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.

Parker

Autoclave Engineers

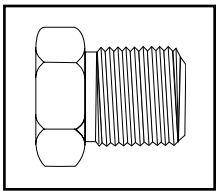
www.autoclave.com

Pressures to 15,000 psi (1034 bar)

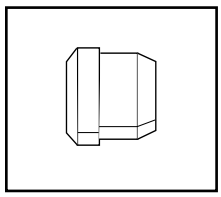
Parker Autoclave Engineers Low Pressure Fittings are designed for use with low pressure valves and tubing. These fittings feature improved SpeedBite compression connections with larger orifices for excellent flow capabilities. Parker Autoclave Engineers fittings and components are manufactured of cold-worked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

Connection Components

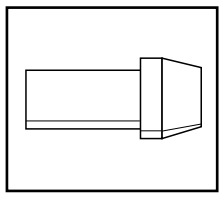
All valves and fittings are supplied complete with appropriate glands and compression sleeves. To order these components separately, use order numbers listed. When using plug, sleeve is not required.



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.

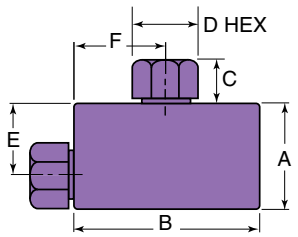
Elbow

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

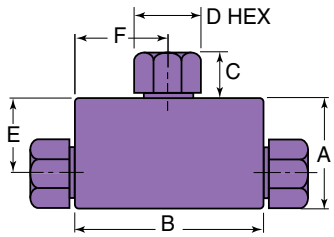
Figure 1



Elbow

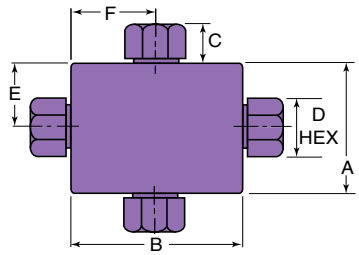
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
Tee													
ST2220	W125	1/8 (3.18)	15,000 (1034.19)	0.094 (2.39)	1.00 (25.40)	1.50 (38.10)	0.31 (7.87)	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



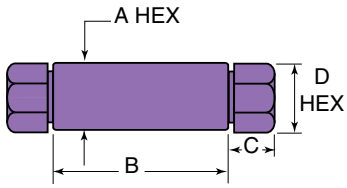
Tee

Figure 3



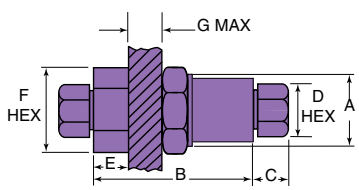
Cross

Figure 4



Straight Coupling

Figure 5



(A=Panel hole drill size)

Bulkhead Coupling

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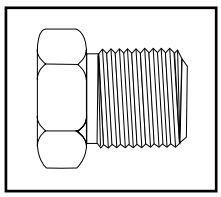
Pressure to 15,000 psi (1034 bar)

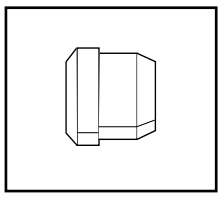
All Parker Autoclave Engineers valves and fittings are supplied complete with appropriate glands and compression sleeves. To order these components separately, use order numbers listed. When using plug, sleeve is not required.



Gland
SMN ( )

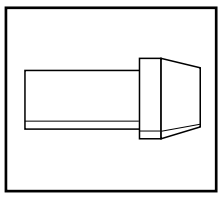
Add gland size ( ) Example: SMN - 10
- 1/16" - 10
- 1/16" - 10-10mm
- 1/8" - 20
- 1/8" - 20-10mm

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)**	

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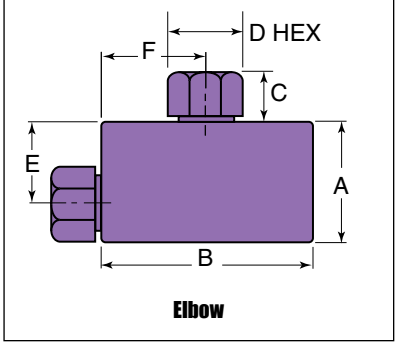
Figure 1



Elbow

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

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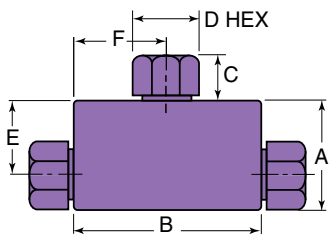
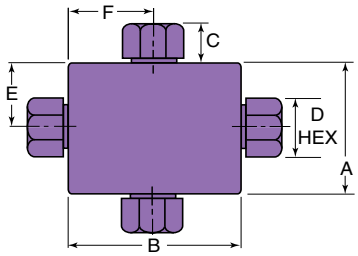
Figure 2



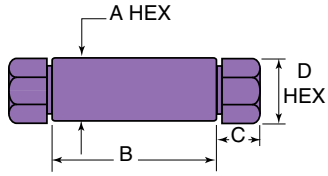
Tee

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.

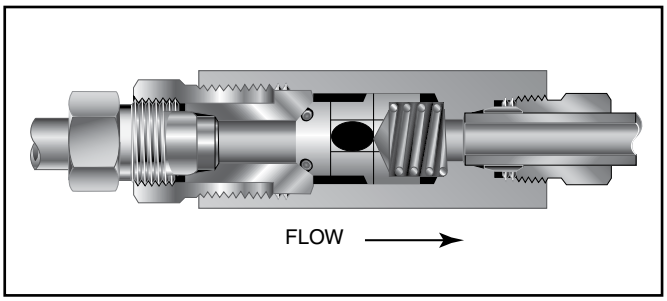
†Items are being discontinued. Contact the factory for available stock

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

Fittings and Tubing - Low Pressure Check Valves

Pressures to 15,000 psi (1034 bar)

O-Ring Check Valves



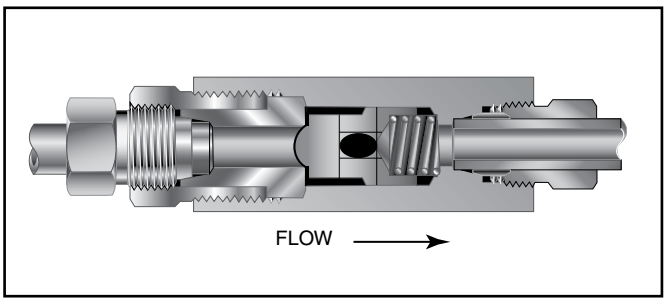
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C).
For low temperature option to -100°F (-73°C) add suffix LTTO (Low temperature spring & PTFE o-ring).

