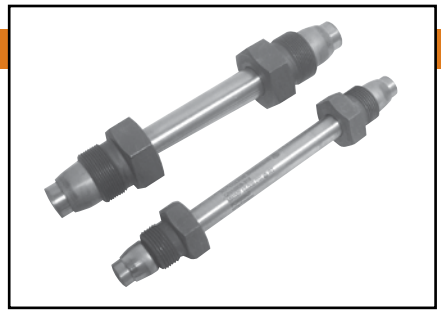
Nominal Tubing Size inches (mm)	Tolerance/Outside Diameter inches (mm)
1/4 (6.35)	.248/.243 (6.30/6.17)
3/8 (9.53)	.370/.365 (9.40/9.27)
9/16 (14.27)	.557/.552 (14.15/14.02)
3/4 (19.05)	.745/.740 (18.92/18.80)

Catalog Number	Tube Material	Fits Connection Type	Tube Size Inches (mm)			Flow Area in.² (mm²)	Working Pressure psi (bar)*			
			Outside Diameter	Inside Diameter	Wall Thickness		-325 to 100°F -198 to - 37.8°C	200°F 93°C	400°F 204°C	600°F 316°C
MS15-092**	316SS	QS250	1/4 **(6.35)**	0.109 **(2.77)**	0.070 **(1.78)**	0.009 **(5.81)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**
MS15-192**	304SS						20,000 **(1378.93)**	18,950 **(1306.54)**	17,200 **(1185.88)**	17,000 **(1172.09)**
MS15-093**	316SS	QS375	3/8 **(9.53)**	0.203 **(5.16)**	0.086 **(2.18)**	0.032 **(20.65)**	20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**
MS15-193**	304SS						20,000 **(1378.93)**	20,000 **(1378.93)**	19,250 **(1327.22)**	18,050 **(1244.48)**
MS15-097	316SS	QS562	9/16 **(14.29)**	0.359 **(9.12)**	0.101 **(2.57)**	0.101 **(65.16)**	15,000 **(1034.19)**	15,000 **(1034.19)**	14,400 **(992.82)**	13,650 **(941.12)**
MS15-098	316SS	QS750	3/4 **(19.05)**	0.516 **(13.11)**	0.117 **(2.97)**	0.209 **(134.84)**	15,000 **(1034.19)**	15,000 **(1034.19)**	14,400 **(992.82)**	13,650 **(941.12)**

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.
**Larger inside diameters are available as special order.

Nipples - QS Series

Pressures to 15,000 psi (1034 bar)



For rapid system make-up, Parker Autoclave Engineers supplies pre-assembled nipples in various sizes and lengths for Parker Autoclave Engineers QSS valves and fittings.

Special Lengths

In addition to the standard lengths listed in the table below, nipples are available in any custom length. Consult factory.

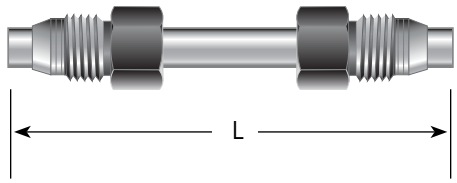
Materials

Catalog numbers in table refer to Type 316 Stainless Steel.

Catalog Numbers Nipple Length Inches (mm)					Fits Connection Type	Tube Size Inches (mm)		Working Pressure at 100° psi (bar)
4.00" (101.60)	6.00" (152.40)	8.00" (203.20)	10.00" (254.60)	12.00" (304.80)		OD	ID	
QNA4404-316	QNA4406-316	QNA4408-316	QNA44010-316	QNA44012-316	QS250	1/4"	0.109	15,000
						(6.35)	(2.77)	(1034.16)
QNA6604-316	QNA6606-316	QNA6608-316	QNA66010-316	QNA66012-316	QS375	3/8"	0.203	15,000
						(9.53)	(5.16)	(1034.16)
	QNA9906-316	QNA9908-316	QNA99010-316	QNA99012-316	QS562	9/16"	0.359	15,000
						(14.29)	(9.12)	(1034.16)
		QNA1208-316	QNA12010-316	QNA12012-316	QS750	3/4"	0.516	15,000
						(19.05)	(13.11)	(1034.16)

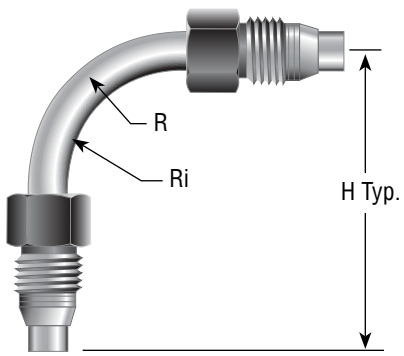
Close Tube Port Connectors

Model	Size Inches (mm)	Fits Connection Type	Dimension "L" Inches (mm)
QTS4403.25	1/4" (6.35)	QS250	3.25 (82.55)
QTS6603.50	3/8" (9.53)	QS375	3.50 (88.90)
QTS9905.25	9/16" (14.29)	QS562	5.25 (133.35)
QTS1206.375	3/4" (19.05)	QS750	6.38 (162.10)



Elbow Tube

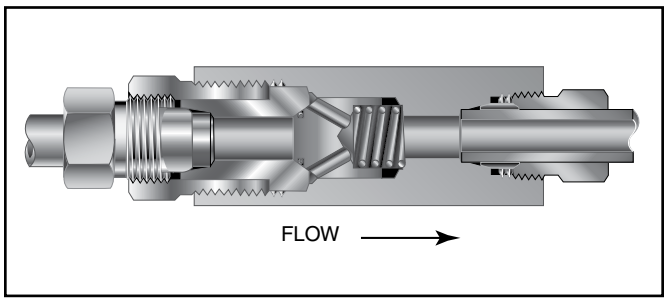
Model	Size Inches (mm)	Fits Connection Type	Dimension "H" Inches (mm)	Mean Radius "R" Inches (mm)	Inside Radius Ri Inches (mm)
QTE44-90	1/4" (6.35)	QS250	3.25 (82.55)	0.563 (14.30)	0.438 (11.13)
QTE66-90	3/8" (9.53)	QS375	3.50 (88.90)	0.938 (23.83)	0.75 (19.05)
QTE99-90	9/16" (14.29)	QS562	7.50 (19.05)	2.906 (73.82)	2.625 (66.68)
QTE12-90	3/4" (19.05)	QS750	10.00 (254.00)	3.875 (98.43)	3.5 (88.9)



Check Valves - QS Series

Pressures to 15,000 psi (1034 bar)

O-Ring Check Valves

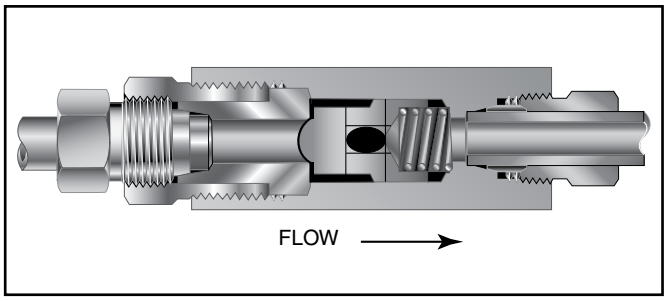


Provide unidirectional flow and tight shut-off for liquids and gases with high reliability. When differential drops below cracking pressure*, valve shuts off. **(Not for use as relief valve.)**

Materials: 316 Stainless Steel: Body, cover, poppet, cover gland. 300 Stainless Steel: Spring.
Standard O-ring: Viton, for operation to 500° F (260°C). Buna-N or PTFE available for 250°F (121°C) or 400°F (204°C) respectively; specify when ordering.

***Cracking Pressure:** 20 psi (1.38 bar) ±30%. Springs for higher cracking pressures (up to 100 psi (6.89bar)) available on special order for O-ring style check valves only.

Ball Check Valves



Prevent reverse flow where leak-tight shut-off is not mandatory. When differential drops below cracking pressure, valve closes. With all-metal components, valve can be used up to 650°F (343°C). See Technical Information section for connection temperature limitations. **(Not for use as a relief valve.)**

Ball and poppet are an integral design to assure positive, in-line seating without "chatter". Poppet is designed essentially for axial flow with minimum pressure drop.

Materials: 316 Stainless Steel: Body, cover, cover gland, ball poppet. 300 Series Stainless Steel: Spring

CAUTION: *While testing has shown O-Rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling and age of the O-ring. FREQUENT INSPECTIONS SHOULD BE MADE to detect any deterioration, and O-rings replaced as required.*

CAUTION: *See Tubing section for proper selection of tubing.*

Catalog Number	Fits Connection Type	Pressure Rating psi (bar)*	Orifice inches (mm)	Rated C_V	Dimensions - inches (mm)					Fitting Pattern
					A	B	C	D Typical	Hex	
O-Ring Check Valves										
QSO4400	QS250	15,000 (1034.20)	0.188 (4.78)	0.15	3.18 (80.77)	2.56 (65.02)	0.44 (11.18)	0.63 (16.00)	0.81 (20.57)	See Figure 1
QSO6600	QS375	15,000 (1034.20)	0.312 (7.93)	0.63	3.56 (90.42)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)	
QSO9900	QS562	15,000 (1034.20)	0.359 (9.12)	2.30	5.21 (132.33)	4.50 (114.30)	0.81 (20.57)	1.19 (30.18)	1.75 (44.45)	
QSO12	QS750	15,000 (1034.20)	0.516 (13.11)	4.70	6.40 (162.56)	5.50 (139.70)	1.03 (26.16)	1.50 (38.10)	1.88† (47.75)	
Ball Check Valves										
QSB4400	QS250	15,000 (1034.20)	0.188 (4.78)	0.15	3.18 (80.77)	2.56 (65.02)	0.44 (11.18)	0.63 (16.00)	0.81 (20.57)	See Figure 1
QSB6600	QS375	15,000 (1034.20)	0.312 (7.93)	0.63	3.56 (90.42)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)	
QSB9900	QS562	15,000 (1034.20)	0.359 (9.12)	2.30	5.21 (132.33)	4.50 (114.30)	0.81 (20.57)	1.19 (30.18)	1.75 (44.45)	
QSB12	QS750	15,000 (1034.20)	0.516 (13.11)	4.70	6.40 (162.56)	5.50 (139.70)	1.03 (26.16)	1.50 (38.10)	1.88† (47.75)	

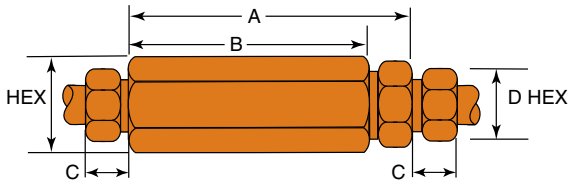
†Distance across flats

Note:
All check valves are furnished complete with connection components unless otherwise specified.

*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave Engineers stocks select products.
Consult your local representative.

Figure 1



Male/Female Adapters - QS Series

Male /female adapters are designed to adapt a female connection to another size and/or type of connection without the need for additional couplings. In selecting an adapter involving two different sized connections, the larger connection should be on the male end where it is possible to maximize the mechanical strength of the adapter.

Materials

All Parker Autoclave Engineers adapters are precision machined from high strength stainless steel.

To use this chart:

1. Locate MALE end in vertical column.
2. Locate desired FEMALE end of adapter across top of chart.
3. Catalog number of required adapter is located at intersection of columns.
4. For one piece adapter add-OP to suffix of part number.

					FEMALE END								
					Quick Set				Medium Pressure				
MALE END	Connection Size and Type				1/4" QS250	3/8" QS375	9/16" QS562	3/4" QS750	1/4" SF250CX	3/8" SF375CX	9/16" SF562CX	3/4" SF750CX	1" SF1000CX
		Fits this Female Connection		Pressure Rating PSI (bar)*	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)	20,000 (1378.93)
Quick Set	1/4"	**QS250**		15,000 (1034.20)		15M46QQ	15M49QQ	15M412QQ	15M44Q6	15M46Q6	15M49Q6	15M412Q6	15M416Q6
	3/8"	**QS375**		15,000 (1034.20)	15M64QQ		15M69QQ	15M612QQ	15M64Q6	15M66Q6	15M69Q6	15M612Q6	15M616Q6
	9/16"	**QS562**		15,000 (1034.20)	15M94QQ	15M94QQ		15M912QQ	15M94Q6	15M96Q6	15M99Q6	15M912Q6	15M916Q6
	3/4"	**QS750**		15,000 (1034.20)	15M124QQ	15M126QQ	15M129QQ		15M124Q6	15M126Q6	15M129Q6	15M1212Q6	15M1216Q6
Medium Pressure	1/4"	**SF250CX**		20,000 (1378.93)	15M44KQ	15M46KQ	15M49KQ	15M412KQ					
	3/8"	**SF375CX**		20,000 (1378.93)	15M64KQ	15M66KQ	15M69KQ	15M612KQ					
	9/16"	**SF562CX**		20,000 (1378.93)	15M94KQ	15M96KQ	15M99KQ	15M912KQ					
	3/4"	**SF750CX**		20,000 (1378.93)	15M124KQ	15M126KQ	15M129KQ	15M1212KQ					
	1"	**SF1000CX**		20,000 (1378.93)	15M164KQ	15M166KQ	15M169KQ	15M1612KQ					
High Pressure	1/4"	**F250C**		60,000 (4136.85)	15M44BQ	15M46BQ	15M49BQ	15M412BQ					
	3/8"	**F375C**		60,000 (4136.85)	15M64BQ	15M66BQ	15M69BQ	15M612BQ					
	9/16"	**F562C**		60,000 (4136.85)	15M94BQ	15M96BQ	15M99BQ	15M912BQ					
National Pipe Thread (NPT)	1/4"	**NPT**		15,000 (1034.20)	15M44NQ	15M46NQ	15M49NQ	15M412NQ					
	3/8"	**NPT**		15,000 (1034.20)	15M64NQ	15M66NQ	15M69NQ	15M612NQ					
	1/2"	**NPT**		15,000 (689.45)	15M84NQ	15M86NQ	15M89NQ	15M812NQ					
	3/4"	**NPT**		10,000 (689.45)	10M124NQ	10M126NQ	10M129NQ	10M1212NQ					
	1"	**NPT**		10,000 (689.45)	10M164NQ	10M166NQ	10M169NQ	10M1612NQ					

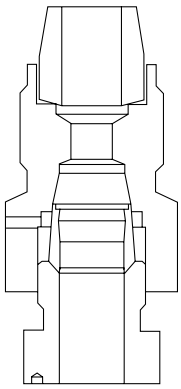
Note:
All AE adapters are supplied complete with appropriate gland nuts and sleeves unless specified without.

** The maximum pressure rating for an adapter is determined by the connection component with the LOWEST pressure rating; that is, the two end connections and the tubing or pipe used, whichever is LOWER.*

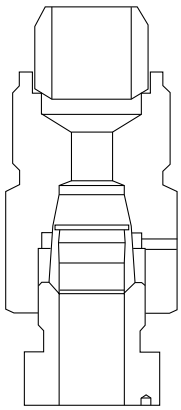
CAUTION: See appropriate pressure section in reference to proper selection of tubing.

NOTE: NPT (Pipe) connections

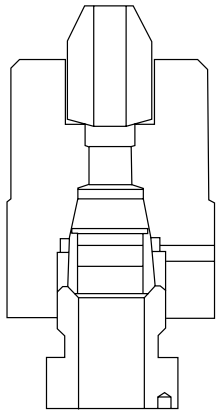
- NPT threads must be sealed using a high quality PTFE tape and/or PTFE paste product. Refer to thread sealant manufacturer's instructions on how to apply thread sealant.
- Sealing performance may vary based on many factors such as pressure, temperature, media, thread quality, thread material, proper thread engagement and proper use of thread sealant.
- Customer should limit the number of times an NPT fitting is assembled and disassembled because thread deformation during assembly will result in deteriorating seal quality over time. When using only PTFE tape, consider using thread lubrication to prevent galling of mating parts.



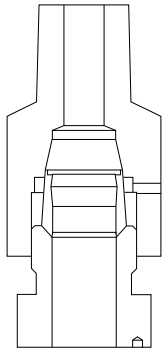
Quick Set Female
to
Quick Set Male



Quick Set Female
to
Medium Pressure Male



Quick Set Female
to
High Pressure Male



Quick Set Female
to
National Pipe Male

FEMALE END							
High Pressure			**National Pipe Thread (NPT)**				
1/4" F250C	3/8" F375C	9/16" F562C	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT
60,000 (4136.85)	60,000 (4136.85)	150,000 (10342.14)	15,000 (1034.20)	15,000 (1034.20)	15,000 (1034.20)	10,000 (689.45)	10,000 (689.45)
15M44Q3	15M46Q3	15M49Q3	15M44Q8	15M46Q8	15M48Q8	10M412Q8	10M416Q8
15M64Q3	15M66Q3	15M69Q3	15M64Q8	15M66Q8	15M68Q8	10M612Q8	10M616Q8
15M94Q3	15M96Q3	15M99Q3	15M94Q8	15M96Q8	15M98Q8	10M912Q8	10M916Q8
15M124Q3	15M126Q3	15M129Q3	15M124Q8	15M126Q8	15M128Q8	10M1212Q8	10M1216Q8

AE Male/Female Adapters are available in a "one-piece" design. They are identical to the two piece designs in length and can be ordered by adding the suffix - OP to the two piece adapter part numbers listed.

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

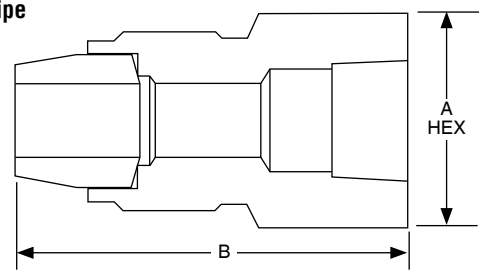
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
QS250	QS250			
QS250	QS375	15M46QQ		
QS250	QS562	15M49QQ		
QS250	QS750	15M412QQ		
QS250	SF250CX	15M44Q6		
QS250	SF375CX	15M46Q6		
QS250	SF562CX	15M49Q6		
QS250	SF750CX	15M412Q6		
QS250	SF1000CX	15M416Q6		
QS250	F250C	15M44Q3		
QS250	F375C	15M46Q3		
QS250	F562C	10M49Q3		
QS250	1/4 NPT	15M44Q8	.75 (19.1)	1.69 (42.9)
QS250	3/8 NPT	15M46Q8		
QS250	1/2 NPT	15M48Q8		
QS250	3/4 NPT	10M412Q8		
QS250	1 NPT	10M416Q8		
QS375	QS250	15M64QQ	.75 (19.1)	1.40 (35.6)
QS375	QS375			
QS375	QS562	15M69QQ		
QS375	QS750	15M612QQ		
QS375	SF250CX	15M64Q6		
QS375	SF375CX	15M66Q6		
QS375	SF562CX	15M69Q6		
QS375	SF750CX	15M612Q6		
QS375	SF1000CX	15M616Q6		
QS375	F250C	15M64Q3		
QS375	F375C	15M66Q3		
QS375	F562C	15M69Q3		
QS375	1/4 NPT	15M64Q8	.75 (19.1)	1.66 (42.2)
QS375	3/8 NPT	15M66Q8	1.00 (25.4)	1.78 (45.3)
QS375	1/2 NPT	15M68Q8	1.19 (30.1)	2.16 (54.8)
QS375	3/4 NPT	10M612Q8		
QS375	1 NPT	10M616Q8		

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

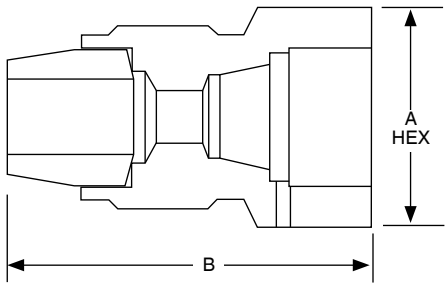
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
QS562	QS250	15M94QQ	1.00 (25.4)	1.85 (46.8)
QS562	QS375	15M96QQ	1.00 (25.4)	1.85 (46.8)
QS562	QS562			
QS562	QS750	15M912QQ		
QS562	SF250CX	15M94Q6		
QS562	SF375CX	15M96Q6		
QS562	SF562CX	15M99Q6		
QS562	SF750CX	15M912Q6		
QS562	SF1000CX	15M916Q6		
QS562	F250C	15M94Q3		
QS562	F375C	15M96Q3		
QS562	F562C	15M99Q3		
QS562	1/4 NPT	15M94Q8	1.19 (30.1)	2.22 (56.4)
QS562	3/8 NPT	15M96Q8	1.19 (30.1)	2.22 (56.4)
QS562	1/2 NPT	15M98Q8	1.19 (30.1)	2.41 (61.1)
QS562	3/4 NPT	10M912Q8	1.38 (35.1)	2.56 (65.0)
QS562	1 NPT	10M916Q8		
QS750	QS250	15M124QQ		
QS750	QS375	15M126QQ	1.50 (38.1)	2.53 (64.1)
QS750	QS562	15M129QQ	1.50 (38.1)	2.53 (64.1)
QS750	QS750			
QS750	SF250CX	15M124Q6		
QS750	SF375CX	15M126Q6		
QS750	SF562CX	15M129Q6		
QS750	SF750CX	15M1212Q6		
QS750	SF1000CX	15M1216Q6		
QS750	F250C	15M124Q3		
QS750	F375C	15M126Q3		
QS750	F562C	15M129Q3		
QS750	1/4 NPT	15M124Q8		
QS750	3/8 NPT	15M126Q8		
QS750	1/2 NPT	15M128Q8	1.50 (38.1)	2.78 (70.5)
QS750	3/4 NPT	10M1212Q8		
QS750	1 NPT	10M1216Q8		

Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.
All Dimensions for reference only and subject to change.

QSS to Pipe



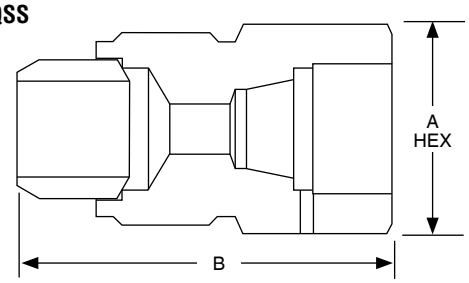
QSS to QSS



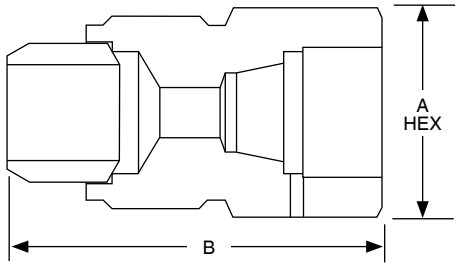
Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
SF250CX	QS250	15M44KQ		
SF250CX	QS375	15M46KQ		
SF250CX	QS562	15M49KQ		
SF250CX	QS750	15M412KQ		
SF375CX	QS250	15M64KQ		
SF375CX	QS375	15M66KQ	.081 (20.6)	1.81 (46.1)
SF375CX	QS562	15M69KQ		
SF375CX	QS750	15M612KQ	1.50 (38.1)	3.00 (76.2)
SF562CX	QS250	15M94KQ	.94 (23.8)	1.75 (44.5)
SF562CX	QS375	15M96KQ	.94 (23.8)	1.75 (44.5)
SF562CX	QS562	15M99KQ	1.38 (34.9)	2.50 (63.5)
SF562CX	QS750	15M912KQ	1.50 (38.1)	3.25 (82.6)
SF750CX	QS250	15M124KQ		
SF750CX	QS375	15M126KQ		
SF750CX	QS562	15M129KQ	1.38 (34.9)	2.67 (67.8)
SF750CX	QS750	15M1212KQ	1.50 (38.1)	3.06 (77.7)
SF1000CX	QS250	15M164KQ		
SF1000CX	QS375	15M166KQ		
SF1000CX	QS562	15M169KQ	1.50 (38.1)	2.88 (73.0)
SF1000CX	QS750	15M1612KQ	1.50 (38.1)	3.38 (85.7)

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
F250C	QS250	15M44BQ	.75 (19.1)	1.31 (33.3)
F250C	QS375	15M46BQ	.81 (20.6)	1.56 (39.7)
F250C	QS562	15M49BQ		
F250C	QS750	15M412BQ		
F375C	QS250	15M64BQ		
F375C	QS375	15M66BQ		
F375C	QS562	15M69BQ		
F375C	QS750	15M612BQ		
F562C	QS250	15M94BQ	1.19 (30.1)	1.81(46.1)
F562C	QS375	15M96BQ	1.19 (30.1)	1.69 (42.9)
F562C	QS562	15M99BQ	1.38 (34.9)	2.32 (58.8)
F562C	QS750	15M912BQ		

MP to QSS



HP to QSS

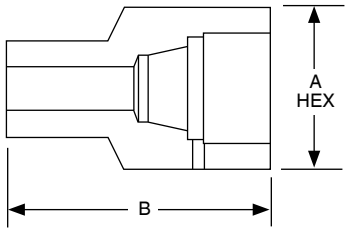


Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.
All Dimensions for reference only and subject to change.
Adapter configurations may vary from outline shown.

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

Male End Fits this Connection	Female End	Catalog Number	Dimension inches (mm)	
			A Hex	B
1/4 NPT	QS250	15M44NQ	0.75 (19.1)	1.44 (36.5)
1/4 NPT	QS375	15M46NQ	0.81 (20.6)	1.63 (41.3)
1/4 NPT	QS562	15M49NQ		
1/4 NPT	QS750	15M412NQ		
3/8 NPT	QS250	15M64NQ	0.75 (19.1)	1.50 (38.1)
3/8 NPT	QS375	15M66NQ	0.81 (20.6)	1.63 (41.3)
3/8 NPT	QS562	15M69NQ	1.38 (35.1)	2.13 (53.5)
3/8 NPT	QS750	15M612NQ		
1/2 NPT	QS250	15M84NQ	0.94 (23.8)	1.75 (44.5)
1/2 NPT	QS375	15M86NQ	0.94 (23.8)	1.63 (41.3)
1/2 NPT	QS562	15M89NQ	1.38 (35.1)	2.25 (57.2)
1/2 NPT	QS750	15M812NQ		
3/4 NPT	QS250	10M124NQ		
3/4 NPT	QS375	10M126NQ		
3/4 NPT	QS562	10M129NQ	1.38 (35.1)	2.38 (60.3)
3/4 NPT	QS750	10M1212NQ	1.50 (38.1)	2.81 (71.4)
1 NPT	QS250	10M164NQ		
1 NPT	QS275	10M166NQ		
1 NPT	QS562	10M169NQ	1.50 (38.1)	2.38 (60.3)
1 NPT	QS750	10M1612NQ	1.50 (38.1)	2.38 (60.3)

NPT to QSS

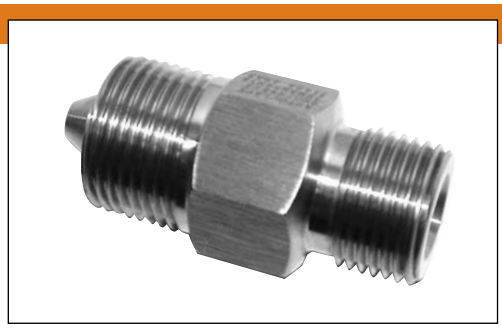


Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
Note: For pressure rating see selection chart.
All Dimensions for reference only and subject to change.
Adapter configurations may vary from outline shown.

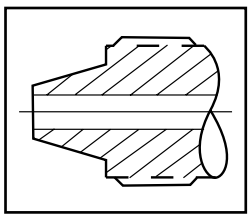
For prompt service, Parker Autoclave Engineers stocks select products.
Consult factory.

Male/Male Adapters - QS Series

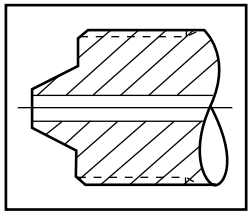
Parker Autoclave Engineer's standard male-to-male one piece adapters are available in multiple configurations. Standard male-to-male adapters are machined from cold worked stainless steel.Contact your local Sales Representative for optional information. The following tables list our standard adapters with dimensions.



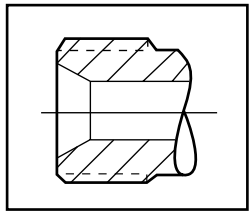
Adapter End Configuration



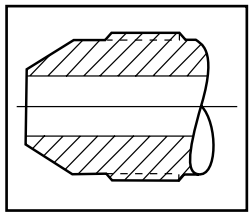
QS Series



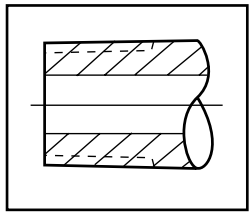
'H' High Pressure



'RH' Reverse High Pressure



'M' Medium Pressure



'P' National Pipe Tapered

Ordering Procedure

Typical catalog number: 15 MA Q4 H9

15 — **Pressure (X 1000 psi)**

MA — **Male Adapter**

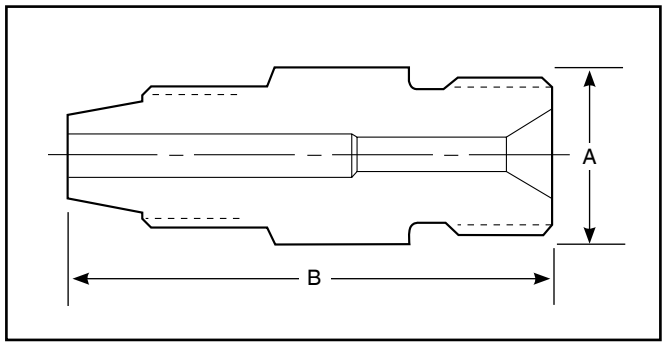
Q4 / **H9** — **Available End Connections**

Q4 - 1/4" QS Series	**M4** - 1/4" Medium Pressure	**H4** - 1/4" High Pressure	**P4** - 1/4" NPT	***RH9** - 9/16" -18 Reverse High
Q6 - 3/8" QS Series	**M6** - 3/8" Medium Pressure	**H5** - 5/16" High Pressure	**P6** - 3/8" NPT	**RH12** - 3/4" -16 Reverse High
Q9 - 9/16" QS Series	**M9** - 9/16" Medium Pressure	**H6** - 3/8" High Pressure	**P8** - 1/2" NPT	**RH14** - 7/8" -14 Reverse High
Q12 - 3/4" QS Series	**M12** - 3/4" Medium Pressure	**H9** - 9/16" High Pressure	**P12** - 3/4" NPT	**RH16** - 1" -12 Reverse High
	M16 - 1" Medium Pressure		**P16** - 1" NPT	**RH21** - 1-5/16" -12 Reverse High

*RH9 & RH14 - 40,000 psi (2758 bar), RH12 - 30,000 psi (2068 bar), RH16 - 26,000 psi (1793 bar), RH21 - 20,000 psi (1379 bar).

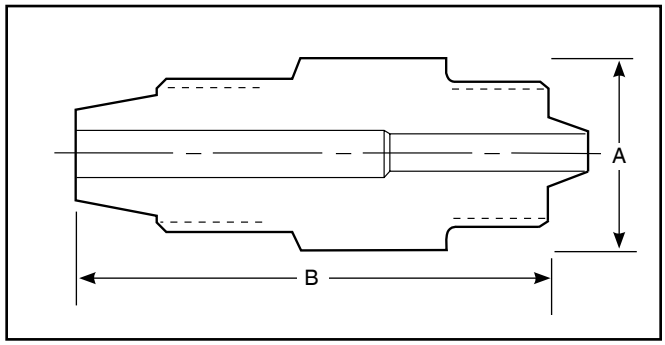
QS Series to Reverse High-Pressure Adapters

Catalog Number	Connection QS	Connection RH	Dimension inches (mm)	
			A Hex	B
15MAQ4RH9	QS250	9/16”	0.63 (15.9)	1.70 (43.2)
15MAQ6RH9	QS375	9/16”	.75 (19.1)	1.81 (46.2)
15MAQ9RH9	QS562	9/16”	1.19 (30.1)	2.25 (57.1)
15MAQ9RH12	QS562	3/4”	1.19 (30.1)	2.38 (60.3)
15MAQ9RH16	QS562	1”	1.19 (30.1)	2.56 (65.1)



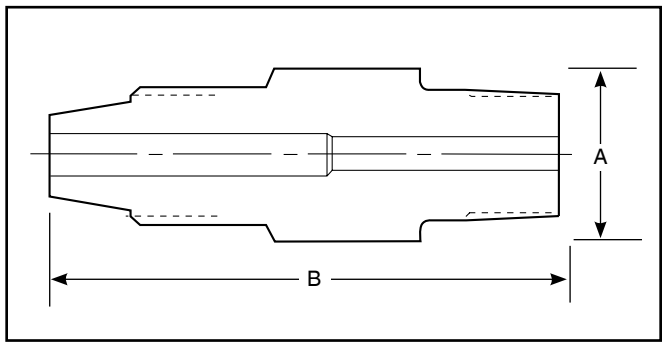
QS Series to High-Pressure Adapter

Catalog Number	Connection QS	Connection H/P	Dimension inches (mm)	
			A Hex	B
15MAQ9H4	QS562	1/4”	0.75 (19.1)	2.00 (50.8)



QS Series to NPT Adapter

Catalog Number	Connection QS	Connection NPT	Dimension inches (mm)	
			A Hex	B
15MAQ6P4	QS375	1/4”	1.19 (30.1)	2.44 (62.0)



QSS Assembly Procedure

Fast, Positive Sealing for Pressures up to 15,000 psi (1034 bar)

1/4" & 3/8" Tubing Size (Standard setting operation)

See next page for setting with hydraulic tool.

