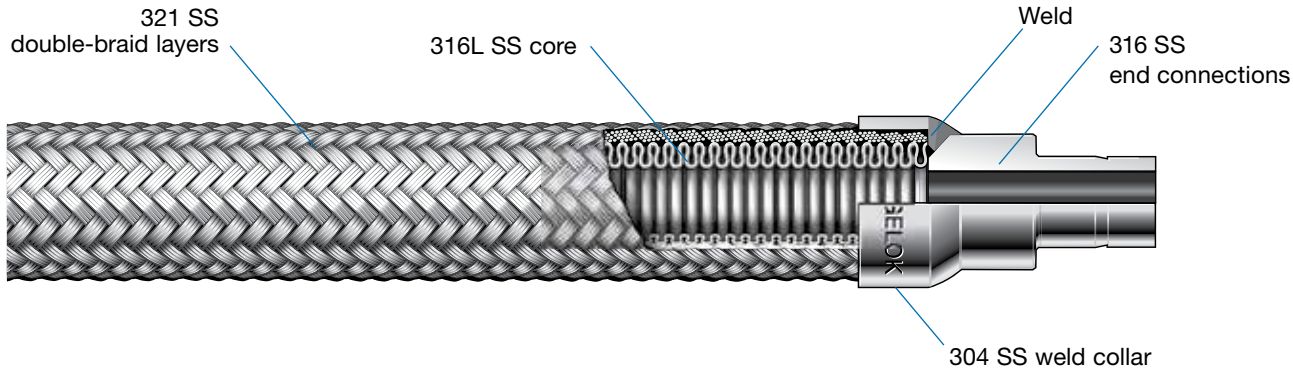


FX Series Metal Hose

Features

- High-pressure corrosion resistant all-metal hose
- 316L stainless steel annular convoluted core
- Size range of 1/4 through 2 in. and working pressures from vacuum to 6000 psig (413 bar)
- Double braid layers of 321 stainless steel promotes hose pressure containment (M).
- End connections welded in accordance with ASME Boiler and Pressure Vessel Code Section IX.
- Commonly used in high-temperature vacuum and high-pressure corrosive environments or where permeation is undesirable
- Standard and custom assemblies available
- Options include hose covers, hose tags, and additional helium leak testing. See page 338 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 100°F (-200 to 37°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)	0.68 (17.3)	1.5 (3.81)	5.5 (14.0)	-325 to 1000 (-200 to 537)	6000 (413)	24 000 (1653)	0.49 (0.73)
3/8 (9.7)	0.38 (9.5)	0.92 (23.4)	2.5 (6.40)	7.0 (17.8)		5000 (344)	20 000 (1379)	0.77 (1.15)
1/2 (12.7)	0.51 (13.0)	0.98 (24.9)	3.0 (7.62)	8.0 (20.3)		4500 (310)	18 000 (1240)	0.85 (1.26)
3/4 (19.0)	0.75 (19.0)	1.40 (35.6)	4.0 (10.2)	10.0 (25.4)		3600 (248)	14 400 (993)	1.58 (2.35)
1 (25.4)	1.00 (25.4)	1.70 (43.2)	5.0 (12.7)	11.0 (27.9)		3000 (206)	12 000 (827)	2.32 (3.45)
1 1/4 (31.8)	1.25 (31.8)	2.00 (50.8)	6.5 (16.5)	12.5 (31.8)		2600 (179)	10 400 (717)	2.88 (4.29)
1 1/2 (38.1)	1.50 (38.1)	2.36 (59.9)	7.5 (19.1)	13.0 (33.0)		2200 (151)	8 800 (607)	3.57 (5.31)
2 (50.8)	2.00 (50.8)	2.82 (71.6)	9.0 (22.9)	14.0 (35.6)		1675 (115)	6 700 (462)	4.45 (6.62)

Pressure-temperature ratings may be limited by the end connections.