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.)**

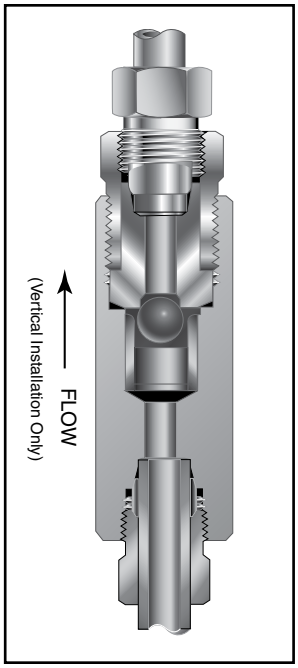
Ball and poppet are an integral design to assure positive, in-line seating without "chatter". Poppet is designed essentially for axial flow with minimum pressure drop.

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



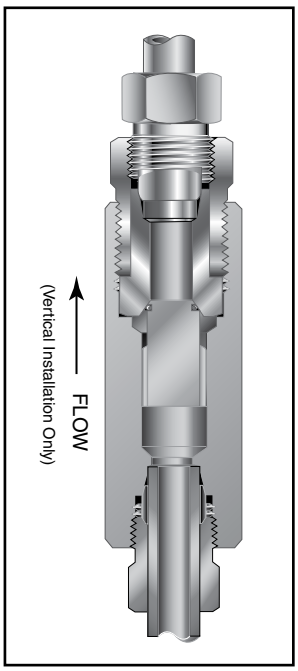
Protects pressure gauges and pressure instrumentation from sudden surges in flow or venting in the event of line failure.

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.*

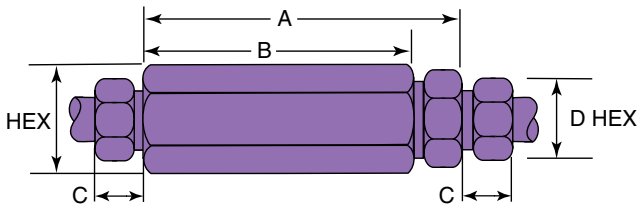
Catalog Number	Fits Connection Type	Pressure Rating psi (bar)*	Orifice inches (mm)	Rated C_V	Dimensions - inches (mm)				
					A	B	C	D Typical	Hex
O-Ring Check Valves									
SW02200	W125	15,000 (1034.19)	0.094 (2.39)	0.15	2.25 (57.15)	1.88 (47.75)	0.31 (7.87)	0.50 (12.70)	0.63 (15.88)
SW04400	SW250	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.

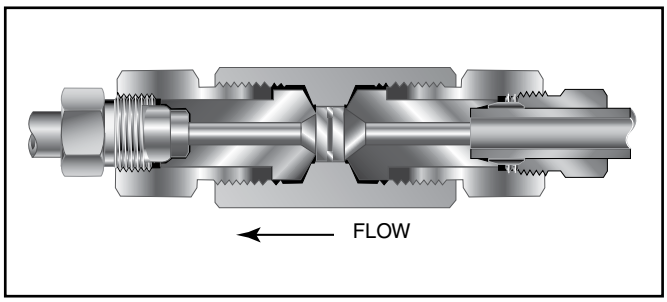
All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave stocks select products. Consult your local representative.

Figure 1



Pressures to 15,000 psi (1034 bar)

Dual-Disc Line Filters

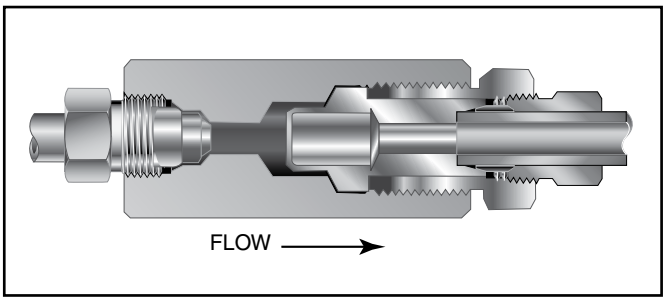


Dual-Disc Line Filters are utilized in numerous industrial, chemical processing, aerospace, nuclear and other applications. With the dual-disc design, large contaminant particles are trapped by the upstream filter element before they can reach and clog the smaller micron-size downstream element. Filter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

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

Cup-Type Line Filters

SWF4-5	15,000 (1034.19)	.188 **(4.78)**	5	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)**
SWF4-35			35							
SWF4-65			65							
SWF6-5	15,000 (1034.19)	.312 **(7.92)**	5	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)**
SWF6-35			35							
SWF6-65			65							
SWF8-5	10,000 (689.46)	.438 **(11.13)**	5	SW500	1.53 **(987.09)**	4.18 **(106.17)**	3.50 **(88.90)**	0.53 **(13.46)**	.93 **(23.62)**	1.38 **(35.05)**
SWF8-35			35							
SWF8-65			65							

** 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.

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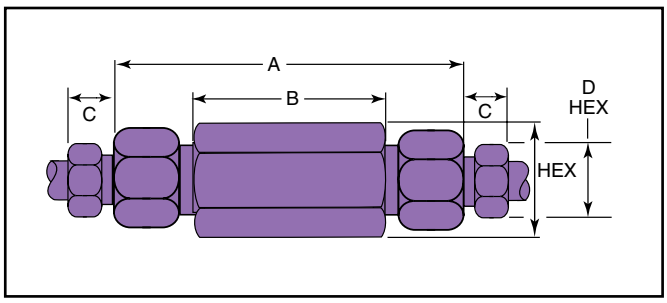
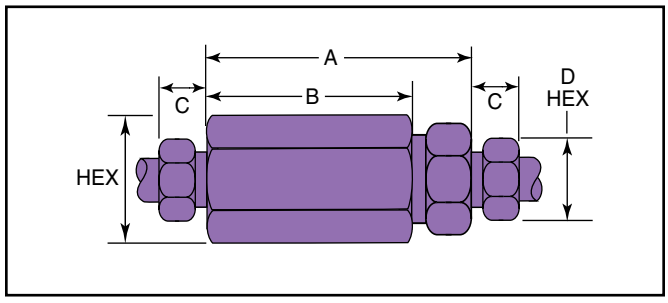
Dual-Disc Line Filters



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.

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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.