(Setting with hydraulic tool is recommended but not required).

1. Cut tubing to length and deburr. Allow extra length for proper engagement (per table below).

Outside Diameter Tube Size inches (mm)	Extra Allowance** for Engagement inches (mm)
1/4 (6.35)	0.75 (19.05)
3/8 (9.53)	0.81 (20.64)

2. Slip gland and sleeve onto tubing.

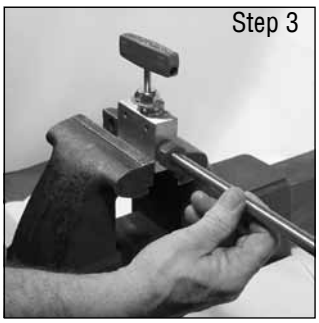
Note: *Be sure to remove gland and sleeve from components and slide them onto the tubing before inserting the tubing into the components.*

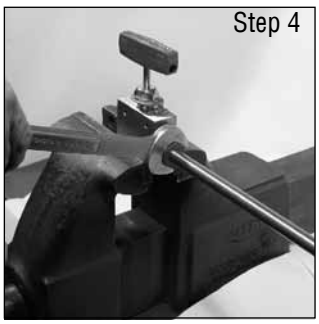
Make sure larger end of sleeve is toward gland.

Push tubing into valve or fitting until it bottoms. Lubricate gland nut threads to aid in assembly. If process tolerable, a slight amount of inert grease on the nose of the compression sleeve is recommended to improve sealability.

3. TIGHTEN GLAND NUT UNTIL SLEEVE BEGINS TO GRIP TUBING.

4. Note starting position of wrench.† Tighten gland nut 1-1/4 turns to complete the QSS connection.*



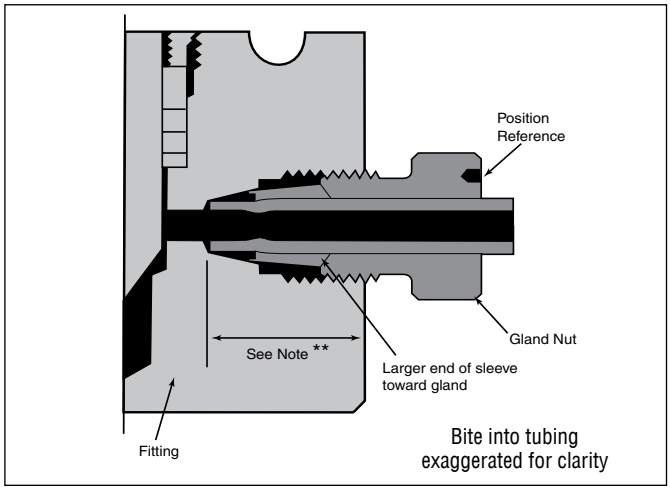


Torque values can be used for both initial setting and reassembly connections. See the following page for reassembly values and ranges.

	Initial setting torque ft-lbs (NM)
1/4"	40 (54.3)
3/8"	80 (108.5)

Completed Connection

The illustration below shows the condition of sleeve and tubing after completion of "sleeve setting." The sleeve has cut into the tubing as it moved forward into the tapered seat, upsetting material ahead of it and establishing a shoulder on the tubing to provide positive mechanical support for the tubing end-load. A properly set sleeve cannot be displaced back and forth along the tubing but may be rotated around the tubing.



Reassembly

To reassemble a 1/4 or 3/8 connection, insert tubing with sleeve and gland nut into valve or fitting. Tighten gland nut until the sleeve begins to grip tubing. Tighten gland with a wrench 1/4 of a turn for a gas-tight seal. After frequent reassemblies, it may take less than 1/4 turn to affect a gas-tight seal and as little as 1/8 of a turn may be sufficient.

* No special torque wrenches or mandrels required.

** Distance tubing protrudes into connection from face of fitting.

† A small blind hole on the face of the gland is provided for a starting position reference.

Parker Autoclave Engineers Medium Pressure tubing is required for these connection components.

When assembling tubing into fittings such as in rack systems, alignment of tubing is critical in connection make up. Do not force tubing into alignment with connections as bending stress will effect the sealing capability of the connections.

QSS Assembly Procedure

Fast, Positive Sealing for Pressures up to 15,000 psi (1034 bar)

Hydraulic Set Tool Assembly

1. Cut tubing to length and deburr. Allow extra length for proper engagement (per table below).

Outside Diameter Tube Size inches (mm)	Extra Allowance for Engagement** inches (mm)
1/4 (6.35)	0.75 (19.05)
3/8 (9.53)	0.81 (20.64)
9/16 (14.27)	1.25 (31.75)
3/4 (19.04)	1.63 (41.28)

2. Slip gland nut and sleeve onto tubing. Lubricate the nose of the compression sleeve with a metal to metal lubricant. We recommend Jetlube MP-50. Make sure larger end of sleeve is toward gland nut. Push tubing into hydraulic set tool until it bottoms into the setting die.

3. Thread gland nut into cap until the hex touches the top surface.

4. Pressurize cylinder up to the set pressure (per table below.)

DO NOT EXCEED THE SET PRESSURE.

AS WITH ALL HIGH PRESSURE EQUIPMENT, USE CAUTION DURING OPERATION. SET TOOL MAWP IS 10,000 PSI (690 BAR).

Outside Diameter Tube Size inches (mm)	Set Pressure for Full Tubing Bite psi (bar)
1/4 (6.35) 3/8 (9.53) 9/16 (14.27)	4500 (310) to 5000 (344)
3/4 (19.04)	8000 (552) to 10000 (690)

Vent all presssure from hydraulic cylinder. Remove gland assembly from preset tool and inspect biting end of sleeve. Looking inside the biting end of the sleeve you should see a shoulder pushed up from the tubing material. A properly set sleeve must spin freely 360° to achieve a seal. If the sleeve is seized in place after setting, discard and make another. **Do not set a sleeve more than once.**

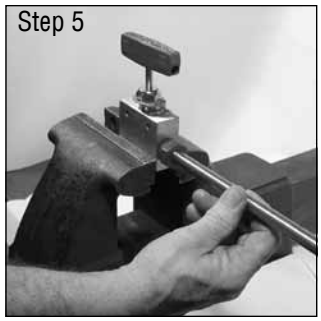
5. Install gland assembly into valve/fitting. If process tolerable, a slight amount of inert grease on the nose of the compression sleeve should be used to aid sealing. Lubrication of gland threads will also aid in assembly.

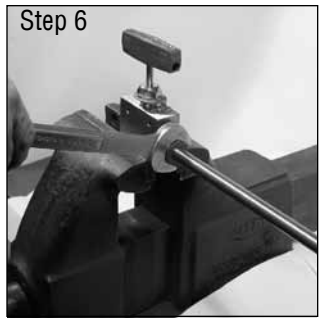
TIGHTEN GLAND NUT UNTIL SLEEVE BEGINS TO GRIP TUBING.

6. Note starting position of wrench.† Tighten gland nut 1/4 turn to complete the QSS connection. Since the mechanical bite has already been completed with the hydraulic set tool, it is permissible to vary the torque to achieve sealing.

If torque values are required, use the following:

Size (in)	Required Torque ft-lbs (Nm)	Max. Torque ft-lbs (Nm)	Torque Wrench Adapter Size	Adapter Part #
1/4"	30 (40.7)	50 (67.8)	5/8"	P-1683
3/8"	35 (47.5)	80 (108.5)	3/4"	P-9813
9/16"	90 (122.0)	135 (183.0)	1-3/16"	P-1689
3/4"	175 (237.3)	250 (339.0)	1-1/2"	P-6040





Completed Connection

The hydraulically set sleeve has cut into the tubing as it moved forward into the tapered seat, upsetting material ahead of it and establishing a shoulder on the tubing to provide positive mechanical support for the tubing end-load. A properly set sleeve cannot be displaced back and forth along the tubing but may be rotated around the tubing.

Reassembly

To reassemble a connection, insert tubing with sleeve and gland nut into valve or fitting.

Install gland into valve/fitting.

TIGHTEN GLAND NUT UNTIL SLEEVE BEGINS TO GRIP TUBING.

Note starting position of wrench.† Tighten gland nut 1/4 turn to complete the QSS connection.

** Distance tubing protrudes into connection from face of fitting.

† A small blind hole on the face of the gland is provided for a starting position reference.

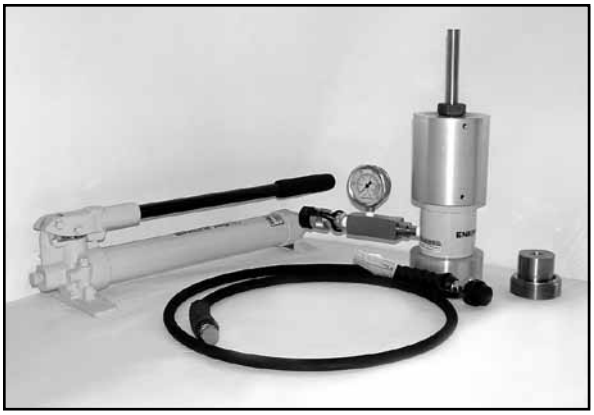
Parker Autoclave Engineers Medium Pressure tubing is required for these connection components.

When assembling tubing into fittings such as in rack systems, alignment of tubing is critical in connection make up.
Do not force into alignment with connections as bending stress will effect the sealing capability of the connections.

Hydraulic Sleeve Set Tool

The Parker Autoclave Engineers hydraulic sleeve set tool is designed for use with the QS Series glands, sleeves and Parker Autoclave Engineers tubing. This tool is required to set the sleeve for the 9/16” and 3/4” sizes and suggested for the 1/4” and 3/8” sizes. It not only produces the required bite into the tubing, it is much easier than trying to set the sleeve the conventional method.

The tool comes in a self contained portable, lockable case complete with hand or air pump, cap and dies for all sizes.



Features

Case Dimensions: 28”W x 14.25”H x 13.75”D (711cm x 362cm x 292cm)

Total Weight: 69 lbs. (31 Kg)

Hand Pump: Single stage hydraulic (standard)

Hydraulic Cylinder: 10,000 psi, 2.5” 25 ton

Base & Housing: Aluminum anodized

Die and Cap: Precision hardened steel

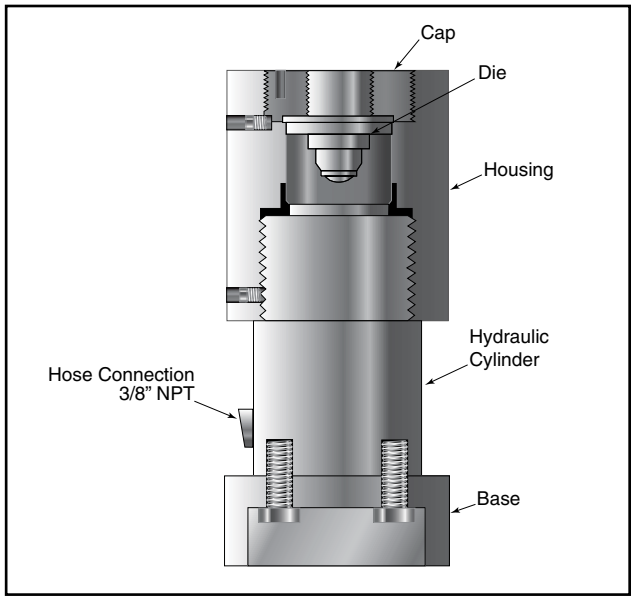
Gauge: 15,000 psi (1034 bar)

Air-operated hydraulic pump option can be furnished in place of standard hand pump. (Add “-A” to order number). Operating pressure 0 to 10,000 psi (0 to 690 bar). Required air presssure, 30 psi (2.1 bar) minimum 120 psi (8.3 bar) maximum. Reservoir capacity: 24 cu. in. (393cm^3). Air lubricator/air separator is recommended for air operated units.

Tooling Installation and Changing Sizes

To change tooling to another size only requires interchanging 2 parts.

1. Loosen the 5/16" set screw that locks the threaded cap from rotating.
2. Using a 5/32" hex key to rotate and remove the threaded steel cap from the aluminum housing.
3. Turn the tool assembly upside down the remove the die from inside the housing.
4. Install the die of the appropriate connection size you wish to use. The solid side of the die should be facing down towards the hydraulic cylinder.
5. Install the appropriate size cap to match the size of the die. Insert cap with the 5/32" hex up. Rotate with a 5/32" hex key until it bottoms out on the shoulder side of the housing.
6. Thread in the 5/16" set screw until it bottoms out on the cap threads. Tighten set screw to prevent movement during use.



Ordering Information

HST-912: Complete tool kit with hand pump (shown in photo)

HST-912TW: Complete tool kit with torque wrench and adapters

HST-912A: Complete tool kit with air-operated pump (Air operated pump #P-1948)

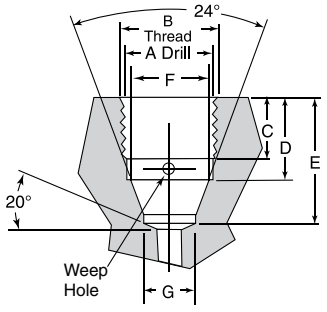
HST-912ATW: Complete tool kit with torque wrench and adapters

Description	Part #
Hydraulic Cylinder	90588
Gauge	90594
Adapter	90593
Base	101F-3407
Housing	101F-3408
Hydraulic Pump	P-1893
Hose	P-1894
1/4” Die	HSTD4
1/4” Cap	HSTC4
3/8” Die	HSTD6
3/8” Cap	HSTC6
9/16” Die	HSTD9
9/16” Cap	HSTC9
3/4” Die	HSTD12
3/4” Cap	HSTC12
Tool Chest	P-10011
Moly Paste	P-9766
(TW) Kits with torque and adapters	
20 to 150 ft-lbs (27-203 Nm) Torque Wrench	P-1680
75 to 250 ft-lbs (102-339 Nm) Torque Wrench	91020
5/8” wrench adapter	P-1683
3/4” wrench adapter	P-9813
1-3/16” wrench adapter	P-1689
1-1/2” wrench adapter	P-6040

Tube Connection Dimensions

Parker Autoclave Engineers Quick Set QS*

Tube Outside Diameter (inches)	Connection Type	Dimensions inches (mm)						
		A	B	C	D	E	F	G
1/4	QS250	29/64 (11.5)	1/2 -20	0.34 (8.6)	0.44 (11.1)	0.69 (17.5)	0.34 (8.6)	0.254 (16.4)
3/8	QS375	37/64 (14.7)	5/8 -18	0.38 (9.7)	0.47 (11.9)	0.75 (19.1)	0.48 (12.1)	0.380 (9.6)
9/16	QS562	7/8 (22.2)	15/16 -16	0.57 (14.5)	0.70 (17.8)	1.12 (28.5)	0.71 (18.0)	0.568 (14.2)
3/4	QS750	1-3/16 (30.15)	1-1/4 -18	0.82 (20.8)	1.00 (25.4)	1.56 (39.6)	0.94 (23.9)	0.75 (19.1)



*For port diameter please see orifice sizes for specific valves and fittings.

All threads are manufactured to a class 2A or 2B fit.

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).

02-1253BE January2013

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

Caution! Parker Autoclave Engineers Valves, Fittings and Tools are not designed to work with common commercial instrument tubing and will only work with tubing built to Parker Autoclave Engineers AES Specifications. Failure to do so will void warranty.

ISO-9001 Certified

Parker Autoclave Engineers

Valves, Fittings and Tubing

Condensed Catalog

Parker

Autoclave Engineers®

The world leader in high pressure valves, fittings and tubing

Since its inception in 1945, Parker Autoclave Engineers (P-AE) has been dedicated to manufacturing high pressure valving systems which operate safely and reliably under extreme variations in temperature, pressure and environmental conditions. Today, Parker Autoclave Engineers is a world leader in providing dependable high pressure valves, fittings and tubing, and serving applications in high pressure industries.

While Parker Autoclave Engineers valves, fittings and tubing are known industry wide for their ability to operate at pressures in excess of 100,000 psi (6895 bar), a low pressure line for applications rated to 15,000 psi (1034 bar) is also available. Utilizing single ferrule compression sleeves which provide easy, leak free performance, the connection sizes come in 1/16 to 1/2 inches.

Low Pressure Valves, Fittings and Tubing

All Parker Autoclave Engineers low pressure valves incorporate a rising stem/block design while the non-rotating feature of the stem prevents galling. In addition, the valves are designed with metal to metal seating for bubble tight shut-off, long stem/seat life even in abrasive flow conditions and excellent overall corrosion resistance.

Three styles of low pressure valves are offered. The 10V, SW and MVE/MV series.

Pattern Options:
2-Way Straight
2-Way Angle
3-Way/2 on Pressure
3-Way/1 on Pressure
2-Way Angle with Replaceable Seat (not available in MVE/MV)
3-Way/2 Stem Manifold

Three different stem types are available. A vee stem is chosen when the application calls for direct on-off, metal to metal shut-off with fast opening capabilities. If an application calls for tighter flow control, Parker Autoclave Engineers offers a non-rotating regulating stem. For the most precise flow control, Parker Autoclave Engineers recommends a micro metering stem design.

A complete line of tubing and fittings, as well as special items are available, providing all components required for our low pressure line. Parker Autoclave Engineers components are offered in 316SS standard, but can be ordered in a variety of optional materials such as: Hastelloy B and C, Inconel, Monel, Nickel or Titanium.

For more information or to order a complete VFT Catalog, contact your Parker Autoclave Engineers representative or the factory direct at 814-860-5700.

Parker Autoclave Engineers has engineered an advanced single ferrule fitting system called the QSS-Quick Set System. This 1/4" through 1" O.D. heavy -walled, high flowing tubing system operates in all sizes up to 15,000 psi (1034 bar).
For more information, order a complete catalog or contact your Parker Autoclave Engineers representative.

Manual Shut-off Valves

Parker Autoclave Engineers valves are designed to operate safely and reliably at pressures to 150,000 psi (10342 bar). Several important features make this dependable service possible under widely varying conditions.

Non-rotating stem

Prevents stem/seat galling when valve is opened and closed.

Metal-to-Metal seating

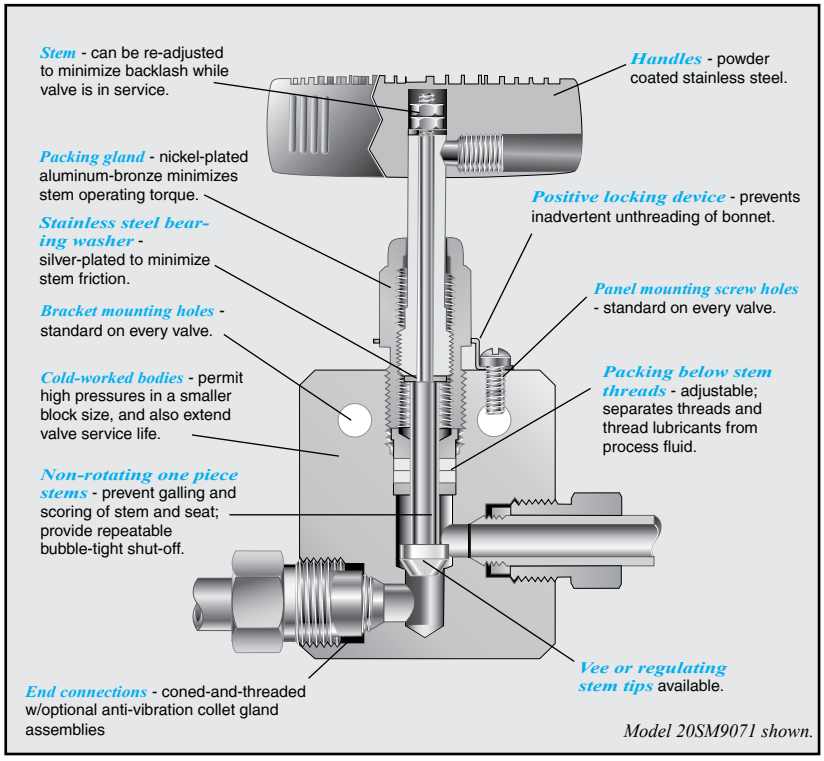
Provides bubble-tight shut-off, longer stem/seat life in abrasive flow, greater durability for repeated on/off cycles and excellent corrosion resistance.

PTFE encapsulated packing

Ensures dependable stem and body sealing. The stem sleeve and packing gland materials extend thread life and reduce the handle torque required to operate the valve.

Manual valve options

Enables you to customize Parker Autoclave Engineers valves to meet your specific application. Five different body patterns, a variety of materials and stem types, extreme temperature models, abrasive service options, panel mounting and several handle styles are among the available options.



Model 20SM9071 shown.

	O.D. Tube Size In. (mm)	Pressure Rating psi (bar)	*Rated C_v (full open)	Valve Stem Type	2-Way Straight	2-Way Angle	3-Way 2 On Pressure	3-Way 1 On Pressure	2-Way Angle Replaceable Seat	3-Way 2 Stem Manifold
Medium Pressure	1/4 (6.35)	20,000 (1380)	.31	Vee	20SM4071	20SM4072	20SM4073	20SM4074	20SM4872	20SM4075
				Reg	20SM4081	20SM4082	20SM4083	20SM4084	20SM4882	20SM4085
	3/8 (9.53)	20,000 (1380)	.75	Vee	20SM6071	20SM6072	20SM6073	20SM6074	20SM6872	20SV6075
				Reg	20SM6081	20SM6082	20SM6083	20SM6084	20SM6882	20SM6085
	9/16 (14.3)	20,000 (1380)	1.30	Vee	20SM9071	20SM9072	20SM9073	20SM9074	20SM9872	20SM9075
				Reg	20SM9081	20SM9082	20SM9083	20SM9084	20SM9882	20SM9085
	3/4 (19.1)	20,000 (1380)	2.50	Vee	20SM12071	20SM12072	20SM12073	20SM12074	20SM12872	20SM12075
				Reg	20SM12081	20SM12082	20SM12083	20SM12084	20SM12882	20SM12085
	1 (25.4)	20,000 (1380)	4.40	Vee	20SM16071	20SM16072	20SM16073	20SM16074	20SM16872	20SM16075
				Reg	20SM16081	20SM16082	20SM16083	20SM16084	20SM16882	20SM16085
	9/16 (14.30)	10,000 (690)	1.75	Vee	10SM9071	10SM9072	10SM9073	10SM9074	10SM9872	10SM9075
				Reg	10SM9081	10SM9082	10SM9083	10SM9084	10SM9882	10SM9085
	3/4 (19.10)	10,000 (690)	2.80	Vee	10SM12071	10SM12072	10SM12073	10SM12074	10SM12872	10SM12075
				Reg	10SM12081	10SM12082	10SM12083	10SM12084	10SM12882	10SM12085
	1 (25.40)	10,000 (690)	5.20	Vee	10SM16071	10SM16072	10SM16073	10SM16074	10SM16872	10SM16075
				Reg	10SM16081	10SM16082	10SM16083	10SM16084	10SM16882	10SM16085
High Pressure	1 (25.4)	30,000 (2070)	2.60	Vee	30SC16071	30SC16072	30SC16073	30SC16074	30SC16872	30SC16075
				Reg	30SC16081	30SC16082	30SC16083	30SC16084	30SC16882	30SC16085
	1/4 (6.35)	30,000 (2070)	.12	Vee	30VM4071	30VM4072	30VM4073	30VM4074	30VM4872	30VM4075
				Reg	30VM4081	30VM4082	30VM4083	30VM4084	30VM4882	30VM4085
	3/8 (9.53)	30,000 (2070)	.23	Vee	30VM6071	30VM6072	30VM6073	30VM6074	30VM6872	30VM6075
				Reg	30VM6081	30VM6082	30VM6083	30VM6084	30VM6882	30VM6085
	9/16 (14.3)	30,000 (2070)	.33	Vee	30VM9071	30VM9072	30VM9073	30VM9074	30VM9872	30VM9075
				Reg	30VM9081	30VM9082	30VM9083	30VM9084	30VM9882	30VM9085
	9/16 (14.3)	40,000 (2760)	.28	Vee	40VM9071	40VM9072	40VM9073	40VM9074	40VM9872	40VM9075
				Reg	40VM9081	40VM9082	40VM9083	40VM9084	40VM9882	40VM9085
	1/4 (6.35)	60,000 (4140)	.08	Vee	60VM4071	60VM4072	60VM4073	60VM4074	60VM4872	60VM4075
				Reg	60VM4081	60VM4082	60VM4083	60VM4084	60VM4882	60VM4085
	3/8 (9.53)	60,000 (4140)	.09	Vee	60VM6071	60VM6072	60VM6073	60VM6074	60VM6872	60VM6075
				Reg	60VM6081	60VM6082	60VM6083	60VM6084	60VM6882	60VM6085
	9/16 (14.3)	60,000 (4140)	.14	Vee	60VM9071	60VM9072	60VM9073	60VM9074	60VM9872	60VM9075
				Reg	60VM9081	60VM9082	60VM9083	60VM9084	60VM9882	60VM9085

*C_v Valves shown are for 2-way straight pattern. For 2-way angle, increase C_v Valve 50%. **Note: SM Series replaces 20SC Series**

Air Actuators (for P-AE Manual Valves)

Three sizes of air operators (medium, heavy duty or extra heavy) are offered for remote on-off operation or automatic operation of Parker Autoclave Engineers medium or high pressure valves. The actuators are available in air-to-open (normally closed) and air-to-close (normally open) designs.

Ordering Procedure *(Consult factory to insure proper selection)*

To order a valve with an air operator, select the duty rating and type of the air operator from the chart below. Add the air operator identifying suffix to the catalog number of the Parker Autoclave Engineers valve. To order a 2-way straight, 30VM vee stem, 9/16" (14.3 mm) valve with a medium duty air-to-close air operator, specify: ex: ***30VM9071-C1S*** *for a yoke style piston air actuated valve or* ***30VM9071-CM*** *for an integral style diaphragm air operated valve.*

Duty Rating	Operator	Type	Ordering Suffix
Medium	Diaphragm	Air-to-open	OM
		Air-to-close	CM
	Piston	Air-to-open	O1S
		Air-to-close	C1S
Heavy	Diaphragm	Air-to-open	OH
		Air-to-close	CH
	Piston	Air-to-open	O2S
		Air-to-close	C2S
Extra Heavy Single Stage	Piston	Air-to-open	HO1S
		Air-to-close	HC1S
Extra Heavy Two Stage	Piston	Air-to-open	HO2S
		Air-to-close	HC2S

This table is designed to allow quick selection of an appropriate air actuator based on valve style and size, maximum system operating pressure and maximum available air pressure. For example, if the system operating pressure is 25,000 psi (1723 bar) and the available air pressure is 60 psi (4.1 bar) and an air-to-open (spring fail closed) valve is required, a 30VM or 60VM valve with a heavy duty air operator can be used.

Air-to-close

Valve Series	O.D. Tube in. (mm)	Medium		Heavy		Extra Heavy Single Stage		Extra Heavy Two Stage	
		System Press. psi (bar)	Air Press. psi (bar)	System Press. psi (bar)	Air Press. psi (bar)	System Press. psi (bar)	Air Press. psi (bar)	System Press. psi (bar)	Air Press. psi (bar)
10SM	9/16 (14.3)	8,600 (593)	100 (6.9)	10,000 (690)	55 (3.8)	10,000 (690)	45 (3.10)	10,000 (690)	20 (1.4)
	3/4 (19.1)	4,800 (331)	100 (6.9)	10,000 (690)	100 (6.9)	10,000 (690)	70 (4.83)	10,000 (690)	35 (2.4)
	1 (25.4)	2,800 (193)	100 (6.9)	6,300 (434)	100 (6.9)	8,500 (586)	95 (6.55)	10,000 (690)	55 (3.79)
20SM	1/4 (6.35)	20,000 (1380)	95 (6.5)	20,000 (1380)	50 (3.5)	—	—	—	—
	3/8 (9.53)	19,000 (1310)	100 (6.9)	20,000 (1380)	55 (3.8)	—	—	—	—
	9/16 (14.3)	10,700 (734)	100 (6.9)	20,000 (1380)	85 (5.9)	20,000 (1380)	65 (4.48)	20,000 (1380)	30 (2.1)
	3/4 (19.1)	6,100 (421)	100 (6.9)	13,600 (938)	100 (6.9)	19,000 (1310)	100 (6.90)	20,000 (1380)	50 (3.4)
	1 (25.4)	3,900 (269)	100 (6.9)	8,800 (607)	100 (6.9)	12,500 (862)	100 (6.90)	20,000 (1380)	75 (5.1)
30SC	1 (25.4)	—	—	—	—	—	—	30,000 (2068)	80 (5.5)
30VM	1/4 (6.35)	30,000 (2068)	55 (3.8)	30,000 (2068)	30 (2.0)	—	—	—	—
	3/8 (9.53)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
	9/16 (14.3)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
40VM	9/16 (14.3)	40,000 (2758)	90 (6.2)	40,000 (2758)	45 (3.1)	—	—	—	—
60VM	1/4 (6.35)	60,000 (4137)	75 (5.2)	60,000 (4137)	40 (2.8)	—	—	—	—
	3/8 (9.53)	60,000 (4137)	75 (5.2)	60,000 (4137)	40 (2.8)	—	—	—	—
	9/16 (14.3)	60,000 (4137)	90 (6.2)	60,000 (4137)	45 (3.1)	—	—	—	—

Air-to-open

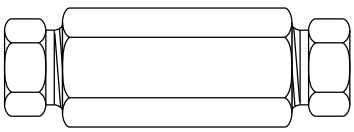
10SM	9/16 (14.3)	7,900 (545)	95 (6.6)	10,000 (690)	75 (5.1)	10,000 (690)	60 (4.13)	10,000 (690)	40 (2.8)
	3/4 (9.1)	—	—	—	—	10,000 (690)	95 (6.55)	10,000 (690)	60 (4.1)
	1 (25.4)	—	—	—	—	6,500 (448)	100 (6.90)	10,000 (690)	85 (5.9)
20SM	1/4 (6.35)	20,000 (1380)	95 (6.6)	20,000 (1380)	50 (3.4)	—	—	—	—
	3/8 (9.53)	18,250 (1258)	95 (6.6)	18,250 (1258)	50 (3.4)	—	—	—	—
	9/16 (14.3)	9,800 (676)	95 (6.6)	15,700 (1082)	75 (5.1)	20,000 (1379)	85 (5.86)	20,000 (1380)	55 (3.8)
	3/4 (19.1)	—	—	6,000 (414)	75 (5.1)	15,000 (1034)	100 (6.90)	20,000 (1380)	80 (5.5)
	1 (25.4)	—	—	4,000 (276)	75 (5.1)	10,000 (690)	100 (6.90)	20,000 (1380)	100 (6.9)
30SC	1 (25.4)	—	—	—	—	—	—	30,000 (2068)	100 (6.9)
30VM	1/4 (6.35)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
	3/8 (9.53)	30,000 (2068)	95 (6.5)	30,000 (2068)	50 (3.5)	—	—	—	—
	9/16 (14.3)	30,000 (2068)	95 (6.5)	30,000 (2068)	50 (3.5)	—	—	—	—
40VM	9/16 (14.3)	40,000 (2758)	100 (6.9)	40,000 (2758)	55 (3.8)	—	—	—	—
60VM	1/4 (6.35)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—
	3/8 (9.53)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—
	9/16 (14.3)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—

Couplings

The couplings shown here permit the joining of any combination of standard size Parker Autoclave Engineers tubing with female-to-female couplings. Other couplings available on special order. See valve fitting and tubing catalog for complete selection.

How to use the Ordering Chart:

1. *Locate "A" connection in the vertical column.*
2. *Locate the desired "B" connection across the top of the chart.*
3. *The catalog number of the required coupling is located at the intersection of the two columns.*



"A" Connection FEMALE

"B" Connection FEMALE

"A" Connection				"B" Connection									
				P-AE Medium Pressure					P-AE High Pressure				
	Tube Size in.(mm)	Conn. Type	Pressure psi*(bar)	1/4 (6.35) SF250CX	3/8 (9.53) SF375CX	9/16 (14.3) SF562CX	3/4 (19.1) SF750CX	1 (25.4) SF1000CX	1 (25.4) F1000C43	1/4 (6.35) F250C	3/8 (9.53) F375C	9/16 (14.3) F562C	9/16 (14.3) F562C40
P-AE Medium Pressure	1/4 (6.35)	SF250 CX	20,000 (1380)	20FX 4466	20F 4666	20F 4966	20F 41266	20F 41666	20F 41663	20F 4463	20F 4663	20F 4963	
	3/8 (9.53)	SF375 CX	20,000 (1380)		20FX 6666	20F 6966	20F 61266	20F 61666	20F 61663	20F 6463	20F 6663	20F 6963	
	9/16 (14.3)	SF562 CX	20,000 (1380)			20FX 9966	20F 91266	20F 91666		20F 9463	20F 9663	20F 9963	
	3/4 (19.1)	SF750 CX	20,000 (1380)				20FX 12	20F 121666		20F 12463	20F 12663	20F 12963	
	1 (25.4)	SF1000 CX	20,000 (1380)					20FX 16		20F 16463	20F 16663	20F 16963	
P-AE High Pressure	1 (25.4)	F1000 C43	43,000 (2964)						43F 16				
	1/4 (6.35)	F250 C	60,000 (4140)						43F 41633	60F 4433	60F 4633	60F 4933	
	3/8 (9.53)	F375 C	60,000 (4140)						43F 61633		60F 6633	60F 6933	
	9/16 (14.3)	F562C	60,000 (4140)						43F 91633			60F 9333	
	9/16 (14.3)	F562 C40	40,000 (2758)										40F 9933

Male/Female Adapters

Male/female adapters are designed to adapt a female connection direct to another size and/or type of connection. In selecting an adapter involving two different sized connections, the larger connection should be on the male end where it is possible to maximize the mechanical strength of the adapter. See valve fitting and tubing catalog for complete selection.

