

C-LOK

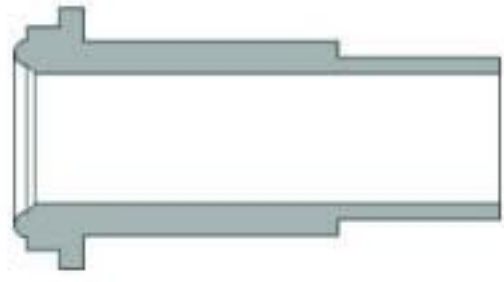
C-LOK Instrument Valve Co.,Ltd.

Metal Gasket Face Seal Fittings

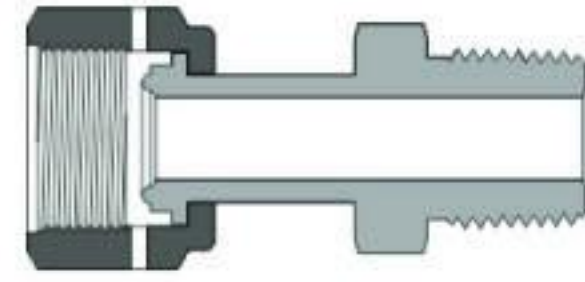


Contents

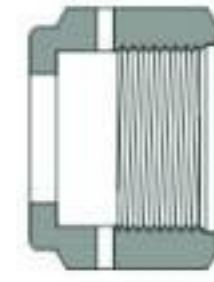
03 Glands



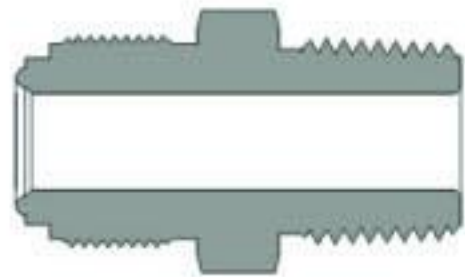
05 Welded Glands



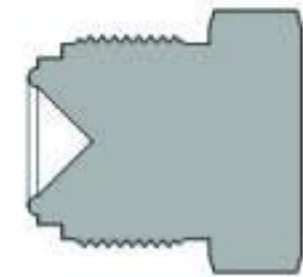
07 Nuts



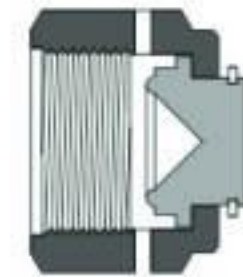
07 Bodies



12 Plugs



12 Caps



13 Gaskets



Features

- 316, 316L, and 316L VAR (Vacuum Arc Remelt) stainless steel materials are available.
- Metal-to-metal seal provides perfect leak-tight service from critical vacuum to high pressure.
- FR female threads are silver plated.
- Every gland and body are stamped with size, material and heat code.
- All seal faces and male threads are protected with plastic caps.

Technical Data

- Size range from 1/16" to 1" and 6 mm to 18 mm.
- Thread Specifications:

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

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

- Working Temperature:

Component	Material	Working Temperature
Fittings	316 stainless steel	-425°F to 1000°F (-254°C to 538°C)
	316L stainless steel	
	316L VAR stainless steel	
Gaskets	316L stainless steel	-425°F to 400°F (-268°C to 204°C)
	Copper	
	Nickel	

Standard Materials of Construction

Material	Bar Stock	Forging	Designator
Fitting Material			
316 stainless steel	ASTM A479, ASME SA479	ASTM A182, ASME SA182	SS
316L stainless steel			6L
316L VAR stainless steel			6LV
Gasket Material			
316L stainless steel	ASTM A240, A167		6L
Copper	ASTM B 152		CU
Nickel	ASTM B 162		NI

Materials traceable, certification available upon request

Metal Gasket Face Seal Fittings

Testing

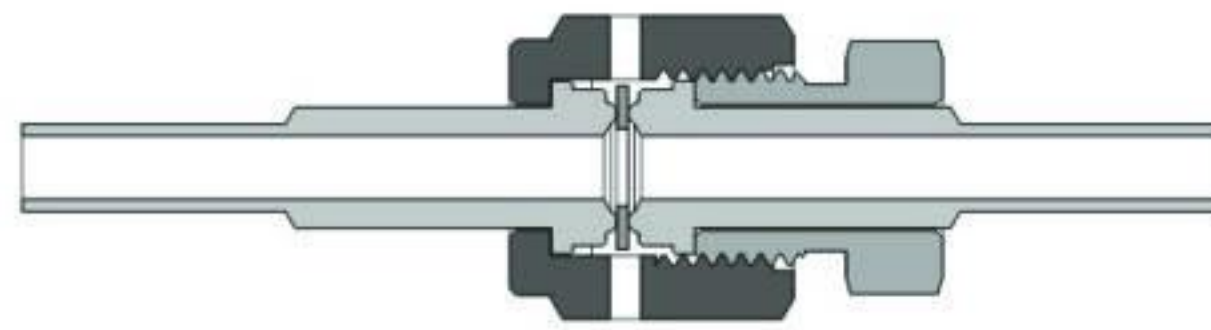
FR fitting is tested with helium to a maximum leak rate of 4×10^{-3} std cm³/s.

Ordering Information

- Each component must be ordered separately. Add the material designator as a prefix, Cleaning and Packaging code and (or) Wetted Surface Finish code as a suffix to the basic ordering number to get the complete ordering number.
- Standard Cleaning and Packaging
C-LOK specification (FC-01), standard cleaning and packaging, is applied to all the fittings for general industrial procedure. No suffix is required. Example: 6L-G-FR2-TB2
- Special Cleaning and Packaging
To order fittings with special cleaning and packaging (FC-02), following ASTM G93 C standard, add -F2 as a suffix to the ordering number. Example: 6L-G-FR4-TB4-F2
- Ultrahigh Purity Cleaning and Packaging
To order fittings with ultrahigh purity cleaning and packaging (FC-03), add -F3 as a suffix to the ordering number. Example: 6LV-G-FR8-TB8-4S-F3.
- Wetted Surface Finish
Standard surface finish is a roughness average of 10 μ in. (0.25 μ m) Ra. To order fittings to a roughness average of 5 μ in. (0.13 μ m) Ra, add -E2 as a suffix to the ordering number. Put Cleaning and Packaging code before Wetted Surface Finish code. Example: 6L-G-FR4-TB4-F2-E2

Installation Instructions

1. Assemble the gland, nut, gasket and body as below, finger tighten the nut.



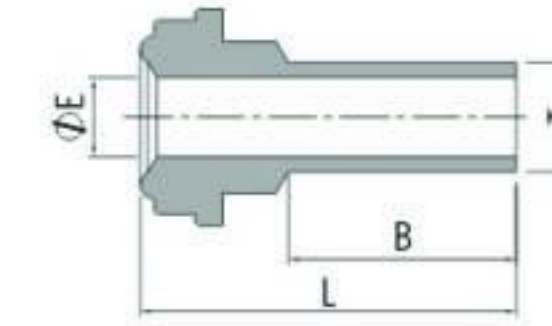
2. Tighten the nut 1/8 turn with wrench while holding steady the male nut or the body of the fitting, for 316L stainless steel and nickel gasket. Tighten the nut 1/4 turn for copper gasket.

Cautions:

- Excessive over-tightening will damage the sealing beads and possibly cause system leakage.
- The using of a new gasket is necessary for each assembly.
- Tungsten Inert Gas Welding (TIG) is recommended.
- Always use proper thread sealants on tapered pipe threads.
- Do not loosen or tighten fittings when system is pressurized.