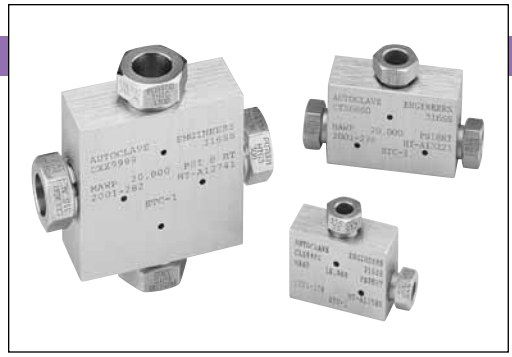
Parker

Autoclave Engineers

www.autoclave.com

Medium Pressure Fittings

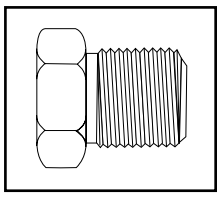
Pressures to 20,000 psi (1379 bar)



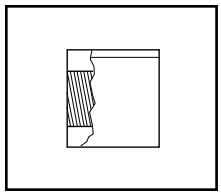
Parker Autoclave Engineers medium pressure fittings, Series SF, are designed for use with Series 20SM medium pressure valves and Parker Autoclave Engineers' medium pressure tubing. They incorporate medium pressure coned-and-threaded connections with orifices sized to match the high-flow Series 20SC valves.

Connection Components

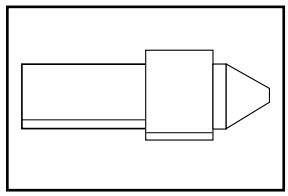
All Parker Autoclave valves and fittings are supplied complete with appropriate glands and collars. To order these components separately, use order numbers listed. When using plug, collar is not required.



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.

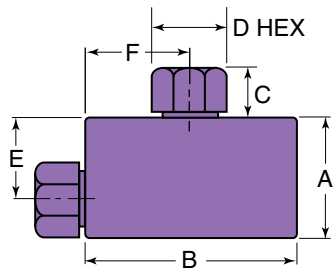
Note: Special material glands may be supplied with four flats in place of standard hex.

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.

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
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

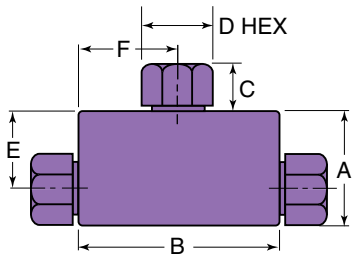
CXX4444	SF250CX	1/4 **(6.35)**	20,000 **(1378.93)**	0.125 **(3.18)**	1.50 **(38.10)**	1.50 **(38.10)**	0.38 **(9.53)**	0.50 **(12.70)**	0.75 **(19.05)**	0.75 **(19.05)**		0.62 **(15.75)**	**See Figure 3**
CXX6666	SF375CX	3/8 **(9.53)**	20,000 **(1378.93)**	0.219 **(5.56)**	2.00 **(50.80)**	2.00 **(50.80)**	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.

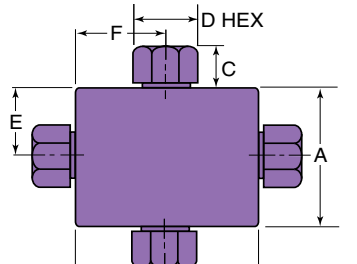
For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

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

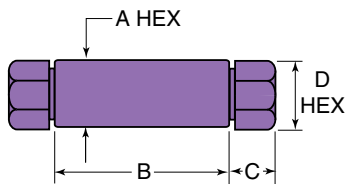
20BFX4466	SF250CX	1/4	20,000	0.125	0.81	1.88	0.38	0.50	0.53	1.00	0.38		See Figure 5
		(6.35)	**(1378.93)**	**(3.18)**	**(20.57)**	**(47.75)**	**(9.53)**	**(12.70)**	**(13.46)**	**(25.40)**	**(9.53)**		
20BFX6666	SF375CX	3/8	20,000	0.219	0.94	2.00	0.44	0.62	0.62	1.00	0.38		
		(9.53)	**(1378.93)**	**(5.56)**	**(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.

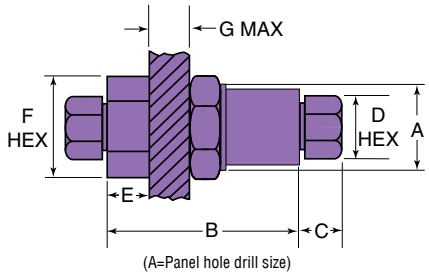
Union Couplings are designed with a removable seat insert allowing disassembly and tubing removal without the necessity of loosening other items in a line.

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.

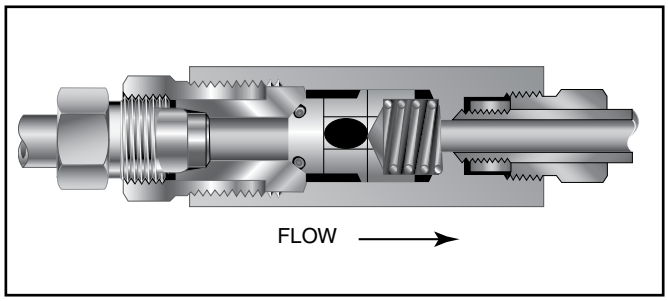
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.
**Type 304 Stainless Steel nipples available.

All dimensions for reference only and subject to change.

Medium Pressure Check Valves

Pressures to 20,000 (1379 bar)

O-Ring Check Valves



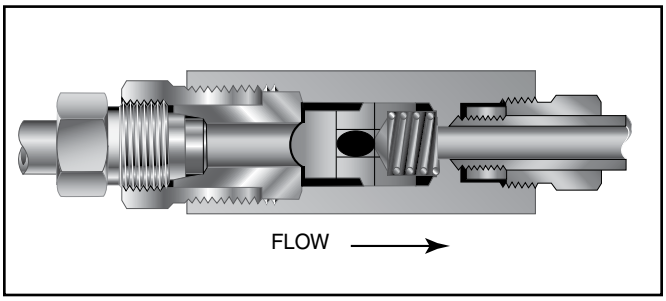
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C).
For low temperature option to -423°F (-252°C) add suffix LTTO (Low temperature spring & PTFE o-ring).

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



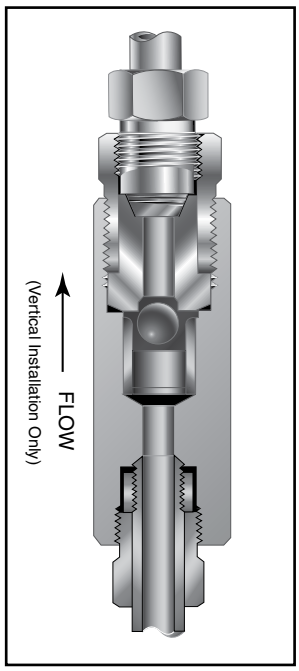
Minimum operating temperature for standard ball check valves -110°F (-79°C).
For low temperature option to -423°F (-252°C) add suffix LT (Low temperature spring).

