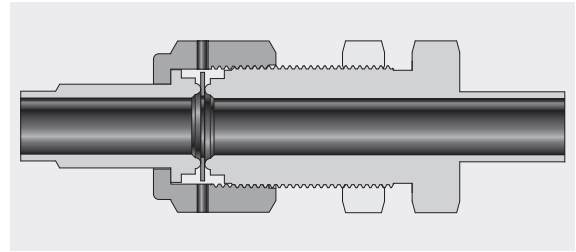


Metal Gasket Face Seal Fittings

- ❖ Metal-to-metal seal provides perfect leak-tight service from critical vacuum to high pressure
- ❖ Female threads are silver plated to prevent galling
- ❖ Two test port for easy leak testing
- ❖ Non-rotational female nut to prevent transmission of torque
- ❖ Smooth transition into the internal diameter minimizes entrapment areas
- ❖ Standard surface finish on glands and bodies is a roughness average of 10µin. (0.25µm) Ra
- ❖ Sizes from 1/16 to 1 in. and 6 to 18 mm
- ❖ 316, 316L, and 316L VAR (Vacuum Arc Remelt) stainless steel materials are available



Pressure Ratings

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

Temperature ratings

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 (-269°C to 204°C)
	Copper	
	Nickel	

Standard Materials

Material	Bar Stock	Forging
Fitting Material		
316 stainless steel	ASTM A276, ASME SA479	ASTM A182, ASME SA182
316L stainless steel		
316L VAR stainless steel		
Gasket Material		
316L stainless steel	ASTM A240, A167	
Copper	ASTM B152	
Nickel	ASTM B162	

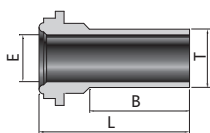


Testing

- ❖ The GFS fitting has been helium leak tested to a maximum leak rate of 4×10^{-9} std cm³/s with silver-plated.

Pressure Ratings and Dimensions

Glands

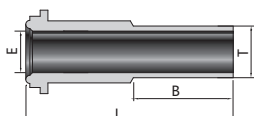


GFS Gland to Short Fractional Tube Butt Weld

GFS Size (in.)	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	GFS2-SG-FBW2-	27.4	19.1	1.5	8500 (586)	6800 (468)	8500 (586)
1/4	1/8	0.028	GFS4-SG-FBW2-	27.9	19.1	1.5	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	GFS4-SG-FBW4-	15.2	6.4	4.6	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	GFS4-SG-FBW4-2-	18.3	9.7	4.6	5100 (351)	5100 (351)	5100 (351)
1/4	1/4	0.035	GFS4-SG-FBW4-4-	27.9	19.1	4.6	5100 (351)	5100 (351)	5100 (351)
1/2	1/4	0.035	GFS8-SG-FBW4-	28.4	19.1	4.6	4300 (296)	2800 (192)	3500 (241)
1/2	3/8	0.035	GFS8-SG-FBW6-	15.7	6.4	7.9	3300 (227)	2600 (179)	3300 (227)
1/2	3/8	0.035	GFS8-SG-FBW6-2-	28.4	19.1	7.9	3300 (227)	2600 (179)	3300 (227)
1/2	1/2	0.049	GFS8-SG-FBW8-	15.7	6.4	10.2	3500 (241)	2800 (192)	3500 (241)
1/2	1/2	0.049	GFS8-SG-FBW8-2-	18.8	9.7	10.2	3500 (241)	2800 (192)	3500 (241)
1/2	1/2	0.049	GFS8-SG-FBW8-4-	28.4	19.1	10.2	3500 (241)	2800 (192)	3500 (241)

GFS Gland to Short Metric Tube Butt Weld

GFS 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	GFS4-SG-MBW6-	29.5	19.1	4.0	6800(468)	5400(372)	6800(468)
1/4	8	1.0	GFS4-SG-MBW8-	29.5	19.1	6.0	4900(337)	4900(337)	4900(337)
1/2	10	1.0	GFS8-SG-MBW10-	29.5	19.1	8.0	3500(241)	2800(192)	3500(241)
1/2	12	1.0	GFS8-SG-MBW12-	29.5	19.1	10.0	3100(213)	2400(165)	3100(213)
3/4	18	1.5	GFS12-SG-MBW18-	31.0	19.1	15.0	3000(206)	2400(165)	3000(206)



