

FACE SEAL FITTINGS





GENTEC® specializes in designing and manufacturing high quality valves and fittings for High Purity and Ultra-High Purity applications. GENTEC® FSR fittings are available in 316, 316L, or 316 VAR and supplied in BA or EP grade. Fittings are cleaned, bagged individually in nylon bags, and heat-sealed. The inner bag is then placed in a polyethylene outer bag and heat-sealed in a class 100 clean room to meet this stringent demands of the semi-conductor industry.

Material	Ordering Number Designator	Applicable Specification
Bodies, Nuts, Caps and Plugs		
316	SS	Bar Stock: ASME SA479, ASTM A276 Forged Shapes: ASME SA182, ASTM A314
Glands		
316L	SL	Bar Stock: ASME SA479, ASTM A276 Forged Shapes: ASME SA182
316L VAR	SLV	Bar Stock: ASME SA479, ASTM A276 Forged Shapes: ASME SA182
Gaskets		
Nickel	NI	ASTM B162
316L	SS	ASTM A240, ASTM A167

► **Plating**

FSR female nuts are silver-plated. Avoid chemical processes used for cleaning, electropolishing and passivation that will remove plating. If the plating is damaged or removed, thread galling will occur, damaging fitting components and preventing a proper seal.

► **Dimensions**

Dimensions are in inches for reference only and subject to change without notice.

► **Pressure Ratings**

Ratings are based upon tests conducted using FSR assemblies.

All ratings comply with calculations per ANSI Code for Pressure Piping B31.3.

Working Pressure ratings determined at room temperature. Allowable Working Pressure of elevated temperatures could be obtained by multiplying factors shown in the following table.

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Face Seal Fittings

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Pressure & Temperature Ratings

Testing

FSR assemblies have been helium-leak tested to a rate of 1×10^{-9} std cc/sec without leakage.

Ultra High Purity

A variety of FSR face seal Glands and Bodies are available with controlled surface finishes, electropolished, and specially cleaned to meet ultra-high-purity system requirements.

Components	Material	Temperature	
		°F	°C
Fittings	316	1000	537
	316L	1000	537
	316L VAR	1000	537
Gaskets	316	1000	537
	Nickel	600	315

Temperature (°C)	Temperature (°F)	Favors
38	100	1.0
93	200	1.0
145	300	1.0
204	400	0.96
260	500	0.90
315	600	0.85
371	700	0.82
427	800	0.79
482	900	0.78
537	1000	0.76

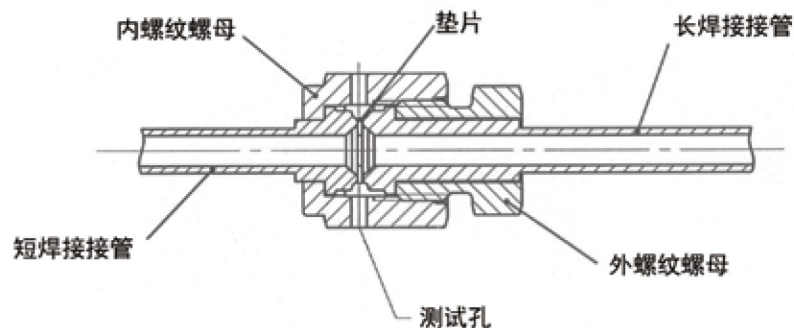
Ordering Information

To order EP fittings, use the following Designator code as a suffix to the Ordering Number.

Example: SLV-VDS-FSR4-T4L7P

Surface Finish Grade	Designator	Surface Finish
BA	-	10µin (0.25µm)
EP	P	5µin (0.13µm)

Configuration

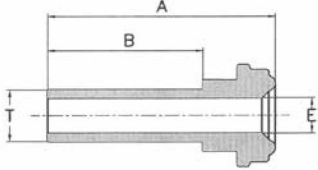


- **Female Nut:** female thread is silver-plated to prevent galling, an ensure ease of assembly with consistent make-up.
- **Visual Check & Leak Test Port:** test port at two locations for easy leak testing.

Heat Code Traceability

Material heat code is stamped on Glands and all shapes to ensure raw Material traceability.

