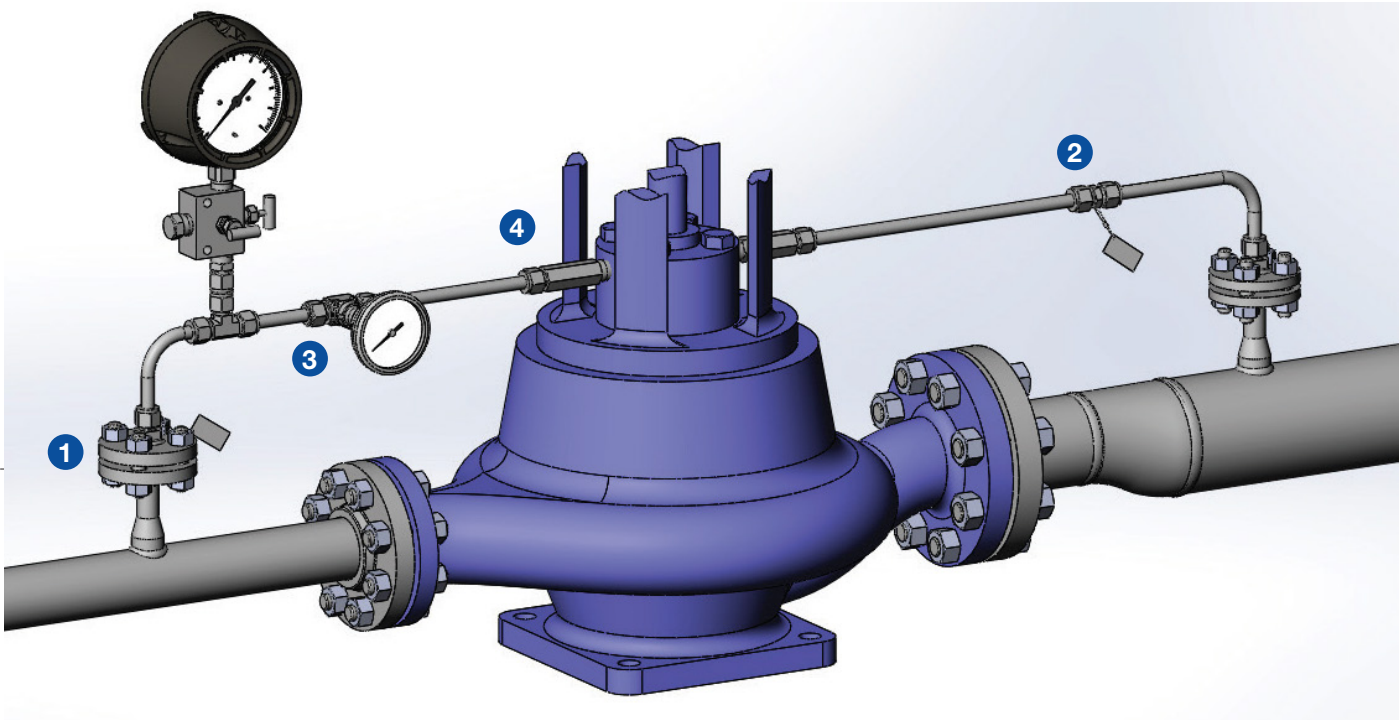




# Swagelok Seal Plan Components

Fewer Leak Point. Simplified Maintenance

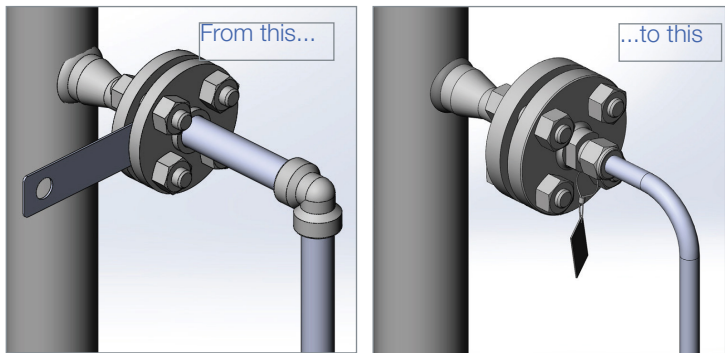


## Swagelok Rotating Equipment Solutions

Swagelok seal plan components help keep your rotating equipment running efficiently, with less downtime and fewer leaks. Our 2-inch and under components replace traditional threaded and welded pipe connections with bent tubing, tube fittings, and other quality parts like the components shown here.

