

Group 8

High Pressure Fittings and Tubing



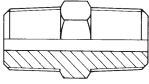

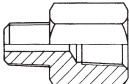
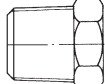
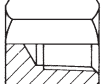
Page	Contents
2	Index
3	10K Fittings NPT-NPT
4	10K Fittings JIC-JIC
5	10K Fittings JIC-NPT
6	10K Fittings BSP-BSP
7	10K Fittings BSP-JIC, BSP-NPT
8	Adapters - HP Fittings 15
9-11	Low Pressure Fitting and Tubing Low Pressure
12-13	Low Pressure Tubing
14-19	Medium Pressure Fittings and Tubing
20	Medium Pressure Coned-and-Threaded Nipples
21-25	High Pressure Fittings and Tubing
26-27	High Pressure Tubing
28	High Pressure Coned-and-Threaded Nipples
29	A-LOCK Instrumentation fittings

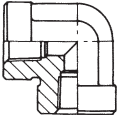
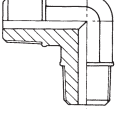
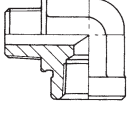
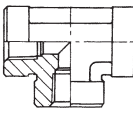
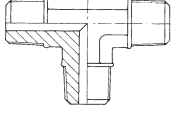


10K FITTINGS 10 000 PSI NPT - NPT

Material Quality:
AISI 316 stainless steel. Material certificate according to DIN 500049. 3.1.B.
Other material qualities available on request.

STAINLESS STEEL

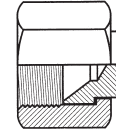
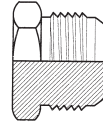
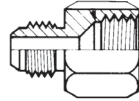
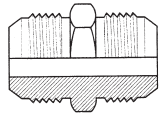
NPT - NPT						
Thread 1	Thread 2	Nipple	Socket	Nipple Socket	Plug	Cap
1/8	1/8	HN10K-0202	HC10K-0202	FMA10K-0202	HP10K-02	PC10K-02
1/8	1/4	HN10K-0204	HC10K-0204	FMA10K-0204		
1/4	1/8			FMA10K-0402		
1/4	1/4	HN10K-0404	HC10K-0404	FMA10K-0404	HP10K-04	PC10K-04
1/4	3/8	HN10K-0406	HC10K-0406	FMA10K-0406		
1/4	1/2	HN10K-0408	HC10K-0408	FMA10K-0408		
3/8	1/4			FMA10K-0604		
3/8	3/8	HN10K-0606	HC10K-0606	FMA10K-0606	HP10K-06	PC10K-06
3/8	1/2	HN10K-0608	HC10K-0608	FMA10K-0608		
1/2	1/4			FMA10K-0804		
1/2	3/8			FMA10K-0806		
1/2	1/2	HN10K-0808	HC10K-0808	FMA10K-0808	HP10K-08	PC10K-08
1/2	3/4	HN10K-0812	HC10K-0812	FMA10K-0812		
1/2	1	HN10K-0816	HC10K-0816	FMA10K-0816		
3/4	1/2			FMA10K-1208		
3/4	3/4	HN10K-1212	HC10K-1212	FMA10K-1212	HP10K-12	PC10K-12
3/4	1	HN10K-1216	HC10K-1216	FMA10K-1216		
1	1/2			FMA10K-1608		
1	3/4			FMA10K-1612		
1	1	HN10K-1616	HC10K-1616	FMA10K-1616	HP10K-16	PC10K-16

NPT - NPT						
Thread 1	Thread 2	Elbow 90° Female	Elbow 90° Male	Elbow 90° Male/Female	Tee Female	Tee Male
1/8	1/8	FE10K-0202	ME10K-0202	FME10K-0202	FT10K-02	MT10K-02
1/4	1/4	FE10K-0404	ME10K-0404	FME10K-0404	FT10K-04	MT10K-04
3/8	3/8	FE10K-0606	ME10K-0606	FME10K-0606	FT10K-06	MT10K-06
1/2	1/2	FE10K-0808	ME10K-0808	FME10K-0808	FT10K-08	MT10K-08

Other dimensions, thread types or 15,000 PSI are available on request.

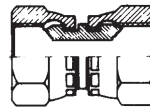
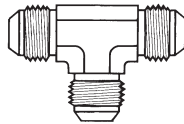
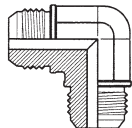
Safety factor: 4:1

JIC - JIC



Thread 1	Thread 2	Nipple	Nipple Socket	Plug	Cap
7/16-20	7/16-20	JHN10K-0404	JMFS10K-0404	JHP10K-04	JPC10K-0404
7/16-20	9/16-18	JHN10K-0406	JMFS10K-0406		
7/16-20	3/4-16	JHN10K-0408	JMFS10K-0408		
1/2-20	1/2-20	JHN10K-0505	JMFS10K-0505	JHP10K-05	JPC10K-0505
9/16-18	9/16-18	JHN10K-0606	JMFS10K-0606	JHP10K-06	JPC10K-0606
9/16-18	3/4-16	JHN10K-0608	JMFS10K-0608		
9/16-18	7/8-14	JHN10K-0610	JMFS10K-0610		
9/16-18	1 1/16-12	JHN10K-0612	JMFS10K-0612		
3/4-16	3/4-16	JHN10K-0808	JMFS10K-0808	JHP10K-08	JPC10K-0808
7/8-14	7/8-14	JHN10K-1010	JMFS10K-1010	JHP10K-10	JPC10K-1010
1 1/16-12	1 1/16-12	JHN10K-1212	JMFS10K-1212	JHP10K-12	JPC10K-1212
1 5/16-12	1 5/16-12	JHN10K-1616	JMFS10K-1616	JHP10K-16	JPC10K-1616

