

Flange Adapters



- Threadless, weldless transition from flanged piping systems to tubing systems
- Flange types meet ASME, DIN EN, and JIS standards
- One-piece integrally machined forged body
- Available with Swagelok® tube fitting end connections up to 50 mm and 2 in.

Features

- Flange types meet ASME, DIN EN, and JIS standards
- Range of flange sizes and pressure classes
- Full range of sealing faces including flat face, raised face, RTJ, and tongue-and-groove
- 316/316L dual-certified stainless steel material standard
- Wrench flats for ease of tube fitting assembly
- Gaugeability on initial installation using Swagelok gap inspection gauges

End Connections

- Metric and fractional Swagelok tube fittings from 3 to 50 mm and 1/16 to 2 in.
- Metric and fractional Swagelok tube adapter fittings from 6 to 50 mm and 1/4 to 2 in.
- Male pipe weld end connections from 1/16 to 2 in.
- Socket weld end connections from 1/16 to 2 in.
- Other end connections are available upon request
- The designators previously used for Alloy C-276 Swagelok ends HC-1210, HC-1610, & HC-18M0 have been replaced by HC-1230, HC-1630, & HC-18M30.

Flange Connections

- ASME B16.5
 - Nominal flange sizes from NPS 1/2 to 2 in.
 - Pressure class ratings from 150 to 2500
- DIN EN 1092-1
 - Nominal flange sizes from DN 10 to 50
 - Pressure class ratings from PN 10 to 320
- JIS B2220
 - Nominal flange sizes from DN 15 to 50
 - Pressure class ratings from 10 to 63K
- Flange adapters to meet additional standards, such as API and ISO, are available upon request.

Regulatory Compliance

Stainless steel flange adapters with DIN EN (up to PN 160), and ANSI flanges are TÜV type approved.

According to the PED, flange adapters are classified as piping components and may not bear the CE-marking.

Cleaning and Packaging

All Swagelok flange adapters are cleaned in accordance with Swagelok *Standard Cleaning and Packaging (SC-10)* catalog, [MS-06-62](#).

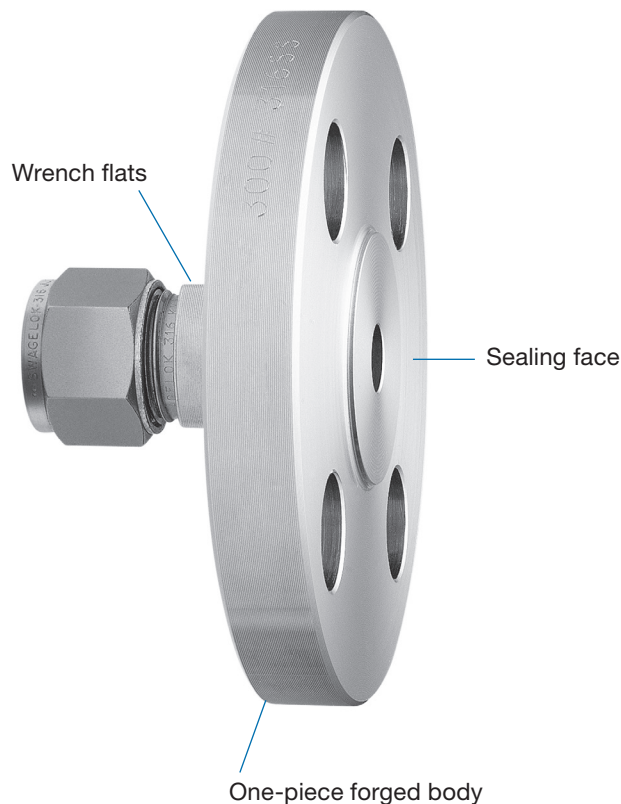
To order flange adapters processed in accordance with ASTM G93 Level C, add G93 to the flange adapter ordering number.

Example: SS-810-F12-300-G93

Special Cleaning and Packaging

To order flange adapters processed in accordance with ASTM G93 Level E, add **GQ** to the flange adapter ordering number.

