Metal Gasket Face Seal Fittings
FR Series

Features

- Metal-to-metal seal to provide perfect leak-tight service for working conditions from critical vacuum to high pressure
- Precision manufactured gasket to ensure best performance
- Test port at nut for easy leak testing
- Silver-plated female threads
- Standard surface roughness finished to an average of Ra 10 µin. (0.25 µm) or electropolished to Ra 5 µin. (0.13 µm) optional
- All seal faces and male threads protected with plastic caps
- Sizes range from 1/16" to 1" and 6 mm to 18 mm
- Every gland and body marked with size, material and heat number

Technical Data

◎ Thread Specifications

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

◎ Working Pressure

Working pressures shown in the Catalog are calculated according to ASME B31.3 and B31.1 at ambient temperature.

◎ Materials

Material	Designator
Fitting Material	
316 SS	SS
316L SS	6L
316L SS VAR	6LV
316L SS VAR Ultra-low Mn	6LM
Gasket Material	
316L SS	6L
Copper	CU
Nickel	NI

◎ Weld End Tube O.D. and Wall Thickness

Fractional		Metric	
Tube O.D. in.	Wall Thickness in.	Tube O.D. mm	Wall Thickness mm
1/8	0.028	6	1.0
1/4	0.035	8	1.0
3/8	0.035	10	1.0
1/2	0.049	12	1.0
3/4	0.049	18	1.5
1	0.065		
1 1/2	0.065		
2	0.065		

For other sizes or wall thicknesses of welded ports, please contact FITOK Group or our authorized distributors.

◎ Working Temperature

Component	Material	Max. Temperature
Fittings	316 SS	1000 °F (538 °C)
	316L SS	
	316L SS VAR	
	316L SS VAR Ultra-low Mn	
Gaskets	316L SS	
	Copper	400 °F (204 °C)
	Nickel	600 °F (316 °C)

Process Specification

Item \ Process Specification	Standard Cleaning and Packaging Process (FC-01) Special Cleaning and Packaging Process (FC-02)	Ultra High Purity Process (FC-03)
Material	316 SS, 316L SS	316L SS, 316L SS VAR, 316L SS VAR Ultra-low Mn
Wetted Surface Roughness	Ra 10 µin. (0.25 µm)	Ra 5 µin. (0.13 µm)
Polishing Process	Machine finished	Electropolished

Testing

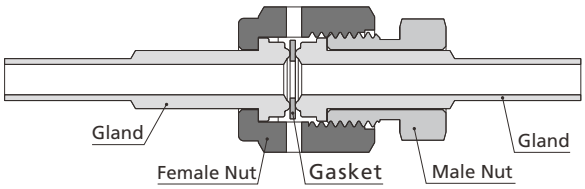
FR fittings are rated to a maximum helium leak rate of 4×10^{-11} std cm^3/s.

Ordering Information

◎ Each component can be ordered separately.
◎ Add the material designator as a prefix, cleaning and packaging designator as a suffix to the basic ordering number to get the complete ordering number.
◎ Cleaning and Packaging
a. Standard Cleaning and Packaging Process (FC-01) for general industrial procedures. No suffix is needed.
b. Special Cleaning and Packaging Process (FC-02), to ensure compliance with product cleanliness requirement as stated in ASTM G93 Level C. Add "-F2" as a suffix when needed.
c. Ultra High Purity Process (FC-03) is applied to products with wetted surface roughness finished to an average of Ra 5 µin. (0.13 µm). Add "-F3" as a suffix when needed.
Example: For 1/2" 316L SS VAR gland with Ultra High Purity Process (FC-03), the complete ordering number is 6LV-G-FR8-TB8-6-F3.

Installation Instructions

1. Assemble the gland, nut, gasket and male nut as below. Finger tight the nut.

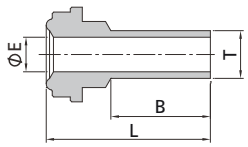


2. For fittings with 316L SS and nickel gaskets, tighten the nut 1/8 turn with a wrench while holding the male nut or the fitting body steady. Tighten the nut 1/4 turn for those with copper gaskets.

Cautions

◎ Dimensions are for reference only and are subject to change
◎ Over-tightening will damage the sealing beads and lead to possible leak
◎ Utilize a new gasket for each assembly
◎ Tungsten Inert Gas Welding (TIG) is recommended
◎ Always apply sealing materials compatible with the fluid on tapered pipe threads
◎ Do not loosen or tighten fittings when the system is pressurized
◎ Integral FR fittings must remain stationary during installation. Integral male FR fittings should not be paired with integral female FR fittings. Instead, they should be used in conjunction with rotating nuts and glands.

Glands

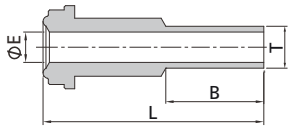


FR Gland to Short Fractional Tube Butt Weld

FR Size (in.)	T-Tube O.D. (in.)	Nominal Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
				L	B	E	6L	CU	NI
1/8	1/8	0.028	-G-FR2-TB2-12S	1.08 (27.4)	0.75 (19.1)	0.07 (1.8)	8500 (586)	6800 (468)	8500 (586)
1/4	1/8	0.028	-G-FR4-TB2-12S	1.10 (27.9)	0.75 (19.1)	0.07 (1.8)	8500 (586)	6400 (440)	8000 (551)
1/4	1/4	0.035	-G-FR4-TB4-4S	0.60 (15.2)	0.25 (6.4)	0.18 (4.6)	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-G-FR4-TB4-6S	0.72 (18.3)	0.38 (9.6)	0.18 (4.6)	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-G-FR4-TB4-12S	1.10 (27.9)	0.75 (19.1)	0.18 (4.6)	5100 (351)	5100 (351)	5100 (351)
1/2	1/4	0.035	-G-FR8-TB4-12S	1.12 (28.4)	0.75 (19.1)	0.18 (4.6)	4300 (296)	2800 (192)	3500 (241)
1/2	3/8	0.035	-G-FR8-TB6-4S	0.62 (15.7)	0.25 (6.4)	0.31 (7.9)	3300 (227)	2600 (179)	3300 (227)
1/2	3/8	0.035	-G-FR8-TB6-12S	1.12 (28.4)	0.75 (19.1)	0.31 (7.9)	3300 (227)	2600 (179)	3300 (227)
1/2	1/2	0.049	-G-FR8-TB8-4S	0.62 (15.7)	0.25 (6.4)	0.40 (10.2)	3500 (241)	2800 (192)	3500 (241)
1/2	1/2	0.049	-G-FR8-TB8-6S	0.74 (18.8)	0.38 (9.6)	0.40 (10.2)	3500 (241)	2800 (192)	3500 (241)
1/2	1/2	0.049	-G-FR8-TB8-12S	1.12 (28.4)	0.75 (19.1)	0.40 (10.2)	3500 (241)	2800 (192)	3500 (241)

FR Gland to Short Metric Tube Butt Weld

FR Size (in.)	T-Tube O.D. (mm)	Nominal Wall Thickness (mm)	Basic Ordering Number	Dimensions, mm (in.)			Working Pressure, bar (psig)		
				L	B	E	6L	CU	NI
1/4	6	1.0	-G-FR4-MTB6-12S	29.5 (1.16)	19.1 (0.75)	4.0 (0.16)	468 (6800)	372 (5400)	468 (6800)
1/4	8	1.0	-G-FR4-MTB8-12S	29.5 (1.16)	19.1 (0.75)	6.0 (0.24)	337 (4900)	337 (4900)	337 (4900)
1/2	10	1.0	-G-FR8-MTB10-12S	29.5 (1.16)	19.1 (0.75)	8.0 (0.31)	241 (3500)	192 (2800)	241 (3500)
1/2	12	1.0	-G-FR8-MTB12-12S	29.5 (1.16)	19.1 (0.75)	10.0 (0.39)	213 (3100)	165 (2400)	213 (3100)
3/4	18	1.5	-G-FR12-MTB18-12S	31.0 (1.22)	19.1 (0.75)	15.0 (0.59)	206 (3000)	165 (2400)	206 (3000)



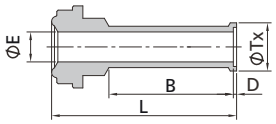
FR Gland to Long Fractional Tube Butt Weld