JIC - JIC

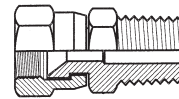
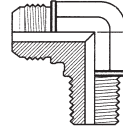
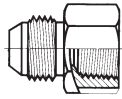
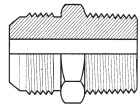


Thread 1	Thread 2	Elbow 90° Male	Tee Male	Swivel
7/16-20	7/16-20	JME10K-0404	JMT10K-04	JFFS10K-0404
7/16-20	9/16-18			JFFS10K-0406
7/16-20	3/4-16			JFFS10K-0408
1/2-20	1/2-20	JME10K-0505		JFFS10K-0505
9/16-18	9/16-18	JME10K-0606	JMT10K-06	JFFS10K-0606
9/16-18	3/4-16			JFFS10K-0608
9/16-18	7/8-14			JFFS10K-0610
9/16-18	1 1/16-12			JFFS10K-0612
3/4-16	3/4-16	JME10K-0808	JMT10K-08	JFFS10K-0808
7/8-14	7/8-14	JME10K-1010	JMT10K-10	
1 1/16-12	1 1/16-12	JME10K-1212	JMT10K-12	
1 5/16-12	1 5/16-12	JME10K-1616	JMT10K-16	

Other dimensions, thread types or 15,000 PSI are available on request.

10K FITTINGS 10 000 PSI JIC - NPT

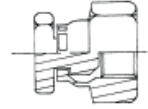
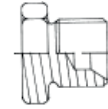
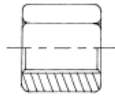
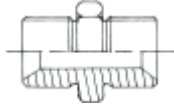
JIC - NPT



Thread 1	Thread 2	Nipple	Nipple Socket	Elbow 90° Male	Swivel Nipple
7/16-20	1/8	NJHN10K-0402	NJFMA10K-0402	NJME10K-0402	NJMFS10K-0402
7/16-20	1/4	NJHN10K-0404	NJFMA10K-0404	NJME10K-0404	NJMFS10K-0404
7/16-20	3/8	NJHN10K-0406	NJFMA10K-0406	NJME10K-0406	NJMFS10K-0406
1/2-20	1/4	NJHN10K-0504	NJFMA10K-0504	NJME10K-0504	NJMFS10K-0504
9/16-18	1/4	NJHN10K-0604	NJFMA10K-0604	NJME10K-0604	NJMFS10K-0604
9/16-18	3/8	NJHN10K-0606	NJFMA10K-0606	NJME10K-0606	NJMFS10K-0606
9/16-18	1/2	NJHN10K-0608	NJFMA10K-0608	NJME10K-0608	NJMFS10K-0608
3/4-16	3/8	NJHN10K-0806	NJFMA10K-0806	NJME10K-0806	NJMFS10K-0806
3/4-16	1/2	NJHN10K-0808	NJFMA10K-0808	NJME10K-0808	NJMFS10K-0808
3/4-16	3/4	NJHN10K-0812	NJFMA10K-0812	NJME10K-0812	NJMFS10K-0812
7/8-14	1/2	NJHN10K-1008	NJFMA10K-1008	NJME10K-1008	NJMFS10K-1008
7/8-14	3/4	NJHN10K-1012	NJFMA10K-1012	NJME10K-1012	NJMFS10K-1012
1.1/16-12	1/2	NJHN10K-1208	NJFMA10K-1208	NJME10K-1208	NJMFS10K-1208
1.1/16-12	3/4	NJHN10K-1212	NJFMA10K-1212	NJME10K-1212	NJMFS10K-1212
1.5/16-12	3/4	NJHN10K-1612	NJFMA10K-1612	NJME10K-1612	NJMFS10K-1612
1.5/16-12	3/4	NJHN10K-1616	NJFMA10K-1616	NJME10K-1616	NJMFS10K-1616

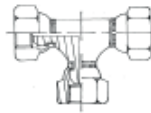
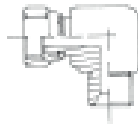
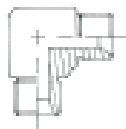
Other dimensions, thread types or 15,000 PSI are available on request.

BSP - BSP



Thread 1	Thread 2	Nipple	Socket	Nipple Socket	Plug	Cap
1/8	1/8	HB0K-0202	HCB10K-0202	BMF10K-0202	HPB10K-02	BPC10K-02
1/8	1/4	HB10K-0204	HCB10K-0204	BMF10K-0204		
1/4	1/8			BMF10K-0402		
1/4	1/4	HB10K-0404	HCB10K-0404	BMF10K-0404	HPB10K-04	BPC10K-04
1/4	3/8	HB10K-0406	HCB10K-0406	BMF10K-0406		
1/4	1/2	HB10K-0408	HCB10K-0408	BMF10K-0408		
3/8	1/4			BMF10K-0604		
3/8	3/8	HB10K-0606	HCB10K-0606	BMF10K-0606	HPB10K-06	BPC10K-06
3/8	1/2	HB10K-0608	HCB10K-0608	BMF10K-0608		
1/2	1/4			BMF10K-0804		
1/2	3/8			BMF10K-0806		
1/2	1/2	HB10K-0808	HCB10K-0808	BMF10K-0808	HPB10K-08	BPC10K-08
1/2	3/4	HB10K-0812	HCB10K-0812	BMF10K-0812		
1/2	1	HB10K-0816	HCB10K-0816	BMF10K-0816		
3/4	1/2			BMF10K-1208		
3/4	3/4	HB10K-1212	HCB10K-1212	BMF10K-1212	HPB10K-12	BPC10K-12
3/4	1	HB10K-1216	HCB10K-1216	BMF10K-1216		
1	1/2			BMF10K-1608		
1	3/4			BMF10K-1612		
1	1	HB10K-1616	HCB10K-1616	BMF10K-1616	HPB10K-16	BPC10K-16