Metal Gasket Face Seal Fittings

Glands



FR Gland to Short Fractional Tube Butt Weld

FR Size (in.)	T-Tube O.D. (in.)	Nominal Wall Thickness (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
				L	B	E	6L	CU	NI
1/8	1/8	0.028	-G-FR2-BW2-12S	27.4	19.1	1.5	8500 (586)	6800 (468)	8500 (586)
1/4	1/8	0.028	-G-FR4-BW2-12S	27.9	19.1	1.5	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-G-FR4-BW4-4S	15.2	6.4	4.6	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-G-FR4-BW4-6S	18.3	9.7	4.6	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	-G-FR4-BW4-12S	27.9	19.1	4.6	5100 (351)	5100 (351)	5100 (351)
1/2	1/4	0.035	-G-FR8-BW4-12S	28.4	19.1	4.6	4300 (296)	2800 (192)	3500 (241)
1/2	3/8	0.035	-G-FR8-BW6-4S	15.7	6.4	7.9	3300 (227)	2600 (179)	3300 (227)
1/2	3/8	0.035	-G-FR8-BW6-12S	28.4	19.1	7.9	3300 (227)	2600 (179)	3300 (227)
1/2	1/2	0.049	-G-FR8-BW8-4S	15.7	6.4	10.2	3500 (241)	2800 (192)	3500 (241)
1/2	1/2	0.049	-G-FR8-BW8-6S	18.8	9.7	10.2	3500 (241)	2800 (192)	3500 (241)
1/2	1/2	0.049	-G-FR8-BW8-12S	28.4	19.1	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	Dimension, mm			Working Pressure, psig (bar)		
				L	B	E	6L	CU	NI
1/4	6	1.0	-G-FR4-MB6-12S	29.5	19.1	4.0	6800(468)	5400(372)	6800(468)
1/4	8	1.0	-G-FR4-MB8-12S	29.5	19.1	6.0	4900(337)	4900(337)	4900(337)
1/2	10	1.0	-G-FR8-MB10-12S	29.5	19.1	8.0	3500(241)	2800(192)	3500(241)
1/2	12	1.0	-G-FR8-MB12-12S	29.5	19.1	10.0	3100(213)	2400(165)	3100(213)
3/4	18	1.5	-G-FR12-MB18-12S	31.0	19.1	15.0	3000(206)	2400(165)	3000(206)

FR Gland to Long Fractional Tube Butt Weld

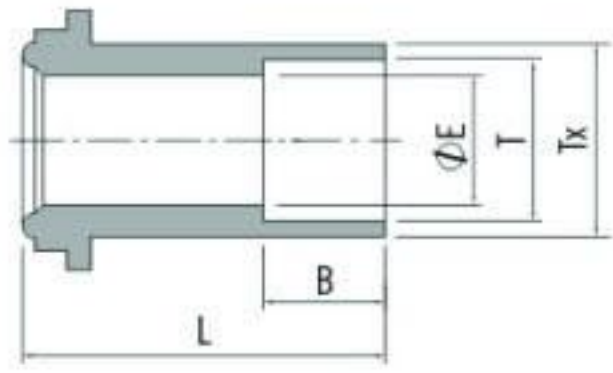
FR Size (in.)	T-Tube O.D. (in.)	Nominal Wall Thickness (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
				L	B	E	6L	CU	NI
1/8	1/8	0.028	-G-FR2-BW2-12	36.1	19.1	1.5	8500(586)	6800(468)	8500(586)
1/4	1/4	0.035	-G-FR4-BW4-4	30.5	6.4	4.6	5100(351)	5100(351)	5100(351)
1/4	1/4	0.035	-G-FR4-BW4-6	33.5	9.7	4.6	5100(351)	5100(351)	5100(351)
1/4	1/4	0.035	-G-FR4-BW4-12	43.2	19.1	4.6	5100(351)	5100(351)	5100(351)
1/2	1/4	0.035	-G-FR8-BW4-12	45.7	19.1	4.6	4300(296)	2800(192)	3500(241)
1/2	3/8	0.035	-G-FR8-BW6-4	32.8	6.4	7.9	3300(227)	2600(179)	3300(227)
1/2	3/8	0.035	-G-FR8-BW6-12	45.5	19.1	7.9	3300(227)	2600(179)	3300(227)
1/2	1/2	0.049	-G-FR8-BW8-4	32.8	6.4	10.2	3500(241)	2800(192)	3500(241)
1/2	1/2	0.049	G-FR8-BW8-6	35.8	9.7	10.2	3500(241)	2800(192)	3500(241)
1/2	1/2	0.049	-G-FR8-BW8-12	45.5	19.1	10.2	3500(241)	1900(130)	3500(241)
3/4	3/4	0.049	-G-FR12-BW12-12	51.6	19.1	16.5	2400(165)	1900(130)	2400(165)
1	1	0.065	-G-FR16-BW16-12	58.9	19.1	22.1	2400(165)	2400(165)	2400(165)

FR Gland to Long Metric Tube Butt Weld

FR Size (in.)	T-Tube O.D. (mm.)	Nominal Wall Thickness (mm)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
				L	B	E	6L	CU	NI
1/4	6	1.0	-G-FR4-MB6-12	43.2	19.1	4.0	6800(468)	5400(372)	6800(468)
1/4	8	1.0	-G-FR4-MB8-12	43.2	19.1	6.0	4900(337)	4900(337)	4900(337)
1/2	10	1.0	-G-FR8-MB10-12	45.5	19.1	8.0	3500(241)	2800(192)	3500(241)
1/2	12	1.0	-G-FR8-MB12-12	45.5	19.1	10.0	3100(213)	2400(165)	3100(213)
3/4	18	1.5	-G-FR12-MB18-12	51.6	19.1	15.0	3000(207)	2400(165)	3000(207)

Dimensions are for reference only and are subject to change.

Glands



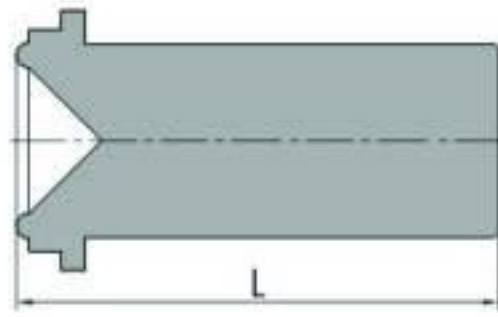
FR Gland to Short Tube Socket Weld

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				Working Pressure, psig (bar)		
			L	B	E	Tx	6L	CU	NI
1/4	1/4	-G-FR4-SW4-0.50	12.7	7.1	4.6	8.9	5500 (378)	5500 (378)	5500 (378)
1/4	1/4	-G-FR4-SW4-0.75	19.1	7.1	4.6	8.9	5500 (378)	5500 (378)	5500 (378)



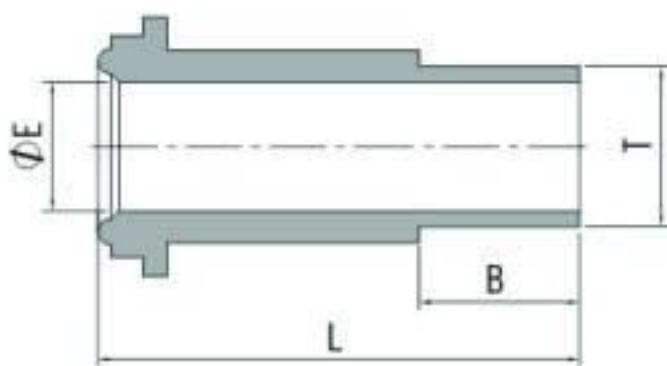
FR Gland to Tube Socket Weld

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				Working Pressure, psig (bar)		
			L	B	E	Tx	6L	CU	NI
1/8	1/16	-G-FR2-SW1	17.8	2.5	1.3	3.3	9000 (620)	7200 (496)	9000 (620)
1/8	1/8	-G-FR2-SW2	17.8	2.5	2.3	5.1	7100 (489)	7100 (489)	7100 (489)
1/4	1/8	-G-FR4-SW2	33.3	2.5	2.3	8.9	8000 (551)	8000 (551)	8000 (551)
1/4	1/4	-G-FR4-SW4	33.3	7.1	4.6	8.9	5500 (378)	5500 (378)	5500 (378)
1/2	1/4	-G-FR8-SW4	38.1	7.1	4.6	15.2	4300 (196)	3500 (241)	3500 (241)
1/2	3/8	-G-FR8-SW6	38.1	7.9	7.1	15.2	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-G-FR8-SW8	38.1	9.7	10.2	15.2	3000 (206)	2400 (165)	3000 (206)
5/8	5/8	-G-FR10-SW10	39.6	10.4	12.7	18.3	2800 (192)	2200 (151)	2800 (192)
3/4	3/4	-G-FR12-SW12	50.8	11.2	15.7	22.4	2800 (192)	2200 (151)	2800 (192)
1	1	-G-FR16-SW16	56.4	15.7	22.1	30.2	3000 (206)	1900 (130)	2400 (165)