To use this chart:

1. *Locate MALE end in vertical column.*
2. *Locate desired FEMALE end of adapter across top of chart.*
3. *Catalog number of required adapter is located at intersection of columns.*

Other Adapters

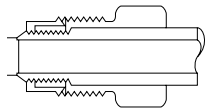
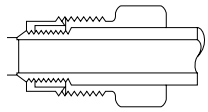
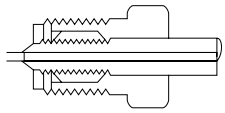
Parker Autoclave Engineers supplies many other types of adapters on special orders. These include UniVersa-Lok swaged-type connections, socketweld to O.D. tube or nominal pipe size, male or female AN connections and others.

Materials

All Parker Autoclave Engineers adapters are precisionmachined from cold-worked Type 316 stainless steel. Other materials available on special order.

Female End ▶				P-AE Medium Pressure					P-AE High Pressure				
				1/4"(6.35) SF250CX	3/8"(9.53) SF375CX	9/16"(14.3) SF562CX	3/4"(19.1) SF750CX	1"(25.4) SF1000CX	1"(25.4) F1000C43	1/4"(6.35) F250C	3/8"(9.53) F375C	9/16"(14.3) F562C	9/16"(14.3) F562C40
Male End ▼		Fits this Female Conn.	Pressure psi*(bar)	20,000 (1380)	20,000 (1380)	20,000 (1380)	20,000 (1380)	20,000 (1380)	43,000 (2964)	60,000 (4140)	60,000 (4140)	60,000 (4140)	40,000 (2758)
P-AE Medium Pressure	1/4 (6.35)	SF250CX	20,000 (1380)		20M46K6	20M49K6	20M412K6	20M416K6		20M44K3	20M46K3	20M49K3	
	3/8 (9.53)	SF375CX	20,000 (1380)	20M64K6		20M69K6	20M612K6	20M616K6		20M64K3	20M66K3	20M69K3	
	9/16 (14.3)	SF562CX	20,000 (1380)	20M94K6	20M96K6		20M912K6	20M916K6		20M94K3	20M96K3	20M99K3	
	3/4 (19.1)	SF750CX	20,000 (1380)	20M124K6	20M126K6	20M129K6		20M1216K6	20M1216K3	20M124K3	20M126K3	20M129K3	20M129K40
	1 (25.4)	SF1000CX	20,000 (1380)	20M164K6	20M166K6	20M169K6	20M1612K6	20M1616K6		20M164K3	20M166K3	20M169K3	
P-AE High Pressure	1 (25.4)	F1000C43	43,000 (2964)							43M164B3	43M166B3	43M169B3	43M169B40
	1/4 (6.35)	F250C	60,000 (4140)	20M44B6	20M46B6	20M49B6	20M412B6				60M46B3	60M49B3	
	3/8 (9.53)	F375C	60,000 (4140)	20M64B6	20M66B6	20M69B6	20M612B6	20M616B6	43M416B6	60M64B3		60M69B3	
	9/16 (14.3)	F562C	60,000 (4140)	20M94B6	20M96B6	20M99B6	20M912B6	20M916B6	43M616B6	60M94B3	60M96B3		
	9/16 (14.3)	F562C40	40,000 (2758)				20M912G6		43M916B6				

***Pressure Rating** - The pressure rating of Parker Autoclave Engineers couplings is based on the lower rated connection used.*

	Connection Sizes in. (mm)	Pressure Rating psi (bar)	Connection Styles
Medium Pressure	1/4 to 1 (6.35 to 25.4)	to 20,000 (1380)	Coned-and-threaded type for high strength and repeated make-up. Anti-vibration collet gland available. In line collar and gland to minimize block thickness. 
High Pressure	1 (25.4)	to 43,000 (2964)	Coned-and-threaded type for high strength and repeated make-up. Anti-vibration collet gland available. 
	1/4 to 9/16 (6.35 to 14.3)	to 60,000 (4140)	Coned-and-threaded type for high strength and repeated make-up. Anti-vibration collet gland available. Nested collar and gland to minimize block width. 

	O.D. Tube Size in. (mm)	Pressure Rating psi (bar)	Elbow	Tee	Cross	Straight Coupling	Union Coupling	Bulkhead Coupling
Medium Pressure	1/4 (6.35)	20,000 (1380)	CLX4400	CTX4440	CXX4444	20FX4466	20UFX4466	20BFX4466
	3/8 (9.53)	20,000 (1380)	CLX6600	CTX6660	CXX6666	20FX6666	20UFX6666	20BFX6666
	9/16 (14.3)	20,000 (1380)	CLX9900	CTX9990	CXX9999	20FX9966	20UFX9966	20BFX9966
	3/4 (19.1)	20,000 (1380)	CLX12	CTX12	CXX12	20FX12	20UFX12	20BFX12
	1 (25.4)	20,000 (1380)	CLX16	CTX16	CXX16	20FX16	20UFX16	20BFX16
High Pressure	1 (25.4)	43,000 (2964)	43CL16	43CT16	43CX16	43F16	43UF16	43BF16
	9/16 (14.3)	40,000 (2760)	40CL9900	40CT9990	40CX9999	40F9933	40UF9933	40BF9933
	1/4 (6.35)	60,000 (4140)	CL4400	CT4440	CX4444	60F4433	60UF4433	60BF4433
	3/8 (9.53)	60,000 (4140)	CL6600	CT6660	CX6666	60F6633	60UF6633	60BF6633
	9/16 (14.3)	60,000 (4140)	CL9900	CT9990	CX9999	60F9933	60UF9933	60BF9933

			Connection Components			Check Valves			Line Filters		Safety Heads
	O.D. Tube Size In. (mm)	Pressure Rating psi (bar)	Gland	Collar	Plug	O-Ring	Ball	Excess Flow	Dual Disc	Cup-Type	Safety Heads
Medium Pressure	1/4 (6.35)	20,000 (1380)	CGLX40	CCLX40	CPX40	CXO4400	CXB4400	CXK4402	-	CXF4	CSX4600*
	3/8 (9.53)	20,000 (1380)	CGLX60	CCLX60	CPX60	CXO6600	CXB6602	CXK6602	-	CXF6	CSX6600*
	9/16 (14.3)	20,000 (1380)	CGLX90	CCLX90	CPX90	CXO9900	CXB9900	CXK9902	CLFX9900	CXF9	CSX9600*
	3/4 (19.1)	20,000 (1380)	CGLX120	CCLX120	CPX120	CXO12	CXB12	CXK1202	-	CXF12	-
	1 (25.4)	20,000 (1380)	CGLX160	CCLX160	CPX160	CXO16	CXB16	CXK1602	-	CXF16	-
High Pressure	1 (25.4)	43,000 (2964)	CGLX160	CCLX160	43CP160	43CO16	43CB16	-	-	-	-
	9/16 (14.3)	40,000 (2760)	AGL90	ACL90	AP90	-	-	-	-	-	-
	1/4 (6.35)	60,000 (4140)	AGL40	ACL40	AP40	CKO4400	CB4401	CK4402	CLF4400	CF4	CS4600*
	3/8 (9.53)	60,000 (4140)	AGL60	ACL60	AP60	CKO6600	CB6601	CK6602	CLF6600	CF6	CS6600*
	9/16 (14.3)	60,000 (4140)	AGL90	ACL90	AP90	CKO9900	CB9901	CK9902	CLF9900	CF9	CS9600*

**Indicate size of rupture disc.*

Tubing

Parker Autoclave Engineers offer a complete selection of Austenetic, cold drawn stainless steel tubing designed to match the performance standards of Parker Autoclave Engineers valves and fittings. Parker Autoclave Engineers tubing is manufactured specifically for high pressure applications requiring both strength and corrosion resistance. The tubing is furnished in random lengths between 20 and 26.5 feet (6.1 and 8.0 meter).

Inspection and Testing

Parker Autoclave Engineers tubing is inspected to assure it's free of seams, laps, fissures or other flaws, as well as carburization or intergranular carbide precipitation. The outside and inside diameters of the tubing are subject to special inspection and are controlled within close tolerances to assure proper fit. Sample pieces of tube for each lot are tested to confirm mechanical properties. Hydrostatic testing is also performed on a statistical basis and is conducted at the working pressure of the tube. Parker Autoclave Engineers will perform 100% hydrostatic testing at additional cost if desired.

Catalog Number	Tube Material	Fits Connection Type	Tube Size in.(mm)		Wall Thickness nom. in. (mm)	Flow Area in.² (mm²)	Working Pressures psi (bar)				
			O.D. In. (mm)	I.D. In. (mm)			-325 to 100°F (-198 to 38°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)
MS15-092	316SS	SF250CX	1/4 (6.35)	.109 (2.77)	.070 (1.78)	.009 (5.81)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-192	304SS						20,000 (1380)	18,950 (1310)	17,200 (1190)	17,000 (1170)	16,150 (1110)
MS15-093	316SS	SF375CX	3/8 (9.53)	.203 (5.16)	.086 (2.18)	.032 (20.6)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-193	304SS						20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-085	316SS	SF562CX	9/16 (14.3)	.312 (7.92)	.125 (3.17)	.076 (49)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-187	304SS						20,000 (1380)	20,000 (1380)	19,250 (1327)	18,050 (1250)	16,800 (1160)
MS15-097	316SS	SF562CX	9/16 (14.3)	.359 (9.12)	.101 (2.56)	.101 (65.2)	15,000 (1034)	15,000 (1034)	14,400 (992)	13,650 (941)	12,670 (874)
MS15-194	304SS						15,000 (1034)	14,170 (977)	12,900 (890)	12,750 (880)	12,670 (874)
MS15-095	316SS	SF750CX	3/4 (19.1)	.438 (11.1)	.156 (3.96)	.151 (97.4)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-098	316SS			.516 (13.1)	.117 (2.97)	.209 (135)	15,000 (1034)	15,000 (1034)	14,400 (993)	13,650 (941)	12,670 (874)
MS15-096	316SS	SF1000CX	1 (25.4)	.562 (14.3)	.219 (5.56)	.248 (160)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	12,670 (874)
MS15-099	316SS			.688 (17.5)	.156 (4.02)	.371 (239)	15,000 (1034)	15,000 (1034)	14,400 (992)	13,650 (941)	12,670 (874)
MS15-081	316SS	F250C	1/4 (6.35)	.083 (2.11)	.083 (2.11)	.005 (3.22)	60,000 (4140)	60,000 (1380)	57,750 (1380)	54,250 (1380)	50,700 (1380)
MS15-182	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-087	316SS	F375C	3/8 (9.53)	.125 (3.18)	.125 (3.18)	.012 (7.74)	60,000 (4140)	60,000 (4140)	57,750 (3980)	54,250 (3740)	50,700 (3490)
MS15-183	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-090	316SS	F562C40	9/16 (14.3)	.25 (6.35)	.156 (4.02)	.048 (31)	40,000 (2760)	40,000 (2760)	38,500 (2655)	36,100 (2489)	33,800 (2330)
MS15-083	316SS	F562C	9/16 (14.3)	.187 (4.78)	.187 (4.78)	.028 (18)	60,000 (4140)	60,000 (4140)	57,750 (3980)	54,250 (3740)	50,700 (3490)
MS15-185	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-211	316SS	--	1 (25.4)	.438 (11.1)	.281 (7.14)	.151 (97.4)	43,000 (2964)	43,000 (2964)	43,000 (2964)	41,380 (2853)	36,330 (2504)

Note: For autofrettage tubing, add suffix "ESR42" to the tubing part number.

Coned-and-threaded Nipples

For rapid system make-up, Parker Autoclave Engineers supplies pre-cut, coned-and-threaded nipples in various sizes and lengths for Parker Autoclave Engineers valves and fittings.

Special lengths

In addition to the standard lengths listed in the table below, nipples are available in any custom length. Consult factory.

Materials

Catalog numbers in table refer to Type 316 stainless steel, unless specified.

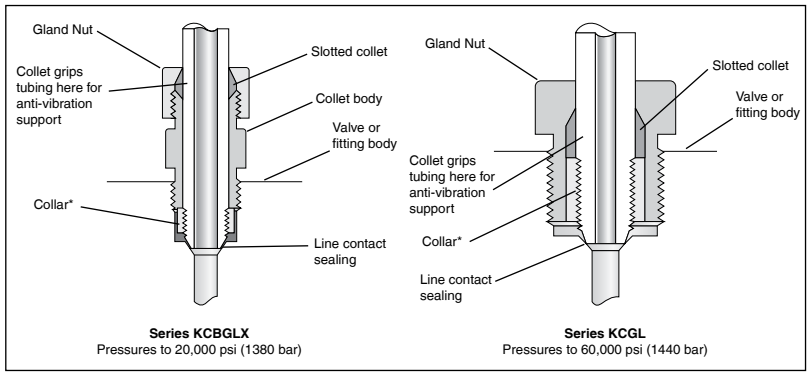
Working Fits Connection Type	Tube Size in.(mm)		Pressure at 100°F(38°C) psi(bar)	Catalog Number						
	O.D.	I.D.		2.75" Length	3" Length	4" Length	6" Length	8" Length	10" Length	12" Length
SF250CX	1/4 (6.35)	.109 (2.77)	20,000 (1380)	CNX4402	CNX4403	CNX4404	CNX4406	CNX4408	CNX44010	CNX44012
SF375CX	3/8 (9.53)	.203 (5.16)	20,000 (1380)		CNX6603	CNX6604	CNX6606	CNX6608	CNX66010	CNX66012
SF562CX	9/16 (14.3)	.312 (7.92)	20,000 (1380)			CNX9904	CNX9906	CNX9908	CNX99010	CNX99012
SF562CX	9/16 (14.3)	.359 (9.12)	15,000 (1034)			CNLX9904	CNLX9906	CNLX9908	CNLX99010	CNLX99012
SF750CX	3/4 (19.1)	.438 (11.1)	20,000 (1380)			CNX1204	CNX1206	CNX1208	CNX12010	CNX12012
SF750CX	3/4 (19.1)	.515 (13.1)	15,000 (1034)			CNLX1204	CNLX1206	CNLX1208	CNLX12010	CNLX12012
SF1000CX	1 (25.4)	.562 (14.3)	20,000 (1380)				CNX1606	CNX1608	CNX16010	CNX16012
SF1000CX	1 (25.4)	.688 (17.5)	15,000 (1034)				CNLX1606	CNLX1608	CNLX16010	CNLX16012
F250C	1/4 (6.35)	.083 (2.11)	60,000 (4140)	CN4402	CN4403	CN4404	CN4406	CN4408	CN44010	CN44012
F375C	3/8 (9.53)	.125 (3.18)	60,000 (4140)		CN6603	CN6604	CN6606	CN6608	CN66010	CN66012
F562C	9/16 (14.3)	.187 (4.78)	60,000 (4140)			CN9904	CN9906	CN9908	CN99010	CN99012
F562C40	9/16 (14.3)	.250 (6.35)	40,000 (2760)			40CN9904-316	40CN9906-316	40CN9908-316	40CN99010-316	40CN99012-316
F1000C43	1 (25.4)	.438 (11.1)	43,000 (2964)				43CN1606	43CN1608	43CN16010	43CN16012

Note: Add -316 or -304 to catalog number for material choice if not shown.

Anti Vibration Collet Gland Assemblies

Vibration and/or shock can be present in tubing systems, especially if the valve or fitting happens to be located on an unsupported line near a compressor. For this reason, Parker Autoclave Engineers coned-and-threaded connections are offered with the Parker Autoclave Engineers Anti-Vibration Collet Gland Assemblies. Completely interchangeable with standard Parker Autoclave Engineers high pressure connections, the Collet Gland Assemblies provide equally effective pressure handling capability.

O.D. Tubing Size in. (mm)	Catalog Number	
	Medium Pressure to 20,000	High Pressure to 60,000
1/4 (6.35)	KCBGLX40-316MC	KCGL40-316
3/8 (9.53)	KCBGLX60-316MC	KCGL60-316
9/16 (14.3)	KCBGLX90-316MC	KCGL90-316
3/4 (19.1)	KCBGLX120-316MC	-
1 (25.4)	KCBGLX160-316MC	†KCBGLX160-316MC



Series KCBGLX
Pressures to 20,000 psi (1380 bar)

Series KCGL
Pressures to 60,000 psi (1440 bar)

† 1" High Pressure to 43,000 psi (2964 bar)

*AE Collar not included in complete assembly.

P-AE Instrument Quality Gauges

Materials and features

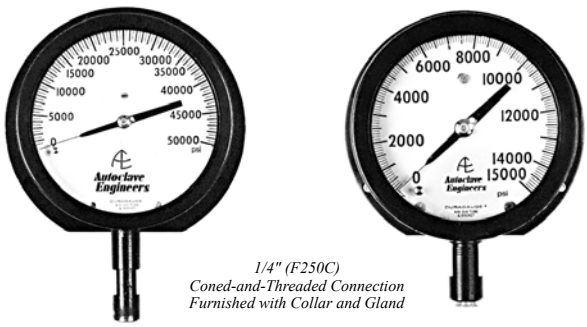
- *Accuracy within ±0.5% of full scale range*
- *Plastic dial cover/solid front aluminum alloy case*
- *Blow-out back panel for pressure relief in the event of Bourdon tube failure*
- *316 Stainless steel Bourdon tubes***
- *Precision stainless steel movement for accuracy and resistance to atmospheric corrosion*
- *Pointer zero adjustment located on front of gauge behind dial cover for convenience*

Instrument quality gauges

- *Flush panel mounting - Panel mounting kits are stocked to permit flush panel mounting of any instrument quality gauge. These will be furnished at an additional charge when specified on order -- add "PM" to order number.*
- *Optional electrical contact face - Available for all instrument quality gauges. With adjustable low and high electrical contacts, this option permits gauges to provide pressure control for automatic or remote operation, or for fail-safe set points.*

*** Bourdon Tube material for 0-80,000 psi (0-5116 bar) and 0-50,000 psi (0-3447 bar) gauge is Inconel 718. Bourdon Tube material for 0-30,000 psi (0-2068 bar) gauge is K Monel.*

Note: Gauges available with back connections. Add B to the base catalog number. Ex: P-047B-CG

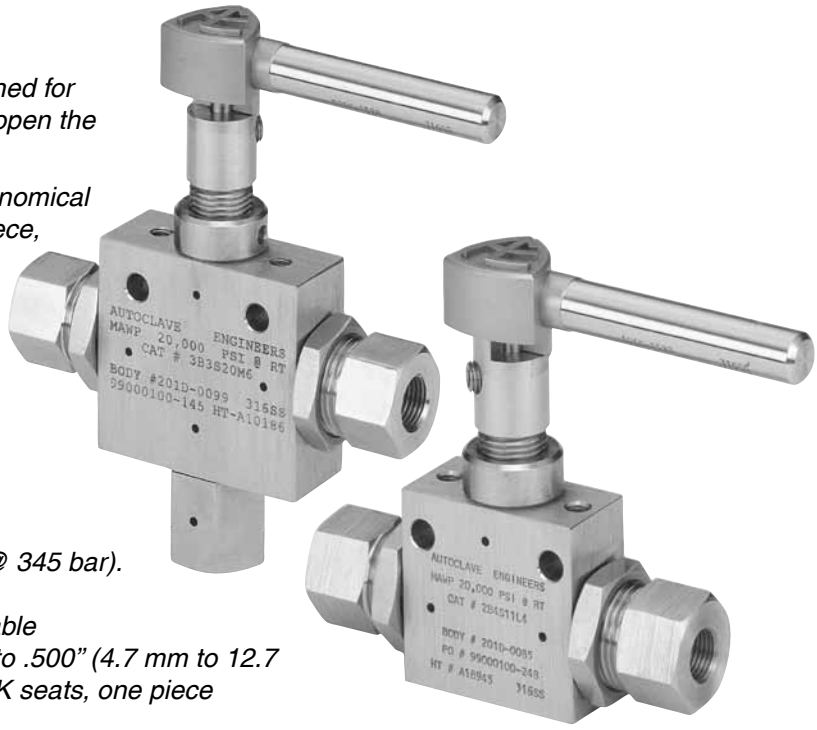


1/4" (F250C)
Coned-and-Threaded Connection
Furnished with Collar and Gland

Calibrated in psi Only			
Catalog Number	**Pressure Range (psi)**	**Minor Interval Value (psi)**	**Dial Diameter (inches)**
P-0499-CG	0-1000	10	4-1/2
P-0479-CG	0-1500	10	4-1/2
P-0480-CG	0-3000	20	4-1/2
P-0481-CG	0-5000	50	4-1/2
P-0482-CG	0-10,000	100	4-1/2
P-0483-CG	0-15,000	100	4-1/2
P-0487-CG	0-20,000	200	4-1/2
P-0488-CG**	0-30,000	200	6
P-0489-CG**	0-50,000	500	6
P-0490-CG**	0-80,000	1,000	6

Optional Electrical Contact Face	
Catalog Number	**Fits Gauge Dial Diameter (inches)**
P-0713	4-1/2
P-0714	6

Ball Valves



Parker Autoclave Engineers ball valves are designed for on-off, high flow applications. With the valve fully open the straight-through design minimizes pressure drop.

Parker Autoclave Engineers ball valves are economical and easy to maintain for long service life. One piece, trunnion mounted style stem design eliminates shear failure and reduces the effects of side loading found in two piece designs. Seat glands may be retightened for extended use. Operating torque is low to reduce wear and extend the life of parts.

The Parker Autoclave Engineers ball valve is designed to operate safely at pressures up to 20,000 psi @ 200° F (1380 bar @ 93° C) and temperatures up to 500° F @ 5,000 psi (260° C @ 345 bar).

Parker Autoclave Engineers Ball Valves are available in 2 and 3 way designs with orifice sizes of .187" to .500" (4.7 mm to 12.7 mm). Features include 316SS construction, PEEK seats, one piece trunnion stems and low friction stem seals.

Series RVP & RVS

Series RVP & RVS relief valves provide reliable venting of gases or liquids for set pressures from 1,500 psi (103 bar) to 60,000 psi (4140 bar). Standard temperature range on RVP models is -423° F to 400° F (-253° C to 204° C). High temperature option to 750° F (400° C) also available. Temperature range on RVS model is 32° F to 400° F (0° C to 204° C). (Note: Seat material is Arlon).

These precision valves are designed for pressure gas systems, cryogenic systems, petrochemical applications and other special systems. They are capable of handling air, gases, steam, vapor and liquids. They are not recommended for steam boiler applications and are not ASME code stampable.

Relief valves are designed to open proportionally to increasing back pressure and, therefore, are not recommended for applications requiring immediate full valve flow at set pressure (such as decompositions, polymerizations, etc.). Full flow of relief valve is defined at 10% over set pressure.

	Connection Size & Type (inches)			Pressure Rating PSIG @ 100°F (bar @ 38°C)		
Catalog Number	Inlet	Outlet FNPT	Orifice in. (mm)	Min Set	Max Set	Max Back
5RVP9072	SF562CX	3/4 (19.1)	.312 (7.92)	3,000 (207)	5,000 (345)	500 (34.5)
10RVP9072	SF562CX	3/4 (19.1)	.250 (6.35)	5,000 (345)	10,000 (690)	500 (34.5)
15RVP9072	SF562CX	3/4 (19.1)	.188 (4.78)	10,000 (689)	15,000 (1034)	500 (34.5)
20RVP9072	SF562CX	3/4 (19.1)	.156 (4.02)	15,000 (1034)	20,000 (1379)	500 (34.5)
30RVP6072	F375C	3/4 (19.1)	.125 (3.18)	20,000 (1379)	30,000 (2068)	500 (34.5)
45RVP9072	F562C	3/4 (19.1)	.093 (2.36)	25,000 (1724)	45,000 (3103)	500 (34.5)
60RVP6072	F375C	3/4 (19.1)	.078 (1.98)	30,000 (2060)	60,000 (4137)	500 (34.5)
Soft Seat						
5RVS9072	SF562CX	3/4 (19.1)	.312 (7.92)	1,500 (103)	5,000 (345)	500 (34.5)
10RVS9072	SF562CX	3/4 (19.1)	.250 (6.35)	5,000 (345)	10,000 (690)	500 (34.5)
20RVS9072	SF562CX	3/4 (19.1)	.156 (4.02)	10,000 (690)	20,000 (1379)	500 (34.5)

Manifold Block

Specialty pressure manifolds minimize space requirements and reduce installation time necessary to plumb a pressure system. In addition, by reducing the number of components used in a system, manifolds reduce the number of potential leak joints.

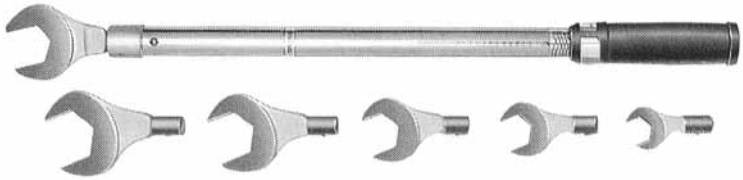
Parker Autoclave Engineers will design and build pressure manifolds to meet specific installation, layout and pressure requirements. These manifolds are capable of withstanding pressures from vacuum to 60,000 psi (4137 bar), and are available in a variety of materials and sizes. Among the pressure connections that can be incorporated are Parker Autoclave Engineers' low, medium and high pressure, NPT, SAE, BSP and others. Transitions in system line sizes and tubing pressure series can be accomplished through a specialty manifold. These manifolds are appropriate wherever pressure tubing systems are utilized.

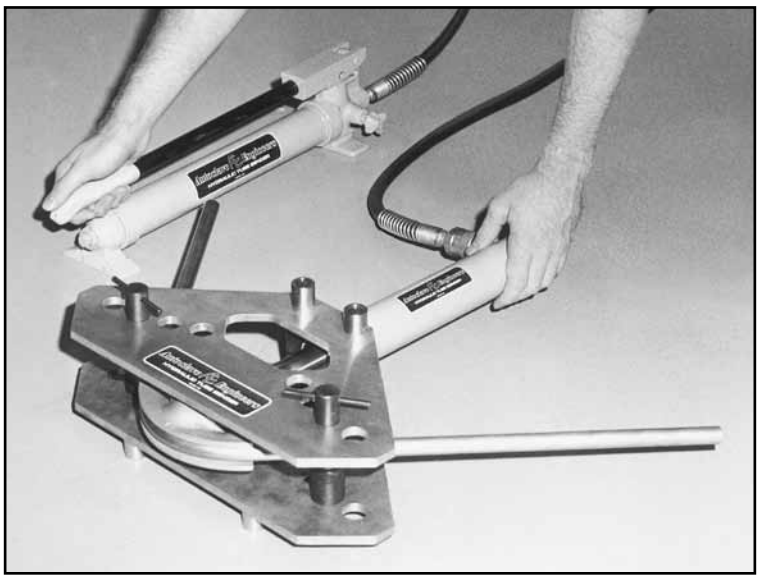
P-AE Micrometer Adjustable Torque Wrench

P-1680 20 to 150 ft. lbs. (27 to 203 Nm)
91020 75 to 250 ft. lbs. (102 to 339 Nm)

Accurate tightening for all Parker Autoclave Engineers valve packing glands and tube nuts is essential. The wrench can be adjusted to the ranges shown and is used with interchangeable wrench adapters for hex sizes from 1/2" through 1-7/8". Part numbers for wrench adapters are listed on chart.

Packing Gland or Tube Nut Hex Size in. (mm)	1/2 (12.7)	9/16 (14.3)	5/8 (15.9)	3/4 (19.05)	13/16 (20.6)	7/8 (22.2)	15/16 (23.8)	1 (25.4)	1-1/16 (27)	1-3/16 (30.2)	1-3/8 (34.9)	1-1/2 (38.1)	1-7/8 (47.6)
Wrench Adapter Number	P-1681	P-1682	P-1683	P-9813	P-1685	P-1686	P-1687	P-9901	P-1688	P-1689	P-1690	P-6040	P-10076





Hydraulic Tube Bender

For single pass bending of high pressure tubing. The Parker Autoclave Engineers hydraulic tube bender is designed to bend heavy wall tubing quickly, accurately and reliably with only one setup. The tube bender is complete with pump, cylinder, frame and bending shoes which are self-contained in a portable, lockable case. (Order number: HTB)

Air operated hydraulic pump option available in place of hand pump. (Order Number: HTB-A)

Coning and Threading Machine

Ordering Procedure: Model # AEGCTM-2

Separate heads for coning and threading are powered by a single motor and drive system. Available models cone and thread Parker Autoclave Engineers medium and high pressure tubing.

Approximate dimensions: 56" high, 28" wide and 20" deep (1.4 m x .7 m x .5 m). Shipping weight is 350 pounds (159 kg). Tooling ordered separately. Consult factory.

Features

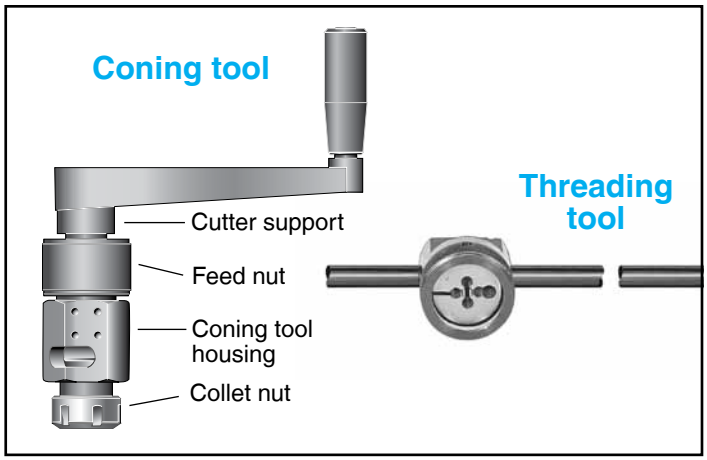
- *One-half hp motor, 115 VAC 60 Hz (220 VAC 50 Hz) volt capacitor start.*
- *No reversing necessary on threading operation; pop-open die prevents thread damage.*
- *Complete tooling is available; specify tooling sizes required.*
- *Coning head has feed wheel for easy, precision feeding.*
- *Complete with oil pump and reservoir.*
- *Unit mounted on stand complete with locking casters for ease of mobility and stability.*
- *Available with optional reservoir heater*
- *CE mark standard on 220 VAC 50 Hz models*

Manual Coning & Threading Tools

Parker Autoclave Engineers manufactures a manual coning tool for optimum coning performance with tubing sizes up to 9/16" (14.3 mm) O.D. This is a precision quality manual tool to permit on-site end preparation for AE medium and high pressure tubing installations. Interchangeable collets for each size tubing provide proper centering of tubing. The cutting feed arrangement permits the operator to control the depth of cut to assure against work hardening effects. Interchangeable tool steel cutting blades are used in pairs to assure more accurate and faster coning and are designed to square-off and finish the tube as the cone is completed. There is a provision for applying metal cutting lubricants to the cutting zone.

The threading die holder is designed to hold the appropriate die for any of the standard Parker Autoclave Engineers tubing sizes through 9/16" (14.3 mm) O.D. Interchangeable guide bushings properly guide the tool for accurate thread cutting.

Note: Complete tool kits are available. Consult factory



	Tube Size		Coning Tools and Components Catalog Number			Threading Tools and Components Catalog Number				
	O.D. in.(mm)	I.D. in.(mm)	Tool with Collet & Blades	Collet	Coning Blades (set of 2)	Tool with Die & Bushing	Tool Only	Threading Die		Guide Bushing
								Order No.	Size-type*	
PAE Medium Pressure	1/4 (6.35)	.109 (2.77)	MCTM4	90248	101F-1577	402A	402	P-0214	1/4-28	1010-0343
	3/8 (9.53)	.203 (5.16)	MCTM6	90250	101F-1601	402C	402	P-0215	3/8-24	1010-0344
	9/16 (14.3)	.312 (7.92)	MCTM920	90251	1010-5218	402E	402	P-0216	9/16-18	1010-0345
	9/16 (14.3)	.359 (9.12)	MCTM910	90251	101A-1897	402E	402	P-0216	9/16-18	1010-0345
PAE High Pressure	1/4 (6.35)	.083 (2.11)	MCTH4	90248	101F-3939	402A	402	P-0214	1/4-28	1010-0343
	3/8 (9.53)	.125 (3.18)	MCTH6	90250	101F-1578	402C	402	P-0215	3/8-24	1010-0344
	9/16 (14.3)	.188 (4.78)	MCTH960	90251	1010-0883	402E	402	P-0216	9/16-18	1010-0345
	9/16 (14.3)	.250 (6.35)	MCTH940	90251	101C-7214	402E	402	P-0216	9/16-18	1010-0345

Cutting Oil: P-8784

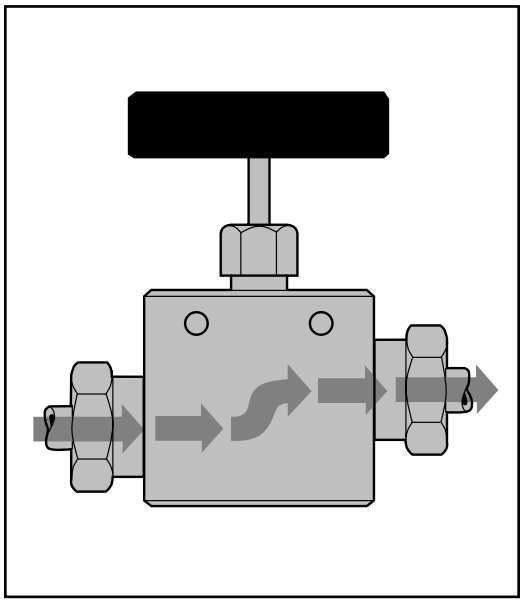
•All threads for PAE medium pressure and high pressure tubing are LH national fine (class 2).