FR Size (in.)	T-Tube O.D. (in.)	Nominal Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
				L	B	E	6L	CU	NI
1/8	1/8	0.028	-G-FR2-TB2-12	1.42 (36.1)	0.75 (19.1)	0.07 (1.8)	8500 (586)	6800 (468)	8500 (586)
1/4	1/4	0.035	-G-FR4-TB4-4	1.20 (30.5)	0.25 (6.4)	0.18 (4.6)	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-G-FR4-TB4-1.31	1.31 (33.3)	0.36 (9.1)	0.18 (4.6)	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-G-FR4-TB4-6	1.32 (33.5)	0.38 (9.6)	0.18 (4.6)	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-G-FR4-TB4-12	1.70 (43.2)	0.75 (19.1)	0.18 (4.6)	5100 (351)	5100 (351)	5100 (351)
1/2	1/4	0.035	-G-FR8-TB4-12	1.80 (45.7)	0.75 (19.1)	0.18 (4.6)	4300 (296)	2800 (192)	3500 (241)
1/2	3/8	0.035	-G-FR8-TB6-4	1.29 (32.8)	0.25 (6.4)	0.31 (7.9)	3300 (227)	2600 (179)	3300 (227)
1/2	3/8	0.035	-G-FR8-TB6-12	1.79 (45.5)	0.75 (19.1)	0.31 (7.9)	3300 (227)	2600 (179)	3300 (227)
1/2	1/2	0.049	-G-FR8-TB8-4	1.29 (32.8)	0.25 (6.4)	0.40 (10.2)	3500 (241)	2800 (192)	3500 (241)
1/2	1/2	0.049	-G-FR8-TB8-6	1.41 (35.8)	0.38 (9.6)	0.40 (10.2)	3500 (241)	2800 (192)	3500 (241)
1/2	1/2	0.049	-G-FR8-TB8-12	1.79 (45.5)	0.75 (19.1)	0.40 (10.2)	3500 (241)	2800 (192)	3500 (241)
3/4	3/4	0.049	-G-FR12-TB12-12	2.03 (51.6)	0.75 (19.1)	0.65 (16.5)	2400 (165)	1900 (130)	2400 (165)
1	1	0.065	-G-FR16-TB16-12	2.32 (58.9)	0.75 (19.1)	0.87 (22.1)	2400 (165)	1900 (130)	2400 (165)

① The suffix "-1.31" refers to the length of Dimension L, L=1.31" (33.3 mm).

FR Gland to Long Metric Tube Butt Weld

FR Size (in.)	T-Tube O.D. (mm)	Nominal Wall Thickness (mm)	Basic Ordering Number	Dimensions, mm (in.)			Working Pressure, bar (psig)		
				L	B	E	6L	CU	NI
1/4	6	1.0	-G-FR4-MTB6-12	43.2 (1.7)	19.1 (0.75)	4.0 (0.16)	468 (6800)	372 (5400)	468 (6800)
1/4	8	1.0	-G-FR4-MTB8-12	43.2 (1.7)	19.1 (0.75)	6.0 (0.24)	337 (4900)	337 (4900)	337 (4900)
1/2	10	1.0	-G-FR8-MTB10-12	45.5 (1.79)	19.1 (0.75)	8.0 (0.31)	241 (3500)	192 (2800)	241 (3500)
1/2	12	1.0	-G-FR8-MTB12-12	45.5 (1.79)	19.1 (0.75)	10.0 (0.39)	213 (3100)	165 (2400)	213 (3100)
3/4	18	1.5	-G-FR12-MTB18-12	51.6 (2.03)	19.1 (0.75)	15.0 (0.59)	206 (3000)	165 (2400)	206 (3000)

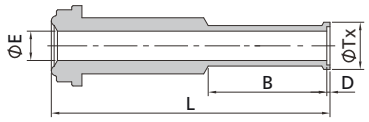


FR Gland to Short Fractional Automatic Tube Butt Weld

FR Size (in.)	Tube O.D. (in.)	Nominal Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)					Working Pressure, psig (bar)		
				L	B	D	E	Tx	6L	CU	NI
1/4	1/4	0.035	-AG-FR4-TB4-12S	1.12 (28.4)	0.75 (19.1)	0.02 (0.5)	0.18 (4.6)	0.29 (7.4)	5100 (351)	5100 (351)	5100 (351)
1/2	3/8	0.035	-AG-FR8-TB6-12S	1.15 (29.2)	0.75 (19.1)	0.03 (0.8)	0.31 (7.9)	0.41 (10.4)	3300 (227)	2600 (179)	3300 (227)
1/2	1/2	0.049	-AG-FR8-TB8-12S	1.16 (29.5)	0.75 (19.1)	0.04 (1.0)	0.40 (10.2)	0.55 (14.0)	3500 (241)	2800 (192)	3500 (241)

FR Gland to Short Metric Automatic Tube Butt Weld

FR Size (in.)	Tube O.D. (mm)	Nominal Wall Thickness (mm)	Basic Ordering Number	Dimensions, mm (in.)					Working Pressure, bar (psig)		
				L	B	D	E	Tx	6L	CU	NI
1/4	6	1.0	-AG-FR4-MTB6-12S	30.0 (1.18)	19.1 (0.75)	0.5 (0.02)	4.0 (0.16)	6.8 (0.27)	468 (6800)	372 (5400)	468 (6800)
1/4	8	1.0	-AG-FR4-MTB8-12S	30.2 (1.19)	19.1 (0.75)	0.8 (0.03)	6.0 (0.24)	8.9 (0.35)	337 (4900)	337 (4900)	337 (4900)
1/2	10	1.0	-AG-FR8-MTB10-12S	31.0 (1.22)	19.1 (0.75)	0.8 (0.03)	8.0 (0.31)	10.9 (0.43)	241 (3500)	192 (2800)	241 (3500)
1/2	12	1.0	-AG-FR8-MTB12-12S	30.5 (1.20)	19.1 (0.75)	1.0 (0.04)	10.0 (0.39)	13.2 (0.52)	213 (3100)	165 (2400)	213 (3100)



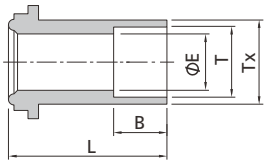
FR Gland to Long Fractional Automatic Tube Butt Weld

FR Size (in.)	Tube O.D. (in.)	Nominal Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)					Working Pressure, psig (bar)		
				L	B	D	E	Tx	6L	CU	NI
1/4	1/4	0.035	-AG-FR4-TB4-12	1.72 (43.7)	0.75 (19.1)	0.02 (0.5)	0.18 (4.6)	0.29 (7.4)	5100 (351)	5100 (351)	5100 (351)
1/2	1/4	0.035	-AG-FR8-TB4-12	1.82 (46.2)	0.75 (19.1)	0.02 (0.5)	0.18 (4.6)	0.29 (7.4)	3500 (241)	2800 (192)	3500 (241)
1/2	3/8	0.035	-AG-FR8-TB6-12	1.82 (46.2)	0.75 (19.1)	0.03 (0.8)	0.31 (7.9)	0.41 (10.4)	3300 (227)	2600 (179)	3300 (227)
1/2	1/2	0.049	-AG-FR8-TB8-12	1.83 (46.5)	0.75 (19.1)	0.04 (1.0)	0.40 (10.2)	0.55 (14.0)	3500 (241)	2800 (192)	3500 (241)
3/4	3/4	0.049	-AG-FR12-TB12-12	2.07 (52.6)	0.75 (19.1)	0.04 (1.0)	0.65 (16.5)	0.80 (20.3)	2400 (165)	2400 (165)	2400 (165)
1	1	0.065	-AG-FR16-TB16-16	2.57 (65.3)	0.96 (24.4)	0.04 (1.0)	0.87 (22.1)	1.06 (26.9)	2400 (165)	1900 (130)	2400 (165)

FR Gland to Long Metric Automatic Tube Butt Weld

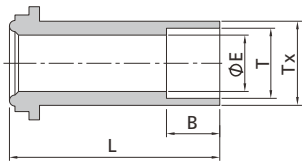
FR Size (in.)	Tube O.D. (mm)	Nominal Wall Thickness (mm)	Basic Ordering Number	Dimensions, mm (in.)					Working Pressure, bar (psig)		
				L	B	D	E	Tx	6L	CU	NI
1/4	6	1.0	-AG-FR4-MTB6-12	43.7 (1.72)	19.1 (0.75)	0.5 (0.02)	4.0 (0.16)	6.8 (0.27)	468 (6800)	372 (5400)	468 (6800)
1/2	12	1.0	-AG-FR8-MTB12-12	46.5 (1.83)	19.1 (0.75)	1.0 (0.04)	10.0 (0.39)	13.2 (0.52)	213 (3100)	165 (2400)	213 (3100)
3/4	18	1.5	-AG-FR12-MTB18-12	52.6 (2.07)	19.1 (0.75)	1.0 (0.04)	15.0 (0.59)	19.3 (0.76)	206 (3000)	165 (2400)	206 (3000)

1. The suffixes "-4", "-6", and "-12" indicate the length of Dimension B. Example: The suffix "-12" means B=12×1/16"=3/4" (19.1 mm).
2. The "S" in the suffix "-4S" indicates that the gland is a short tube.