Blind Gland

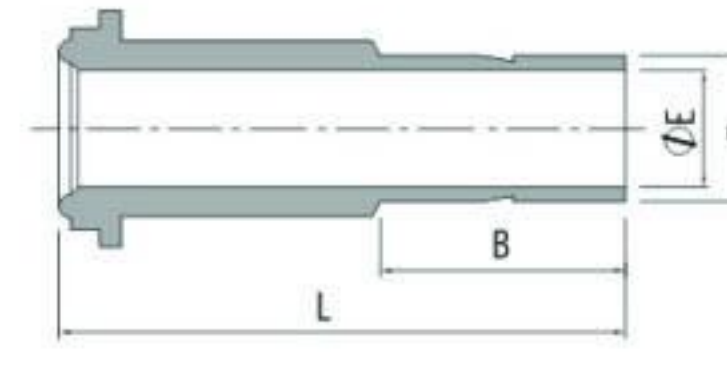
FR Size (in.)	Basic Ordering Number	Dimension, mm	
		L	
1/8	-G-FR2-B	17.8	
1/4	-G-FR4-B	33.3	
1/2	-G-FR8-B	38.1	
3/4	-G-FR12-B	50.8	
1	-G-FR16-B	56.4	



FR Gland to Male Weld

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
			L	B	E	6L	CU	NI
1/8	1/8	-G-FR2-BW2	17.8	7.1	1.5	11200 (772)	7200 (496)	9000 (620)
1/4	1/8	-G-FR4-BW2	33.3	7.1	1.5	10000 (689)	6400 (440)	8000 (551)
1/4	1/4	-G-FR4-BW4	33.3	10.4	3.0	10000 (689)	6400 (440)	8000 (551)
1/2	1/4	-G-FR8-BW4	38.1	10.4	3.0	4300 (296)	2800 (192)	3500 (241)
1/2	3/8	-G-FR8-BW6	38.1	10.4	7.1	4300 (196)	2800 (192)	3500 (241)
1/2	1/2	-G-FR8-BW8	38.1	12.7	10.2	3500 (241)	3500 (241)	3500 (241)
3/4	3/4	-G-FR12-BW12	50.8	15.7	13.5	3700 (254)	2400 (165)	3000 (206)
1	1	-G-FR16-BW16	56.4	20.6	19.1	3000 (206)	1900 (130)	2400 (165)

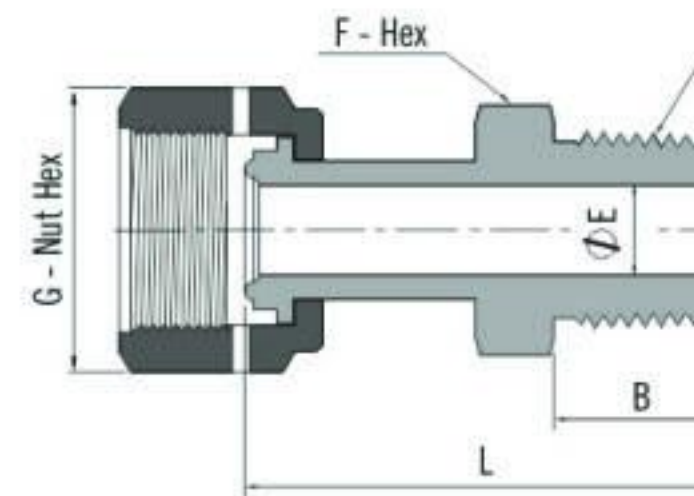
Glands



FR Gland to Male Weld

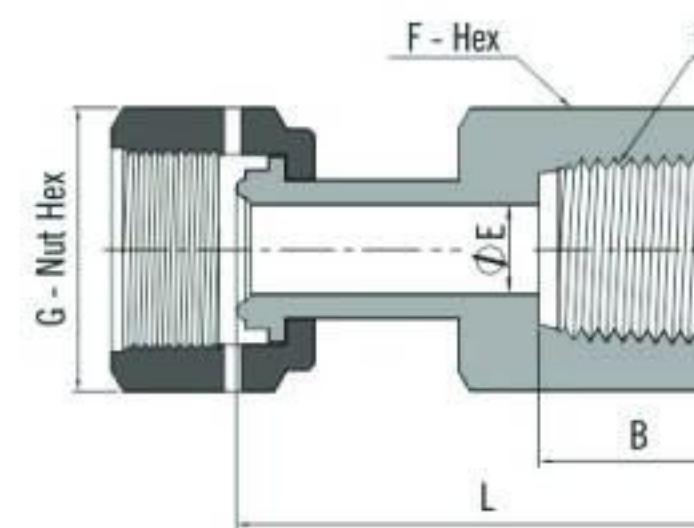
FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
			L	B	E	6L	CU	NI
1/4	1/4	-G-FR4-FT4	41.1	16.3	4.3	10000 (689)	6400 (440)	8000 (551)
1/2	3/8	-G-FR8-FT6	46.0	17.8	16.9	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-G-FR8-FT8	49.3	24.4	9.4	4300 (296)	2800 (192)	3500 (241)

Welded Glands



FR Welded Gland to Male NPT

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm					Working Pressure, psig (bar)		
			L	B	E	G	F	6L	CU	NI
1/4	1/8	-WG-FR4-NT2	40.1	9.7	4.6	19.05	11.1	8000 (551)	6400 (446)	8000 (551)
1/4	1/4	-WG-FR4-NT4	45.5	14.2	4.6	19.05	14.3	8000 (551)	6400 (446)	8000 (551)
1/2	3/8	-WG-FR8-NT6	48.0	14.2	10.2	26.99	17.5	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-WG-FR8-NT8	53.1	19.1	10.2	26.99	22.2	4300 (296)	2800 (192)	3500 (241)

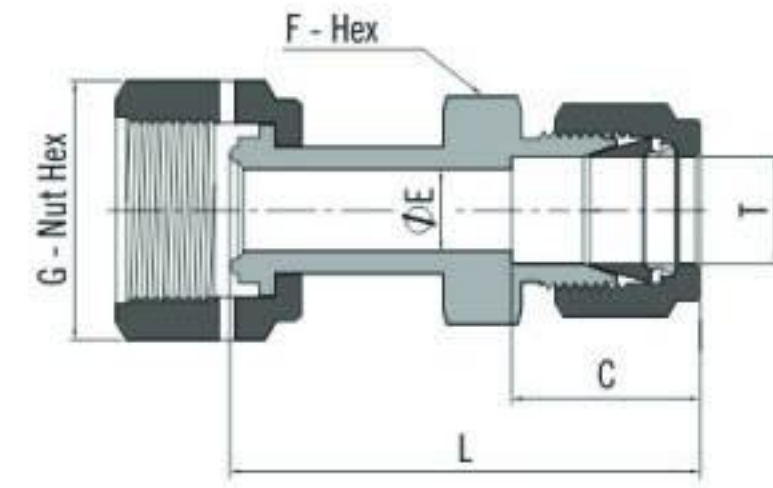


FR Welded Gland to Female NPT

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm					Working Pressure, psig (bar)		
			L	B	E	G	F	6L	CU	NI
1/4	1/4	-WG-FR4-F4	45.0	15.0	4.6	19.1	19.1	6600 (454)	5200 (458)	6600 (454)
1/2	3/8	-WG-FR8-F6	49.5	15.0	10.2	27.0	22.2	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-WG-FR8-F8	55.4	19.8	10.2	27.0	27.0	4300 (296)	2800 (192)	3500 (241)

