O-ring Face Seal Fittings

FO Series

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FG09040813

FITOK
Valves and Fittings

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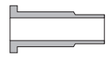
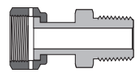
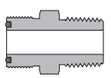
Glands - G  03

Welded Glands - WG  03

Nuts - N 05

Bodies - CM, CF, U, UB, BY, BU, CW, LM, LU, LP, LU, TTT  05

O-rings 09

Features

- 316, 316L stainless steel materials are available.
- O-ring seal provides perfect leak-tight service from critical vacuum to high pressure.
- FO female threads are silver plated.
- Every gland and body is stamped with size, material and heat code.
- Easy to install and maintain.
- Test ports at nut for easy leak testing.
- O-ring contained completely for maximum efficiency.
- Smooth finish on gland face ensures positive seal.

Technical Data

- Sizes range from 1/8" to 1".
- Thread Specifications:

Thread Type	Specification
NPT	ASME B1.20.1, SAE AS71051
Unified (SAE)	ASME B1.1, SAE J475

- Working Pressure:
  Catalog working pressure is calculated in accordance with ANSI/ASME B31.3. To determine working pressure in accordance with ANSI/ASME B31.1, multiply values by 0.94.

- Working Temperature:
  Temperature ranges for FO fittings are governed by the O-ring materials.

Material	Designator	Working Temperature
Fluorocarbon FKM (70 durometer)	VI7	-10°F to 400°F (-23°C to 204°C)
Fluorocarbon FKM (90 durometer)	VI9	-10°F to 400°F (-23°C to 204°C)
PTFE	T	-50°F to 450°F (-45°C to 232°C)
Buna N (70 durometer)	BN7	-10°F to 250°F (-23°C to 121°C)
Perfluoroelastomer	Z	-10°F to 550°F (-23°C to 287°C)
Ethylene propylene	E	-50°F to 300°F (-45°C to 148°C)

The fluorocarbon FKM of 90 durometer is for SAE/MS threads.

Standard Materials

Material	Bar Stock	Forging	Designator
316 stainless steel	ASTM A276, ASME SA479	ASTM A182, ASME SA182	SS
316L stainless steel			6L

Materials traceable, certification available upon request

Testing

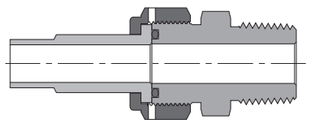
FO fitting is tested with helium at a maximum leak rate of 4 x 10^{-9} std cm^3/s.

Ordering Information

- Dimensions are for reference only and are subject to change.
- Each component should be ordered separately.
- The FO body is supplied with 70 durometer fluorocarbon FKM O-ring.
- The ordering number listed in the following page is for 316 SS material fittings, to order 316L SS material fittings, use 6L to replace SS.

Installation Instructions

1. Assembled the gland, nut, O-ring and body as below, finger tighten the nut.

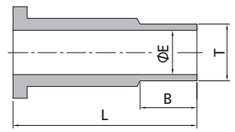


2. Tighten the nut 1/8-1/4 turn with wrench while holding the body of the fitting steadily, until a sharp rise in torque.

Cautions:

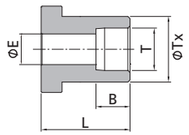
- Inspect the O-ring each time the groove housing is dismantled. If the O-ring is broken, it should be replaced.
- When welding is applied to the body, the O-ring should be removed to prevent possible damage.
- Tungsten Inert Gas Welding (TIG) is recommended.
- Do not loosen or tighten fittings when system is pressurized.

Glands



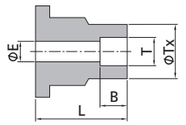
FO Gland to Tube Butt Weld

FO Size (in.)	T-Tube O.D. (in.)	Ordering Number	Dimension, mm			Working Pressure psig (bar)
			L	B	E	
1/4	1/8	SS-G-FO4-TB2	19.6	7.1	1.5	11200 (771)
1/4	1/4	SS-G-FO4-TB4	28.4	10.4	3.0	11200 (771)
1/2	1/4	SS-G-FO8-TB4	23.1	10.4	3.0	11200 (771)
1/2	3/8	SS-G-FO8-TB6	21.3	10.4	5.8	8200 (564)
1/2	1/2	SS-G-FO8-TB8	26.9	12.7	8.4	7500 (516)