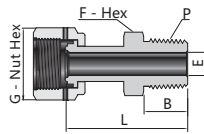
GFS Gland to Long Fractional Tube Butt Weld

GFS Size (in.)	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	GFS2-G-FBW2-	36.1	19.1	1.5	8500(586)	6800(468)	8500(586)
1/4	1/4	0.035	GFS4-G-FBW4-	30.5	6.4	4.6	5100(351)	5100(351)	5100(351)
1/4	1/4	0.035	GFS4-G-FBW4-2-	33.3	9.1	4.6	5100(351)	5100(351)	5100(351)
1/4	1/4	0.035	GFS4-G-FBW4-4-	33.5	9.7	4.6	5100(351)	5100(351)	5100(351)
1/4	1/4	0.035	GFS4-G-FBW4-6-	43.2	19.1	4.6	5100(351)	5100(351)	5100(351)
1/2	1/4	0.035	GFS8-G-FBW4-	45.7	19.1	4.6	4300(296)	2800(192)	3500(241)
1/2	3/8	0.035	GFS8-G-FBW6-	32.8	6.4	7.9	3300(227)	2600(179)	3300(227)
1/2	3/8	0.035	GFS8-G-FBW6-2-	45.5	19.1	7.9	3300(227)	2600(179)	3300(227)
1/2	1/2	0.049	GFS8-G-FBW8-	32.8	6.4	10.2	3500(241)	2800(192)	3500(241)
1/2	1/2	0.049	GFS8-G-FBW8-2-	35.8	9.7	10.2	3500(241)	2800(192)	3500(241)
1/2	1/2	0.049	GFS8-G-FBW8-4-	45.5	19.1	10.2	3500(241)	1900(130)	3500(241)
3/4	3/4	0.049	GFS12-G-FBW12-	51.6	19.1	16.5	2400(165)	1900(130)	2400(165)
1	1	0.065	GFS16-G-FBW16-	58.9	19.1	22.1	2400(165)	2400(165)	2400(165)

GFS Gland to Long Metric Tube Butt Weld

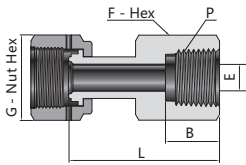
GFS Size (in.)	T-Tube O.D. (mm)	Nominal Wall Thickness (mm)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
				L	B	E	6L	CU	NI
1/4	6	1.0	GFS4-G-MBW6-	43.2	19.1	4.0	6800(468)	5400(372)	6800(468)
1/4	8	1.0	GFS4-G-MBW8-	43.2	19.1	6.0	4900(337)	4900(337)	4900(337)
1/2	10	1.0	GFS8-G-MBW10-	45.5	19.1	8.0	3500(241)	2800(192)	3500(241)
1/2	12	1.0	GFS8-G-MBW12-	45.5	19.1	10.0	3100(213)	2400(165)	3100(213)
3/4	18	1.5	GFS12-G-MBW18-	51.6	19.1	15.0	3000(207)	2400(165)	3000(207)

Welded Assemblies



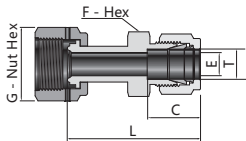
GFS Welded Assemblies to Male NPT

GFS 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	FGFS4-WA-NPT2-	40.1	9.7	4.6	19.05	11.1	8000 (551)	6400 (446)	8000 (551)
1/4	1/4	FGFS4-WA-NPT4-	45.5	14.2	4.6	19.05	14.3	8000 (551)	6400 (446)	8000 (551)
1/2	3/8	FGFS8-WA-NPT6-	48.0	14.2	10.2	26.99	17.5	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	FGFS8-WA-NPT8-	53.1	19.1	10.2	26.99	22.2	4300 (296)	2800 (192)	3500 (241)