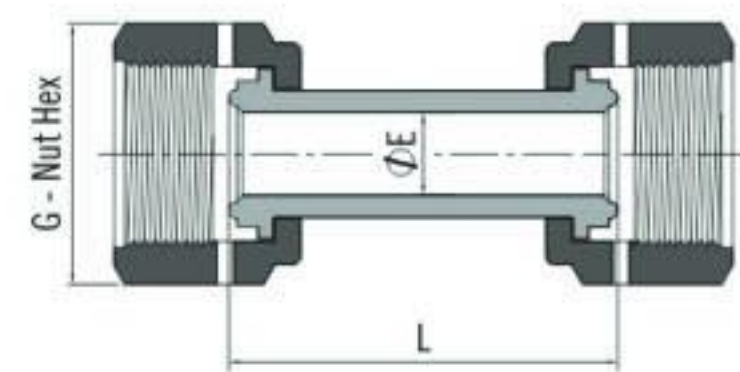
Metal Gasket Face Seal Fittings

Welded Glands



FR Welded Gland to Tube Fitting

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm					Working Pressure, psig (bar)		
			L	B	E	G	F	6L	CU	NI
1/4	1/4	-WG-FR4-S4	49.3	15.2	4.6	19.1	12.7	10000 (689)	6400 (440)	8000 (551)
1/4	3/8	-WG-FR4-S6	50.0	16.8	4.6	19.1	15.9	6500 (447)	5200 (358)	6500 (447)
1/2	1/2	-WG-FR8-S8	56.6	22.9	10.2	27.0	20.6	4300 (296)	2800 (192)	3500 (241)

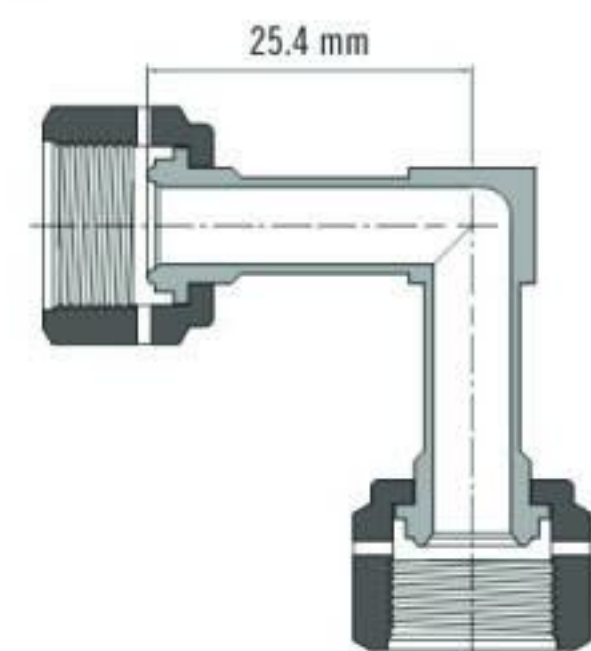


FR Welded Gland Union

FR Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
		L	E	G	6L	CU	NI
1/4	-WG-FR4	43.4	4.6	19.1	10000 (689)	6400 (440)	8000 (551)
1/2	-WG-FR8	46.7	10.2	27.0	4300 (296)	2800 (192)	3500 (241)

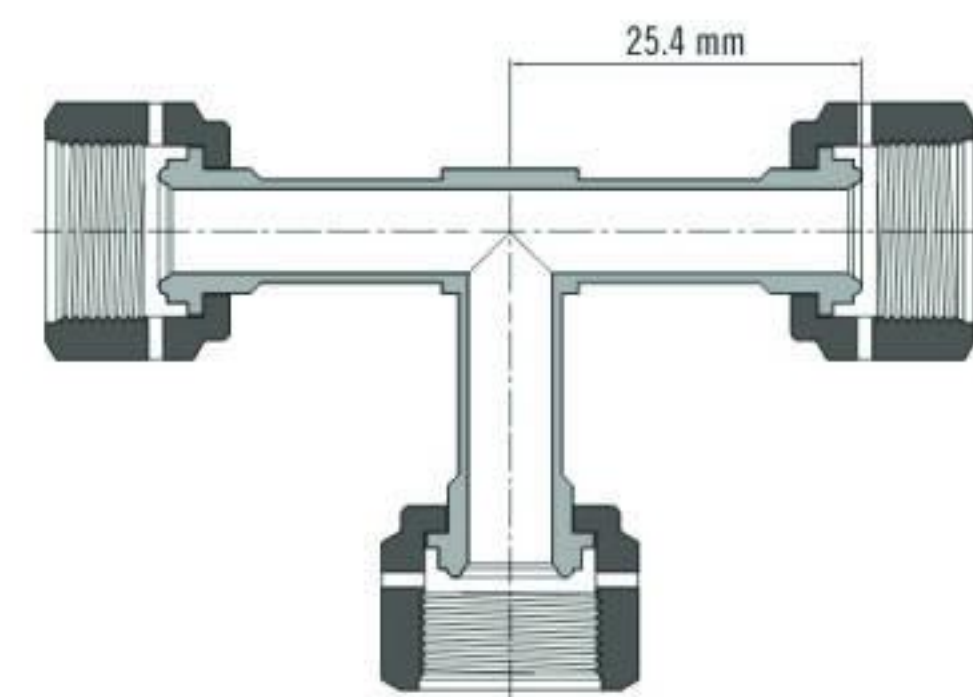
Female Elbow

Basic ordering number: -LWG-FR4



Female Tee

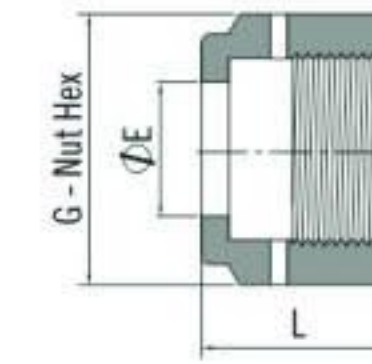
Basic ordering number: -TWG-FR4



Elbows, crosses, Mini, Butt, Weld, Fittings, and tees are available with welded male and female ends. For more information, please contact the authorized representative or C-LOK.

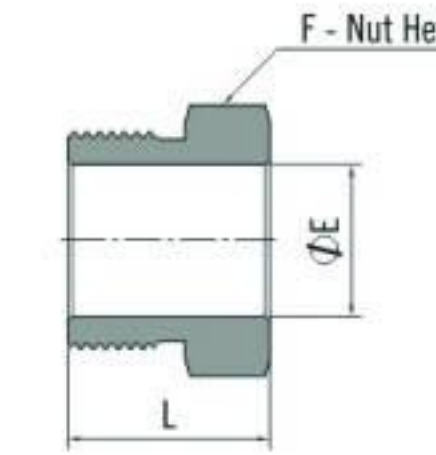
Metal Gasket Face Seal Fittings

Nuts



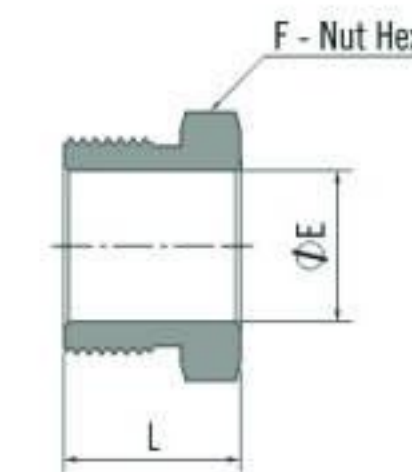
Female Nut

FR Size (in.)	Basic Ordering Number	Dimension, mm		
		L	G	E
1/8	-N-FR2	13.5	11.1	5.3
1/4	-N-FR4	20.6	19.1	9.1
1/2	-N-FR8	22.4	27.0	15.5
5/8	-N-FR10	22.4	30.2	18.8
3/4	-N-FR12	28.4	38.1	22.6
1	-N-FR16	34.0	44.5	30.5



Male Nut

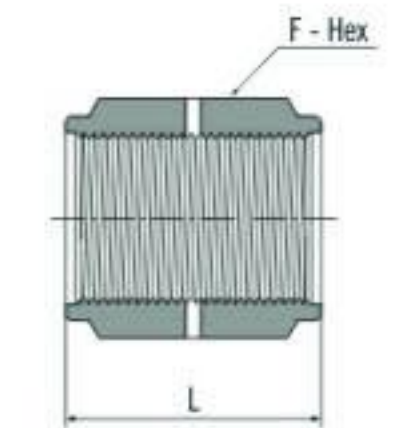
FR Size (in.)	Basic Ordering Number	Dimension, mm		
		L	F	E
1/8	-MN-FR2	12.7	9.5	5.3
1/4	-MN-FR4	18.0	15.9	9.1
1/2	-MN-FR8	20.6	23.8	15.5
5/8	-MN-FR10	20.6	27.0	18.8
3/4	-MN-FR12	25.4	33.3	22.6
1	-MN-FR16	30.2	41.3	30.5