Note: Manual coning and threading tools for 3/4" (19.1 mm) and 1" (25.4 mm) O.D. medium pressure tubing are not available. Model AEGCTM-2 Power Coning-and-Threading Machine is recommended for this tubing. A minimum of 3" (76 mm) straight length is required to perform coning and threading operation for manual coning tool.

Flow Calculations

Coefficient of flow (C_V) for a valve is the volume of water in U.S. gallons per minute at room temperature...which will flow through the valve with the stem fully open...with a pressure drop of 1 psi across the valve. C_V is the valve sizing factor that permits selection of the appropriate valve to meet the flow requirements of a given fluid system.

The C_V values shown on the valve ordering pages represent the full-open C_V for that valve. In determining estimated capacity, this C_V value should be used in the formulas which follow.



Flow Formulas

Liquids

- ❑ Flow, U.S. gal./min. $V = \frac{C_V \sqrt{P_1 - P_2}}{\sqrt{S_{GF}}}$
- ❑ Flow, lb./hr. $W = 500\, C_V \sqrt{(P_1 - P_2)/S_{GF}}$

Gases

- ❑ Flow, SCFH $Q = \frac{42.2\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{\sqrt{S_{GF}}}$ **
- ❑ Flow, SCFH (temperature corrected) $Q = \frac{963\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{\sqrt{S_{GF}\, T_F}}$ *
- ❑ Flow, lb./hr. $W = 3.22\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)/S_G}$ *

Saturated Steam

- ❑ Flow, lb./hr. $W = 2.1\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}$ *

Super Heated Steam

- ❑ Flow, lb./hr. $W = \frac{2.1\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{(1 + 0.0007\, T_S)}$ *

Specific gravity (S_G) typical gases

Gas	S_G @ RT Relative to Air
Acetylene	*0.897*
Air	*1.000*
Ammonia	*0.587*
Argon	*1.377*
Butane	*2.070*
Carbon dioxide	*1.516*
Ethylene	*0.967*
Helium	*0.138*
Hydrogen	*0.0695*
Methane	*0.553*
Nitrogen	*0.966*
Oxygen	*1.103*
Propane	*1.562*
Sulpher dioxide	*2.208*

Specific gravity (S_{GF}) typical gases

Gas	S_{GF} @ RT Referred to Water
Acetone	*0.792*
Alcohol	*0.792*
Benzine	*0.902*
Gasoline	*0.751*
Gasoline, nat.	*0.680*
Kerosene	*0.815*
Pentane	*0.624*
Water	*1.000*

Formula Nomenclature

- **V** = Flow, U.S. gallons per minute (GPM)
- **Q** = Flow, standard cu. ft. per hr. (SCFH)
- **W** = Flow, pounds per hour (lb./hr.)
- P_1 = Inlet pressure, psia (14.7 + psig)
- P_2 = Outlet pressure, psia (14.7 + psig)
- S_{GF} = Liquid specific gravity (water = 1.0)
- S_G = Gas specific gravity (air = 1.0)
- T_F = Flowing temp., °R absolute (460 + °F)
- T_S = Superheat in °F
- C_V = Valve coefficient of flow, full open

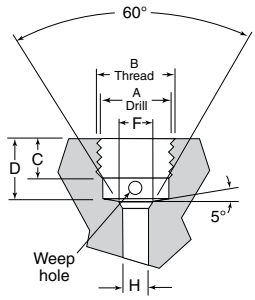
*Effect of flowing temperatures on gas flow are minimal for temperatures between 30°F and 150°F. Correction should be included if temperatures are higher or lower.

**Where outlet pressure P_2 is less than $^1/_2$ inlet pressure P_1, the term: $\sqrt{(P_1 - P_2)\ (P_1 + P_2)}$: becomes 0.87 P_1.

Note: Maximum C_V values in this catalog have been determined in accordance with the Fluid Controls Institute report FCI 58-2. "Recommended Voluntary Standards for Measurement Procedure for Determining Control Valve Flow Capacity," including procedure, design of the test stand and evaluation of the data.

P-AE Medium Pressure SFCX

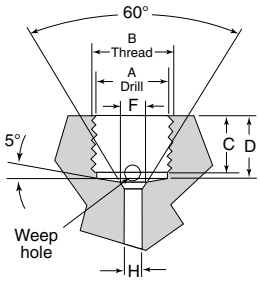
Tube O.D. in. (mm)	Connection Type	Dimensions inches (mm)					
		A	B	C	D	F	H
1/4 (6.35)	SF250CX20	25/64	7/16 -20	.28 (7.11)	.50 (12.7)	.19 (4.83)	.109 (2.77)
3/8 (9.53)	SF375CX20	33/64	9/16 -18	.38 (9.65)	.62 (15.7)	.31 (7.87)	.203 (5.16)
9/16 (14.3)	SF562CX20	3/4	13/16 -16	.44 (11.2)	.75 (19.1)	.50 (12.7)	.359 (9.12)
3/4 (19.1)	SF750CX20	61/64	3/4 -14$_z$	.50 (12.7)	.94 (23.9)	.62 (15.7)	.516 (13.1)
1 (25.4)	SF1000CX20	1-19/64	1-3/8 -12	.81 (20.6)	1.31 (33.3)	.88 (22.4)	.688 (17.5)



Z = NPS Male Tap

P-AE High Pressure FC

Tube O.D. in. (mm)	Connection Type	Dimensions inches (mm)					
		A	B	C	D	F	H
1/4 (6.35)	F250C	33/64	9/16 -18	.38 (9.65)	.44 (11.2)	.17 (4.32)	.094 (2.39)
3/8 (9.53)	F375C	11/16	3/4 -16	.53 (13.5)	.62 (15.7)	.26 (6.60)	.125 (3.18)
9/16 (14.3)	F562C	1-3/64	1-1/8 -12	.62 (15.7)	.75 (19.1)	.38 (9.65)	.188 (4.78)
9/16 (14.3)	F562C40	1-3/64	1-1/8 -12	.62 (15.7)	.75 (19.1)	.38 (9.65)	.250 (6.35)
1 (25.4)	F1000C43	1-19/64	1-3/8 -12	.81 (20.6)	1.31 (33.3)	.88 (22.4)	.438 (11.1)



Note: All dimensions are shown for reference only and should not be considered as actual machining dimensions.
*For port Diameter please see orifice sizes for specific valves and fittings.
All threads are manufactured to a class 2A or 2B fit.

02-0015BE January2013

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ISO-9001 Certified

Autoclave Engineers

Vannes, Raccords et Tubes

Catalogue Condensé

Autoclave Engineers

Composants pour fluides
Division de Snap-tite, Inc.

Leader mondial des raccords, vannes et tubes haute pression

Depuis sa création en 1945, Autoclave Engineers s'est consacré à la fabrication de robinetterie haute pression totalement fiable, pour un fonctionnement en toute sécurité, malgré des variations extrêmes de température et de pression et dans des conditions environnementales parfois difficiles. Aujourd'hui, Autoclave Engineers est le leader mondial de la fourniture des vannes, raccords et tubes haute pression, et du service aux industries utilisant les hautes pressions.
Alors que les vannes, raccords et tubes Autoclave sont largement réputés pour leur aptitude à travailler jusqu'à des pressions pouvant excéder 6895 bars (100000 psi), il existe aussi une ligne de produits basse pression pour les applications allant jusqu'à 750 bar (11500 psi). Utilisant une simple bague sertie, qui permet une mise en oeuvre rapide et parfaitement étanche; ce raccordement est disponible de 1/16" à 1/2".

Vannes, raccords et tubes basse pression
Toutes les vannes basse pression Autoclave sont des vannes de type bloc/pointeau. La conception du pointeau dit "non tournant" évite le grippage et d'éventuelles rayures.
De plus le contact métal/métal entre siège et pointeau garantit une étanchéité aux bulles, ainsi qu'une longévité accrue en cycle marche/arrêt du pointeau et de son siège même dans un flux abrasif et une excellente résistance à la corrosion de l'ensemble.

Trois styles de vannes basse pression sont disponibles: les séries 10V, SW et MVE/MV.

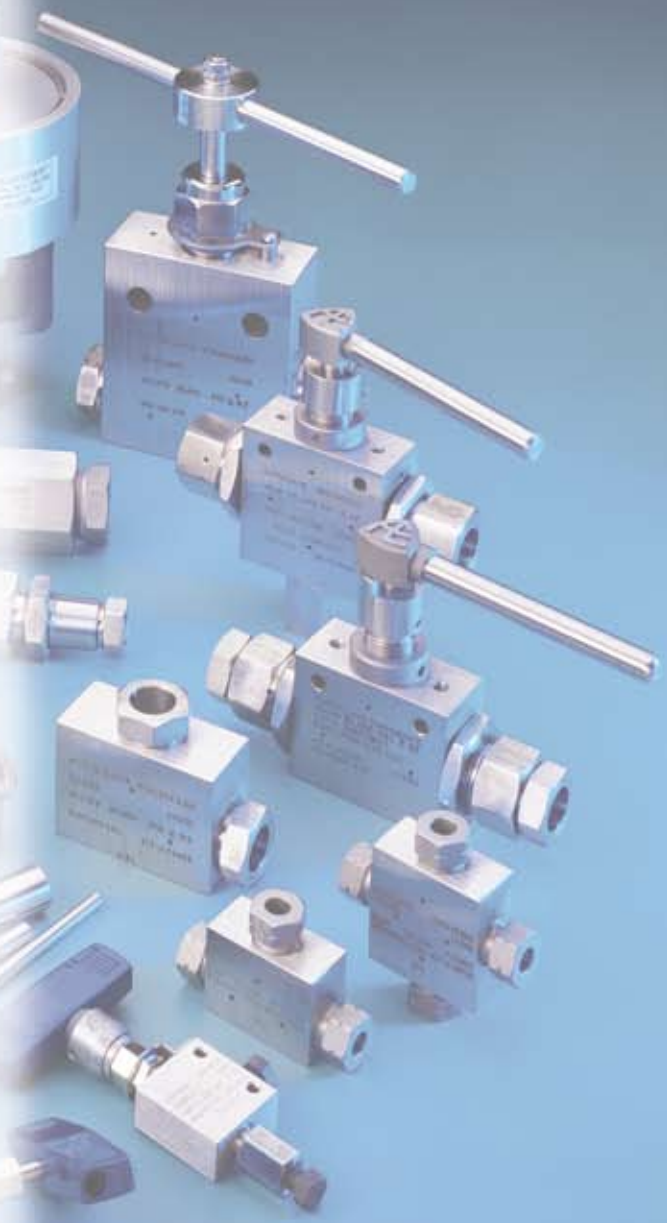
Types de circuits proposés :
2-Voies droites
2-Voies d'angle
3-Voies/ 2 sous pression
3-Voies/ 1 sous pression
2-Voies d'angle siège remplaçable (non disponible en MVE/MV)
3-Voies/ 2 pointeaux

Trois types de pointeaux sont disponibles. Un pointeau en V est proposé quand l'application demande une simple ouverture/ fermeture, étanchéité métal/métal, avec possibilité d'ouverture rapide. Si l'application nécessite un meilleur contrôle du débit, AE propose un pointeau de régulation non tournant en 2 parties. Pour les régulations de débit les plus précises, Autoclave recommande un pointeau de régulation micrométrique.

Une gamme complète de tubes et raccords, ainsi que des produits spéciaux sont disponibles, afin de pouvoir fournir tous les composants nécessaires pour notre ligne basse pression. Les composants Autoclave sont proposés de façon standard en Inox 316, mais peuvent être commandés en option en différents matériaux tels que: Hastelloy B et C, Inconel, Monel, Nickel ou Titane.

Pour plus d'information ou pour commander un catalogue VFT complet, contactez votre représentant Autoclave ou directement notre site www.autoclaveengineers.com.

Autoclave Engineers a développé un système de connexion à bague sertie unique appelée QSS-Quick Set System. Ce système pour tube de 1/4" à 1/3", pour débit important permet de travailler jusqu'à 1034 bars (15,000 psi) dans toutes les tailles. Pour plus d'informations, demander un catalogue VFT complet ou contacter le représentant Autoclave Engineers.



Vannes à fermeture manuelle

Les vannes Autoclave sont conçues et fabriquées pour fonctionner à des pressions allant jusqu'à 10342 bar (150,000 psi). Leurs caractéristiques spécifiques assurent un fonctionnement sûr et fiable sous des contraintes très variées.

Pointeau non tournant

Évite la détérioration par grippage du pointeau/siège, à l'ouverture et la fermeture de la vanne.

Etanchéïté métal/métal

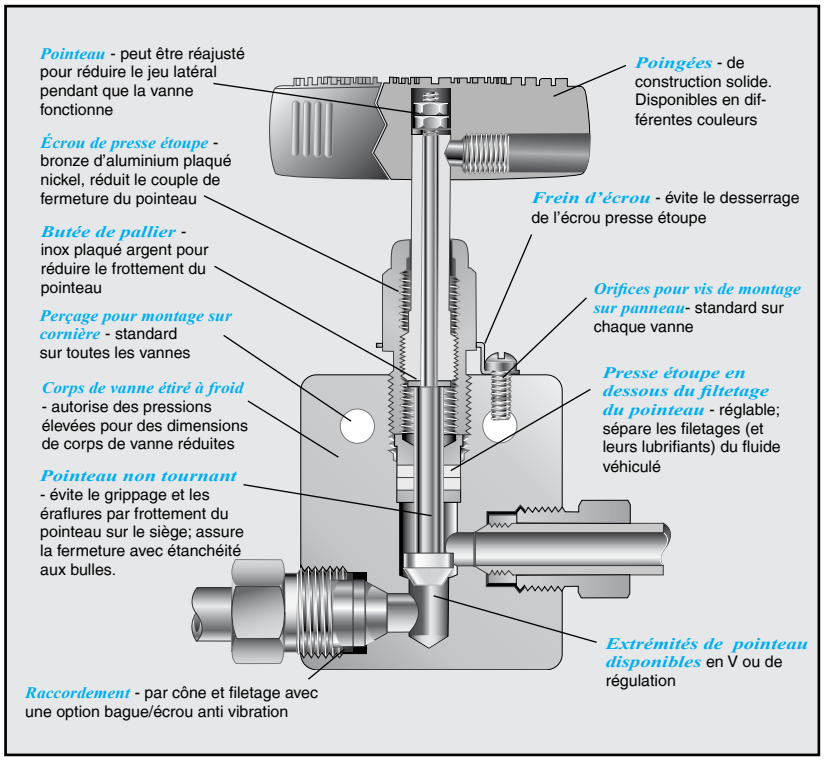
Assure une fermeture étanche aux bulles, une durée de vie pointeau/siège plus longue même dans un flux abrasif, une longévité accrue en cycle marche/arrêt et une excellente résistance à la corrosion.

Presse-étoupe PTFE encastré

Accroît la fiabilité de l'étanchéïté entre pointeau et corps de vanne. Les matériaux du fourreau du pointeau et de l'écrou du presse étoupe augmentent la durée de vie du filetage et réduisent le couple nécessaire pour actionner la vanne.

Options des vannes manuelles

Permet de proposer des vannes « sur mesures » pour des usages spécifiques: six types de corps de vannes différents, une variété de matériaux et de pointeaux, des modèles pour températures extrêmes, des options pour fonctionner en milieu abrasif, des montages sur panneau et plusieurs type de poignées sont également disponibles en option.



Modèle présenté: 20SC9071

	Ø ext du tube (pouces)	Pressions de service psi (bar)	*Valeur C_v (ouverture totale)	Type de pointeau	2-Voies droites	2-Voies d'angle	3-Voies 2 sous pression	3-Voies 1 sous pression	2-Voies d'angle siège remplaçable	3-Voiex 2 pointeaux
Moyenne Pression	1/4 (6.35)	20,000 (1380)	.31	Vee	20SC4071	20SC4072	20SC4073	20SC4074	20SC4872	20SC4075
				Reg	20SC4081	20SC4082	20SC4083	20SC4084	20SC4882	20SC4085
	3/8 (9.53)	20,000 (1380)	.75	Vee	20SC6071	20SC6072	20SC6073	20SC6074	20SC6872	20SC6075
				Reg	20SC6081	20SC6082	20SC6083	20SC6084	20SC6882	20SC6085
	9/16 (14.3)	20,000 (1380)	1.75	Vee	20SC9071	20SC9072	20SC9073	20SC9074	20SC9872	20SC9075
				Reg	20SC9081	20SC9082	20SC9083	20SC9084	20SC9882	20SC9085
	3/4 (19.1)	20,000 (1380)	2.80	Vee	20SC12071	20SC12072	20SC12073	20SC12074	20SC12872	20SC12075
				Reg	20SC12081	20SC12082	20SC12083	20SC12084	20SC12882	20SC12085
	1 (25.4)	20,000 (1380)	5.20	Vee	20SC16071	20SC16072	20SC16073	20SC16074	20SC16872	20SC16075
				Reg	20SC16081	20SC16082	20SC16083	20SC16084	20SC16882	20SC16085
Haute Pression	1 (25.4)	30,000 (2070)	2.60	Vee	30SC16071	30SC16072	30SC16073	30SC16074	30SC16872	30SC16075
				Reg	30SC16081	30SC16082	30SC16083	30SC16084	30SC16882	30SC16085
	1/4 (6.35)	30,000 (2070)	.12	Vee	30VM4071	30VM4072	30VM4073	30VM4074	30VM4872	30VM4075
				Reg	30VM4081	30VM4082	30VM4083	30VM4084	30VM4882	30VM4085
	3/8 (9.53)	30,000 (2070)	.23	Vee	30VM6071	30VM6072	30VM6073	30VM6074	30VM6872	30VM6075
				Reg	30VM6081	30VM6082	30VM6083	30VM6084	30VM6882	30VM6085
	9/16 (14.3)	30,000 (2070)	.33	Vee	30VM9071	30VM9072	30VM9073	30VM9074	30VM9872	30VM9075
				Reg	30VM9081	30VM9082	30VM9083	30VM9084	30VM9882	30VM9085
	9/16 (14.3)	40,000 (2760)	.28	Vee	40VM9071	40VM9072	40VM9073	40VM9074	40VM9872	40VM9075
				Reg	40VM9081	40VM9082	40VM9083	40VM9084	40VM9882	40VM9085
	1/4 (6.35)	60,000 (4140)	.08	Vee	60VM4071	60VM4072	60VM4073	60VM4074	60VM4872	60VM4075
				Reg	60VM4081	60VM4082	60VM4083	60VM4084	60VM4882	60VM4085
	3/8 (9.53)	60,000 (4140)	.09	Vee	60VM6071	60VM6072	60VM6073	60VM6074	60VM6872	60VM6075
				Reg	60VM6081	60VM6082	60VM6083	60VM6084	60VM6882	60VM6085
	9/16 (14.3)	60,000 (4140)	.14	Vee	60VM9071	60VM9072	60VM9073	60VM9074	60VM9872	60VM9075
				Reg	60VM9081	60VM9082	60VM9083	60VM9084	60VM9882	60VM9085

**les C_v indiqués le sont pour les modèles 2-voies droites. Pour 2-voies d'angle, augmenter le C_v de 50%.*

Opérateurs Pneumatiques (pour Vannes Manuelles AE)

Trois tailles d'opérateurs pneumatiques (service moyen, fort ou extra fort) sont proposées pour la commande d'ouverture-fermeture automatique à distance des vannes AE de moyenne et haute pression. Les opérateurs pneumatiques sont disponibles en deux configurations: à ouverture par pression d'air (vanne normalement fermée) ou à fermeture par pression d'air (vanne normalement ouverte.)

Procédure de commande (consulter l'usine pour une sélection correcte)

Pour commander une vanne avec un opérateur pneumatique, choisir la classe de service et le type de configuration d'aprés le tableau ci-dessous. Ajoutez le suffixe caractérisant l'opérateur pneumatique à la référence catalogue de la vanne AE. Par exemple pour commander une vanne 2-voies droites, 30VM pointeau en V, 9/16" (14.3mm) avec un opérateur pneumatique de type moyen à fermeture sous pression d'air (normalement ouvert), préciser la référence ***30VM9071-C1S*** *pour le modéle à carcan à piston ou bien* ***30VM9071-CM*** *pour le modèle intégral à membrane.*

Classe de Service	Opérateur	Type	suffixe de la référence
Moyen	Membrane	Normalement fermé	OM
		Normalement ouvert	CM
	Piston	Normalement fermé	O1S
		Normalement ouvert	C1S
Fort	Membrane	Normalement fermé	OH
		Normalement ouvert	CH
	Piston	Normalement fermé	O2S
		Normalement ouvert	C2S
Extra Fort Piston Simple	Piston	Normalement fermé	HO2S
		Normalement ouvert	HC2S
Extra Fort Piston Double	Piston	Normalement fermé	HO2S
		Normalement ouvert	HC2S

Ce tableau est destiné à permettre d'effectuer la selection rapide d'un opérateur pneumatique à partir de la taille et du type de la vanne à équiper, de la pression de service maximum du système et de la pression d'air maximum disponible. Par exemple, si la pression de travail du système est 1723 bar (25000 psi), la pression d'air disponible est de 4,1 bar (60psi) et une vanne normalement fermée est nécessaire, une vanne 30VM ou 60VM avec un opérateur pneumatique de classe "fort" peut être utilisée.

Normalement ouvert

Type de Vanne	Ø ext. du tube pouces (mm)	Moyen		Fort		Extra Fort Piston Simple		Extra Fort Piston Double	
		Pression du systéme psi (bar)	Pression d'air psi (bar)	Pression du systéme psi (bar)	Pression d'air psi (bar)	Pression du systéme psi (bar)	Pression d'air psi (bar)	Pression du systéme psi (bar)	Pression d'air psi (bar)
10SM	9/16 (14.3)	8,600 (593)	100 (6.9)	10,000 (690)	55 (3.8)	10,000 (690)	45 (3.10)	10,000 (690)	20 (1.4)
	3/4 (19.1)	4,800 (331)	100 (6.9)	10,000 (690)	100 (6.9)	10,000 (690)	70 (4.83)	10,000 (690)	35 (2.4)
	1 (25.4)	2,800 (193)	100 (6.9)	6,300 (4346)	100 (6.9)	8,500 (586)	95 (6.55)	10,000 (690)	55 (3.79)
20SM	1/4 (6.35)	20,000 (1380)	95 (6.5)	20,000 (1380)	50 (3.5)	—	—	—	—
	3/8 (9.53)	19,000 (1310)	100 (6.9)	20,000 (1380)	55 (3.8)	—	—	—	—
	9/16 (14.3)	10,700 (734)	100 (6.9)	20,000 (1296)	85 (5.9)	20,000 (1380)	65 (4.48)	20,000 (1380)	30 (2.1)
	3/4 (19.1)	6,100 (421)	95 (6.5)	13,600 (938)	100 (6.9)	19,000 (1310)	100 (6.90)	20,000 (1380)	50 (3.4)
	1 (25.4)	3,900 (269)	100 (6.9)	8,800 (607)	100 (6.9)	19,000 (1310)	95 (6.55)	20,000 (1380)	75 (5.1)
30SC	1 (25.4)	—	—	—	—	—	—	30,000 (2068)	80 (5.5)
30VM	1/4 (6.35)	30,000 (2068)	55 (3.8)	30,000 (2068)	30 (2.0)	—	—	—	—
	3/8 (9.53)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
	9/16 (14.3)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
40VM	9/16 (14.3)	—	—	40,000 (2758)	45 (3.1)	—	—	—	—
60VM	1/4 (6.35)	60,000 (4137)	75 (5.2)	60,000 (4137)	40 (2.8)	—	—	—	—
	3/8 (9.53)	60,000 (4137)	75 (5.2)	60,000 (4137)	40 (2.8)	—	—	—	—
	9/16 (14.3)	60,000 (4137)	90 (6.2)	60,000 (4137)	45 (3.1)	—	—	—	—

Normalement fermé

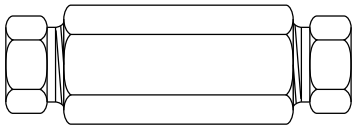
10SM	9/16 (14.3)	7,900 (1380)	95 (6.9)	10,000 (1380)	75 (5.1)	10,000 (690)	60 (4.13)	10,000 (690)	40 (2.8)
	3/4 (9.1)	—	—	—	—	10,000 (690)	95 (6.55)	10,000 (690)	60 (4.1)
	1 (25.4)	—	—	—	—	6,500 (448)	100 (6.90)	10,000 (690)	85 (5.9)
20SM	1/4 (6.35)	20,000 (1380)	95 (6.6)	20,000 (1380)	50 (3.4)	—	—	—	—
	3/8 (9.53)	18,250 (1258)	95 (6.6)	18,250 (1258)	50 (3.4)	—	—	—	—
	9/16 (14.3)	9,800 (676)	95 (6.6)	15,700 (948)	75 (5.1)	20,000 (1380)	85 (5.86)	20,000 (1380)	55 (3.8)
	3/4 (19.1)	—	—	6,000 (414)	75 (5.1)	15,000 (1034)	100 (6.90)	20,000 (1380)	80 (5.5)
	1 (25.4)	—	—	4,000 (276)	75 (5.1)	10,000 (690)	100 (6.90)	20,000 (1380)	100 (6.9)
30SC	1 (25.4)	—	—	—	—	—	—	30,000 (2068)	100 (6.9)
30VM	1/4 (6.35)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
	3/8 (9.53)	30,000 (2068)	95 (6.5)	30,000 (2068)	50 (3.5)	—	—	—	—
	9/16 (14.3)	30,000 (2068)	95 (6.5)	30,000 (2068)	50 (3.5)	—	—	—	—
40VM	9/16 (14.3)	—	—	40,000 (2758)	55 (3.8)	—	—	—	—
60VM	1/4 (6.35)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—
	3/8 (9.53)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—
	9/16 (14.3)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—

Raccords Union

Les raccords "union" présentés ici permettent de raccorder toutes les combinaisons de tube Autoclave de taille standard par l'intermédiaire de raccordements femelle-femelle. D'autre raccords sont disponibles sur commande spéciale.

Comment utiliser le tableau:

1. *Localiser la connexion "A" dans la colonne verticale.*
2. *Localiser la connexion "B" sur la partie haute du tableau.*
3. *La référence du raccord nécessaire est située à l'intersection des 2 colonnes.*



connexion femelle "A" — connexion femelle "B"

Connexion "A"				Connexion "B"								
				AE Moyenne Pression					AE Haute Pression			
	Ø ext. du tube pouces (mm)	Type de connexion	Pression psi* (bar)	1/4 (6.35) SF250CX	3/8 (9.53) SF375CX	9/16 (14.3) SF562CX	3/4 (19.1) SF750CX	1 (25.4) SF1000CX	1 (25.4) F1000 CX43	1/4 (6.35) F250C	3/8 (9.53) F375C	9/16 (14.3) F562C	9/16 (14.3) F562C40
AE Moyenne Pression	1/4 (6.35)	SF250CX	20,000 (1380)	20FX 4466	20F 4666	20F 4966	20F 41266	20F 41666	20F 41666	20F 4463	20F 4663	20F 4963	
	3/8 (9.53)	SF375CX	20,000 (1380)		20FX 6666	20F 6966	20F 61266	20F 61666	20F 61666	20F 6463	20F 6663	20F 6963	
	9/16 (14.3)	SF562CX	20,000 (1380)			20FX 9966	20F 91266	20F 91666		20F 9463	20F 9663	20F 9963	
	3/4 (19.1)	SF750CX	20,000 (1380)				20FX 12	20F 121666		20F 12463	20F 12663	20F 12963	
	1 (25.4)	SF1000CX	20,000 (1380)					20FX 16		20F 16463	20F 16663	20F 16963	
AE Haute Pression	1 (25.4)	F1000C43	43,000 (2964)						43FX 16				
	1/4 (6.35)	F250C	60,000 (4140)						43F 41633	60F 4433	60F 4633	60F 4933	
	3/8 (9.53)	F375C	60,000 (4140)						43F 61633		60F 6633	60F 6933	
	9/16 (14.3)	F562C	40,000 (2758)						43F 91633			60F 9933	
	9/16 (14.3)	F562C40	40,000 (2758)										40F 9933

Adaptateurs Mâle/Femelle

Les adaptateurs Mâle/Femelle sont conçus pour raccorder directement une connexion femelle à une autre taille ou à un autre type de connexion.
En choisissant un adaptateur comportant des connexions de tailles différentes, la connexion de plus gros diamètre devrait être sur l'extrémité mâle où la résistance mécanique de l'adaptateur peut être la plus forte.

Pour utiliser le tableau:

1. *Localiser l'extremité MÂLE dans la colonne verticale.*
2. *Localiser l'extremité FEMELLE désirée pour l'adaptateur sur la partie haute du tableau.*
3. *La référence catalogue de l 'adaptateur nécessaire est située á l'intersection des 2 colonnes.*

Autres adaptateurs

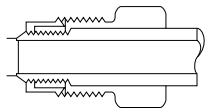
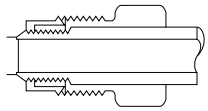
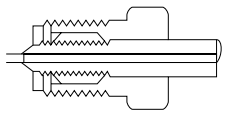
AE fournit plusieurs autres types d'adaptateurs sur commande spéciale. Celà inclut aussi les connexions du type AE UniVersa-Lok, douille à souder sur le Ø ext du tube ou taille nominale du tube, connexion mâle ou femelle AN et autres.

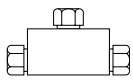
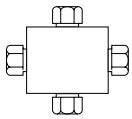
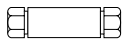
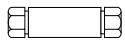
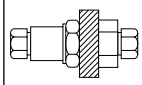
Matières

Tous les adaptateurs AE sont usinés avec précision à partir d'Inox 316 étiré à froid. Autres matières disponible sur commande spéciale.