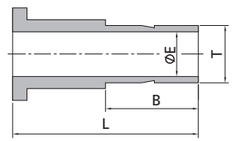
FO Gland to Tube Socket Weld

FO Size (in.)	T-Tube O.D. (in.)	Ordering Number	Dimension, mm				Working pressure psig (bar)
			L	B	E	Tx	
1/8	1/8	SS-G-FO2-TS2	19.6	2.5	2.3	9.7	15400 (1061)
1/4	1/4	SS-G-FO4-TS4	19.6	7.1	4.6	9.7	6800 (468)
3/8	3/8	SS-G-FO6-TS6	20.6	7.9	7.1	15.2	8100 (558)
1/2	1/2	SS-G-FO8-TS8	20.6	9.7	10.2	15.2	3000 (206)
3/4	3/4	SS-G-FO12-TS12	23.9	11.2	15.7	23.4	3700 (255)
1	1	SS-G-FO16-TS16	24.9	15.7	22.1	30.2	3000 (206)



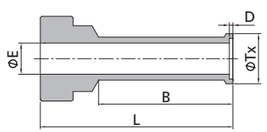
FO Gland to Tube Socket Weld Reducing

FO Size (in.)	T-Tube O.D. (in.)	Ordering Number	Dimension, mm				Working pressure psig (bar)
			L	B	E	Tx	
1/4	1/8	SS-G-FO4-TS2	19.6	2.5	2.3	7.4	12600(868)
1/2	1/4	SS-G-FO8-TS4	20.6	7.1	4.6	12.2	10700(737)



FO Gland to Tube Port

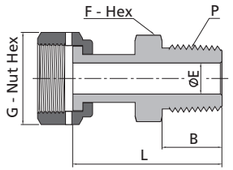
FO Size (in.)	T-Tube O.D. (in.)	Ordering Number	Dimension, mm			Working Pressure psig (bar)
			L	B	E	
1/4	1/4	SS-G-FO4-FT4	33.3	16.3	4.3	10200 (702)
1/2	3/8	SS-G-FO8-FT6	35.1	17.8	6.8	6500 (447)
1/2	1/2	SS-G-FO8-FT8	41.1	24.4	9.3	6700 (461)
3/4	3/4	SS-G-FO12-FT12	45.7	25.9	14.7	5800 (399)
1	1	SS-G-FO16-FT16	52.1	33.0	20.3	4700 (323)



FO Gland to Automatic Tube Weld

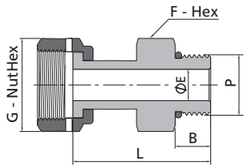
FO Size (in.)	T-Tube O.D. (in.)	Wall (in.)	Ordering Number	Dimension, mm					Working pressure psig (bar)
				L	B	D	E	Tx	
1/4	1/4	0.035	6L-G-FO4-TB4A	28.4	19.8	0.51	4.6	7.4	5100(351)
1/2	3/8	0.035	6L-G-FO8-TB6A	28.7	20.0	0.76	7.9	10.4	3300(227)
1/2	1/2	0.049	6L-G-FO8-TB8A	29.0	20.3	1.0	10.2	14.0	3500(241)
3/4	3/4	0.049	6L-G-FO12-TB12A	30.5	20.3	1.0	16.5	20.3	2200(151)
1	1	0.065	6L-G-FO16-TB16A	35.8	25.4	1.0	22.1	26.9	2200(151)

Welded Glands



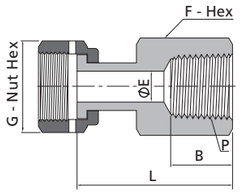
FO Welded Gland to Male NPT

FO Size (in.)	P-NPT Size	Ordering Number	Dimension, mm					Working Pressure psig (bar)
			L	B	E	G	F	
1/4	1/4	SS-WG-FO4-NS4	40.4	14.2	4.6	17.5	15.9	9800 (675)
1/2	3/8	SS-WG-FO8-NS6	42.4	14.2	10.2	25.4	23.8	5600 (385)
1/2	1/2	SS-WG-FO8-NS8	47.5	19.1	10.2	25.4	23.8	5600 (385)
3/4	3/4	SS-WG-FO12-NS12	51.6	19.1	15.7	38.1	26.99	3900 (268)
1	1	SS-WG-FO16-NS16	59.9	23.9	22.1	44.5	41.3	2900 (199)