Short Male Nut

FR Size (in.)	Basic Ordering Number	Dimension, mm		
		L	F	E
1/4	-MN-FR4-0.54	13.7	15.9	9.1
1/4	-MN-FR4-0.65	16.5	15.9	9.1

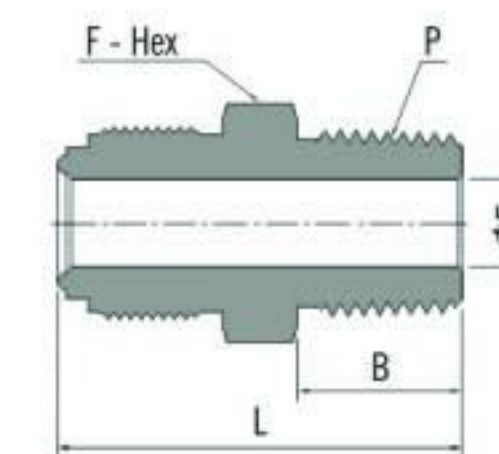
For use with short gland



Coupling

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

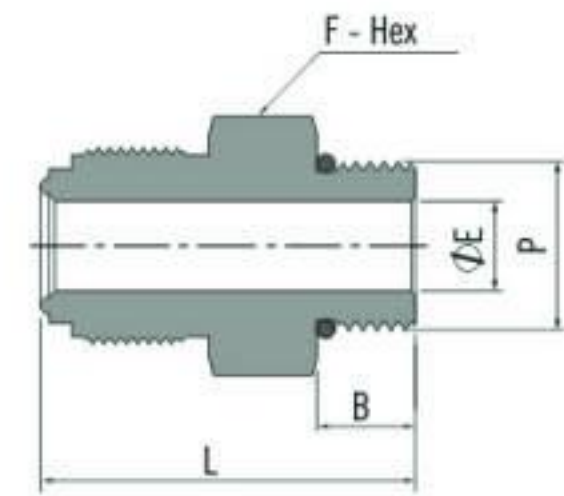
Bodies



FR Body to Male NPT

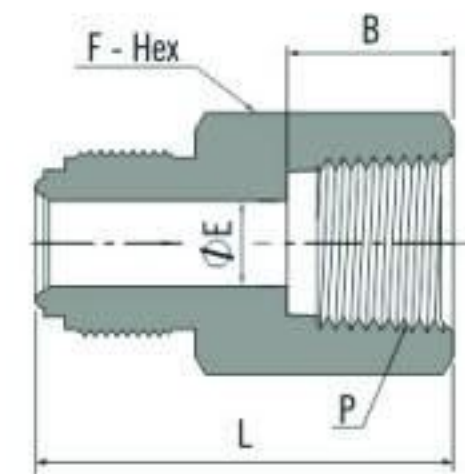
FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm				Working Pressure, psig (bar)		
			L	F	B	E	6L	CU	NI
1/8	1/16	-CM-FR2-NT1	27.2	9.5	9.7	2.3	9000 (620)	7200 (496)	9000 (620)
1/8	1/8	-CM-FR2-NT2	27.2	11.1	9.7	2.3	9000 (620)	7200 (496)	9000 (620)
1/4	1/8	-CM-FR4-NT2	33.3	15.9	9.7	4.6	10000 (689)	6400 (440)	8000 (551)
1/4	1/4	-CM-FR4-NT4	37.9	15.9	14.2	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	1/4	-CM-FR8-NT4	41.9	23.8	14.2	10.2	4300 (296)	2800 (196)	3500 (241)
1/2	3/8	-CM-FR8-NT6	41.9	23.8	19.1	9.7	4300 (296)	2800 (196)	3500 (241)
1/2	1/2	-CM-FR8-NT8	46.7	23.8	19.1	10.2	4300 (296)	2800 (196)	3500 (241)
3/4	3/4	-CM-FR12-NT12	55.6	33.3	19.1	15.8	3700 (254)	2400 (165)	3000 (206)
1	1	-CM-FR16-NT16	62.7	41.3	23.9	22.1	3000 (206)	1900 (130)	2400 (165)

Bodies



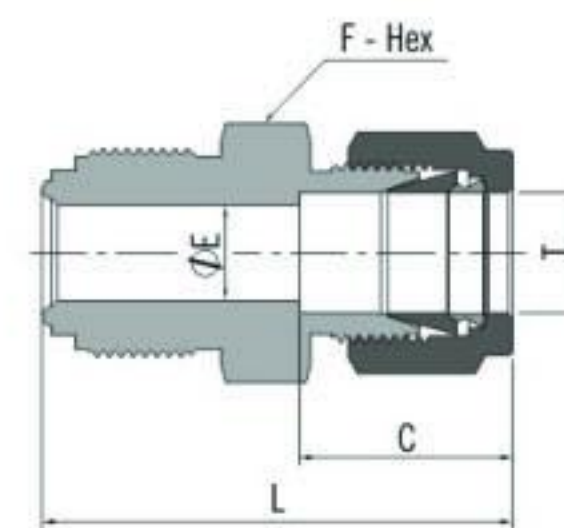
FR Body to SAE/MS Thread

FR Size (in.)	P-SAE/MS Thread Size	Basic Ordering Number	Dimension, mm				Working Pressure, psig (bar)		
			L	F	B	E	6L	CU	NI
1/4	9/16-18	-CM-FR4-ST9	33.8	19.1	9.9	4.6	4500 (310)	4500 (310)	4500 (310)
1/2	9/16-18	-CM-FR8-ST9	37.6	23.8	9.9	7.1	3500 (241)	2800 (192)	3500 (241)
1/2	7/8-14	-CM-FR8-ST12	42.2	25.4	12.7	7.1	3500 (241)	2800 (192)	3500 (241)



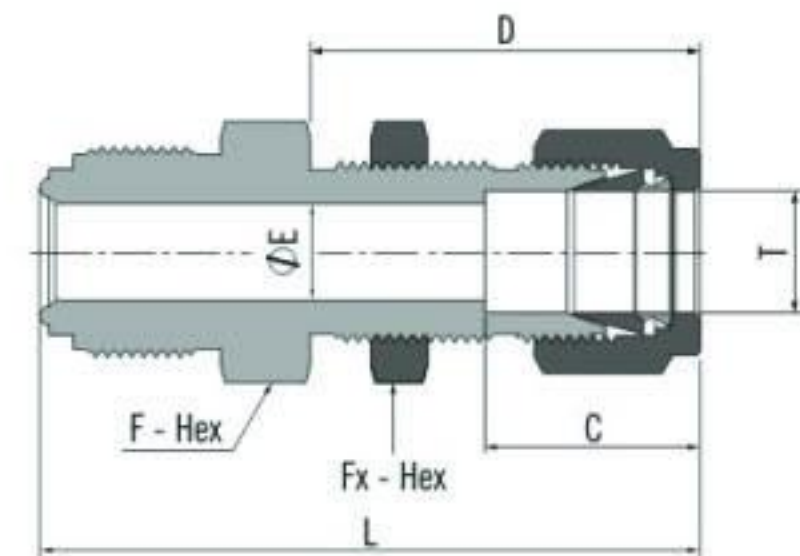
FR Body to Female NPT

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm				Working Pressure, psig (bar)		
			L	F	B	E	6L	CU	NI
1/8	1/16	-CF-FR2-NT1	27.9	11.1	9.9	2.3	6700 (461)	6700 (461)	6700 (461)
1/8	1/8	-CF-FR2-NT2	30.2	14.3	10.4	2.3	6500 (447)	6500 (447)	6500 (447)
1/4	1/8	-CF-FR4-NT2	35.8	15.9	10.4	4.6	8000 (551)	6400 (440)	8000 (551)
1/4	1/4	-CF-FR4-NT4	39.1	19.1	15.0	4.6	6600 (454)	5200 (358)	6600 (454)
1/2	3/8	-CF-FR8-NT6	44.7	23.8	15.0	10.2	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-CF-FR8-NT8	50.5	27.0	19.8	10.2	4300 (296)	2800 (192)	3500 (241)
3/4	3/4	-CF-FR12-NT12	59.9	33.3	20.6	15.7	3700 (254)	2400 (165)	3000 (207)
1	1	-CF-FR16-NT16	63.8	41.3	25.4	22.1	3000 (207)	1900 (130)	2400 (165)