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)**

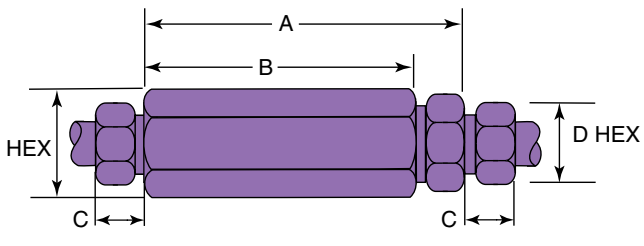
Note:
+ Check Flow - water, GPM
For flow rates using alternate fluids, consult Parker Autoclave Engineers.

*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.

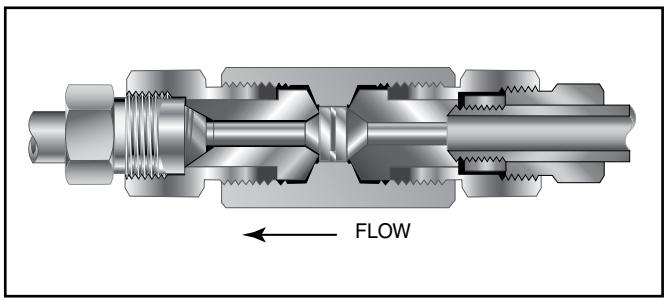
Figure 1



Medium Pressure Line Filters

Pressures to 20,000 psi (1379 bar)

Dual-Disc Line Filters

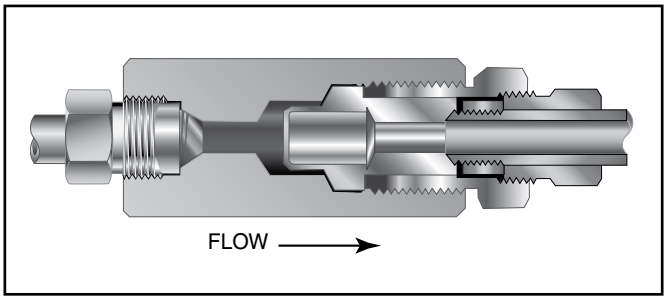


Parker Autoclave Engineers Dual-Disc Line Filters are utilized in numerous industrial, chemical processing, aerospace, nuclear and other applications. With the dual-disc design, large contaminant particles are trapped by the upstream filter element before they can reach and clog the smaller micron-size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

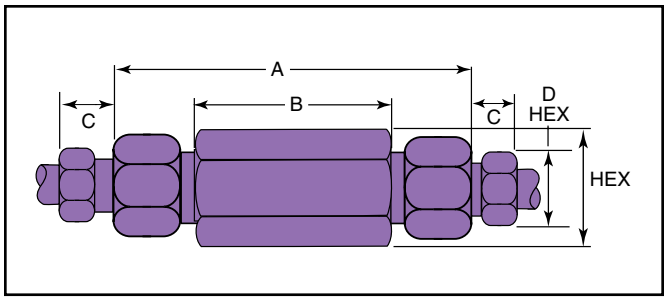
CXF4-5	20,000 **(1378.93)**	0.125 **(3.18)**	5	SF250CX	0.81 **(522.57)**	2.94 **(74.68)**	2.50 **(63.50)**	0.38 **(9.53)**	.50 **(12.70)**	0.81 **(20.57)**
CXF4-35			35							
CXF4-65			65							
CXF6-5	20,000 **(1378.93)**	0.218 **(5.54)**	5	SF375CX	0.81 **(522.57)**	3.12 **(79.25)**	2.62 **(66.55)**	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.

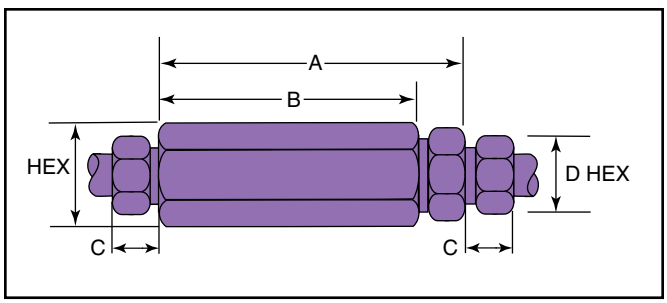
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

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



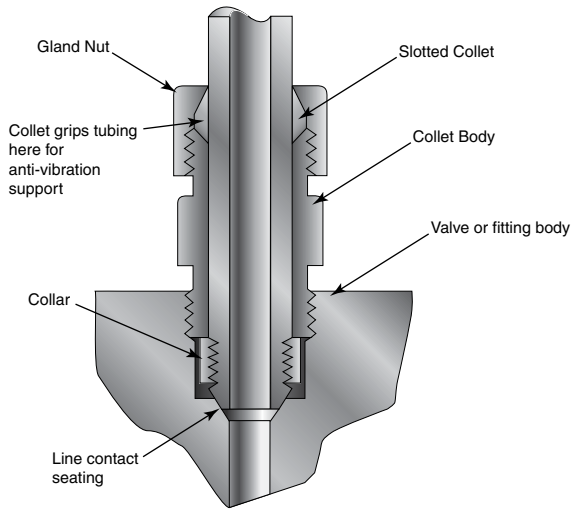
Anti-Vibration Collet Gland Assembly

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.



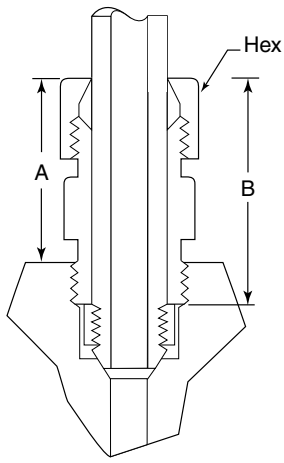
Series KCBGLX
Pressures to 20,000 (1379 bar)

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®

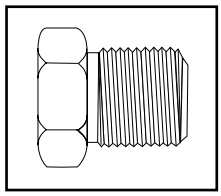
www.autoclave.com

Pressures to 15,000 psi (1034 bar)

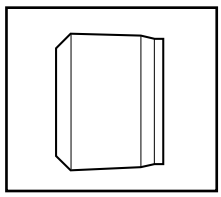
Parker Autoclave Engineers Medium Pressure QS Fittings are designed for use with QS Series valves and medium pressure tubing. These fittings feature improved compression connections with larger orifices for excellent flow capabilities. Parker Autoclave Engineers fittings and components are manufactured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

Connection Components

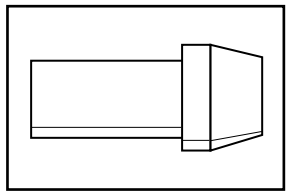
All Parker Autoclave Engineers valves and fittings are supplied complete with appropriate glands and sleeves. To order these components separately, use order numbers listed. When using plug, sleeve is not required.