Extrémité Femelle ▶				AE Moyenne Pression					AE Haute Pression				
				1/4"(6.35) SF250CX	3/8"(9.53) SF375CX	9/16"(14.3) SF562CX	3/4"(19.1) SF750CX	1"(25.4) SF1000CX	1"(25.4) F1000C43	1/4"(6.35) F250C	3/8"(9.53) F375C	9/16"(14.3) F562C	9/16" (14.3) F562C40
Extrémité Mâle ▼		pour conn. femelle corresp.	Pression psi*(bar)	20,000 (1380)	20,000 (1380)	20,000 (1380)	20,000 (1380)	20,000 (1380)	43,000 (2964)	60,000 (4140)	60,000 (4140)	60,000 (4140)	40,000 (2758)
AE Moyenne Pression	1/4 (6.35)	SF250CX	20,000 (1380)		20M46K6	20M49K6	20M412K6	20M416K6		20M44K3	20M46K3	20M49K3	
	3/8 (9.53)	SF375CX	20,000 (1380)	20M64K6		20M69K6	20M612K6	20M616K6		20M64K3	20M66K3	20M69K3	
	9/16 (14.3)	SF562CX	20,000 (1380)	20M94K6	20M96K6		20M912K6	20M916K6		20M94K3	20M96K3	20M99K3	
	3/4 (19.1)	SF750CX	20,000 (1380)	20M124K6	20M126K6	20M129K6		20M1216K6		20M124K3	20M126K3	20M129K3	20M129K40
	1 (25.4)	SF1000CX	20,000 (1380)	20M164K6	20M166K6	20M169K6	20M1612K6	20M1616K6		20M164K3	20M166K3	20M169K3	
AE Haute Pression	1 (25.4)	F1000C43	43,000 (2964)							43M164B3	43M166B3	43M169B3	43M168B40
	1/4 (6.35)	F250C	60,000 (4140)	20M44B6	20M46B6	20M49B6	20M412B6		43M416B6		60M46B3	60M49B3	
	3/8 (9.53)	F375C	60,000 (4140)	20M64B6	20M66B6	20M69B6	20M612B6	20M616B6	43M616B6	60M64B3		60M69B3	
	9/16 (14.3)	F562C	60,000 (4140)	20M94B6	20M96B6	20M99B6	20M912B6	20M916B6	43M916B6	60M94B3	60M96B3		
	9/16 (14.3)	F562C40	40,000 (2758)				20M912G6						

***Pression-** les valeurs de pression des raccords AE sont basées la valeur de la connexion la plus faible.*

	Connexion Pouce (mm)	Pression psi (bar)	Type de connexion
Moyenne Pression	1/4 to 1 (6.35 to 25.4)	to 20,000 (1380)	*Type cône et filetage pour contrainte élévée et assemblage répété .* *Bague écrou anti vibration disponible.* *Bague et écrou en ligne pour réduire l'épaisseur du bloc.* 
Haute Pression	1 (25.4)	to 43,000 (2964)	*Type cône et filetage pour contrainte élévée et assemblage répété .* *Bague écrou anti vibration disponible.* 
	1/4 to 9/16 (6.35 to 14.3)	to 60,000 (4140)	*Type cône et filetage pour contrainte élévée et assemblage répété .* *Bague écrou anti vibration disponible.* *Bague épaulée logée dans l'écrou pour diminuer la largeur du bloc .* 

	Ø ext. Tube pouces (mm)	Valeurs de Pression psi (bar)	 Coude	 Té	 Croix	 Raccord union	 Raccord union droit	 Traversée de cloison
Moyenne Pression	1/4 (6.35)	20,000 (1380)	CLX4400	CTX4440	CXX4444	20FX4466	20UFX4466	20BFX4466
	3/8 (9.53)	20,000 (1380)	CLX6600	CTX6660	CXX6666	20FX6666	20UFX6666	20BFX6666
	9/16 (14.3)	20,000 (1380)	CLX9900	CTX9990	CXX9999	20FX9966	20UFX9966	20BFX9966
	3/4 (19.1)	20,000 (1380)	CLX12	CTX12	CXX12	20FX12	20UFX12	20BFX12
	1 (25.4)	20,000 (1380)	CLX16	CTX16	CXX16	20FX16	20UFX16	20BFX16
Haute Pression	1 (25.4)	43,000 (2964)	43CLX16	43CTX16	43CXX16	43FX16	43UFX16	43BFX16
	9/16 (14.3)	40,000 (2760)	40CL9900	40CT9990	40CX9999	40F9933	40UF9933	40BF9933
	1/4 (6.35)	60,000 (4140)	CL4400	CT4440	CX4444	60F4433	60UF4433	60BF4433
	3/8 (9.53)	60,000 (4140)	CL6600	CT6660	CX6666	60F6633	60UF6633	60BF6633
	9/16 (14.3)	60,000 (4140)	CL9900	CT9990	CX9999	60F9933	60UF9933	60BF9933

			Composants de raccordement			***Clapet de retenue***			***Filtres en ligne***		***Supports disque de rupture***
	Ø ext. Tube pouces (mm)	Valeurs de Pression psi (bar)	 Écrou	 Bague filetée	 Bouchon	 Joint torique	 Bille	 limiteur de débit	 Double disque	 Cartouche	 Support disque de rupture
Moyenne Pression	1/4 (6.35)	20,000 (1380)	CGLX40	CCLX40	CPX40	CXO4400	CXB4400	CXK4402	-	CXF4	CSX4600*
	3/8 (9.53)	20,000 (1380)	CGLX60	CCLX60	CPX60	CXO6600	CXB6602	CXK6602	-	CXF6	CSX6600*
	9/16 (14.3)	20,000 (1380)	CGLX90	CCLX90	CPX90	CXO9900	CXB9900	CXK9902	CLFX9900	CXF9	CSX9600*
	3/4 (19.1)	20,000 (1380)	CGLX120	CCLX120	CPX120	CXO12	CXB12	CXK1202	-	-	-
	1 (25.4)	20,000 (1380)	CGLX160	CCLX160	CPX160	CXO16	CXB16	CXK1602	-	-	-
Haute Pression	1 (25.4)	43,000 (2964)	CGLX160	CCLX160	43CPX160	43CXO16	43CXB16	-	-	-	-
	9/16 (14.3)	40,000 (2760)	AGL90	ACL90	AP90	-	-	-	-	-	-
	1/4 (6.35)	60,000 (4140)	AGL40	ACL40	AP40	CXO4400	CB4401	CK4402	CLF4400	CF4	CS4600*
	3/8 (9.53)	60,000 (4140)	AGL60	ACL60	AP60	CXO6600	CB6601	CK6602	CLF6600	CF6	CS6600*
	9/16 (14.3)	60,000 (4140)	AGL90	ACL90	AP90	CXO9900	CB9901	CK9902	CLF9900	CF9	CS9600*

**Indiquer la taille du disque de rupture*

Tube

Autoclave Engineers propose une gamme complète de tubes en acier inox. austénitique étiré à froid conçu pour répondre aux éxigences des normes des vannes et raccords AE. Le tube AE est fabriqué spécifiquement pour les applications haute pression nécessitant à la fois résistance aux contraintes mécaniques et à la corrosion. Le tube est fourni dans des longueurs comprises entre 6,1m et 8,2m (20 et 27 pieds).

Contrôles et essais

Le tube AE est contrôlé pour s'assurer qu'il est exempt de soudure, défauts, fissures et autres imperfections, également qu'il ne présente pas de carburation ou de précipatation de carbone intergranulaire. Les diamètres intérieurs et extérieurs du tube sont soumis à un contrôle spécifique et les dimensions comprises dans des tolérances serrées pour garantir un raccordement correct. Des échantillons de chaque lot sont testés pour confirmer les caractéristiques mécaniques. Des tests hydrostatiques sont également mis en oeuvre sur une base statistique et sont effectués à la pression de travail du tube. Autoclave peut, sur demande, effectuer les tests hydrostatiques sur 100% du lot.

Référence	Matière du tube	Type de raccordement associé	Taille du tube pouces(mm)		Épaisseur nomminale pouce (mm)	Section de flux pouce² (mm²)	Pressions de travail psi (bar)				
			Ø ext. pouce (mm)	Ø int. pouce (mm)			-325 to 100°F (-198 to 38°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)
MS15-092	316SS	SF250CX	1/4 (6.35)	.109 (2.77)	.070 (1.78)	.009 (5.81)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-192	304SS						20,000 (1380)	18,950 (1310)	17,200 (1190)	17,000 (1170)	16,150 (1110)
MS15-093	316SS	SF375CX	3/8 (9.53)	.203 (5.16)	.086 (2.18)	.032 (20.6)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-193	304SS						20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-085	316SS	SF562CX	9/16 (14.3)	.312 (7.92)	.125 (3.17)	.076 (49)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-187	304SS						20,000 (1380)	20,000 (1380)	19,250 (1327)	18,050 (1250)	16,800 (1160)
MS15-097	316SS	SF562CX	9/16 (14.3)	.359 (9.12)	.101 (2.56)	.101 (65.2)	15,000 (1034)	15,000 (1034)	14,400 (992)	13,650 (941)	12,670 (874)
MS15-194	304SS						15,000 (1034)	14,170 (977)	12,900 (890)	12,750 (880)	12,670 (874)
MS15-095	316SS	SF750CX	3/4 (19.1)	.438 (11.1)	.156 (3.96)	.151 (97.4)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-098	316SS			.516 (13.1)	.117 (2.97)	.209 (135)	15,000 (1034)	15,000 (1034)	14,400 (993)	13,650 (941)	12,670 (874)
MS15-096	316SS	SF1000CX	1 (25.4)	.562 (14.3)	.219 (5.56)	.248 (160)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	12,670 (874)
MS15-099	316SS			.688 (17.5)	.156 (4.02)	.371 (239)	15,000 (1034)	15,000 (1034)	14,400 (992)	13,650 (941)	12,670 (874)
MS15-081	316SS	F250C	1/4 (6.35)	.083 (2.11)	.083 (2.11)	.005 (3.22)	60,000 (4140)	60,000 (1380)	57,750 (1380)	54,250 (1380)	50,700 (1380)
MS15-182	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-087	316SS	F375C	3/8 (9.53)	.125 (3.18)	.125 (3.18)	.012 (7.74)	60,000 (4140)	60,000 (4140)	57,750 (3980)	54,250 (3740)	50,700 (3490)
MS15-183	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-083	316SS	F562C	9/16 (14.3)	.187 (4.78)	.187 (4.78)	.028 (18)	60,000 (4140)	60,000 (4140)	57,750 (3980)	54,250 (3740)	50,700 (3490)
MS15-185	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-199	304SS	F1000C43	1 (25.4)	.438 (11.1)	.281 (7.14)	.151 (97.4)	43,000 (2964)	40,600 (2799)	36,900 (2544)	36,300 (2502)	34,700 (2392)
MS15-211	316SS	F1000C43	1 (25.4)	.438 (11.13)	.281 (7.14)	.151 (97.4)	43,000 (2964)	43,000 (2964)	43,000 (2964)	41,380 (2853)	36,330 (2504)
MS15-090	316SS	F562C40	9/16 (14.3)	.25 (6.35)	.156 (4.02)	.048 (31)	40,000 (2760)	40,000 (2760)	38,500 (2655)	36,100 (2489)	33,800 (2330)

Note: pour du tube "autofretté", ajouter le suffixe "ESR42" au numéro de référence du tube.

Manchettes usinées

Pour un faciliter assemblage rapide, AE fournit des manchettes pré usinées (cône et filetage) coupées à différentes longueurs pour les vannes et raccords AE.

Longueurs spéciales

En complément des longueurs standards listées dans le tableau ci-dessous, les manchettes peuvent être fournies en toute autre longueur spécifique. Consulter l'usine.

Matières

Hormis mention spéciale, les références indiquées dans le tableau se rapportent à l'inox 316.

Type de connexion associé	Taille du tube pouce(mm)		Pression à 38°C (100°F) psi(bar)	Références						
	Ø ext.	Ø int.		2.75" Longueur	3" Longueur	4" Longueur	6" Longueur	8" Longueur	10" Longueur	12" Longueur
SF250CX	1/4 (6.35)	.109 (2.77)	20,000 (1380)	CNX4402	CNX4403	CNX4404	CNX4406	CNX4408	CNX44010	CNX44012
SF375CX	3/8 (9.53)	.203 (5.16)	20,000 (1380)		CNX6603	CNX6604	CNX6606	CNX6608	CNX66010	CNX66012
SF562CX	9/16 (14.3)	.312 (7.92)	20,000 (1380)			CNX9904	CNX9906	CNX9908	CNX99010	CNX99012
SF562CX	9/16 (14.3)	.359 (9.12)	15,000 (1034)			CNLX9904	CNLX9906	CNLX9908	CNLX99010	CNLX99012
SF750CX	3/4 (19.1)	.438 (11.1)	20,000 (1380)				CNX1206	CNX1208	CNX12010	CNX12012
SF750CX	3/4 (19.1)	.515 (13.1)	15,000 (1034)				CNLX1206	CNLX1208	CNLX12010	CNLX12012
SF1000CX	1 (25.4)	.562 (14.3)	20,000 (1380)				CNX1606	CNX1608	CNX16010	CNX16012
SF1000CX	1 (25.4)	.688 (17.5)	15,000 (1034)				CNLX1606	CNLX1608	CNLX16010	CNLX16012
F250C	1/4 (6.35)	.083 (2.11)	60,000 (4140)	CN4402	CN4403	CN4404	CN4406	CN4408	CN44010	CN44012
F375C	3/8 (9.53)	.125 (3.18)	60,000 (4140)		CN6603	CN6604	CN6606	CN6608	CN66010	CN66012
F562C	9/16 (14.3)	.187 (4.78)	60,000 (4140)			CN9904	CN9906	CN9908	CN99010	CN99012
F562C40	9/16 (14.3)	.250 (6.35)	40,000 (2760)			40CN9904-316	40CN9906-316	40CN99086-316	40CN99010-316	40CN99012-316
F1000C43	1 (25.4)	.438 (11.1)	43,000 (2964)				43CN1606-304	43CN1608-304	43CN16010-304	43CN16010-304

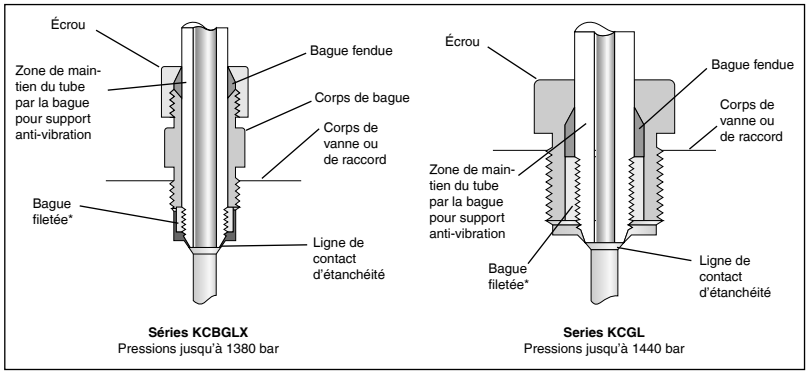
Note: Ajouter -316 ou -314 à la référence pour préciser la matière si elle n'est pas indiquée.

Ensembles bague/écrou anti-vibrations

Des chocs et des vibrations peuvent se produire dans le système et sur le tube, particulièrement si la vanne ou le raccord sont placés sur une ligne non soutenue à proximité d'un compresseur. Pour cette raison, les connexions par cône et filetage Autoclave Engineers sont proposées avec un ensemble bague et écrou anti-vibrations AE. Complètement interchangeables avec les connexions haute pression standards AE, les ensembles bague/écrou anti-vibrations offrent la même efficacité de tenue à la pression.

Ø ext Tube pouces (mm)	Références	
	Moyenne Pression (jusqu'à 1400 bars)	Haute Pression (jusqu'à 4200 bars)
1/4 (6.35)	KCBGLX40-316MC	KCGL40-316
3/8 (9.53)	KCBGLX60-316MC	KCGL60-316
9/16 (14.3)	KCBGLX90-316MC	KCGL90-316
3/4 (19.1)	KCBGLX120-316MC	-
1 (25.4)	KCBGLX160-316MC	†KCBGLX160-316MC

†1" High Pressure to 43,000 psi (2964 bar)



*Bague filetée AE non inclus dans l'ensemble complet

Matières et caractéristiques

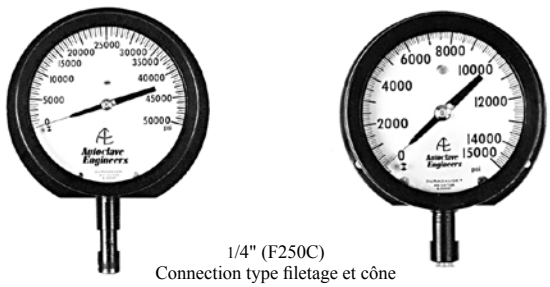
- *Précision de ± 0,5% de la gamme de mesure.*
- *Cadran plastique robuste - boitier robuste en alliage d'aluminium.*
- *Panneau arrière éclatable pour libération de pression en cas de défaillance du tube de Bourdon.*
- *Tube de Bourdon** en Acier Inox 316.*
- *Mouvement de précision en Acier Inox pour la précision et la résistance à la corrosion atmosphérique.*
- *Réglage de point zéro situé sur la face du manomètre derrière le couvercle du cadran pour commodité d'utilisation*

Des manomètres de qualité pour instrumentation.

- *Montage affleurant sur panneau – Des bagues interchangeables de maintien des cadrans sont réservés. pour permettre un montage sur panneau. Ils sont fournis sans coût supplémentaire s'ils sont spécifiés à la commande – ajouter "PM" à la référence de commande.*
- *En option: des faces avec contact électrique – Disponibles pour tous les manomètres pour instrumentation. Grâce à des contacts électriques réglables haut et bas, cette option permet aux manomètres de fournir un contrôle de pression pour un travail automatique ou télécommandé ou pour positionner des points de sécurité de défaillance.*

*** La matière des tubes de Bourdon pour les manomètres de 0 à 5500 bar (P-0490-CG) est l'Inconel 718 #1 trempé recuit*
La matière des tube de Bourdon pour les manomètres de 0 à 30000 psi (0 à 2068 bars est le Monel K)

Note: Les manomètres peuvent être fournis avec des connexions arrière; Ajouter la lettre B à la référence. Exemple: P-047B-CG.



1/4" (F250C)
Connection type filetage et cône
Livré avec bague filetée et écrou

Etalonné en psi uniquement			
Références Catalogue	**Gamme de pression (psi)**	**Valeur mini. d'intervalle (psi)**	**Diamètre du cadran (pouces)**
P-0499-CG	0-1000	10	4-1/2
P-0479-CG	0-1500	10	4-1/2
P-0480-CG	0-3000	20	4-1/2
P-0481-CG	0-5000	50	4-1/2
P-0482-CG	0-10,000	100	4-1/2
P-0483-CG	0-15,000	100	4-1/2
P-0487-CG	0-20,000	200	4-1/2
P-0488-CG	0-30,000	200	6
P-0489-CG	0-50,000	500	6
P-0490-CG**	0-80,000	1,000	6

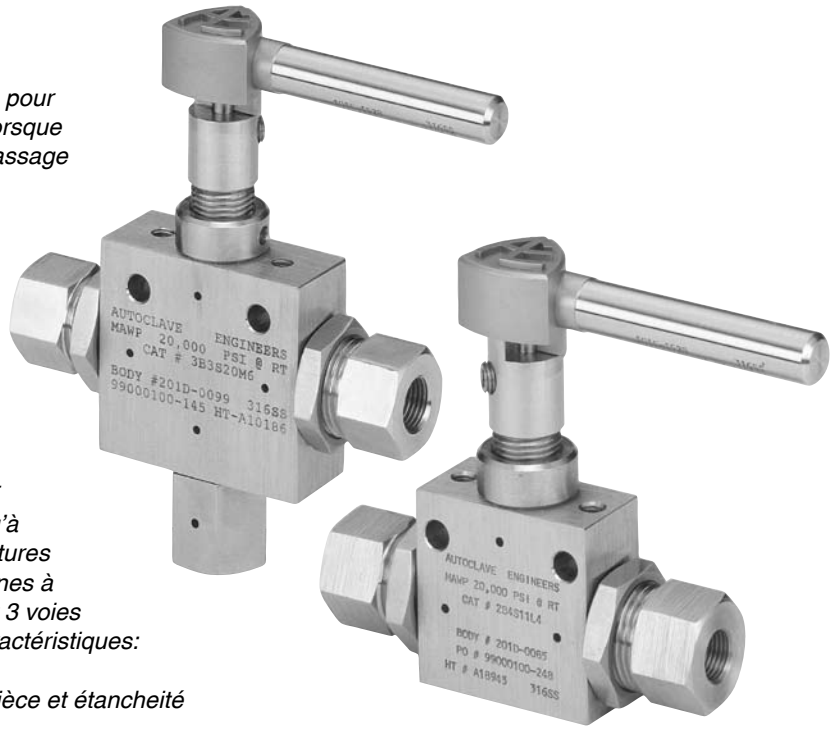
Option face à contacts électriques	
Références	**Diamètre de logement du cadran (pouces)**
P-0713	4-1/2
P-0714	6

Vannes à boisseau sphérique

Les vannes à boisseau sphérique AE sont conçues pour des applications de type ouvert-fermé à haut débit. Lorsque la vanne est totalement ouverte la conception plein passage minimise la perte de charge.

Les vannes à boisseau sphérique AE sont économiques et faciles à entretenir pour une utilisation durable. Conçue d'une seule pièce, la tige-boisseau élimine le risque de cisaillement et diminue les effets de charge latérale qui se produisent avec les pièces conçues en deux parties.

Les écrous de siège peuvent être resserrés pour prolonger l'utilisation. Le couple de fonctionnement est faible pour diminuer l'usure et étendre la durée de vie des pièces. La vanne à boisseau sphérique AE est conçue pour travailler à des pressions allant jusqu'à 1380 bar à 93°C (20000 psi à 200°F) et des températures jusqu'à 260°C à 345 bar (500°F à 5000 psi). Les vannes à boisseau sphérique AE sont disponibles en 2 voies et 3 voies avec orifices de taille 4.7mm à 12.7mm. Parmi les caractéristiques: construction en acier Inox 316, sièges PEEK, tige-boisseau en une seule pièce et étanchéité à faible friction.



Séries RVP & RVS

Les clapets de décharge, séries RVP & RVS, permettent une évacuation fiable des gaz ou des liquides pour des pressions étalonnées de 103 bar (1500 psi) à 4140 bar (60 000 psi). La gamme de températures standard sur les modèles RVP est de –253°C à 204°C (-423°F à 400°F). Une option haute température jusqu'à 750°F (400°C) est également disponible. La gamme de températures sur les modèles RVS est de 0°C à 204°C (32°F à 400°F). (Nota: la matière du siège est Arlon).

Ces clapets de précision sont conçus pour les systèmes à pression de gaz, les systèmes cryogéniques, les applications pétro-chimiques et autres applications spéciales. Ils peuvent être utilisés sur de l'air, des gaz, de la vapeur, liquides et vapeur. Ils ne sont pas recommandés pour applications sur chaudières à vapeur et ne peuvent pas être estampillés du code ASME.

Les clapets de décharge sont conçus pour s'ouvrir proportionnellement à la pression de retour et par conséquent, ne sont pas recommandés pour des applications réclamant une ouverture immédiate à plein passage à la pression d'étalonage (telles que décompositions, polymérisation, etc ...). L'ouverture totale du clapet est définie à 10% au dessus de la pression d'étalonage.

	Type & taille de connexion (pouces)			Valeurs de pressions PSIG @ 100°F (bar à 38°C)		
Références	**Entrée**	**Sortie FNPT**	**Ø orifice pouces (mm)**	**Étalonage Min.**	**Étalonage Max.**	**Pression maxi de retour**
5RVP9072	SF562CX	3/4 (19.1)	.312 (7.92)	3,000 (207)	5,000 (345)	500 (34.5)
10RVP9072	SF562CX	3/4 (19.1)	.250 (6.35)	5,000 (345)	10,000 (690)	500 (34.5)
15RVP9072	SF562CX	3/4 (19.1)	.188 (4.78)	10,000 (689)	15,000 (1034)	500 (34.5)
20RVP9072	SF562CX	3/4 (19.1)	.156 (4.02)	15,000 (1034)	20,000 (1379)	500 (34.5)
30RVP6072	F375C	3/4 (19.1)	.125 (3.18)	20,000 (1379)	30,000 (2068)	500 (34.5)
45RVP9072	F562C	3/4 (19.1)	.093 (2.36)	25,000 (1724)	45,000 (3103)	500 (34.5)
60RVP6072	F375C	3/4 (19.1)	.078 (1.98)	30,000 (2060)	60,000 (4137)	500 (34.5)
Siège souple						
5RVS9072	SF562CX	3/4 (19.1)	.312 (7.92)	1,500 (103)	5,000 (345)	500 (34.5)
10RVS9072	SF562CX	3/4 (19.1)	.250 (6.35)	5,000 (345)	10,000 (690)	500 (34.5)
20RVS9072	SF562CX	3/4 (19.1)	.156 (4.02)	10,000 (690)	20,000 (1379)	500 (34.5)

Blocs multi-voies collecteurs/distributeurs

Les blocs collecteurs/distributeurs permettent de réduire au minimum l'espace et le temps nécessaires à la connexion d'un circuit sous pression. Par ailleurs en réduisant le nombre des composants utilisés dans le sytème, les blocs multi-voies limitent le nombre de points de fuite potentiels.

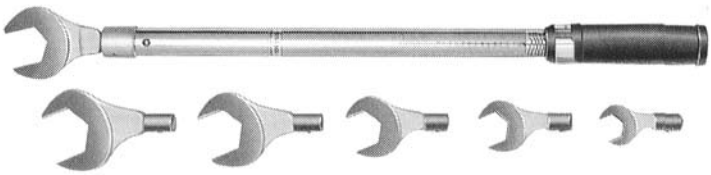
Autoclave Engineers peut concevoir et fabriquer des blocs multi-voies pour répondre à des besoins spécifiques de disposition et de pression pour des installations spéciales. Ces blocs multi-voies sont capables de tenir des pressions allant du vide jusqu'à 4137 bar (60 000 psi),et sont disponibles en divers matériaux et tailles. Parmi les types de raccordement pouvant être intégrés, on retouve les types basses pressions, moyennes pressions et hautes pressions Autoclave, ainsi que NPT, SAE, BSP, et autres. Les changements de taille de circuits du système et les montages en serie de tubes sous pressions peuvent être effectués par un bloc multi-voies spécialisé. Ces blocs multi-voies peuvent être utilisés en tout point d'un circuit sous pression.

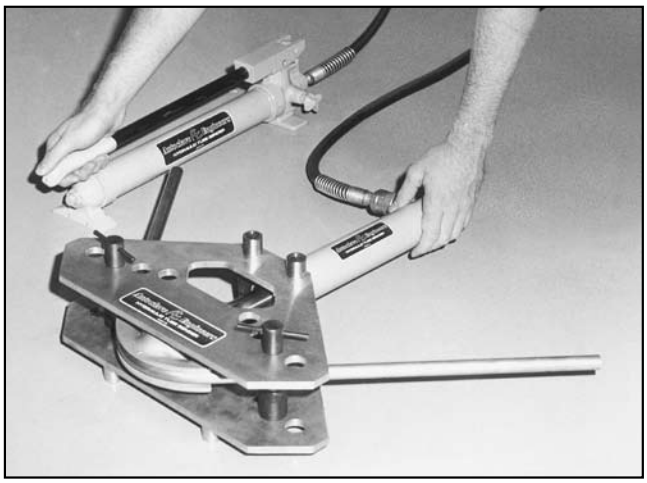
Clef dynamométrique à réglage micrométrique AE (P-1680)

P-1680 20 to 150 ft. lbs. (27 to 203 Nm)
91020 75 to 250 ft. lbs. (102 to 339 Nm)

Un serrage précis des presse-étoupe et des écrous de connexion est essentiel. La clé peut être ajustée dans les plages indiquées et est utilisée avec les adapteurs interchangeables pour des six-pans de 1/2" à 1-7/8". Les références des adapteurs se trouvent sur le tableau ci-dessous.

Taille du six pans Écrou presse-étoupe ou Écrou de tube pouces (mm)	1/2 (12.7)	9/16 (14.3)	5/8 (15.9)	3/4 (19.05)	13/16 (20.6)	7/8 (22.2)	15/16 (23.8)	1 (25.4)	1-1/16 (27)	1-3/16 (30.2)	1-3/8 (34.9)	1-1/2 (38.1)	1-7/8 (47.6)
Référence adapteur de la clef	P-1681	P-1682	P-1683	P-9813	P-1685	P-1686	P-1687	P-9901	P-1688	P-1689	P-1690	P-6040	P-10076





Cintreuse hydraulique de tubes

Pour le pliage en une passe du tube haute pression. La cintreuse hydraulique AE est conçue pour cintrer rapidement du tube à parois épaisses, de manière précise et fliable en un seul réglage.
La cintreuse de tube est livrée complète avec pompe, vérin, cadre et fer à cintrer dans une malette portable et fermant à clef. (référence : HTB)

Pompe hydraulique actionée pneumatiquement disponible en option à la place de la pompe à main. (référence: HTB-A)

Machine à usiner cônes et filetages

Procédure pour commander: Model #AEGCTM-2

Des têtes différentes d'usinage de cônes et filetages sont actionnées par un seul moteur et système d'entrainement. Le modèle AEGCTM-2 est destiné à l'usinage des cônes et filtages de tube AE moyenne et haute pression.

Dimensions approximatives: 1,4m x 0,7m x 0,5m (H x L x l)
Poids: 159 kg - Les outils doivent être commandés séparément (consulter l'usine).

Caractéristiques

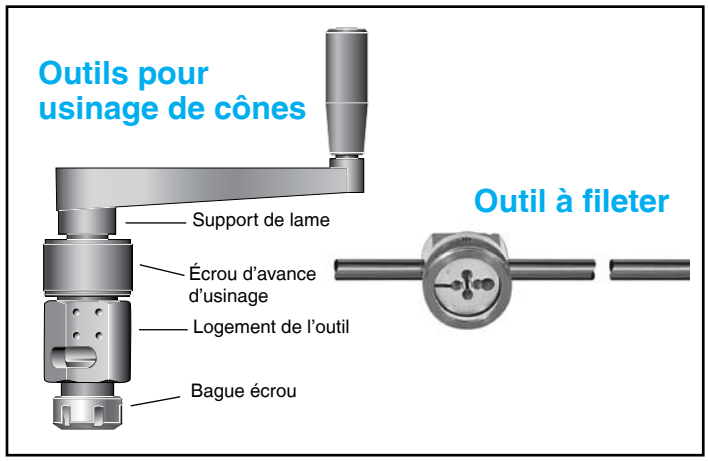
- *Moteur de 1,5 C_V, 220 VAC 50 Hz (115 VAC 60 Hz) démarrage par condensateur.*
- *Inversion inutile durant le filetage; l'ouverture rapide de l'outil prévient l'endommagement éventuel des filets.*
- *Disponibilité d'un outillage complet; préciser les tailles demandées.*
- *La tête d'usinage de cône est déplacée par un volant permettant une opération facile et précise.*
- *Pompe à huile et réservoir pour l'usinage de cône.*
- *L'unité est montée sur châssis avec roulettes bloquables offrant mobilité et stabilité de la machine.*
- *En option desponibilité d'un réservoir chauffant*
- *Estampillée CE en standard sur les modèles 220 VAC 50 Hz.*

Outils manuels pour usinage de cône et filetage

AE fabrique un outil manuel permettant d'usiner au mieux des cônes sur des tubes de taille allant jusqu'a (9/16") de diamètre extérieur. Il s'agit d'un outil manual de précision et de qualité permettant la préparation sur site de l'extrémité des tubes AE moyenne et haute pression. Des mandrins interchangeables correspondant à chaque taille de tube assurent le centrage correct du tube. Le dispositif d'avance de coupe permet à l'opérateur de contrôler la profondeur de passe afin de se préserver des effets d'écrouissage. Les lames interchangeables sont utilisées par pair afin de garantir une réalisation plus précise it plus rapide du cône et elles sont conçues pour équarir et terminer le tube quand le cône est fini. Une réserve est prévue pour l'application de lubrifiant sur la zone de coupe.

Le logement de la filière est conçu pour recevoir la filière adaptée à chaque taille de tube standard AE jusqu'à 14.3mm (9/16") de diamètre extérieur. Des bagues interchangeables guident l'outil pour un usinage précis du filetage.

Nota: Des kits complets d'outils sont disponibles. Consulter l'usine.



	Taille du tube		Références des outils pour cônes et composants			Références des outils à fileter et composants				
	Ø ext. pouces (mm)	Ø int. pouces (mm)	Outil avec Bague & Lames	Bague de serrage	Jeu de 2 lames	Outil Complet	Corps d'outil	Filière		Bague de guidage
								Référence	Dimension*	
AE Moyenne Pression	1/4 (6.35)	.109 (2.77)	MCTM4	90248	101F-1577	402A	402	P-0214	1/4-28	1010-0343
	3/8 (9.53)	.203 (5.16)	MCTM6	90250	101F-1601	402C	402	P-0215	3/8-24	1010-0344
	9/16 (14.3)	.312 (7.92)	MCTM920	90251	1010-5218	402E	402	P-0216	9/16-18	1010-0345
	9/16 (14.3)	.359 (9.12)	MCTM910	90251	101A-1897	402E	402	P-0216	9/16-18	1010-0345
AE Haute Pression	1/4 (6.35)	.083 (2.11)	MCTH4	90248	101F-1577	402A	402	P-0214	1/4-28	1010-0343
	3/8 (9.53)	.125 (3.18)	MCTH6	90250	101F-1578	402C	402	P-0215	3/8-24	1010-0344
	9/16 (14.3)	.188 (4.78)	MCTH960	90251	1010-0883	402E	402	P-0216	9/16-18	1010-0345
	9/16 (14.3)	.250 (6.35)	MCTH940	90251	101C-7214	402E	402	P-0216	9/16-18	1010-0345

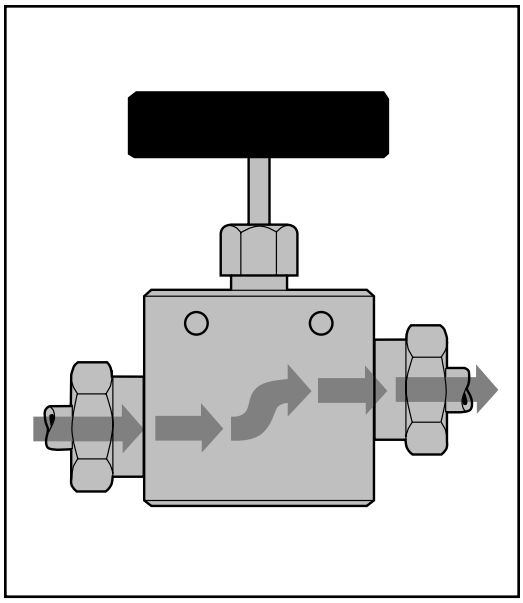
Huile de coupe: P-8784

•Tous les filetage pour tubes moyenne et haute pression sont du type "LH national fine (classe 2)".

Nota: les outils manuels pour usinage de cônes et filetage pour les tubes moyenne pression de Ø ext. 19,1 mm (3/4") et 25,4 mm (1") ne sont pas disponibles. La machine électrique modèle AEGCTM-2 pour usinage de cônes et tubes est recommandée pour ce type de tubes. Une longueur droite minimum de 76 mm (3") est nécessaire afin de pouvoir réaliser des usinages de cône et filetage avec l'outil manuel.

Calculs de débits

Le Coefficient de debit (C_V) d'une vanne est le débit d'eau, à température ambiante, exprimé en galon US par minute circulant au travers de la vanne, complètement ouverte, pour une perte de charge de 1 psi. Le C_V est un coefficient de dimensionnement de la vanne qui permet de choisir la vanne nécessaire pour répondre aux contraintes de débit d'un système fluide donné.
Les valeurs de C_V indiquées sur les pages de commande de la vanne representent le C_V de cette vanne lorqu'elle est totalement ouverte. En déterminant la capacité estimée, cette valeur de C_V devrait être utilisée dans les fomules suivantes.



