

High Purity Face Seal Fittings



ROKE
Valves and Fittings

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Contents

Technical Data	01
Female Nuts	02
Male Nuts	02
Glands	02
Blind Gland	05
Union Body	06
Reducing Union Body	06
Bulkhead Union Body	06
Bulkhead Body to Tube Butt Weld	07
Female Reducing Union	07
Reducing Adapter	07
Reducing Bushing	07
Union Elbow Body	08
Union Tee Body	08
Union Cross Body	08
FR Body to Male NPT	09
FR Body to Bulkhead Male NPT	09
FR Body to SAE/MS Thread	09
FR Body to Female NPT	10
FR Body to Male NPT Elbow	10
FR Body to Tube Fitting	10
FR Body to Bulkhead Tube Fitting	11
FR Welded Gland to Male NPT	11
FR Welded Gland to Female NPT	11
FR Welded Gland to Tube Fitting	12
FR Welded Gland Union	12
Female Elbows	12
Female Tees	12
Plugs	13
Caps	13
Gaskets	13
High-Flow Connections	14
HFR Gland to Tube Bult Weld	14
HFR Body to Tube Bult Weld	15
HFR BulkheadBody to Tube Bult Weld	15
HFR Body to Automatic Tube Weld	15
HFR Body Union Elbow	16
HFR Body Union Tee	16

High Purity Face Seal Fittings

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 $\mu\text{in.}$ (0.25 μm) or electropolished to Ra 5 $\mu\text{in.}$ (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.

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	1.0
1	0.065			
1.1/2	0.065			
2	0.065			

Working Pressure

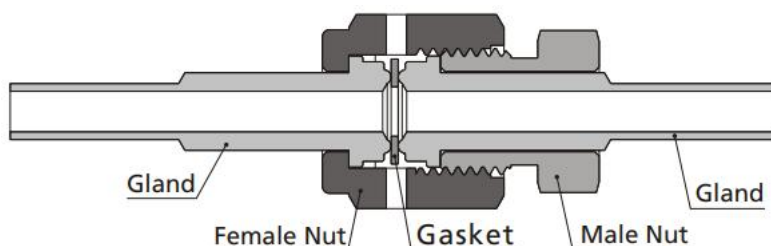
Working pressures are calculated according to ASME B31.3 and B31.1 at ambient temperature.

Working Temperature

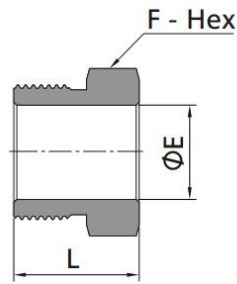
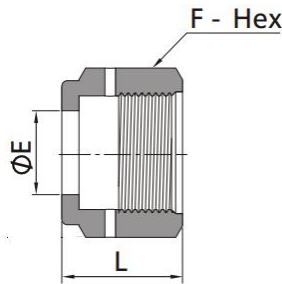
Component	Material	Max. Temperature
Fittings	SS 316	1000 °F (538 °C)
	SS 316L	
Gaskets	SS 316L	1000 °F (538 °C)
	Copper	400 °F (204 °C)
	Nickel	600 °F (316 °C)

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 body steady. Tighten the nut 1/4 turn for those with copper gaskets.

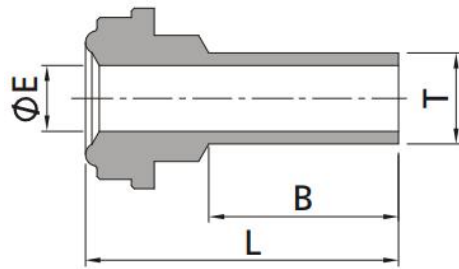


Nuts

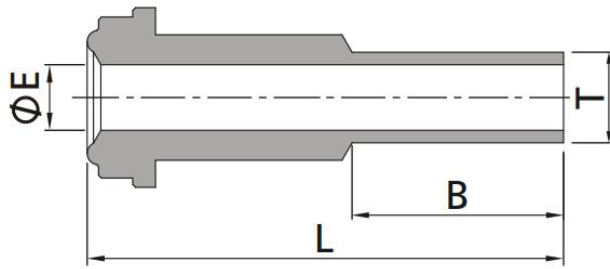


Female Nuts					Male Nuts				
Basic Ordering NO.	Size (in.)	Dimensions in.(mm)			Basic Ordering NO.	Size (in.)	Dimensions in.(mm)		
		F	E	L			F	E	L
-FN-FT2	1/8	7/16 (11.1)	0.21 (5.3)	0.53 (13.5)	-MN-FT2	1/8	3/8 (9.5)	0.21 (5.3)	0.50 (12.7)
-FN-FT4	1/4	3/4 (19.1)	0.36 (9.1)	0.81 (20.6)	-MN-FT4	1/4	5/8 (15.9)	0.36 (9.1)	0.71 (18.0)
-FN-FT8	1/2	1.1/16 (27.0)	0.61 (15.5)	0.88 (22.4)	-MN-FT8	1/2	15/16 (23.8)	0.61 (15.5)	0.81 (20.6)
-FN-FT10	5/8	1.3/16 (30.2)	0.74 (18.8)	0.88 (22.4)	-MN-FT10	5/8	1.1/16 (27.0)	0.74 (18.8)	0.81 (20.6)
-FN-FT12	3/4	1.1/2 (38.1)	0.89 (22.6)	1.12 (28.4)	-MN-FT12	3/4	1.5/16 (33.3)	0.89 (22.6)	1.00 (25.4)
-FN-FT16	1	1.3/4 (44.5)	1.20 (30.5)	1.34 (34.0)	-MN-FT16	1	1 5/8 (41.3)	1.20 (30.5)	1.19 (30.2)

Glands



FR Gland to Short Fractional Tube Butt Weld							
Basic Ordering NO.	FR Size (in.)	T-Tube OD(in.)	Nominal Wall Thickness(In.)	Dimensions in.(mm)			Working Pressure psig (bar)
				B	E	L	
-G-FR2-FT2-12	1/8	1/8	0.028	0.75 (19.1)	0.07 (1.8)	1.08 (27.4)	8500 (586)
-G-FR4-FT2-12	1/4	1/8	0.028	0.75 (19.1)	0.07 (1.8)	1.10 (27.9)	5100 (352)
-G-FR4-FT4-4	1/4	1/4	0.035	0.25 (6.4)	0.18 (4.6)	0.60 (15.2)	5100 (352)
-G-FR4-FT4-6	1/4	1/4	0.035	0.38 (9.6)	0.18 (4.6)	0.72 (18.3)	5100 (352)
-G-FR4-FT4-12	1/4	1/4	0.035	0.75 (19.1)	0.18 (4.6)	1.10 (27.9)	5100 (352)
-G-FR8-FT4-12	1/2	1/4	0.035	0.75 (19.1)	0.18 (4.6)	1.12 (28.4)	4300 (296)
-G-FR8-FT6-4	1/2	3/8	0.035	0.25 (6.4)	0.31 (7.9)	0.62 (15.7)	3300 (227)
-G-FR8-FT6-12	1/2	3/8	0.035	0.75 (19.1)	0.31 (7.9)	1.12 (28.4)	3300 (227)
-G-FR8-FT8-4	1/2	1/2	0.049	0.25 (6.4)	0.40 (10.2)	0.62 (15.7)	3500 (241)
-G-FR8-FT8-6	1/2	1/2	0.049	0.38 (9.6)	0.40 (10.2)	0.74 (18.8)	3500 (241)
-G-FR8-FT8-12	1/2	1/2	0.049	0.75 (19.1)	0.40 (10.2)	1.12 (28.4)	3500 (241)
FR Gland to Short Metric Tube Butt Weld							
Basic Ordering NO.	FR Size (in.)	T-Tube OD(mm)	Nominal Wall Thickness(mm)	Dimensions mm(in.)			Working Pressure Bar(psig)
				B	E	L	
-G-FR4-MT6-12	1/4	6	1	19.1 (0.75)	4.0 (0.16)	29.5 (1.16)	468 (6800)
-G-FR4-MT8-12	1/4	8	1	19.1 (0.75)	6.0 (0.24)	29.5 (1.16)	337 (4900)
-G-FR8-MT10-12	1/2	10	1	19.1 (0.75)	8.0 (0.31)	29.5 (1.16)	241 (3500)
-G-FR8-MT12-12	1/2	12	1	19.1 (0.75)	10.0 (0.39)	29.5 (1.16)	213 (3100)
-G-FR12-MT18-12	3/4	18	1.5	19.1 (0.75)	15.0 (0.59)	31.0 (1.22)	206 (3000)