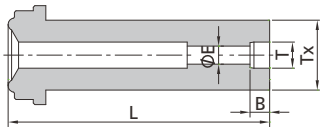
FR Gland to Short Tube Socket Weld

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimensions, in. (mm)				Working Pressure, psig (bar)		
			L	B	E	Tx	6L	CU	NI
1/4	1/4	-G-FR4-TS4-0.50	0.50 (12.7)	0.28 (7.1)	0.18 (4.6)	0.35 (8.9)	5500 (378)	5500 (378)	5500 (378)
1/4	1/4	-G-FR4-TS4-0.75	0.75 (19.1)	0.28 (7.1)	0.18 (4.6)	0.35 (8.9)	5500 (378)	5500 (378)	5500 (378)



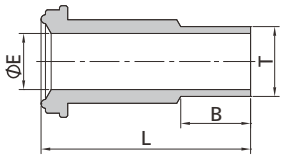
FR Gland to Tube Socket Weld

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimensions, in. (mm)				Working Pressure, psig (bar)		
			L	B	E	Tx	6L	CU	NI
1/8	1/16	-G-FR2-TS1	0.70 (17.8)	0.10 (2.5)	0.05 (1.3)	0.13 (3.3)	9000 (620)	7200 (496)	9000 (620)
1/8	1/8	-G-FR2-TS2	0.70 (17.8)	0.10 (2.5)	0.09 (2.3)	0.20 (5.1)	7100 (489)	7100 (489)	7100 (489)
1/4	1/4	-G-FR4-TS4	1.31 (33.3)	0.28 (7.1)	0.18 (4.6)	0.35 (8.9)	5500 (378)	5500 (378)	5500 (378)
1/2	3/8	-G-FR8-TS6	1.50 (38.1)	0.31 (7.9)	0.28 (7.1)	0.60 (15.2)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-G-FR8-TS8	1.50 (38.1)	0.38 (9.7)	0.40 (10.2)	0.60 (15.2)	3000 (206)	2400 (165)	3000 (206)
5/8	5/8	-G-FR10-TS10	1.56 (39.6)	0.41 (10.4)	0.50 (12.7)	0.72 (18.3)	2800 (192)	2200 (151)	2800 (192)
3/4	3/4	-G-FR12-TS12	2.00 (50.8)	0.44 (11.2)	0.62 (15.7)	0.88 (22.4)	2800 (192)	2200 (151)	2800 (192)
1	1	-G-FR16-TS16	2.22 (56.4)	0.62 (15.7)	0.87 (22.1)	1.19 (30.2)	3000 (206)	1900 (130)	2400 (165)



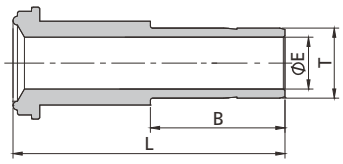
Reducing Socket Weld

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimensions, in. (mm)				Working Pressure, psig (bar)		
			L	B	E	Tx	6L	CU	NI
1/4	1/8	-G-FR4-RTS2	1.31 (33.3)	0.10 (2.5)	0.09 (2.3)	0.35 (8.9)	8000 (551)	8000 (551)	8000 (551)
1/2	1/4	-G-FR8-RTS4	1.50 (38.1)	0.28 (7.1)	0.18 (4.6)	0.60 (15.2)	3500 (241)	3500 (241)	3500 (241)



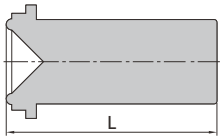
FR Gland to Fractional Tube Butt Weld

FR Size (in.)	T-Tube O.D. (in.)	T-Tube Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
				L	B	E	6L	CU	NI
1/8	1/8	0.032	-G-FR2-TB2×032	0.70 (17.8)	0.28 (7.1)	0.06 (1.5)	11200 (772)	7200 (496)	9000 (620)
1/4	1/8	0.032	-G-FR4-TB2×032	1.31 (33.3)	0.28 (7.1)	0.06 (1.5)	10000 (690)	6400 (440)	8000 (551)
1/4	1/4	0.065	-G-FR4-TB4×065	1.31 (33.3)	0.41 (10.4)	0.12 (3.0)	10000 (690)	6400 (440)	8000 (551)
1/2	1/4	0.065	-G-FR8-TB4×065	1.50 (38.1)	0.41 (10.4)	0.12 (3.0)	4300 (296)	2800 (192)	3500 (241)
1/2	3/8	0.049	-G-FR8-TB6×049	1.50 (38.1)	0.41 (10.4)	0.28 (7.1)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	0.049	-G-FR8-TB8	1.50 (38.1)	0.50 (12.7)	0.40 (10.2)	3500 (241)	3500 (241)	3500 (241)
3/4	3/4	0.109	-G-FR12-TB12×109	2.00 (50.8)	0.62 (15.7)	0.53 (13.5)	3700 (254)	2400 (165)	3000 (206)
1	1	0.125	-G-FR16-TB16×125	2.22 (56.4)	0.81 (20.6)	0.75 (19.1)	3000 (206)	1900 (130)	2400 (165)



FR Gland to Tube Port

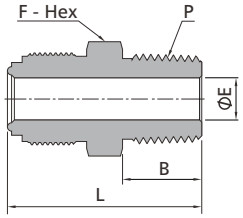
FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
			L	B	E	6L	CU	NI
1/4	1/4	-G-FR4-FT4	1.62 (41.0)	0.64 (16.2)	0.17 (4.3)	10000 (690)	6400 (440)	8000 (551)
1/2	3/8	-G-FR8-FT6	1.81 (46.0)	0.70 (17.8)	0.27 (6.9)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-G-FR8-FT8	1.94 (49.3)	0.96 (24.4)	0.37 (9.4)	4300 (296)	2800 (192)	3500 (241)



Blind Gland

FR Size (in.)	Basic Ordering Number	Dimension, in. (mm)
		L
1/8	-G-FR2-B	0.70 (17.8)
1/4	-G-FR4-B	1.31 (33.3)
1/2	-G-FR8-B	1.50 (38.1)
3/4	-G-FR12-B	2.00 (50.8)
1	-G-FR16-B	2.22 (56.4)

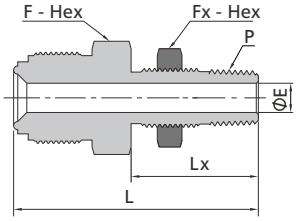
Bodies



FR Body to Male NPT

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimensions, in. (mm)				Working Pressure, psig (bar)		
			L	B	E	F	6L	CU	NI
1/8	1/16	-CM-FR2-NS1	1.07 (27.2)	0.38 (9.7)	0.09 (2.3)	3/8 (9.5)	9000 (620)	7200 (496)	9000 (620)
1/8	1/8	-CM-FR2-NS2	1.07 (27.2)	0.38 (9.7)	0.09 (2.3)	7/16 (11.1)	9000 (620)	7200 (496)	9000 (620)
1/4	1/8	-CM-FR4-NS2	1.31 (33.3)	0.38 (9.7)	0.18 (4.6)	5/8 (15.9)	10000 (690)	6400 (440)	8000 (551)
1/4	1/4	-CM-FR4-NS4	1.49 (37.8)	0.56 (14.2)	0.18 (4.6)	5/8 (15.9)	10000 (690)	6400 (440)	8000 (551)
1/2	1/4	-CM-FR8-NS4	1.65 (41.9)	0.56 (14.2)	0.28 (7.1)	15/16 (23.8)	4300 (296)	2800 (192)	3500 (241)
1/2	3/8	-CM-FR8-NS6	1.65 (41.9)	0.56 (14.2)	0.38 (9.7)	15/16 (23.8)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-CM-FR8-NS8	1.84 (46.7)	0.75 (19.1)	0.40 (10.2)	15/16 (23.8)	4300 (296)	2800 (192)	3500 (241)
3/4	3/4	-CM-FR12-NS12	2.19 (55.6)	0.75 (19.1)	0.62 (15.7)	1 15/16 (33.3)	3700 (254)	2400 (165)	3000 (206)
1	1	-CM-FR16-NS16	2.47 (62.7)	0.94 (23.9)	0.87 (22.1)	1 5/8 (41.3)	3000 (206)	1900 (130)	3000 (206)

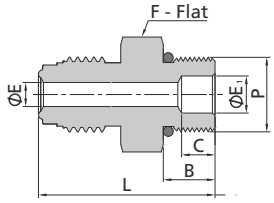
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Body to Bulkhead Male Connector

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimensions, in. (mm)					Panel Hole Size in. (mm)	Max. Panel Thickness in. (mm)	Working Pressure, psig (bar)		
			L	Lx	E	F	Fx			6L	CU	NI
1/4	1/4	-CMB-FR4-NS4	2.21 (56.1)	1.24 (31.5)	0.28 (7.1)	13/16 (20.6)	13/16 (20.6)	21/32 (16.7)	0.38 (9.7)	8000 (551)	6400 (440)	8000 (551)
1/2	1/4	-CMB-FR8-NS4	2.34 (59.4)	1.24 (31.5)	0.28 (7.1)	15/16 (23.8)	13/16 (20.6)	21/32 (16.7)	0.38 (9.7)	4370 (301)	2800 (192)	3500 (241)