Formules de débit

Liquides

❑ Débit, gal. U.S./mn.

$$V = \frac{C_V \sqrt{P_1 - P_2}}{\sqrt{S_{GF}}}$$

❑ Débit, lb./hr.

$$W = 500\, C_V \sqrt{(P_1 - P_2)/S_{GF}}$$

Gaz

❑ Débit, SCFH

$$Q = \frac{42.2\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{\sqrt{S_G}} \;^{*\dagger}$$

❑ Débit, SCFH (température corrigée)

$$Q = \frac{963\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{\sqrt{S_G\, T_F}} \;^{\dagger}$$

❑ Débit, lb./hr.

$$W = 3.22\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)/S_G} \;^{\dagger}$$

Vapeur saturée

❑ Débit, lb./hr.

$$W = 2.1\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)} \;^{\dagger}$$

Vapeur super chauffée

❑ Débit, lb./hr.

$$W = \frac{2.1\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{(1 + 0.0007\, T_S)} \;^{\dagger}$$

Poids spécifique (S_G) des gaz typiques

Gaz	S_G à T°amb Relative à l'air
Acetylène	*0.897*
Air	*1.000*
Ammoniac	*0.587*
Argon	*1.377*
Butane	*2.070*
Dioxyde de carbone	*1.516*
Ethylène	*0.967*
Hélium	*0.138*
Hydrogène	*0.0695*
Méthane	*0.553*
Azote	*0.966*
Oxygène	*1.103*
Propane	*1.562*
Dioxyde de soufre	*2.208*

Poids spécifique (S_{GF}) des liquides typiques

Gaz	S_{GF} à T°amb Relative à l'eau
Acétone	*0.792*
Alcool	*0.792*
Benzine	*0.902*
Essence	*0.751*
Gasoline, nat.	*0.680*
Kerosène	*0.815*
Pentane	*0.624*
Eau	*1.000*

Nomenclature des formules

V = Débit, gallons US par minute (GPM)
Q = Débit, pieds cube standard par heure (SCFH)
W = Débit, livres/heure
P_1 = pression d'entrée, psia (14.7 + psig)
P_2 = pression de sortie, psia (14.7 + psig)
S_{GF} = poids spécifique des liquide (eau = 1.0)
S_G = poids spécifique des gaz (air = 1.0)
T_F = Température du fluide.,°R absolu (460 + °F)
T_S = Super chauffage en °F
C_V = coefficient de débit de la vanne totalement ouverte

*L'effet des températures du fluide sur les écoulement gazeux sont minimum pour les températures entre 0° C et 65°C. Une correction devrait êre apportée pour des températures inférieures ou supérieures.

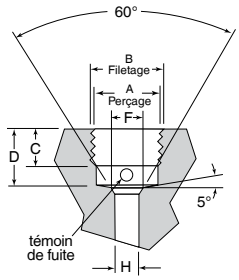
† Là où la pression de sortie P_2 est moins de $^1/_2$ fois la pression à l'entrée P_1, le terme: $\sqrt{(P_1 - P_2)\ (P_1 + P_2)}$: devient 0.87 P_1.

Nota: Les valeurs de C_V maximum indiquées dans ce catalogue ont été déterminées en accord avec le rapport de l'Institut de Controle des Fluide FCI 58-2. " Normes volontairement recommandés pour la procédure de mesure pour la determination de la capacité de débit des vannes de contrôle", incluant procédure,conception du banc de test et évaluation des données.

Connexions

AE Moyenne Pression SFCX

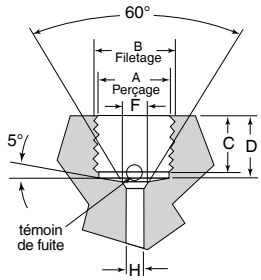
Tube Ø ext. pouces (mm)	Type de connexion	Dimensions pouces (mm)					
		A	B	C	D	F	H
1/4 (6.35)	SF250CX20	25/64	7/16 -20	.28 (7.11)	.50 (12.7)	.19 (4.83)	.109 (2.77)
3/8 (9.53)	SF375CX20	33/64	9/16 -18	.38 (9.65)	.62 (15.7)	.31 (7.87)	.203 (5.16)
9/16 (14.3)	SF562CX20	3/4	13/16 -16	.44 (11.2)	.75 (19.1)	.50 (12.7)	.359 (9.12)
3/4 (19.1)	SF750CX20	61/64	3/4 -14$_z$	.50 (12.7)	.94 (23.9)	.62 (15.7)	.516 (13.1)
1 (25.4)	SF1000CX20	1-19/64	1-3/8 -12	.81 (20.6)	1.31 (33.3)	.88 (22.4)	.688 (17.5)



Z = Taraudage mâle NPS

AE Haute Pression FC

Tube Ø ext. pouces (mm)	Type de connexion	Dimensions pouces (mm)					
		A	B	C	D	F	H
1/4 (6.35)	F250C	33/64	9/16 -18	.38 (9.65)	.44 (11.2)	.17 (4.32)	.094 (2.39)
3/8 (9.53)	F375C	11/16	3/4 -16	.53 (13.5)	.62 (15.7)	.26 (6.60)	.125 (3.18)
9/16 (14.3)	F562C	1-3/64	1-1/8 -12	.62 (15.7)	.75 (19.1)	.38 (9.65)	.188 (4.78)
9/16 (14.3)	F562C40	1-3/64	1-1/8 -12	.62 (15.7)	.75 (19.1)	.38 (9.65)	.250 (6.35)
1 (25.4)	F1000CX43	1-19/64	1-3/8 -12	.81 (20.6)	1.31 (33.3)	.88 (22.4)	.438 (11.1)



Nota: Toutes les dimensions ne sont indiquées qu'à titre indicatif et ne doivent pas être considérées comme des dimensions réelles d'usinage.
**Pour les dimensions des sorties voir taille des orifices des vannes et raccords spécifiques.*
Tous les filetages sont fabriqués à une classe 2A ou 2B .

! AVERTISSMENT !

Le présent document (ainsi que tout renseignement provenant de Snap-tite Inc. , de ses filiales et distributeurs autorisés) offrent le choix de produits et/ou systèmes destinés à permettre à des utilisateurs techniquement compétents d'effectuer des recherches supplémentaires. Il est important d'effectuer une analyse exhaustive de l'application et d'étudier les renseignements relatifs au produit ou système dans le catalogue le plus récent . En raison de la grande variété de conditions d'exploitation et d'application de ces produits , l'utilisateur est, suite à ses analyses et essais réalisés par ses soins, seul responsable de son choix de produits et de systèmes et de l'assurance que toutes les conditions de fonctionnement , de sécurité et d'avertissement ont été satisfaites .

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Autoclave Engineers

Ventile, Armaturen und Rohre

Übersicht

Autoclave Engineers

Fluid Components

Division of Snap-tite, Inc.

Weltweit führend in Hochdruckventilen-, Armaturen- und Rohren

Seit der Gründung im Jahre 1945 hat sich Autoclave Engineers der Herstellung von Höchstdruck Ventil-Systemen gewidmet welche sicher und zuverlässig bei extremen Schwankungen von Temperatur, Druck und Umweldbedingungen arbeiten. Heute ist Autoclave weltweit führend auf dem Gebiet der Hochdrucktechnik mit sicher und zuverlässig arbeitenden Komponenten sowie unterstützendem Service in der Hochdruckindustrie.

Autoclave Ventile, Armaturen und Rohre sind der Industrie bekannt für Einsätze bis zu 6895 bar (100.000 psi); eine Niederdruckreihe für Applikationen von 1034 bar (15.000 psi) ist ebenfalls verfügbar. Unter Nutzung spezieller Dichtungsführungen sind die Produkte lekagefrei; Nennweiten von 1/16” bis 1/2”.

Niederdruck Ventile, Armaturen und Rohre

Alle Autoclave Niederdruck-Ventile sind mit einer justierbaren Ventilspindel ausgerüstet; eine spielfreie Bedinung ist daher auch nach lägerem Betrieb gewährleistet.

Zusätzlich sind die Ventile mit einer Metall-auf-Metall Dichtung ausgerüstet für blasenfreies Abschalten, verschleissfrei und korrosionsbeständig.

Die folgenden 3 Ausführungen der Ventile der Niederdruckreihe werden angeboten: 10V, SW und MVE/MV Serie.

Modellbeispiele:

2-Wege Durchgangsventil
2-Wege Eckventil
3-Wege 2 Druckeingänge
3-Wege 1 Druckeingang
2-Wege Eckventil mit auswechselbarer Spindel (nicht für MVE/MV)
3-Wege 2 Spindel Verteiler

Drei unterschiedliche Spindeln sind verfügbar: - “Auf/ZU”-Spindel: Spindelkopf in V-förmiger Ausführung: Funktion Absperrventil “Auf/Zu”, Metall-auf-Metall dichtend.- Regulier-Spindel: Spindelspitze in konischer Ausführung. Funktion: Drosselventil/Absperrventil.- Mikrometer-Spindel: Feindosierventil mit Mikrometereinteilung, für kleine reproduzierbare Durchflussmengen.

Neben einer kompletten Auswahl an Rohren und Armaturen bieten wir noch weitere Produckte für andere Temperatur- und Druckbereiche an. Autoclave Produkte werden standardmässig in Edelstahl 316SS geliefert – aber auch Materialien wie Hastelloy B & C,
Inconel, Monel, Nickel oder Titan sind lieferbar.

Unseren umfangreichen VFT-Katalog erhalten Sie über unsere Distributionspartner oder direkt ab Werk unter Telefon (USA):
+1 814-860-5700.

Autoclave Engineers hat ein weitergehendes, fortschrittliches Druckhülsensystem-genannt QSS-Quick-Set-System-entwickelt.
Dieses 1/4” bis 3/4” Aussendurchmesser dickwandige Hochfluss-Rohrsystem arbeitet in allen Nennweiten bis 1034 bar (15.000 psi).
Für weitere Informationen forden Sie bitte unseren kompletten VFT Katalog an oder wenden Sie sich an Ihren Autoclave Vertriebspartner.

Handventile

Autoclave Ventile sind für das sichere und zuverlässige Arbeiten mit Drücken bis zu 10342 bar (150.000 psi) entwickelt. Mehrere wichtige Eigenschaften ermöglichen das zuverlässige arbeiten unter unterschiedlichen Bedingungen.

Nichtdrehende Ventilspindel

Verhindert Abrieb an Spindelspitze und Sitz beim Öffnen und Schliessen.

Metall-auf-Metall Packung

Für blasenfreies Abschalten, garantiert längere Lebensdauer für Spindel und Sitz, höhere Beständigkeit für „Auf/Zu"-Zyklen sowie hervorragende Korrosionsbeständigkeit.

PTFE gekapselte Packung

Garantiert zuverlässige Spindel-/ Ventildichtung. Spindelführung und Packungsmutter verringern die Übertragung von Drehkräften auf die Ventilspindel.

Handventilvarianten

Eine Auswahl von Autoclave Ventilen auf Ihre Bedürfnisse zugeschnitten, steht zur Verfügung. Fünf verschiedene Ventilausführungen, eine Auswahl von verschiedenen Materialien und Spindeltypen für extreme Einsatzbedingungen sowie für abrasive Medien stehen zur Verfügung.

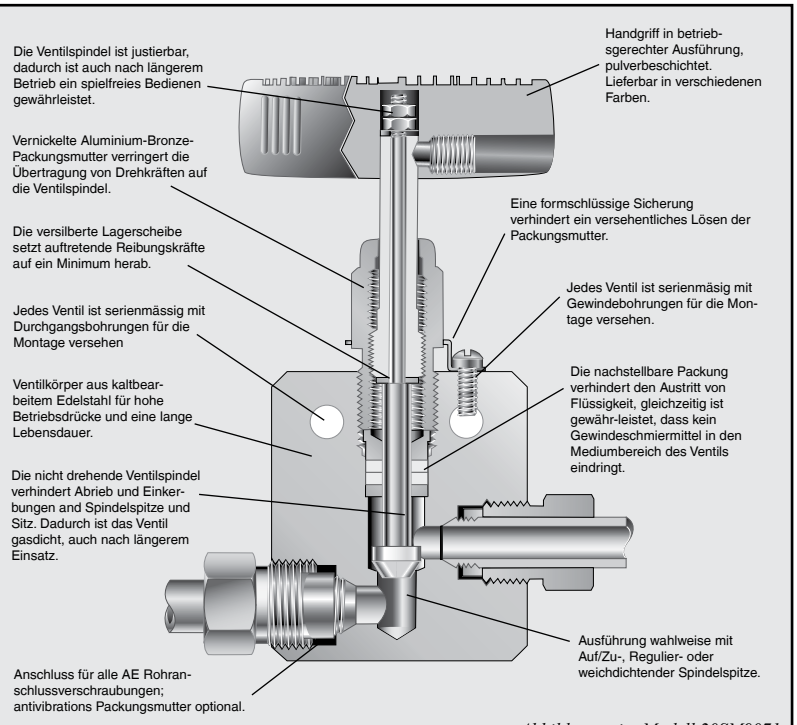


Abbildung zeigt Modell 20SM9071

	Rohraussendurchmesser Zoll (mm)	Betriebsdruck psi (bar)	*Nennwert C_v (offen)	Spindeltyp	2-Wege Durchgangsventil	2-Wege Eckventil	3-Wegeventil, 2 Druckeingänge	3-Wegeventil, 1 Druckeingäng	2-Wege Eckventil austauschbarer Sitz	3-Wegeventil mit 2 Spindel
Mitteldruck	1/4 (6.35)	20,000 (1380)	.31	Vee	20SM4071	20SM4072	20SM4073	20SM4074	20SM4872	20SM4075
				Reg	20SM4081	20SM4082	20SM4083	20SM4084	20SM4882	20SM4085
	3/8 (9.53)	20,000 (1380)	.75	Vee	20SM6071	20SM6072	20SM6073	20SM6074	20SM6872	20SV6075
				Reg	20SM6081	20SM6082	20SM6083	20SM6084	20SM6882	20SM6085
	9/16 (14.3)	20,000 (1380)	1.30	Vee	20SM9071	20SM9072	20SM9073	20SM9074	20SM9872	20SM9075
				Reg	20SM9081	20SM9082	20SM9083	20SM9084	20SM9882	20SM9085
	3/4 (19.1)	20,000 (1380)	2.50	Vee	20SM12071	20SM12072	20SM12073	20SM12074	20SM12872	20SM12075
				Reg	20SM12081	20SM12082	20SM12083	20SM12084	20SM12882	20SM12085
	1 (25.4)	20,000 (1380)	4.40	Vee	20SM16071	20SM16072	20SM16073	20SM16074	20SM16872	20SM16075
				Reg	20SM16081	20SM16082	20SM16083	20SM16084	20SM16882	20SM16085
	9/16 (14.30)	10,000 (690)	1.75	Vee	10SM9071	10SM9072	10SM9073	10SM9074	10SM9872	10SM9075
				Reg	10SM9081	10SM9082	10SM9083	10SM9084	10SM9882	10SM9085
	3/4 (19.10)	10,000 (690)	2.80	Vee	10SM12071	10SM12072	10SM12073	10SM12074	10SM12872	10SM12075
				Reg	10SM12081	10SM12082	10SM12083	10SM12084	10SM12882	10SM12085
	1 (25.40)	10,000 (690)	5.20	Vee	10SM16071	10SM16072	10SM16073	10SM16074	10SM16872	10SM16075
				Reg	10SM16081	10SM16082	10SM16083	10SM16084	10SM16882	10SM16085
Hochdruck	1 (25.4)	30,000 (2070)	2.60	Vee	30SC16071	30SC16072	30SC16073	30SC16074	30SC16872	30SC16075
				Reg	30SC16081	30SC16082	30SC16083	30SC16084	30SC16882	30SC16085
	1/4 (6.35)	30,000 (2070)	.12	Vee	30VM4071	30VM4072	30VM4073	30VM4074	30VM4872	30VM4075
				Reg	30VM4081	30VM4082	30VM4083	30VM4084	30VM4882	30VM4085
	3/8 (9.53)	30,000 (2070)	.23	Vee	30VM6071	30VM6072	30VM6073	30VM6074	30VM6872	30VM6075
				Reg	30VM6081	30VM6082	30VM6083	30VM6084	30VM6882	30VM6085
	9/16 (14.3)	30,000 (2070)	.33	Vee	30VM9071	30VM9072	30VM9073	30VM9074	30VM9872	30VM9075
				Reg	30VM9081	30VM9082	30VM9083	30VM9084	30VM9882	30VM9085
	9/16 (14.3)	40,000 (2760)	.28	Vee	40VM9071	40VM9072	40VM9073	40VM9074	40VM9872	40VM9075
				Reg	40VM9081	40VM9082	40VM9083	40VM9084	40VM9882	40VM9085
	1/4 (6.35)	60,000 (4140)	.08	Vee	60VM4071	60VM4072	60VM4073	60VM4074	60VM4872	60VM4075
				Reg	60VM4081	60VM4082	60VM4083	60VM4084	60VM4882	60VM4085
	3/8 (9.53)	60,000 (4140)	.09	Vee	60VM6071	60VM6072	60VM6073	60VM6074	60VM6872	60VM6075
				Reg	60VM6081	60VM6082	60VM6083	60VM6084	60VM6882	60VM6085
	9/16 (14.3)	60,000 (4140)	.14	Vee	60VM9071	60VM9072	60VM9073	60VM9074	60VM9872	60VM9075
				Reg	60VM9081	60VM9082	60VM9083	60VM9084	60VM9882	60VM9085

*C_v Werte gelten für 2-Wege Durchgangsventile. Für 2-Wege Eckventile C_v plus 50%. ***Bitten beachten: SM Serie ersetzt 20SC Serie.***

Pneumatisch betätigte Ventile (für AE handbetätigte Ventile)

Drei Grössen pneumatisch betätigter Ventile (Mittel-, Hoch- und Höchstdruck) stehen zur Auswahl für fernbetätigte "Auf-Zu" Bedienung oder automatische Bedienung von Autoclave Mittel- oder Hochdruckventilen. Die pneumatischen AE-Ventile sind in zwei Schaltvorrichtungen erhältlich: normal offen, mit Druckluft schliessend (air-to-open) und normal geschlossen, mit Druckluft öffnend (air-to-close).

Bestell-Beispiele (Um eine sichere Auswahl zu treffen, setzen Sie sich bitte mit unserem Werk in Verbindung)

Um ein Ventil mit einer pneumatischen Bedienung zu bestellen, wählen Sie "Nennleistung", und "Ventiltyp" aus der untenstehenden Tabelle. Fügen Sie "Bestellzusatz" zur Katalognummer des AE-Ventils hinzu. Beispiele: 2-Wege-Durchgangsventil, 30VM, Auf/Zu-Spindel, 9/16" (14,3mm), Mitteldruck, mit Druckluft öffnend: ***30VM9071-C1S*** *für ein Pneumatisch betätiges Joch (Yoke) Ventil mit Kolbenantrieb oder* ***30VM9071-CM*** *für ein pneumatisch betätigtes integrales Ventil mit Membranantrieb.*

Nennleistung	Antrieb	Type	Bestellzusatz
Mitteldruck	Membranantrieb	Offen, mit Druckluft schliessend	OM
		Geschlossen, mit Druckluft öffnend	CM
	Kolbenantrieb	Offen, mit Druckluft schliessend	O1S
		Geschlossen, mit Druckluft öffnend	C1S
Hochdruck	Membranantrieb	Offen, mit Druckluft schliessend	OH
		Geschlossen, mit Druckluft öffnend	CH
	Kolbenantrieb	Offen, mit Druckluft schliessend	O2S
		Geschlossen, mit Druckluft öffnend	C2S
Höchstdruck	Kolbenantrieb	Offen, mit Druckluft schliessend	HO1S
		Geschlossen, mit Druckluft öffnend	HC1S
Höchstdruck zweistufig	Kolbenantrieb	Offen, mit Druckluft schliessend	HO2S
		Geschlossen, mit Druckluft öffnend	HC2S

Die untenstehende Tabelle erlaubt eine schnelle Selektion entprechender Betätgungsvorrichtungen basierend auf Ventilausführung und Grösse, maximaler Systemarbeitsdruck und maximalem entsprechendem Pneumatikdruck. Beispiel: Der Systemsarbeitsdruck beträgt 1723 bar (25,000 psi) und der verfügbare Pneumatikdruck 4,1 bar (60 psi) und ein "normal offen" (mit Druckluft schliessend) Ventil wird verlangt: ein 30VM oder 60VM Höchstdruckventil kann Eingesetzt werden.

Geschlossen, mit Druckluft öffnend

Ventil-Serien	Rohraussen-durchmesser in. (mm)	Mitteldruck		Hochdruck		Höchstdruck		Höchstdruck zweistufig	
		Systemdruck psi (bar)	Pneumatik-druck psi (bar)	Systemdruck psi (bar)	Pneumatik-druck psi (bar)	Systemdruck psi (bar)	Pneumatik-druck psi (bar)	Systemdruck psi (bar)	Pneumatik-druck psi (bar)
10SM	9/16 (14.3)	8,600 (593)	100 (6.9)	10,000 (690)	55 (3.8)	10,000 (690)	45 (3.10)	10,000 (690)	20 (1.4)
	3/4 (19.1)	4,800 (331)	100 (6.9)	10,000 (690)	100 (6.9)	10,000 (690)	70 (4.83)	10,000 (690)	35 (2.4)
	1 (25.4)	2,800 (193)	100 (6.9)	6,300 (434)	100 (6.9)	8,500 (586)	95 (6.55)	10,000 (690)	55 (3.79)
20SM	1/4 (6.35)	20,000 (1380)	95 (6.5)	20,000 (1380)	50 (3.5)	—	—	—	—
	3/8 (9.53)	20,000 (1380)	100 (6.9)	20,000 (1380)	55 (3.8)	—	—	—	—
	9/16 (14.3)	10,700 (734)	100 (6.9)	20,000 (1380)	85 (5.9)	20,000 (1380)	65 (4.48)	20,000 (1380)	30 (2.1)
	3/4 (19.1)	6,100 (421)	100 (6.9)	13,600 (938)	100 (6.9)	19,000 (1310)	100 (6.90)	20,000 (1380)	50 (3.4)
	1 (25.4)	3,900 (269)	100 (6.9)	8,800 (607)	100 (6.9)	19,000 (1310)	95 (6.55)	20,000 (1380)	75 (5.1)
30SC	1 (25.4)	—	—	—	—	—	—	30,000 (2068)	80 (5.5)
30VM	1/4 (6.35)	30,000 (2068)	55 (3.8)	30,000 (2068)	30 (2.0)	—	—	—	—
	3/8 (9.53)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
	9/16 (14.3)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
40VM	9/16 (14.3)	—	—	40,000 (2758)	45 (3.1)	—	—	—	—
60VM	1/4 (6.35)	60,000 (4137)	75 (5.2)	60,000 (4137)	40 (2.8)	—	—	—	—
	3/8 (9.53)	60,000 (4137)	75 (5.2)	60,000 (4137)	40 (2.8)	—	—	—	—
	9/16 (14.3)	60,000 (4137)	90 (6.2)	60,000 (4137)	45 (3.1)	—	—	—	—

Offen, mit Druckluft schliessend

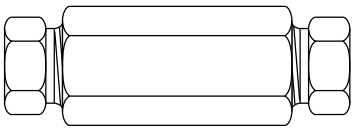
10SM	9/16 (14.3)	7,900 (545)	95 (6.6)	10,000 (690)	75 (5.1)	10,000 (690)	60 (4.13)	10,000 (690)	40 (2.8)
	3/4 (9.1)	—	—	—	—	10,000 (690)	95 (6.55)	10,000 (690)	60 (4.1)
	1 (25.4)	—	—	—	—	6,500 (448)	100 (6.90)	10,000 (690)	85 (5.9)
20SM	1/4 (6.35)	20,000 (1380)	95 (6.6)	20,000 (1380)	50 (3.4)	—	—	—	—
	3/8 (9.53)	18,250 (1258)	95 (6.6)	18,250 (1258)	50 (3.4)	—	—	—	—
	9/16 (14.3)	9,800 (676)	95 (6.6)	15,700 (1082)	75 (5.1)	20,000 (1380)	85 (5.86)	20,000 (1380)	55 (3.8)
	3/4 (19.1)	—	—	6,000 (414)	75 (5.1)	15,000 (1034)	100 (6.90)	20,000 (1380)	80 (5.5)
	1 (25.4)	—	—	4,000 (276)	75 (5.1)	10,000 (690)	100 (6.90)	20,000 (1380)	100 (6.9)
30SC	1 (25.4)	—	—	—	—	—	—	30,000 (2068)	100 (6.9)
30VM	1/4 (6.35)	30,000 (2068)	75 (5.2)	30,000 (2068)	40 (2.8)	—	—	—	—
	3/8 (9.53)	30,000 (2068)	95 (6.5)	30,000 (2068)	50 (3.5)	—	—	—	—
	9/16 (14.3)	30,000 (2068)	95 (6.5)	30,000 (2068)	50 (3.5)	—	—	—	—
40VM	9/16 (14.3)	—	—	40,000 (2758)	55 (3.8)	—	—	—	—
60VM	1/4 (6.35)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—
	3/8 (9.53)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—
	9/16 (14.3)	60,000 (4137)	95 (6.5)	60,000 (4137)	50 (3.5)	—	—	—	—

Kupplungen

Die hier erwähnten Kupplungen sind für die Verbindungen aller Kombinationen von Autoclave Standardrohren mit Innengewinde (female-to-female). Weitere Ausführungen stehen auf Anfrage zur Verfügung.

Bestellbeispiele:

1. *Nennweite in Tabelle "A" lokalisieren*
2. *Nennweite in Tabelle "B" entsprechend zuordnen*
3. *Die entsprechende Katalognummer finden Sie im Schnittpunkt der beiden Tabellen.*



"A" Verbindung — "B" Verbindung

"A" Verbindung				"B" Verbindung									
				AE Mitteldruck					AE Hochdruck				
	Rohrab-messung in.(mm)	Anschluss-variante	Druck psi*(bar)	1/4 (6.35) SF250CX	3/8 (9.53) SF375CX	9/16 (14.3) SF562CX	3/4 (19.1) SF750CX	1 (25.4) SF1000CX	1 (25.4) F1000C43	1/4 (6.35) F250C	3/8 (9.53) F375C	9/16 (14.3) F562C	9/16 (14.3) F562C40
AE Mitteldruck	1/4 (6.35)	SF250CX	20,000 (1380)	20FX 4466	20F 4666	20F 4966	20F 41266	20F 41666	20F 41663	20F 4463	20F 4663	20F 4963	
	3/8 (9.53)	SF375CX	20,000 (1380)		20FX 6666	20F 6966	20F 61266	20F 61666	20F 61663	20F 6463	20F 6663	20F 6963	
	9/16 (14.3)	SF562CX	20,000 (1380)			20FX 9966	20F 91266	20F 91666		20F 9463	20F 9663	20F 9963	
	3/4 (19.1)	SF750CX	20,000 (1380)				20FX 12	20F 121666		20F 12463	20F 12663	20F 12963	
	1 (25.4)	SF1000CX	20,000 (1380)					20FX 16		20F 16463	20F 16663	20F 16963	
AE Hochdruck	1 (25.4)	F1000C43	43,000 (2964)						43F 16				
	1/4 (6.35)	F250C	60,000 (4140)						43F 41633	60F 4433	60F 4633	60F 4933	
	3/8 (9.53)	F375C	60,000 (4140)						43F 61633		60F 6633	60F 6933	
	9/16 (14.3)	F562C	60,000 4140						43F 91633			60F 9333	
	9/16 (14.3)	F562C40	40,000 (2758)										40F 9933

Aussen-/Inngewinde Adapter

Aussen-/Inngewindeadapter erlauben eine Verbindung zu anderen Nennweiten und/oder Anschlussvarianten. Bei der Selektion eines Adapters für zwei unterschiedliche Nennweiten, sollte die grössere Verbindung auf der Seite des Aussengewindes liegen, zur Maximierung der mechanischen Kraft des Adapters.

Bestellbeispiele:

1. *Aussengewinde in vertikaler Spalte lokalisieren*
2. *Entsprechendes Innengewinde entsprechend zuordnen*
3. *Die entsprechende Katalognummer finden Sie im Schnittpunkt der beiden Tabellen.*

Andere Adapter

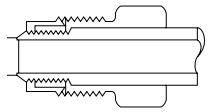
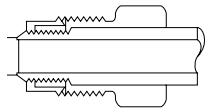
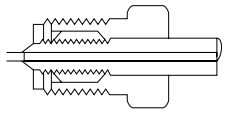
AE liefert auf Wunsch viele andere Ausführungen von Adaptern,Einschliesslich AE UniVersa-Lok gesenkgeschmiedete Verbindungen, Einschweissverschraubung zum Rohraussen- bzw. nominalem Rohr-durchmesser, Aussen-/Inndurchmesser.

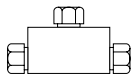
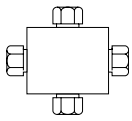
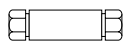
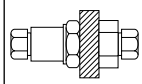
Werkstoffe

Alle AE Adapter sind Präzsionsteile aus kaltgeschmiedetem Edelstahl Typ 316. Weitere Werkstoffe auf Anfrage.

Innengewinde ▶				AE Mitteldruck					AE Hochdruck				
				1/4"(6.35) SF250CX	3/8"(9.53) SF375CX	9/16"(14.3) SF562CX	3/4"(19.1) SF750CX	1"(25.4) SF1000CX	1"(25.4) F1000C43	1/4"(6.35) F250C	3/8"(9.53) F375C	9/16"(14.3) F562C	9/16" (14.3) F562C40
Aussenge-winde ▼		Passend zum Innenge-winde	Arbeits-druck psi* (bar)	20,000 (1380)	20,000 (1380)	20,000 (1380)	20,000 (1380)	20,000 (1380)	43,000 (2964)	60,000 (4140)	60,000 (4140)	60,000 (4140)	40,000 (2758)
AE Mitteldruck	1/4 (6.35)	SF250CX	20,000 (1380)		20M46K6	20M49K6	20M412K6	20M416K6		20M44K3	20M46K3	20M49K3	
	3/8 (9.53)	SF375CX	20,000 (1380)	20M64K6		20M69K6	20M612K6	20M616K6		20M64K3	20M66K3	20M69K3	
	9/16 (14.3)	SF562CX	20,000 (1380)	20M94K6	20M96K6		20M912K6	20M916K6		20M94K3	20M96K3	20M99K3	
	3/4 (19.1)	SF750CX	20,000 (1380)	20M124K6	20M126K6	20M129K6		20M1216K6		20M124K3	20M126K3	20M129K3	20M129K40
	1 (25.4)	SF1000CX	20,000 (1380)	20M164K6	20M166K6	20M169K6	20M1612K6	20M1616K6		20M164K3	20M166K3	20M169K3	
AE Hochdruck	1 (25.4)	F1000C43	43,000 (2964)							43M164B3	43M166B3	43M169B3	43M169B40
	1/4 (6.35)	F250C	60,000 (4140)	20M44B6	20M46B6	20M49B6	20M412B6		43M416B6		60M46B3	60M49B3	
	3/8 (9.53)	F375C	60,000 (4140)	20M64B6	20M66B6	20M69B6	20M612B6	20M616B6	43M616B6	60M64B3		60M69B3	
	9/16 (14.3)	F562C	60,000 (4140)	20M94B6	20M96B6	20M99B6	20M912B6	20M916B6	43M916B6	60M94B3	60M96B3		
	9/16 (14.3)	F562C40	40,000 (2758)				20M912G6						

***Nennleistung** - Die Druckleistung der AE Kupplungen ist auf den niedrigsten Druck der Vergindung ausgelegt!*

	Anschluss-Typ in. (mm)	Betriebsdruck psi (bar)	Anschlussausführungen	
Mitteldruck	1/4 to 1 (6.35 to 25.4)	to 20,000 (1380)	Dichtkonus und Gewindeausführung für höchsten und wiederholten Einsatz, einschliesslich Druckschraube und Stützring. Anti-Vibrationsdruckschrauben lieferbar.	
Hochdruck	1 (25.4)	to 43,000 (2964)	Dichtkonus- und Gewindeausführung für höchsten und wiederholten Einsatz. Anti-Vibrationsdruckschrauben lieferbar.	
	1/4 to 9/16 (6.35 to 14.3)	to 60,000 (4140)	Dichtkonus- und Gewindeausführung für höchsten und wiederholten Einsatz. Anti-Vibrationsdruckschrauben lieferbar.	