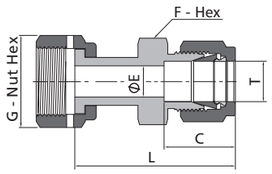
FO Welded Gland to SAE/MS Thread

FO Size (in.)	P-SAE/MS Thread Size	Ordering Number	Dimension, mm					Working Pressure psig (bar)
			L	B	E	G	F	
1/4	7/16-20	SS-WG-FO4-ST7	39.1	9.1	4.6	17.5	14.3	4500 (310)
1/2	9/16-18	SS-WG-FO8-ST9	41.7	9.9	10.2	25.4	17.5	4500 (310)
1/2	3/4-16	SS-WG-FO8-ST12	43.4	11.2	10.2	25.4	22.2	4500 (310)
3/4	1 1/16-12	SS-WG-FO12-ST17	52.6	15.0	15.7	38.1	31.8	3600 (248)
1	1 5/16-12	SS-WG-FO16-ST21	55.1	15.0	22.1	44.5	38.1	2900 (199)



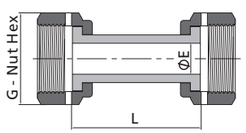
FO Welded Gland to Female NPT

FO Size (in.)	P-NPT Size	Ordering Number	Dimension, mm					Working Pressure psig (bar)
			L	B	E	G	F	
1/4	1/4	SS-WG-FO4-FNS4	39.9	15.0	4.6	17.5	19.1	6600 (454)
1/2	3/8	SS-WG-FO8-FNS6	43.9	15.0	10.2	25.4	22.2	5300 (365)
1/2	1/2	SS-WG-FO8-FNS8	49.8	19.8	10.2	25.4	27.0	4900 (337)
3/4	3/4	SS-WG-FO12-FNS12	53.8	20.6	15.7	38.1	33.3	4000 (275)
1	1	SS-WG-FO16-FNS16	58.2	25.4	22.1	44.5	41.3	3000 (206)



FO Welded Gland to Tube Fitting

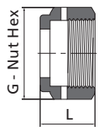
FO Size (in.)	T-Tube O.D. (in.)	Ordering Number	Dimension, mm					Working Pressure psig (bar)
			L	C	E	G	F	
1/4	1/4	SS-WG-FO4-FL4	44.2	15.2	4.6	17.5	12.7	10200 (702)
1/2	3/8	SS-WG-FO8-FL6	47.5	16.8	7.1	25.4	15.9	5800 (399)
1/2	1/2	SS-WG-FO8-FL8	51.1	22.9	10.2	25.4	20.6	5800 (399)
3/4	3/4	SS-WG-FO12-FL12	54.4	24.4	15.7	38.1	27.0	4000 (275)
1	1	SS-WG-FO16-FL16	62.2	31.2	22.1	44.5	34.9	3000 (206)



FO Welded Gland Union

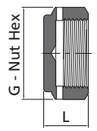
FO Size (in.)	Ordering Number	Dimension, mm			Working Pressure psig (bar)
		L	E	G	
1/4	SS-WG-FO4	36.1	4.6	17.5	10200 (702)
1/2	SS-WG-FO8	40.9	10.2	25.4	5800 (399)

Nuts



Female

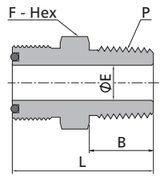
FO Size (in.)	Ordering Number	Dimension mm	
		L	G
1/8-1/4	SS-N-FO4	16.8	17.5
3/8-1/2	SS-N-FO8	17.5	25.4
3/4	SS-N-FO12	20.6	38.1
1	SS-N-FO16	20.6	44.5



Blind

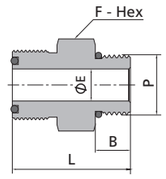
FO Size (in.)	Ordering Number	Dimension mm	
		L	G
1/8-1/4	SS-N-FO4-B	11.2	17.5
3/8-1/2	SS-N-FO8-B	14.2	25.4
3/4	SS-N-FO12-B	19.1	38.1
1	SS-N-FO16-B	20.6	44.5