Pressure-Temperature Ratings

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

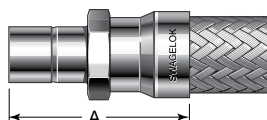
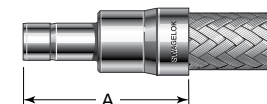
Nominal Hose Size, in.	1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2
Temperature °F (°C)	Working Pressure Vacuum to ... psig (bar)							
-325 (-200)	6000 (413)	5000 (345)	4500 (310)	3600 (248)	3000 (207)	2600 (179)	2200 (152)	1675 (115)
300 (148)	5580 (384)	4650 (321)	4185 (288)	3348 (231)	2790 (192)	2418 (167)	2046 (141)	1558 (107)
400 (204)	5160 (355)	4300 (296)	3870 (266)	3096 (213)	2580 (178)	2236 (154)	1892 (130)	1441 (99.4)
500 (260)	4860 (334)	4050 (279)	3645 (251)	2916 (201)	2430 (168)	2106 (145)	1782 (123)	1357 (93.6)
600 (315)	4620 (318)	3850 (265)	3465 (238)	2772 (191)	2310 (159)	2002 (138)	1694 (117)	1290 (88.9)
700 (371)								
800 (426)	4440 (305)	3700 (255)	3330 (229)	2664 (184)	2220 (153)	1924 (133)	1628 (112)	1240 (85.5)
850 (454)	4320 (297)	3600 (248)	3240 (223)	2592 (179)	2160 (149)	1872 (129)	1584 (109)	1206 (83.5)
900 (482)	4260 (293)	3550 (245)	3195 (220)	2556 (176)	2130 (147)	1846 (127)	1562 (108)	1189 (82.0)
950 (510)	4140 (285)	3450 (238)	3105 (213)	2484 (171)	2070 (143)	1794 (124)	1518 (105)	1156 (79.7)
1000 (537)	4020 (276)	3350 (231)	3015 (207)	2412 (166)	2010 (139)	1742 (120)	1474 (102)	1122 (77.4)

Swagelok®

FX Series Metal Hose

End Connections

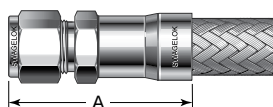
Swagelok Tube Adapters



End Connections
with Hex Flat

Tube Adapter Size	Nominal Hose Size Designator	End Connection Designator	Dimensions		
			A	Minimum Inside Diameter	Maximum Outside Dimension
Dimensions, in. (mm)					
1/4	4	TA4	1.64 (41.7)	0.18 (4.6)	0.78 (19.8)
3/8	6	TA6	1.81 (46.0)	0.27 (6.9)	1.01 (25.7)
1/2	8	TA8	2.28 (57.9)	0.37 (9.4)	1.08 (27.4)
3/4	12	TA12	2.62 (66.5)	0.58 (14.7)	1.50 (38.1)
1	16	TA16	2.99 (75.9)	0.80 (20.3)	1.79 (45.5)
1 1/4	20	TA20	3.91 (99.3)	1.02 (25.9)	2.16 (54.9)
1 1/2	24	TA24	4.47 (114)	1.25 (31.8)	2.59 (65.8)
2	32	TA32	5.70 (145)	1.72 (43.7)	3.45 (87.6)
Dimensions, mm (in.)					
6	4	TM6	42.2 (1.66)	4.1 (0.16)	19.8 (0.78)
8	4	TM8	42.4 (1.67)	5.6 (0.22)	19.8 (0.78)
10	6	TM10	53.3 (2.10)	7.1 (0.28)	25.7 (1.01)
12	8	TM12	67.9 (2.67)	8.9 (0.35)	27.4 (1.08)
18	12	TM18	64.0 (2.52)	14.0 (0.55)	38.1 (1.50)
25	16	TM25	75.9 (2.99)	19.8 (0.78)	45.5 (1.79)
32	20	TM32	87.4 (3.44)	26.4 (1.04)	57.4 (2.26)
38	24	TM38	97.3 (3.83)	31.8 (1.25)	69.1 (2.72)