BSP - BSP



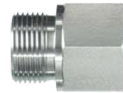
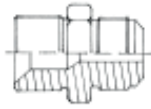
Thread 1	Thread 2	Elbow 90° Female	Elbow 90° Male/Female	Tee Female	Swivel
1/8	1/8	BEFFS10K-0202	MFEB10K-0202	FTB10K-02	BFSS10K-0202
1/4	1/4	BEFFS10K-0404	MFEB10K-0404	FTB10K-04	BFSS10K-0404
3/8	3/8	BEFFS10K-0606	MFEB10K-0606	FTB10K-06	BFSS10K-0606
1/2	1/2	BEFFS10K-0808	MFEB10K-0808	FTB10K-08	BFSS10K-0808
3/4	3/4	BEFFS10K-1212	MFEB10K-1212	FTB10K-12	BFSS10K-1212
1	1	BEFFS10K-1616	MFEB10K-1616	FTB10K-16	BFSS10K-1616

Safety factor: 4:1

Other dimensions, thread types or 15,000 PSI are available on request.

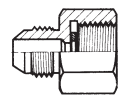
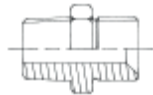
10K FITTINGS 10 000 PSI BSP - JIC /BSP -NPT

BSP - JIC



Thread 1	Thread 1	Nipple	Nipple Socket	Swivel Nipple
1/4	7/16-20	BJHN10K-0404	BJMFS10K-0404	BJFFS10K-0404
1/4	9/16-18	BJHN10K-0406	BJMFS10K-0406	BJFFS10K-0406
1/4	3/4-16	BJHN10K-0408	BJMFS10K-0408	BJFFS10K-0408
3/8	7/16-20	BJHN10K-0604	BJMFS10K-0604	BJFFS10K-0604
3/8	9/16-18	BJHN10K-0606	BJMFS10K-0606	BJFFS10K-0606
3/8	3/4-16	BJHN10K-0608	BJMFS10K-0608	BJFFS10K-0608
3/8	1 1/16-12	BJHN10K-0612	BJMFS10K-0612	BJFFS10K-0612
1/2	9/16-18	BJHN10K-0806	BJMFS10K-0806	BJFFS10K-0806
1/2	3/4-16	BJHN10K-0808	BJMFS10K-0808	BJFFS10K-0808
1/2	1 1/16-12	BJHN10K-0812	BJMFS10K-0812	BJFFS10K-0812
3/4	3/4-16	BJHN10K-1208	BJMFS10K-1208	BJFFS10K-1208
3/4	1 1/16-12	BJHN10K-1212	BJMFS10K-1212	BJFFS10K-1212
1				

BSP- NPT



Thread 1	Thread 2	Nipple	Nipple Socket
1/4	1/4	HNB10K-0404	FMABN10K-0404
1/4	3/8	HNB10K-0406	FMABN10K-0406
3/8	1/4	HNB10K-0604	FMABN10K-0604
3/8	3/8	HNB10K-0606	FMABN10K-0606
3/8	1/2	HNB10K-0608	FMABN10K-0608
1/2	3/8	HNB10K-0806	FMABN10K-0806
1/2	1/2	HNB10K-0808	FMABN10K-0808
1/2	3/4	HNB10K-0812	FMABN10K-0812
3/4	1/2	HNB10K-1208	FMABN10K-1208
3/4	3/4	HNB10K-1212	FMABN10K-1212
1	1/2	HNB10K-1608	FMABN10K-1608
1	3/4	HNB10K-1612	FMABN10K-1612
1	1	HNB10K-1616	FMABN10K-1616
2	2	HNB10K-3232	FMABN10K-3232

Other dimensions, thread types or 15,000 PSI are available on request.