### 1 Integral Orifice Flange Adapter

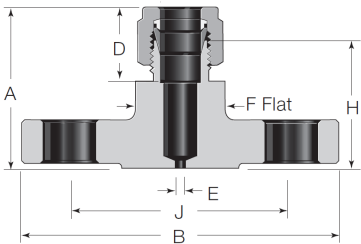
Replace threaded or welded flange assemblies with a one-piece flange adapter with an integral orifice:



- Reduces number of potential leak points and eliminates need to fabricate welded or threaded adapter
- Tagged as reduced orifice for safety
- Easy-to-install transition from pipe to tubing



Integral Orifice Class 300 ANSI Flange Adapter with Tag Ordering Information

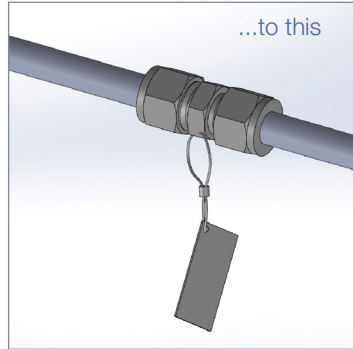
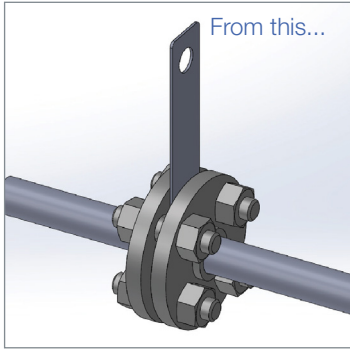


Tube OD	Flange Size	Ordering Number	Dimensions							Pressure Rating
			A	B	D	E	F	H	J	
Dimensions, in. (mm)										psig (bar)
1/2	3/4	SS-810-F12-300-43359	1.96 (49.8)	4.62 (117)	0.90 (22.9)	0.125 (3.2)	1.06 (26.9)	1.56 (39.6)	3.25 (82.6)	720 (49.6)
	1/2	SS-810-F8-300-43359	1.90 (48.3)	3.75 (95.3)	1.50 (38.1)		2.62 (66.5)			
3/4	3/4	SS-1210-F12-300-43359	2.04 (51.8)	4.62 (117)	0.96 (24.4)		1.50 (38.1)	1.64 (41.7)	3.25 (82.6)	
Dimensions, mm (in.)										bar (psig)
12	3/4	SS-12MO-F12-300-43359	49.8 (1.96)	117 (4.62)	22.9 (0.90)	3.2 (0.125)	26.9 (1.06)	39.6 (1.56)	82.6 (3.25)	49.6 (720)

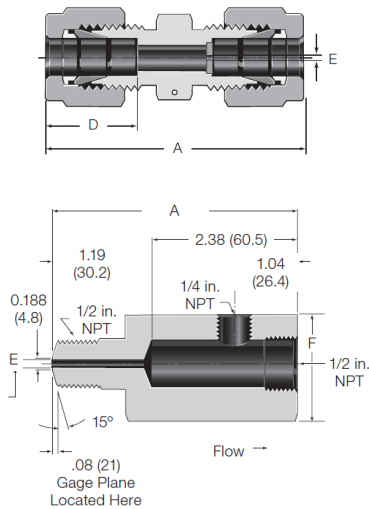


## 2 Orifice Union

Easily add an orifice to a flush system with the orifice union. This fitting makes welding bulky flange assemblies unnecessary. Tagged for visual identification.



- Can be easily installed in tubing flush systems
- Eliminates the need for welding flanges
- Allows easy identification with attached tag, reduce installation errors



### Orifice Union Adapter with Lanyard

Tube OD	Ordering Number	Dimensions			Pressure Rating
		A	D	E	
Dimensions, in. (mm)					psig (bar)
1/2	SS-810-6PD-50174	2.02 (51.3)	0.90 (22.9)	0.125 (3.2)	6700 (461)
3/4	SS-1210-6PD-50174	2.11 (53.6)	0.96 (24.2)		5800 (399)

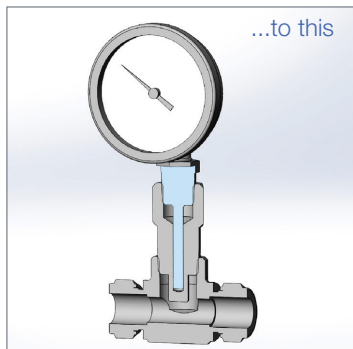
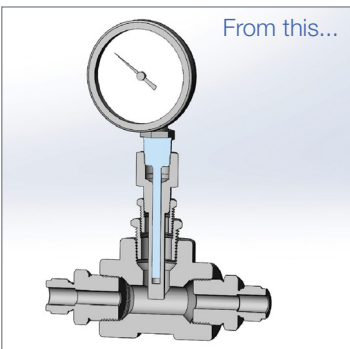
Please include E-dimension at time of order. E-dimension will be between 0.125 in. (0.3 mm) and maximum E-dimension for size of tube fitting.