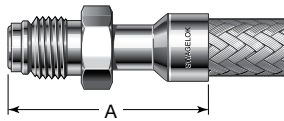
Swagelok Tube Fittings



Tube Fitting Size	Nominal Hose Size Designator	End Connection Designator	Dimensions		
			A	Minimum Inside Diameter	Maximum Outside Dimension
Dimensions, in. (mm)					
1/4	4	SL4	1.99 (50.5)	0.19 (4.8)	0.78 (19.8)
3/8	6	SL6	2.07 (52.6)	0.28 (7.1)	1.01 (25.7)
1/2	8	SL8	2.56 (65.0)	0.41 (10.4)	1.08 (27.4)
3/4	12	SL12	2.74 (69.6)	0.63 (16.0)	1.50 (38.1)
1	16	SL16	3.20 (81.3)	0.88 (22.4)	1.79 (45.5)
1 1/4	20	SL20	3.79 (96.3)	1.09 (27.7)	2.10 (53.3)
1 1/2	24	SL24	4.25 (108)	1.35 (34.3)	2.45 (62.2)
2	32	SL32	5.47 (138.9)	1.82 (46.2)	3.17 (80.5)
Dimensions, mm (in.)					
6	4	SM6	50.5 (1.99)	4.8 (0.19)	19.8 (0.78)
8	4	SM8	51.6 (2.03)	6.4 (0.25)	19.8 (0.78)
10	6	SM10	53.6 (2.11)	7.9 (0.31)	25.7 (1.01)
12	8	SM12	65.0 (2.56)	9.7 (0.38)	27.4 (1.08)
18	12	SM18	69.6 (2.74)	15.0 (0.59)	38.1 (1.50)
25	16	SM25	81.3 (3.20)	21.8 (0.86)	45.5 (1.79)
32	20	SM32	98.8 (3.89)	28.7 (1.13)	53.3 (2.10)
38	24	SM38	111 (4.36)	33.8 (1.33)	63.2 (2.49)

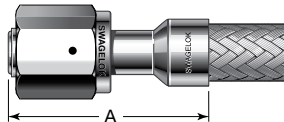
FX Series Metal Hose

Rotatable Male VCR® Metal Gasket Face Seal Fittings



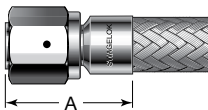
VCR Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)		
			A	Minimum Inside Diameter	Maximum Outside Dimension
1/4	4	RM4	1.81 (46)	0.18 (4.6)	0.78 (19.8)
1/2	8	RM8	2.13 (54.1)	0.40 (10.2)	1.08 (27.4)
3/4	12	RM12	2.75 (69.9)	0.63 (16.0)	1.51 (38.4)
1	16	RM16	2.97 (75.4)	0.88 (22.4)	1.88 (47.8)

Rotatable Female VCR Metal Gasket Face Seal Fittings



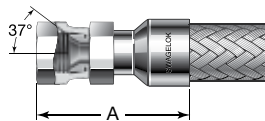
VCR Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)		
			A	Minimum Inside Diameter	Maximum Outside Dimension
1/4	4	RF4	1.81 (46)	0.18 (4.6)	0.87 (22.1)
1/2	8	RF8	2.13 (54.1)	0.40 (10.2)	1.23 (31.2)
3/4	12	RF12	2.75 (69.9)	0.63 (16.0)	1.73 (43.9)
1	16	RF16	2.97 (75.4)	0.88 (22.4)	2.02 (51.3)

Female VCO O-Ring Face Seal Fittings



VCO Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)		
			A	Minimum Inside Diameter	Maximum Outside Dimension
1/4	4	VF4	1.27 (32.3)	0.19 (4.8)	0.79 (20.1)
1/2	8	VF8	1.44 (36.6)	0.41 (10.4)	1.08 (27.4)
3/4	12	VF12	1.69 (42.9)	0.63 (16.0)	1.73 (43.9)
1	16	VF16	1.73 (43.9)	0.88 (22.4)	2.02 (51.3)

