

# Weld Fittings

Ultrahigh-Purity, Specially Cleaned, and Industrial



- 1/8 to 1 in. and 6 to 18 mm
- 316, 316L, 316L VAR, and 316L VIM-VAR stainless steel materials
- Fittings for manual or automatic welding equipment

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## Materials of Construction

Material	Designator	Specifications
<b>Bar Stock<sup>①</sup></b>		
316 stainless steel	SS	ASTM A479/ASME SA479 and ASTM A276
316L stainless steel	316L	
316L VIM-VAR stainless steel	6LV	SEMI F20 Ultrahigh-Purity <sup>②</sup>
<b>Forgings<sup>③</sup></b>		
316 stainless steel	SS	ASTM A182/ASME SA182 and ASTM A314
316L stainless steel	316L	

① Includes straight configurations and all Micro-Fit weld fittings.

② 20 % minimum elongation allowed.

③ Includes all elbows, crosses, and tees, excluding Micro-Fit weld fittings.

## Additional Considerations

Consult ASME Boiler and Pressure Vessel Code, ASME B31.1, ASME B31.3, or other applicable codes for information on weld setup, technique, and additional considerations for welded systems.

The choice of fitting, pipe, and tubing material being welded is critical. Using the same materials will ensure the same coefficients of expansion and will reduce the possibility of poor welds, out-of-roundness, or dimensional changes that are detrimental to a good weld.

## Threaded End Connections

Pipe threads are based on the requirements of ASME B1.2.0.1 (NPT) and SAE AS71051 (ANPT) for tapered pipe threads.

## Cleaning and Packaging

### Standard

Weld fittings are cleaned in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)* catalog, MS-06-62.

### Special (SC-11)

Weld fittings are available cleaned and packaged in accordance with Swagelok *Special Cleaning and Packaging (SC-11)* catalog, MS-06-63, to ensure compliance with product cleanliness requirements as stated in ASTM G93 Level C. To order, add **-SC11** to the ordering number.

Example: 6LV-4MW-6-2-**SC11**

### Photovoltaic (SC-06)

Select weld fittings are available cleaned and packaged in accordance with Swagelok *Photovoltaic Process Specification (SC-06)* catalog, MS-06-64, to meet the process requirements of solar cell production. To order, add **-SC06** to the ordering number.

Example: 6LV-4MW-6-2-**SC06**

SC-06-cleaned weld fittings are available with controlled surface finishes and electropolishing. Wetted surfaces are finished to an average 5 µin. (0.13 µm)  $R_a$ . To order, add **P6** to the ordering number.

Example: 6LV-4MW-6-2**P6**

### Ultrahigh-Purity (SC-01)

Select weld fittings are available with controlled surface finishes, electropolished, and specially cleaned. Wetted surfaces are finished to an average 5 µin. (0.13 µm)  $R_a$ . Refer to *Ultrahigh-Purity Process Specification (SC-01)* catalog, MS-06-61, for additional information. To order, add **P** to the ordering number.

Example: 6LV-4MW-6-2**P**

## Cleaning Process Availability

Fitting Type	Cleaning Process (Designator)			
	Special (-SC11)	Photovoltaic		Ultrahigh-Purity (P)
		(-SC06)	(P6)	
Micro-Fit (miniature tube butt weld)	✓	✓	✓	✓
Tube butt weld	✓	✓	✓	✓
Automatic tube butt weld	✓	✓	✓	✓
Automatic tube socket weld	✓			
Tube socket weld	✓			
Pipe socket weld	✓			
Pipe butt weld	✓			

## Oxygen Service Hazards

For more information about hazards and risks of oxygen-enriched systems, refer to *Oxygen System Safety Technical Report* catalog, MS-06-13.

## Pressure Ratings Basis

Catalog pressure ratings shown are for temperatures from -20 to 100°F (-28 to 37°C), which are based on an allowable stress value of 20 000 psi (1378 bar) in accordance with ASME B31.3 and ASME B31.1 for 316 stainless steel. 316L stainless steel material is controlled in accordance with Swagelok material specifications and possesses minimum room temperature tensile and yield strengths equivalent to 316 stainless steel.

Pressure derating factors for applications at temperatures greater than 100°F (37°C) were determined from these pressure codes and are listed in the table at right.

Material Type	316 SS	316L SS
Temperature, °F (°C)	Factor	
-20 (-28) to 100 (37)	1.00	1.00
200 (93)	1.00	0.83
400 (204)	0.96	0.77
600 (315)	0.85	0.67
800 (426)	0.79	0.62
1000 (537)	0.76	0.56

### Examples:

A 1/4 in. 316L VIM-VAR reducing union has a pressure rating of 5100 psig (351 bar), as shown in the table below. To obtain the pressure rating at 400°F (204°C), multiply 5100 psig (351 bar) by 0.77:

$$5100 \text{ psig (351 bar)} \times 0.77 = 3927 \text{ psig (270 bar)}$$

A 1/4 in. 316 SS tube socket weld union has a pressure rating of 10 700 psig (737 bar), as shown in the table on page 13. To obtain the pressure rating at 400°F (204°C), multiply 10 700 psig (737 bar) by 0.96:

$$10\,700 \text{ psig (737 bar)} \times 0.96 = 10\,272 \text{ psig (707 bar)}$$

Alternative elevated-temperature factors may be chosen from ASME B31.3 or B31.1 at the user's discretion.

## Micro-Fit (Miniature Tube Butt Weld) Fittings

### Compact Design

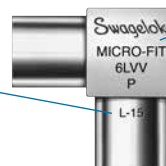
- Accommodates tubing systems requiring miniaturization
- Allows close component spacing
- Provides flow and service ratings equal to larger weld fittings

### Ordering Information and Dimensions

- Dimensions are for reference only and are subject to change.
- See **Cleaning and Packaging**, page 2, to order Micro-Fit weld fittings cleaned in accordance with Swagelok *Special Cleaning and Packaging (SC-11)* catalog, MS-06-63; *Photovoltaic Process Specification (SC-06)* catalog, MS-06-64; or *Ultrahigh-Purity Process Specification (SC-01)* catalog, MS-06-61.

**Rounded body block** helps prevent damage to other components during system fabrication or maintenance.

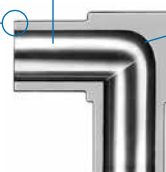
**Material heat code** is roll stamped to ensure raw material traceability.



**Marking** identifies manufacturer, material, and, when applicable, ultrahigh-purity cleaning.

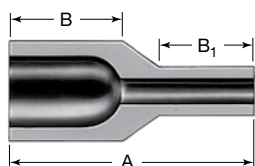
**Ultrahigh-purity cleaning** with average 5 µin. (0.13 µm)  $R_a$  surface finish is available. Standard surface finish is average 10 µin. (0.25 µm)  $R_a$ .

**Square, sharp, burr-free tube weld ends** enhance alignment, maintain tube wall uniformity, and promote weld repeatability.



**Radiused junction** allows for a smooth flow transition and eliminates pockets and entrapment zones.

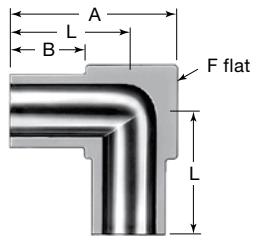
### Reducing Union



Tube OD	Wall Thickness	Tube OD	Wall Thickness	Ordering Number	Dimensions			Pressure Rating
					A	B	B <sub>1</sub>	
<b>Dimensions, in. (mm)</b>								
1/4	0.035	1/8	0.028	6LV-4MW-6-2	0.75 (19.0)	0.42 (10.7)	0.25 (6.4)	5100 (351)
3/8	0.035	1/4	0.035	6LV-6MW-6-4				3300 (227)
1/2	0.049	1/4	0.035	6LV-8MW-6-4				3700 (254)
		3/8		6LV-8MW-6-6	3300 (227)			