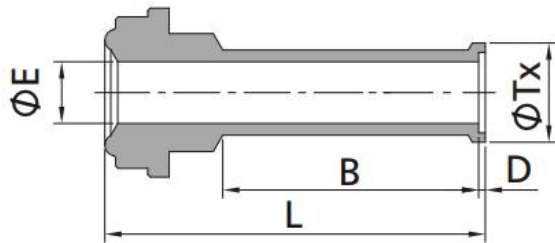


FR Gland to Long Fractional Tube Butt Weld

Basic Ordering NO.	FR Size (in.)	T-Tube OD(in.)	Nominal Wall Thickness(In.)	Dimensions in.(mm)			Working Pressure psig (bar)
				B	E	L	
-G-FR2-FT2-12L	1/8	1/8	0.028	0.75 (19.1)	0.07 (1.8)	1.42 (36.1)	8500 (586)
-G-FR4-FT4-4L	1/4	1/4	0.035	0.25 (6.4)	0.18 (4.6)	1.20 (30.5)	5100 (352)
-G-FR4-FT4-6L	1/4	1/4	0.035	0.38 (9.6)	0.18 (4.6)	1.32 (33.5)	5100 (352)
-G-FR4-FT4-12L	1/4	1/4	0.035	0.75 (19.1)	0.18 (4.6)	1.70 (43.2)	5100 (352)
-G-FR8-FT4-12L	1/2	1/4	0.035	0.75 (19.1)	0.18 (4.6)	1.80 (45.7)	4300 (296)
-G-FR8-FT6-4L	1/2	3/8	0.035	0.25 (6.4)	0.31 (7.9)	1.29 (32.8)	3300 (227)
-G-FR8-FT6-12L	1/2	3/8	0.035	0.75 (19.1)	0.31 (7.9)	1.79 (45.5)	3300 (227)
-G-FR8-FT8-4L	1/2	1/2	0.049	0.25 (6.4)	0.40 (10.2)	1.29 (32.8)	3500 (241)
-G-FR8-FT8-6L	1/2	1/2	0.049	0.38 (9.6)	0.40 (10.2)	1.41 (35.8)	3500 (241)
-G-FR8-FT8-12L	1/2	1/2	0.049	0.75 (19.1)	0.40 (10.2)	1.79 (45.5)	3500 (241)
-G-FR12-FT12-12L	3/4	3/4	0.049	0.75 (19.1)	0.65 (16.5)	2.03 (51.6)	2400 (165)
-G-FR16-FT16-12L	1	1	0.065	0.75 (19.1)	0.87 (22.1)	2.32 (58.9)	2400 (165)

FR Gland to Long Metric Tube Butt Weld

Basic Ordering NO.	FR Size (in.)	T-Tube OD(mm)	Nominal Wall Thickness(mm)	Dimensions mm(in.)			Working Pressure Bar(psig)
				B	E	L	
-G-FR4-MT6-12L	1/4	6	1	19.1 (0.75)	4.0 (0.16)	43.2 (1.7)	468 (6800)
-G-FR4-MT8-12L	1/4	8	1	19.1 (0.75)	6.0 (0.24)	43.2 (1.7)	337 (4900)
-G-FR8-MT10-12L	1/2	10	1	19.1 (0.75)	8.0 (0.31)	45.5 (1.79)	241 (3500)
-G-FR8-MT12-12L	1/2	12	1	19.1 (0.75)	10.0 (0.39)	45.5 (1.79)	213 (3100)
-G-FR12-MT18-12L	3/4	18	1.5	19.1 (0.75)	15.0 (0.59)	51.6 (2.03)	206 (3000)

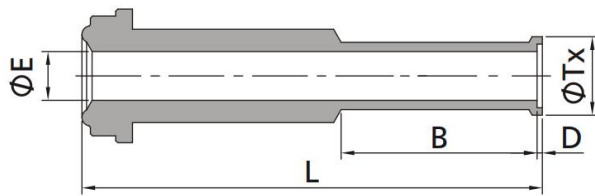


FR Gland to Short Fractional Automatic Tube Butt Weld

Basic Ordering NO.	FR Size (in.)	T-Tube OD(in.)	Nominal Wall Thickness(In.)	Dimensions in.(mm)					Working Pressure psig (bar)
				B	D	E	L	Tx	
-G-FR4-AT4-12	1/4	1/4	0.035	0.75 (19.1)	0.02 (0.5)	0.18 (4.6)	1.12 (28.4)	0.29 (7.4)	5100 (352)
-G-FR8-AT6-12	1/2	3/8	0.035	0.75 (19.1)	0.03 (0.8)	0.31 (7.9)	1.15 (29.2)	0.41 (10.4)	3300 (227)
-G-FR8-AT8-4	1/2	1/2	0.049	0.25 (6.4)	0.04 (1.0)	0.40 (10.2)	1.16 (29.5)	0.55 (14.0)	3500 (241)

FR Gland to Short Metric Automatic Tube Butt Weld

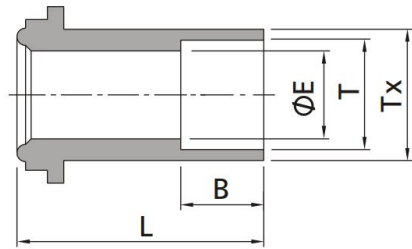
Basic Ordering NO.	FR Size (in.)	T-Tube OD(mm)	Nominal Wall Thickness(mm)	Dimensions in.(mm)					Working Pressure psig (bar)
				B	D	E	L	Tx	
-G-FR4-AT6-12	1/4	6	1	19.1 (0.75)	0.5 (0.02)	4.0 (0.16)	30.0 (1.18)	6.8 (0.27)	468 (6800)
-G-FR4-AT8-12	1/4	8	1	19.1 (0.75)	0.8 (0.03)	6.0 (0.24)	30.2 (1.19)	8.9 (0.35)	337 (4900)
-G-FR8-AT10-12	1/2	10	1	19.1 (0.75)	0.8 (0.03)	8.0 (0.31)	31.0 (1.22)	10.9 (0.43)	241 (3500)
-G-FR8-AT12-12	1/2	12	1	19.1 (0.75)	1.0 (0.04)	10.0 (0.39)	30.5 (1.20)	13.2 (0.52)	213 (3100)

**FR Gland to Short Fractional Automatic Tube Butt Weld**

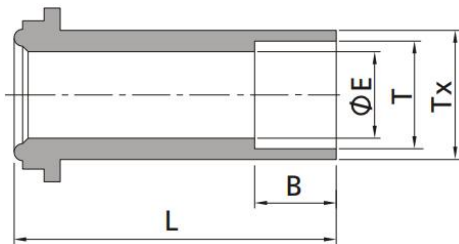
Basic Ordering NO.	FR Size (in.)	T-Tube OD(in.)	Nominal Wall Thickness(In.)	Dimensions in.(mm)					Working Pressure psig (bar)
				B	D	E	L	Tx	
-G-FR4-AT4-12L	1/4	1/4	0.035	0.75 (19.1)	0.02 (0.5)	0.18 (4.6)	1.72 (43.7)	0.29 (7.4)	5100 (352)
-G-FR8-AT4-12L	1/2	1/4	0.035	0.75 (19.1)	0.02 (0.5)	0.18 (4.6)	1.82 (46.2)	0.29 (7.4)	3500 (241)
-G-FR8-AT6-12L	1/2	3/8	0.035	0.75 (19.1)	0.03 (0.8)	0.31 (7.9)	1.82 (46.2)	0.41 (10.4)	3300 (227)
-G-FR8-AT8-12L	1/2	1/2	0.049	0.75 (19.1)	0.04 (1.0)	0.40 (10.2)	1.83 (46.5)	0.55 (14.0)	3500 (241)
-G-FR12-AT12-12L	3/4	3/4	0.049	0.75 (19.1)	0.04 (1.0)	0.65 (16.5)	2.07 (52.6)	0.80 (20.3)	2400 (165)
-G-FR16-AT16-12L	1	1	0.065	0.96(24.4)	0.04 (1.0)	0.87 (22.1)	2.57 (65.3)	1.06(26.9)	2400 (165)