Bodies



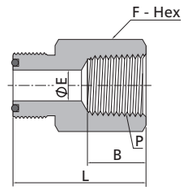
FO Body to Male NPT

FO Size (in.)	P-NPT Size	Ordering Number	Dimension, mm				Working pressure psig (bar)
			L	F	B	E	
1/4	1/8	SS-CM-FO4-NS2	29.5	15.9	9.7	4.6	10000 (689)
1/4	1/4	SS-CM-FO4-NS4	34.0	15.9	14.2	4.6	13400 (923)
1/2	3/8	SS-CM-FO8-NS6	37.1	23.8	14.2	9.7	7800 (537)
1/2	1/2	SS-CM-FO8-NS8	41.9	23.8	19.1	10.2	10000 (689)
3/4	3/4	SS-CM-FO12-NS12	44.5	33.3	19.1	15.7	7300 (502)
1	1	SS-CM-FO16-NS16	50.0	41.3	23.9	22.1	5300 (365)



FO Body to SAE/MS Thread

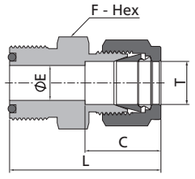
FO Size (in.)	P-SAE/MS Thread Size	Ordering Number	Dimension, mm				Working pressure psig (bar)
			L	F	B	E	
1/4	7/16-20	SS-CM-FO4-ST7	31.5	17.5	9.1	4.6	4500 (310)
1/4	9/16-18	SS-CM-FO4-ST9	29.7	17.5	9.9	4.6	4500 (310)
1/2	7/16-20	SS-CM-FO8-ST7	34.5	13.8	9.1	4.6	4500 (310)
1/2	9/16-18	SS-CM-FO8-ST9	35.3	13.8	9.9	7.6	4500 (310)
1/2	3/4-16	SS-CM-FO8-ST12	37.3	25.4	11.2	10.2	4500 (310)
3/4	1 1/16-12	SS-CM-FO12-ST17	43.9	34.9	15.0	15.7	3600 (248)
1	1 5/16-12	SS-CM-FO16-ST21	45.5	41.3	15.0	21.6	2900 (199)



FO Body to Female NPT

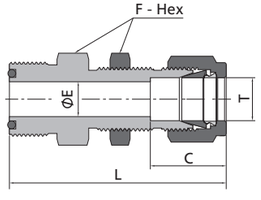
FO Size (in.)	P-NPT Size	Ordering Number	Dimension, mm				Working Pressure psig (bar)
			L	F	B	E	
1/4	1/8	SS-CF-FO4-NS2	31.8	15.9	10.4	4.6	8400 (578)
1/4	1/4	SS-CF-FO4-NS4	35.3	19.1	15.0	4.6	6600 (454)
1/2	3/8	SS-CF-FO8-NS6	39.9	23.8	15.0	10.2	6600 (454)
1/2	1/2	SS-CF-FO8-NS8	45.0	27.0	19.8	10.2	4900 (337)
3/4	3/4	SS-CF-FO12-NS12	49.0	33.3	20.6	15.7	4600 (316)
1	1	SS-CF-FO16-NS16	51.3	41.3	25.4	22.1	4400 (303)

Bodies



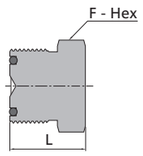
FO Body to Tube Fitting

FO Size (in.)	T-tube O.D. (in.)	Ordering Number	Dimension, mm				Working Pressure psig (bar)
			L	F	C	E	
1/4	1/8	SS-U-FO4-FL2	35.1	15.9	13.0	2.3	10900 (751)
1/4	1/4	SS-U-FO4-FL4	37.3	15.9	15.2	4.6	10200 (702)
1/2	3/8	SS-U-FO8-FL6	41.9	23.8	16.8	7.1	6500 (447)
1/2	1/2	SS-U-FO8-FL8	45.2	23.8	22.9	10.2	6700 (461)
3/4	3/4	SS-U-FO12-FL12	47.2	33.3	24.4	15.7	5800 (399)
1	1	SS-U-FO16-FL16	52.3	41.3	31.2	22.1	4700 (323)



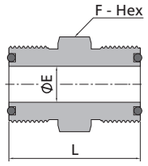
FO Body to Bulkhead Tube Fitting

FO Size (in.)	T-tube O.D. (in.)	Ordering Number	Dimension, mm				Panel Hole Drill Size (mm)	Max. Panel Thickness (mm)	Working Pressure psig (bar)
			L	F	C	E			
1/4	1/4	SS-UB-FO4-FL4	53.4	15.9	15.2	4.6	11.5	10.2	10200 (702)
1/2	3/8	SS-UB-FO8-FL6	59.4	23.8	16.8	7.1	14.7	11.2	6500 (447)
1/2	1/2	SS-UB-FO8-FL8	64.8	23.8	22.9	10.2	19.4	12.7	6700 (461)
3/4	3/4	SS-UB-FO12-FL12	72.6	33.3	24.4	15.7	25.8	16.8	5800 (399)
1	1	SS-UB-FO16-FL16	83.6	41.3	31.2	22.1	33.7	19.1	4700 (323)