## Micro-Fit (Miniature Tube Butt Weld) Fittings

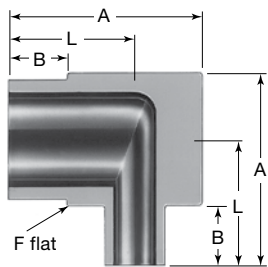
### 90° Union Elbow



Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating
			A	B	F, in.	L	
Dimensions, in. (mm)							psig (bar)
1/8	0.028	6LV-2MW-9 <sup>①</sup>	0.56 (14.2)	0.25 (6.4)	5/16	0.41 (10.4)	8500 (585)
1/4	0.035	6LV-4MW-9			5/16	0.41 (10.4)	5100 (351)
3/8	0.035	6LV-6MW-9			7/16	0.47 (11.9)	3300 (227)
1/2	0.049	6LV-8MW-9			9/16	0.53 (13.5)	3700 (254)
Dimensions, mm (in.)							bar (psig)
6	1.0	6LV-6MMW-9	14.2 (0.56)	6.4 (0.25)	5/16	10.4 (0.41)	420 (6095)
8		6LV-8MMW-9	17.5 (0.69)		7/16	11.9 (0.47)	310 (4499)
10		6LV-10MMW-9	17.5 (0.69)		7/16	11.9 (0.47)	240 (3483)
12		6LV-12MMW-9	20.6 (0.81)		9/16	13.5 (0.53)	200 (2902)

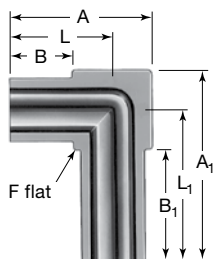
① 1/8 in. junction not radiused due to small bore size

### Reducing 90° Union Elbow



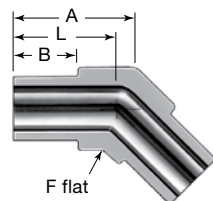
Tube OD	Wall Thickness	Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating	
					A	B	F, in.	L		
Dimensions, in. (mm)										psig (bar)
3/8	0.035	1/4	0.035	6LV-6MW-9-4	0.69 (17.5)	0.25 (6.4)	7/16	0.47 (11.9)	3300 (227)	
1/2	0.049	1/4	0.035	6LV-8MW-9-4	0.81 (20.6)		9/16	0.53 (13.5)	3700 (254)	
		3/8		6LV-8MW-9-6		3300 (227)				
Dimensions, mm (in.)										bar (psig)
8	1.0	6	1.0	6LV-8MMW-9-6M	17.5 (0.69)	6.4 (0.25)	7/16	11.9 (0.47)	310 (4499)	
10		6		6LV-10MMW-9-6M	17.5 (0.69)		7/16	11.9 (0.47)	240 (3483)	
12		6		6LV-12MMW-9-6M	20.6 (0.81)		9/16	13.5 (0.53)	200 (2902)	
		8		6LV-12MMW-9-8M						

### Extended Leg 90° Union Elbow



Tube OD	Wall Thickness	Ordering Number	Dimensions							Pressure Rating
			A	A <sub>1</sub>	B	B <sub>1</sub>	F	L	L <sub>1</sub>	
Dimensions, in. (mm)										psig (bar)
1/4	0.035	6LV-4MW-9-03442	0.56 (14.2)	0.76 (19.3)	0.25 (6.4)	0.45 (11.4)	5/16	0.41 (10.4)	0.61 (15.5)	5100 (351)
		6LV-4MW-9-03443		0.81 (20.6)		0.50 (12.7)			0.66 (16.8)	
		6LV-4MW-9-03444	0.76 (19.3)	0.45 (11.4)	0.61 (15.5)					
		6LV-4MW-9-03445	0.81 (20.6)	0.50 (12.7)	0.66 (16.8)					

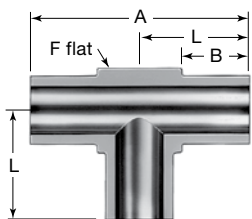
### 45° Union Elbow



Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating
			A	B	F	L	
Dimensions, in. (mm)							psig (bar)
1/4	0.035	6LV-4MW-5	0.47 (11.9)	0.25 (6.4)	5/16	0.41 (10.4)	5100 (351)
3/8	0.035	6LV-6MW-5	0.56 (14.2)		7/16	0.47 (11.9)	3300 (227)
1/2	0.049	6LV-8MW-5	0.64 (16.3)		9/16	0.53 (13.5)	3700 (254)

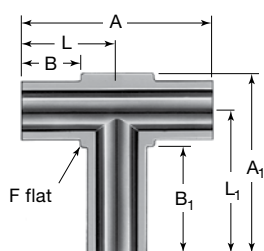
## Micro-Fit (Miniature Tube Butt Weld) Fittings

### Union Tee



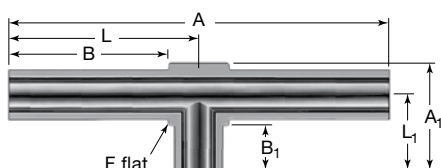
Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating
			A	B	F, in.	L	
Dimensions, in. (mm)							psig (bar)
1/8	0.028	6LV-2MW-3	0.82 (20.8)	0.25 (6.4)	5/16	0.41 (10.4)	8500 (585)
1/4	0.035	6LV-4MW-3			5/16	0.41 (10.4)	5100 (351)
3/8	0.035	6LV-6MW-3			7/16	0.47 (11.9)	3300 (227)
1/2	0.049	6LV-8MW-3			9/16	0.53 (13.5)	3700 (254)
Dimensions, mm (in.)							bar (psig)
6	1.0	6LV-6MMW-3	20.8 (0.82)	6.4 (0.25)	5/16	10.4 (0.41)	420 (6095)
8		6LV-8MMW-3	23.9 (0.94)		7/16	11.9 (0.47)	310 (4499)
10		6LV-10MMW-3	23.9 (0.94)		7/16	11.9 (0.47)	240 (3483)
12		6LV-12MMW-3	26.9 (1.06)		9/16	13.5 (0.53)	200 (2902)

### Extended Branch Leg Union Tee



Tube OD	Wall Thickness	Ordering Number	Dimensions							Pressure Rating
			A	A <sub>1</sub>	B	B <sub>1</sub>	F	L	L <sub>1</sub>	
Dimensions, in. (mm)										psig (bar)
1/4	0.035	6LV-4MW-3-03446	0.82 (20.8)	0.76 (19.3)	0.25 (6.4)	0.45 (11.4)	5/16	0.41 (10.4)	0.61 (15.5)	5100 (351)

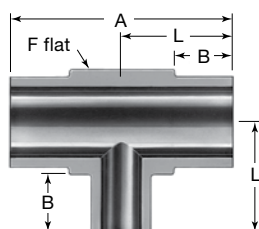
### Extended Run Leg Union Tee



Tube OD	Wall Thickness	Ordering Number	Dimensions							Pressure Rating
			A	A <sub>1</sub>	B	B <sub>1</sub>	F	L	L <sub>1</sub>	
Dimensions, in. (mm)										psig (bar)
1/4	0.035	6LV-4MW-3-03921	1.96 (49.8)	0.56 (14.2)	0.83 (21.1)	0.25 (6.4)	5/16	0.98 (24.9)	0.41 (10.4)	5100 (351)

There may be a slight mismatch between run ends at drill intersection.

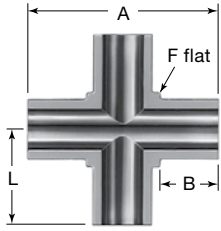
### Reducing Tee



Tube OD	Wall Thickness	Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating
					A	B	F, in.	L	
Dimensions, in. (mm)									psig (bar)
3/8	0.035	1/4	0.035	6LV-6MW-3-6-4	0.94 (23.9)	0.25 (6.4)	7/16	0.47 (11.9)	3300 (227)
1/2	0.049	1/4		6LV-8MW-3-8-4	1.06 (26.9)		9/16	0.53 (13.5)	3700 (254)
		3/8		6LV-8MW-3-8-6		3300 (227)			
Dimensions, mm (in.)									bar (psig)
10	1.0	6	1.0	6LV-10MMW-3-10M-6M	23.9 (0.94)	6.4 (0.25)	7/16	11.9 (0.47)	240 (3483)
12		6		6LV-12MMW-3-12M-6M	26.9 (1.06)		9/16	13.5 (0.53)	200 (2902)
		8		6LV-12MMW-3-12M-8M					

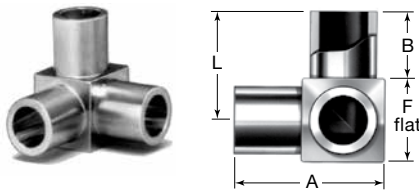
## Micro-Fit (Miniature Tube Butt Weld) Fittings

### Union Cross



Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating
			A	B	F, in.	L	
Dimensions, in. (mm)							psig (bar)
1/8	0.028	6LV-2MW-4	0.82 (20.8)	0.25 (6.4)	5/16	0.41 (10.4)	8500 (585)
1/4	0.035	6LV-4MW-4			5/16	0.41 (10.4)	5100 (351)
3/8	0.035	6LV-6MW-4			7/16	0.47 (11.9)	3300 (227)
1/2	0.049	6LV-8MW-4			9/16	0.53 (13.5)	3700 (254)
Dimensions, mm (in.)							bar (psig)
6	1.0	6LV-6MMW-4	20.6 (0.81)	6.4 (0.25)	5/16	10.4 (0.41)	420 (6095)
8		6LV-8MMW-4	23.9 (0.94)		7/16	11.9 (0.47)	310 (4499)
10		6LV-10MMW-4			7/16	11.9 (0.47)	240 (3483)
12		6LV-12MMW-4	26.9 (1.06)		9/16	13.5 (0.53)	200 (2902)

### Tribow



This unique design has weld ends in three planes at 90° to each other. It permits greater flexibility in designing systems, especially where space is limited.

Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating
			A	B	F, in.	L	
Dimensions, in. (mm)							psig (bar)
1/4	0.035	6LV-4MW-91	0.56 (14.2)	0.25 (6.4)	5/16	0.41 (10.4)	5100 (351)
3/8	0.035	6LV-6MW-91	0.69 (17.5)		7/16	0.47 (11.9)	3300 (227)
1/2	0.049	6LV-8MW-91	0.81 (20.6)		9/16	0.53 (13.5)	3700 (254)
Dimensions, mm (in.)							bar (psig)
6	1.0	6LV-6MMW-91	14.2 (0.56)	6.4 (0.25)	5/16	10.4 (0.41)	420 (6095)

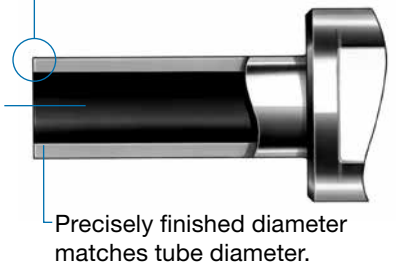
## Tube Butt Weld Fittings

### Ordering Information and Dimensions

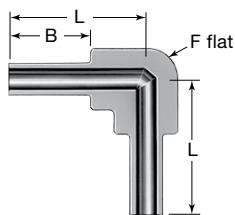
- Dimensions are for reference only and are subject to change.
- See **Cleaning and Packaging**, page 2, to order tube butt weld fittings cleaned in accordance with Swagelok *Special Cleaning and Packaging (SC-11)* catalog, MS-06-63; *Photovoltaic Process Specification (SC-06)* catalog, MS-06-64; or *Ultrahigh-Purity Process Specification (SC-01)* catalog, MS-06-61.

Standard surface finish is average 10 µin. (0.25 µm)  $R_a$ . Controlled surface finish is available for ultrahigh-purity systems.

Tube ends are machined with a square face and corners to enhance alignment and maintain tube wall uniformity.



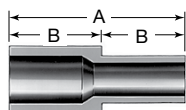
### 90° Union Elbow



Tube OD	Wall Thickness	Ordering Number	Dimensions			Pressure Rating
			B	F, in.	L	
Dimensions, in. (mm)						psig (bar)
1/4	0.035	316L-4TB7-9	0.75 (19.0)	7/16	1.23 (31.2)	5100 (351)
3/8	0.035	316L-6TB7-9		7/16	1.20 (30.5)	3300 (227)
1/2	0.049	316L-8TB7-9		11/16	1.34 (34.0)	3700 (254)
3/4	0.049	316L-12TB7-9		15/16	1.46 (37.1)	2400 (165)
Dimensions, mm (in.)						bar (psig)
6	1.0	316L-6MTB7-9	19.0 (0.75)	7/16	31.2 (1.23)	420 (6095)
8	1.0	316L-8MTB7-9		7/16	31.2 (1.23)	310 (4499)
10	1.0	316L-10MTB7-9		11/16	34.0 (1.34)	240 (3483)
12	1.0	316L-12MTB7-9		11/16	34.0 (1.34)	200 (2902)
18	1.5	316L-18MTB7-9		15/16	37.6 (1.48)	200 (2902)

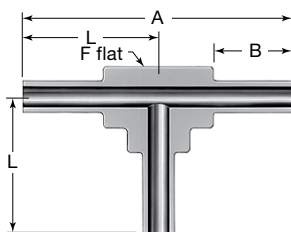
## Tube Butt Weld Fittings

### Reducing Union



Tube OD	Wall Thickness	Tube OD	Wall Thickness	Ordering Number	Dimensions		Pressure Rating
					A	B	
<b>Dimensions, in. (mm)</b>							<b>psig (bar)</b>
3/8	0.035	1/4	0.035	316L-6TB7-6-4	1.50 (38.1)	0.75 (19.0)	3300 (227)
1/2	0.049	1/4	0.035	316L-8TB7-6-4			3700 (254)
		3/8		316L-8TB7-6-6			3300 (227)
3/4	0.049	1/2	0.049	316L-12TB7-6-8			2400 (165)
1	0.065	1/2	0.049	316L-16TB7-6-8			2400 (165)
		3/4		316L-16TB7-6-12			
<b>Dimensions, mm (in.)</b>							<b>bar (psig)</b>
10	1.0	6	1.0	316L-10MTB7-6-6M	38.1 (1.50)	19.0 (0.75)	240 (3483)
		8		316L-10MTB7-6-8M			
12	1.0	6	1.0	316L-12MTB7-6-6M			200 (2902)
		8		316L-12MTB7-6-8M			
		10		316L-12MTB7-6-10M			
18	1.5	6	1.0	316L-18MTB7-6-6M	200 (2902)		
		12		316L-18MTB7-6-12M			

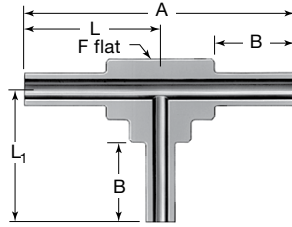
### Union Tee



Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating
			A	B	F, in.	L	
<b>Dimensions, in. (mm)</b>							<b>psig (bar)</b>
1/4	0.035	316L-4TB7-3	2.46 (62.5)	0.75 (19.0)	7/16	1.23 (31.2)	5100 (351)
3/8	0.035	316L-6TB7-3	2.40 (61.0)		7/16	1.20 (30.5)	3300 (227)
1/2	0.049	316L-8TB7-3	2.68 (68.1)		11/16	1.34 (34.0)	3700 (254)
3/4	0.049	316L-12TB7-3	2.91 (73.9)		15/16	1.46 (37.1)	2400 (165)
<b>Dimensions, mm (in.)</b>							<b>bar (psig)</b>
6	1.0	316L-6MTB7-3	62.5 (2.46)	19.0 (0.75)	7/16	31.2 (1.23)	420 (6095)
8	1.0	316L-8MTB7-3	62.5 (2.46)		7/16	31.2 (1.23)	310 (4499)
10	1.0	316L-10MTB7-3	67.8 (2.67)		11/16	34.0 (1.34)	240 (3483)
12	1.0	316L-12MTB7-3	67.8 (2.67)		11/16	34.0 (1.34)	200 (2902)
18	1.5	316L-18MTB7-3	74.9 (2.95)		15/16	37.6 (1.48)	200 (2902)