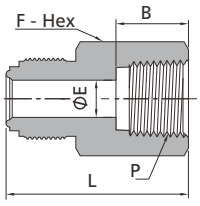
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Body to SAE/MS Thread

FR Size (in.)	P-SAE/MS Thread Size	Uniform O-Ring① Size	Basic Ordering Number	Dimensions, in. (mm)						Working Pressure, psig (bar)		
				L	B	C	E	E_1	F	6L	CU	NI
1/4	9/16-18	906	-CM-FR4-ST9	1.33 (33.8)	0.39 (9.9)	0.25 (6.4)	0.18 (4.6)	0.28 (7.1)	3/4 (19.1)	4500 (310)	4500 (310)	4500 (310)
1/2	9/16-18	906	-CM-FR8-ST9	1.48 (37.6)	0.39 (9.9)	–	0.28 (7.1)	0.28 (7.1)	15/16 (23.8)	3500 (241)	2800 (192)	3500 (241)
1/2	7/8-14	910	-CM-FR8-ST14	1.66 (42.2)	0.50 (12.7)	0.40 (10.2)	0.28 (7.1)	0.59 (15.0)	1 (25.4)	3500 (241)	2800 (192)	3500 (241)

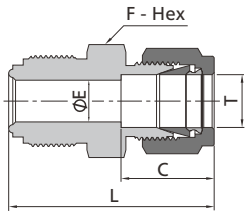
Notes: ① The bodies are supplied with O-rings. Fluorocarbon FKM is standard O-ring material, contact FITOK Group for other materials. Fluorocarbon FKM O-rings are internally lubricated, no external lubricants are required.
Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Body to Female NPT

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimensions, in. (mm)				Working Pressure, psig (bar)		
			L	B	E	F	6L	CU	NI
1/8	1/16	-CF-FR2-NS1	1.10 (27.9)	0.39 (9.9)	0.09 (2.3)	7/16 (11.1)	6700 (461)	6700 (461)	6700 (461)
1/8	1/8	-CF-FR2-NS2	1.19 (30.2)	0.41 (10.4)	0.09 (2.3)	9/16 (14.3)	6500 (447)	6500 (447)	6500 (447)
1/4	1/8	-CF-FR4-NS2	1.41 (35.8)	0.41 (10.4)	0.18 (4.6)	5/8 (15.9)	8000 (551)	6400 (440)	8000 (551)
1/4	1/4	-CF-FR4-NS4	1.54 (39.1)	0.59 (15.0)	0.18 (4.6)	3/4 (19.1)	6600 (454)	5200 (358)	6600 (454)
1/2	3/8	-CF-FR8-NS6	1.76 (44.7)	0.59 (15.0)	0.40 (10.2)	15/16 (23.8)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-CF-FR8-NS8	1.99 (50.5)	0.78 (19.8)	0.40 (10.2)	1 1/16 (27.0)	4300 (296)	2800 (192)	3500 (241)
3/4	3/4	-CF-FR12-NS12	2.36 (59.9)	0.81 (20.6)	0.62 (15.7)	1 5/16 (33.3)	3700 (254)	2400 (165)	3000 (206)
1	1	-CF-FR16-NS16	2.51 (63.8)	1.00 (25.4)	0.87 (22.1)	1 5/8 (41.3)	3000 (206)	1900 (130)	2400 (165)

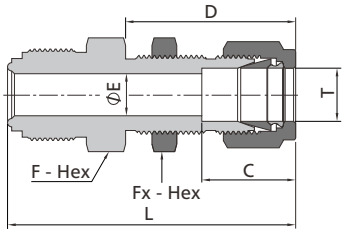
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Body to Tube Fitting

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimensions, in. (mm)				Working Pressure, psig (bar)		
			L ①	C	E	F	6L	CU	NI
1/4	1/8	-U-FR4-FL2	1.53 (38.9)	0.50 (12.7)	0.09 (2.3)	5/8 (15.9)	10000 (690)	6400 (440)	8000 (551)
1/4	1/4	-U-FR4-FL4	1.62 (41.1)	0.60 (15.2)	0.18 (4.6)	5/8 (15.9)	10000 (690)	6400 (440)	8000 (551)
1/2	3/8	-U-FR8-FL6	1.84 (46.7)	0.66 (16.8)	0.28 (7.1)	15/16 (23.8)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-U-FR8-FL8	1.95 (49.5)	0.90 (22.9)	0.40 (10.2)	15/16 (23.8)	4300 (296)	2800 (192)	3500 (241)

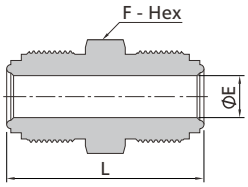
Notes: ① Dimension L is with FITOK nuts finger-tight.
Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Body to Bulkhead Tube Fitting Union

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimensions, in. (mm)						Panel Hole Size in. (mm)	Max. Panel Thickness in. (mm)	Working Pressure, psig (bar)		
			L ①	C	D	E	F	Fx			6L	CU	NI
1/4	1/4	-UB-FR4-FL4	2.25 (57.2)	0.60 (15.2)	1.32 (33.5)	0.18 (4.6)	5/8 (15.9)	5/8 (15.9)	15/32 (11.9)	0.40 (10.2)	10000 (690)	6400 (440)	8000 (551)
1/4	1/4	-UB-FR4-FL4-1.88	1.88 (47.8)	0.60 (15.2)	1.05 (26.7)	0.18 (4.6)	5/8 (15.9)	5/8 (15.9)	15/32 (11.9)	0.13 (3.3)	10000 (690)	6400 (440)	8000 (551)
1/2	3/8	-UB-FR8-FL6	2.54 (64.5)	0.66 (16.8)	1.45 (36.8)	0.28 (7.1)	15/16 (23.8)	3/4 (19.1)	19/32 (15.0)	0.44 (11.2)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-UB-FR8-FL8	2.74 (69.6)	0.90 (22.9)	1.65 (41.9)	0.40 (10.2)	15/16 (23.8)	15/16 (23.8)	25/32 (19.8)	0.50 (12.7)	4300 (296)	2800 (192)	3500 (241)

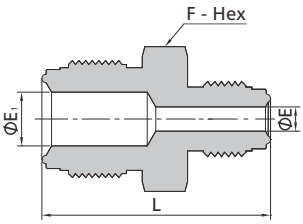
Notes: ① Dimension L is with FITOK nuts finger-tight.
Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



Union Body

FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
			L	E	F	6L	CU	NI
1/8	1/8	-U-FR2	1.13 (28.7)	0.09 (2.3)	3/8 (9.5)	11200 (772)	7200 (496)	9000 (620)
1/4	1/4	-U-FR4	1.55 (39.4)	0.18 (4.6)	5/8 (15.9)	10000 (690)	6400 (440)	8000 (551)
1/2	1/2	-U-FR8	1.84 (46.7)	0.40 (10.2)	15/16 (23.8)	4300 (296)	2800 (192)	3500 (241)
3/4	3/4	-U-FR12	2.44 (62.0)	0.62 (15.7)	1 5/16 (33.3)	3700 (254)	2400 (165)	3000 (206)
1	1	-U-FR16	2.59 (65.8)	0.87 (22.1)	1 5/8 (41.3)	3000 (206)	1900 (130)	2400 (165)

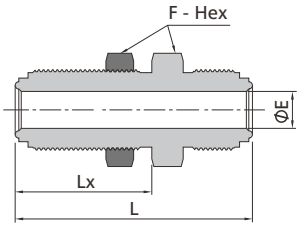
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



Reducing Union

FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)				Working Pressure, psig (bar)		
			L	E	E_1	F	6L	CU	NI
1/4	1/8	-U-FR4-FR2	1.37 (34.8)	0.09 (2.3)	0.18 (4.6)	5/8 (15.9)	10000 (690)	6400 (440)	8000 (551)
1/2	1/4	-U-FR8-FR4	1.71 (43.4)	0.18 (4.6)	0.40 (10.2)	5/16 (23.8)	4300 (296)	2800 (192)	3500 (241)

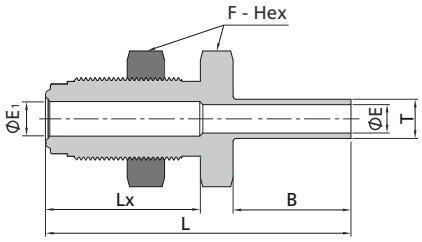
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