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.

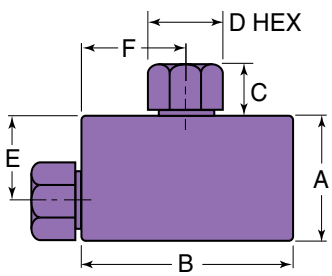
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
Elbow													
QSL4400	QS250	1/4 **(6.35)**	15,000 **(1034.20)**	0.16 **(3.99)**	1.38 **(34.93)**	2.00 **(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

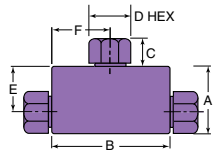
For mounting hole option add suffix PM to catalog number.
Consult factory for mounting hole dimensions.

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													
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													
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.

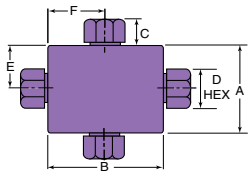
1" QS fitting bodies are 2507 Super Duplex

Figure 2



Tee

Figure 3



Cross

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													
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													
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.

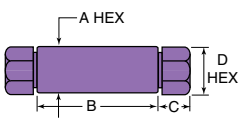
All dimensions for reference only and subject to change. For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative.

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

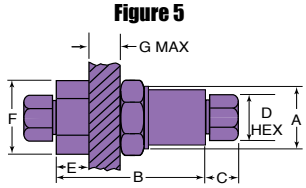
† Distance across flats

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

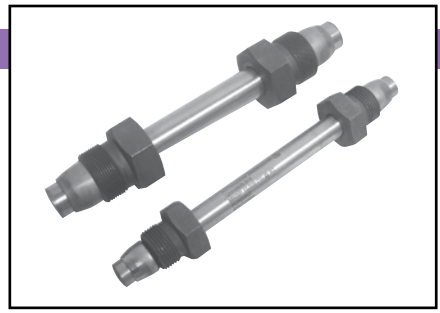
Nominal Tubing Size inches (mm)	Tolerance/Outside Diameter inches (mm)
1/4 (6.35)	.248/.243 (6.30/6.17)
3/8 (9.53)	.370/.365 (9.40/9.27)
9/16 (14.27)	.557/.552 (14.15/14.02)
3/4 (19.05)	.745/.740 (18.92/18.80)
1 (25.4)	.995/.990 (25.27/25.14)

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.

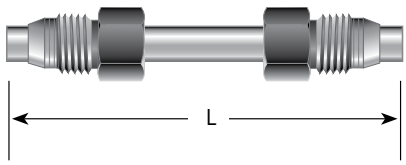
Materials

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)

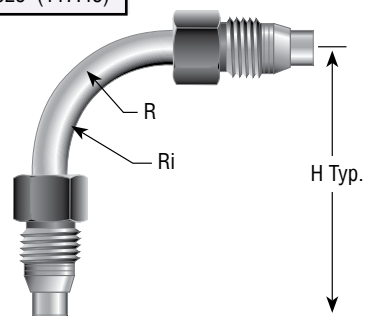
Close Tube Port Connectors

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

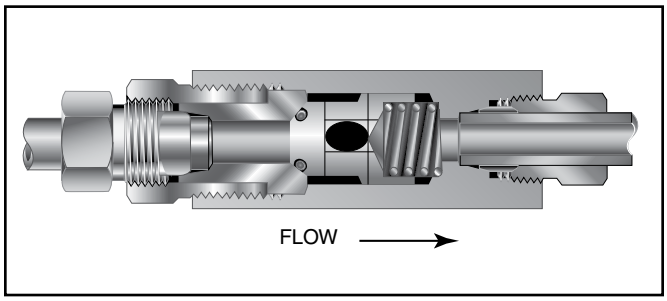
Model	Size Inches (mm)	Fits Connection Type	Dimension "H" Inches (mm)	Mean Radius "R" Inches (mm)	Inside Radius Ri Inches (mm)
QTE44-90	1/4" (6.35)	QS250	3.25 (82.55)	0.563 (14.30)	0.438 (11.13)
QTE66-90	3/8" (9.53)	QS375	3.50 (88.90)	0.938 (23.83)	0.75 (19.05)
QTE99-90	9/16" (14.29)	QS562	7.50 (19.05)	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



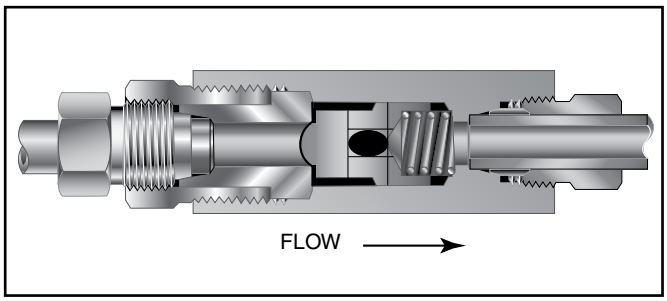
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C)

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

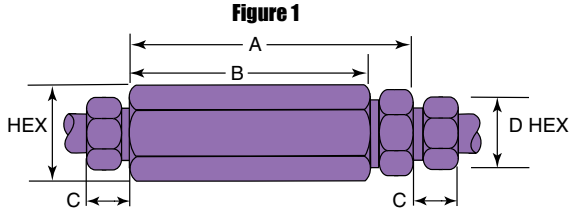
Note:
All check valves are furnished complete with connection components unless otherwise specified.

*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.

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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02-1247BE 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

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

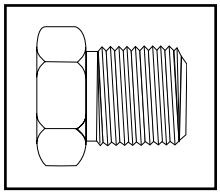
www.autoclave.com

Pressures to 150,000 psi (10342 bar)

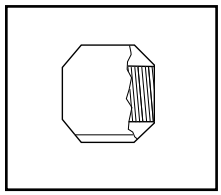
Parker Autoclave Engineers high pressure fittings Series F and SF are the industry standard for pressures to 150,000 psi (10342 bar). Utilizing Parker Autoclave Engineers high pressure coned-and-threaded connections, these fittings are correlated with Series 30SC, 43SC, 30VM, 40VM, 60VM, 100VM, and 150V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

Connection Components

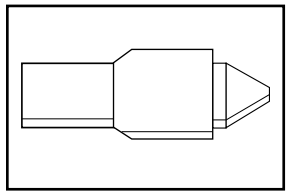
All Parker Autoclave Engineers valves and fittings are supplied complete with appropriate glands and collars. To order these components separately, use order numbers listed. When using plug, collar is not required.



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.