FR Gland to Short Metric Automatic Tube Butt Weld

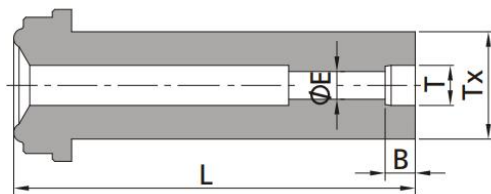
Basic Ordering NO.	FR Size (in.)	T-Tube OD(mm)	Nominal Wall Thickness(mm)	Dimensions in.(mm)					Working Pressure psig (bar)
				B	D	E	L	Tx	
-G-FR4-AT6-12L	1/4	6	1	19.1 (0.75)	0.5 (0.02)	4.0 (0.16)	43.7 (1.72)	6.8 (0.27)	468 (6800)
-G-FR8-AT12-12L	1/2	12	1	19.1 (0.75)	1.0 (0.04)	10.0 (0.39)	46.5 (1.83)	13.2 (0.52)	213 (3100)
-G-FR12-AT18-12L	3/4	18	1.5	19.1 (0.75)	1.0 (0.04)	15.0 (0.59)	51.6 (2.03)	19.3 (0.76)	206 (3000)

**FR Gland to Short Fractional Tube Socket Weld**

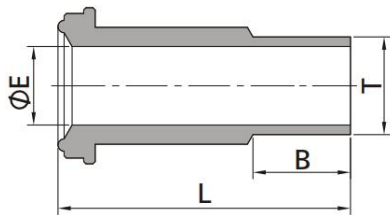
Basic Ordering NO.	FR Size (in.)	T-Tube U-OD(in.)	Dimensions in.(mm)				Working Pressure psig (bar)
			B	E	L	Tx	
-G-FR4-FST4	1/4	1/4	0.28 (7.1)	0.18 (4.6)	0.50 (12.7)	0.35 (8.9)	5100 (352)
-G-FR4-FST4	1/4	1/4	0.28 (7.1)	0.18 (4.6)	0.75 (19.1)	0.35 (8.9)	5100 (352)

**FR Gland to Long Fractional Tube Socket Weld**

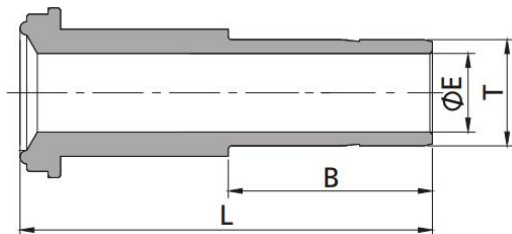
Basic Ordering NO.	FR Size (in.)	T-Tube OD(in.)	Dimensions in.(mm)				Working Pressure psig (bar)
			B	E	L	Tx	
-G-FR2-FST2-L	1/8	1/8	0.10 (2.5)	0.09 (2.3)	0.70 (17.8)	0.20 (5.1)	7100 (489)
-G-FR4-FST4-L	1/4	1/4	0.28 (7.1)	0.18 (4.6)	1.31 (33.3)	0.35 (8.9)	5500 (378)
-G-FR8-FST6-L	1/2	3/8	0.31 (7.9)	0.28 (7.1)	1.50 (38.1)	0.60 (15.2)	4300 (296)
-G-FR8-FST8-L	1/2	1/2	0.38 (9.7)	0.40 (10.2)	1.50 (38.1)	0.60 (15.2)	3000 (206)
-G-FR10-FST10-L	5/8	5/8	0.41 (10.4)	0.50 (12.7)	1.56 (39.6)	0.72 (18.3)	2800 (192)
-G-FR12-FST12-L	3/4	3/4	0.44 (11.2)	0.65 (16.5)	2.00 (50.8)	0.88 (22.4)	2800 (192)
-G-FR16-FST16-L	1	1	0.62 (15.7)	0.87 (22.1)	2.22 (56.4)	1.19 (30.2)	3000 (206)

**FR Gland to Reducing Socket Weld**

Basic Ordering NO.	FR Size (in.)	V-Tube W-OD(in.)	Dimensions in.(mm)				Working Pressure psig (bar)
			B	E	L	Tx	
-G-FR4-RST2	1/4	1/8	0.10 (2.5)	0.09 (2.3)	1.31 (33.3)	0.35 (8.9)	8000 (550)
-G-FR8-RST4	1/2	1/4	0.28 (7.1)	0.18 (4.6)	1.50 (38.1)	0.60 (15.2)	3500 (241)

**FR Gland to Male Weld**

Basic Ordering NO.	FR Size (in.)	T-Tube OD(in.)	Dimensions in.(mm)			Working Pressure psig (bar)
			B	E	L	
-G-FR2-FMT2	1/8	1/8	0.28 (7.1)	0.07 (1.8)	0.70 (17.8)	11200 (772)
-G-FR4-FMT2	1/4	1/8	0.28 (7.1)	0.07 (1.8)	1.31 (33.3)	10000 (690)
-G-FR4-FMT4	1/4	1/4	0.41 (10.4)	0.12 (3.0)	1.31 (33.3)	10000 (690)
-G-FR8-FMT4	1/2	1/4	0.41 (10.4)	0.12 (3.0)	1.50 (38.1)	4300 (296)
-G-FR8-FMT6	1/2	3/8	0.41 (10.4)	0.28 (7.1)	1.50 (38.1)	4300 (296)
-G-FR8-FMT8	1/2	1/2	0.50 (12.7)	0.40 (10.2)	1.50 (38.1)	3500 (241)
-G-FR12-FMT12	3/4	3/4	0.62 (15.7)	0.53 (13.5)	2.00 (50.8)	3700 (254)
-G-FR16-FMT16	1	1	0.81 (20.6)	0.75 (19.1)	2.22 (56.4)	3000 (206)

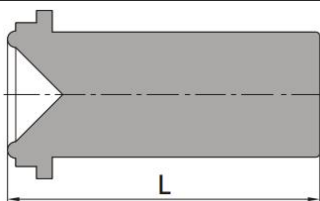
**FR Gland to Tube Port**

Basic Ordering NO.	FR Size (in.)	T-Tube OD(in.)	Dimensions in.(mm)			Working Pressure psig (bar)
			B	E	L	
-G-FR4-TP4	1/4	1/4	0.64 (16.2)	0.17 (4.3)	1.62 (41.0)	10000 (690))
-G-FR8-TP6	1/2	3/8	0.70 (17.8)	0.27 (6.9)	1.81 (46.0)	4300 (296)
-G-FR8-TP8	1/2	1/2	0.96 (24.4)	0.37 (9.4)	1.94 (49.3)	4300 (296)

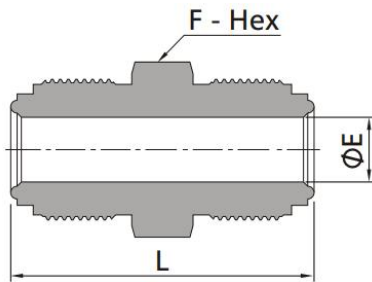
Blind Gland

Fractiona FR Blind Gland

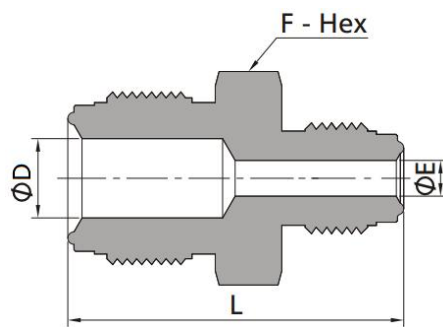
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)
		L
-BG-FR2	1/8	0.70 (17.8)
-BG-FR4	1/4	1.31 (33.3)
-BG-FR8	1/2	1.50 (38.1)
-BG-FR12	3/4	2.00 (50.8)
-BG-FR16	1	2.22 (56.4)