Example: SS-810-F12-300**GQ**



Flange Materials

Material	ASTM / EN Specification
316/316L stainless steel ^①	A182/1.4401
Alloy 2507	A182 F53
6-moly	A182 F44
316L ^②	A182 316F
Alloy 400	B564
Alloy 600	
Alloy C-276	
Alloy 625	
Alloy 825	

^① Over 1 in. and over 25 mm stainless steel fittings use stainless steel ferrules with PFA coating. Applications above 450°F (232°C) **require** silver-plated front ferrules and uncoated back ferrules. To order fittings with silver-plated ferrules and uncoated back ferrules, add **BM** to the ordering number.

Example: SS-25M0-F25E-40-B1**BM**

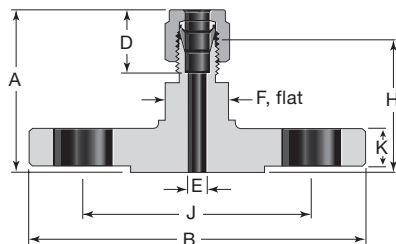
^② 316L material has preferential properties for welding.

Note: Swagelok does not offer gaskets for use with flange adapters due to variety of system media that could be used. Choosing a compatible gasket material is the responsibility of the system designer.

Ordering Information and Dimensions

Dimensions are for reference only and are subject to change.

ANSI Flanges with Swagelok Tube Fitting or Tube Adapter



Tube OD in.	ANSI Flange NPS	Class	Ordering Number Raised Face Flange	Dimensions, in.							
				A	B	D	E	F	H	J	K
1/4	1/2	150	SS-400-F8-150	1.61	3.50	0.60	0.19	13/16	1.32	2.38	0.38
3/8	1/2	300	SS-600-F8-300	1.79	3.75	0.66	0.28	13/16	1.50	2.62	0.50
1/2	1/2	150	SS-810-F8-150	1.78	3.50	0.90	0.41	13/16	1.38	2.38	0.38
	1		SS-810-F16-150	1.90	4.25				1.50	3.12	0.50
	2		SS-810-F32-150	2.09	6.00				1.69	4.75	0.69
3/4	1		SS-1210-F16-150	1.98	4.25	0.96	0.62	1 1/4	1.58	3.12	0.50
1	1		SS-1610-F16-150	2.38	4.25	1.23	0.88	1 3/8	1.90	3.12	0.50
1 1/2	2		SS-2400-F32-150	3.40	6.00	1.97	1.34	2 1/8	2.33	4.75	0.69
2	2		SS-3200-F32-150	4.11	6.00	2.66	1.81	2 3/4	2.64	4.75	0.69

Note: Some flange size and fitting combinations are not available

Ratings are taken from ASME B16.5, Table 2-2.2 and Table II-2-2.2 (based on A182 316 stainless steel material).

Pressure ratings for fittings with a flange end connection and another end connection are determined by the connection with the lower pressure rating. Refer to *Tubing Data* catalog, MS-01-107, for additional information on tubing data.

Working Pressures by Classes, psig

Temperature °F	ASME Class						
	150	300	400	600	900	1500	2500
-20 to 100	275	720	960	1440	2160	3600	6000
200	235	620	825	1240	1860	3095	5160
300	215	560	745	1120	1680	2795	4660
400	195	515	685	1025	1540	2570	4280
500	170	480	635	955	1435	2390	3980
600	140	450	600	900	1355	2255	3760
650	125	440	590	885	1325	2210	3680
700	110	435	580	870	1305	2170	3620
750	95	425	570	855	1280	2135	3560
800	80	420	565	845	1265	2110	3520
850	65	420	555	835	1255	2090	3480
900	50	415	555	830	1245	2075	3460
950	35	385	515	775	1160	1930	3220
1000	20	365	485	725	1090	1820	3030