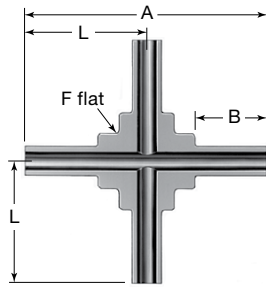
## Tube Butt Weld Fittings

### Reducing Tee



Tube OD	Wall Thickness	Tube OD	Wall Thickness	Ordering Number	Dimensions					Pressure Rating
					A	B	F, in.	L	L <sub>1</sub>	
<b>Dimensions, in. (mm)</b>										
3/8	0.035	1/4	0.035	316L-6TB7-3-6-4	2.39 (60.7)	0.75 (19.0)	7/16	1.20 (30.5)	1.23 (31.2)	3300 (227)
1/2	0.049	1/4		316L-8TB7-3-8-4	2.67 (67.8)		11/16	1.34 (34.0)	1.34 (34.0)	3700 (254)
		3/8		316L-8TB7-3-8-6	2.67 (67.8)		11/16	1.35 (34.3)	1.35 (34.3)	3300 (227)
3/4	0.049	3/8		316L-12TB7-3-12-6	2.91 (73.9)	15/16	1.46 (37.1)	1.48 (37.6)	1.48 (37.6)	2400 (165)
		1/4		316L-12TB7-3-12-4	2.91 (73.9)					
<b>Dimensions, mm (in.)</b>										<b>bar (psig)</b>
8	1.0	6	1.0	316L-8MTB7-3-8M-6M	62.2 (2.45)	19.0 (0.75)	7/16	31.3 (1.23)		310 (4499)
10		6		316L-10MTB7-3-10M-6M	67.8 (2.67)		11/16	34.0 (1.34)	240 (3483)	
		8		316L-10MTB7-3-10M-8M	67.8 (2.67)		11/16	34.0 (1.34)	200 (2902)	
12		6		316L-12MTB7-3-12M-6M	67.8 (2.67)	11/16	34.0 (1.34)	200 (2902)		
		8		316L-12MTB7-3-12M-8M	67.8 (2.67)					

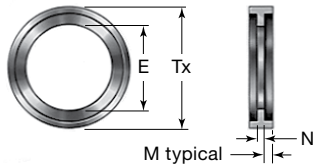
### Union Cross



Tube OD	Wall Thickness	Ordering Number	Dimensions				Pressure Rating
			A	B	F, in.	L	
<b>Dimensions, in. (mm)</b>							<b>psig (bar)</b>
1/4	0.035	316L-4TB7-4	2.45 (62.2)	0.75 (19.0)	7/16	1.23 (31.2)	5100 (351)
3/8	0.035	316L-6TB7-4	2.39 (60.7)	0.75 (19.0)	7/16	1.20 (30.5)	3300 (227)
1/2	0.049	316L-8TB7-4	2.61 (66.3)	0.75 (19.0)	11/16	1.31 (33.2)	3700 (254)
<b>Dimensions, mm (in.)</b>							<b>bar (psig)</b>
6	1.0	316L-6MTB7-4	62.2 (2.45)	19.0 (0.75)	7/16	31.3 (1.23)	420 (6095)
8		316L-8MTB7-4	62.2 (2.45)		7/16	31.3 (1.23)	310 (4499)
10		316L-10MTB7-4	64.8 (2.55)		5/8	32.4 (1.28)	240 (3483)
12		316L-12MTB7-4	64.8 (2.55)		5/8	32.4 (1.28)	200 (2902)

### ATW Weld Ring

ATW weld rings are used with tube butt weld fittings. The ring helps align weld joints and adds material to the weld zone during manual or orbital welding.



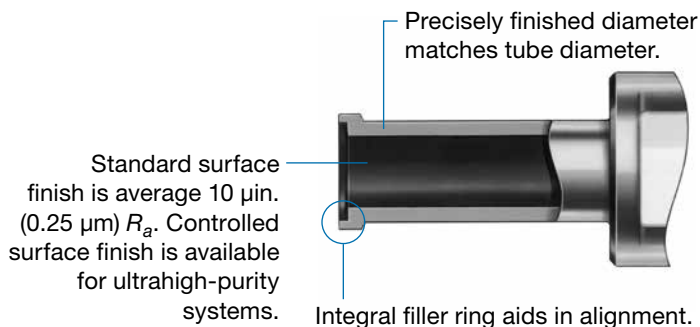
Tube OD	Ordering Number	Dimensions			
		E	M	N	Tx
<b>Dimensions, in. (mm)</b>					
1/4	316L-4-ATW-R	0.20 (5.1)	0.02 (0.51)	0.01 (0.25)	0.28 (7.1)
3/8	316L-6-ATW-R	0.32 (8.1)			0.41 (10.4)
1/2	316L-8-ATW-R	0.42 (10.7)			0.54 (13.7)



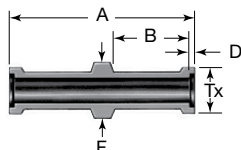
## Automatic Tube Butt Weld Fittings

### Ordering Information and Dimensions

- Dimensions are for reference only and are subject to change.
- See **Cleaning and Packaging**, page 2, to order automatic tube butt weld fittings cleaned in accordance with Swagelok *Special Cleaning and Packaging (SC-11)* catalog, MS-06-63; *Photovoltaic Process Specification (SC-06)* catalog, MS-06-64; or *Ultrahigh-Purity Process Specification (SC-01)* catalog, MS-06-61.



### Locator Union



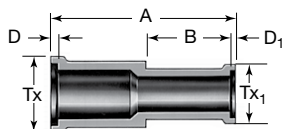
Tube OD	Wall Thickness	Ordering Number	Dimensions					Pressure Rating
			A	B	D	F	Tx	
Dimensions, in. (mm)								psig (bar)
1/4	0.035	316L-4-ATW-6L	1.69 (42.9)	0.75 (19.0)	0.02 (0.51)	0.36 (9.1)	0.29 (7.4)	5100 (351)
3/8	0.035	316L-6-ATW-6L	1.71 (43.4)		0.03 (0.76)	0.42 (10.7)	0.41 (10.4)	3300 (227)
1/2	0.049	316L-8-ATW-6L	1.73 (43.9)		0.04 (1.0)	0.60 (15.2)	0.55 (14.0)	3700 (254)

### Union



Tube OD	Wall Thickness	Ordering Number	Dimensions			Pressure Rating
			A	D	Tx	
Dimensions, in. (mm)						psig (bar)
1/4	0.035	316L-4-ATW-6	1.00 (25.4)	0.02 (0.51)	0.29 (7.4)	5100 (351)
3/8	0.035	316L-6-ATW-6	1.00 (25.4)	0.03 (0.76)	0.41 (10.4)	3300 (227)
1/2	0.049	316L-8-ATW-6	1.00 (25.4)	0.04 (1.0)	0.55 (14.0)	3700 (254)
3/4	0.049	316L-12-ATW-6	1.00 (25.4)	0.04 (1.0)	0.80 (20.3)	2400 (165)
1	0.065	316L-16-ATW-6	1.25 (31.8)	0.04 (1.0)	1.06 (26.9)	2400 (165)
Dimensions, mm (in.)						bar (psig)
6	1.0	316L-6-MATW-6	31.8 (1.25)	0.51 (0.02)	6.9 (0.27)	420 (6095)
8	1.0	316L-8-MATW-6		0.76 (0.03)	8.9 (0.35)	310 (4499)
10	1.0	316L-10-MATW-6		0.76 (0.03)	10.9 (0.43)	240 (3483)
12	1.0	316L-12-MATW-6		1.0 (0.04)	13.2 (0.52)	200 (2902)
18	1.5	316L-18-MATW-6		1.0 (0.04)	19.3 (0.76)	200 (2902)

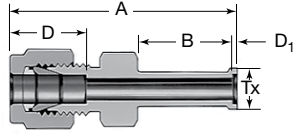
### Reducing Union



Tube OD	Wall Thickness	Tube OD	Wall Thickness	Ordering Number	Dimensions						Pressure Rating
					A	B	D	D <sub>1</sub>	Tx	Tx <sub>1</sub>	
Dimensions, in. (mm)											psig (bar)
3/8	0.035	1/4	0.035	316L-6-ATW-6-4	1.58 (40.1)	0.75 (19.0)	0.03 (0.76)	0.02 (0.51)	0.41 (10.4)	0.29 (7.4)	3300 (227)
1/2	0.049	1/4	0.035	316L-8-ATW-6-4	1.58 (40.1)	0.75 (19.0)	0.04 (1.0)	0.02 (0.51)	0.55 (14.0)	0.29 (7.4)	3700 (254)
		316L-8-ATW-6-6		0.03 (0.76)				0.41 (10.4)		3300 (227)	
3/4	0.049	1/2	0.049	316L-12-ATW-6-8	1.62 (41.1)	0.75 (19.0)	0.04 (1.0)	0.04 (1.0)	0.80 (20.3)	0.55 (14.0)	2400 (165)
Dimensions, mm (in.)											bar (psig)
8	1.0	6	1.0	316L-8-MATW-6-6M	39.9 (1.57)	19.0 (0.75)	0.76 (0.03)	0.51 (0.02)	8.9 (0.35)	6.8 (0.27)	310 (4499)
12		6		316L-12-MATW-6-6M	40.1 (1.58)		0.51 (0.02)	13.2 (0.52)	6.8 (0.27)	200 (2902)	
		8		316L-12-MATW-6-8M	40.4 (1.59)		0.76 (0.03)	8.9 (0.35)			