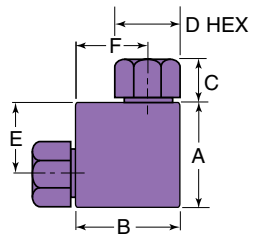
Connection Type	Gland	Collar	Plug	Connection Components (Industry Standard)
F250C F375C F562C	AGL( )	ACL( )	AP( )	Parker Autoclave Engineer's high pressure fittings 1/4, 3/8 and 9/16 connection components to 60,000 psi (4137 bar). For use with 30VM, 40VM, 60VM valves and fittings.
F1000C43	CGLX160	CCLX160	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*)

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	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													
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													
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 **(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)**	
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.

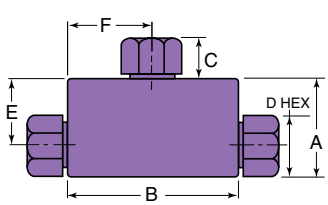
All dimensions for reference only and subject to change.
For prompt service, Parker Autoclave stocks select products. Consult your local representative.

Figure 1



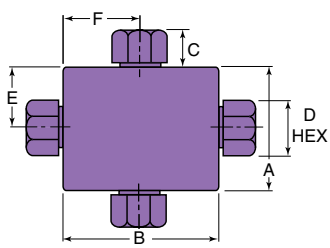
Elbow

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

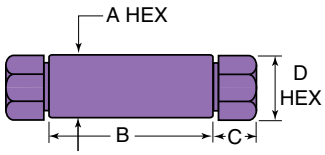
60BF4433	F250C	1/4	60,000	0.094	0.94	1.88	0.50	0.63	0.50	1.00	0.38		
		(6.35)	**(4136.79)**	**(2.39)**	**(23.88)**	**(47.75)**	**(12.70)**	**(15.88)**	**(12.70)**	**(25.40)**	**(9.65)**		
100BF4433	F312C150	1/4	100,000	0.094	2.12	3.25	0.52	0.75	1.38	2.00	0.38		
		(6.35)	**(6894.65)**	**(2.39)**	**(53.85)**	**(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.

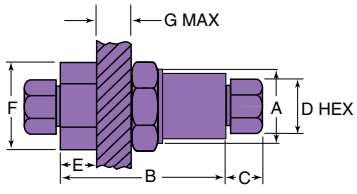
Union Couplings are designed with a removable seat insert allowing disassembly and tubing removal without the necessity of loosening other items in a line.

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)**

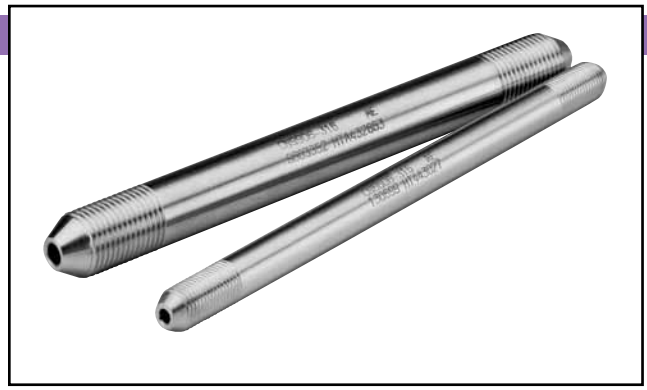
Note:
1. Autofrettaged tubing available (see technical Information section: Pressure Cycling for Autofrettage information)
2. For HighPressure, High Cycle (HPHC) tubing, MS15-201, MS15-202, MS15-209, and MS15-210 are available. (See Technical Information section: Pressure Cycling for additional information)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

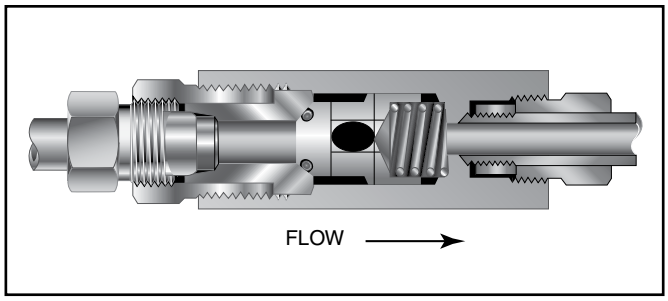
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

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



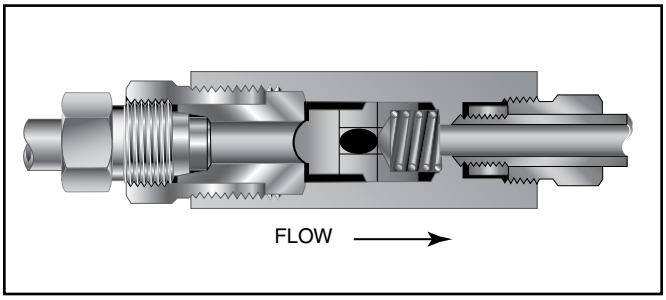
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C).
For low temperature option to -423°F (-252°C) add suffix LTTO (Low temperature spring & PTFE o-ring).

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



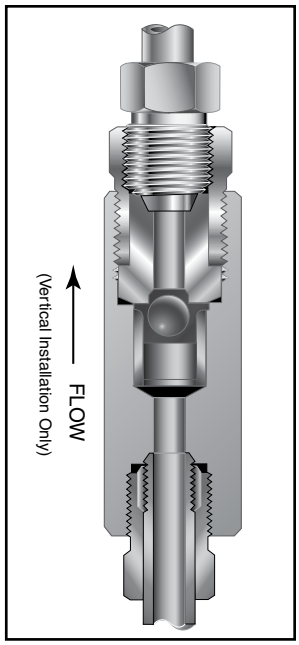
Minimum operating temperature for standard ball check valves -110°F (-79°C).
For low temperature option to -423°F (-252°C) add suffix LT (Low temperature spring).

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)**

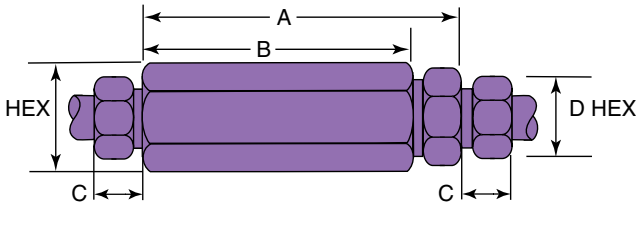
+Body material is 15-5PH

*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.