### Orifice Adapter

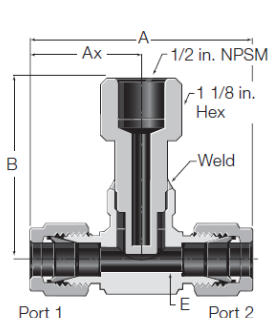
Tube OD	Female NPT	Ordering Number	Dimensions			Pressure Rating
			A	E	F	
Dimensions, in. (mm)						psig (bar)
1/2	1/2	SS-8-A-08097	4.00 (102)	0.125 (3.2)	1 5/8	4900 (337)
3/4		SS-12-R8-8-08096			1 1/16	

## 3 Thermowell Tee

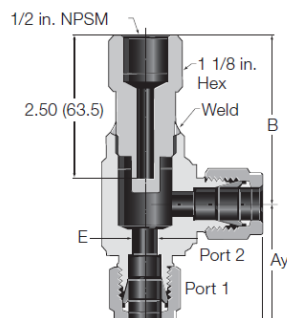
Reduce threaded connections and monitor temperature with integrated thermowell pre-welded into tube fitting tee for ease of installation:



- Welded thermowell eliminates multiple threaded pipe fittings, isolating process fluid for safer thermometer replacement
- Lighter weight eliminates need for additional support
- Accurate temperature measurement without blocking flow



**Straight Pattern**



**Angle Pattern**

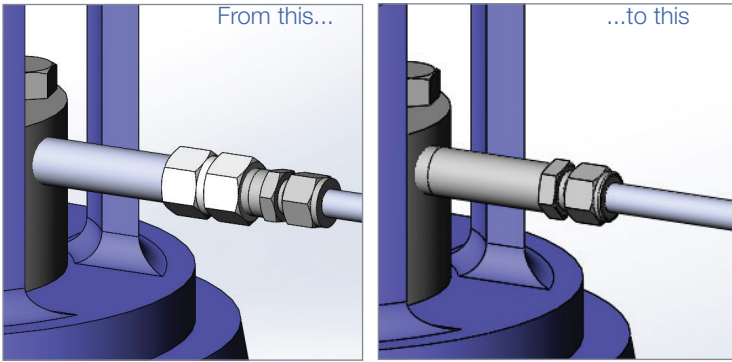
### Thermowell Tee Ordering Information

Tube OD	Ordering Number	Dimensions					Pressure Rating
		A	Ax	Ay	B	E	
Dimensions, in. (mm)							psig (bar)
3/8	SS-TTW-S6	2.84 (72.1)	1.42 (36.1)		2.86 (72.7)	0.28 (7.1)	4900 (337)
1/2	SS-TTW-S8 <sup>①</sup>	3.06 (77.7)	1.53 (38.9)			0.41 (10.4)	
3/4	SS-TTW-S12 <sup>①</sup>	3.52 (89.4)	1.76 (44.7)		1.76 (44.7)	0.62 (15.7)	4600 (316)
Dimensions, mm (in.)							bar (psig)
12	SS-TTW-S12MM <sup>①</sup>	77.7 (3.06)	38.9 (1.53)		72.7 (2.86)	9.5 (0.73)	337 (4900)
16	SS-TTW-S16MM <sup>①</sup>					12.7 (0.50)	
18	SS-TTW-S18MM	89.4 (3.52)	44.7 (1.76)		75.2 (2.96)	15.0 (0.59)	316 (4600)

<sup>①</sup> To order an angle-pattern Thermowell Tee, add -A to the ordering number. Example: SS-TTW-S6-A  
Refer to Temperature Measurement Devices, Bimetal Thermometers and Thermowells catalog, MS-02-353, for additional information.

#### 4 Extended Male Connector

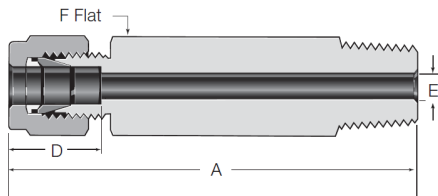
Eliminate threaded pipe and potential leak points with a single fitting. Available in 4- and 6- inch lengths, to allow you to clear the shroud and go straight from the gland to your tubing run in one piece.