ADAPTERS - HP FITTINGS

Thread 1 Couplings	Thread 2 Couplings	Part No.	Description Special Transition Nipples	Part No.	Description Special Transition Nipples
1/4"	1/4"	ASB-1144	Med. Press. Couplings male / male	ASB-1544	Med. Press. Couplings male / female
1/4"	3/8"	ASB-1146	Med. Press. Couplings male / male	ASB-1546	Med. Press. Couplings male / female
3/8"	1/4"	ASB-1164	Med. Press. Couplings male / male	ASB-1564	Med. Press. Couplings male / female
3/8"	3/8"	ASB-1166	Med. Press. Couplings male / male	ASB-1566	Med. Press. Couplings male / female
3/8"	9/16"	ASB-1169	Med. Press. Couplings male / male	ASB-1569	Med. Press. Couplings male / female
9/16"	3/8"	ASB-1196	Med. Press. Couplings male / male	ASB-1596	Med. Press. Couplings male / female
9/16"	9/16"	ASB-1199	Med. Press. Couplings male / male	ASB-1599	Med. Press. Couplings male / female
1/4"	7/16"	ASB-1244	Med. Press. Coupling x JIC male / male	ASB-5246	Med. Press. Coupling x JIC female / male
1/4"	9/16"	ASB-1246	Med. Press. Coupling x JIC male / male	ASB-5264	Med. Press. Coupling x JIC female / male
3/8"	7/16"	ASB-1264	Med. Press. Coupling x JIC male / male	ASB-5264	Med. Press. Coupling x JIC female / male
3/8"	9/16"	ASB-1266	Med. Press. Coupling x JIC male / male	ASB-5266	Med. Press. Coupling x JIC female / male
9/16"	7/16"	ASB-1294	Med. Press. Coupling x JIC male / male	ASB-5294	Med. Press. Coupling x JIC female / male
9/16"	9/16"	ASB-1296	Med. Press. Coupling x JIC male / male	ASB-5296	Med. Press. Coupling x JIC female / male
9/16"	3/4"	ASB-1298	Med. Press. Coupling x JIC male / male	ASB-5298	Med. Press. Coupling x JIC female / male
1/4"	1/4"	ASB-1344	Med. Press. Coupling x BSP male / male	ASB-5344	Med. Press. Coupling x BSP female / male
1/4"	3/8"	ASB-1346	Med. Press. Coupling x BSP male / male	ASB-5346	Med. Press. Coupling x BSP female / male
1/4"	3/4"	ASB-1348	Med. Press. Coupling x BSP male / male	ASB-5348	Med. Press. Coupling x BSP female / male
3/8"	1/4"	ASB-1364	Med. Press. Coupling x BSP male / male	ASB-5364	Med. Press. Coupling x BSP female / male
3/8"	3/8"	ASB-1366	Med. Press. Coupling x BSP male / male	ASB-5366	Med. Press. Coupling x BSP female / male
3/8"	1/2"	ASB-1368	Med. Press. Coupling x BSP male / male	ASB-5368	Med. Press. Coupling x BSP female / male
9/16"	1/4"	ASB-1394	Med. Press. Coupling x BSP male / male	ASB-5394	Med. Press. Coupling x BSP female / male
9/16"	3/8"	ASB-1396	Med. Press. Coupling x BSP male / male	ASB-5396	Med. Press. Coupling x BSP female / male
9/16"	1/2"	ASB-1398	Med. Press. Coupling x BSP male / male	ASB-5398	Med. Press. Coupling x BSP female / male
1/4"	1/4"	ASB-1444	Med. Press. Coupling x NPT male / male	ASB-5444	Med. Press. Coupling x NPT female / male
1/4"	3/8"	ASB-1446	Med. Press. Coupling x NPT male / male	ASB-5446	Med. Press. Coupling x NPT female / male
3/8"	1/4"	ASB-1464	Med. Press. Coupling x NPT male / male	ASB-5464	Med. Press. Coupling x NPT female / male
3/8"	3/8"	ASB-1466	Med. Press. Coupling x NPT male / male	ASB-5466	Med. Press. Coupling x NPT female / male
3/8"	1/2"	ASB-1468	Med. Press. Coupling x NPT male / male	ASB-5468	Med. Press. Coupling x NPT female / male
9/16"	1/4"	ASB-1494	Med. Press. Coupling x NPT male / male	ASB-5494	Med. Press. Coupling x NPT female / male
9/16"	3/8"	ASB-1496	Med. Press. Coupling x NPT male / male	ASB-5496	Med. Press. Coupling x NPT female / male
9/16"	1/2"	ASB-1498	Med. Press. Coupling x NPT male / male	ASB-5498	Med. Press. Coupling x NPT female / male
1/4"	9/16"	ASB-9246	High Press. Coupling x JIC male / male		
3/8"	9/16"	ASB-9266	High Press. Coupling x JIC male / male		
9/16"	9/16"	ASB-9296	High Press. Coupling x JIC male / male		
1/4"	1/4"	ASB-9344	High Press. Coupling x BSP male / male	ASB-9844	High Press. Coupling x NPT male / female
3/8"	1/4"	ASB-9364	High Press. Coupling x BSP male / male		

ASB -

1st Coupling Type
 1= MP Male
 5= MP Female
 2= JIC Male
 6= JIC Female
 3= BSP Male
 7= BSP Female
 4= NPT Male
 8= NPT Female
 9= HP Male
 ?= HP Female

2nd Coupling Type
 1= MP Male
 5= MP Female
 2= JIC Male
 6= JIC Female
 3= BSP Male
 7= BSP Female
 4= NPT Male
 8= NPT Female
 9= HP Male
 ?= HP Female

Size Thread 1

Size Thread 2

Other dimensions, thread types or 15,000 PSI are

LOW PRESSURE FITTINGS AND TUBING

Pressures to 15,000 psi (1034 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.

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 Autoclave's SpeedBite connection. This single-ferrule compression sleeve connection delivers fast, easy make-up and reliable bubble-tight performance, in liquid or gas service.

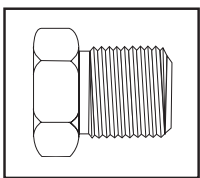


Autoclave Engineers Low Pressure Fittings are designed for use with low pressure valves and tubing. These fittings feature improved SpeedBite compression connections with larger orifices for excellent flow capabilities. Autoclave fittings and components are manufactured of cold-worked type 316 stainless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

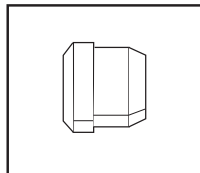


Connection Components

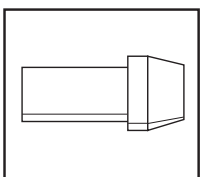
All valves and fittings are supplied complete with appropriate glands and compression sleeves. To order these components separately, use order numbers listed. When using plug, sleeve is not required.



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

† 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 Autoclave Engineers tubing. For mounting hole option add suffix PM to catalog number. Consult factory for mounting hole dimensions.

