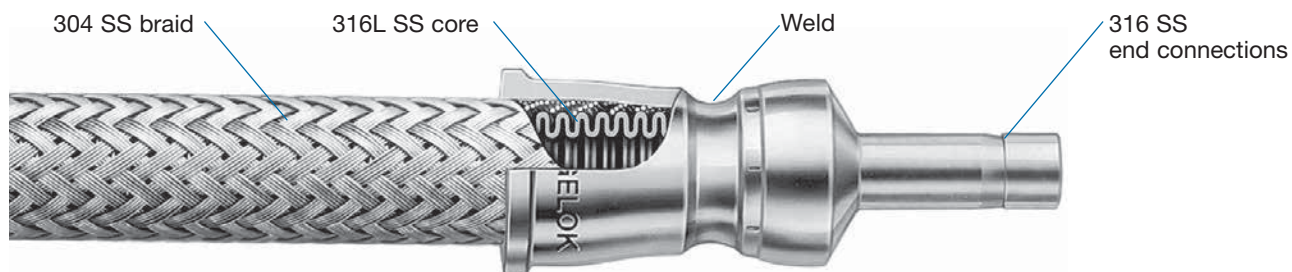


FJ Series Metal Hose

Features

- General purpose all-metal hose.
- 316L stainless steel annular convoluted core.
- Size range of 1/4 through 2 in. and working pressures from vacuum to 1600 psig (110 bar).
- Single braid layer of 304 stainless steel promotes hose pressure containment.
- End connections welded in accordance with ASME Boiler and Pressure Vessel Code Section IX.
- Optional 316L stainless steel braid available to provide greater corrosion resistance.
- Commonly used in high-temperature vacuum or general purpose applications where permeation is undesirable.
- Custom assemblies available.
- Options include hose covers, hose tags, and additional helium leak testing. See page 103 for details.
- For electrical properties, see page 5 for details.



Technical Data

Nominal Hose Size in. (mm)	Inside Diameter in. (mm)	Outside Diameter in. (mm)	Minimum Center Line Bend Radius in. (cm)		Temperature Range °F (°C)	Working Pressure at -325 to 300°F (-200 to 148°C) Vacuum to ... psig (bar)	Minimum Burst Pressure at 70°F (20°C) psig (bar)	Bulk Hose Weight lb/ft (kg/m)
			Static	Dynamic				
1/4 (6.4)	0.25 (6.4)	0.47 (11.9)	1.00 (2.54)	4.33 (11.0)	-325 to 800 (-200 to 426)	1600 (110)	6400 (440)	0.11 (0.16)
3/8 (9.7)	0.38 (9.5)	0.68 (17.3)	1.20 (3.05)	5.91 (15.0)		1470 (101)	5880 (405)	0.20 (0.30)
1/2 (12.7)	0.50 (12.7)	0.81 (20.5)	1.50 (3.81)	6.50 (16.5)		1110 (76.4)	4440 (306)	0.22 (0.33)
3/4 (19.0)	0.75 (19.0)	1.20 (30.5)	2.10 (5.33)	8.86 (22.5)		860 (59.2)	3440 (237)	0.37 (0.55)
1 (25.4)	1.00 (25.4)	1.50 (38.0)	2.70 (6.86)	10.2 (25.9)		680 (46.8)	2720 (187)	0.50 (0.74)
1 1/4 (31.8)	1.25 (31.8)	1.80 (45.7)	3.10 (7.87)	11.8 (30.0)		680 (46.8)	2720 (187)	0.61 (0.91)
1 1/2 (38.1)	1.50 (38.1)	2.13 (54.0)	3.90 (9.91)	13.4 (34.0)		520 (35.8)	2080 (143)	0.85 (1.26)
2 (50.8)	2.00 (50.8)	2.66 (67.5)	5.10 (13.0)	15.4 (39.1)		450 (31.0)	1800 (124)	1.10 (1.65)

Pressure-Temperature Ratings

Ratings are based on ASME Code for Pressure Piping B31.3, Process Piping.