	Rohraussen-durchmesser in. (mm)	Arbeitsdruck psi (bar)	 Winkelstücke	 T-Stücke	 Kreuzstücke	 Kupplungen und Universal-Kupplungen	 Kupplungen und Universal-Kupplungen	 Schottver-schraubung
Mitteldruck	1/4 (6.35)	20,000 (1380)	CLX4400	CTX4440	CXX4444	20FX4466	20UFX4466	20BFX4466
	3/8 (9.53)	20,000 (1380)	CLX6600	CTX6660	CXX6666	20FX6666	20UFX6666	20BFX6666
	9/16 (14.3)	20,000 (1380)	CLX9900	CTX9990	CXX9999	20FX9966	20UFX9966	20BFX9966
	3/4 (19.1)	20,000 (1380)	CLX12	CTX12	CXX12	20FX12	20UFX12	20BFX12
	1 (25.4)	20,000 (1380)	CLX16	CTX16	CXX16	20FX16	20UFX16	20BFX16
Hochdruck	1 (25.4)	43,000 (2964)	43CL16	43CT16	43CX16	43F16	43UF16	43BF16
	9/16 (14.3)	40,000 (2760)	40CL9900	40CT9990	40CX9999	40F9933	40UF9933	40BF9933
	1/4 (6.35)	60,000 (4140)	CL4400	CT4440	CX4444	60F4433	60UF4433	60BF4433
	3/8 (9.53)	60,000 (4140)	CL6600	CT6660	CX6666	60F6633	60UF6633	60BF6633
	9/16 (14.3)	60,000 (4140)	CL9900	CT9990	CX9999	60F9933	60UF9933	60BF9933

			Anschluss-Komponenten			Rückschlagventile			Leitungsfilter		Berstscheiben-halterung
	Rohraussen-durchmesser in. (mm)	Arbeitsdruck psi (bar)	 Dichtschraube	 Druckring	 Stopfen	 O-Ring	 Kugel	 Durchflussüber-schuss	 Kugel-Type Doppelfilter-scheiben	 "Tassen"-Filterelement	 Berstscheiben-sicherung
Mitteldruck	1/4 (6.35)	20,000 (1380)	CGLX40	CCLX40	CPX40	CXO4400	CXB4400	CXK4402	-	CXF4	CSX4600*
	3/8 (9.53)	20,000 (1380)	CGLX60	CCLX60	CPX60	CXO6600	CXB6602	CXK6602	-	CXF6	CSX6600*
	9/16 (14.3)	20,000 (1380)	CGLX90	CCLX90	CPX90	CXO9900	CXB9900	CXK9902	CLFX9900	CXF9	CSX9600*
	3/4 (19.1)	20,000 (1380)	CGLX120	CCLX120	CPX120	CXO12	CXB12	CXK1202	-	-	-
	1 (25.4)	20,000 (1380)	CGLX160	CCLX160	CPX160	CXO16	CXB16	CXK1602	-	CXF16	-
Hochdruck	1 (25.4)	43,000 (2964)	CGLX160	CCLX160	43CP160	43CO16	43CB16	-	-	-	-
	9/16 (14.3)	40,000 (2760)	AGL90	ACL90	AP90	-	-	-	-	-	-
	1/4 (6.35)	60,000 (4140)	AGL40	ACL40	AP40	CKO4400	CB4401	CK4402	CLF4400	CF4	CS4600*
	3/8 (9.53)	60,000 (4140)	AGL60	ACL60	AP60	CKO6600	CB6601	CK6602	CLF6600	CF6	CS6600*
	9/16 (14.3)	60,000 (4140)	AGL90	ACL90	AP90	CKO9900	CB9901	CK9902	CLF9900	CF9	CS9600*

**Gibt Abmessung der Bertscheibe an*

Hochdruckrohre

Autoclave Engineers bieten eine komplette Auswahl an austenitisch, kaltgezogenen Edelstahlrohren nach strengsten AE-Vorschriften für Ventile und Fittinge an. AE Rohre sind speziell für Höchstdruckanwendungen betreffend Festigkeit und Korrosionsbeständigkeit hergestellt. Die Herstellungslängen liegen zwischen 6,1 m und 8,2 m (20 und 27 feet).

Inspektion und Prüfung

Die Eingangskontrolle von AE garantiert, dass die Rohre frei von Nähten, Überlappstössen, Rissen und anderen Fabrikationsfehlern sind. Die Aussen- und Innendurchmesser der Rohre werden einer speziellen Kontrolle und Inspektion unterzogen, um eine einwandfreie Passung zu garantieren. Die mechanischen und hydrostatischen Eigenschaften werden ebenfalls regelmässig durch Stichprobentests kontrolliert.

Katalog Nummer	Material	Anschlusstyp	Abmessung in.(mm)		Wandstärke nominal In. (mm)	Durchfluss-fläche In.² (mm²)	Betriebsdruck psi (bar)				
			Aussendurch-messer In. (mm)	Innendurch-messer In. (mm)			-325 to 100°F (-198 to 38°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)
MS15-092	316SS	SF250CX	1/4 (6.35)	.109 (2.77)	.070 (1.78)	.009 (5.81)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-192	304SS						20,000 (1380)	18,950 (1310)	17,200 (1190)	17,000 (1170)	16,150 (1110)
MS15-093	316SS	SF375CX	3/8 (9.53)	.203 (5.16)	.086 (2.18)	.032 (20.6)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-193	304SS						20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-085	316SS	SF562CX	9/16 (14.3)	.312 (7.92)	.125 (3.17)	.076 (49)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-187	304SS						20,000 (1380)	20,000 (1380)	19,250 (1327)	18,050 (1250)	16,800 (1160)
MS15-097	316SS	SF562CX	9/16 (14.3)	.359 (9.12)	.101 (2.56)	.101 (65.2)	15,000 (1034)	15,000 (1034)	14,400 (992)	13,650 (941)	12,670 (874)
MS15-194	304SS						15,000 (1034)	14,170 (977)	12,900 (890)	12,750 (880)	12,670 (874)
MS15-095	316SS	SF750CX	3/4 (19.1)	.438 (11.1)	.156 (3.96)	.151 (97.4)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	16,800 (1160)
MS15-098	316SS			.516 (13.1)	.117 (2.97)	.209 (135)	15,000 (1034)	15,000 (1034)	14,400 (993)	13,650 (941)	12,670 (874)
MS15-096	316SS	SF1000CX	1 (25.4)	.562 (14.3)	.219 (5.56)	.248 (160)	20,000 (1380)	20,000 (1380)	19,250 (1330)	18,050 (1250)	12,670 (874)
MS15-099	316SS			.688 (17.5)	.156 (4.02)	.371 (239)	15,000 (1034)	15,000 (1034)	14,400 (992)	13,650 (941)	12,670 (874)
MS15-081	316SS	F250C	1/4 (6.35)	.083 (2.11)	.083 (2.11)	.005 (3.22)	60,000 (4140)	60,000 (1380)	57,750 (1380)	54,250 (1380)	50,700 (1380)
MS15-182	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-087	316SS	F375C	3/8 (9.53)	.125 (3.18)	.125 (3.18)	.012 (7.74)	60,000 (4140)	60,000 (4140)	57,750 (3980)	54,250 (3740)	50,700 (3490)
MS15-183	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-083	316SS	F562C	9/16 (14.3)	.187 (4.78)	.187 (4.78)	.028 (18)	60,000 (4140)	60,000 (4140)	57,750 (3980)	54,250 (3740)	50,700 (3490)
MS15-185	304SS						60,000 (4140)	56,800 (3910)	51,650 (3560)	50,700 (3500)	48,450 (3340)
MS15-199	304SS	F1000C43	1 (25.4)	.438 (11.1)	.281 (7.14)	.151 (97.4)	43,000 (2964)	40,600 (2799)	36,900 (2544)	36,300 (2502)	34,700 (2392)
MS15-211	316SS	F1000C43	1 (25.4)	.438 (11.13)	.281 (7.14)	.151 (97.4)	43,000 (2964)	43,000 (2964)	43,000 (2964)	41,380 (2853)	36,330 (2504)
MS15-090	316SS	F562C40	9/16 (14.3)	.25 (6.35)	.156 (4.02)	.048 (31)	40,000 (2760)	40,000 (2760)	38,500 (2655)	36,100 (2489)	33,800 (2330)

Bemerkung: Für autofrettierte Rohre der Teile-Nummer den Zusatz “ESR42” hinzufügen.

Nippel (konisch/mit Gewinde)

Autoclave Engineers bietet vorgefertigte – mit Konus und Gewinde versehene Nippel in verschiedenen Abmessungen und Längen um schnellere Installationen zu gewährleisten.

Sonderlängen

Zusätzlich zu den in der untenstehenden Tabelle aufgeführten Längen sind Sonderlängen auf Anfrage lieferbar.

Material

Edelstahl Typ 316, falls nicht anderweitig spezifiert.

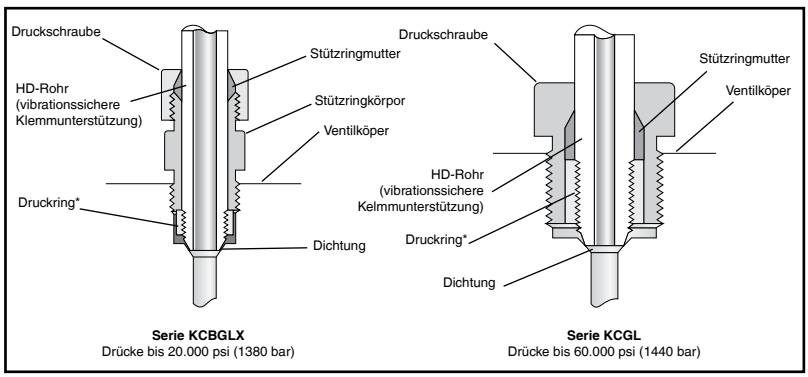
Anschlusstyp	Abmessung in.(mm)		Betriebsdruck bei 100°F (38°C) psi (bar)	Katalog-Nummer						
	Aussendurch-messer	Innendurch-messer		2.75" Länge	3" Länge	4" Länge	6" Länge	8" Länge	10" Länge	12" Länge
SF250CX	1/4 (6.35)	.109 (2.77)	20,000 (1380)	CNX4402	CNX4403	CNX4404	CNX4406	CNX4408	CNX44010	CNX44012
SF375CX	3/8 (9.53)	.203 (5.16)	20,000 (1380)		CNX6603	CNX6604	CNX6606	CNX6608	CNX66010	CNX66012
SF562CX	9/16 (14.3)	.312 (7.92)	20,000 (1380)			CNX9904	CNX9906	CNX9908	CNX99010	CNX99012
SF562CX	9/16 (14.3)	.359 (9.12)	15,000 (1034)			CNLX9904	CNLX9906	CNLX9908	CNLX99010	CNLX99012
SF750CX	3/4 (19.1)	.438 (11.1)	20,000 (1380)			CNX1204	CNX1206	CNX1208	CNX12010	CNX12012
SF750CX	3/4 (19.1)	.515 (13.1)	15,000 (1034)			CNLX1204	CNLX1206	CNLX1208	CNLX12010	CNLX12012
SF1000CX	1 (25.4)	.562 (14.3)	20,000 (1380)				CNX1606	CNX1608	CNX16010	CNX16012
SF1000CX	1 (25.4)	.688 (17.5)	15,000 (1034)				CNLX1606	CNLX1608	CNLX16010	CNLX16012
F250C	1/4 (6.35)	.083 (2.11)	60,000 (4140)	CN4402	CN4403	CN4404	CN4406	CN4408	CN44010	CN44012
F375C	3/8 (9.53)	.125 (3.18)	60,000 (4140)		CN6603	CN6604	CN6606	CN6608	CN66010	CN66012
F562C	9/16 (14.3)	.187 (4.78)	60,000 (4140)			CN9904	CN9906	CN9908	CN99010	CN99012
F562C40	9/16 (14.3)	.250 (6.35)	40,000 (2760)			40CN9904-316	40CN9906-316	40CN9908-316	40CN99010-316	40CN99012-316
F1000C43	1 (25.4)	.438 (11.1)	43,000 (2964)				43CN1606-304	43CN1608-304	43CN16010-304	43CN16012-304

Bemerkung: Bitte Katalognummer mit Materialnummer -316 oder -304 ergänzen, falls nicht angegeben.

Vibrationssichere Rohranschlüsse

Vibrationen und/oder Erschütterungen können die Arbeitsweise in Rohrsystemen beinträchtigen. Aus diesem Grund bietet Autoclave Engineers – komplett mit AE Hochdruckverbindungen austauschbare - vibrationssichere Rohranschlüsse.

Anschluss-grösse in. (mm)	Katalog-Nummer	
	Mitteldruck bis to 20.000 psi	Hochdruck bis 60.000 psi
1/4 (6.35)	KCBGLX40-316MC	KCGL40-316
3/8 (9.53)	KCBGLX60-316MC	KCGL60-316
9/16 (14.3)	KCBGLX90-316MC	KCGL90-316
3/4 (19.1)	KCBGLX120-316MC	-
1 (25.4)	KCBGLX160-316MC	†KCBGLX160-316MC



† 1" Hochstdruck bis 43.000 psi (2964 bar)

*ohne AE-Druckring!

AE Manometer

Werkstoff/Eigenschaften

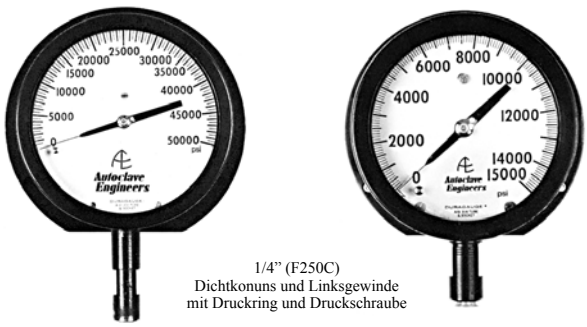
- Genauigkeit +/- 0.5%
- Kunststoff-Einstellscheibe/Vorderseite Aluminiumguss
- Überdruck-Entlastungsventil
- Werkstoff 316 Edelstahl Rohrverbindung
- Präzisionsedelstahlführung für hohe Passgenauigkeit und Witterungsbeständigkeit
- Nadel-Nullinieneinstellung

Qualitäts-Manometer

- Bündige Panel-Befestigung – austauschbare Anzeigenscheibe zur Installation auf jedem Qualitäts-Manometer. Dies wird gesondert berechnet, falls der Auftrag mit dem Zusatz "PM" gekennzeichnet ist.
- Optional elektrische Kontaktanzeige-lieferbar für alle Qualitäts-Manometer, justierbar für niedrige und hohe elektrische Kontakte.

** Manometer aus Inconel 718 für Bourdon-Rohre von 0-80.000 psi (0-5116 bar) und 0-50.000 psi (0-3447 bar). Manometer aus K Monel für Bourdon-Rohre von 0-30.000 psi (0-2068 bar).

Bemerkung: Für Manometer mit rückseitigem Anschluss bitte den Buchstaben "B" zur Bestellnummer hinzufügen. Beispiel: P-047B-CG



1/4" (F250C)
Dichtkonuns und Linksgewinde
mit Druckring und Druckschraube

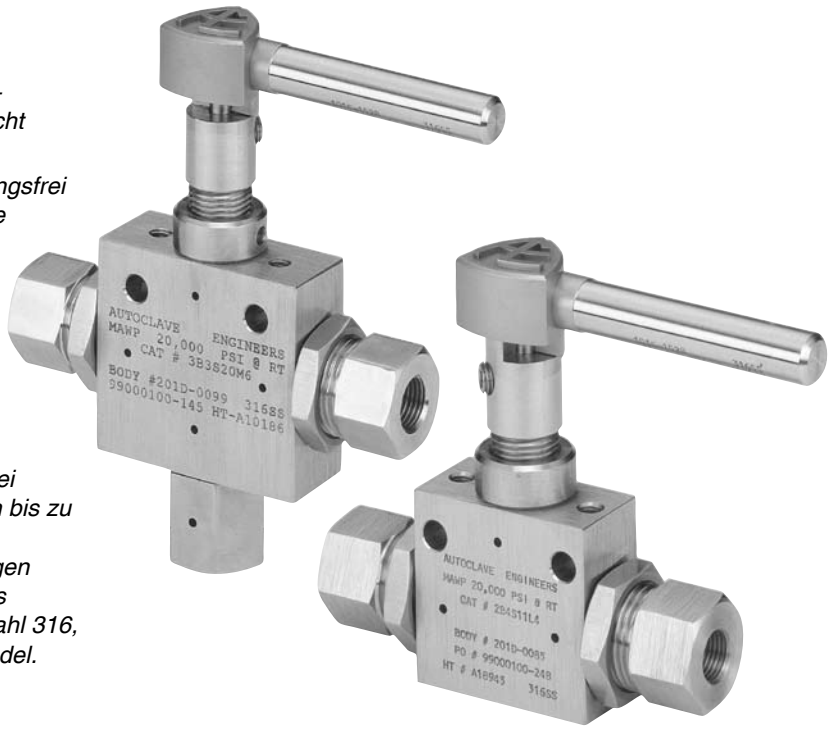
Kalibriert (ausschliesslich) in PSI			
Katalog Nummer	**Druckbereich (psi)**	**Kleinster Intervallwert (psi)**	**Scheiben-durchmesser (inches)**
P-0499-CG	0-1000	10	4-1/2
P-0479-CG	0-1500	10	4-1/2
P-0480-CG	0-3000	20	4-1/2
P-0481-CG	0-5000	50	4-1/2
P-0482-CG	0-10,000	100	4-1/2
P-0483-CG	0-15,000	100	4-1/2
P-0487-CG	0-20,000	200	4-1/2
P-0488-CG**	0-30,000	200	6
P-0489-CG**	0-50,000	500	6
P-0490-CG**	0-80,000	1,000	6

Optional elektrische Kontaktanzeige	
Katalog-Nummer	**Passend zum Scheiben-durchmesser (inches)**
P-0713	4-1/2
P-0714	6

Kugelventile

AE Kugelventile sind für „Auf-Zu“ und Schnellfluss-applikationen konstruiert. In der Offen-Stellung (nicht absperrend) werden Druckverluste minimiert.

AE Kugelventile sind ökonomisch, praktisch wartungsfrei und garantieren eine lange Lebensdauer. Einteilige Ventilspindel, zapfengelagert, verhindert Scherbruch und reduziert den Einfluss von Seitenkräften,wie sie bei einer zweiteiligen Spindel auftreten können. Ein niedriges Drehmoment verhindert Verschleiss und verlängert die Lebensdauer.



Die AE Kugelventile gewährleisten einen sicheren Gebrauch bei Betriebsdrücken bis zu 20,000 psi bei 200˚F (1380 bar bei 93˚C) sowie bei Temperaturen bis zu 500˚F bei 5,000 psi (260˚C bei 345 bar).
AE Kugelventile sind in 2- und 3-Wege Ausführungen mit Düsenweiten von 0,187“ bis 0,500“ (4,7 mm bis 12.7mm) lieferbar. Konstruktionsmerkmale: Edelstahl 316, PEEK-Auflage, einteilig zapfengelagerte Ventilspindel.

Überdruckventile Serie RVP & RVS

Autoclave Engineers Überdruckventile der Serien RVP & RVS sind für Gase und Flüssigkeiten geeignet und schützen Systeme vor unbeabsichtigten Druckerhöhungen. Betriebsdrücke von 1.500 psi (103 bar) bis 60,000 psi (4140 bar). Standardmässig können sie für Betriebstemperaturen von –423˚F bis 400˚F (-253˚C bis 204˚C) = RVP Modelle, eingesetzt werden. Höhere Temperaturen sind bei Sonderausührungen bis zu 750˚F (400˚C) möglich. Die Betriebstemperaturskala der RVS Modelle beträgt 32˚F bis 400˚F (0˚C bis 204˚C). (Zur Beachtung: Sitz-Material = ARLON).

Die Durchflusscharakteristik des Überdruckventils ist an einer Akkumulation von 10% über den Einstelldruck definiert. Es wird deshalb empfohlen – und hat sich in der Praxis bewährt – zum zusätzlichen Schutz eine entsprechende Berstscheibensicherung zu verwenden.

	Anschlussgrösse und Typ (inches)			Druckleistung PSIG bei 100°F (bar bei 38°C)		
Katalog-nummer	Eingang	Ausgang FNPT	Düse in. (mm)	Min. Einstellung	Max. Einstellung	Max. Rückfluss
5RVP9072	SF562CX	3/4 (19.1)	.312 (7.92)	3,000 (207)	5,000 (345)	500 (34.5)
10RVP9072	SF562CX	3/4 (19.1)	.250 (6.35)	5,000 (345)	10,000 (690)	500 (34.5)
15RVP9072	SF562CX	3/4 (19.1)	.188 (4.78)	10,000 (689)	15,000 (1034)	500 (34.5)
20RVP9072	SF562CX	3/4 (19.1)	.156 (4.02)	15,000 (1034)	20,000 (1379)	500 (34.5)
30RVP6072	F375C	3/4 (19.1)	.125 (3.18)	20,000 (1379)	30,000 (2068)	500 (34.5)
45RVP9072	F562C	3/4 (19.1)	.093 (2.36)	25,000 (1724)	45,000 (3103)	500 (34.5)
60RVP6072	F375C	3/4 (19.1)	.078 (1.98)	30,000 (2060)	60,000 (4137)	500 (34.5)
Weicher Sitz						
5RVS9072	SF562CX	3/4 (19.1)	.312 (7.92)	1,500 (103)	5,000 (345)	500 (34.5)
10RVS9072	SF562CX	3/4 (19.1)	.250 (6.35)	5,000 (345)	10,000 (690)	500 (34.5)
20RVS9072	SF562CX	3/4 (19.1)	.156 (4.02)	10,000 (690)	20,000 (1379)	500 (34.5)

Verteilerblock

Spezielle Verteilerblöcke minimieren den Platzbedarf, reduzieren Installationszeit. Zusätzlich werden bei der Installation von weniger Komponenten evtl. Leckagen reduziert.

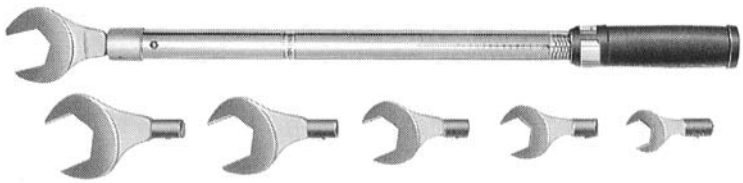
Autoclave Engineers konstruiert und fertigt Hochdruckventile für spezielle Applikationen und Betriebsdrücke. Die Verteiler sind für Druckanwendungen von "Vakuum" bis 60.000 psi (4137 bar) und sind in verschiedenen Werkstoffen und Abmessungen und Anschlussvarianten wie z.B. NPT, SAE, BSP und weiteren, lieferbar.

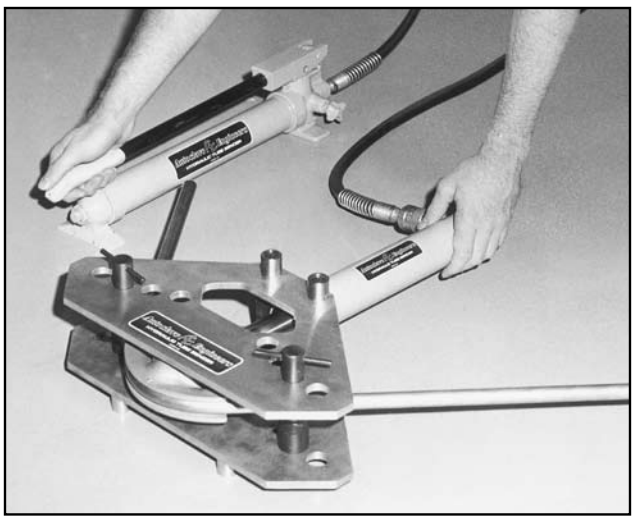
AE Mikrometer Drehmomentschlüssel

P-1680 20 to 150 ft. lbs. (27 to 203 Nm)
91020 75 to 250 ft. lbs. (102 to 339 Nm)

Präzises Festziehen aller AE Packungsschrauben und Rohrmuttern ist unbedingt erforderlich. Der Drehmomentschlüssel kann auf die untenstehenden Schlüsselweiten engestellt werden und mit austauschbaren Schlüssel-Adaptern für Muttern von 1/2" bis 1-7/8" verwendet werden.Teile-/ Bestellnummer: siehe Tabelle.

Packungsschraub- oder Rohrmutter-Schlüsselweite in. (mm)	1/2 (12.7)	9/16 (14.3)	5/8 (15.9)	3/4 (19.05)	13/16 (20.6)	7/8 (22.2)	15/16 (23.8)	1 (25.4)	1-1/16 (27)	1-3/16 (30.2)	1-3/8 (34.9)	1-1/2 (38.1)	1-7/8 (47.6)
Teile-Nr. Drehmo-ment-schlüssel-Adapter	P-1681	P-1682	P-1683	P-9813	P-1685	P-1686	P-1687	P-9901	P-1688	P-1689	P-1690	P-6040	P-10076





Hydraulischer Rohrbieger

AE Biegewerkzeuge ermöglichen ein schnelles, genaues und einfaches Biegen von dickwandigen Hochdruckrohren. Der Rohrbieger wird komplett mit Pumpe, Zylinder, Rahmen und Biegebacken im tragbaren Koffer geliefert. (Bestell-Nr.: HTB)

Pneumatisch betätigte Pumpe ist optional lieferbar. (Bestell-Nr.: HTB-A)

Konus- und Gewindeschneidemaschine

Bestell-Beispiel: Model # AEGCTM-2

Separate Köpfe für Konus- und Gewindeschneiden werden motorisch von einem Antriebsaggretat gesteuert. Modelle sind für Mittel-und Hochdruckrohre lieferbar.
Ca-Abmessungen: 1,4 m x 0,7 m x 0,5 m (56" x 28" x 20") - Gewicht: 159 kg (350 pounds)-
Werkzeuge sind gesondert zu bestellen, bitte mit der Werk in Verbindung setzen.

Merkmale

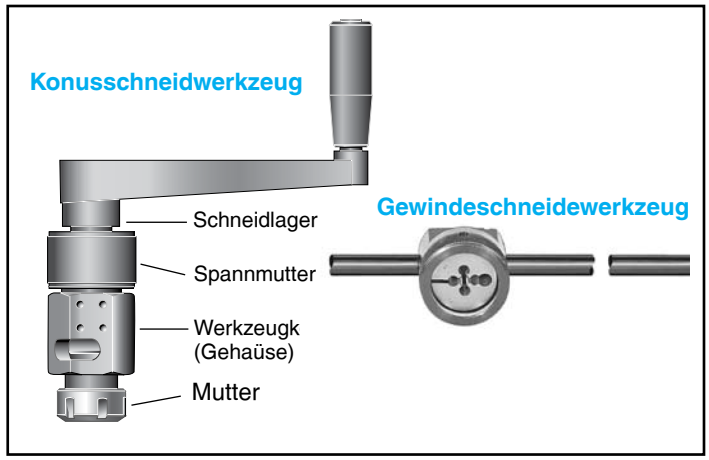
- *1/2 PS Motor, 220 VAC, 50 Hz (115 VAC, 60 Hz) Volt Kondensatror Start.*
- *Kein Rücklauf erforderlich beim Gewindeschneiden; aufspringende Schneideisen verhindern Beschädigung des Gewindes.*
- *Kompletter Werkzeugsatz lieferbar, bitte Werkzeuggrössen spezifizieren.*
- *Konusschneidkopft mit Federwalze für präzise Beschickung.*
- *Komplett mit Ölpumpe und Behälter.*
- *Die Einheit ist komplett auf einem Gestall mit feststellbaren Laufrollen montiert.*
- *Lieferbar optional mit Tankheizung*
- *CE-Kennzeichen auf 220 VAC, 50 Hz Modelle.*

Rohrendbearbeitungswerkzeuge

Autoclave Engineers fertigt ein manulles Konusschneidwerkzeug für eine optimale Konus-Performance für Rohre bis 14.3 mm (9/16" Aussendurchmesser. Dieses Präzisions-und Qualtitäswerkzeug kann an Ort und Stelle zum Bearbeiten von AE Mittel- und Hochdruckrohren eingesetzt werden.

Austauschbare Muttern für jede Rohrgrösse gewährleisten eine exakte Zentrierung der Rohre. Die Schneidezuführung erlaubt es dem Bediener die Einschnitt-tiefe genau zu kontrollieren. Der Einsatz der austauschbaren, rechtwinkeligen Schneideblätter gewährleisten einen genaueren und schnelleren Schneidevorgang. Das Gewindeschneidwerkzeug kann für alle Rohraussendurchmesser bis 14,3 mm (9/16") benutzt werden. Hierzu ist es lediglich notwendig, das Schneideisen und die Führungsbuchse im Werkzeug auszutauschen.

Bemerkung: Kompletter Werzeugsatz lieferbar.
Bitte mit unserem Werk in Verbindung setzen.



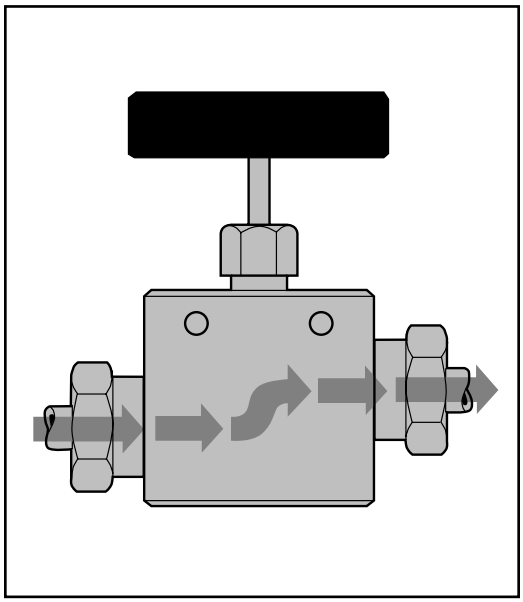
	Rohrdurchmesser		Teile-Nr. Konusschneidwerkzeug und Ersatzteile			Teile-Nr. Gewindeschneidwerkzeug und Ersatzteile				
	Aussendurchmesser in.(mm)	Innendurchmesser in.(mm)	Werkzeug mit Mutter und Messern	Mutter	Schneidmesser (2 Stück)	Werkzeug mit Schneideisin und Buchse	Werkzeug	Gewindeschneideisen		Führungsbuchse
								Teile-Nr.	Abmessung*	
AE Mitteldruck	1/4 (6.35)	.109 (2.77)	MCTM4	90248	101F-1577	402A	402	P-0214	1/4-28	1010-0343
	3/8 (9.53)	.203 (5.16)	MCTM6	90250	101F-1601	402C	402	P-0215	3/8-24	1010-0344
	9/16 (14.3)	.312 (7.92)	MCTM920	90251	1010-5218	402E	402	P-0216	9/16-18	1010-0345
	9/16 (14.3)	.359 (9.12)	MCTM910	90251	101A-1897	402E	402	P-0216	9/16-18	1010-0345
AE Hochdruck	1/4 (6.35)	.083 (2.11)	MCTH4	90248	101F-3939	402A	402	P-0214	1/4-28	1010-0343
	3/8 (9.53)	.125 (3.18)	MCTH6	90250	101F-1578	402C	402	P-0215	3/8-24	1010-0344
	9/16 (14.3)	.188 (4.78)	MCTH960	90251	1010-0883	402E	402	P-0216	9/16-18	1010-0345
	9/16 (14.3)	.250 (6.35)	MCTH940	90251	101C-7214	402E	402	P-0216	9/16-18	1010-0345

Empfohlenes Öl: P-8784
**Alle Gewinde der AE Mittel- und Hochdruckrohre entsprechen "LH National Fine" (Klasse 2).*
Zur Beachtung: Rohrendbearbeitungswerkzeuge (Konus- und Gewindeschneiden) für 3/4" (19,1 mm) und 1" (25,4 mm) Aussendurchmesser für Mittel- und Hochdruckrohre sind nicht lieferbar.
Für diese Abmessungen ist das Modell AEGCTM-2 einzusetzen.

Durchflusswerte

Koeffizient des Durchflusses (Cv) für Ventile ist das Wasservolumen in U.S. Gallonen pro Minute bei Raumtemperatur und völlig geöffneter Ventilspindel und einem Druckabfall von 1 psi. Cv gibt den Abmessungsfaktur zur Auswahl des entsprechenden Ventils an.

Die C_V -Werte - siehe Bestellbezeichnungen Ventile - geben den vollen Durchfluss für dieses Ventil an. Zur Festlegung geschätzer Kapazität sollte dieser C_V -Wert in noch folgenden Formeln verwendet werden.



Durchflussformeln

Flüssigkeiten

❑ Durchfluss, U.S. gal./min.

$$V = \frac{C_V \sqrt{P_1 - P_2}}{\sqrt{S_{GF}}}$$

❑ Durchfluss, lb./hr.

$$W = 500\, C_V \sqrt{(P_1 - P_2)/S_{GF}}$$

Gase

❑ Durchfluss, SCFH

$$Q = \frac{42.2\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{\sqrt{S_{GF}}} \; *\dagger$$

❑ Durchfluss, SCFH
(bei angepasster Temperatur)

$$Q = \frac{963\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{\sqrt{S_{GF}\, T_F}} \; \dagger$$

❑ Durchfluss, lb./hr.

$$W = 3.22\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)/S_G} \; \dagger$$

Nassdampf

❑ Durchfluss, lb./hr.

$$W = 2.1\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)} \; \dagger$$

Heissdampf

❑ Durchfluss, lb./hr.

$$W = \frac{2.1\, C_V \sqrt{(P_1 - P_2)(P_1 + P_2)}}{(1 + 0.0007\, T_S)} \; \dagger$$

Spezifisches Gewicht (S_G) typischer Gase

Gase	S_G @ RT im Verhaltnis zu Luft
Acethylen	*0.897*
Luft	*1.000*
Ammoniak	*0.587*
Argon	*1.377*
Butan	*2.070*
Kohlendioxid	*1.516*
Ethylen	*0.967*
Helium	*0.138*
Wasserstoff	*0.0695*
Methan	*0.553*
Stickstoff	*0.966*
Sauerstoff	*1.103*
Propangas	*1.562*
Schwefeldioxid	*2.208*

Spezifisches Gewicht (S_{GF}) typischer Gase

Gase	S_{GF} @ RT in Bezug auf Wasser
Azeton	*0.792*
Alkohol	*0.792*
Waschbenzin	*0.902*
Benzin	*0.751*
Benzin, nat.	*0.680*
Kerosene	*0.815*
Petroleum	*0.624*
Wasser	*1.000*

Nomenklatur

V = Durchfluss, (GPM)

Q = Durchfluss, (SCFH)

W = Durchfluss, (lb./hr.)