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

SL2200	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)
SL4400	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)
SL6600	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)
SL8800	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)

See Fig. 1

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)
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)

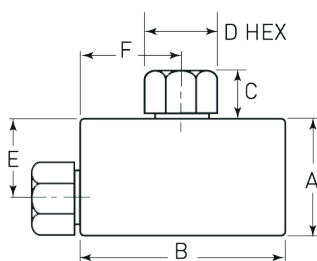
See Fig. 2

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)
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)

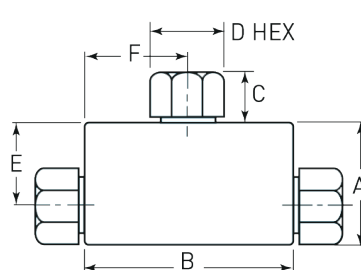
See Fig. 3

Figure 1



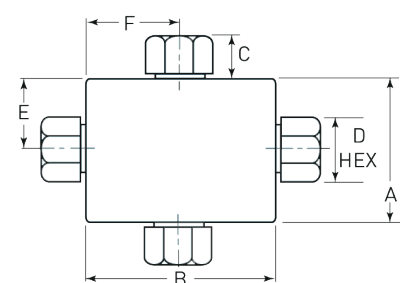
Elbow

Figure 2



Tee

Figure 3



Cross

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

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

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		

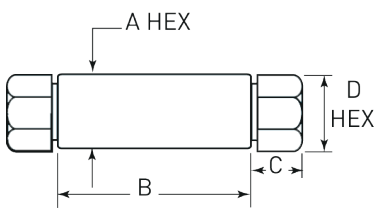
Straight Coupling

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)							
6F4422	SW250	1/4 (6.35)	15,000 (1034.19)	0.188 (4.78)	0.62 (15.75)	1.62 (50.80)	0.44 (11.18)	0.63 (15.88)							See Fig. 4
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

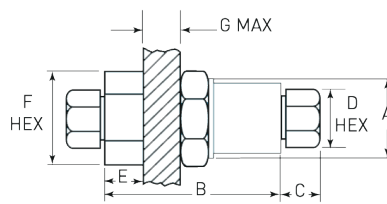
15BF2211	W125	1/8 (3.18)	15,000 (1034.19)	0.094 (2.39)	0.690 (17.53)	1.75 (44.45)	0.31 (7.87)	0.38 (9.53)	0.38 (9.53)	0.75 (19.05)	0.38 (9.53)				
6BF4422	SW250	1/4 (6.35)	15,000 (1034.19)	0.188 (4.78)	0.940 (23.88)	1.88 (47.75)	0.44 (11.18)	0.63 (15.88)	0.50 (12.70)	1.00 (25.40)	0.38 (9.53)				See Fig. 5
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 4



Straight Coupling

Figure 5



(A=Panel hole drill size)

Bulkhead Coupling

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

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

LOW PRESSURE TUBING

Pressures to 15,000 psi (1034 bar)

Autoclave Engineers offers a complete selection of annealed, seamless stainless steel tubing designed to match the performance standards of Autoclave low pressure valves and fittings. Autoclave 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, Autoclave Engineers specifies and controls the strength levels of both the tube and sleeve materials.

INSPECTION AND TESTING

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, Autoclave 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 availability.

TUBING TOLERANCE

Nominal Tubing Size	Tolerance/Outside Diameter
inches (mm)	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 (mm ²)	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)		15,000 (1034.20)	15,000 (1034.20)	14,400 (992.83)	13,600 (937.67)	12,600 (868.73)
MS15-200	316SS	W125		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	W375 or SW375	3/8 (9.53)	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	W500 or SW500	1/2 (12.70)	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			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	W375 or SW375	3/8 (9.53)	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	W375 or SW375	3/8 (9.53)	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)
MS15-062	316SS			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	W375 or SW375	3/8 (9.53)	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			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	W500 or SW500	1/2 (12.70)	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	W500 or SW500	1/2 (12.70)	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.

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

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

MEDIUM PRESSURE FITTINGS AND TUBING

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

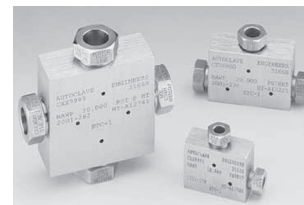
FEATURES:

- Coned-and-Threaded Connection.
- Available sizes are 1/4", 3/8", 9/16", 3/4", 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 Autoclave's medium pressure connection. This coned-and-threaded connection features orifice sizes to match the high flow characteristics of this series.

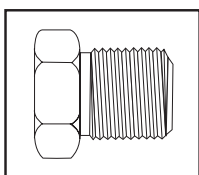


Autoclave Engineers medium pressure fittings, Series SF, are designed for use with Series 20SM medium pressure valves and Autoclave medium pressure tubing. They incorporate medium pressure coned-and-threaded connections with orifices sized to match the high-flow Series 20SC valves.

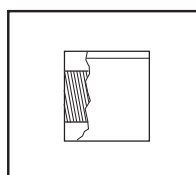


Connection Components

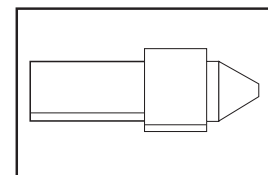
All Autoclave valves and fittings are supplied complete with appropriate glands and collars. To order these components separately, use order numbers listed. When using plug, collar is not required.



Gland
CGLX ()



Collar
CCLX ()



Plug
CPX ()

Add tube size ()

- 1/4" - 40
- 3/8" - 60
- 9/16" - 90
- 3/4" - 120
- 1" - 160
- 1-1/2" - 240

Example:

1/4" Gland - CGLX 40

To ensure proper fit use Autoclave Engineers tubing.

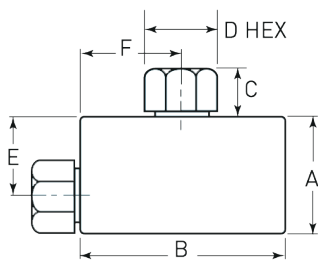
Note: Special material glands may be supplied with four flats in place of standard hex.