- Single fitting eliminates multiple connections and extends tubing connection beyond pump shroud
- Larger body allows firm grip for ease of installation and access
- Machined shank allows better access for close-clearance pump

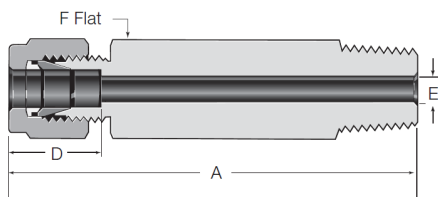


#### Extended Male Connector Hex Shank Ordering Information



Tube OD	NPT Size	Ordering Number	Dimensions				Pressure Rating
			A	D	E	F	
Dimensions, in. (mm)							psig (bar)
3/8	3/8	SS-600-1-6-50553	4.00 (102)	0.66 (16.8)	0.28 (7.1)	11/16	7500 (516)
		SS-600-1-6-49485	6.00 (152)				
1/2	1/2	SS-810-1-8-50553	4.00 (102)	0.90 (22.9)	0.41 (10.4)	7/8	6700 (461)
		SS-810-1-8-49485	6.00 (152)				
3/4	1/2	SS-1210-1-8-50553	4.00 (102)	0.96 (24.4)	0.63 (16.0)	1 1/16	5800 (399)
		SS-1210-1-8-49485	6.00 (152)				
	3/4	SS-1210-1-12-50553	4.00 (102)				
		SS-1210-1-12-49485	6.00 (152)				
Dimensions, mm (in.)							bar (psig)
12	1/2	SS-12M0-1-8-50553	102 (4.00)	22.8 (0.90)	9.5 (0.37)	22	470 (6821)
		SS-12M0-1-8-49485	152 (6.00)				

#### Extended Male Connector Machined Shank Ordering Information



Tube OD	NPT Size	Ordering Number	Dimensions				Pressure Rating
			A	D	E	F	
Dimensions, in. (mm)							psig (bar)
3/8	3/8	SS-600-1-6-52166	4.00 (102)	0.66 (16.8)	0.28 (7.1)	11/16	7500 (516)
		SS-600-1-6-52167	6.00 (152)				
1/2		SS-810-1-6-52166	4.00 (102)				
		SS-810-1-6-52167	6.00 (152)				
1/2	1/2	SS-810-1-8-52166	4.00 (102)	0.90 (22.9)	0.41 (10.4)	7/8	6700 (461)
		SS-810-1-8-52167	6.00 (152)				
3/4	1/2	SS-1210-1-8-52166	4.00 (102)	0.96 (24.4)	0.63 (16.0)	1 1/16	5800 (399)
		SS-1210-1-8-52167	6.00 (152)				
	3/4	SS-1210-1-12-52166	4.00 (102)				
		SS-1210-1-12-52167	6.00 (152)				
Dimensions, mm (in.)							bar (psig)
12	1/2	SS-12M0-1-8-52166	102 (4.00)	22.8 (0.90)	9.5 (0.37)	22	470 (6821)
		SS-12M0-1-8-52167	152 (6.00)				
18	3/4	SS-18M0-1-12-52166	102 (4.00)	24.4 (0.96)	11.9 (0.47)	27	370 (5370)
		SS-18M0-1-12-52167	152 (6.00)				





## Swagelok Assembly Services

Proper system start-up and commissioning are critical for the operation of mechanical seals and their associated support systems. Swagelok's seal support systems are built with the Swagelok components you trust. Our thermowell tees, eliminate multiple welded and threaded connections to minimize leak points, reduce labor costs and save your time.



Swagelok's local custom solutions capabilities help your source components and build mechanical seal support panels to meet your unique requirements. Each Swagelok technician undergoes a comprehensive training and certification program every three years to ensure your panel is assembled to strict guidelines, providing you with reliable, consistent operation.

### We can help you with:

- Fabricating and assembling customized API 682 panels with components especially suited to your application
- Creating CAD drawings and piping, and instrumentation diagrams (P&ID)
- Selecting components and generating Bills of Material (BOM)
- Welding, tube bending and other services

## Guided by API 682: Pumps - Shaft Sealing System for Centrifugal and Rotary Pumps

Swagelok Seal Support System designs avoid pipe threads and limit the number of connections wherever possible. Based on the fourth edition, the standard design for each plan includes the minimum arrangement of components as detailed in API 682<sup>1</sup>.

<sup>1</sup> API Standard 682 Pumps - Shaft Sealing Systems for Centrifugal and Rotary Pumps, fourth edition, May 2014.

## Build Better Mechanical Seal Support Systems with Seal Plan Kits and Assemblies

Swagelok provides design and assembly of seal support systems through our network. We offer configurable, local, and reliable systems that are better by design to help you reduce costs, save time, and improve safety of your rotating equipment.