FR Body to Tube Fitting

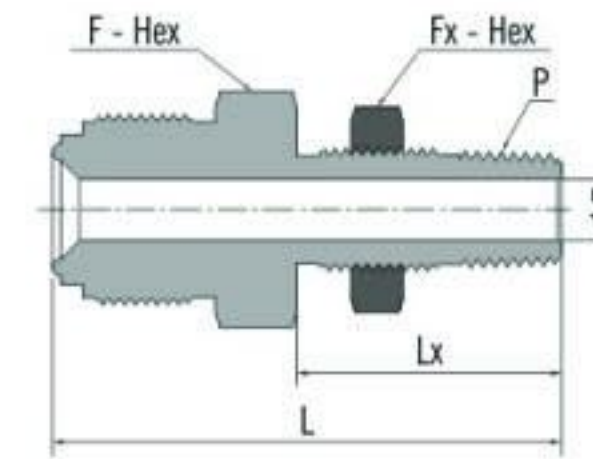
FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm				Working Pressure, psig (bar)		
			L	F	C	E	6L	CU	NI
1/4	1/8	-U-FR4-S2	38.9	15.9	12.7	2.3	10000 (689)	6400 (440)	8000 (551)
1/4	1/4	-U-FR4-S4	41.1	15.9	15.2	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	3/8	-U-FR8-S6	46.7	23.8	16.8	7.1	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-U-FR8-S8	49.5	23.8	22.9	10.2	4300 (296)	2800 (192)	3500 (241)



FR Body to Bulkhead Tube Fitting Union

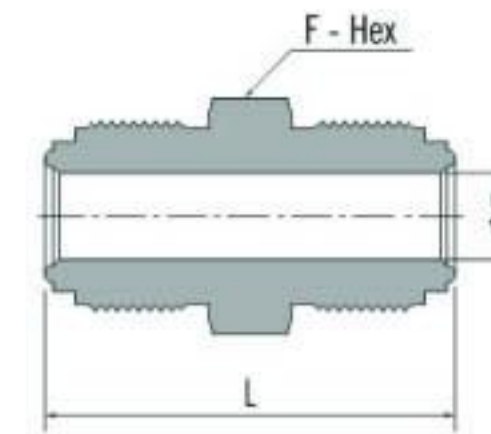
FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm						Panel Hole Size (mm)	Max. Panel Thickness (mm)	Working Pressure, psig (bar)		
			L	F	Fx	D	C	E			6L	CU	NI
1/4	1/4	-UB-FR4-S4	57.2	15.9	15.9	33.5	15.2	4.6	11.9	10.2	10000 (689)	6400 (440)	8000 (551)
1/4	1/4	-UB-FR4-S4-1.88	47.8	15.9	15.9	26.7	15.2	4.6	11.9	3.3	10000 (689)	6400 (440)	8000 (551)
1/2	3/8	-UB-FR8-S6	64.5	23.8	19.1	36.8	16.8	7.1	15.1	11.2	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-UB-FR8-S8	69.6	23.8	23.8	41.9	22.9	10.2	19.8	12.7	4300 (296)	2800 (192)	3500 (241)

Bodies



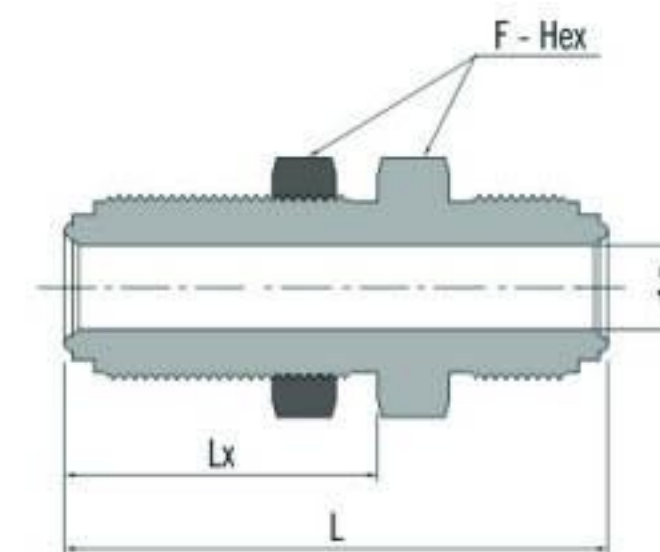
FR Body to Bulkhead Male Connector

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm					Panel Hole Size (mm)	Max. Panel Thickness (mm)	Working Pressure, psig (bar)		
			L	F	Fx	Lx	E			6L	CU	NI
1/4	1/4	-CMB-FR4-NT4	56.1	20.6	20.6	31.5	7.1	16.7	9.7	8000 (551)	6400 (440)	8000 (551)
1/2	1/4	-CMB-FR8-NT4	59.4	23.8	20.6	31.5	7.1	16.7	9.7	4370 (301)	2800 (192)	3500 (241)



Union Body

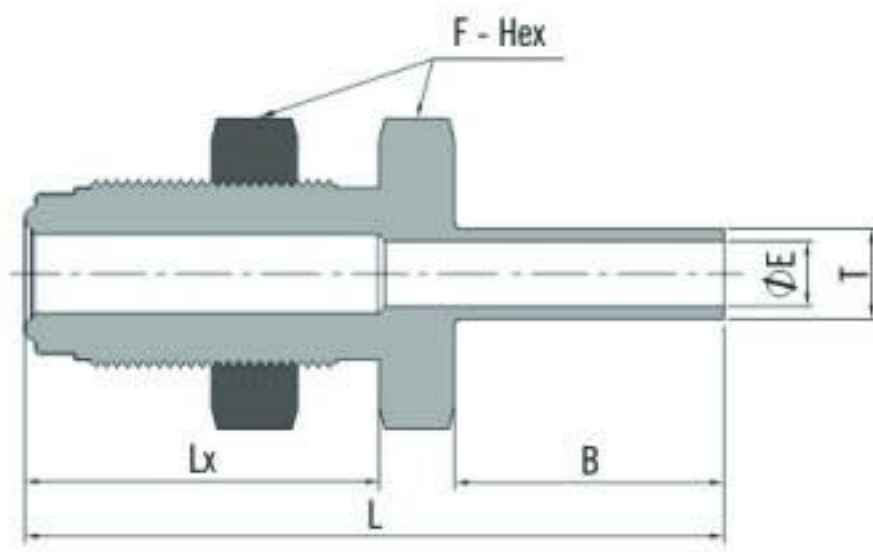
FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
			L	F	E	6L	CU	NI
1/8	1/8	-U-FR2	28.7	9.5	2.3	11200 (772)	7200 (496)	9000 (620)
1/4	1/8	-U-FR4-FR2	34.8	15.9	2.3	10000 (689)	6400 (440)	8000 (551)
1/4	1/4	-U-FR4	39.4	15.9	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	1/4	-U-FR8-FR4	43.4	23.8	4.6	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-U-FR8	46.7	23.8	10.2	4300 (296)	2800 (192)	3500 (241)
3/4	3/4	-U-FR12	62.0	33.3	15.7	3700 (254)	2400 (165)	3000 (207)
1	1	-U-FR16	65.8	41.3	22.1	3000 (207)	1900 (130)	2400 (165)



Bulkhead Union Body

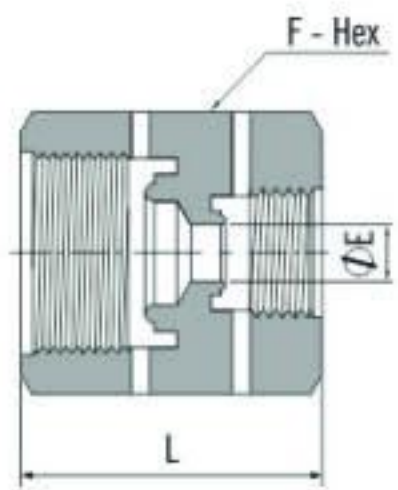
FR Size (in.)	Basic Ordering Number	Dimension, mm				Panel Hole Drill Size (mm)	Max. Panel Thickness (mm)	Working Pressure, psig (bar)		
		L	Lx	F	E			6L	CU	NI
1/4	-BU-FR4-1.82	46.2	25.1	19.1	4.6	15.1	3.3	10000 (689)	6400 (440)	8000 (551)
1/4	-BU-FR4	56.6	33.0	19.1	4.6	15.1	11.2	10000 (689)	6400 (440)	8000 (551)
1/2	-BU-FR8-2.14	54.4	28.2	27.0	10.2	23.0	3.3	4300 (296)	2800 (192)	3500 (241)
1/2	-BU-FR8	65.3	37.6	27.0	10.2	23.0	12.7	4300 (296)	2800 (192)	3500 (241)