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		
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)	
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)	See Fig. 1
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)	

Tee

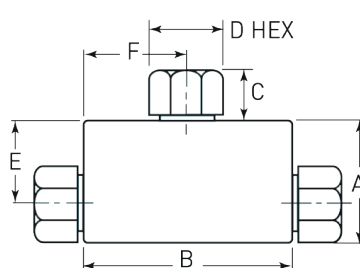
CTX4440	SF250CX	1/4 (6.35)	20,000 (1378.93)	0.125 (3.18)	1.12 (28.45)	1.50 (38.10)	0.38 (9.53)	0.50 (12.70)	0.75 (19.05)	0.75 (19.05)		0.62 (15.75)	
CTX6660	SF375CX	3/8 (9.53)	20,000 (1378.93)	0.219 (5.56)	1.38 (35.05)	2.00 (50.80)	0.44 (11.10)	0.62 (15.75)	1.00 (25.40)	1.00 (25.40)		0.75 (19.05)	
CTX9990	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)	See Fig. 1
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)	

Figure 1



Elbow

Figure 2



Tee

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

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

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

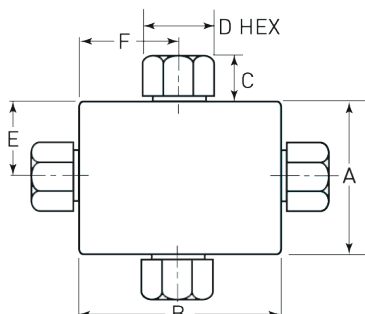
Catalog Number	Connection Type	Outside Diameter Tube	Pressure Rating psi (bar)*	Minimum Opening	Dimensions - inches (mm)							Block Thickness	Fitting Pattern
					A	B	C	D Typical	E	F	G Thickness		
CXX4444	SF250CX	1/4 (6.35)	20,000 (1378.93)	0.125 (3.18)	1.50 (38.10)	1.50 (38.10)	0.38 (9.53)	0.50 (12.70)	0.75 (19.05)	0.75 (19.05)		0.62 (15.75)	
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)	See Fig. 3
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)	

Cross

Straight Coupling / Union Coupling

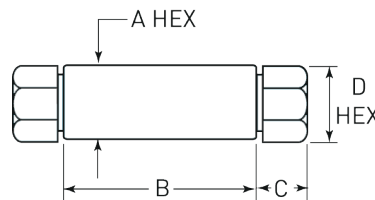
20FX4466 20UF4466	SF250CX	1/4 (6.35)	20,000 (1378.93)	0.125 (3.18)	0.62 (15.75)	1.62 (41.15)	0.38 (9.53)	0.50 (12.70)			Straight Union	
20FX6666 20UF6666	SF375CX	3/8 (9.53)	20,000 (1378.93)	0.219 (5.56)	0.75 (19.05)	1.75 (44.45)	0.44 (11.10)	0.62 (15.75)			Straight Union	
20FX9966 20UF9966	SF562CX	9/16 (14.29)	20,000 (1378.93)	0.359 (9.12)	1.00 (25.40)	2.12 (53.85)	0.53 (13.46)	0.94 (23.88)			Straight Union	See Fig. 4
20FX12 20UF12	SF750CX	3/4 (19.05)	20,000 (1378.93)	0.516 (13.11)	1.38 (35.05)	2.50 (63.50)	0.62 (15.75)	1.19 (30.23)			Straight Union	
20FX16 20UF16	SF1000CX	1 (25.40)	20,000 (1378.93)	0.688 (17.48)	1.75 (44.45)	3.50 (88.90)	0.72 (18.29)	1.38 (35.05)			Straight Union	
15FX24 15UF24	SF1500CX	1-1/2 (38.10)	15,000 (1034.20)	0.94 (23.80)	2.25 (57.15)	5.00 (127.00)	1.12 (28.45)	1.88 (47.63)			Straight Union	

Figure 3



Cross

Figure 4



Straight Coupling / Union Coupling

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

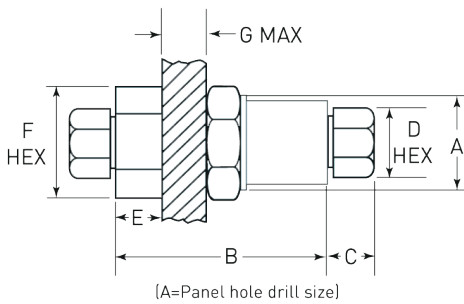
Actual working pressure may be determined by tubing pressure rating, if lower.

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

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

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

Figure 5



Bulkhead Coupling

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

+ distance across flats

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

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 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

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 316/316L 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 (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 Materials	Fits Connection Type	Tube Size Inches (mm)				Flow Area in. ² (mm ²)	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						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						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.

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)	15,000 (1034.16)
		CNLX1204-316	CNLX1206-316	CNLX1208-316	CNLX12010-316	CNLX12012-316	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.

HIGH PRESSURE FITTINGS AND TUBING

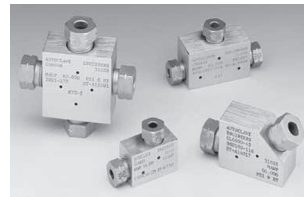
Pressures to 150,000 psi (10342 bar)

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, 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.

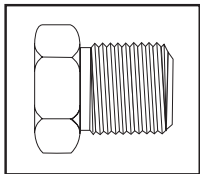
The high and ultra-high pressure series uses Autoclave's high pressure connector. This coned-and-threaded connection provides dependable performance in gas or liquid service.



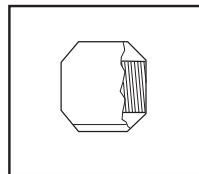
SF are the industry standard for pressures to 150,000 psi (10342 bar). Utilizing Autoclave Engineers high pressure coned-and-threaded connections, these fittings are correlated with Series 30SC, 43SC, 30VM, 40VM, 60VM, 100VM, and 150V valves and Autoclave Engineers high pressure tubing.