Nominal Hose Size, in.	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Temperature °F (°C)	Working Pressure, vacuum to ... psig (bar)							
-325 (-200) to 300 (148)	1600 (110)	1470 (101)	1110 (76.4)	860 (59.2)	680 (46.8)	680 (46.8)	520 (35.8)	450 (31.0)
400 (204)	1488 (102)	1367 (94.1)	1032 (71.1)	800 (55.1)	632 (43.5)	632 (43.5)	484 (33.3)	419 (28.8)
500 (260)	1376 (94.8)	1264 (87.0)	955 (65.7)	740 (50.9)	585 (40.3)	585 (40.3)	447 (30.7)	387 (26.6)
600 (315)	1296 (89.2)	1191 (82.0)	899 (61.9)	697 (48.0)	551 (37.9)	551 (37.9)	421 (29.0)	365 (25.1)
700 (371)	1232 (84.8)	1132 (77.9)	855 (58.9)	662 (45.6)	524 (36.1)	524 (36.1)	400 (27.5)	347 (23.9)
750 (398)	1200 (82.6)	1103 (75.9)	833 (57.3)	645 (44.4)	510 (35.1)	510 (35.1)	390 (26.8)	338 (23.2)
800 (426)	1184 (81.5)	1088 (74.9)	821 (56.5)	636 (43.8)	503 (34.6)	503 (34.6)	385 (26.5)	333 (22.9)

FJ Series Metal Hose

Testing

Every Swagelok FJ series hose assembly is inboard helium leak tested to a maximum leak rate of 1×10^{-5} std cm³/s.

For additional testing, see **Testing**, page 103.

Cleaning and Packaging

Swagelok FJ series hose components are cleaned in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)* catalog, MS-06-62. Each hose is bagged individually and boxed; longer hoses are coiled, bagged, and boxed.



Do not subject flexible metal hose to pressure surges, shock, or pulsations, where the peak pressure is greater than 50 % of the working pressure rating.

Ordering Information

Custom Hose Assemblies

Build a hose assembly ordering number by combining the designators in the sequence shown below.

Typical Ordering Number

1 2 3 4 4 5 6 5 6
SS - FJ 4 TA4 PM4 - 28 - F or **71CM - F**
└─── in. ───┘ └─── cm ───┘

1 Material

End Connections

SS = 316 stainless steel

2 Hose

FJ = FJ series metal hose

3 Nominal Hose Size, in.

4 = 1/4	16 = 1
6 = 3/8	20 = 1 1/4
8 = 1/2	24 = 1 1/2
12 = 3/4	32 = 2

4 End Connections

See **End Connection Designator** column in tables on next page.

5 Overall Length

Inches or centimeters, in whole numbers. Include **CM** as shown for centimeter lengths.

6 Options

For multiple options, add designators with a dash between each designator.

A = Armor guard
CRN = Lanyard tag with CRN
F = Fire jacket
G = CGA 4.1 cleaning on hose wetted surfaces
F1 = Thermosleeve
H7 = Helium leak test (1×10^{-7} std cm³/s)
N3 = Nitrogen pressure test
W = Hydrostatic test
Z = 316L SS braid material
093 = ECE R110 approval, only on select end connections. See page 105 for additional information.

Mat Tags

MA = Gray	MO = Orange
MB = Blue	MP = Purple
MC = Brown	MR = Red
MG = Green	MW = White
MK = Black	MY = Yellow
MN = Pink	

Add **2** to the end of the Mat Tag designator for two tags.

Example: MA2

Other Tags

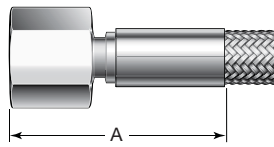
T = Lanyard tag
T2 = Two lanyard tags
T5 = Clamp tag

Specify text for tags. See **Hose Tag Text** table, page 104.

See page 103 for detailed descriptions of options.