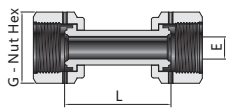
GFS Welded Assemblies to Female NPT

GFS 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	FGFS4-WA-FNPT4-	45.0	15.0	4.6	19.1	19.1	6600 (454)	5200 (458)	6600 (454)
1/2	3/8	FGFS8-WA-FNPT6-	49.5	15.0	10.2	27.0	22.2	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	FGFS8-WA-FNPT8-	55.4	19.8	10.2	27.0	27.0	4300 (296)	2800 (192)	3500 (241)



GFS Welded Assemblies to Tube Fitting

GFS 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	FGFS4-WA-F4-	49.3	15.2	4.6	19.1	12.7	10000 (689)	6400 (440)	8000 (551)
1/4	3/8	FGFS4-WA-F6-	50.0	16.8	4.6	19.1	15.9	6500 (447)	5200 (358)	6500 (447)
1/2	1/2	FGFS8-WA-F8-	56.6	22.9	10.2	27.0	20.6	4300 (296)	2800 (192)	3500 (241)

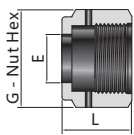


GFS Welded Assemblies Union

GFS Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
		L	E	G	6L	CU	NI
1/4	FGFS4-WU-FGFS4-	43.4	4.6	19.1	10000 (689)	6400 (440)	8000 (551)
1/2	FGFS8-WU-FGFS8-	46.7	10.2	27.0	4300 (296)	2800 (192)	3500 (241)

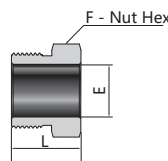
Nuts

Female Nut

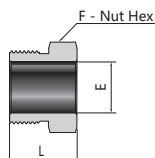


GFS Size (in.)	Basic Ordering Number	Dimension, mm		
		L	G	E
1/8	FN-FGFS2-	13.5	11.1	5.3
1/4	FN-FGFS4-	20.6	19.1	9.1
1/2	FN-FGFS8-	22.4	27.0	15.5
5/8	FN-FGFS10-	22.4	30.2	18.8
3/4	FN-FGFS12-	28.4	38.1	22.6
1	FN-FGFS16-	34.0	44.5	30.5

Male Nut



GFS Size (in.)	Basic Ordering Number	Dimension, mm		
		L	F	E
1/8	MN-GFS2-	12.7	9.5	5.3
1/4	MN-GFS4-	18.0	15.9	9.1
1/2	MN-GFS8-	20.6	23.8	15.5
5/8	MN-GFS10-	20.6	27.0	18.8
3/4	MN-GFS12-	25.4	33.3	22.6
1	MN-GFS16-	30.2	41.3	30.5



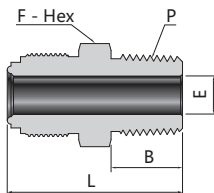
Short Male Nut

GFS Size (in.)	Basic Ordering Number	Dimension, mm		
		L	F	E
1/4	SMN-GFS4-0.54-	13.7	15.9	9.1
1/4	SMN-GFS4-0.65-	16.5	15.9	9.1

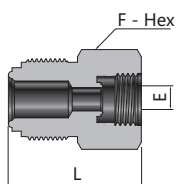
For use with short gland

Bodies

GFS Body to Male NPT

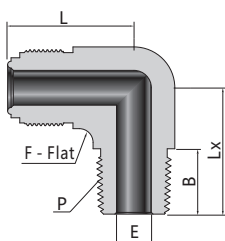


GFS Size (in.)	P-NPT Size	Basic Ordering Number	Dimension, mm				Working Pressure, psig (bar)		
			L	F	B	E	6L	CU	NI
1/8	1/16	GFS2-MC-NPT1-	27.2	9.5	9.7	2.3	9000 (620)	7200 (496)	9000 (620)
1/8	1/8	GFS2-MC-NPT2-	27.2	11.1	9.7	2.3	9000 (620)	7200 (496)	9000 (620)
1/4	1/8	GFS4-MC-NPT2-	33.3	15.9	9.7	4.6	10000 (689)	6400 (440)	8000 (551)
1/4	1/4	GFS4-MC-NPT4-	37.9	15.9	14.2	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	1/4	GFS8-MC-NPT4-	41.9	23.8	14.2	10.2	4300 (296)	2800 (196)	3500 (241)
1/2	3/8	GFS8-MC-NPT6-	41.9	23.8	19.1	9.7	4300 (296)	2800 (196)	3500 (241)
1/2	1/2	GFS8-MC-NPT8-	46.7	23.8	19.1	10.2	4300 (296)	2800 (196)	3500 (241)
3/4	3/4	GFS12-MC-NPT12-	55.6	33.3	19.1	15.8	3700 (254)	2400 (165)	3000 (206)
1	1	GFS16-MC-NPT16-	62.7	41.3	23.9	22.1	3000 (206)	1900 (130)	2400 (165)