P_1 = Eingangsdruck, (14.7 + psig)

P_2 = Ausgangsdruck, (14.7 + psig)

S_{GF} = Spezifisches Gewicht-Flüssigkeiten (wasser = 1.0)

S_G = Spezifisches Gewicht-Gase-(luft = 1.0)

T_F = Fliesstemperatur, °R absolut (460 + °F)

T_S = Heissdampftemperatur °F

C_V = Ventil Koeffizient des Durchflusses, offen

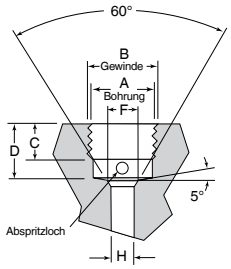
*Auswirkung der Fliesstemperatur bei Gas sind minimal bei Temperaturen zwishcen 30°F und 150° F.

† Wenn Ausgangsdruck P_2 geringer ist als $^1/_2$ des Eingangsdruck P_1:
$\sqrt{(P_1 - P_2)\ (P_1 + P_2)}$: wird 0.87 P_1.

Bemerkung: Die maximalen Cv-Werte in diesem Katalog sind festgelegt unter Zugrundelegung des "Fluid Control Institute" Berichtes FCI 58-2. "Recommended Voluntary Standards for Measurement Procedure for Determining Control Valve Flow Capacity", einschliesslich Verfahrenstest, Konstruktion der Prüfstäde sowie Auswertung der Kenndaten.

AE Mitteldruck SFCX

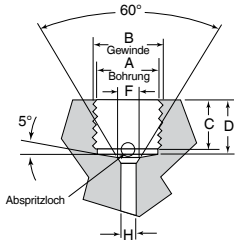
Rohr-Aussen-durchmesser in. (mm)	Anschlusstyp	Abmessungen inches (mm)					
		A	B	C	D	F	H
1/4 (6.35)	SF250CX20	25/64	7/16 -20	.28 (7.11)	.50 (12.7)	.19 (4.83)	.109 (2.77)
3/8 (9.53)	SF375CX20	33/64	9/16 -18	.38 (9.65)	.62 (15.7)	.31 (7.87)	.203 (5.16)
9/16 (14.3)	SF562CX20	3/4	13/16 -16	.44 (11.2)	.75 (19.1)	.50 (12.7)	.359 (9.12)
3/4 (19.1)	SF750CX20	61/64	3/4 -14$_z$	.50 (12.7)	.94 (23.9)	.62 (15.7)	.516 (13.1)
1 (25.4)	SF1000CX20	1-19/64	1-3/8 -12	.81 (20.6)	1.31 (33.3)	.88 (22.4)	.688 (17.5)



Z = NPS Gewindezapfen

AE Hochdruck FC

Rohr-Aussen-durchmesser in. (mm)	Anschlusstyp	Abmessungen inches (mm)					
		A	B	C	D	F	H
1/4 (6.35)	F250C	33/64	9/16 -18	.38 (9.65)	.44 (11.2)	.17 (4.32)	.094 (2.39)
3/8 (9.53)	F375C	11/16	3/4 -16	.53 (13.5)	.62 (15.7)	.26 (6.60)	.125 (3.18)
9/16 (14.3)	F562C	1-3/64	1-1/8 -12	.62 (15.7)	.75 (19.1)	.38 (9.65)	.188 (4.78)
9/16 (14.3)	F562C40	1-3/64	1-1/8 -12	.62 (15.7)	.75 (19.1)	.38 (9.65)	.250 (6.35)
1 (25.4)	F1000C43	1-19/64	1-3/8 -12	.81 (20.6)	1.31 (33.3)	.88 (22.4)	.438 (11.1)



Bemerkung: Alle Abmessungen sind freibleibend und dienen lediglich zur Orientierung.
*Für Öffnungsdiameter siehe Düsenabmessungen für spezifische Ventile und Fittinge.
Alle Gewinde entsprechen den Klassen 2A oder 2B.

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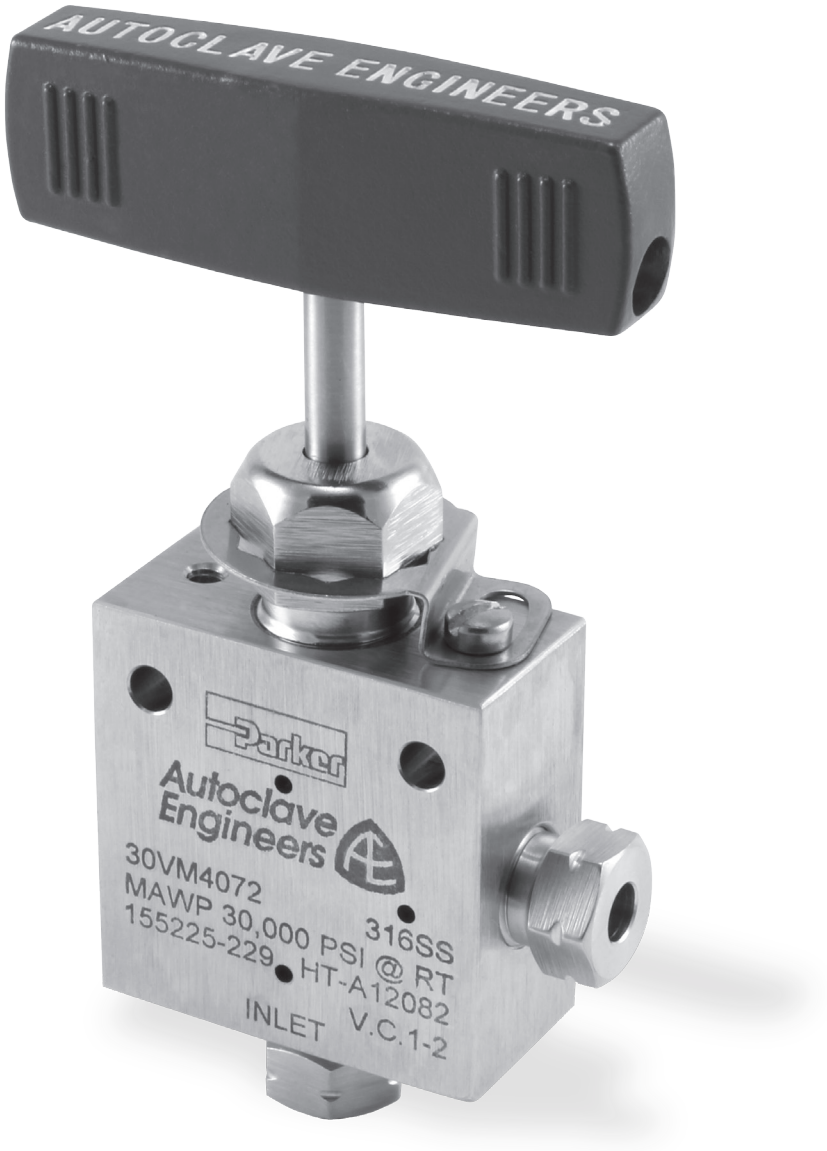
MANUAL VALVE SERIES

10V
10VRMM
MV/MVE
SW
10P/15P
10SM/20SM
30VM
30VRMM
60VM
60VRMM
100VM



Manual Valves

Operation and Maintenance Manual

Catalog: 02-0024ME **January 2013**

aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

Parker Autoclave Engineers®

ENGINEERING YOUR SUCCESS.

Model # _____ **Order #** _____

Serial # _____ **Mfg. Date** _____

Drawing # _____

Table of Contents

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Section 1.0 Installation

No adjustments are necessary prior to installation. Refer to Parker Autoclave Engineers' Valve, Fitting and Tubing Catalog (Installation Section) for proper tubing connection installation.

Note: The minimum and maximum temperature limits of the connection style and materials listed in the Valve, Fitting and Tubing Catalog.

Section 2.0 Packing Adjustment

If the valve packing starts to leak, follow the steps listed below to reseal the valve stem.

Note: The minimum and maximum temperature limits of the appropriate packing listed in the Valve, Fitting and Tubing Catalog.

1. Relieve all pressure from the valve and remove it from the system.
2. Turn valve stem to full open position.
3. Loosen the packing gland locking device.
4. While holding the valve body secure, use a torque wrench to tighten the packing gland to the value shown on the attached Installation Summary Chart. If a torque wrench is not available, tighten the packing gland approximately 1/16 turn.
5. Pressurize the valve to the maximum operating pressure and check for leaks.
6. If the packing still leaks, relieve all pressure in the valve and repeat steps 4 and 5. If the packing does not seal after several attempts, it needs replaced (refer to Section 3.0).
7. Reinstall the packing gland locking device.

Section 3.0 Packing or Stem Replacement

⚠ CAUTION

If stem removal is necessary on a MicroMetering (VRMM series) valve, it must be returned to the factory as precise adjustments are necessary after assembly to achieve minimum flow capability of the valve.

1. Relieve all pressure from the valve and remove it from the system.
2. Turn valve stem to full open position.
3. Remove the packing gland locking device.

4. While holding the valve body (or housing for HT and LT valves) secure, unthread and remove the packing gland. The packing will stay on stems that have a larger stem tip below the packing (see Fig. 3: SW8, 10/20SM9, 10/20SM12, 10/20SM16).

   Note: For HT and LT valves, the housing must be removed where the stem tip is larger than the body cone ring ID (SW6, SM12 and SM16 valves). Remove the housing locking device and unscrew the housing from the valve body.

5. Autoclave Engineers manual valves have three different type of stems; one piece non-rotating (figure 2), two piece pinned non-rotating (figure 4) and rotating (figure 5). Follow steps 6-9 for one piece non-rotating stems, steps 10-11 for two piece pinned non-rotating stems and step 12 for rotating stems.

   One piece non-rotating stem

6. For stems without a larger stem tip, remove the bottom washer, packing and packing washer in the body. Place the bottom washer, packing and packing washer in the body. If the stem does not require replacement, screw the packing gland back into the body and tighten the packing gland to the value in the Installation Summary Chart.

7. Remove the handle by loosening the set screw(s) located in the larger hole of the handle (use a 5/32 hex wrench for the 3" long handle, a 3/16 hex wrench for the 4" and 10-1/4" long handle) and remove it from the stem sleeve. Unscrew the stem from the packing gland. Remove the two nuts and thrust washer from the top of the stem assembly. Remove the stem from the stem sleeve. Remove the bottom thrust washer from the stem. For SW8, 10SM9 and 20SM9 valves, remove the stem collar by unscrewing it clockwise. For stems with a larger stem tip, remove the packing washer and packing from the stem.

8. Clean thrust washers and all surfaces which mate with thrust washers with a clean cloth. Apply non-hardening lubricant (Jet-Lube SS-30[1] or similar) lightly to both faces of the thrust washer and the sleeve threads.

9. For stems with a larger stem tip, place the bottom washer, packing and packing washer on the stem (remove the bottom washer from from the old stem if the stem is being replaced). For SW8, 10SM9 and 20SM9 valves, place the stem collar on the stem by threading it counter-clockwise. Place first thrust washer on the stem and slide stem into stem sleeve. Place second thrust washer on the stem sleeve. Replace hex nut lightly against the upper thrust washer and thread the stem assembly fully into the packing gland. Screw the packing gland into the body and tighten to the value in the Installation Summary Chart. Open the valve completely, then close it one turn to remove the play. Finger tighten the hex nut, then use a wrench to tighten it approximately 1/8 of a turn. Install the lock nut and finger tighten it in place. While holding the lock nut secure, loosen the hex nut from the top washer and tighten it against the lock nut approximately 1/16 of a turn. Replace the handle by lining the hex socket set screw up against the flat spot on the stem sleeve and tightenit in place (DO NOT OVERTIGHTEN). In order to have a nonrotating stem, a slight amount of free play must exist between the stem sleeve and shaft. The handle should have a 10 degree maximum free play for "backlash". If the free play is excessive, it will be necessary to remove the handle and loosen the lock nut and tighten the hex nut further against the thrust washer. Tighten the lock nut as indicated above and check for free play. When the desired "backlash" is achieved, replace the handle as described above. Re-install the locking device.

   Two piece pinned non-rotating stems

10. For high and low temperature valves that have two piece non-rotating stems, remove the groove pin holding

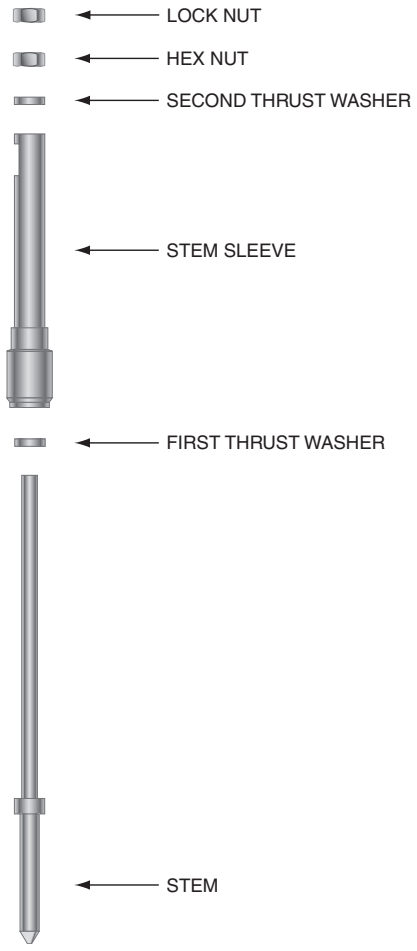

Figure 1: Two-Piece Non-rotating Stem Assembly (Exploded)

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the upper and lower stem together by driving it out with a rigid small diameter rod and pulling it out with a pair of pliers. Remove the packing washer and packing from the stem. If a new lower stem is required, remove the housing andcone ring from the old stem and place the cone ring and housing over the new lower stem. Place the bottom washer, packing and packing washer on the stem. Insert the lower stem into the upper stem so that the groove pin holes line up. Drive the groove pin into the hole until it is flush with the outside diameter of the upper stem.

11. Lubricate stem sleeve threads with Jet-Lube SS-30[1] or similar lubricant. Thread the stem sleeve all the way into the packing gland or the insert so that the stem is in the full open position. While holding the housing in a vice, torque the packing gland to the value in the Installation Summary Chart and tighten the locknut. Apply silicone grease or similar lubricant to the sealing surfaces of the cone rings. Apply Jet-Lube SS-30[1] or similar lubricant to the threads. Screw the housing into the valve body and torque the housing to the value in the Installation Sum mary Chart. Replace the housing locking device.

Rotating Stem

12. Remove the handle from the stem. Unthread the stem from the packing gland. Apply Jet-Lube SS-30[1] or similar lubricant to the threads of the new stem and thread the new stem all the way into the packing gland. Line the set screw on the stem up with the flat spot on the stem and tighten the set screw. With the bottom washer, packing and packing washer installed in the body, screw in the packing gland and torque it to the value in the Installation Summary Chart. Reinstall the packing gland locking device.

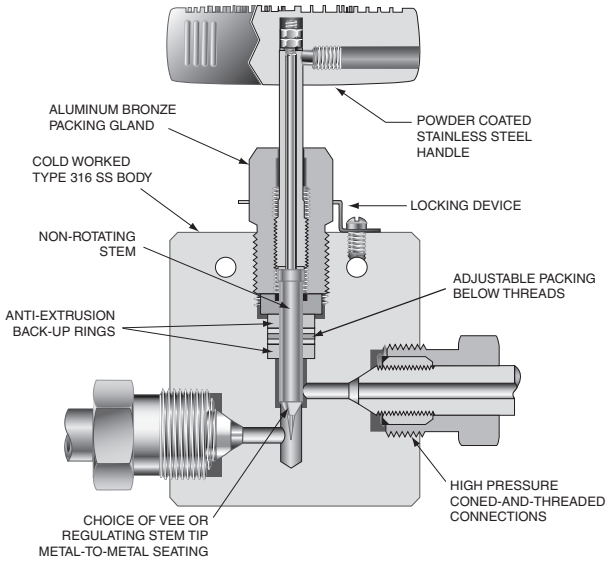

Figure 2: Typical Valve Assembly

Section 4.0
Seat Replacement

(see Fig. 3)

1. Relieve all pressure from the valve and remove it from the system. Turn the valve stem to the full open position.
2. While holding the body secure, unscrew the seat retainer.
3. Remove old seat and replace if necessary.
4. Apply silicone grease or similar lubricant to sealing surfaces of seat. Apply Jet-Lube SS-30[1] or similar lubricant to the seat retainer threads.
5. Replace seat and seat retainer. Make certain that the seat stays flat against the valve body. Tighten seat retainer to the torque specified in the Installation Summary Chart.

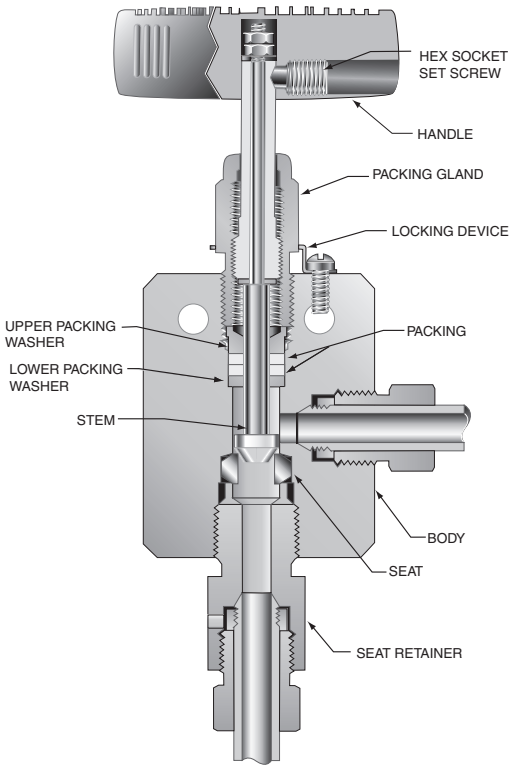

Figure 3: Valve with Replacement Seat

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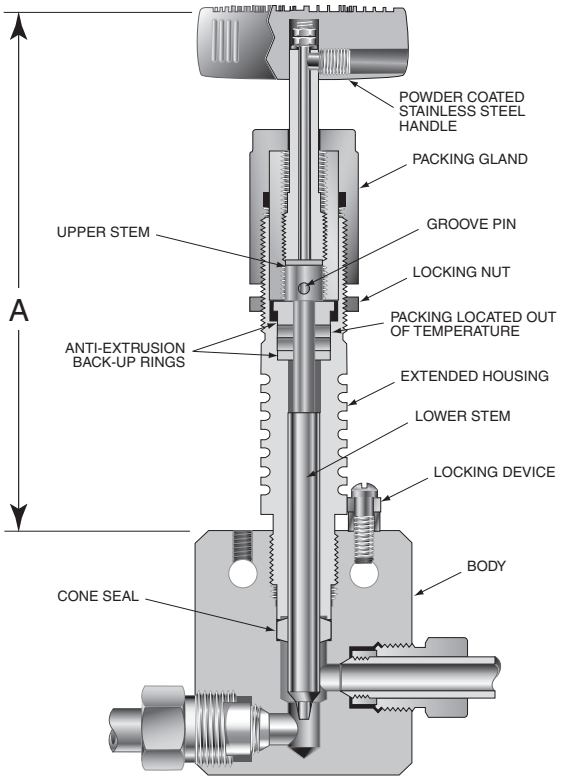

Figure 4: Extended Housing Valve Assembly with Two Piece Pinned Non-Rotating Stem

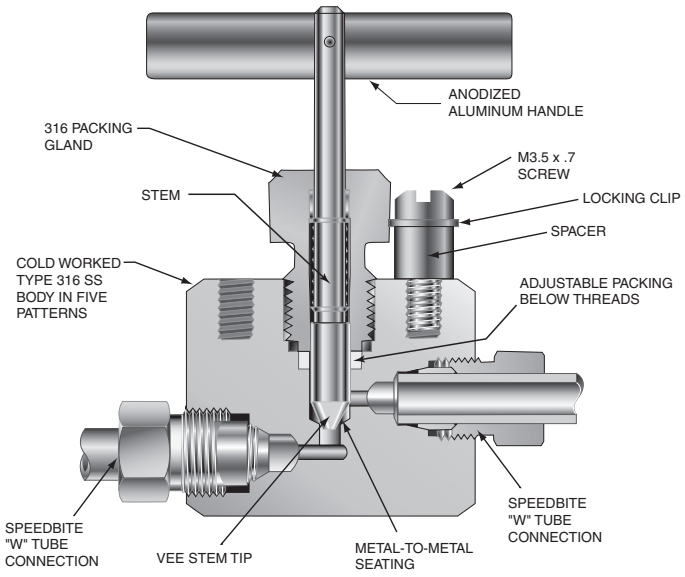

Figure 5: One Piece Rotating Stem

Section 5.0
Service

For service contact the Parker Autoclave Engineers' Representative in your area or FAX Parker Autoclave Engineers' Support Services at 1-814-860-5703.

Notes:

HT - (high temperature extended stuffing box option).

LT - (cryogenic extended stuffing box option).

[1]SS30 is a registered trademark of Jet-Lube, Inc.

Section 6.0
Installation Summary Chart

Please see Installation Summary Chart on pages 6 & 7.

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Section 4.0
Installation Summary Chart

Valve** Series	Packing Gland Hex Size		Packing Gland Torque ~		Tube Gland Hex Size		Tube Gland Torque		Packing P/N			Replaceable Seat Retainer Hex Size		Replaceable Seat Retainer Torque		Extended Housing Hex		Extended Housing Torque		Packing Gland Hex Size (w/ext. housing)		Packing Gland Torque ~ (w/ext. housing)		Hex and Lock Nut Sizes	
	in.	(mm)	ft-lbs	(Nm)	in.	(mm)	ft-lbs	(Nm)	TFE (qty.)	TG (qty.)	GY (qty.)	in.	(mm)	ft-lbs	(Nm)	in.	(mm)	ft-lbs	(Nm)	in.	(mm)	ft-lbs	(Nm)	in.	(mm)
MV1/ MV2	1/2	(12.7)	12.5	(17.1)	.393	(10.0)	*	-	-	P-0825 (1)	-	-		-		-		-		-		-		-	
MVE1/ MVE2	1/2	(12.7)	12.5	(17.13)	3/8	(7.57)	*	-	-	P-0825 (1)	-	-		-		-		-		-		-		-	
10V2/ SW2	1/2	(12.7)	12	(16.3)	1/2	(12.7)	*	-	P-0492 (2)	P-0825 (2)	P-8926 (1)	1/2	(12.7)	10	(13.6)	5/8	(15.9)	10	(13.6)	1/2	(12.7)	12	(16.3)	7/32	(5.56)
10 V4	13/16	(20.6)	40	(54.2)	13/16	(20.6)	*	-	P-0128 (1)	P-0466 (1)	P-8932 (1)	1	(25.4)	15	(20.4)	15/16	(23.8)	20	(27.2)	13/16	(20.6)	40	(54.4)	7/32	(5.56)
10 V6	13/16	(20.6)	40	(54.2)	13/16	(20.6)	*	-	P-0128 (1)	P-0466 (1)	P-8932 (1)	1	(25.4)	10	(13.6)	15/16	(23.8)	15	(20.4)	13/16	(20.6)	40	(54.4)	7/32	(5.56)
10 V8	13/16	(20.6)	30	(40.7)	15/16	(23.8)	*	-	P-0686 (1)	P-1211 (1)	P-8927 (1)	1	(25.4)	15	(20.4)	15/16	(23.8)	20	(27.2)	13/16	(20.6)	30	(47.6)	7/32	(5.56)
SW4	5/8	(15.9)	30	(40.7)	5/8	(15.9)	*	-	P-0685 (2)	P-1691 (2)	P-8928 (1)	3/4	(19.1)	20	(27.2)	13/16	(20.6)	35	(47.6)	1-13/16	(30.2)	25	(34.0)	7.32	(5.56)
SW6	5/8	(15.9)	40	(54.2)	3/4	(19.1)	*	-	P-0686 (2)	P-1211 (2)	P-8927 (1)	3/4	(19.1)	15	(20.4)	13/16	(20.6)	35	(47.6)	1-13/16	(30.2)	30	(40.8)	7/32	(5.56)
SW8	13/16	(20.6)	50	(67.8)	15/16	(23.8)	*	-	P-0677 (2)	P-0776 (2)	P-8929 (1)	1	(25.4)	50	(68.0)	1	(25.4)	35	(47.6)	1-1/2	(38.1)	20	(27.2)	5/16	(7.94)
15P4	5/8	(15.9)	40	(54.2)	-		-		P-0685 (2)	P-1691 (2)	P-8928 (1)	-		-		-		-		-		-		7/32	(5.56)
15P6	5/8	(15.9)	40	(54.2)	-		-		P-0685 (2)	P-1691 (2)	P-8928 (1)	-		-		-		-		-		-		7/32	(5.56)
15P8	13/16	(20.6)	80	(108)	-		-		P-0677 (2)	P-0776 (2)	P-8929 (1 set)	-		-		-		-		-		-		5/16	(7.94)
10P12	15/16	(23.8)	+		-		-		P-1758 (2)	P-1759 (2)	P-8930 (1 set)	-		-		-		-		-		-		3/8	(9.53)
10P16	1-3/8	(34.9)	20	(27.2)	-		-		P-1733 (2)	P-1775 (4)	P-8931 (1 set)	-		-		-		-		-		-		1/2	(12.7)
20SM4	5/8	(15.9)	40	(54.2)	1/2	(12.7)	20	(27.1)	P-0685 (2)	P-1691 (2)	P-8928 (1)	3/4	(19.1)	35	(47.6)	13/16	(20.6)	35	(47.6)	1-13/16	(30.2)	25	(34.0)	7/32	(5.56)
20SM6	5/8	(15.9)	40	(54.2)	5/8	(15.9)	30	(40.7)	P-0685 (2)	P-1691 (2)	P-8928 (1)	3/4	(19.1)	35	(47.6)	13/16	(20.6)	35	(47.6)	1-13/16	(30.2)	25	(34.0)	7/32	(5.56)
20SM9	13/16	(20.6)	80	(108)	15/16	(23.8)	55	(74.6)	P-0677 (2)	P-0776 (2)	P-8929 (1 set)	1	(25.4)	125	(170)	1	(25.4)	100	(136)	1-1/2	(38.1)	100	(136)	5/16	(7.94)
20SM12	15/16	(23.8)	+		1-3/16	(30.2)	90	(122)	P-1758 (2)	P-1759 (2)	P-8930 (1 set)	1-3/8	(34.9)	140	(190)	1-3/8	(34.9)	120	(163.2)	1-3/4	(44.5)	+		3/8	(9.53)
20SM16	1-3/8	(34.9)	++		1-3/8	(34.9)	150	(203)	P-1733 (2)	P-1775 (4)	P-8931 (1 set)	1-3/4	(44.5)	150	(203)	1-3/4	(44.5)	170	(231.2)	1-3/4	(44.5)	++		1/2	(12.7)

For the discontinued 20SV and 20SC Series use SM valves

Notes:

** Valve series and connection size in sixteenth's of an inch are indicated.

\+ Finger tight, then 3/4 turn with wrench (TFE only). 175 ft. - lbs. (238.9) N-m with TG packing. 120 ft.-lbs. (162.7) N-m with GY packing.

++ Finger tight, then 3/4 turn with wrench (TFE only). 325 ft. - lbs. (443.8) N-m with TG packing. 140 ft.-lbs. (189.8) N-m with GY packing.

~ Unless otherwise noted, torque values are for TFE packing. For TG packing add 10% and for GY packing add 25% to these values.

* Torque wrench not required for AE Speedbite tube connections. Tighten gland until sleeve begins to grip tubing the 1-1/4 turns.

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Installation Summary Chart - con't

Valve** Series	Packing Gland Hex Size		Packing Gland Torque ~		Tube Gland Hex Size		Tube Gland Torque		Packing P/N ^^ TFE (qty.)	Packing P/N TG (qty.)	Packing P/N GY (qty.)	Replaceable Seat Retainer Hex Size		Replaceable Seat Retainer Torque		Extended Housing Hex		Extended Housing Torque		Packing Gland Hex Size (w/ext. housing)		Packing Gland Torque ~ (w/ext. housing)		Hex and Lock Nut Sizes	
	in.	(mm)	ft-lbs	(Nm)	in.	(mm)	ft-lbs	(Nm)				in.	(mm)	ft-lbs	(Nm)	in.	(mm)	ft-lbs	(Nm)	in.	(mm)	ft-lbs	(Nm)	in.	(mm)
30VM4	13/16	(20.6)	60	(81.3)	5/8	(15.9)	15	(20.3)	P-0128 (1)	P-0466 (1)	P-8932 (1)	3/4	(19.1)	35	(47.6)	15/16	(23.8)	50	(67.8)	13/16	(20.6)	60	(81.3)	7/32	(5.56)
30VM6	13/16	(20.6)	60	(81.3)	13/16	(20.6)	25	(33.9)	P-0128 (1)	P-0466 (1)	P-8932 (1)	1	(25.4)	35	(47.6)	15/16	(23.8)	50	(67.8)	13/16	(20.6)	60	(81.3)	7/32	(5.56)
30VM9	13/16	(20.6)	60	(81.3)	1-3/16	(30.2)	55	(74.6)	P-0128 (1)	P-0466 (1)	P-8932 (1)	1-3/8	(34.9)	35	(47.6)	15/16	(23.8)	50	(67.8)	13/16	(20.6)	60	(81.3)	7/32	(5.56)
60VM4	13/16	(20.6)	60	(81.3)	5/8	(15.9)	25	(33.9)	P-0864 (1 set)	P-8713 (2)	P-8933 (1)	13/16	(20.6)	45	(61.2)	15/16	(23.8)	65	(88.1)	13/16	(20.6)	60	(81.3)	7.32	(5.56)
60VM6	13/16	(20.6)	60	(81.3)	13/16	(20.6)	50	(67.8)	P-0864 (1 set)	P-8713 (2)	P-8933 (1)	1	(25.4)	45	(61.2)	15/16	(23.8)	65	(88.1)	13/16	(20.6)	60	(81.3)	7/32	(5.56)
60VM9	13/16	(20.6)	60	(81.3)	1-3/16	(30.2)	110	(149.2)	P-0864 (1 set)	P-8713 (2)	P-8933 (1)	1-3/8	(34.9)	45	(61.2)	15/16	(23.8)	65	(88.1)	13/16	(20.6)	60	(81.3)	7/32	(5.56)
10VRMM2	5/8	(15.9)	20^	(27.1)	1/2	(12.7)	*		P-1654 (1)	P-0467 (1)	P-8934 (1)	5/8	(15.9)	25	(34.0)	5/8	(15.9)	15	(20.5)	5/8	(15.9)	20	(27.3)	N/A	
30VRMM4	13/16	(20.6)	50^	(67.8)	5/8	(15.9)	15	(20.3)	P-1654 (1)	P-0467 (1)	P-8934 (1)	13/16	(20.6)	50	(67.8)	15/16	(23.8)	50	(67.8)	13/16	(20.6)	50	(67.8)	N/A	
60VRMM4	13/16	(20.6)	50^	(67.8)	5/8	(15.9)	25	(33.9)	P-0864 (1) (1 set)	P-8713 (2)	P-8933 (1)	15/16	(23.8)	35	(47.6)	N/A		N/A		N/A		N/A		7/32	(5.56)
60VRMM4	13/16	(20.6)	50^	(67.8)	13/16	(20.6)	50	(67.8)	P-0864 (1) (1 set)	P-8713 (2)	P-8933 (1)	1-3/8	(34.9)	35	(47.6)	15/16	(23.8)	55	(75.1)	13/16	(20.6)	75	(102.4)	7/32	(5.56)
100VM5	15/16	(23.8)	60	(81.3)	3/4	(19.1)	70	(95.0)	90368 (1) 90369 (2)			N/A		70	(95.2)	NA		N/A		NA		N/A		15/16	(7.94)
100VM4	15/16	(23.8)	60	(81.3)	3/4	(19.1)	70	(95.0)	90368 (1) 90369 (2)			1	(25.4)	70	(95.2)	NA		N/A		NA		N/A		15/16	(7.94)
100VM6	15/16	(23.8)	60	(81.3)	3/4	(19.1)	70	(95.0)	90368 (1) 90369 (2)			1	(25.4)	70	(95.2)	NA		N/A		NA		N/A		15/16	(7.94)

Notes:

** Valve series and connection size in sixteenth's of an inch are indicated.

^ Zero position of barrel or thimble must be changed.

^^ 60VM and 60VRMM packing is nylon (P-0829), leather (P-0803) and nylon (P-0829).

+ Finger tight, then 3/4 turn with wrench (TFE only). 175 ft. - lbs. (238.9) N-m with TG packing. 120 ft.-lbs. (162.7) N-m with GY packing.

++ Finger tight, then 3/4 turn with wrench (TFE only). 325 ft. - lbs. (443.8) N-m with TG packing. 140 ft.-lbs. (189.8) N-m with GY packing.

~ Unless otherwise noted, torque values are for TFE packing. For TG packing add 10% and for GY packing add 25% to these values.

* Torque wrench not required for AE Speedbite tube connections. Tighten gland until sleeve begins to grip tubing the 1-1/4 turns.

N/A Not Applicable

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WARNING

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