End Connections for B, X, S, C, J, N, W, F and U Series Hose

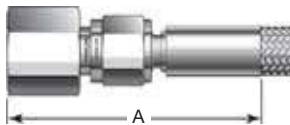
Female Pipe Threads, NPT



NPT Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)			Pressure Rating psig (bar)
			A Max	Minimum Inside Diameter	Maximum Outside Dimension	
1/8	2	PF2	1.76 (44.7)	0.070 (1.7)	0.65 (16.5)	Determined by hose ^①
1/4	4	PF4	1.85 (47.0)	0.16 (4.0)	0.87 (22.1)	
3/8	6	PF6	2.31 (58.7)	0.26 (6.6)	1.01 (25.7)	
1/2	8	PF8	2.66 (67.6)	0.34 (8.6)	1.30 (33.0)	
3/4	12	PF12	3.32 (84.3)	0.54 (13.7)	1.52 (38.6)	
1	16	PF16	3.44 (87.4)	0.78 (19.8)	1.88 (47.8)	
1 1/2	24	PF24	4.19 (106)	1.24 (31.4)	2.75 (69.9)	
2	32	PF32	4.88 (124)	1.68 (42.6)	3.18 (80.8)	

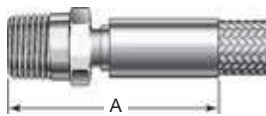
① Brass PF4 pressure rating is 3300 psig (228 bar).

Female Pipe Threads, NPT, with JIC (AN) 37° Union



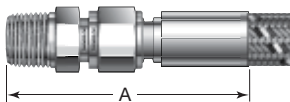
NPT with JIC Union Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)			Pressure Rating psig (bar)
			A Max	Minimum Inside Diameter	Maximum Outside Dimension	
1/8	2	FU2	2.38 (60.5)	0.070 (1.7)	0.65 (16.5)	Determined by hose
1/4	4	FU4	2.61 (66.3)	0.16 (4.0)	0.87 (22.1)	
3/8	6	FU6	3.07 (78.0)	0.26 (6.6)	1.01 (25.7)	
1/2	8	FU8	3.59 (91.2)	0.34 (8.6)	1.23 (31.2)	
3/4	12	FU12	4.47 (114)	0.54 (13.7)	1.52 (38.6)	
1	16	FU16	4.77 (121)	0.78 (19.8)	2.02 (51.3)	
1 1/2	24	FU24	6.12 (155)	1.24 (31.4)	2.75 (69.9)	
2	32	FU32	7.05 (179)	1.68 (42.6)	3.46 (87.9)	

Male Pipe Threads, NPT



NPT Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)			Pressure Rating psig (bar)
			A Max	Minimum Inside Diameter	Maximum Outside Dimension	
1/8	2	PM2	1.70 (43.2)	0.077 (1.9)	0.55 (14.0)	Determined by hose
1/4	4	PM4	1.91 (48.5)	0.16 (4.0)	0.65 (16.5)	
3/8	6	PM6	2.31 (58.7)	0.28 (7.1)	0.82 (20.8)	
1/2	8	PM8	2.72 (69.1)	0.37 (9.3)	1.04 (26.4)	
3/4	12	PM12	3.26 (82.8)	0.63 (16.0)	1.35 (34.3)	
1	16	PM16	3.45 (87.6)	0.78 (19.8)	1.75 (44.5)	
1 1/2	24	PM24	4.24 (108)	1.36 (34.5)	2.31 (58.7)	
2	32	PM32	5.12 (130)	1.84 (46.7)	2.89 (73.4)	

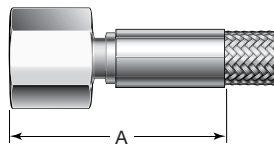
Male Pipe Threads, NPT, with JIC (AN) 37° Union



NPT with JIC Union Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)			Pressure Rating psig (bar)
			A Max	Minimum Inside Diameter	Maximum Outside Dimension	
1/8	2	MU2	2.37 (60.2)	0.070 (1.7)	0.55 (14.0)	Determined by hose
1/4	4	MU4	2.70 (68.6)	0.16 (4.0)	0.65 (16.5)	
3/8	6	MU6	3.19 (81.0)	0.26 (6.6)	0.82 (20.8)	
1/2	8	MU8	3.71 (94.2)	0.34 (8.6)	1.04 (26.4)	
3/4	12	MU12	4.52 (115)	0.54 (13.7)	1.45 (36.8)	
1	16	MU16	4.75 (121)	0.78 (19.8)	1.75 (44.5)	
1 1/2	24	MU24	5.88 (149)	1.24 (31.4)	2.60 (66.0)	
2	32	MU32	7.08 (180)	1.68 (42.6)	3.32 (84.3)	

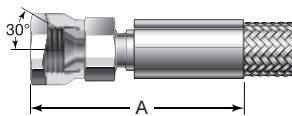
End Connections for B, X, S, C, J, N, W, F and U Series Hose