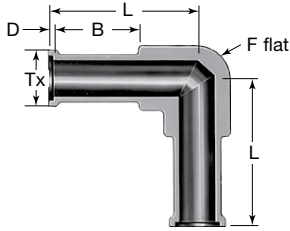
## Automatic Tube Butt Weld Fittings

### Swagelok Tube Fitting to Automatic Tube Weld Connector



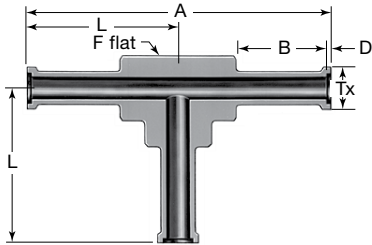
Tube OD	Tube OD	Wall Thickness	Ordering Number	Dimensions					Pressure Rating
				A	B	D	D <sub>1</sub>	T <sub>x</sub>	
Dimensions, in. (mm)									psig (bar)
1/4	1/4	0.035	316L-4-ATW-6-400	1.74 (44.2)	0.75 (19.0)	0.60 (15.2)	0.02 (0.51)	0.29 (7.4)	5100 (351)
3/8	3/8	0.035	316L-6-ATW-6-600	1.84 (46.7)		0.66 (16.8)	0.03 (0.76)	0.41 (10.4)	3300 (227)
1/2	1/2	0.049	316L-8-ATW-6-810	1.99 (50.5)		0.90 (22.9)	0.04 (1.0)	0.55 (14.0)	3700 (254)

### 90° Union Elbow



Tube OD	Wall Thickness	Ordering Number	Dimensions					Pressure Rating
			B	D	F, in.	L	T <sub>x</sub>	
Dimensions, in. (mm)								psig (bar)
1/4	0.035	316L-4-ATW-9	0.75 (19.0)	0.02 (0.51)	7/16	1.25 (31.8)	0.29 (7.4)	5100 (351)
3/8	0.035	316L-6-ATW-9	0.75 (19.0)	0.03 (0.76)	7/16	1.23 (31.2)	0.41 (10.4)	3300 (227)
1/2	0.049	316L-8-ATW-9	0.75 (19.0)	0.04 (1.0)	11/16	1.38 (35.1)	0.55 (14.0)	3700 (254)
3/4	0.049	316L-12-ATW-9	0.75 (19.0)	0.04 (1.0)	15/16	1.50 (38.1)	0.80 (20.3)	2400 (165)
1	0.065	316L-16-ATW-9	0.96 (24.4)	0.04 (1.0)	1 1/4	1.89 (48.0)	1.06 (26.9)	2400 (165)
Dimensions, mm (in.)								bar (psig)
6	1.0	316L-6-MATW-9	19.0 (0.75)	0.51 (0.02)	7/16	31.8 (1.25)	6.9 (0.27)	351 (5100)
8	1.0	316L-8-MATW-9		0.76 (0.03)	7/16	32.0 (1.26)	8.9 (0.35)	227 (3300)
10	1.0	316L-10-MATW-9		0.76 (0.03)	11/16	34.8 (1.37)	10.9 (0.43)	254 (3700)
12	1.0	316L-12-MATW-9		1.0 (0.04)	11/16	35.1 (1.38)	13.2 (0.52)	199 (2888)
18	1.5	316L-18-MATW-9		1.0 (0.04)	15/16	38.6 (1.52)	19.3 (0.76)	206 (2989)

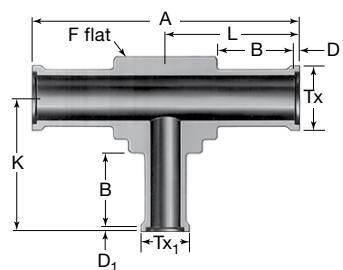
### Union Tee



Tube OD	Wall Thickness	Ordering Number	Dimensions					Pressure Rating	
			A	B	D	F, in.	L		T <sub>x</sub>
Dimensions, in. (mm)								psig (bar)	
1/4	0.035	316L-4-ATW-3	2.50 (63.5)	0.75 (19.0)	0.02 (0.51)	7/16	1.25 (31.8)	0.29 (7.4)	5100 (351)
3/8	0.035	316L-6-ATW-3	2.46 (62.5)	0.75 (19.0)	0.03 (0.76)	7/16	1.23 (31.2)	0.41 (10.4)	3300 (227)
1/2	0.049	316L-8-ATW-3	2.76 (70.1)	0.75 (19.0)	0.04 (1.0)	11/16	1.38 (35.1)	0.55 (14.0)	3500 (241)
3/4	0.049	316L-12-ATW-3	3.00 (76.2)	0.75 (19.0)	0.04 (1.0)	15/16	1.50 (38.1)	0.80 (20.3)	2400 (165)
1	0.065	316L-16-ATW-3	3.78 (96.0)	0.96 (24.4)	0.04 (1.0)	1 1/4	1.89 (48.0)	1.06 (26.9)	2400 (165)
Dimensions, mm (in.)								bar (psig)	
6	1.0	316L-6-MATW-3	63.5 (2.50)	19.0 (0.75)	0.51 (0.02)	7/16	31.8 (1.25)	6.9 (0.27)	454 (6589)
8	1.0	316L-8-MATW-3	64.0 (2.52)		0.76 (0.03)	7/16	32.0 (1.26)	8.9 (0.35)	323 (4687)
10	1.0	316L-10-MATW-3	69.6 (2.74)		0.76 (0.03)	11/16	34.8 (1.37)	10.9 (0.43)	254 (3686)
12	1.0	316L-12-MATW-3	70.1 (2.76)		1.0 (0.04)	11/16	35.1 (1.38)	13.2 (0.52)	206 (2989)
18	1.5	316L-18-MATW-3	77.2 (3.04)		1.0 (0.04)	15/16	38.6 (1.52)	19.3 (0.76)	206 (2989)

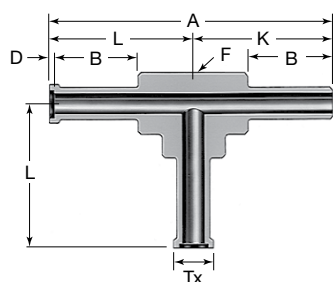
## Automatic Tube Butt Weld Fittings

### Reducing Tee



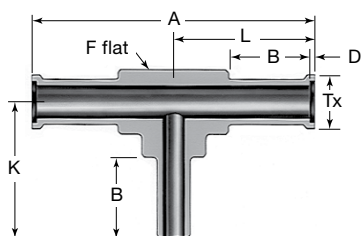
Tube OD	Wall Thickness	Tube OD	Wall Thickness	Ordering Number	Dimensions								Pressure Rating	
					A	B	D	D <sub>1</sub>	F, in.	K	L	Tx		Tx <sub>1</sub>
Dimensions, in. (mm)													psig (bar)	
3/8	0.035	1/4	0.035	316L-6-ATW-3-6-4	2.46 (62.5)	0.75 (19.0)	0.03 (0.76)	0.02 (0.51)	7/16	1.25 (31.8)	1.23 (31.2)	0.41 (10.4)	0.29 (7.4)	3300 (227)
1/2	0.049	1/4	0.035	316L-8-ATW-3-8-4	2.76 (70.1)		0.04 (1.0)	0.02 (0.51)	11/16	1.38 (35.1)	1.38 (35.1)	0.55 (14.0)	0.29 (7.4)	3700 (254)
		3/8	0.035	316L-8-ATW-3-8-6			0.03 (0.76)	1.37 (34.8)		0.41 (10.4)				3300 (227)
3/4	0.049	3/8	0.035	316L-12-ATW-3-12-6	3.00 (76.2)	0.04 (1.0)	0.03 (0.76)	15/16	1.50 (38.1)	1.50 (38.1)	0.80 (20.3)	0.41 (10.4)	2400 (165)	
		1/2	0.049	316L-12-ATW-3-12-8		0.04 (1.0)	0.55 (14.0)							
Dimensions, mm (in.)													bar (psig)	
12	1.0	6	1.0	316L-12-MATW-3-12M6M	70.1 (2.76)	19.0 (0.75)	0.51 (0.02)	11/16	34.5 (1.36)	35.1 (1.38)	13.2 (0.52)	6.9 (0.27)	200 (2902)	