Bulkhead Union Body

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)				Panel Hole Drill Size in. (mm)	Max. Panel Thickness in. (mm)	Working Pressure, psig (bar)		
		L	Lx	E	F			6L	CU	NI
1/4	-BU-FR4-1.82	1.82 (46.2)	0.99 (25.1)	0.18 (4.6)	3/4 (19.1)	19/32 (15.0)	0.13 (3.3)	10000 (690)	6400 (440)	8000 (551)
1/4	-BU-FR4	2.23 (56.6)	1.30 (33.3)	0.18 (4.6)	3/4 (19.1)	19/32 (15.0)	0.44 (11.2)	10000 (690)	6400 (440)	8000 (551)
1/2	-BU-FR8-2.14	2.14 (54.4)	1.11 (28.2)	0.40 (10.2)	1 1/16 (27.0)	29/32 (23.1)	0.13 (3.3)	4300 (296)	2800 (192)	3500 (241)
1/2	-BU-FR8	2.57 (65.3)	1.48 (37.6)	0.40 (10.2)	1 1/16 (27.0)	29/32 (23.1)	0.50 (12.7)	4300 (296)	2800 (192)	3500 (241)

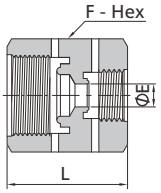
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Bulkhead Body to Tube Butt Weld

FR Size (in.)	T-Tube O.D. (in.)	T-Tube Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)						Panel Hole Drill Size in. (mm)	Max. Panel Thickness in. (mm)	Working Pressure, psig (bar)		
				L	Lx	B	E	E1	F			6L	CU	NI
1/4	1/4	0.035	-BW-FR4-TB4-1.95	1.95 (49.5)	0.99 (25.1)	0.75 (19.1)	0.18 (4.6)	0.22 (5.6)	0.75 (19.1)	19/32 (15.1)	0.13 (3.3)	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-BW-FR4-TB4	2.36 (59.9)	1.30 (33.0)	0.75 (19.1)	0.18 (4.6)	0.22 (5.6)	0.75 (19.1)	19/32 (15.1)	0.44 (11.2)	5100 (351)	5100 (351)	5100 (351)

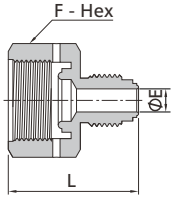
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



Female Reducing Union

FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
			L	E	F	6L	CU	NI
1/4	1/8	-RU-FR4-FR2	1.16 (29.5)	0.13 (3.3)	3/4 (19.1)	10000 (690)	6400 (440)	8000 (551)
1/2	1/4	-RU-FR8-FR4	1.41 (35.8)	0.25 (6.4)	1 1/16 (27.0)	4300 (296)	2800 (192)	3500 (241)

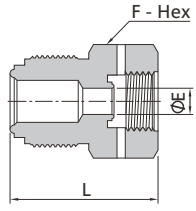
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



Reducing Adapter

FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
			L	E	F	6L	CU	NI
1/4	1/8	-RA-FR4-FR2	1.19 (30.2)	0.09 (2.3)	3/4 (19.1)	10000 (690)	6400 (440)	8000 (551)
1/2	1/4	-RA-FR8-FR4	1.41 (35.8)	0.18 (4.6)	1 1/16 (27.0)	4300 (296)	2800 (192)	3500 (241)

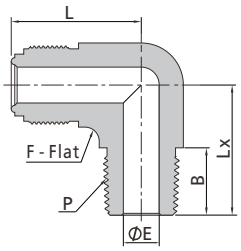
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



Reducing Bushing

FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
			L	E	F	6L	CU	NI
1/4	1/8	-RB-FR4-FR2	1.06 (26.9)	0.13 (3.3)	5/8 (15.9)	10000 (690)	6400 (440)	8000 (551)
1/2	1/4	-RB-FR8-FR4	1.41 (35.8)	0.25 (6.4)	15/16 (23.8)	4300 (296)	2800 (192)	3500 (241)

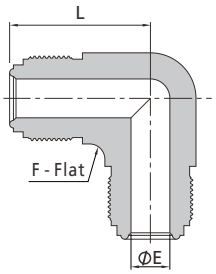
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Body to Male NPT Elbow

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimensions, in. (mm)					Working Pressure, psig (bar)		
			L	Lx	B	E	F	6L	CU	NI
1/4	1/8	-LM-FR4-NS2	1.07 (27.2)	0.87 (22.1)	0.38 (9.6)	0.18 (4.6)	1/2 (12.7)	10000 (690)	6400 (440)	8000 (551)
1/4	1/4	-LM-FR4-NS4	1.07 (27.2)	1.05 (26.7)	0.56 (14.2)	0.18 (4.6)	1/2 (12.7)	8000 (551)	8000 (551)	8000 (551)
1/2	3/8	-LM-FR8-NS6	1.45 (36.8)	1.26 (32.0)	0.56 (14.2)	0.40 (10.2)	13/16 (20.6)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-LM-FR8-NS8	1.45 (36.8)	1.45 (36.8)	0.75 (19.1)	0.40 (10.2)	13/16 (20.6)	4300 (296)	2800 (192)	3500 (241)

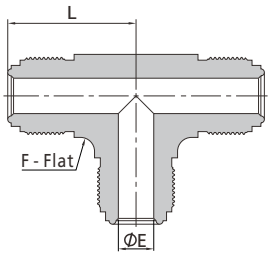
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Body Union Elbow

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
		L	E	F	6L	CU	NI
1/8	-LU-FR2	0.89 (22.6)	0.09 (2.3)	7/16 (11.1)	11200 (772)	7200 (496)	9000 (620)
1/4	-LU-FR4	1.07 (27.2)	0.18 (4.6)	1/2 (12.7)	10000 (690)	6400 (440)	8000 (551)
1/2	-LU-FR8	1.45 (36.8)	0.40 (10.2)	13/16 (20.6)	4300 (296)	2800 (192)	3500 (241)
3/4	-LU-FR12	1.92 (48.8)	0.62 (15.7)	1 1/4 (31.8)	3700 (254)	2400 (165)	3000 (206)
1	-LU-FR16	2.00 (50.8)	0.87 (22.1)	1 11/16 (42.9)	3000 (206)	1900 (130)	2400 (165)

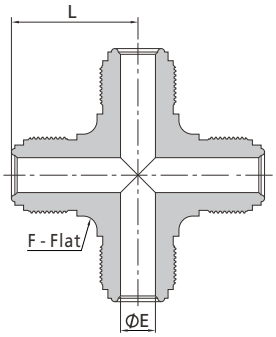
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



FR Body Union Tee

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
		L	E	F	6L	CU	NI
1/8	-TTT-FR2	0.89 (22.6)	0.09 (2.3)	7/16 (11.1)	11200 (772)	7200 (496)	9000 (620)
1/4	-TTT-FR4	1.07 (27.2)	0.18 (4.6)	1/2 (12.7)	10000 (690)	6400 (440)	8000 (551)
1/2	-TTT-FR8	1.45 (36.8)	0.40 (10.2)	13/16 (20.6)	4300 (296)	2800 (192)	3500 (241)
3/4	-TTT-FR12	1.92 (48.8)	0.62 (15.7)	1 1/4 (31.8)	3700 (254)	2400 (165)	3000 (206)
1	-TTT-FR16	2.00 (50.8)	0.87 (22.1)	1 11/16 (42.9)	3000 (206)	1900 (130)	2400 (165)

Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.

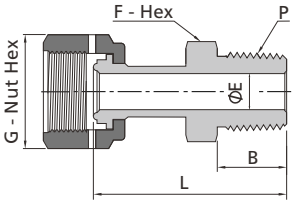


FR Body Union Cross

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
		L	E	F	6L	CU	NI
1/8	-C-FR2	0.89 (22.6)	0.09 (2.3)	7/16 (11.1)	11200 (772)	7200 (496)	9000 (620)
1/4	-C-FR4	1.07 (27.2)	0.18 (4.6)	1/2 (12.7)	10000 (690)	6400 (440)	8000 (551)
1/2	-C-FR8	1.45 (36.8)	0.40 (10.2)	13/16 (20.6)	4300 (296)	2800 (192)	3500 (241)
3/4	-C-FR12	1.92 (48.8)	0.62 (15.7)	1 1/4 (31.8)	3700 (254)	2400 (165)	3000 (206)
1	-C-FR16	2.00 (50.8)	0.87 (22.1)	1 11/16 (42.9)	3000 (206)	1900 (130)	2400 (165)

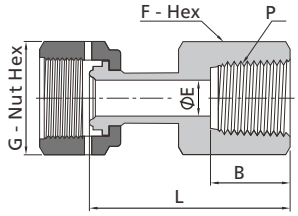
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.