Working Pressures by Classes, bar

Temperature °C	ASME Class						
	150	300	400	600	900	1500	2500
-29 to 38	19.0	49.6	66.2	99.3	148.9	248.2	413.7
50	18.4	48.1	64.2	96.2	144.3	240.6	400.9
100	16.2	42.2	56.3	84.4	126.6	211.0	351.6
150	14.8	38.5	51.3	77.0	115.5	192.5	320.8
200	13.7	35.7	47.6	71.3	107.0	178.3	297.2
250	12.1	33.4	44.5	66.8	100.1	166.9	278.1
300	10.2	31.6	42.2	63.2	94.9	158.1	263.5
325	9.3	30.9	41.2	61.8	92.7	154.4	257.4
350	8.4	30.3	40.4	60.7	91.0	151.6	252.7
375	7.4	29.9	39.8	59.8	89.6	149.4	249.0
400	6.5	29.4	39.3	58.9	88.3	147.2	245.3
425	5.5	29.1	38.9	58.3	87.4	145.7	242.9
450	4.6	28.8	38.5	57.7	86.5	144.2	240.4
475	3.7	28.7	38.2	57.3	86.0	143.4	238.9
500	2.8	28.2	37.6	56.5	84.7	140.9	235.0
538	1.4	25.2	33.4	50.0	75.2	125.5	208.9

Ordering Information, ANSI Flange Adapters with Swagelok Tube Fitting or Tube Adapter

For standard stainless steel flange adapters, select an ordering number from the table on page 3.

Build a special-order flange adapter by combining the designators in the sequence shown below.

SS - 8M0 - F16 - 150 - FF - BLIND

Flange Material

- SS** = 316/316L stainless steel^①
- M** = Alloy 400
- INC** = Alloy 600
- HC** = Alloy C-276

^① Over 1 in. and over 25 mm stainless steel fittings use stainless steel ferrules with PFA coating. Applications above 450°F (232°C) require silver-plated front ferrules and uncoated back ferrules. To order fittings with silver-plated ferrules and uncoated back ferrules, add **BM** to the ordering number.

Example: SS-8M0-F16-150-FFBM

End Connection Size

Swagelok Tube Fitting

Fractional	Metric
200 = 1/8 in.	3M0 = 3 mm
400 = 1/4 in.	6M0 = 6 mm
600 = 3/8 in.	8M0 = 8 mm
810 = 1/2 in.	10M0 = 10 mm
1010 = 5/8 in.	12M0 = 12 mm
1210 = 3/4 in.	14M0 = 14 mm
1610 = 1 in.	15M0 = 15 mm
2000 = 1 1/4 in.	18M0 = 18 mm
2400 = 1 1/2 in.	20M0 = 20 mm
3200 = 2 in.	22M0 = 22 mm
	25M0 = 25 mm
	28M0 = 28 mm
	32M0 = 32 mm
	38M0 = 38 mm
	50M0 = 50 mm

Swagelok Tube Adapter^①

Fractional	Metric
4-TA = 1/4 in.	6-MTA = 6 mm
6-TA = 3/8 in.	8-MTA = 8 mm
8-TA = 1/2 in.	10-MTA = 10 mm
12-TA = 3/4 in.	12-MTA = 12 mm
16-TA = 1 in.	18-MTA = 18 mm
20-TA = 1 1/4 in.	20-MTA = 20 mm
24-TA = 1 1/2 in.	22-MTA = 22 mm
32-TA = 2 in.	25-MTA = 25 mm
	28-MTA = 28 mm
	32-MTA = 32 mm
	38-MTA = 38 mm
	50-MTA = 50 mm

^① Over 1 in. and over 25 mm tube adapter fittings are furnished with nuts and preswaged ferrules.

Options

- BLIND** = Blind through hole
- BT** = Bored-through^①
- PMI** = 100% positive material identification, no report
- PM2** = 100% positive material identification, with report
- PM3** = specified % positive material identification, with report

^① No hyphen is needed in front of BT designator.

Sealing Face (Raised Face Standard)

no designator = Raised face

- FF** = Flat face
- RTJ** = Ring joint face^{①②}
- MFL** = Male face, large
- MFS** = Male face, small
- FFL** = Female face, large
- FFS** = Female face, small
- TFL** = Tongue face, large
- TFS** = Tongue face, small
- GFL** = Groove face, large
- GFS** = Groove face, small

ASME B16.5 should be reviewed for specific dimensions related to sealing faces.

^① May come with full face or contoured face.

^② No hyphen is needed in front of RTJ designator.