### Manifold Tee



Tube OD	Wall Thickness	Ordering Number	Dimensions							Pressure Rating
			A	B	D	F	K	L	Tx	
Dimensions, in. (mm)										psig (bar)
1/4	0.035	316L-4-ATW-3-4TB7-4A	2.48 (63.0)	0.75 (19.0)	0.02 (0.51)	7/16	1.23 (31.2)	1.25 (31.8)	0.29 (7.4)	5100 (351)
3/8	0.035	316L-6-ATW-3-6TB7-6A	2.43 (61.7)		0.03 (0.76)	11/16	1.20 (30.5)	1.23 (31.2)	0.41 (10.4)	3300 (227)
1/2	0.049	316L-8-ATW-3-8TB7-8A	2.72 (69.1)		0.04 (1.0)	11/16	1.34 (34.0)	1.38 (35.1)	0.55 (14.0)	3700 (254)

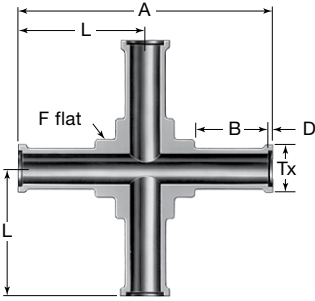
### Reducing Tee



Tube OD	Wall Thickness	Tube OD	Wall Thickness	Ordering Number	Dimensions							Pressure Rating
					A	B	D	F	K	L	Tx	
Dimensions, in. (mm)												psig (bar)
3/8	0.035	1/4	0.035	316L-6-ATW-3-6A-4TB7	2.46 (62.5)	0.75 (19.0)	0.03 (0.76)	7/16	1.23 (31.2)	1.23 (31.2)	0.41 (10.4)	3300 (227)
1/2	0.049	1/4		316L-8-ATW-3-8A-4TB7	2.76 (70.1)		0.04 (1.0)	11/16	1.36 (34.5)	1.38 (35.1)	0.55 (14.0)	3700 (254)
		3/8		316L-8-ATW-3-8A-6TB7			1.35 (34.3)		3300 (227)			

## Automatic Tube Butt Weld Fittings

### Union Cross

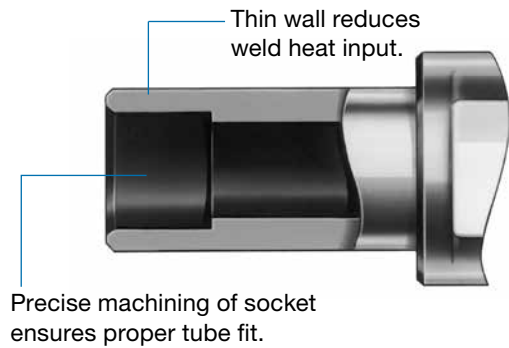


Tube OD	Wall Thickness	Ordering Number	Dimensions						Pressure Rating
			A	B	D	F, in.	L	Tx	
<b>Dimensions, in. (mm)</b>									<b>psig (bar)</b>
1/4	0.035	316L-4-ATW-4	2.50 (63.5)	0.75 (19.0)	0.02 (0.51)	7/16	1.25 (31.8)	0.29 (7.4)	5100 (351)
3/8	0.035	316L-6-ATW-4	2.46 (62.5)		0.03 (0.76)	7/16	1.23 (31.2)	0.41 (10.4)	3300 (227)
1/2	0.049	316L-8-ATW-4	2.70 (68.6)		0.04 (1.0)	5/8	1.35 (34.3)	0.55 (14.0)	3700 (254)
<b>Dimensions, mm (in.)</b>									<b>bar (psig)</b>
6	1.0	316L-6-MATW-4	63.5 (2.50)	19.0 (0.75)	0.51 (0.02)	7/16	31.8 (1.25)	6.9 (0.27)	420 (6095)
8		316L-8-MATW-4	64.0 (2.52)		0.76 (0.03)			8.9 (0.35)	310 (4499)

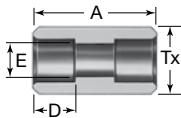
## Automatic Tube Socket Weld Fittings

### Ordering Information and Dimensions

- Dimensions are for reference only and are subject to change.
- See **Cleaning and Packaging**, page 2, to order automatic tube socket weld fittings cleaned in accordance with Swagelok *Special Cleaning and Packaging (SC-11)*, MS-06-63.

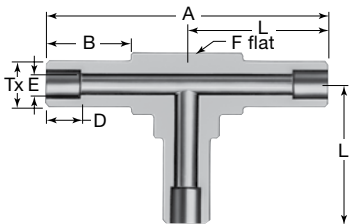


### Union



Tube OD	Ordering Number	Dimensions				Pressure Rating
		A	D	E	Tx	
<b>Dimensions, in. (mm)</b>						<b>psig (bar)</b>
1/4	316L-4-ASW-6	1.00 (25.4)	0.28 (7.1)	0.19 (4.8)	0.38 (9.7)	6800 (468)
3/8	316L-6-ASW-6		0.31 (7.9)	0.28 (7.1)	0.50 (12.7)	4900 (337)
1/2	316L-8-ASW-6		0.38 (9.7)	0.41 (10.4)	0.63 (16.0)	3800 (261)
3/4	316L-12-ASW-6		0.44 (11.2)	0.63 (16.0)	0.88 (22.4)	2700 (186)

### Union Tee

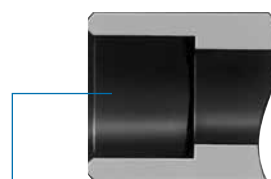


Tube OD	Ordering Number	Dimensions							Pressure Rating
		A	B	D	E	F	L	Tx	
<b>Dimensions, in. (mm)</b>									<b>psig (bar)</b>
1/4	316L-4-ASW-3	2.46 (62.5)	0.75 (19.0)	0.28 (7.1)	0.19 (4.8)	7/16	1.23 (31.2)	0.38 (9.7)	6800 (468)
3/8	316L-6-ASW-3	2.68 (68.1)		0.31 (7.9)	0.28 (7.1)	11/16	1.34 (34.0)	0.50 (12.7)	4900 (337)
1/2	316L-8-ASW-3	2.68 (68.1)		0.38 (9.7)	0.41 (10.4)	11/16	1.34 (34.0)	0.63 (16.0)	3800 (261)
3/4	316L-12-ASW-3	2.94 (74.7)		0.44 (11.2)	0.63 (16.0)	15/16	1.47 (37.3)	0.88 (22.4)	2700 (186)

## Tube Socket Weld Fittings

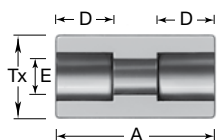
### Ordering Information and Dimensions

- Dimensions are for reference only and are subject to change.
- See **Cleaning and Packaging**, page 2, to order automatic tube socket weld fittings cleaned in accordance with *Swagelok Special Cleaning and Packaging (SC-11)*, MS-06-63.



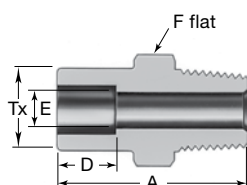
Precise machining of socket ensures proper tube fit.