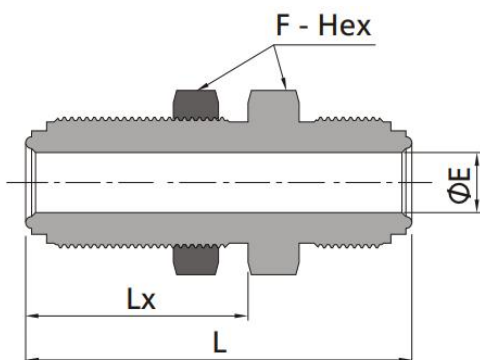
Bodies



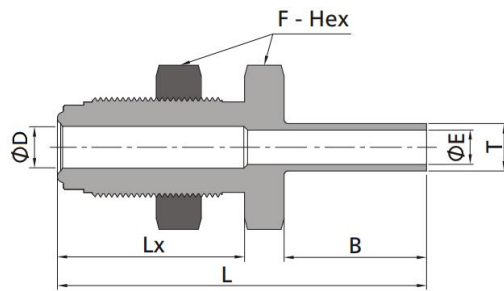
Union Body					
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
		F	E	L	
-U-FR2	1/8	3/8 (9.5)	0.09 (2.3)	1.13 (28.7)	11200 (772)
-U-FR4	1/4	5/8 (15.9)	0.18 (4.6)	1.55 (39.4)	10000 (690)
-U-FR8	1/2	15/16 (23.8)	0.40 (10.2)	1.84 (46.7)	4300 (296)
-U-FR12	3/4	1 5/16 (33.3)	0.62 (15.7)	2.44 (62.0)	3700 (254)
-U-FR16	1	1 5/8 (41.3)	0.87 (22.1)	2.59 (65.8)	3000 (206)



Reducing Union Body							
Basic Ordering NO.	FR Size (in.)	FR Size (in.)	Dimensions in.(mm)				Working Pressure psig (bar)
			F	D	E	L	
-RU-FR4-FR2	1/4	1/8	5/8 (15.9)	0.18 (4.6)	0.09 (2.3)	1.37 (34.8)	10000 (690)
-RU-FR8-FR4	1/2	1/4	15/16 (23.8)	0.40 (10.2)	0.18 (4.6)	1.71 (43.4)	4300 (296)
-RU-FR12-FR8	3/4	1/2	1 5/16 (33.3)	0.62 (15.7)	0.40 (10.2)	2.13 (54.1)	3700 (254)
-RU-FR16-FR12	1	3/4	1 5/8 (41.3)	0.87 (22.1)	0.62 (15.7)	2.50 (63.5)	3000 (206)

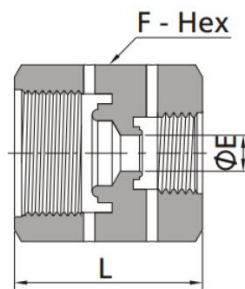


Bulkhead Union Body							
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)				Panel Hole in. (mm)	Working Pressure psig (bar)
		F	L	Lx	E		
-BU-FR4	1/4	3/4 (19.1)	1.82 (46.2)	0.99 (25.1)	0.18 (4.6)	19/32 (15.0)	10000 (690)
-BU-FR4-L	1/4	3/4 (19.1)	2.23 (56.6)	1.30 (33.0)	0.18 (4.6)	19/32 (15.0)	4300 (296)
-BU-FR8	1/2	1 1/16 (27.0)	2.14 (54.4)	1.11 (28.2)	0.40 (10.2)	29/32(23.1)	3700 (254)
-BU-FR8-L	1/2	1 1/16 (27.0)	2.57 (65.3)	1.48 (37.6)	0.40 (10.2)	29/32(23.1)	3000 (206)



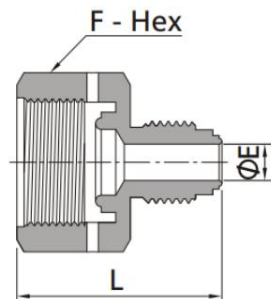
Bulkhead Body to Tube Butt Weld

Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)						Panel Hole in. (mm)	Working Pressure psig (bar)
		F	L	Lx	B	D	E		
-BBW-FR4-FT4	1/4	3/4(19.1)	1.95(49.5)	0.99(25.1)	0.75(19.1)	0.18(4.6)	0.22(5.6)	19/32(15.0)	5100(352)
-BBW-FR4-FT4-L	1/4	3/4(19.1)	2.36(59.9)	1.30(33.0)	0.75(19.1)	0.18(4.6)	0.22(5.6)	19/32(15.0)	5100(352)



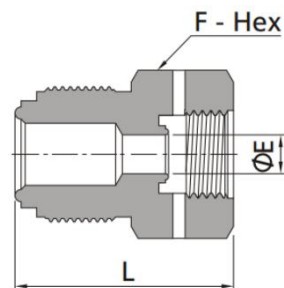
Female Reducing Union

Basic Ordering NO.	FR Size (in.)	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
			F	L	E	
-FRU-FR4-FT2	1/4	1/8	3/4 (19.1)	1.16 (29.5)	0.22 (5.6)	10000 (690)
-FRU-FR8-FT4	1/2	1/4	1 1/16 (27.0)	1.41 (35.8)	0.22 (5.6)	4300 (296)



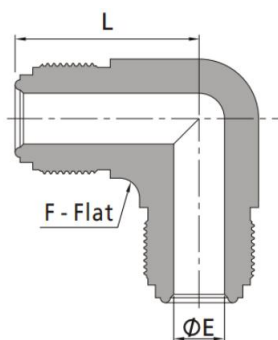
Reducing Adapter

Basic Ordering NO.	FR Size (in.)	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
			F	L	E	
-RA-FR4-FT2	1/4	1/8	3/4 (19.1)	1.19 (30.2)	0.09 (2.3)	10000 (690)
-RA-FR8-FT4	1/2	1/4	1 1/16 (27.0)	1.41 (35.8)	0.18 (4.6)	4300 (296)

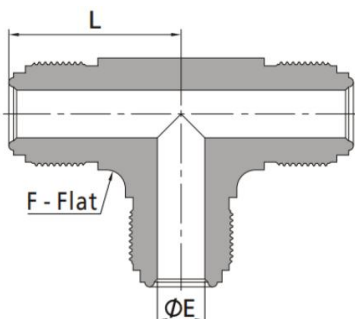


Reducing Bushing

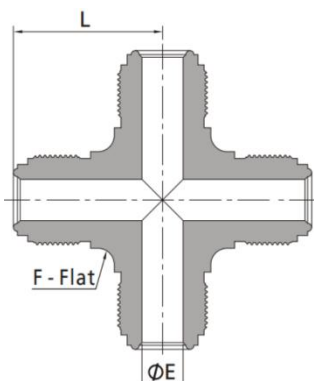
Basic Ordering NO.	FR Size (in.)	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
			F	L	E	
-RB-FR4-FT2	1/4	1/8	5/8 (15.9)	1.06 (26.9)	0.13 (3.3)	10000 (690)
-RB-FR8-FT4	1/2	1/4	15/16 (23.8)	1.41 (35.8)	0.25 (6.4)	4300 (296)