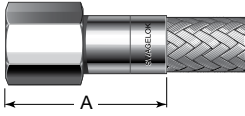
SAE 37° (JIC) Female Swivel



Swivel Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)		
			A	Minimum Inside Diameter	Maximum Outside Dimension
1/4	4	AS4	1.67 (42.4)	0.19 (4.8)	0.78 (19.8)
3/8	6	AS6	1.79 (45.5)	0.28 (7.1)	1.01 (25.7)
1/2	8	AS8	2.08 (52.8)	0.39 (9.9)	1.08 (27.4)
3/4	12	AS12	2.39 (60.7)	0.61 (15.5)	1.50 (38.1)
1	16	AS16	2.64 (67.1)	0.84 (21.3)	1.79 (45.5)

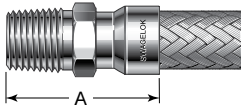
FX Series Metal Hose

Female Pipe Threads, NPT



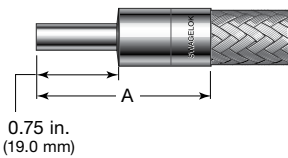
NPT Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)		
			A	Minimum Inside Diameter	Maximum Outside Dimension
1/4	4	PF4	1.72 (43.7)	0.30 (7.6)	0.87 (22.1)
3/8	6	PF6	1.84 (46.7)	0.42 (10.7)	1.01 (25.7)
1/2	8	PF8	2.58 (65.5)	0.58 (14.7)	1.23 (31.2)
3/4	12	PF12	2.53 (64.3)	0.73 (18.5)	1.51 (38.4)
1	16	PF16	2.92 (74.2)	0.95 (24.1)	1.88 (47.8)
1 1/2	24	PF24	3.28 (83.3)	1.50 (38.1)	2.74 (69.6)

Male Pipe Threads, NPT and ISO/BSP Tapered (ISO 7)



NPT and ISO/BSP Tapered Size in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)		
			A	Minimum Inside Diameter	Maximum Outside Dimension
NPT					
1/4	4	PM4	1.82 (46.2)	0.28 (7.1)	0.78 (19.8)
3/8	6	PM6	1.91 (48.5)	0.38 (9.7)	1.01 (25.7)
1/2	8	PM8	2.45 (62.2)	0.47 (11.9)	1.08 (27.4)
3/4	12	PM12	2.57 (65.3)	0.63 (16.0)	1.50 (38.1)
1	16	PM16	3.05 (77.5)	0.88 (22.4)	1.79 (45.5)
1 1/4	20	PM20	3.14 (79.8)	1.09 (27.7)	2.10 (53.3)
1 1/2	24	PM24	3.38 (85.9)	1.34 (34.0)	2.45 (62.2)
2	32	PM32	3.88 (98.6)	1.81 (46.0)	2.92 (74.2)
ISO/BSP Tapered					
1/4	4	MT4	1.82 (46.2)	0.28 (7.1)	0.78 (19.8)
3/8	6	MT6	1.91 (48.5)	0.38 (9.7)	1.01 (25.7)
1/2	8	MT8	2.45 (62.2)	0.47 (11.9)	1.08 (27.4)
3/4	12	MT12	2.57 (65.3)	0.63 (16.0)	1.50 (38.1)
1	16	MT16	3.05 (77.5)	0.88 (22.4)	1.79 (45.5)
1 1/4	20	MT20	3.14 (79.8)	1.09 (27.7)	2.10 (53.3)
1 1/2	24	MT24	3.38 (85.9)	1.34 (34.0)	2.45 (62.2)

Tube Butt Welds



Tube Butt Weld Size in.	Wall Thickness in.	Nominal Hose Size Designator	End Connection Designator	Dimensions, in. (mm)		
				A	Minimum Inside Diameter	Maximum Outside Dimension
1/4	0.035	4	TB4	1.77 (45.0)	1.64 (41.7)	0.78 (19.8)
3/8	0.035	6	TB6	1.82 (46.2)	1.82 (46.2)	1.01 (25.7)
1/2	0.049	8	TB8	2.17 (55.1)	2.04 (51.8)	1.08 (27.4)
3/4	0.049	12	TB12	2.27 (57.7)	2.14 (54.4)	1.50 (38.1)
1	0.065	16	TB16	2.46 (62.5)	2.46 (62.5)	1.79 (45.5)