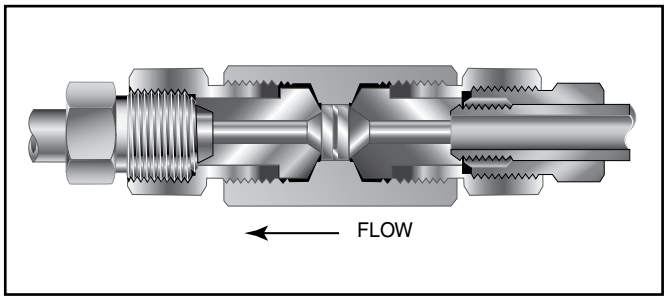
Figure 1



High Pressure Line Filters

Pressures to 60,000 psi (4137 bar)

Dual-Disc Line Filters

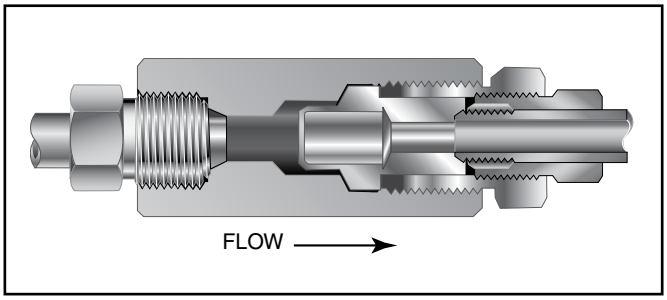


Parker Autoclave Engineers Dual-Disc Line Filters are utilized in numerous industrial, chemical processing, aerospace, nuclear and other applications. With the dual-disc design, large contaminant particles are trapped by the upstream filter element before they can reach and clog the smaller micron-size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

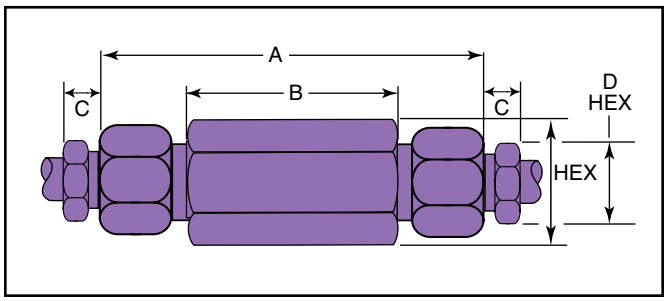
Note:

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

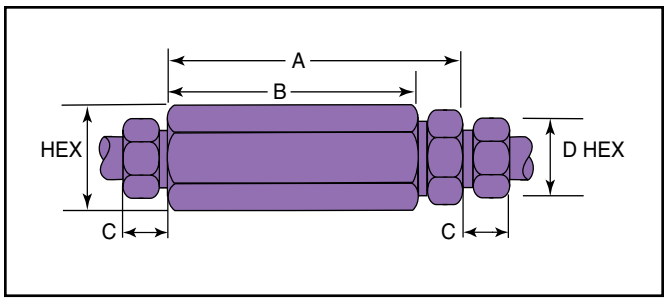
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

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

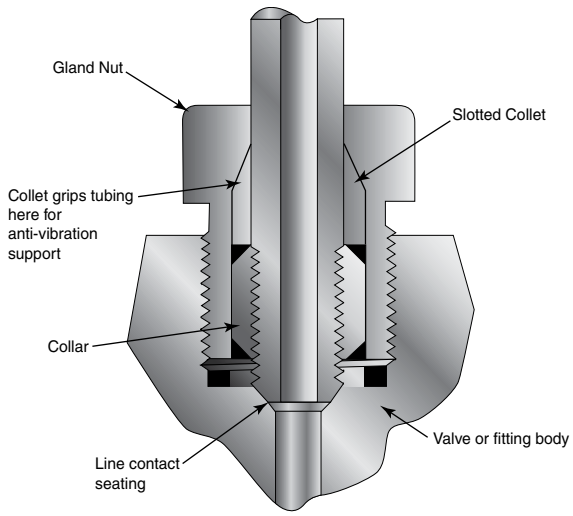
Pressures to 150,000 psi (10342 bar)

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.

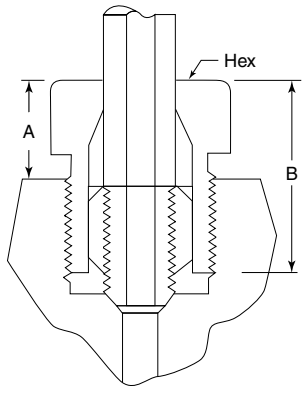
A less complex and more economical design than other vibration-resistant connections, the Collet Gland Assembly utilizes the same coned-and-threaded features of Parker Autoclave Engineers high pressure connections. In Series KCGL the gland nut is recessed to accommodate a tapered, slotted collet that 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.

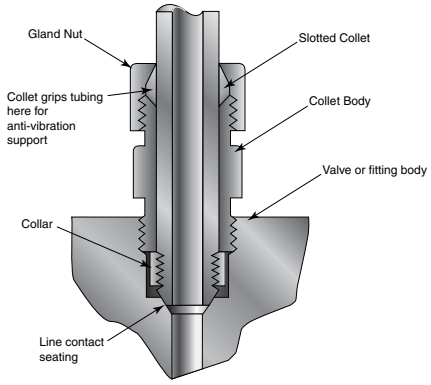
Series KCBGLX - Sizes to 1" (25.40)
Series KCBGL - Sizes to 1/4" (6.35), 5/16" (7.94), 3/8" (9.53)

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

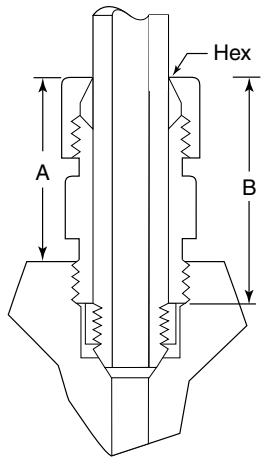
Type 316 stainless steel with bonded dry film (316MC) moly lubricant.



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)**	

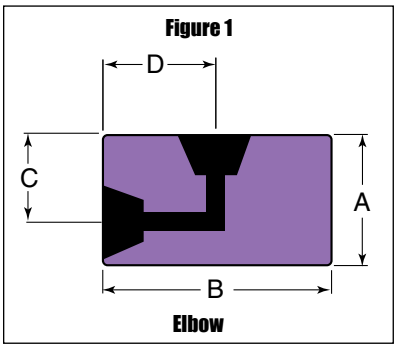
Pipe Cross

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.