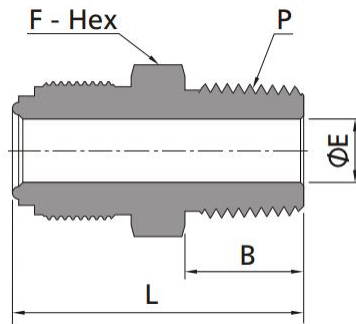
Union Elbow Body					
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
		F	E	L	
-UE-FR2	1/8	7/16 (11.1)	0.09 (2.3)	0.89 (22.6)	11200 (772)
-UE-FR4	1/4	1/2 (12.7)	0.18 (4.6)	1.07 (27.2)	10000 (690)
-UE-FR8	1/2	13/16 (20.6)	0.40 (10.2)	1.45 (36.8)	4300 (296)
-UE-FR12	3/4	1 1/4 (31.8)	0.62 (15.7)	1.92 (48.8)	3700 (254)
-UE-FR16	1	1 11/16 (42.9)	0.87 (22.1)	2.00 (50.8)	3000 (206)



Union Tee Body					
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
		F	E	L	
-UT-FR2	1/8	7/16 (11.1)	0.09 (2.3)	0.89 (22.6)	11200 (772)
-UT-FR4	1/4	1/2 (12.7)	0.18 (4.6)	1.07 (27.2)	10000 (690)
-UT-FR8	1/2	13/16 (20.6)	0.40 (10.2)	1.45 (36.8)	4300 (296)
-UT-FR12	3/4	1 1/4 (31.8)	0.62 (15.7)	1.92 (48.8)	3700 (254)
-UT-FR16	1	1 11/16 (42.9)	0.87 (22.1)	2.00 (50.8)	3000 (206)

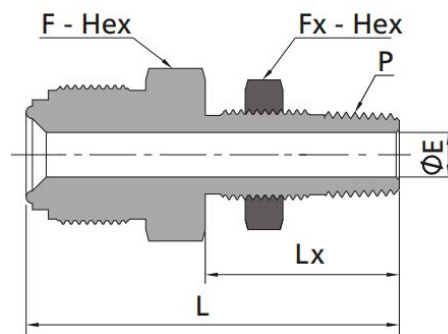


Union Cross Body					
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
		F	E	L	
-UC-FR2	1/8	7/16 (11.1)	0.09 (2.3)	0.89 (22.6)	11200 (772)
-UC-FR4	1/4	1/2 (12.7)	0.18 (4.6)	1.07 (27.2)	10000 (690)
-UC-FR8	1/2	13/16 (20.6)	0.40 (10.2)	1.45 (36.8)	4300 (296)
-UC-FR12	3/4	1 1/4 (31.8)	0.62 (15.7)	1.92 (48.8)	3700 (254)
-UC-FR16	1	1 11/16 (42.9)	0.87 (22.1)	2.00 (50.8)	3000 (206)



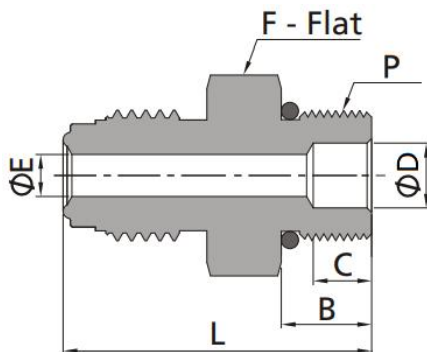
FR Body to Male NPT

Basic Ordering NO.	FR Size (in.)	P NPT	Dimensions in.(mm)				Working Pressure psig (bar)
			F	B	E	L	
-MC-FR2-MN1	1/8	1/16	3/8 (9.5)	0.38 (9.7)	0.09 (2.3)	1.07 (27.2)	9000 (620)
-MC-FR2-MN2	1/8	1/8	7/16 (11.1)	0.38 (9.7)	0.09 (2.3)	1.07 (27.2)	9000 (620)
-MC-FR4-MN2	1/4	1/8	5/8 (15.9)	0.38 (9.7)	0.18 (4.6)	1.31 (33.3)	10000 (690)
-MC-FR4-MN4	1/4	1/4	5/8 (15.9)	0.56 (14.2)	0.18 (4.6)	1.49 (37.8)	10000 (690)
-MC-FR8-MN4	1/2	1/4	15/16 (23.8)	0.56 (14.2)	0.28 (7.1)	1.65 (41.9)	4300 (296)
-MC-FR8-MN6	1/2	3/8	15/16 (23.8)	0.56 (14.2)	0.38 (9.7)	1.65 (41.9)	4300 (296)
-MC-FR8-MN8	1/2	1/2	15/16 (23.8)	0.75 (19.1)	0.40 (10.2)	1.84 (46.7)	4300 (296)
-MC-FR12-MN12	3/4	3/4	1 5/16 (33.3)	0.75 (19.1)	0.62 (15.7)	2.19 (55.6)	3700 (254)
-MC-FR16-MN16	1	1	1 5/8 (41.3)	0.94 (23.9)	0.87 (22.1)	2.47 (62.7)	3000 (206)



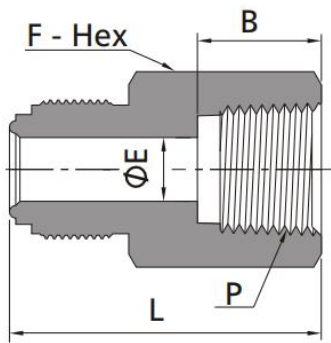
FR Body to Bulkhead Male NPT

Basic Ordering NO.	FR Size (in.)	P NPT	Dimensions in.(mm)					Panel Hole in. (mm)	Working Pressure psig (bar)
			F	Fx	L	Lx	E		
-BMC-FR4-MN4	1/4	1/4	13/16 (20.6)	13/16 (20.6)	2.21 (56.1)	1.24 (31.5)	0.28 (7.1)	21/32 (16.7)	8000 (551)
-BMC-FR8-MN4	1/2	1/4	15/16 (23.8)	13/16 (20.6)	2.34 (59.4)	1.24 (31.5)	0.28 (7.1)	21/32 (16.7)	4370 (301)

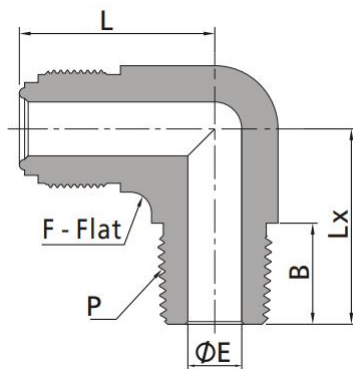


FR Body to SAE/MS Thread

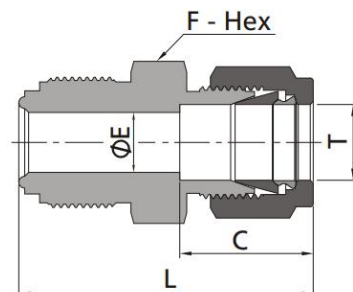
Basic Ordering NO.	FR Size (in.)	P SAE	Dimensions in.(mm)						Working Pressure psig (bar)
			F	L	B	C	D	E	
-MC-FR4-ST9	1/4	9/16-18	3/4 (19.1)	1.33 (33.8)	0.39 (9.9)	0.25 (6.4)	0.18 (4.6)	0.28 (7.1)	4500 (310)
-MC-FR8-ST9	1/2	9/16-18	15/16 (23.8)	1.48 (37.6)	0.39 (9.9)	0.25 (6.4)	/	0.28 (7.1)	3500 (241)
-MC-FR8-ST14	1/2	7/8-14	1 (25.4)	1.66 (42.2)	0.50 (12.7)	1.24 (31.5)	0.40 (10.2)	0.59 (15.0)	3500 (241)