Pressure Class

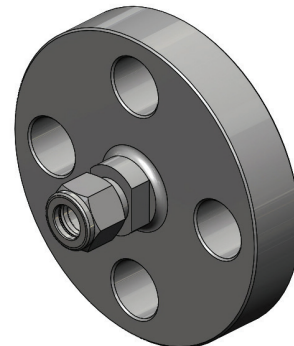
150 = 150	900 = 900
300 = 300	1500 = 1500
600 = 400/600	2500 = 2500

Note: Part pressure rating is the lower of the Flange and Fitting End connection. Refer to *Tubing Data* catalog, [MS-01-107](#).

Nominal Flange Size

- F8** = NPS 1/2 in.
- F12** = NPS 3/4 in.
- F16** = NPS 1 in.
- F24** = NPS 1 1/2 in.
- F32** = NPS 2 in.

Note: F8-150 and F12-150 flanges are not available with RTJ sealing face.



Ordering Information, ANSI Flange Adapters with NPT or Weld End Connections

For standard stainless steel flange adapters, select an ordering number from the table on page 3.

Build a special-order flange adapter by combining the designators in the sequence shown below.

SS - F16 - 150 - FF - 1 - 8 - BLIND

Flange Material

- SS = 316/316L stainless steel
- M = Alloy 400
- INC = Alloy 600
- HC = Alloy C-276

Nominal Flange Size

- F8 = NPS 1/2 in.
- F12 = NPS 3/4 in.
- F16 = NPS 1 in.
- F24 = NPS 1 1/2 in.
- F32 = NPS 2 in.

Pressure Class

- 150 = 150
- 300 = 300
- 600 = 400/600
- 900 = 900
- 1500 = 1500
- 2500 = 2500

Note: Part pressure rating is the lower of the Flange and Fitting End connection. Refer to *Tubing Data* catalog, [MS-01-107](#).

Options

- BLIND = Blind through hole
- BT = Bored-through
- PMI = 100% positive material identification, no report
- PM2 = 100% positive material identification, with report
- PM3 = specified % positive material identification, with report

End Connection Size

NPT	Weld
1 = 1/16 in.	1W = 1/16 in.
2 = 1/8 in.	2W = 1/8 in.
4 = 1/4 in.	4W = 1/4 in.
6 = 3/8 in.	6W = 3/8 in.
8 = 1/2 in.	8W = 1/2 in.
12 = 3/4 in.	12W = 3/4 in.
16 = 1 in.	16W = 1 in.
20 = 1 1/4 in.	20W = 1 1/4 in.
24 = 1 1/2 in.	24W = 1 1/2 in.
32 = 2 in.	32W = 2 in.

End Connection Type

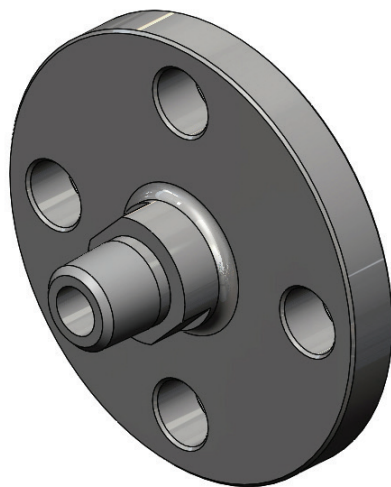
- 1 = Male (pipe weld)
- 7 = Female (socket weld)

Sealing Face (Raised Face Standard)

- no designator = Raised face
- FF = Flat face
- RTJ = Ring joint face^①
- MFL = Male face, large
- MFS = Male face, small
- FFL = Female face, large
- FFS = Female face, small
- TFL = Tongue face, large
- TFS = Tongue face, small
- GFL = Groove face, large
- GFS = Groove face, small

ASME B16.5 should be reviewed for specific dimensions related to sealing faces.

^① May come with full face or contoured face.



Ordering Information, DIN EN Flange Adapters

For standard stainless steel flange adapters, select an ordering number from the table on page 3.

Build a special-order flange adapter by combining the designators in the sequence shown below.

SS - 810 - F25E - 40 - B1 - BLIND

Flange Material

SS = 316/316L stainless steel^①

M = Alloy 400

INC = Alloy 600

HC = Alloy C-276

^① Over 1 in. and over 25 mm stainless steel fittings use stainless steel ferrules with PFA coating. Applications above 450°F (232°C) **require** silver-plated front ferrules and uncoated back ferrules. To order fittings with silver-plated ferrules and uncoated back ferrules, add **BM** to the ordering number.