Blind Body

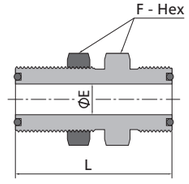
FO Size (in.)	Ordering Number	Dimension, mm	
		L	F
1/4	SS-BY-FO4	19.6	15.9
1/2	SS-BY-FO8	22.6	23.8
3/4	SS-BY-FO12	25.1	33.3
1	SS-BY-FO16	25.9	41.3



Union Body

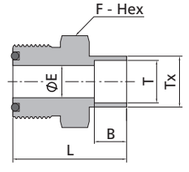
FO Size (in.)	FO Size (in.)	Ordering Number	Dimension, mm			Working Pressure psig (bar)
			L	F	E	
1/4	1/4	SS-U-FO4	31.8	15.9	4.6	14300 (985)
1/2	1/4	SS-U-FO8-FO4	36.3	23.8	4.6	11100 (764)
1/2	1/2	SS-U-FO8	38.1	23.8	10.2	11100 (764)

Bodies



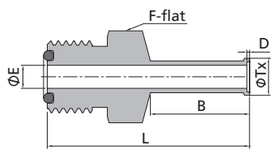
Bulkhead Union Body

FO Size (in.)	Ordering Number	Dimension, mm			Panel Hole Drill Size (mm)	Max. Panel Thickness (mm)	Working Pressure psig (bar)
		L	F	E			
1/4	SS-BU-FO4	47.8	19.1	4.6	14.7	9.1	14300 (985)
1/2	SS-BU-FO8	53.1	27.0	10.2	22.6	10.2	11100 (764)



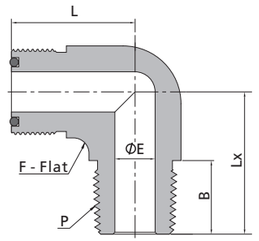
FO Body to Tube Socket Weld

FO Size (in.)	T-Tube O.D. (in.)	Ordering Number	Dimension, mm					Working Pressure psig (bar)
			L	F	E	B	Tx	
1/4	1/8	SS-CW-FO4-TS2	22.4	15.9	2.3	2.5	7.4	12600 (868)
1/4	1/4	SS-CW-FO4-TS4	27.7	15.9	4.6	7.1	9.7	6800 (468)
1/2	3/8	SS-CW-FO8-TS6	32.5	23.8	7.1	7.9	15.2	8100 (558)
1/2	1/2	SS-CW-FO8-TS8	34.0	23.8	10.2	9.7	18.5	3000 (206)
3/4	3/4	SS-CW-FO12-TS12	38.1	33.3	15.7	11.2	23.4	3700 (254)
1	1	SS-CW-FO16-TS16	43.7	41.3	22.1	15.7	30.2	3000 (206)



FO Body to Automatic Tube Weld

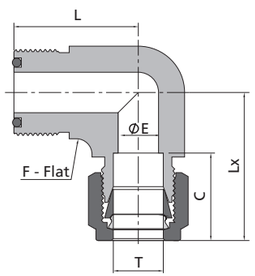
FO Size (in.)	T-tube O.D. (in.)	Wall (in.)	Ordering Number	Dimension, mm						Working Pressure psig (bar)
				L	B	D	E	Tx	F	
1/4	1/4	0.035	6L-CW-FO4-TB4A	40.4	19.8	0.51	4.6	7.4	15.88	5100(351)
1/2	3/8	0.035	6L-CW-FO8-TB6A	44.2	20.0	0.76	7.9	10.4	23.81	3300(227)
1/2	1/2	0.049	6L-CW-FO8-TB8A	44.4	20.3	1.0	10.2	14.0	23.81	3500(241)
3/4	3/4	0.049	6L-CW-FO12-TB12A	45.2	20.3	1.0	16.5	20.3	23.81	2200(151)
1	1	0.065	6L-CW-FO16-TB16A	51.6	25.4	1.0	22.1	26.9	47.63	2200(151)