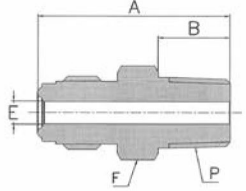
Glands

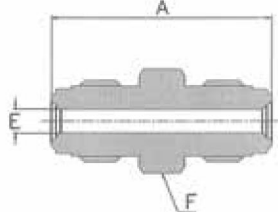
Short Tube Butt Weld	FSR Size	T TUBE O.D.	Ordering Number	Dimensions			Normal Wall Thickness	Working Pressure (psi)
				B	E	A		
	1/4"	1/4"	SL*-VDS-FSR4-T4L2	0.25	0.18	0.60	0.035	5100
	1/4"	1/4"	SL*-VDS-FSR4-T4L7	0.75	0.18	1.10	0.035	5100
	1/2"	3/8"	SL*-VDS-FSR8-T6L7	0.75	0.31	1.12	0.035	3300
	1/2"	1/2"	SL*-VDS-FSR8-T8L2	0.25	0.40	0.62	0.049	3500
	1/2"	1/2"	SL*-VDS-FSR8-T8L7	0.75	0.40	1.12	0.049	3500
	3/4"	3/4"	SL*-VDS-FSR12-T1	0.75	0.65	1.38	0.049	2400

Long Tube Butt Weld	FSR Size	T TUBE O.D.	Ordering Number	Dimensions			Normal Wall Thickness	Working Pressure (psi)
				B	E	A		
	1/4"	1/4"	SL*-VD-FSR4-T4L2	0.25	0.18	1.20	0.035	5100
	1/4"	1/4"	SL*-VD-FSR4-T4L7	0.75	0.18	1.70	0.035	5100
	1/2"	3/8"	SL*-VD-FSR8-T6L7	0.75	0.31	1.79	0.035	3300
	1/2"	1/2"	SL*-VD-FSR8-T8L2	0.25	0.40	1.29	0.049	3500
	1/2"	1/2"	SL*-VD-FSR8-T8L7	0.75	0.40	1.79	0.049	3500
	3/4"	3/4"	SL*-VD-FSR12-T12L7	0.75	0.65	2.03	0.049	2400

*: 316VCR stainless steel is available, please replace SL with SLV.

Bodies

Male NPT Connector	FSR Size	P Male NPT Size	Ordering Number	Dimensions				Working Pressure (psi)
				B	E	F	A	
	1/4"	1/4"	SS-VMC-VM4-NT4	0.56	0.18	5/8	1.49	8000
	1/2"	1/2"	SS-VMC-VM8-NT8	0.75	0.40	15/16	1.84	3500
	3/4"	3/4"	SS-VMC-VM12-NT12	0.75	0.62	1 5/16	2.19	3000

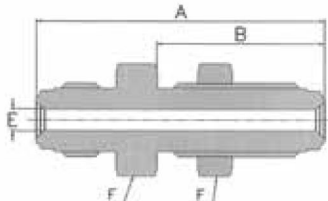
Double Male Union	FSR Size	Ordering Number	Dimensions			Working Pressure (psi)
			E	F	A	
	1/4"	SS-VU-VM4	0.18	5/8	1.55	5100
	1/2"	SS-VU-VM8	0.4	15/16	1.84	3500
	3/4"	SS-VU-VM12	0.62	1 5/16	2.44	2400

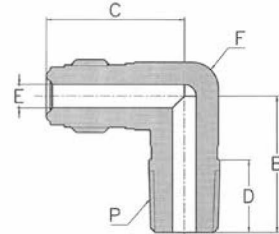
UHP FITTINGS

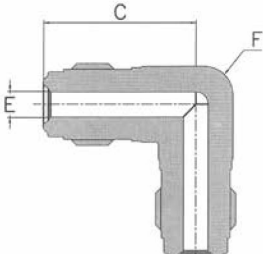
Face Seal Fittings

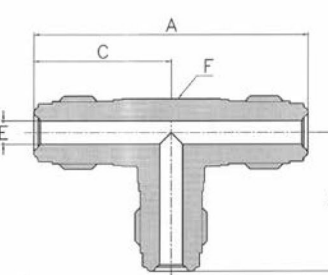
Solutions for Life

Bodies

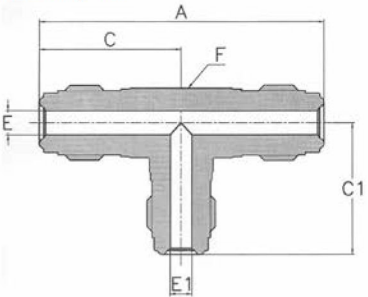
Bulkhead Union	FSR Size	Ordering Number	Dimensions				Panel Hole Size	MAX. Panel Thickness	Working Pressure (psi)
			B	E	F	A			
	1/4"	SS-VBU-VM4	1.30	0.18	3/4	2.23	19/32	0.44	8000
	1/2"	SS-VBU-VM8	1.48	0.40	1 1/16	2.57	29/32	0.5	3500