Example: SS-25M0-F25E-40-B1BM

Options

BLIND = Blind through hole

BT = Bored-through

PMI = 100% positive material identification, no report

PM2 = 100% positive material identification, with report

PM3 = specified % positive material identification, with report

Sealing Face

B1 = Raised face, serrated

B2 = Raised face, smooth

A = Flat face

C = Tongue face

D = Groove face

E = Spigot

F = Recess

G = O-Ring Spigot

H = O-Ring Groove

Pressure Class

10 = PN 10

16 = PN 16

25 = PN 25

40 = PN 40

63 = PN 63

100 = DN 100

160 = PN 160

250 = PN 250

320 = PN 320

Note: Part pressure rating is the lower of the Flange and Fitting End connection. Refer to *Tubing Data* catalog, [MS-01-107](#).

Nominal Flange Size

F10E = DN10

F15E = DN15

F20E = DN20

F25E = DN25

F32E = DN32

F40E = DN40

F50E = DN50

End Connection Size

Swagelok Tube Fitting

Fractional

200 = 1/8 in.

400 = 1/4 in.

600 = 3/8 in.

810 = 1/2 in.

1010 = 5/8 in.

1210 = 3/4 in.

1610 = 1 in.

2000 = 1 1/4 in.

2400 = 1 1/2 in.

3200 = 2 in.

Metric

3M0 = 3 mm

6M0 = 6 mm

8M0 = 8 mm

10M0 = 10 mm

12M0 = 12 mm

14M0 = 14 mm

15M0 = 15 mm

18M0 = 18 mm

20M0 = 20 mm

22M0 = 22 mm

25M0 = 25 mm

28M0 = 28 mm

32M0 = 32 mm

38M0 = 38 mm

50M0 = 50 mm

Swagelok Tube Adapter^①

Fractional

4-TA = 1/4 in.

6-TA = 3/8 in.

8-TA = 1/2 in.

12-TA = 3/4 in.

16-TA = 1 in.

20-TA = 1 1/4 in.

24-TA = 1 1/2 in.

32-TA = 2 in.

Metric

6-MTA = 6 mm

8-MTA = 8 mm

10-MTA = 10 mm

12-MTA = 12 mm

18-MTA = 18 mm

20-MTA = 20 mm

22-MTA = 22 mm

25-MTA = 25 mm

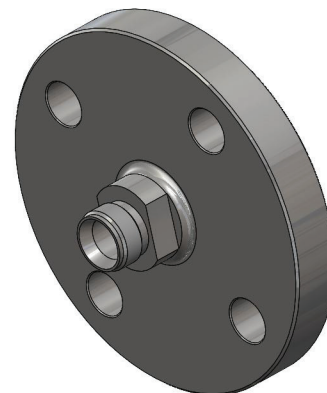
28-MTA = 28 mm

32-MTA = 32 mm

38-MTA = 38 mm

50-MTA = 50 mm

^① Over 1 in. and over 25 mm tube adapter fittings are furnished with nuts and preswaged ferrules.



Ordering Information, JIS Flange Adapters

For standard stainless steel flange adapters, select an ordering number from the table on page 3.

Build a special-order flange adapter by combining the designators in the sequence shown below.

SS - 600 - F25A - 40K - RF - BLIND

Flange Material

SS = 316/316L stainless steel^①

^①Over 1 in. and over 25 mm stainless steel fittings use stainless steel ferrules with PFA coating. Applications above 450°F (232°C) **require** silver-plated front ferrules and uncoated back ferrules. To order fittings with silver-plated ferrules and uncoated back ferrules, add **BM** to the ordering number.