FO Body to Male NPT Elbow

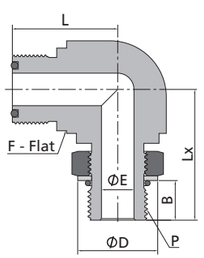
FO Size (in.)	P-NPT Size	Ordering Number	Dimension, mm					Working Pressure psig (bar)
			L	F	B	E	Lx	
1/4	1/8	SS-LM-FO4-NS2	24.4	14.3	9.7	4.6	22.1	10000 (689)
1/4	1/4	SS-LM-FO4-NS4	24.4	14.3	14.2	4.6	26.7	8000 (551)
1/2	3/8	SS-LM-FO8-NS6	32.0	20.6	14.2	9.7	32.0	7800 (537)
1/2	1/2	SS-LM-FO8-NS8	32.0	20.6	19.1	10.2	36.8	7700 (530)
3/4	3/4	SS-LM-FO12-NS12	37.6	31.8	19.1	15.7	42.4	7300 (502)
1	1	SS-LM-FO16-NS16	39.6	42.9	23.9	22.0	49.32	5300 (365)

Bodies



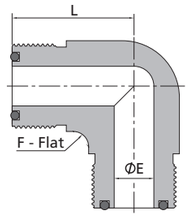
FO Body to Tube Fitting Elbow

FO Size (in.)	T-Tube O.D. (in.)	Ordering Number	Dimension, mm					Working Pressure psig (bar)
			L	F	C	E	Lx	
1/4	1/4	SS-LU-FO4-FL4	24.4	14.3	15.2	4.6	30.2	10200 (702)
1/2	3/8	SS-LU-FO8-FL6	32.0	20.6	16.8	7.1	35.3	6500 (447)
1/2	1/2	SS-LU-FO8-FL8	32.0	20.6	22.9	10.2	38.1	6700 (461)
3/4	3/4	SS-LU-FO12-FL12	37.6	31.8	24.4	15.7	45.7	5800 (399)
1	1	SS-LU-FO16-FL16	39.6	42.9	31.2	22.1	51.8	4700 (323)



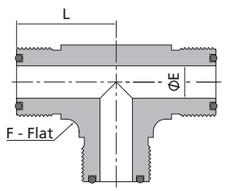
FO Body to Male SAE/MS Thread Adjustable Elbow

FO Size (in.)	P-SAE/MS Thread Size	Ordering Number	Dimension, mm						Working Pressure psig (bar)
			L	F	B	E	D	Lx	
1/4	7/16-20	SS-LP-FO4-ST7	24.4	12.7	9.9	4.6	16.5	30.2	4500 (310)
1/2	9/16-18	SS-LP-FO8-ST9	33.8	20.6	11.2	7.6	20.1	39.1	3600 (248)
1/2	3/4-16	SS-LP-FO8-ST12	33.8	20.6	12.7	10.2	25.7	41.9	3600 (248)
3/4	1 1/16-12	SS-LP-FO12-ST17	38.9	31.8	16.8	15.7	36.6	54.1	2900 (199)
1	1 5/16-12	SS-LP-FO16-ST21	43.7	42.9	16.8	22.1	43.9	58.7	2300 (158)



FO Body Union Elbow

FO Size (in.)	Ordering Number	Dimension, mm			Working Pressure psig (bar)
		L	F	E	
1/4	SS-LU-FO4	24.4	14.3	4.6	14300 (985)
1/2	SS-LU-FO8	32.0	20.6	10.2	11100 (764)
3/4	SS-LU-FO12	37.6	31.8	15.7	10900 (751)
1	SS-LU-FO16	39.6	42.9	22.1	8800 (606)



FO Body Union Tee

FO Size (in.)	Ordering Number	Dimension, mm			Working Pressure psig (bar)
		L	F	E	
1/4	SS-TTT-FO4	24.4	14.3	4.6	14300 (985)
1/2	SS-TTT-FO8	32.0	20.6	10.2	11100 (764)
3/4	SS-TTT-FO12	37.6	31.8	15.7	10900 (751)
1	SS-TTT-FO16	39.6	42.9	22.1	8800 (606)

O-Rings

FO Size (in.)	Basic Ordering Number
1/8-1/4	-010
3/8-1/2	-111
3/4	-116
1	-215

Add the O-ring material designator as a prefix to the basic ordering number to get the complete ordering number. Example: VI7-010.