Female ISO/BSP Parallel Threads (ISO 228)



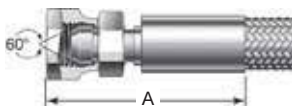
ISO/BSP Parallel Thread Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)			Pressure Rating psig (bar)
			A Max	Minimum Inside Diameter	Maximum Outside Dimension	
1/4	4	FS4	2.06 (52.3)	0.16 (4.0)	0.87 (22.1)	Determined by hose
3/8	6	FS6	2.57 (65.3)	0.26 (6.6)	1.09 (27.7)	
1/2	8	FS8	2.84 (72.1)	0.34 (8.6)	1.23 (31.2)	
3/4	12	FS12	3.39 (86.1)	0.54 (13.7)	1.59 (40.4)	
1	16	FS16	3.46 (87.9)	0.78 (19.8)	1.88 (47.8)	
1 1/2	24	FS24	4.29 (109)	1.24 (31.4)	2.60 (66.0)	
2	32	FS32	4.95 (126)	1.68 (42.6)	3.18 (80.8)	

Female Swivel ISO/BSP Parallel Threads with 30° Cone



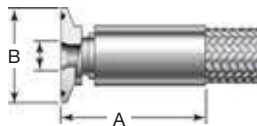
Swivel ISO/BSP Parallel Thread, 30° Cone Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)			Pressure Rating psig (bar)
			A Max	Minimum Inside Diameter	Maximum Outside Dimension	
1/4	4	BS4	2.19 (55.6)	0.16 (4.0)	0.87 (22.1)	Determined by hose
3/8	6	BS6	2.72 (69.1)	0.26 (6.6)	1.01 (25.7)	
1/2	8	BS8	3.10 (78.7)	0.34 (8.6)	1.23 (31.2)	

Female Swivel ISO/BSP Parallel Threads with 60° Cone



Swivel ISO/BSP Parallel Thread, 60° Cone Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)			Pressure Rating psig (bar)
			A Max	Minimum Inside Diameter	Maximum Outside Dimension	
1/4	4	BM4	2.08 (52.8)	0.16 (4.0)	0.87 (22.1)	Determined by hose
3/8	6	BM6	2.59 (65.8)	0.26 (6.6)	1.01 (25.7)	
1/2	8	BM8	2.95 (74.9)	0.34 (8.6)	1.23 (31.2)	

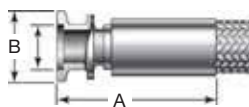
JIS(A)/ISO 2852-Type Sanitary^①



① 316L SS material with an I.D. of 15 μin. (0.38 μm) R_a max surface finish applies prior to crimp.

JIS(A)/ISO 2852-Type Sanitary Size	Nominal Hose Size Designator	End Connection Designator		Dimensions, in. (mm)			Pressure Rating psig (bar)
		Standard Surface	Electro-polished	A Max	Minimum Inside Diameter	B, Flange Outside Diameter	
8A	6	JS8	JE8	2.16 (54.9)	0.26 (6.6)	1.34 (34.0)	500 (34.4)
10A	8	JS10	JE10	2.34 (59.4)	0.34 (8.6)		
15A	12	JS15	JE15	2.88 (73.2)	0.54 (13.7)		

ISO-KF Vacuum Flange



ISO-KF Vacuum Flange Size mm	Nominal Hose Size Designator	End Connection Designator	Dimensions, mm (in.)				Pressure Rating bar (psig)	
			A Max	Minimum Inside Diameter	B, Flange Outside Diameter	C, Flange Face Inside Diameter		
16	12	KF16	71.1 (2.80)	13.7 (0.54)	30.0 (1.18)	34.3 (1.35)	17.3 (0.68)	10.0 (145)
25	16	KF25	68.6 (2.70)	19.8 (0.78)	40.0 (1.57)	44.5 (1.75)	26.4 (1.04)	
40	24	KF40	82.6 (3.25)	31.4 (1.24)	55.0 (2.16)	55.9 (2.20)	41.4 (1.63)	
50	32	KF50	106 (4.16)	42.6 (1.68)	75.0 (2.95)	75.2 (2.96)	52.6 (2.07)	