

Fittings, Tubing & Nipples

Medium Pressure

Pressures to 20,000 psi (1379 bar)

Since 1945 Autoclave Engineers has designed and built premium quality valves, fittings and tubing. This commitment to engineering and manufacturing excellence has earned Autoclave a reputation for reliable, efficient product performance. 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", and 1".
- Fittings and tubing manufactured from cold worked 316 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 Autoclave's medium pressure connection. This coned-and-threaded connection features orifice sizes to match the high flow characteristics of this series.

**Autoclave
Engineers** 

Fluid Components
Division of Snap-tite, Inc.

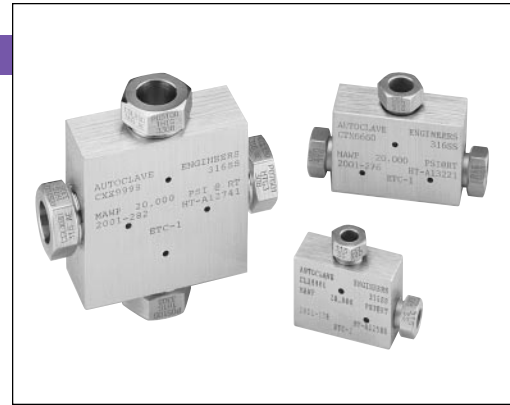
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Fittings, Tubing & Nipples - Medium Pressure

Medium Pressure Fittings

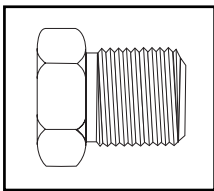
Pressures to 20,000 psi (1379 bar)

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

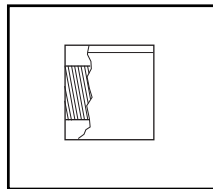


Connection Components

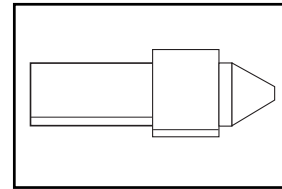
All Autoclave valves and fittings are supplied complete with appropriate glands and collars. To order these components separately, use order numbers listed. When using plug, collar is not required.



Gland
CGLX ()



Collar
CCLX ()



Plug
CPX ()

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

Example:
1/4" Gland - CGLX 40

To ensure proper fit use Autoclave Engineers tubing.

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

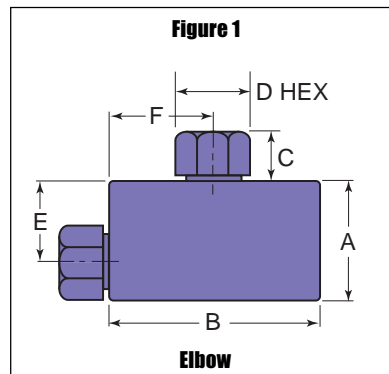
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		

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 (9.65)	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)	

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

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



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

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

Tee

CTX4440	SF250CX	1/4 (6.35)	20,000 (1378.93)	0.125 (3.18)	1.12 (28.45)	1.50 (38.10)	0.38 (9.65)	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)	

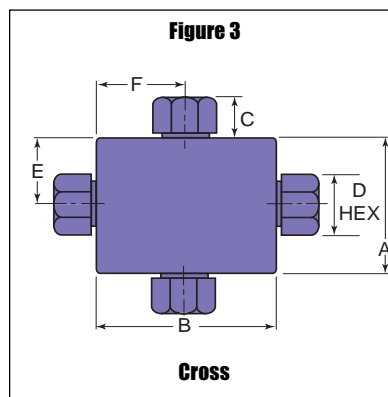
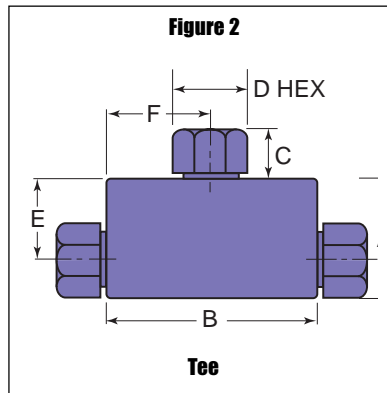
Cross

CXX4444	SF250CX	1/4 (6.35)	20,000 (1378.93)	0.125 (3.18)	1.50 (38.10)	1.50 (38.10)	0.38 (9.65)	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)	

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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		

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)	(9.65)	(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			

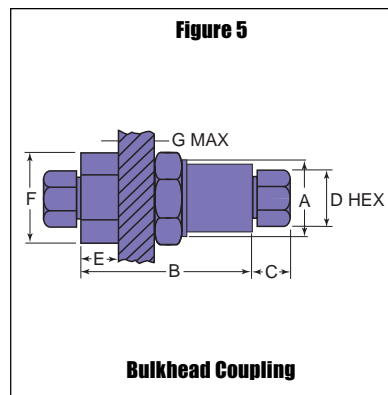
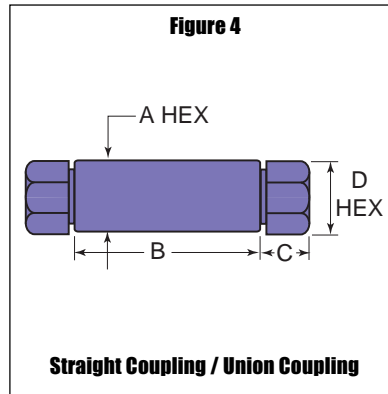
Bulkhead Coupling