**FR Body to Female NPT**

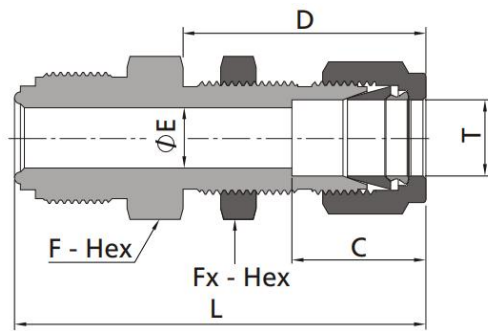
Basic Ordering NO.	FR Size (in.)	P NPT	Dimensions in.(mm)				Working Pressure psig (bar)
			F	B	E	L	
-FC-FR2-FN1	1/8	1/16	7/16 (11.1)	0.39 (9.9)	0.09 (2.3)	1.10 (27.9)	6700 (461)
-FC-FR2-FN2	1/8	1/8	9/16 (14.3)	0.41 (10.4)	0.09 (2.3)	1.19 (30.2)	6500 (447)
-FC-FR4-FN2	1/4	1/8	5/8 (15.9)	0.41 (10.4)	0.18 (4.6)	1.41 (35.8)	8000 (551)
-FC-FR4-FN4	1/4	1/4	3/4 (19.1)	0.59 (15.0)	0.18 (4.6)	1.54 (39.1)	66000 (454)
-FC-FR8-FN6	1/2	3/8	15/16 (23.8)	0.59 (15.0)	0.40 (10.2)	1.76 (44.7)	4300 (296)
-FC-FR8-FN8	1/2	1/2	1 1/16 (27.0)	0.78 (19.8)	0.40 (10.2)	1.99 (50.5)	4300 (296)
-FC-FR12-FN12	3/4	3/4	1 5/16 (33.3)	0.81 (20.6)	0.62 (15.7)	2.36 (59.9)	3700 (254)
-FC-FR16-FN16	1	1	1 5/8 (41.3)	1.00 (25.4)	0.87 (22.1)	2.51 (63.8)	3000 (206)

**FR Body to Male NPT Elbow**

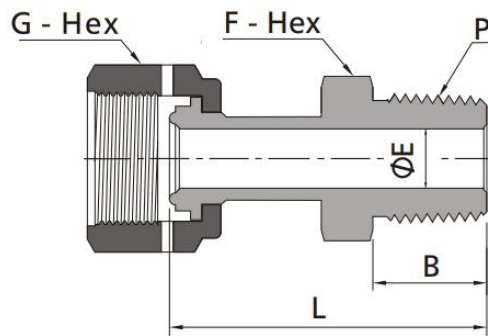
Basic Ordering NO.	FR Size (in.)	P NPT	Dimensions in.(mm)					Working Pressure psig (bar)
			F	B	E	L	Lx	
-ME-FR4-MN2	1/4	1/8	1/2 (12.7)	0.38 (9.7)	0.18 (4.6)	1.07 (27.2)	0.87 (22.1)	10000 (690)
-ME-FR4-MN4	1/4	1/4	3/4 (19.1)	0.56 (14.2)	0.18 (4.6)	1.07 (27.2)	1.05 (26.7)	8000 (551)
-ME-FR8-MN6	1/2	3/8	13/16 (20.6)	0.56 (14.2)	0.40 (10.2)	1.45 (36.8)	1.26 (32.0)	4300 (296)
-ME-FR8-MN8	1/2	1/2	13/16 (20.6)	0.75 (19.1)	0.40 (10.2)	1.45 (36.8)	1.45 (36.8)	4300 (296)

**FR Body to Tube Fitting**

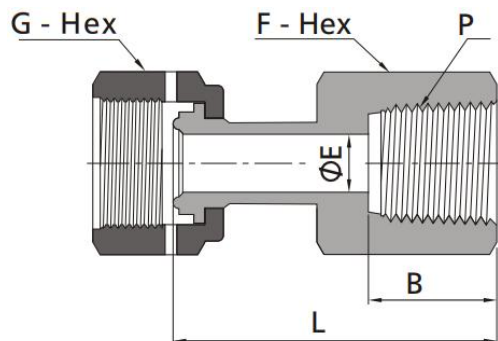
Basic Ordering NO.	FR Size (in.)	T-Tube O.D. (in.)	Dimensions in.(mm)				Working Pressure psig (bar)
			F	C	E	L	
-FU-FR4-FT2	1/4	1/8	5/8 (15.9)	0.50 (12.7)	0.18 (4.6)	1.53 (38.9)	10000 (690)
-FU-FR4-FT4	1/4	1/4	5/8 (15.9)	0.60 (15.2)	0.18 (4.6)	1.62 (41.1)	10000 (690)
-FU-FR8-FT6	1/2	3/8	15/16 (23.8)	0.66 (16.8)	0.40 (10.2)	1.84 (46.7)	4300 (296)
-FU-FR8-FT8	1/2	1/2	15/16 (23.8)	0.90 (22.9)	0.40 (10.2)	1.95 (49.5)	4300 (296)

**FR Body to Bulkhead Tube Fitting**

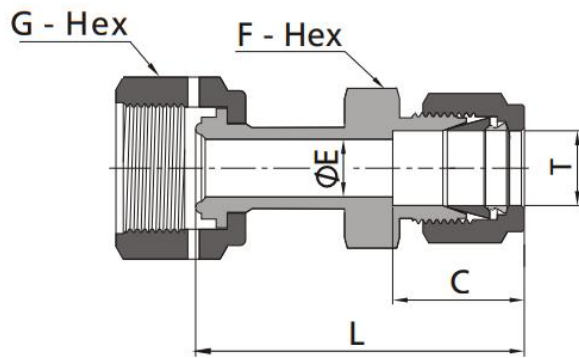
Basic Ordering NO.	FR Size (in.)	T-Tube O.D. (in.)	Dimensions in.(mm)						Panel Hole in. (mm)	Working Pressure psig (bar)
			F	Fx	C	D	E	L		
-FBU-FR4-FT4	1/4	1/4	5/8 (15.9)	5/8 (15.9)	0.50 (12.7)	1.05 (26.7)	0.18 (4.6)	2.25 (57.2)	15/32 (11.9)	10000 (690)
-FBU-FR4-FT4-L	1/4	1/4	5/8 (15.9)	5/8 (15.9)	0.60 (15.2)	1.32 (33.5)	0.18 (4.6)	1.88 (47.8)	15/32 (11.9)	10000 (690)
-FBU-FR8-FT6	1/2	3/8	15/16 (23.8)	3/4 (19.1)	0.66 (16.8)	1.45 (36.8)	0.40 (10.2)	2.54 (64.5)	19/32 (15.0)	4300 (296)
-FBU-FR8-FT8	1/2	1/2	15/16 (23.8)	15/16 (23.8)	0.90 (22.9)	1.65 (41.9)	0.40 (10.2)	2.74 (69.6)	25/32 (19.8)	4300 (296)

**FR Welded Gland to Male NPT**

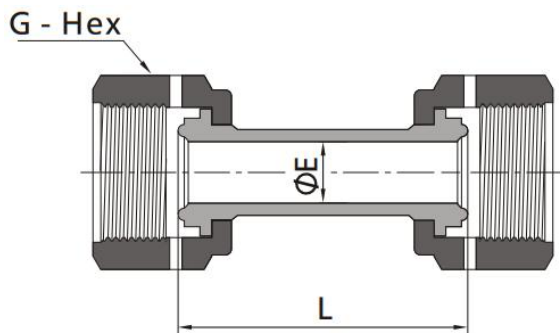
Basic Ordering NO.	FR Size (in.)	P NPT	Dimensions in.(mm)					Working Pressure psig (bar)
			F	G	B	E	L	
-FGM-FR4-MN2	1/4	1/8	7/16 (11.1)	3/4 (19.1)	0.38 (9.7)	0.18 (4.6)	1.58 (40.1)	8000 (551)
-FGM-FR4-MN4	1/4	1/4	9/16 (14.3)	3/4 (19.1)	0.56 (14.2)	0.18 (4.6)	1.79 (45.5)	8000 (551)
-FGM-FR8-MN6	1/2	3/8	11/16 (17.5)	1 1/16 (27)	0.56 (14.2)	0.40 (10.2)	1.89 (48.0)	4300 (296)
-FGM-FR8-MN8	1/2	1/2	7/8 (22.2)	1 1/16 (27)	0.75 (19.1)	0.40 (10.2)	2.09 (53.1)	4300 (296)