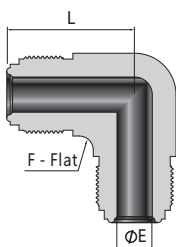
Reducing Bushing

GFS Size (in.)	NPT Size	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
			L	F	E	6L	CU	NI
1/4	1/8	GFS4-RB-FGFS2-	26.9	15.9	3.3	10000 (689)	6400 (440)	8000 (551)
1/2	1/4	GFS8-RB-FGFS4-	35.8	23.8	6.4	4300 (296)	2800 (192)	3500 (241)



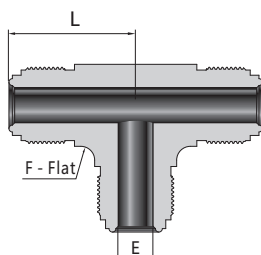
GFS Body to Male NPT Elbow

GFS Size (in.)	NPT Size	Basic Ordering Number	Dimension, mm					Working Pressure, psig (bar)		
			L	F	B	E	Lx	6L	CU	NI
1/4	1/8	GFS4-ME-NPT2-	27.2	12.7	9.6	4.6	22.1	10000 (689)	6400 (440)	8000 (551)
1/4	1/4	GFS4-ME-NPT4-	27.2	12.7	14.2	4.6	26.7	8000 (551)	8000 (551)	8000 (551)
1/2	3/8	GFS8-ME-NPT6-	36.8	20.6	14.2	10.2	32.0	4300 (296)	2800 (192)	3500 (241)
1/2	1/2	GFS8-ME-NPT8-	36.8	20.6	19.1	10.2	36.8	4300 (296)	2800 (192)	3500 (241)



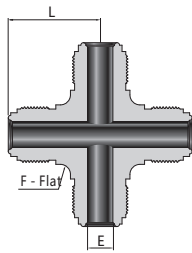
GFS Body Union Elbow

GFS Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
		L	F	E	6L	CU	NI
1/8	GFS2-UE-GFS2-	22.6	11.1	2.3	11200 (772)	7200 (496)	9000 (620)
1/4	GFS4-UE-GFS4-	27.2	12.7	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	GFS8-UE-GFS8-	36.8	20.6	10.2	4300 (296)	2800 (192)	3500 (241)
3/4	GFS12-UE-GFS12-	48.8	31.8	15.7	3700 (254)	2400 (165)	3000 (207)
1	GFS16-UE-GFS16-	50.8	42.9	22.1	3000 (207)	1900 (130)	2400 (165)



GFS Body Union Tee

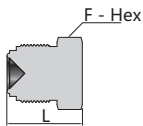
GFS Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
		L	F	E	6L	CU	NI
1/8	GFS2-UT-GFS2-GFS2-	22.6	11.1	2.3	11200 (772)	7200 (496)	9000 (620)
1/4	GFS4-UT-GFS4-GFS4-	27.2	12.7	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	GFS8-UT-GFS8-GFS8-	36.8	20.6	10.2	4300 (296)	2800 (192)	3500 (241)
3/4	GFS12-UT-GFS12-GFS12-	48.8	31.8	15.7	3700 (254)	2400 (165)	3000 (207)
1	GFS16-UT-GFS16-GFS16-	50.8	42.9	22.1	3000 (207)	1900 (130)	2400 (165)