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
20BFX6666		(6.35)	(1378.93)	(3.18)	(20.57)	(47.75)	(9.65)	(12.70)	(13.46)	(25.40)	(9.65)	
20BFX6666	SF375CX	3/8	20,000	0.219	0.94	2.00	0.44	0.62	0.62	1.00	0.38	
20BFX9966		(9.53)	(1378.93)	(5.56)	(23.88)	(50.80)	(11.10)	(15.75)	(15.75)	(25.40)	(9.65)	
20BFX9966	SF562CX	9/16	20,000	0.359	1.12	2.38	0.53	0.94	0.78	1.38	0.38	
20BFX12		(14.29)	(1378.93)	(9.12)	(28.45)	(60.45)	(13.46)	(23.88)	(19.81)	(35.05)	(9.65)	
20BFX12	SF750CX	3/4	20,000	0.516	1.69	2.62	0.62	1.19	0.91	1.88	0.38	
20BFX16		(19.05)	(1378.93)	(13.11)	(42.93)	(66.55)	(15.75)	(30.23)	(23.11)	(47.75)	(9.65)	
20BFX16	SF1000CX	1	20,000	0.688	1.94	3.50	0.72	1.38	1.50	2.21	0.38	
20BFX16		(25.40)	(1378.93)	(17.48)	(49.28)	(88.90)	(18.29)	(35.05)	(38.10)	(56.13)	(9.65)	

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Actual working pressure may be determined by tubing pressure rating, if lower.

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



Medium Pressure Tubing

Pressures to 20,000 psi (1379 bar)

Autoclave Engineers offers a complete selection of austenetic, cold drawn stainless steel tubing designed to match the performance standards of Autoclave valves and fittings. Autoclave medium pressure tubing is manufactured specifically for high pressure applications requiring both strength and corrosion resistance. The tubing is furnished in random lengths between 20 feet (6 meters) and 27 feet (8.2 meters). The average is 24 feet (7.3 meters). Medium Pressure Tubing is available in five sizes and a variety of materials.



Inspection and Testing

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 tolerances to assure proper fit. Sample pieces of tube for each lot are tested to confirm mechanical properties. Hydrostatic testing is also performed on a statistical basis and is conducted at the working pressure of the tube. Autoclave will perform 100% hydrostatic testing at additional cost if desired.

Special Materials

In addition to the type 316 and 304 stainless steel tubing listed in this section, Autoclave has 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 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)

Catalog Number	Tube Material	Fits Connection Type	Tube Size Inches (mm)			Flow Area in. ² (mm ²)	Working Pressure psi (bar)*				
			Outside Diameter	Inside Diameter	Wall Thickness		-325 to 100°F -198 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)	10,000 (689.46)	10,000 (689.46)	9,600 (661.89)	9,100 (627.41)	8,450 (582.60)
MS15-194	304SS						10,000 (689.46)	9,450 (651.54)	8,600 (592.94)	8,500 (586.05)	8,050 (555.02)
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)	10,000 (689.46)	10,000 (689.46)	9,600 (661.89)	9,100 (627.41)	8,450 (582.60)
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)	10,000 (689.46)	10,000 (689.46)	9,600 (661.89)	9,100 (627.41)	8,450 (582.60)

Note: Caution should be exercised in proper selection of Medium Pressure Tubing based on actual operating conditions. Two series available: 10,000 psi (690 bar) and 20,000 psi (1379 bar).

*Maximum pressure rating is based on the lowest rating of any component.

Actual working pressure may be determined by tubing pressure rating, if lower.

All dimensions for reference only and subject to change.

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Medium Pressure Coned-and-Threaded Nipples

Pressures to 20,000 psi (1379 bar)

For rapid system make-up, Autoclave Engineers supplies pre-cut, coned-and-threaded nipples in various sizes and lengths for Autoclave 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							Fits Connection Type	Tube Size inches (mm)		Working Pressure at 100°F psi (bar)*
Nipple Length In (mm)								O.D.	I.D.	
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)				
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)	10,000 (689.46)
			CNX1206-316	CNX1208-316	CNX12010-316	CNX12012-316	SF750CX	3/4 (19.05)	0.438 (11.13)	20,000 (1378.93)
			CNLX1206-316	CNLX1208-316	CNLX12010-316	CNLX12012-316	SF750CX	3/4 (19.05)	0.516 (13.11)	10,000 (689.46)
			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)	10,000 (689.46)

Note: Caution should be exercised when selecting medium pressure nipples since two series are available: 10,000 psi (690 bar) and 20,000 psi (1379 bar)

See medium pressure tubing section for pressures at various temperatures.

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