Bodies



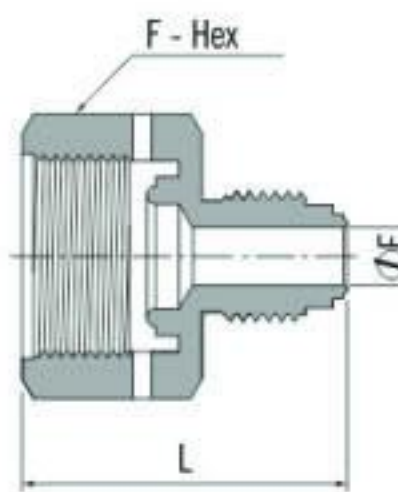
FR Bulkhead Body to Tube Butt Weld

FR Size (in.)	T-Tube O.D. (in.)	Basic Ordering Number	Dimension, mm					Panel Hole Drill Size (mm)	Max. Panel Thickness (mm)	Working Pressure, psig (bar)		
			L	Lx	F	E	B			6L	CU	NI
1/4	1/4	-BW-FR4-BW4-1.95	49.5	25.1	19.1	4.6	19.1	15.1	3.3	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	-BW-FR4-BW4	59.9	33.0	19.1	4.6	19.1	15.1	11.2	5100 (351)	5100 (351)	5100 (351)



Female Reducing Union

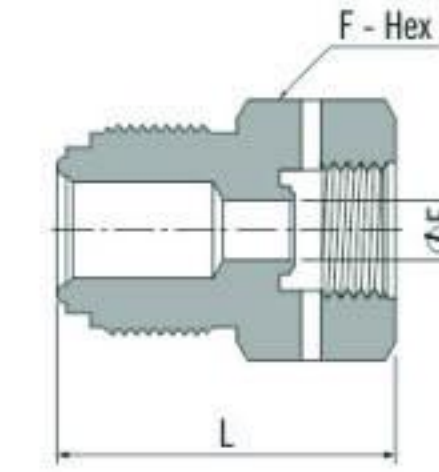
FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
			L	F	E	6L	CU	NI
1/4	1/8	-RU-FR4-FR2	29.5	19.1	3.3	10000 (689)	6400 (440)	8000 (551)
1/2	1/4	-RU-FR8-FR4	35.8	27.0	6.4	4300 (296)	2800 (192)	3500 (241)



Reducing Adapter

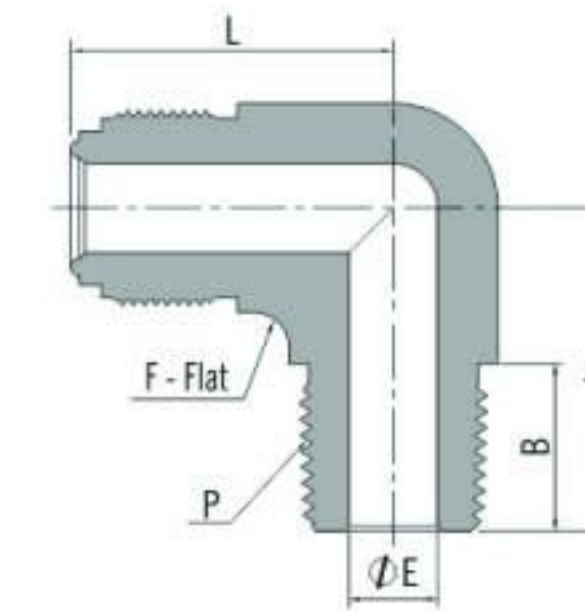
FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
			L	F	E	6L	CU	NI
1/4	1/8	-RA-FR4-FR2	30.2	19.1	2.3	10000 (689)	6400 (440)	8000 (551)
1/2	1/4	-RA-FR8-FR4	35.8	27.0	4.6	4300 (296)	2800 (192)	3500 (241)

Bodies



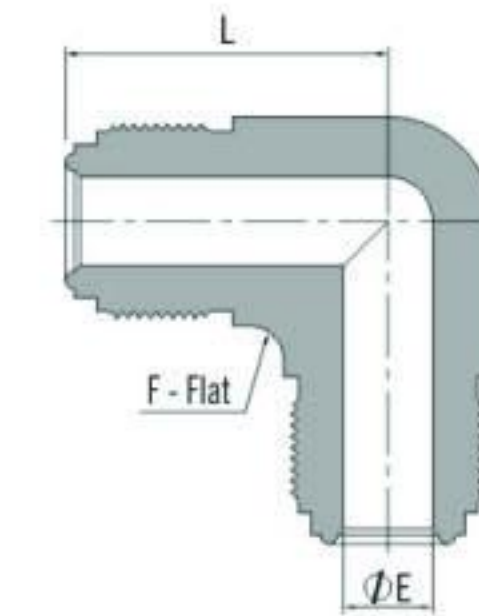
Reducing Bushing

FR Size (in.)	FR Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
			L	F	E	6L	CU	NI
1/4	1/8	-RB-FR4-FR2	26.9	15.9	3.3	10000 (689)	6400 (440)	8000 (551)
1/2	1/4	-RB-FR8-FR4	35.8	23.8	6.4	4300 (296)	2800 (192)	3500 (241)



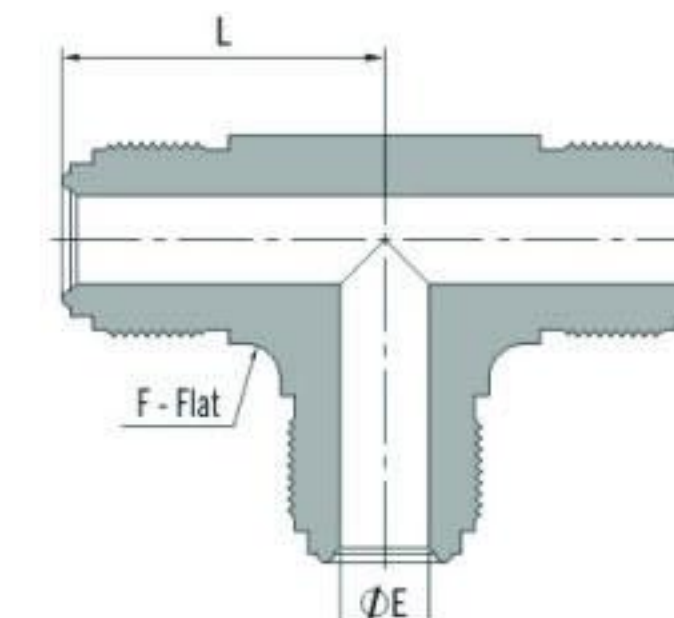
FR Body to Male NPT Elbow

FR Size (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm					Working Pressure, psig (bar)		
			L	F	B	E	Lx	6L	CU	NI
1/4	1/8	-LM-FR4-NT2	27.2	12.7	9.6	4.6	22.1	10000 (689)	6400 (440)	8000 (551)
1/4	1/4	-LM-FR4-NT4	27.2	12.7	14.2	4.6	26.7	8000 (551)	8000 (551)	8000 (551)
1/2	3/8	-LM-FR8-NT6	36.8	20.6	14.2	10.2	32.0	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	-LM-FR8-NT8	36.8	20.6	19.1	10.2	36.8	4300 (296)	2800 (192)	3500 (241)



FR Body Union Elbow

FR Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
		L	F	E	6L	CU	NI
1/8	-LU-FR2	22.6	11.1	2.3	11200 (772)	7200 (496)	9000 (620)
1/4	-LU-FR4	27.2	12.7	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	-LU-FR8	36.8	20.6	10.2	4300 (296)	2800 (192)	3500 (241)
3/4	-LU-FR12	48.8	31.8	15.7	3700 (254)	2400 (165)	3000 (207)
1	-LU-FR16	50.8	42.9	22.1	3000 (207)	1900 (130)	2400 (165)