Welded Glands



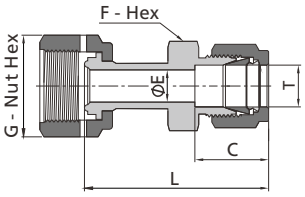
FR Welded Gland to Male NPT

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimensions, in. (mm)					Working Pressure, psig (bar)		
			L	B	E	G	F	6L	CU	NI
1/4	1/8	-WG-FR4-NS2	1.58 (40.1)	0.38 (9.7)	0.18 (4.6)	3/4 (19.1)	7/16 (11.1)	8000 (551)	6400 (446)	8000 (551)
1/4	1/4	-WG-FR4-NS4	1.79 (45.5)	0.56 (14.2)	0.18 (4.6)	3/4 (19.1)	9/16 (14.3)	8000 (551)	6400 (446)	8000 (551)
1/2	3/8	-WG-FR8-NS6	1.89 (48.0)	0.56 (14.2)	0.40 (10.2)	1 1/16 (27.0)	11/16 (17.5)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-WG-FR8-NS8	2.09 (53.1)	0.75 (19.1)	0.40 (10.2)	1 1/16 (27.0)	7/8 (22.2)	4300 (296)	2800 (192)	3500 (241)



FR Welded Gland to Female NPT

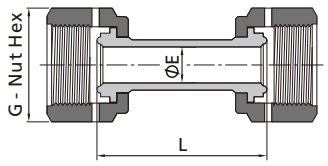
FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimensions, in. (mm)					Working Pressure, psig (bar)		
			L	B	E	G	F	6L	CU	NI
1/4	1/4	-WG-FR4-FNS4	1.77 (45.0)	0.59 (15.0)	0.18 (4.6)	3/4 (19.1)	3/4 (19.1)	6600 (454)	5200 (458)	6600 (454)
1/2	3/8	-WG-FR8-FNS6	1.95 (49.5)	0.59 (15.0)	0.40 (10.2)	1 1/16 (27.0)	7/8 (22.2)	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-WG-FR8-FNS8	2.18 (55.4)	0.78 (19.8)	0.40 (10.2)	1 1/16 (27.0)	1 1/16 (27.0)	4300 (296)	2800 (192)	3500 (241)



FR Welded Gland to Tube Fitting

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimensions, in. (mm)					Working Pressure, psig (bar)		
			L①	C	E	G	F	6L	CU	NI
1/4	1/4	-WG-FR4-FL4	1.94 (49.3)	0.60 (15.2)	0.18 (4.6)	3/4 (19.1)	1/2 (12.7)	8000 (551)	6400 (440)	8000 (551)
1/4	3/8	-WG-FR4-FL6	1.97 (50.0)	0.66 (16.8)	0.18 (4.6)	3/4 (19.1)	5/8 (15.9)	6500 (447)	5200 (358)	6500 (447)
1/2	1/2	-WG-FR8-FL8	2.23 (56.6)	0.90 (22.9)	0.40 (10.2)	1 1/16 (27.0)	13/16 (20.6)	4300 (296)	2800 (192)	3500 (241)

① Dimension L is with FITOK nuts finger-tight.

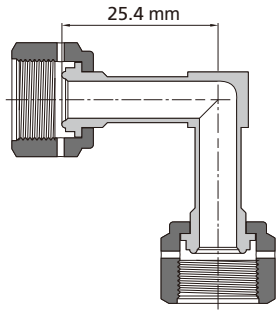


FR Welded Gland Union

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
		L	E	G	6L	CU	NI
1/4	-WG-FR4	1.71 (43.4)	0.18 (4.6)	3/4 (19.1)	8000 (551)	6400 (440)	8000 (551)
1/2	-WG-FR8	1.84 (46.7)	0.40 (10.2)	1 1/16 (27.0)	4300 (296)	2800 (192)	3500 (241)

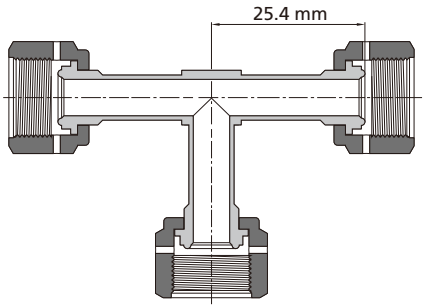
Female Elbows

Basic ordering number: **-LWG-FR4**

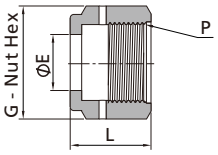


Female Tees

Basic ordering number: **-TWG-FR4**

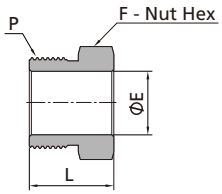


Nuts



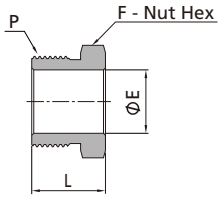
Female Nut

FR Size (in.)	P-Thread Size and Type	Basic Ordering Number	Dimensions, in. (mm)		
			L	E	G
1/8	5/16-24 UNF	-N-FR2	0.53 (13.5)	0.21 (5.3)	7/16 (11.1)
1/4	9/16-18 UNF	-N-FR4	0.81 (20.6)	0.36 (9.1)	3/4 (19.1)
1/2	7/8-14 UNF	-N-FR8	0.88 (22.4)	0.61 (15.5)	1 1/16 (27.0)
5/8	1-14 UNS	-N-FR10	0.88 (22.4)	0.74 (18.8)	1 3/16 (30.2)
3/4	1 1/4-18 UNEF	-N-FR12	1.12 (28.4)	0.89 (22.6)	1 1/2 (38.1)
1	1 1/2-20 UN	-N-FR16	1.34 (34.0)	1.20 (30.5)	1 3/4 (44.5)



Male Nut

FR Size (in.)	P-Thread Size and Type	Basic Ordering Number	Dimensions, in. (mm)		
			L	E	F
1/8	5/16-24 UNF	-MN-FR2	0.50 (12.7)	0.21 (5.3)	3/8 (9.5)
1/4	9/16-18 UNF	-MN-FR4	0.71 (18.0)	0.36 (9.1)	5/8 (15.9)
1/2	7/8-14 UNF	-MN-FR8	0.81 (20.6)	0.61 (15.5)	15/16 (23.8)
5/8	1-14 UNS	-MN-FR10	0.81 (20.6)	0.74 (18.8)	1 1/16 (27.0)
3/4	1 1/4-18 UNEF	-MN-FR12	1.00 (25.4)	0.89 (22.6)	1 5/16 (33.3)
1	1 1/2-20 UN	-MN-FR16	1.19 (30.2)	1.20 (30.5)	1 5/8 (41.3)



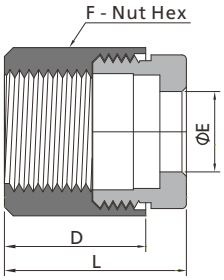
Short Male Nut

FR Size (in.)	P-Thread Size and Type	Basic Ordering Number	Dimensions, in. (mm)		
			L	E	F
1/4	9/16-18 UNF	-MN-FR4-0.54	0.54 (13.7)	0.36 (9.1)	5/8 (15.9)
1/4	9/16-18 UNF	-MN-FR4-0.65	0.65 (16.5)	0.36 (9.1)	5/8 (15.9)

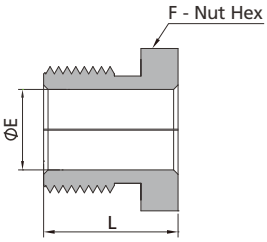
For use with Gland to Short Tube Butt Weld

Split-Nut Assemblies

- Convenient and flexible connection
- Connects FR metal gasket face seal fittings with shorter weld sizes
- Allows for seamless interchangeability between female and male threads, even when the gland is pre-welded



Female



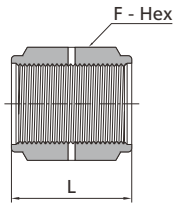
Male


Male Thread Nut: SS-MN-FR4-SN


Female Thread Nut: SS-N-FR4-SN

Split-Nut Assemblies

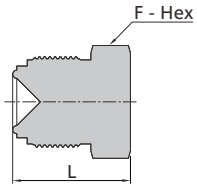
FR Size (in.)	Split Nut Type	Basic Ordering Number	Dimensions, in. (mm)			
			L	E	F	D
1/4	Female	-N-FR4-SN	0.81 (20.6)	0.36 (9.1)	3/4 (19.1)	0.63 (16.0)
1/4	Male	-MN-FR4-SN	0.60 (15.2)	0.36 (9.1)	5/8 (15.9)	–



Coupling

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
1/8	-BC-FR2	0.66 (16.8)	7/16 (11.1)
1/4	-BC-FR4	1.19 (30.2)	3/4 (19.1)
1/2	-BC-FR8	1.31 (33.3)	1 1/16 (27.0)
3/4	-BC-FR12	1.68 (42.7)	1 1/2 (38.1)
1	-BC-FR16	2.04 (51.8)	1 3/4 (44.5)

Plugs



Plug

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
1/8	-PG-FR2	0.68 (17.3)	3/8 (9.5)
1/4	-PG-FR4	0.92 (23.4)	5/8 (15.9)
1/2	-PG-FR8	1.08 (27.4)	15/16 (23.8)
3/4	-PG-FR12	1.43 (36.3)	1 5/16 (33.3)
1	-PG-FR16	1.52 (38.6)	1 5/8 (41.3)

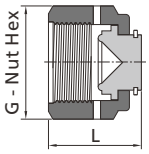
Plugs with Lanyard

- Lanyard material: 304 SS.
- Lanyard length: 15.2 cm.