GFS Body Union Cross

GFS Size (in.)	Basic Ordering Number	Dimension, mm			Working Pressure, psig (bar)		
		L	F	E	6L	CU	NI
1/8	GFS2-UC-GFS2-GFS2-GFS2-	22.6	11.1	2.3	11200 (772)	7200 (496)	9000 (620)
1/4	GFS4-UC-GFS4-GFS4-GFS4-	27.2	12.7	4.6	10000 (689)	6400 (440)	8000 (551)
1/2	GFS8-UC-GFS8-GFS8-GFS8-	36.8	20.6	10.2	4300 (296)	2800 (192)	3500 (241)
3/4	GFS12-UC-GFS12-GFS12-GFS12-	48.8	31.8	15.7	3700 (254)	2400 (165)	3000 (206)
1	GFS16-UC-GFS16-GFS16-GFS16-	50.8	42.9	22.1	3000 (206)	1900 (130)	2400 (165)

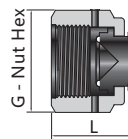
Plugs



Plug

GFS Size (in.)	Basic Ordering Number	Dimension mm	
		L	F
1/8	PL-GFS2-	17.3	9.5
1/4	PL-GFS4-	23.4	15.9
1/2	PL-GFS8-	27.4	23.8
3/4	PL-GFS12-	36.3	33.3
1	PL-GFS16-	38.6	41.3

Caps



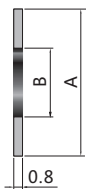
Cap

GFS Size (in.)	Basic Ordering Number	Dimension mm	
		L	F
1/8	CA-FGFS2-	16.0	11.1
1/4	CA-FGFS4-	23.9	19.1
1/2	CA-FGFS8-	25.6	27.0
3/4	CA-FGFS12-	32.8	38.1
1	CA-FGFS16-	39.1	44.5

Gaskets

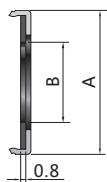
- ❖ Nickel and Copper gasket retainer assemblies use a 316L stainless steel retainer
- ❖ Copper and Nickel gaskets are unplated

Silver Plated



Nonretained

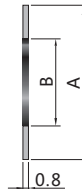
GFS Size (in.)	Basic Ordering Number	Dimension mm	
		A	B
1/8	GA-GFS2-	6.6	2.3
1/4	GA-GFS4-	11.9	5.6
1/2	GA-GFS8-	19.8	11.2
5/8	GA-GFS10-	23.1	14.7
3/4	GA-GFS12-	29.0	16.8
1	GA-GFS16-	35.6	22.6



Gasket Retainer Assembly

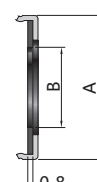
GFS Size (in.)	Basic Ordering Number	Dimension mm	
		A	B
1/4	GA-GFS4-A-	12.7	6.1
1/2	GA-GFS8-A-	20.1	11.2
3/4	GA-GFS12-A-	29.0	16.8
1	GA-GFS16-A-	35.6	22.6

Unplated



Nonretained


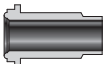
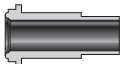




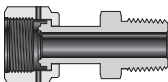
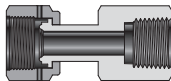
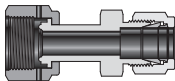
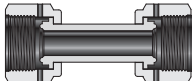
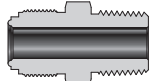
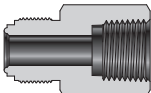
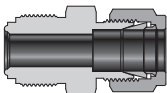
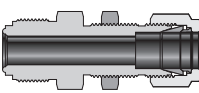
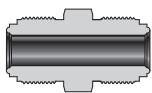
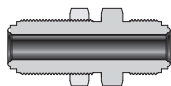
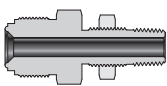
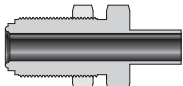
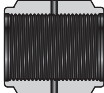
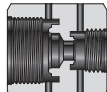
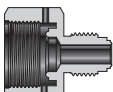
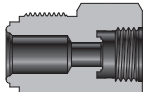

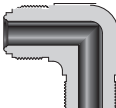

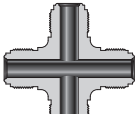





GFS Size (in.)	Basic Ordering Number	Dimension mm	
		A	B
1/8	GA-GFS2-UN-	6.6	2.3
1/4	GA-GFS4-UN-	11.9	5.6
1/2	GA-GFS8-UN-	19.8	11.2
5/8	GA-GFS10-UN-	23.1	14.7
3/4	GA-GFS12-UN-	29.0	16.8
1	GA-GFS16-UN-	35.6	22.6