Connection Components

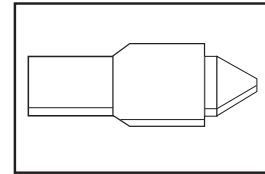
All Autoclave Engineers valves and fittings are supplied complete with appropriate glands and collars. To order these components separately, use order numbers listed. When using plug, collar is not required.



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 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 ()	Autoclave Engineer's high pressure fittings 1/4, 3/8 and 9/16 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	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	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	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		

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)
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 (47.75)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.12 (28.45)	1.88 (47.75)		1.50 (38.10)
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)

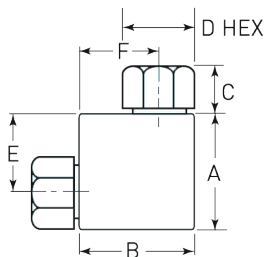
See Fig. 1

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)
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 (47.75)		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)	1.88 (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)

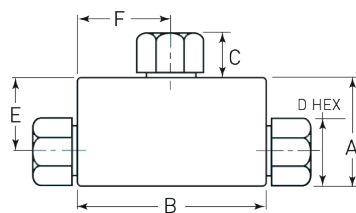
See Fig. 2

Figure 1



Elbow

Figure 2



Tee

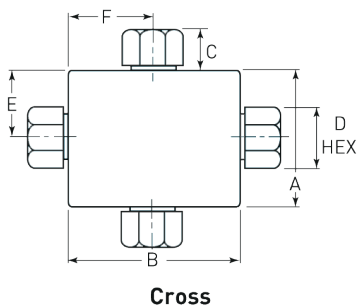
*Maximum pressure rating is based on the lowest rating of any component.
Actual working pressure may be determined by tubing pressure rating, if lower.

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

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

See Fig. 3

Figure 3



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

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

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

Straight Coupling/Union Coupling

60F4433 60UF4433	F250C	1/4 (6.35)	60,000 (4136.79)	0.094 (2.39)	0.75 (19.05)	1.38 (35.05)	0.50 (12.70)	0.63 (15.88)					Straight Union
100F4433 100UF4433	F312C150	1/4 (7.94)	100,000 (10341.97)	0.094 (2.39)	1.12 (28.45)	2.62 (66.55)	0.52 (13.21)	0.75 (19.05)					Straight Union
150F5533 150UF5533	F312C150	5/16 (7.94)	150,000 (10341.97)	0.094 (2.39)	1.12 (28.45)	2.62 (66.55)	0.52 (13.21)	0.75 (19.05)					Straight Union
60F6633 60UF6633	F375C	3/8 (9.53)	60,000 (4136.79)	0.125 (3.18)	1.00 (25.40)	1.75 (44.45)	0.53 (13.46)	0.81 (20.62)					Straight Union
100F6633 100UF6633	F312C150	3/8 (9.53)	100,000 (6894.65)	0.094 (2.39)	1.12 (28.45)	2.62 (66.55)	0.52 (13.21)	0.75 (19.05)					Straight Union
60F9933 60UF9933	F562C	9/16 (14.29)	60,000 (4136.79)	0.188 (4.78)	1.38 (35.05)	2.19 (55.63)	0.81 (20.57)	1.19 (30.23)					Straight Union
40F9933 40UF9933	F562C40	9/16 (14.29)	40,000 (2757.86)	0.250 (6.35)	1.38 (35.05)	2.19 (55.63)	0.81 (20.57)	1.19 (30.23)					Straight Union
43F16 43UF16	F1000C43	1 (25.40)	43,000 (2964.70)	0.438 (11.13)	1.75 (44.45)	3.50 (88.90)	0.72 (18.29)	1.38 (35.05)					Straight Union

See Fig. 4

Bulkhead Coupling

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

See Fig. 5

Figure 4

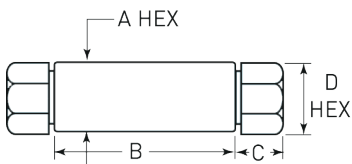
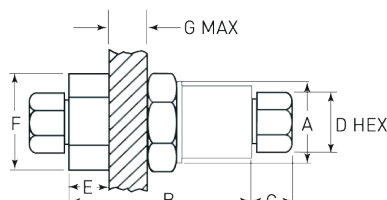


Figure 5



(A=Panel hole drill size)

Straight Coupling / Union Coupling

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

Bulkhead Coupling

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

HIGH PRESSURE TUBING

Pressures to 150,000 psi (10342 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 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

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

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 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 Materials	Fits Connection Type	Tube Size Inches (mm)				Flow Area in. ² (mm ²)	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	
MS15-202	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)	0.033 (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 (2488.96)	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)	
MS15-199	304SS	F1000C43	1 (25.40)	0.438 (11.13)	0.281 (7.14)	0.151 (97.42)	43,000 (2964.70)	40,600 (2799.23)	36,900 (2544.13)	36,300 (2502.76)	34,700 (2392.44)	

NOTE:

- Autofretted tubing available (see technical information section: Pressure Cycling for Autofretting information)
- For High Pressure, High Cycle (HPHC) tubing, MS15-201, MS15-202, MS15-209, and MS15-210 are available. (See Technical Information section: Pressure Cycling for additional information)
- 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, Autoclave 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, 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.
Note: Most items available in 304SS. Consult factory for availability.