### Seal Plan Kits

Seal plan kits are a collection of components that are used to connect the seal support plan to the pump. Due to the simplicity of the arrangement, the following API plans are offered only as a kit of components that are ready for field installation. These kits include all the necessary components to complete the plan:

Process side plans: 11, 12, 13, 14, 21, 22, 23, 31, and 41

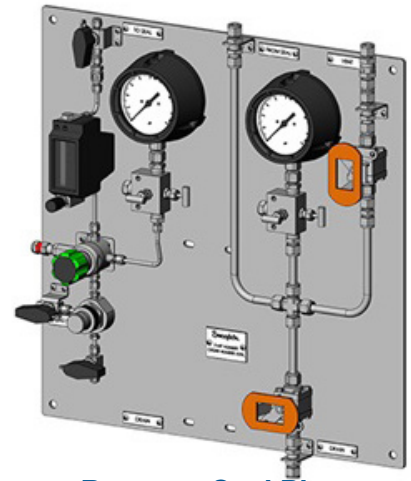
Atmospheric side plans: 51, 62, 65A, and 65B

### Seal Plan Assemblies

Seal plan assemblies are panels, seal pots, or skid systems that comprise the majority of each API seal support plan. The seal plan assembly ordering numbering structure allows for users to select a variety of configurations and additional system components to meet specific site or application requirements.

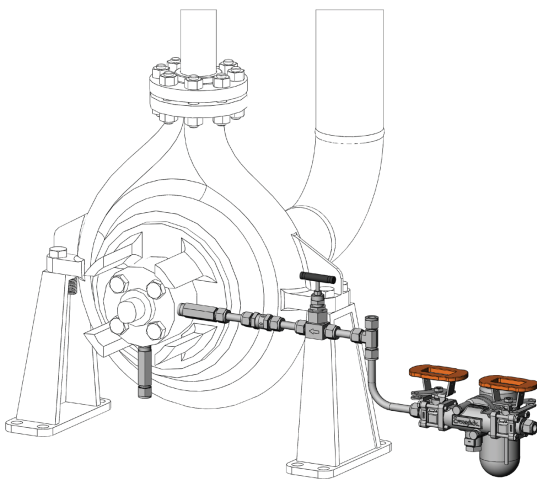
Process side plan: 32

Between seal plans: 52, 53A, 53B, 53C, 54, 55, 72, 74, 75, 76, and 72/76



### Between Seal Plans

Plans: 52, 53A, 53B, 53C, 54, 55, 72, 74, 75, 76, 72/76

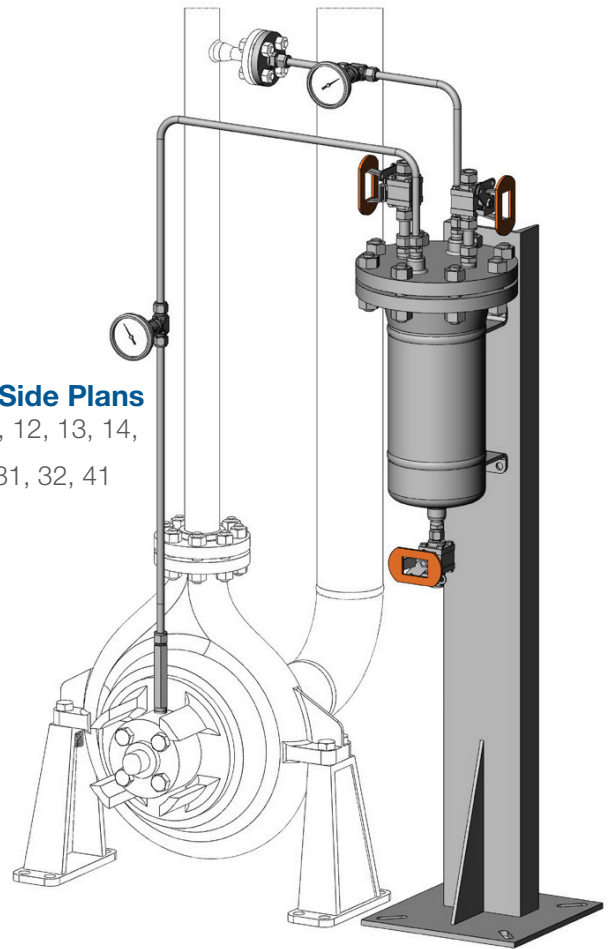


### Atmospheric Plans

Plans: 51, 62, 65A, 66B

### Process Side Plans

Plans: 11, 12, 13, 14, 21, 22, 31, 32, 41



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