#### Union



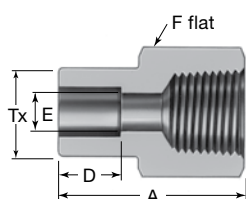
Tube Socket Size	Ordering Number	Dimensions				Pressure Rating
		A	D	E	Tx	
Dimensions, in. (mm)						psig (bar)
1/4	SS-4-TSW-6	0.75 (19.0)	0.28 (7.1)	0.19 (4.8)	0.48 (12.2)	10 700 (737)
3/8	SS-6-TSW-6	0.88 (22.4)	0.31 (7.9)	0.28 (7.1)	0.60 (15.2)	8 100 (558)
1/2	SS-8-TSW-6	1.06 (26.9)	0.38 (9.7)	0.41 (10.4)	0.73 (18.5)	6 600 (454)
3/4	SS-12-TSW-6	1.31 (33.3)	0.44 (11.2)	0.63 (16.0)	1.04 (26.4)	5 900 (406)
1	SS-16-TSW-6	1.44 (36.6)	0.62 (15.7)	0.88 (22.4)	1.36 (34.5)	5 600 (385)

#### Male Connector



Tube Socket Size	Male NPT Size	Ordering Number	Dimensions					Pressure Rating
			A	D	E	F	Tx	
Dimensions, in. (mm)								psig (bar)
1/4	1/4	SS-4-TSW-1-4	1.15 (29.2)	0.28 (7.1)	0.19 (4.8)	9/16	0.48 (12.2)	8000 (551)
3/8	1/4	SS-6-TSW-1-4	1.25 (31.8)	0.31 (7.9)	0.28 (7.1)	5/8	0.60 (15.2)	8000 (551)
	3/8	SS-6-TSW-1-6				11/16		7800 (537)
	1/2	SS-6-TSW-1-8	1.47 (37.3)			7/8	7700 (530)	
1/2	1/4	SS-8-TSW-1-4	1.31 (33.3)	0.38 (9.7)	0.28 (7.1)	3/4	0.73 (18.5)	6600 (454)
	3/8	SS-8-TSW-1-6				0.38 (9.7)		
	1/2	SS-8-TSW-1-8	1.53 (38.9)			0.41 (10.4)		

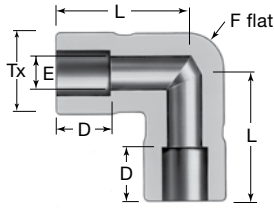
#### Female Connector



Tube Socket Size	Female NPT Size	Ordering Number	Dimensions					Pressure Rating
			A	D	E	F	Tx	
Dimensions, in. (mm)								psig (bar)
1/8	1/8	SS-2-TSW-7-2	0.83 (21.1)	0.10 (2.5)	0.09 (2.3)	9/16	0.29 (7.4)	6500 (447)
1/4	1/8	SS-4-TSW-7-2	1.05 (26.7)	0.28 (7.1)	0.19 (4.8)	9/16	0.48 (12.2)	6500 (447)
	1/4	SS-4-TSW-7-4	1.18 (30.0)			3/4		6600 (454)
3/8	1/4	SS-6-TSW-7-4	1.24 (31.5)	0.31 (7.9)	0.28 (7.1)	3/4	0.60 (15.2)	6600 (454)
1/2	3/8	SS-8-TSW-7-6	1.36 (34.5)	0.38 (9.7)	0.41 (10.4)	7/8	0.73 (18.5)	5300 (365)
	1/2	SS-8-TSW-7-8	1.59 (40.4)			1 1/16		4900 (337)
3/4	3/4	SS-12-TSW-7-12	1.73 (43.9)	0.44 (11.2)	0.63 (16.0)	1 5/16	1.04 (26.4)	4600 (316)

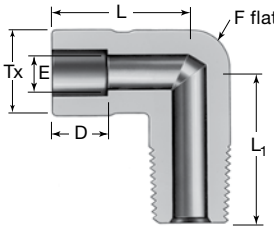
## Tube Socket Weld Fittings

### 90° Union Elbow



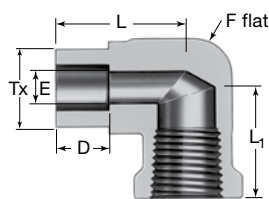
Tube Socket Size	Ordering Number	Dimensions					Pressure Rating
		D	E	F	L	Tx	
Dimensions, in. (mm)							psig (bar)
1/4	SS-4-TSW-9	0.28 (7.1)	0.19 (4.8)	7/16	0.86 (21.8)	0.53 (13.5)	10 700 (737)
3/8	SS-6-TSW-9	0.31 (7.9)	0.28 (7.1)	1/2	1.04 (26.4)	0.64 (16.3)	8 100 (558)
1/2	SS-8-TSW-9	0.38 (9.7)	0.41 (10.4)	11/16	1.17 (29.7)	0.81 (20.6)	6 600 (454)
3/4	SS-12-TSW-9	0.44 (11.2)	0.63 (16.0)	1	1.56 (39.6)	1.12 (28.4)	5 900 (406)
1	SS-16-TSW-9	0.62 (15.7)	0.88 (22.4)	1 1/4	1.92 (48.8)	1.44 (36.6)	5 600 (385)

### 90° Male Elbow



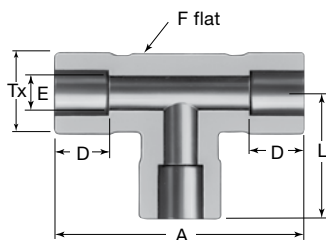
Tube Socket Size	Male NPT Size	Ordering Number	Dimensions					Pressure Rating	
			D	E	F	L	L <sub>1</sub>		Tx
Dimensions, in. (mm)							psig (bar)		
1/4	1/4	SS-4-TSW-2-4	0.28 (7.1)	0.19 (4.8)	1/2	0.79 (20.1)	1.05 (26.7)	0.48 (12.2)	8000 (551)
3/8	1/4	SS-6-TSW-2-4	0.31 (7.9)	0.28 (7.1)	1/2	1.04 (26.4)	1.05 (26.7)	0.64 (16.3)	8000 (551)
	3/8	SS-6-TSW-2-6			11/16	0.97 (24.6)	1.17 (29.7)	0.60 (15.2)	7800 (537)
	1/2	SS-6-TSW-2-8			13/16	1.02 (25.9)	1.45 (36.8)	0.60 (15.2)	7700 (530)
1/2	1/2	SS-8-TSW-2-8	0.38 (9.7)	0.41 (10.4)	13/16	1.08 (27.4)	1.45 (36.8)	0.73 (18.5)	6600 (454)

### 90° Female Elbow



Tube Socket Size	Female NPT Size	Ordering Number	Dimensions					Pressure Rating	
			D	E	F	L	L <sub>1</sub>		Tx
Dimensions, in. (mm)							psig (bar)		
1/4	1/4	SS-4-TSW-8-4	0.28 (7.1)	0.19 (4.8)	11/16	0.90 (22.9)	1.17 (29.7)	0.48 (12.2)	7400 (509)
3/8	1/4	SS-6-TSW-8-4	0.31 (7.9)	0.28 (7.1)	11/16	0.99 (25.1)	1.17 (29.7)	0.60 (15.2)	7400 (509)
	1/2	SS-6-TSW-8-8			1	1.13 (28.7)	1.56 (39.6)		5700 (392)
1/2	1/2	SS-8-TSW-8-8	0.38 (9.7)	0.41 (10.4)	1	1.19 (30.2)	1.56 (39.6)	0.73 (18.5)	5700 (392)

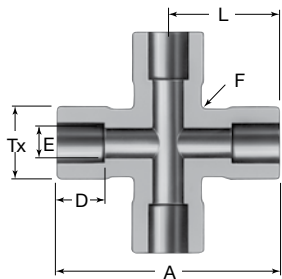
### Union Tee



Tube Socket Size	Ordering Number	Dimensions					Pressure Rating	
		A	D	E	F	L		Tx
Dimensions, in. (mm)							psig (bar)	
1/8	SS-2-TSW-3	1.18 (30.0)	0.10 (2.5)	0.09 (2.3)	7/16	0.59 (15.0)	0.29 (7.4)	12 600 (868)
1/4	SS-4-TSW-3	1.72 (43.7)	0.28 (7.1)	0.19 (4.8)	7/16	0.86 (21.8)	0.53 (13.5)	10 700 (737)
3/8	SS-6-TSW-3	2.08 (52.8)	0.31 (7.9)	0.28 (7.1)	1/2	1.04 (26.4)	0.64 (16.3)	8 100 (558)
1/2	SS-8-TSW-3	2.34 (59.4)	0.38 (9.7)	0.41 (10.4)	11/16	1.17 (29.7)	0.81 (20.6)	6 600 (454)
3/4	SS-12-TSW-3	3.12 (79.2)	0.44 (11.2)	0.63 (16.0)	1	1.56 (39.6)	1.04 (26.4)	5 900 (406)
1	SS-16-TSW-3	3.84 (97.5)	0.62 (15.7)	0.88 (22.4)	1 1/4	1.92 (48.8)	1.45 (36.8)	5 600 (385)