**FR Welded Gland to Female NPT**

Basic Ordering NO.	FR Size (in.)	P NPT	Dimensions in.(mm)					Working Pressure psig (bar)
			F	G	B	E	L	
-FGF-FR4-FN4	1/4	1/4	3/4 (19.1)	3/4 (19.1)	0.59 (15.0)	0.18 (4.6)	1.77 (45.0)	6600 (454)
-FGF-FR8-FN6	1/2	3/8	7/8 (22.2)	1 1/16 (27)	0.59 (15.0)	0.40 (10.2)	1.95 (49.5)	4300 (296)
-FGF-FR8-FN8	1/2	1/2	1 1/16 (27)	1 1/16 (27)	0.78 (19.8)	0.40 (10.2)	2.18 (55.4)	4300 (296)



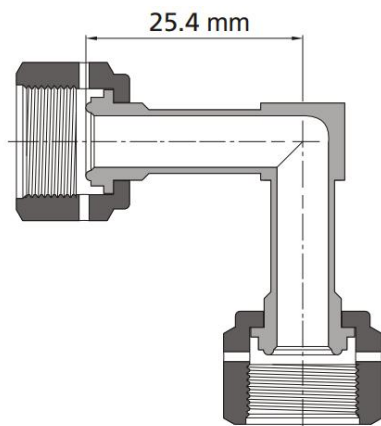
FR Welded Gland to Tube Fitting							
Basic Ordering NO.	FR Size (in.)	T-Tube O.D. (in.)	Dimensions in.(mm)				Working Pressure psig (bar)
			F	C	E	L	
-FWU-FR4-FT4	1/4	1/4	1/2 (12.7)	0.60 (15.2)	0.18 (4.6)	1.94 (49.3)	8000 (551)
-FWU-FR4-FT6	1/4	3/8	5/8 (15.9)	0.66 (16.8)	0.18 (4.6)	1.97 (50.0)	6500 (447)
-FWU-FR8-FT8	1/2	1/2	13/16 (20.6)	0.90 (22.9)	0.40 (10.2)	2.23 (56.6)	4300 (296)



FR Welded Gland Union					
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
		F	E	L	
-FGU-FR4	1/4	3/4 (19.1)	0.18 (4.6)	1.71 (43.4)	8000 (551)
-FGU-FR8	1/2	1 1/16 (27.0)	0.40 (10.2)	1.84 (46.7)	4300 (296)

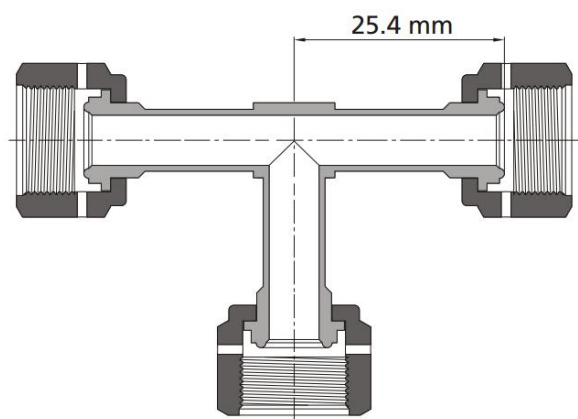
Female Elbows

Basic ordering number: -FGL-FR4



Female Tees

Basic ordering number: -FGT-FR4



Plug & Cap

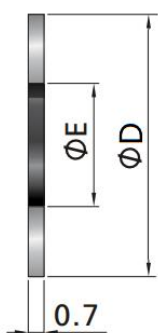


Plug				Cap			
Basic Ordering NO.	Size (in.)	Dimensions in.(mm)		Basic Ordering NO.	Size (in.)	Dimensions in.(mm)	
		F	L			F	L
-PG-FR2	1/8	3/8 (9.5)	0.68 (17.3)	-CP-FR2	1/8	7/16 (11.1)	0.63 (16.0)
-PG-FR4	1/4	5/8 (15.9)	0.92 (23.4)	-CP-FR4	1/4	3/4 (19.1)	0.94 (23.9)
-PG-FR8	1/2	15/16 (23.8)	1.08 (27.4)	-CP-FR8	1/2	1.1/16 (27.0)	1.01 (25.6)
-PG-FR12	3/4	1.5/16 (33.3)	1.43 (36.3)	-CP-FR12	3/4	1.1/2 (38.1)	1.29 (32.8)
-PG-FR16	1	1.5/8 (41.3)	1.52 (38.6)	-CP-FR16	1	1.3/4 (44.5)	1.54 (39.1)

Gaskets

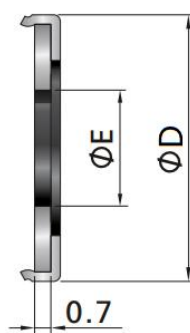
- Copper gaskets are unplated and with FC-02 Special Cleaning and Packaging.
- Unplated SS gaskets and nickel gaskets are electropolished and with FC-03 Ultra High Purity Process Specification.
- For silver-plated 316 SS or nickel gaskets, delete the suffix "-UP" from the ordering number, and the products are processed with FC-02 Special Cleaning and Packaging.
- For 316L SS, nickel EP gaskets, the maximum allowable leak rate is 4×10^{-11} std cm³/s.
- For silver-plated 316L SS, silver-plated nickel and copper gaskets, the maximum allowable leak rate is 4×10^{-9} std cm³/s.

Nonretained



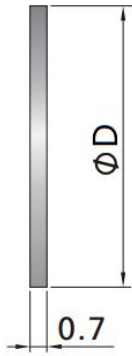
Basic Ordering NO.	Size (in.)	Dimensions in.(mm)	
		D	E
-GKN-FR2	1/8	0.26 (6.6)	0.09 (2.3)
-GKN-FR4	1/4	0.47 (11.9)	0.22 (5.6)
-GKN-FR8	1/2	0.78 (19.8)	0.44 (11.2)
-GKN-FR10	5/8	0.91 (23.1)	0.58 (14.7)
-GKN-FR12	3/4	1.14 (29.0)	0.66 (16.8)
-GKN-FR16	1	1.40 (35.6)	0.89 (22.6)

Gasket Retainer Assemblies

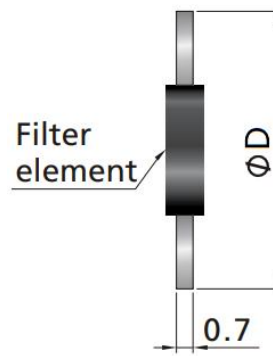


Basic Ordering NO.	Size (in.)	Dimensions in.(mm)	
		D	E
-GRA-FR4	1/4	0.50 (12.7)	0.24 (6.1)
-GRA-FR8	1/2	0.79 (20.1)	0.44 (11.2)
-GRA-FR12	3/4	1.14 (29.0)	0.66 (16.8)
-GR-FR16	1	1.40 (35.6)	0.89 (22.6)

Blind Gaskets



Snubber Gaskets

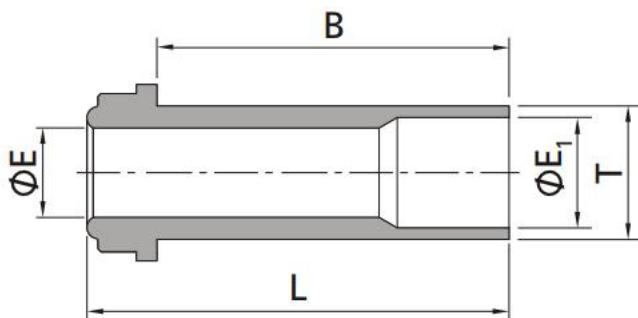


Basic Ordering NO.	Size (in.)	Dimensions in.(mm)	Basic Ordering NO.	Size (in.)	Dimensions in.(mm)
		D			D
-GKN-FR2	1/8	0.26 (6.6)			
-GKN-FR4	1/4	0.47 (11.9)	-GRA-FR4	1/4	0.50 (12.7)
-GKN-FR8	1/2	0.78 (19.8)	-GRA-FR8	1/2	0.79 (20.1)
-GKN-FR10	5/8	0.91 (23.1)			
-GKN-FR12	3/4	1.14 (29.0)	-GRA-FR12	3/4	1.14 (29.0)
-GKN-FR16	1	1.40 (35.6)	-GR-FR16	1	1.40 (35.6)

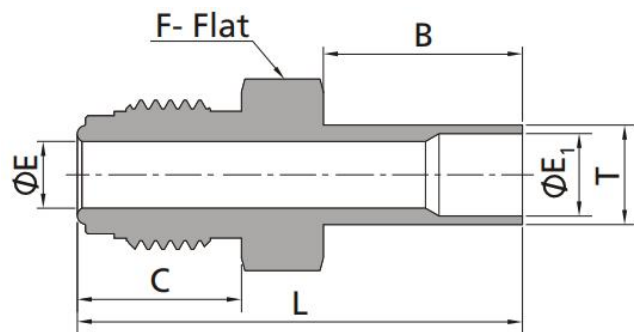
High-Flow Connections

High-Flow connections with high flow capacity are compatible with regular FR connections.