FSR to Male NPT Elbow	FSR Size	P Male NPT Size	Ordering Number	Dimensions				F Wrench Flat	Working Pressure (psi)
				C	B	D	E		
	1/4"	1/4"	SS-VME-VM4-NT4	1.07	1.05	0.56	0.18	1/2	8000
	1/2"	1/2"	SS-VME-VM8-NT4	1.45	1.45	0.75	0.40	13/16	3500

Union Elbow	FSR Size	Ordering Number	Dimensions		F Wrench Flat	Working Pressure (psi)
			C	E		
	1/4"	SS-VUE-VM4	1.07	0.18	1/2	8000
	1/2"	SS-VUE-VM8	1.45	0.4	13/16	3500
	3/4"	SS-VUE-VM12	1.92	0.62	1 1/4	3000

Union Tee	FSR Size	Ordering Number	Dimensions			F Wrench Flat	Working Pressure (psi)
			C	E	A		
	1/4"	SS-VUT-VM4	1.07	0.18	2.14	1/2	8000
	1/2"	SS-VUT-VM8	1.45	0.4	2.9	13/16	3500
	3/4"	SS-VUT-VM12	1.92	0.62	3.84	1 1/4	3000

Bodies

Reducing Tee	FSR Size	Ordering Number	Dimensions					F Wrench Flat	Working Pressure (psi)
			C	C1	E	E1	A		
	1/2" x 1/4" x 1/2"	SS-VRUT-VM8-4-8	1.45	1.25	0.40	0.18	2.90	13/16	3500
	3/4" x 1/4" x 3/4"	SS-VRUT-VM12-4-12	1.92	1.50	0.62	0.18	3.84	1 1/4	3000
	3/4" x 1/2" x 3/4"	SS-VRUT-VM12-8-12	1.92	1.68	0.62	0.40	3.84	1 1/4	3000

Welding Assemblies

Rotating Female Union	FSR Size	Ordering Number	Dimensions			Working Pressure (psi)
			E	G	A	
	1/4"	SS-VSU-VSF4	0.18	3/4	1.71	5100
	1/2"	SS-VSU-VSF8	0.4	1 1/16	1.84	3500

Female Elbow	FSR Size	Ordering Number	Dimensions			Working Pressure (psi)
			E	G	A	
	1/4"	SS-VSUE-VSF4	0.18	3/4	1.0	5100
	1/4"	SS-VSUE-VSM4	0.18	3/4	1.5	5100

Female Tee	FSR Size	Ordering Number	Dimensions			Working Pressure (psi)
			E	G	A	
	1/4"	SS-VSUT-VSF4	0.18	3/4	1.0	5100
	1/4"	SS-VSUT-VSM4	0.18	3/4	1.5	5100

UHP FITTINGS

Face Seal Fittings

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Gasket

Silver Plated (Stainless Steel) Non-Retained Style	FSR Size	Ordering Number	Dimensions		
			E	A	TX
	1/4"	SS-VG-FSR4	0.22	0.03	0.47
	1/2"	SS-VG-FSR8	0.44	0.03	0.78
	3/4"	SS-VG-FSR12	0.66	0.03	1.14

Silver Plated (Stainless Steel) Gasket Retainer Assembly	FSR Size	Ordering Number	Dimensions		
			E	A	TX
	1/4"	SS-VGR-FSR4	0.24	0.03	0.5
	1/2"	SS-VGR-FSR8	0.44	0.03	0.79
	3/4"	SS-VGR-FSR12	0.66	0.03	1.14

Unplated (Nickel) Non-Retained Style	FSR Size	Ordering Number	Dimensions		
			E	A	TX
	1/4"	NI-VGS-FSR4	0.22	0.03	0.47
	1/2"	NI-VGS-FSR8	0.44	0.03	0.78
	3/4"	NI-VGS-FSR12	0.66	0.03	1.14