Plug with Lanyard

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)	
		L	F
1/4	-PG-FR4-BP	0.92 (23.4)	5/8 (15.9)
1/2	-PG-FR8-BP	1.08 (27.4)	15/16 (23.8)

Caps



Cap			
FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)	
		L	G
1/8	-CP-FR2	0.63 (16.0)	7/16 (11.1)
1/4	-CP-FR4	0.94 (23.9)	3/4 (19.1)
1/2	-CP-FR8	1.01 (25.6)	1 1/16 (27.0)
3/4	-CP-FR12	1.29 (32.8)	1 1/2 (38.1)
1	-CP-FR16	1.54 (39.1)	1 3/4 (44.5)

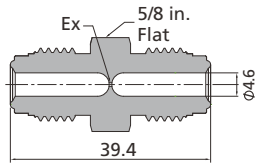
Caps with Lanyard

- Lanyard material: 304 SS.
- Lanyard length: 15.2 cm.

Cap with Lanyard			
FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)	
		L	G
1/4	-CP-FR4-BP	0.94 (23.9)	3/4 (19.1)
1/2	-CP-FR8-BP	1.01 (25.6)	1 1/16 (27.0)

Flow Restrictors

- Working pressure up to: 10,000 psig (690 bar)



FR Body to Male FR	
Ex, in. (mm)	Ordering Number
0.015 (0.381)	6LV-R-FR4-015
0.017 (0.432)	6LV-R-FR4-017
0.020 (0.508)	6LV-R-FR4-020
0.023 (0.584)	6LV-R-FR4-023
0.025 (0.635)	6LV-R-FR4-025
0.026 (0.660)	6LV-R-FR4-026
0.027 (0.686)	6LV-R-FR4-027
0.030 (0.762)	6LV-R-FR4-030
0.035 (0.889)	6LV-R-FR4-035
0.040 (1.016)	6LV-R-FR4-040
0.045 (1.143)	6LV-R-FR4-045
0.050 (1.270)	6LV-R-FR4-050
0.055 (1.397)	6LV-R-FR4-055
0.060 (1.529)	6LV-R-FR4-060
0.065 (1.651)	6LV-R-FR4-065
0.070 (1.778)	6LV-R-FR4-070
0.075 (1.905)	6LV-R-FR4-075
0.080 (2.032)	6LV-R-FR4-080
0.085 (2.159)	6LV-R-FR4-085
0.090 (2.286)	6LV-R-FR4-090
0.093 (2.362)	6LV-R-FR4-093
0.095 (2.413)	6LV-R-FR4-095
0.100 (2.540)	6LV-R-FR4-100

Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.

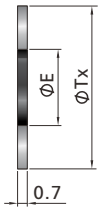
Locking Device

- To help prevent unintentional disassembly of FR connections.
- Used for FITOK FR metal gasket face seal assemblies with standard male and female nuts.

Locking Device	
FR Size (in.)	Ordering Number
1/4	S4-FR4-LD
1/2	S4-FR8-LD

Gaskets

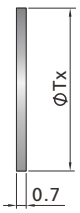
◎ Unplated 316L SS and nickel gaskets are electropolished and conform to the Ultra High Purity Process (FC-03), with a maximum helium leak rate of 4×10^{-11} std cm^3/s.
◎ Silver-plated 316L SS and nickel gaskets conform to the Special Cleaning and Packaging Process (FC-02), with a maximum helium leak rate of 4×10^{-9} std cm^3/s. To order, remove the "-UP" suffix from the ordering number.
◎ Copper gaskets are neither plated nor electropolished and conform to the Special Cleaning and Packaging Process (FC-02), with a maximum helium leak rate of 4×10^{-9} std cm^3/s.



Nonretained Unplated (UP)

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)	
		Tx	E
1/8	-GT-FR2-UP	0.26 (6.6)	0.09 (2.3)
1/4	-GT-FR4-UP	0.47 (11.9)	0.22 (5.6)
1/2	-GT-FR8-UP	0.78 (19.8)	0.44 (11.2)
5/8	-GT-FR10-UP	0.91 (23.1)	0.58 (14.7)
3/4	-GT-FR12-UP	1.14 (29.0)	0.66 (16.8)
1	-GT-FR16-UP	1.40 (35.6)	0.89 (22.6)

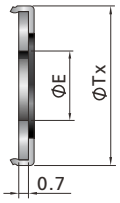
Gaskets are used without retainers.



Blind Gaskets Unplated (UP)

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)
		Tx
1/8	-GT-FR2-B-UP	0.26 (6.6)
1/4	-GT-FR4-B-UP	0.47 (11.9)
1/2	-GT-FR8-B-UP	0.78 (19.8)
5/8	-GT-FR10-B-UP	0.91 (23.1)
3/4	-GT-FR12-B-UP	1.14 (29.0)
1	-GT-FR16-B-UP	1.40 (35.6)

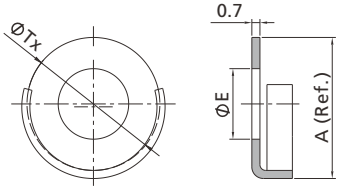
Blind gasket retainer assemblies are available, please contact FITOK Group for more details.



Gasket Retainer Assemblies Unplated (UP)

FR Size (in.)	Basic Ordering Number	Dimensions, mm	
		Tx	E
1/4	-GT-FR4-A-UP	0.50 (12.7)	0.24 (6.1)
1/2	-GT-FR8-A-UP	0.78 (19.7)	0.44 (11.2)
3/4	-GT-FR12-A-UP	1.14 (29.0)	0.66 (16.8)
1	-GT-FR16-A-UP	1.40 (35.6)	0.89 (22.6)

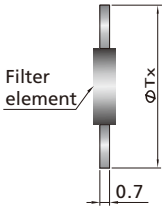
1. Gaskets are used with retainers.
2. Retainer material is 316L SS.
3. Retainers are available in different colors, please contact FITOK Group for more details.



Side-Load Retainer Unplated (UP)

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)		
		Tx	E	A (Ref.)
1/4	-GT-FR4-AS-UP	0.45 (11.4)	0.24 (6.1)	0.48 (12.2)
1/2	-GT-FR8-AS-UP	0.74 (18.8)	0.43 (11.0)	0.77 (19.5)

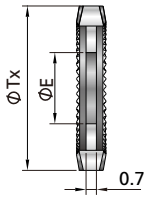
1. Gaskets are only available in 316L SS and nickel.
2. Silver-plated gaskets are not available.



Snubber Gaskets Unplated (UP)

FR Size (in.)	Basic Ordering Number	Dimensions, mm
		Tx
1/4	-GT-FR4-UP-**M	0.47 (11.9)
1/2	-GT-FR8-UP-**M	0.78 (19.8)
3/4	-GT-FR12-UP-**M	1.14 (29.0)
1	-GT-FR16-UP-**M	1.40 (35.6)

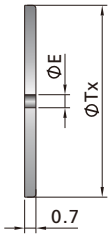
1. Add the designator of filtration accuracy as a suffix to the basic ordering number to get the complete ordering number.
   Example: For 1/4" 316L SS snubber gaskets with filtration accuracy of 0.5 μm, the ordering number is 6L-GT-FR4-UP-05M.
2. Snubber gaskets with filtration accuracy of 0.5 to 60 μm for 1/4 through 1 in. FR fittings are available.



Knurled Unplated (UP)

FR Size (in.)	Basic Ordering Number	Dimensions, in.(mm)	
		Tx	E
1/4	-GT-FR4-KN-A-UP	0.5(12.7)	0.22(5.5)

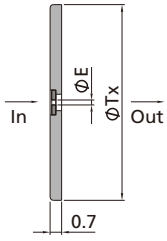
1. Used to prevent nuts from loosening from vibration.
2. General 316L SS or Nickle gaskets are tightened with 1/8 turn, while knurled gaskets are assembled by 3/8 turn.



Restriction Gaskets Unplated (UP)

FR Size (in.)	Basic Ordering Number	Size in. (mm)	
		Tx	E
1/8	-GT-FR2-UP-ID***	0.26 (6.6)	***
1/4	-GT-FR4-UP-ID***	0.47 (11.9)	***
1/2	-GT-FR8-UP-ID***	0.78 (19.8)	***
3/4	-GT-FR12-UP-ID***	1.14 (29.0)	***
1	-GT-FR16-UP-ID***	1.40 (35.6)	***

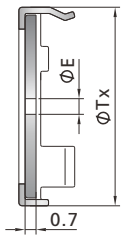
1. Gaskets are used without retainers.
2. *** indicates restriction orifice sizes, such as 0.3, which means an orifice size of Φ0.3 mm (only in mm).
   Example: 6L-GT-FR4-UP-ID0.3.
   For specific selection details, please contact FITOK.