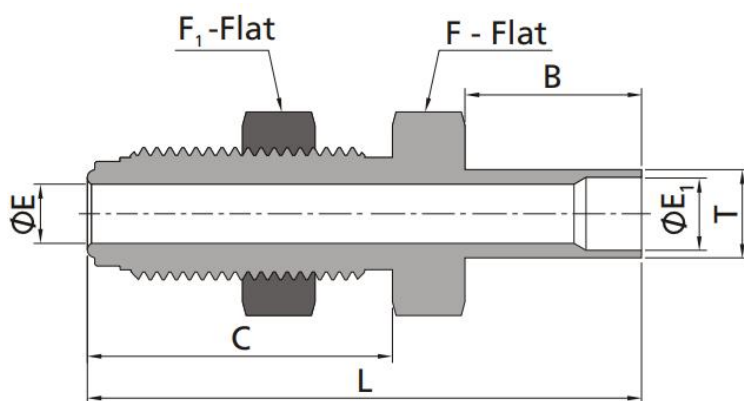
Gasket retainer assemblies are recommended to minimize flow resistance.



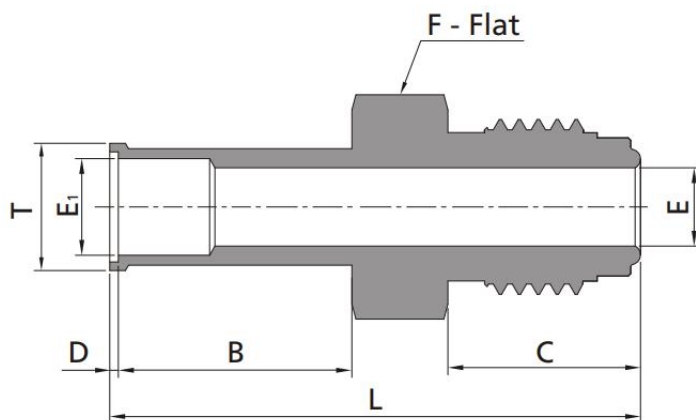
HFR Gland to Tube Bolt Weld								
Basic Ordering NO.	FR Size (in.)	T-Tube O.D.(in.)	Wall Thickness	Dimensions in.(mm)				Working Pressure psig (bar)
				E	E1	L	B	
-HFG-FR4-BW6-0.06	1/4	3/8	0.035	0.25 (6.35)	0.31 (7.9)	0.60 (15.2)	0.41 (10.4)	3300 (227)
-HFG-FR4-BW6-1.19	1/4	3/8	0.035	0.25 (6.35)	0.31 (7.9)	1.19 (30.2)	1.00 (25.4)	3300 (227)
-HFG-FR4-BW6-1.31	1/4	3/8	0.035	0.25 (6.35)	0.31 (7.9)	1.31 (33.3)	1.12 (28.4)	3300 (227)



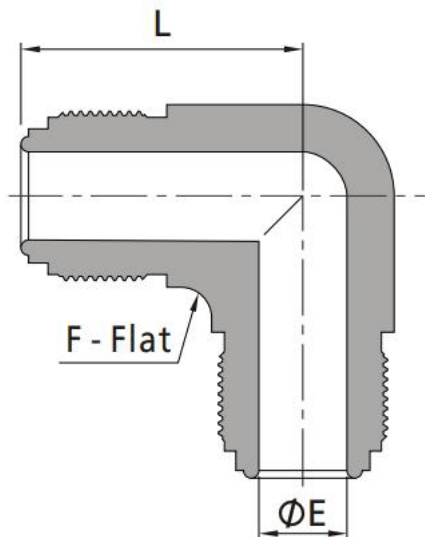
HFR Body to Tube Bolt Weld									
Basic Ordering NO.	FR Size (in.)	U-Tube O.D.(in.)	Dimensions in.(mm)						Working Pressure psig (bar)
			F	L	B	C	E	E1	
-HFB-FR4-BW6	1/4	3/8	5/8 (15.9)	1.68 (42.7)	0.75 (19.1)	0.62 (15.7)	0.25 (6.4)	0.31 (7.9)	3300 (227)



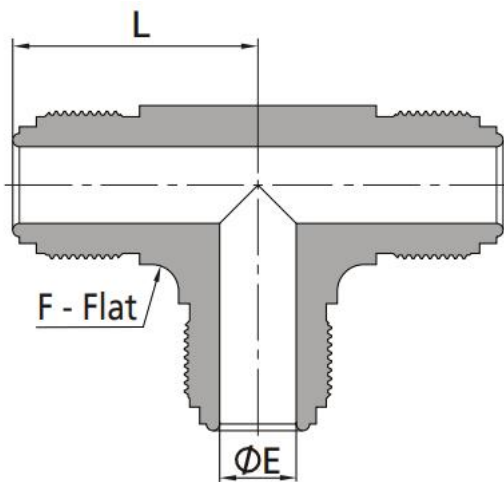
HFR Bulkhead Body to Tube Bolt Weld										
Basic Ordering NO.	FR Size (in.)	V-Tube O.D.(in.)	Dimensions in.(mm)						Panel Hole	Working Pressure psig (bar)
			F=F1	L	B	C	E	E1		
-HBK-FR4-BW6	1/4	3/8	3/4 (19.1)	2.36 (59.9)	0.75 (19.1)	1.30 (33.0)	0.31 (7.9)	0.25 (6.4)	19/32 (15.0)	3300 (227)



HFR Body to Automatic Tube Weld										
Basic Ordering NO.	FR Size (in.)	W-Tube O.D.(in.)	Dimensions in.(mm)							Working Pressure psig (bar)
			F	L	B	C	E	E1	T	
-HFA-FR4-BW6	1/4	3/8	5/8 (15.9)	1.71 (43.4)	0.75 (19.1)	0.62 (15.7)	0.25 (6.4)	0.31 (7.9)	0.41 (10.4)	3300 (227)



HFR Body Union Elbow					
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
		F	L	E	
-HFU-FR4	1/4	1/2 (12.7)	1.07 (27.2)	0.25 (6.4)	10000 (689)



HFR Body Union Tee					
Basic Ordering NO.	FR Size (in.)	Dimensions in.(mm)			Working Pressure psig (bar)
		F	L	E	
-HFT-FR4	1/4	1/2 (12.7)	1.07 (27.2)	0.25 (6.4)	10000 (689)

Nantong ROKE Fluid Equipment Co., Ltd.

ROKE Factory

27-28, Alpha Industrial Park, No. 333, Kaiyuan Avenue.

Hai'an City, Jiangsu Province, China

Tel :86-513-86751377

Fax :86-513-86752577

ROKE Marketing Center

B-1108, Fortune Building, No. 817, Jianghai Avenue.

Nantong City, Jiangsu Province, China

Tel: 86-513-85400443

Fax: 86-513-85400444

Web: www.chinaroke.com

E-mail: sales01@ntroke.com

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www.chinaroke.com