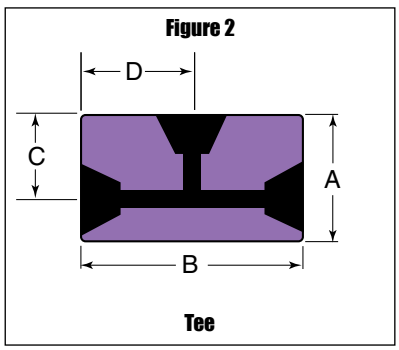
For prompt service, Parker Autoclave Engineers stocks select products. Consult your local representative. For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

Figure 1



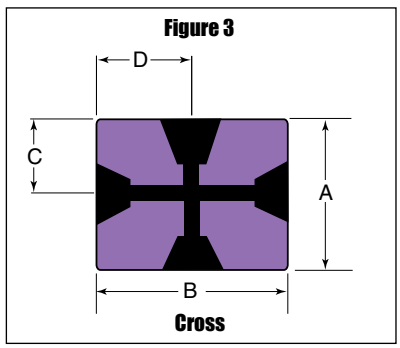
Elbow

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)**	

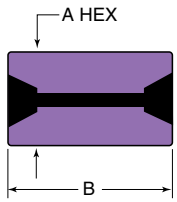
*Maximum pressure rating is based on the lowest rating of any component.
+ distance across flats

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.

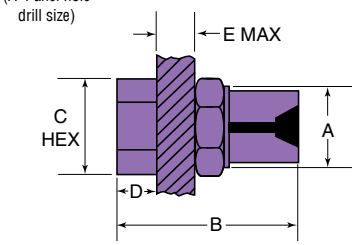
NOTE: Special material components may be supplied with four flats in place of standard hex.

Figure 4



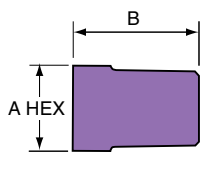
Coupling

Figure 5



Bulkhead Coupling

Figure 6

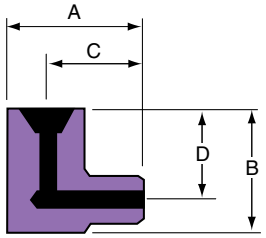


Plugs

Pressures to 15,000 (1034 bar)

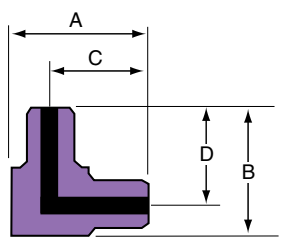
Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm) A	B	C	D	Block Thickness	Fitting Pattern
Street Pipe Elbow									
SPL4400	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	1.50 **(38.10)**	1.50 **(38.10)**	1.13 **(28.70)**	1.00 **(25.40)**	0.75 **(19.05)**	**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



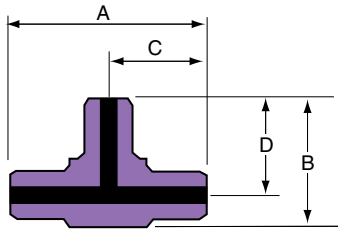
Street Elbow

Figure 2



Male Elbow

Figure 3



Male Tee

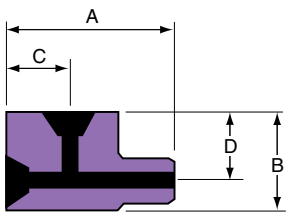
Street Pipe Tee

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

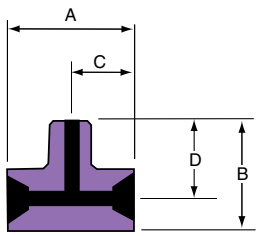
BPT4440	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	2.00 **(50.80)**	1.50 **(38.10)**	1.00 **(25.40)**	1.13 **(28.70)**	0.75 **(19.05)**	**See Figure 5**
BPT6660	3/8" NPT	15,000 **(1034.20)**	0.297 **(7.54)**	2.00 **(50.80)**	1.75 **(44.45)**	1.00 **(25.40)**	1.25 **(31.75)**	1.00 **(25.40)**	
BPT8880	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)

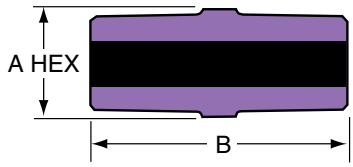
For rapid system make-up, Parker Autoclave Engineers supplies pipe nipples in various sizes and lengths for pipe valves and fittings.

Special lengths

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

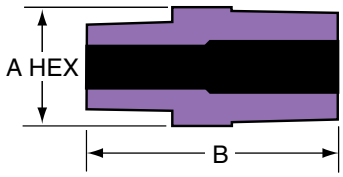
Catalog Number	Connection Type	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - in.(mm) A Hex	Dimensions - in.(mm) B	Fitting Pattern
Pipe Hex Close Nipples						
15MAP4P4	1/4" NPT	15,000 **(1034.20)**	0.219 **(5.54)**	0.63 **(16.00)**	1.81 **(46.02)**	**See Figure 1**
15MAP6P6	3/8" NPT	15,000 **(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.

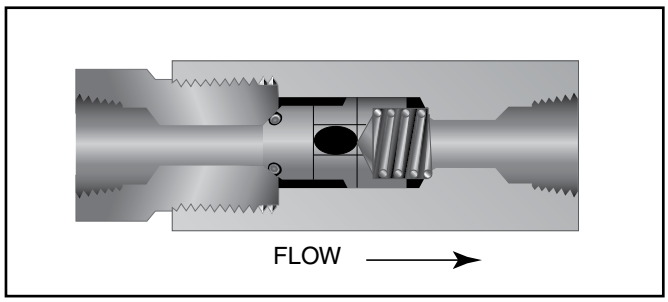
*Maximum pressure rating is based on the lowest rating of any component. Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.

Pipe Check Valves

Pressures to 15,000 (1034 bar)

Pipe O-Ring Check Valves



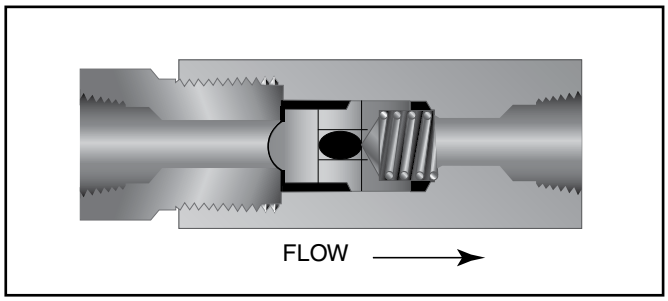
Minimum operating temperature for standard o-ring check valves 0°F (-17.8°C).

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)**	

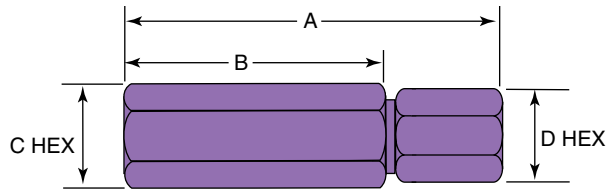
*Maximum pressure rating is based on the lowest rating of any component.
+ distance across flats

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



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.

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