Ruby Orifice Restriction Gaskets Unplated (UP)

FR Size (in.)	Basic Ordering Number	Size in. (mm)	
		Tx	E
1/8	-GT-FR2-UP-R***	0.26 (6.6)	***
1/4	-GT-FR4-UP-R***	0.47 (11.9)	***
1/2	-GT-FR8-UP-R***	0.78 (19.8)	***

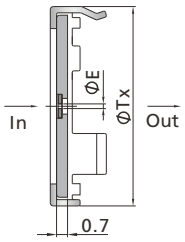
1. Gaskets are used without retainers.
2. *** indicates ruby orifice sizes, such as 012, which means an orifice size of 0.012" (012/1000") (only in inch).
   Example: 6L-GT-FR4-UP-R012. Orifice sizes range from 0.0015” to 0.035”. Please note that the orifice sizes are not available in continuous increments. For specific selection details, please contact FITOK.
3. When using the ruby orifice restriction gasket, it is recommended that the ruby side faces the gas inlet to enable more stable and uniform flow.
4. The maximum working pressure of the ruby orifice restriction gasket is 145 psig (10 bar). For use in working conditions with higher pressure requirements, please contact FITOK.



Restriction Gasket Retainer Assemblies Unplated (UP)

FR Size (in.)	Basic Ordering Number	Size in. (mm)	
		Tx	E
1/4	-GT-FR4-A-UP-ID***	0.50 (12.7)	***
1/2	-GT-FR8-A-UP-ID***	0.78 (19.7)	***
3/4	-GT-FR12-A-UP-ID***	1.14 (29.0)	***
1	-GT-FR16-A-UP-ID***	1.40 (35.6)	***

1. Gaskets are used with retainers.
2. Retainer material is 316L SS.
3. ** indicates restriction orifice sizes, such as 0.3, which means an orifice size of Φ0.3 mm (only in mm).
   Example: 6L-GT-FR4-A-UP-ID0.3.
   For more size options, please contact FITOK.



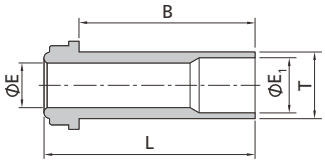
Ruby Orifice Restriction Gasket Retainer Assemblies Unplated (UP)

FR Size (in.)	Basic Ordering Number	Size in. (mm)	
		Tx	E
1/4	-GT-FR4-A-UP-R***	0.50 (12.7)	***

1. Gaskets are used with retainers.
2. Retainer material is 316L SS.
3. *** indicates ruby orifice sizes, such as 012, which means an orifice size of Φ0.012" (012/1000") (only in inch).
   Example: 6L-GT-FR4-A-UP-R012. For more size options, please contact FITOK.
4. When using the ruby orifice restriction gasket, it is recommended that the ruby side faces the gas inlet to enable more stable and uniform flow.
5. The maximum working pressure of the ruby orifice restriction gasket is 145 psig (10 bar). For use in working conditions with higher pressure requirements, please contact FITOK.

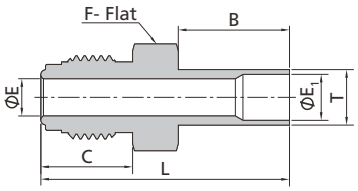
High-Flow Connections - "H" Type FR Fittings

"H" type FR Fittings connections with high flow capacity are compatible with regular FR connections.
Gasket retainer assemblies are recommended to minimize flow resistance.



HFR Gland to Tube Butt Weld

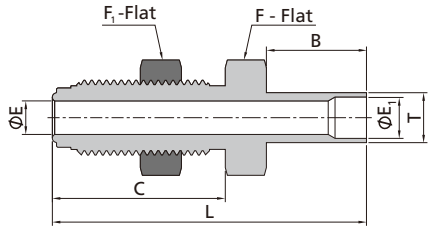
FR Size (in.)	T-Tube O.D. (in.)	Nominal Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)				Working Pressure, psig (bar)		
				L	B	E	E_1	6L	CU	NI
1/4	3/8	0.035	-G-HFR4-TB6-0.60	0.60 (15.2)	0.41 (10.4)	0.25 (6.4)	0.31 (7.9)	3300 (227)	3300 (227)	3300 (227)
1/4	3/8	0.035	-G-HFR4-TB6-1.19	1.19 (30.2)	1.00 (25.4)	0.25 (6.4)	0.31 (7.9)	3300 (227)	3300 (227)	3300 (227)
1/4	3/8	0.035	-G-HFR4-TB6-1.31	1.31 (33.3)	1.12 (28.4)	0.25 (6.4)	0.31 (7.9)	3300 (227)	3300 (227)	3300 (227)



HFR Body to Tube Butt Weld

FR Size (in.)	T-Tube O.D. (in.)	T-Tube Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)						Working Pressure, psig (bar)		
				L	B	C	E	E_1	F	6L	CU	NI
1/4	3/8	0.035	-CW-HFR4-TB6	1.68 (42.7)	0.75 (19.1)	0.62 (15.7)	0.25 (6.4)	0.31 (7.9)	5/8 (15.9)	3300 (227)	3300 (227)	3300 (227)

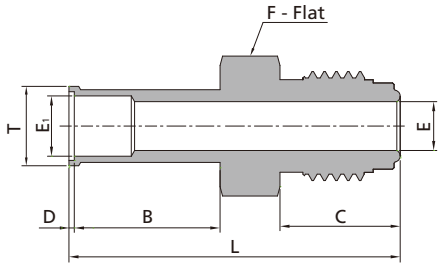
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



HFR Bulkhead Body to Tube Butt Weld

FR Size (in.)	T-Tube O.D. (in.)	T-Tube Wall Thickness (in.)	Basic Ordering Number	Dimensions, in. (mm)							Panel Hole Dia	Max. Panel Thickness	Working Pressure, psig (bar)		
				L	B	C	E	E1	F	F1			6L	CU	NI
1/4	3/8	0.035	-BW-HFR4-TB6	2.36 (59.9)	0.75 (19.1)	1.30 (33.0)	0.25 (6.4)	0.31 (7.9)	3/4 (19.1)	3/4 (19.1)	19/32 (15.0)	0.44 (11.2)	3300 (227)	3300 (227)	3300 (227)

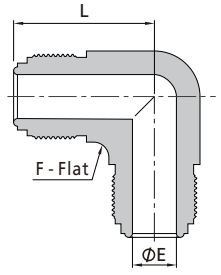
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



HFR Body to Automatic Tube Weld

FR Size (in.)	Tube Size (in.)	Basic Ordering Number	Dimensions, in. (mm)								Working Pressure, psig (bar)		
			L	B	C	D	E	E1	F	T	6L	CU	NI
1/4	3/8	-AW-HFR4-TB6	1.71 (43.4)	0.75 (19.1)	0.62 (15.7)	0.03 (0.8)	0.25 (6.4)	0.31 (7.9)	5/8 (15.9)	0.41 (10.4)	3300 (227)	3300 (227)	3300 (227)

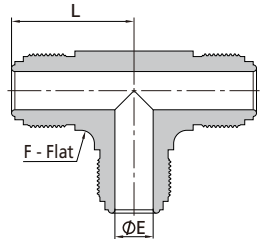
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



HFR Body Union Elbow

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
		L	E	F	6L	CU	NI
1/4	-LU-HFR4	1.07 (27.2)	0.25 (6.4)	1/2 (12.7)	10000 (690)	6400 (440)	8000 (551)

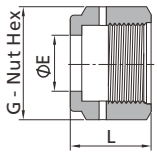
Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



HFR Body Union Tee

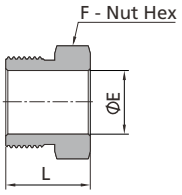
FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)			Working Pressure, psig (bar)		
		L	E	F	6L	CU	NI
1/4	-TTT-HFR4	1.07 (27.2)	0.25 (6.4)	1/2 (12.7)	10000 (690)	6400 (440)	8000 (551)

Note: Integral FR fittings must remain stationary during installation and should be used in conjunction with rotating nuts and glands.



HFR Female Nut

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)		
		L	E	G
1/4	-N-HFR4-9.9	0.81 (20.6)	0.39 (9.9)	3/4 (19.1)
1/4	-N-HFR4-11.7	0.81 (20.6)	0.46 (11.7)	3/4 (19.1)



HFR Male Nut

FR Size (in.)	Basic Ordering Number	Dimensions, in. (mm)		
		L	E	F
1/4	-MN-HFR4	0.71 (18.0)	0.39 (9.9)	5/8 (15.9)