Catalog Number							Fits Connection Type	Tube Size inches (mm)		Working Pressure* at 100°F (37.8°) 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)				
CN4402-316	CN4403-316	CN4404-316	CN4406-316	CN4408-316	CN44010-316	CN44012-316	F250C	1/4 (6.35)	0.109 (2.77)	20,000 (1378.93)
		CN5504-316	CN5506-316	CN5508-316	CN55010-316	CN55012-316	F312C150	3/8 (9.53)	0.203 (5.16)	20,000 (1378.93)
	CN6603-316	CN6604-316	CN6606-316	CN6608-316	CN66010-316	CN66012-316	F375C	9/16 (14.29)	0.312 (7.92)	20,000 (1378.93)
		CN9904-316	CN9906-316	CN9908-316	CN99010-316	CN99012-316	F562C	9/16 (14.29)	0.359 (9.12)	15,000 (1034.16)
		40CN9904-316	40CN9906-316	40CN9908-316	40CN99010-316	40CN99012-316	F562C40	3/4 (19.05)	0.438 (11.13)	20,000 (1378.93)
			43CN1606-316	43CN1608-316	43CN16010-316	43CN16012-316	F1000C43	3/4 (19.05)	0.516 (13.11)	15,000 (1034.16)

NOTE:

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

Material in table is 316 Stainless steel

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

apply to all products and services sold.



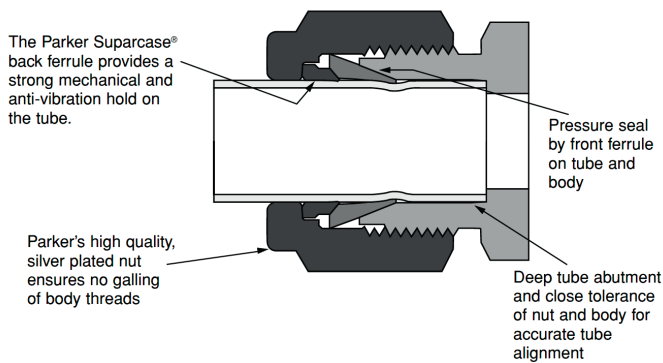
A-LOCK

Flux can supply the full range of A-lock Instrumentation Tube Fittings from Parker. Parker A-LOCK® Fittings has been specifically designed for use on instrumentation, process and control systems, analysers and environmental equipment employed in chemical, petroleum, power generating and pulp and paper plants. Those fittings are designed as leak-free connections. Single and two ferrule fittings are manufactured to the highest quality standards and are available in a broad range of sizes, materials and configurations.

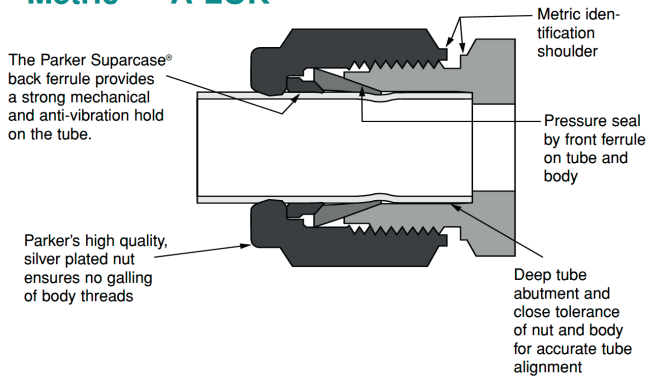
MATERIALS

Parker A-LOCK® fittings are available as standard in Heat Code Traceable, 316 stainless steel. Other standard materials include steel, brass, aluminum, nickel-copper, Hastelloy C®, Alloy 600, Titanium, 6Mo, Incoloy 625 and 825. Straight fittings are machined from cold finished bar stock and shaped bodies are machined from close grain forgings. The raw materials used fully conform to the chemical requirements listed in Specification Table 1. For nuclear and other critical applications, stainless steel CPI™/A-LOCK® fittings are readily available with documented heat code traceability.

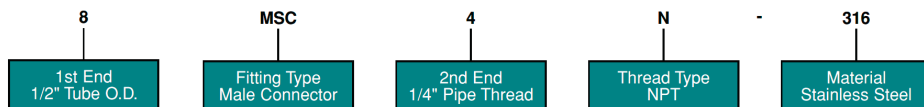
Inch — A-LOCK®



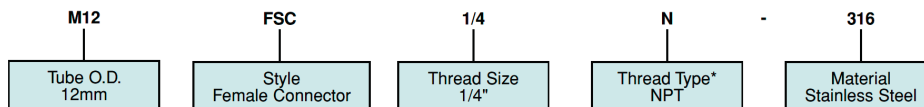
Metric — A-LOCK®



How To Order A-LOCK® Inch Parts



How To Order A-LOCK® Metric Parts



Parker A-LOCK® tube fittings part numbers are constructed from symbols that identify the size and style of the fitting and material used. Example: The part number shown above is for a Parker A-LOCK® stainless steel male connector for 1/2" O.D. tube (-8) and 1/4" male pipe thread (-4).

Type:

A letter or combination of letters and numbers are used to designate the type of fitting. See the visual index for fitting types.

Material:

Basic material type (B = brass, SS or 316 = stainless steel, type 316; S = steel; A = aluminum; M = Alloy 400; HC = Hastelloy C-276®; IN = Alloy 600; SS20 = Carpenter 20®; 6MO = 6Mo; 625 = 625; 825 = 825; T = Titanium). Parker CPI™/A-LOCK® Tube fittings, for special applications, can be furnished in almost any material suitable for machining.

Thread Types:

N = NPT	ANSI B1.20.1
K = BSP Taper	BS21, ISO7/1
R = BSPP	BS2779, ISO 228/1+2, DIN 3852 FORM A
BR = BSPP	BS2779, ISO 228/1+2, DIN 3852 FORM B
M = Metric ISO 6149-2	
R-ED = BSPP	BS2779, ISO 228/1+2, DIN 3852