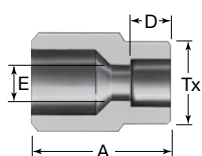
## Tube Socket Weld Fittings

### Union Cross



Tube Socket Size	Ordering Number	Dimensions						Pressure Rating
		A	D	E	F	L	Tx	
Dimensions, in. (mm)								psig (bar)
1/4	SS-4-TSW-4	1.72 (43.7)	0.28 (7.1)	0.19 (4.8)	7/16	0.86 (21.8)	0.53 (13.5)	10 700 (737)
3/8	SS-6-TSW-4	2.08 (52.8)	0.31 (7.9)	0.28 (7.1)	1/2	1.04 (26.4)	0.64 (16.3)	8 100 (558)
1/2	SS-8-TSW-4	2.34 (59.4)	0.38 (9.7)	0.41 (10.4)	11/16	1.17 (29.7)	0.81 (20.6)	6 600 (454)
3/4	SS-12-TSW-4	3.12 (79.2)	0.44 (11.2)	0.63 (16.0)	1	1.56 (39.6)	1.20 (30.5)	5 900 (406)
1	SS-16-TSW-4	3.84 (97.5)	0.62 (15.7)	0.88 (22.4)	1 1/4	1.92 (48.8)	1.45 (36.8)	5 600 (385)

### Tube Butt Weld to Tube Socket Weld



Tube OD	Wall Thickness	Tube Socket Size	Ordering Number	Dimensions				Pressure Rating
				A	D	E	Tx	
Dimensions, in. (mm)								psig (bar)
1/4	0.06 (1.5)	1/8	SS-4-MTW-A-2TSW	0.56 (14.2)	0.10 (2.5)	0.09 (2.3)	0.29 (7.4)	11 200 (772)
3/8	0.07 (1.8)	1/4	SS-6-MTW-A-4TSW	0.75 (19.0)	0.28 (7.1)	0.19 (4.8)	0.48 (12.2)	8 200 (564)
1/2	0.08 (2.0)	1/4	SS-8-MTW-A-4TSW	0.88 (22.4)	0.28 (7.1)	0.19 (4.8)	0.50 (12.7)	7 500 (516)
		3/8	SS-8-MTW-A-6TSW		0.31 (7.9)	0.33 (8.3)	0.60 (15.2)	
3/4	0.11 (2.8)	1/2	SS-12-MTW-A-8TSW	1.12 (28.4)	0.38 (9.7)	0.41 (10.4)	0.75 (19.0)	6 300 (434)
1	0.12 (3.0)	1/2	SS-16-MTW-A-8TSW	1.38 (35.1)	0.38 (9.7)	0.41 (10.4)	0.73 (18.5)	5 300 (365)

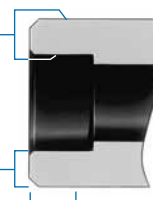
## Pipe Socket Weld Fittings

### Ordering Information and Dimensions

- Dimensions are for reference only and are subject to change.
- See **Cleaning and Packaging**, page 2, to order pipe socket weld fittings cleaned in accordance with Swagelok *Special Cleaning and Packaging (SC-11)*, MS-06-63.

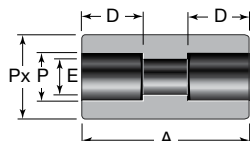
Quality machining of all surfaces ensures consistent welding to pipe.

Heavy wall, plus strength of material, ensures long life in severe service applications.



Socket depth equals or exceeds requirements of ASME B16.11 and ensures proper pipe support.

### Union



P Pipe Size	Ordering Number	Dimensions				Pressure Rating
		A	D	E	Px	
Dimensions, in. (mm)						psig (bar)
1/4	SS-4-PSW-6	1.06 (26.9)	0.39 (9.9)	0.36 (9.1)	0.88 (22.4)	8100 (558)
3/8	SS-6-PSW-6	1.12 (28.4)	0.39 (9.9)	0.49 (12.4)	1.03 (26.2)	7100 (489)
1/2	SS-8-PSW-6	1.12 (28.4)	0.39 (9.9)	0.62 (15.7)	1.25 (31.8)	6800 (468)
3/4	SS-12-PSW-6	1.75 (44.4)	0.51 (13.0)	0.82 (20.8)	1.47 (37.3)	5800 (399)
1	SS-16-PSW-6	1.75 (44.4)	0.51 (13.0)	1.05 (26.7)	1.86 (47.2)	6100 (420)

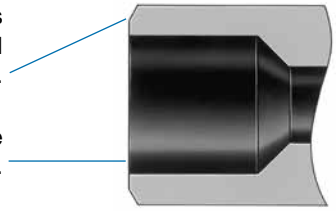
## Pipe Butt Weld Fittings

### Ordering Information and Dimensions

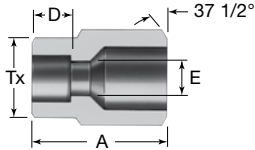
- Dimensions are for reference only and are subject to change.
- See **Cleaning and Packaging**, page 2, to order pipe butt weld fittings cleaned in accordance with Swagelok *Special Cleaning and Packaging (SC-11)* catalog, MS-06-63.

37 1/2° chamfer ensures proper weld (not included on 1/4 in. size).

Male weld end can be butt or socket welded.



### Tube Socket Weld to Pipe Butt Weld



Tube OD	Pipe Size (Sch 80)	Ordering Number	Dimensions				Pressure Rating
			A	D	E	Tx	
<b>Dimensions, in. (mm)</b>							<b>psig (bar)</b>
1/4	1/4	SS-4-MPW-A-4TSW	0.88 (22.4)	0.28 (7.1)	0.19 (4.8)	0.48 (12.2)	10 300 (709)
	1/2	SS-8-MPW-A-4TSW	1.12 (28.4)				7 800 (537)
3/8	3/8	SS-6-MPW-A-6TSW	1.03 (26.2)	0.31 (7.9)	0.28 (7.1)	0.60 (15.2)	8 100 (558)
	1/2	SS-8-MPW-A-6TSW	1.12 (28.4)				7 800 (537)
	3/4	SS-12-MPW-A-6TSW	1.50 (38.1)				6 600 (454)
	1	SS-16-MPW-A-6TSW	1.38 (35.1)				6 000 (413)
1/2	3/8	SS-6-MPW-A-8TSW	1.00 (25.4)	0.38 (9.7)	0.42 (10.7)	0.73 (18.5)	6 600 (454)
	1/2	SS-8-MPW-A-8TSW	1.19 (30.2)	0.38 (9.7)	0.41 (10.4)		6 600 (454)
	3/4	SS-12-MPW-A-8TSW	1.50 (38.1)	0.38 (9.7)	0.41 (10.3)		6 600 (454)
	1	SS-16-MPW-A-8TSW	1.56 (39.6)	0.44 (11.2)	0.38 (9.7)		6 000 (413)
3/4	3/4	SS-12-MPW-A-12TSW	1.50 (38.1)	0.44 (11.2)	0.62 (15.7)	1.05 (26.7)	5 900 (406)

## Swagelok Orbital Welding System

Refer to *Welding System M200 Power Supply* catalog, MS-02-342, for additional information.





## Introduction

Since 1947, Swagelok has designed, developed, and manufactured high-quality, general-purpose and specialty fluid system products to meet the evolving needs of global industries. Our focus is on understanding our customers' needs, finding timely solutions, and adding value with our products and services.

We are pleased to provide this global edition of the book-bound *Swagelok Product Catalog*, which compiles more than 100 separate product catalogs, technical bulletins, and reference documents into one convenient, easy-to-use volume. Each product catalog is up to date at the time of printing, with its revision number shown on the last page of the individual catalog. Subsequent revisions will supersede the printed version and will be posted on the Swagelok website and in the Swagelok electronic Desktop Technical Reference (eDTR) tool.

For more information, visit your Swagelok website or contact your authorized Swagelok sales and service representative.

## Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit [swagelok.com](http://swagelok.com) or contact your authorized Swagelok representative.

### Safe Product Selection

**When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.**

### WARNING

**Do not mix/interchange Swagelok products or components not governed by industrial design standards, including Swagelok tube fitting end connections, with those of other manufacturers.**

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15-7 PH—TM AK Steel Corp.  
AccuTrak, Beacon, Westlock—TM Tyco International Services  
Atlas—TM Asahi Glass Co., Ltd.  
ASCO, El-O-Matic—TM Emerson  
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