Gasket Retainer Assembly

GFS Size (in.)	Basic Ordering Number	Dimension mm	
		A	B
1/4	GA-GFS4-A-UN-	12.7	6.1
1/2	GA-GFS8-A-UN-	20.1	11.2
3/4	GA-GFS12-A-UN-	29.0	16.8
1	GA-GFS16-A-UN-	35.6	22.6

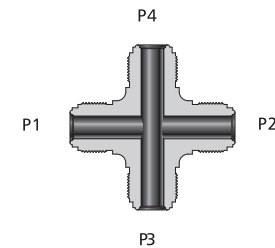
Configuration Designator

Short Gland 	Gland 	Gland 	Gland 
Designator: SG	Designator: G	Designator: G	Designator: G
Gland 	Gland 	Blind Gland 	Welded Assemblies 
Designator: G	Designator: G	Designator: BB	Designator: WA
Welded Assemblies 	Welded Assemblies 	Welded Assemblies 	Body to Male NPT 
Designator: WA	Designator: WA	Designator: WU	Designator: MC
Body to Female NPT 	Body to Tube Fitting 	Body to Bulkhead Tube Fitting 	Union Body 
Designator: FC	Designator: TF	Designator: BTF	Designator: U
Bulkhead Union Body 	Bulkhead Male Connector 	Body to Tube Butt Weld 	Coupling 
Designator: BU	Designator: BMC	Designator: BTB	Designator: C
Female Reducing Union 	Reducing Adapter 	Reducing Bushing 	Body to Male NPT Elbow 
Designator: FU	Designator: RA	Designator: RB	Designator: ME
Body Union Elbow 	Body Union Tee 	Body Union Cross 	Female Nut 
Designator: UE	Designator: UT	Designator: UC	Designator: FN
Male Nut 	Plug 	Cap 	Gasket 
Designator: MN	Designator: PL	Designator: CA	Designator: GA

How to Order

GFS8 — UT — GFS8 — GFS8 — 316L

Port 1 Type	Port 1 Size	Fitting Type	Port 2 Type	Port 2 Size	Port 3 and Port 4	Material
GFS Male Gasket Face Seal	2 1/8 in. 4 1/4 in.	SG Short Gland G Gland	GFS Metal Gasket Face Seal FGFS Fractional Gasket Face Seal	Same as the Port 1 or follow : 1 1/16 in.	Same as Port 2	316 316 S.S. 316L 316L S.S. 316LV 316L VAR NI Nickel CO Copper
FGFS Female Gasket Face Seal	8 1/2 in. or 3/8 in. 12 3/4 in.	WA Weld Assemblies FN Female Nut MN Male Nut	FBW Fractional Tube Butt Weld FSW Fractional Tube Socket Weld MSW Metric Tube Socket Weld MBW Metric Tube Butt Weld	2 1/8 in. 4 1/4 in. 6 3/8 in. or 6 mm 7 7/16-20		
RGFS Rotable Male Gasket Face Seal	16 1 in.	SMN Short Male Nut MC Male Connector Body FC Female Connector Body U Union Body	F Fractional Tube Fitting M Metric Tube Fitting FNPT Female NPT NPT Male NPT FBT Female BSPT MBT Male BSPT	8 8mm 9 9/16-18 10 10 mm 12 3/4 in. or 3/4-16 or 12 mm 17 1 1/16-12 18 18mm 21 1 5/16-12		
RGFS Rotable Female Gasket Face Seal		TF Body to Tube Fitting BTF Body to Bulkhead Tube Fitting BMC Body to Bulkhead Male Connector BB Blind Body BU Bulkhead Union Body BTB Bulkhead Body to Tube Butt Weld C Coupling BSW Body to Tube Socket Weld RA Reducing Adapter RB Reducing Bushing ME Male Elbow UE Union Elbow UT Union Tee UC Union Cross PL Plug CA Cap GA Gasket				



WJE-Weld Union Elbow



WUT-Weld Union Tee



WUC-Weld Union Cross