Unplated (Nickel) Gasket Retainer Assembly	FSR Size	Ordering Number	Dimensions		
			E	A	TX
	1/4"	NI-VGRS-FSR4	0.24	0.03	0.5
	1/2"	NI-VGRS-FSR8	0.44	0.03	0.79
	3/4"	NI-VGRS-FSR12	0.66	0.03	1.14

Nuts,Caps,Plugs

Female Nut	FSR Size	Ordering Number	Dimensions		
			F	A	TX
	1/4"	SS-VN-FSR4	3/4	0.81	0.36
	1/2"	SS-VN-FSR8	1 1/16	0.88	0.61
	3/4"	SS-VN-FSR12	1 1/2	1.12	0.89

Male Nut	FSR Size	Ordering Number	Dimensions		
			F	A	TX
	1/4"	SS-VMN-FSR4	5/8	0.71	0.36
	1/2"	SS-VMN-FSR8	15/16	0.81	0.61
	3/4"	SS-VMN-FSR12	1 5/16	1.00	0.89

Cap	FSR Size	Ordering Number	Dimensions		
			B	F	A
	1/4"	SS-VCP-FSR4	0.44	3/4	0.94
	1/2"	SS-VCP-FSR8	0.45	1 1/16	1.01
	3/4"	SS-VCP-FSR12	0.54	1 1/2	1.29

Plug	FSR Size	Ordering Number	Dimensions	
			F	A
	1/4"	SS-VP-FSR4	5/8	0.92
	1/2"	SS-VP-FSR8	15/16	1.08
	3/4"	SS-VP-FSR12	1 5/16	1.43

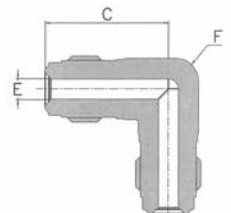
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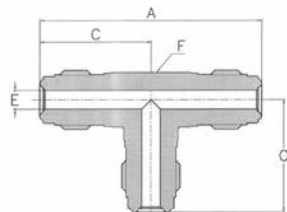
Face Seal Fittings

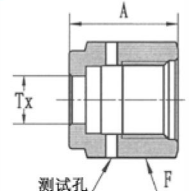
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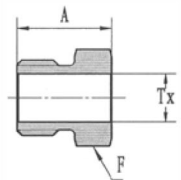
High-Flow Connections

Glands	FSR Size	T Tube O.D.	Ordering Number	Dimensions				Normal Wall Thickness	Working Pressure (psi)
				C	E	E1	A		
	1/4"	3/8"	SL*-HVDS-FSR4-T6L2	0.41	0.25	0.31	0.60	0.035	3300
	1/4"	3/8"	SL*-HVDS-FSR4-T6L7	1.12	0.25	0.31	1.31	0.035	3300

Union Elbow	FSR Size	Ordering Number	Dimensions			Working Pressure (psi)
			C	E	F	
	1/4"	SS-HVUE-VM4	1.07	0.25	1/2	8000

Union Tee	FSR Size	Ordering Number	Dimensions				Working Pressure (psi)
			C	E	A	F	
	1/4"	SS-HVUT-VM4	1.07	0.25	2.14	1/2	8000

Female Nut	FSR Size	Ordering Number	Dimensions		
			F	A	TX
	1/4"	SS-HVN-FSR4	3/4	0.81	0.39

Male Nut	FSR Size	Ordering Number	Dimensions		
			F	A	TX
	1/4"	SS-HVMN-FSR4	5/8	0.71	0.39

Assembly Instructions

STEP 1 PROTECTION



Remove plastic protector cap protecting the gland sealing surfaces. Go to STEP2A for Retainer Assembly, other go to STEP2B.

STEP 2A RETAINER ASSEMBLY



Place retained Gasket over gland face. Be careful not to scratch or nick sealing surface as this could affect performance.

STEP 2B NON-RETAINER ASSEMBLY



Place Gasket into female nut.

STEP 3 FINGERTIGHT



Assemble components and snug to fingertight.

STEP 4 MARK



Mark the hex flat on both the male and female nuts.

STEP 5 TIGHTEN



Holding the backup wrench stationary, tighten the female nut 1/8 turn past fingertight.

Note: Extreme over tightening will damage surface and cause potential leakage.