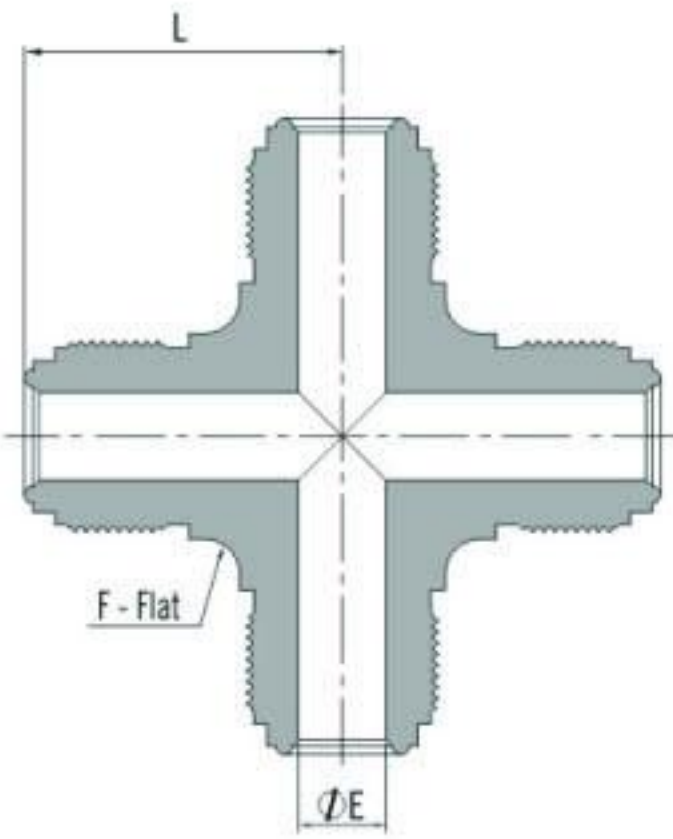


FR Body Union Tee

FR Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
		L	F	E	6L	CU	NI
1/8	-TTT-FR2	22.6	11.1	2.3	11200 (772)	7200 (496)	9000 (620)
1/4	-TTT-FR4	27.2	12.7	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	-TTT-FR8	36.8	20.6	10.2	4300 (296)	2800 (192)	3500 (241)
3/4	-TTT-FR12	48.8	31.8	15.7	3700 (254)	2400 (165)	3000 (207)
1	-TTT-FR16	50.8	42.9	22.1	3000 (207)	1900 (130)	2400 (165)

Metal Gasket Face Seal Fittings

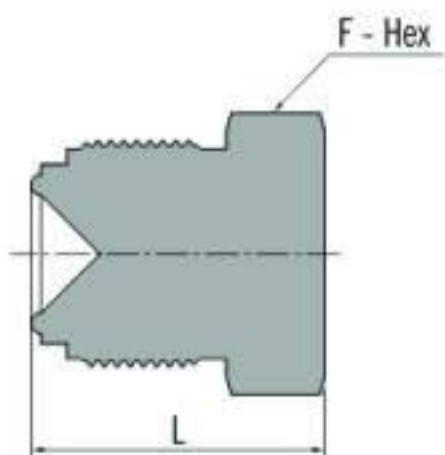
Bodies



FR Body Union Cross

FR Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
		L	F	E	6L	CU	NI
1/8	-C-FR2	22.6	11.1	2.3	11200 (772)	7200 (496)	9000 (620)
1/4	-C-FR4	27.2	12.7	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	-C-FR8	36.8	20.6	10.2	4300 (296)	2800 (192)	3500 (241)
3/4	-C-FR12	48.8	31.8	15.7	3700 (254)	2400 (165)	3000 (206)
1	-C-FR16	50.8	42.9	22.1	3000 (206)	1900 (130)	2400 (165)

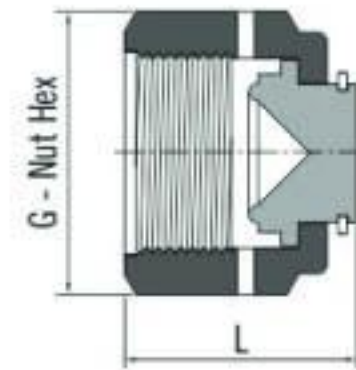
Plugs



Plug

FR Size (in.)	Basic Ordering Number	Dimension, mm	
		L	F
1/8	-PG-FR2	17.3	9.5
1/4	-PG-FR4	23.4	15.9
1/2	-PG-FR8	27.4	23.8
3/4	-PG-FR12	36.3	33.3
1	-PG-FR16	38.6	41.3

Caps



Cap

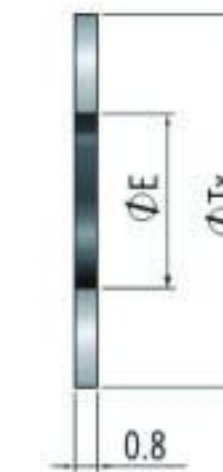
FR Size (in.)	Basic Ordering Number	Dimension, mm	
		L	F
1/8	-CP-FR2	16.0	11.1
1/4	-CP-FR4	23.9	19.1
1/2	-CP-FR8	25.6	27.0
3/4	-CP-FR12	32.8	38.1
1	-CP-FR16	39.1	44.5

Metal Gasket Face Seal Fittings

Gaskets

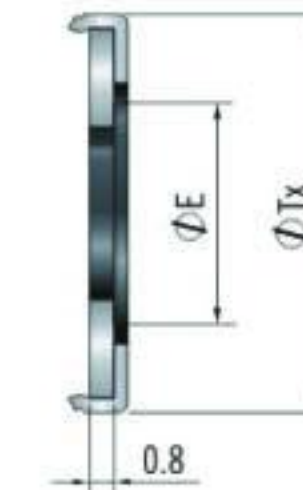
- Nickel and Copper gasket retainer assemblies use a 316L stainless steel retainer.
- Copper and Nickel gaskets are unplated.

Silver Plated



Nonretained

FR Size (in.)	Basic Ordering Number	Dimension, mm	
		Tx	E
1/8	-GT-FR2	6.6	2.3
1/4	-GT-FR4	11.9	5.6
1/2	-GT-FR8	19.8	11.2
5/8	-GT-FR10	23.1	14.7
3/4	-GT-FR12	29.0	16.8
1	-GT-FR16	35.6	22.6



Gasket Retainer Assembly

FR Size (in.)	Basic Ordering Number	Dimension, mm	
		Tx	E
1/4	-GT-FR4-A	12.7	6.1
1/2	-GT-FR8-A	20.1	11.2
3/4	-GT-FR12-A	29.0	16.8
1	-GT-FR16-A	35.6	22.6

Gasket and retainer must be used as an assembly.

Unplated (UP)



Nonretained

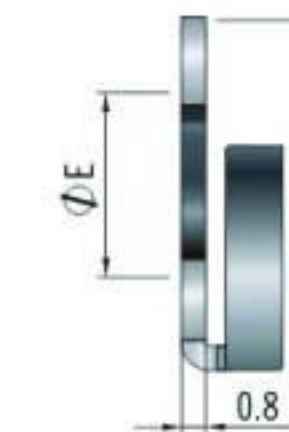
FR Size (in.)	Basic Ordering Number	Dimension, mm	
		Tx	E
1/8	-GT-FR2-UP	6.6	2.3
1/4	-GT-FR4-UP	11.9	5.6
1/2	-GT-FR8-UP	19.8	11.2
5/8	-GT-FR10-UP	23.1	14.7
3/4	-GT-FR12-UP	29.0	16.8
1	-GT-FR16-UP	35.6	22.6



Gasket Retainer Assembly

FR Size (in.)	Basic Ordering Number	Dimension, mm	
		Tx	E
1/4	-GT-FR4-A-UP	12.7	6.1
1/2	-GT-FR8-A-UP	20.1	11.2
3/4	-GT-FR12-A-UP	29.0	16.8
1	-GT-FR16-A-UP	35.6	22.6

Gasket and retainer must be used as an assembly.



Side-load retainer

FR Size (in.)	Basic Ordering Number	Dimension, mm	
		Tx	E
1/4	-GT-FR4-AS-UP	11.4	5.8
1/2	-GT-FR8-AS-UP	19.1	11.0

Not available in copper.