Example: SS-25M0-F25A-40K-RFBM

End Connection Size

Swagelok Tube Fitting

<i>Fractional</i>	<i>Metric</i>
200 = 1/8 in.	3M0 = 3 mm
400 = 1/4 in.	6M0 = 6 mm
600 = 3/8 in.	8M0 = 8 mm
810 = 1/2 in.	10M0 = 10 mm
1010 = 5/8 in.	12M0 = 12 mm
1210 = 3/4 in.	14M0 = 14 mm
1610 = 1 in.	15M0 = 15 mm
2000 = 1 1/4 in.	18M0 = 18 mm
2400 = 1 1/2 in.	20M0 = 20 mm
3200 = 2 in.	22M0 = 22 mm
	25M0 = 25 mm
	28M0 = 28 mm
	32M0 = 32 mm
	38M0 = 38 mm
	50M0 = 50 mm

Swagelok Tube Adapter^①

<i>Fractional</i>	<i>Metric</i>
4-TA = 1/4 in.	6-MTA = 6 mm
6-TA = 3/8 in.	8-MTA = 8 mm
8-TA = 1/2 in.	10-MTA = 10 mm
12-TA = 3/4 in.	12-MTA = 12 mm
16-TA = 1 in.	18-MTA = 18 mm
20-TA = 1 1/4 in.	20-MTA = 20 mm
24-TA = 1 1/2 in.	22-MTA = 22 mm
32-TA = 2 in.	25-MTA = 25 mm
	28-MTA = 28 mm
	32-MTA = 32 mm
	38-MTA = 38 mm
	50-MTA = 50 mm

^① Over 1 in. and over 25 mm tube adapter fittings are furnished with nuts and preswaged ferrules.

Options

- BLIND** = Blind through hole
- BT** = Bored-through
- PMI** = 100% positive material identification, no report
- PM2** = 100% positive material identification, with report
- PM3** = specified % positive material identification, with report

Sealing Face

- RF** = Raised face, small
- RL** = Raised face, large
- FF** = Flat face
- S** = Spigot, male
- R** = Recess, female

Pressure Class

- 5K** = 5K
- 10K** = 10K
- 16K** = 16K
- 20K** = 20K
- 30K** = 30K
- 40K** = 40K
- 63K** = 63K

Note: Part pressure rating is the lower of the Flange and Fitting End connection. Refer to *Tubing Data* catalog, [MS-01-107](#).

Nominal Flange Size

- F10A** = DN10
- F15A** = DN15
- F20A** = DN20
- F25A** = DN25
- F32A** = DN32
- F40A** = DN40
- F50A** = DN50



Options

Bored-Through Flange Adapters for Thermocouples and Dip Tubes

Swagelok bored-through flange adapters with Swagelok tube fitting ends accommodate thermocouples or dip tubes. To order, add **BT** to the ordering number.

Example: SS-6M0-F25M-40-CBT

Tube Fitting Lap Joint Stubs



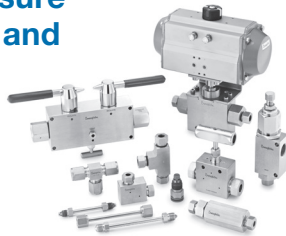
Stainless steel lap joint connectors are available for use with 1/2 in. lap joint pipe flange adapters.

Select an ordering number.

Tube OD	Sealing Surface Finish (R_a)	Ordering Number
3/8 in.	125 to 250 μ in. (3.2 to 6.4 μ m)	SS-600-1-0151
10 mm		SS-10M0-1-0005

Medium- and High-Pressure Fittings, Tubing, Valves, and Accessories

Refer to *Medium- and High-Pressure Fittings, Tubing, Valves, and Accessories* catalog, [MS-02-472](#), for additional information.



Multihead Hydraulic Swaging Unit

Refer to *Gaugeable Tube Fittings and Adapter Fittings* catalog, [MS-01-140](#), for additional information.



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.

Swagelok Tube Fittings

Refer to *Gaugeable Tube Fittings and Adapter Fittings* catalog, [MS-01-140](#), for additional information.



Tubing Products

Swagelok offers a wide variety of tubing products.

Contact your authorized Swagelok representative or see these Swagelok catalogs for more information:

- *Stainless Steel Seamless Tubing, Fractional, Metric, and Imperial Sizes* catalog, [MS-01-181](#)
- *Ultrahigh-Purity and High-Purity Stainless Steel Tubing, Fractional, Metric, and Imperial Sizes* catalog, [MS-01-182](#)



Tubing Data

Refer to *Tubing Data* catalog, [MS-01-107](#), for additional information on tubing data.

Tube Benders

Refer to *Tubing Tools and Accessories* catalog, [MS-01-179](#), for additional information.



Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.