

# 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 stainless steel material standard; optional materials include alloy 20, alloy 400, alloy 600, and alloy C-276
- 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.

## 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 15 to 50
  - Pressure class ratings from PN 40 to 320
- EN 1092-1
  - Nominal flange sizes from DN 15 to 50
  - Pressure class ratings from PN 40 to 100
- 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.

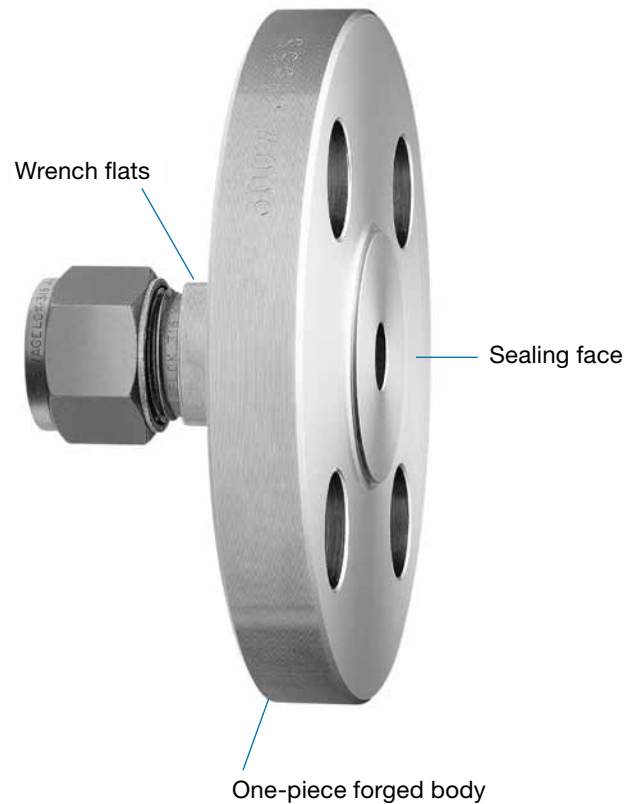
## Regulatory Compliance

Stainless flange adapters with EN, DIN (up to PN 160), and ANSI flanges have been shown through type-test approval TÜ/TÜV A/AR 278-03 to comply with the European Pressure Equipment Directive (PED) and the leakage requirement of TA-LUFT 2002.

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)*, MS-06-62.



## Flange Materials

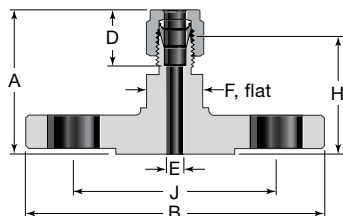
Material	ASTM Specification
316 stainless steel <sup>①</sup>	A182
Alloy 20	B462
Alloy 400	B564
Alloy 600	
Alloy C-276	

<sup>①</sup> 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-6M0-F25M-40-C-**BM**

## Ordering Information and Dimensions

Dimensions are for reference only and are subject to change.

### ANSI Flanges



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

### Pressure-Temperature Ratings

Ratings are taken from ASME B16.5-2003, Table 2-2.2 and Table F2-2.2.

Pressure ratings for fittings with a flange end connection and another end connection are determined by the connection with the lower pressure rating.

#### 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

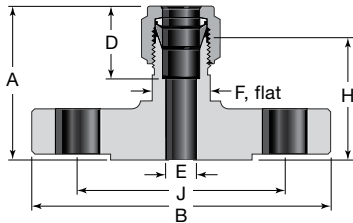
#### Working Pressures by Classes, bar

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 and Dimensions

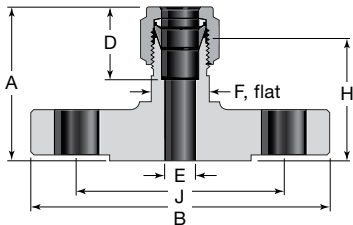
Dimensions are for reference only and are subject to change.

### DIN Flanges, Pressure Class PN 40



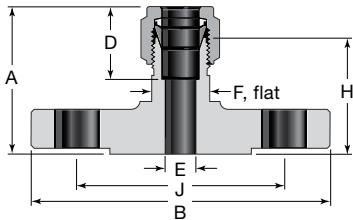
Tube OD mm	DIN Flange Size DN	Ordering Number Raised Face Flange	Dimensions mm						
			A	B	D	E	F	H	J
6	25	SS-6M0-F25M-40-C	47.5	115	15.3	4.8	20	40.1	85.0
12	15	SS-12M0-F15M-40-C	48.5	95.0	22.8	9.5	20	38.4	65.0
	25	SS-12M0-F25M-40-C	50.5	115				40.4	85.0
	50	SS-12M0-F50M-40-C	55.3	165				45.2	125
18	15	SS-18M0-F15M-40-C	51.8	95.0	24.4	15.1	32	41.7	65.0
	25	SS-18M0-F25M-40-C	53.8	115				43.7	85.0
25	25	SS-25M0-F25M-40-C	64.0	115	31.3	21.8	35	51.8	85.0
38	50	SS-38M0-F50M-40-C	90.4	165	49.4	33.7	55	62.7	125
50	50	SS-50M0-F50M-40-C	103	165	65.0	45.2	70	66.3	125

### EN Flanges, Pressure Class PN 40



Tube OD mm	EN Flange Size DN	Ordering Number Raised Face Flange	Dimensions mm						
			A	B	D	E	F	H	J
6	25	SS-6M0-F25E-40-B1	47.5	115	15.3	4.8	20	40.1	85.0
12	15	SS-12M0-F15E-40-B1	48.5	95.0	22.8	9.5	20	38.4	65.0
	25	SS-12M0-F25E-40-B1	50.5	115				40.4	85.0
	50	SS-12M0-F50E-40-B1	55.3	165				45.2	125
18	15	SS-18M0-F15E-40-B1	51.8	95.0	24.4	15.1	32	41.7	65.0
	25	SS-18M0-F25E-40-B1	53.8	115				43.7	85.0
25	25	SS-25M0-F25E-40-B1	64.0	115	31.3	21.8	35	51.8	85.0
38	50	SS-38M0-F50E-40-B1	90.4	165	49.4	33.7	55	62.7	125
50	50	SS-50M0-F50E-40-B1	103	165	65.0	45.2	70	66.3	125

### JIS Flanges, Pressure Class 10K



Tube OD	JIS Flange Size DN	Ordering Number Raised Face Flange	Dimensions						
			A	B	D	E	F	H	J
<b>Dimensions, in.</b>									
1/4	15	SS-400-F15A-10K-RF	1.66	3.74	0.60	0.19	13/16	1.37	2.76
3/8		SS-600-F15A-10K-RF	1.72		0.66	0.28			
1/2		SS-810-F15A-10K-RF	1.83		0.90	0.41			
3/4		SS-1210-F15A-10K-RF	1.91		0.96	0.62		1 1/4	
1	25	SS-1610-F25A-10K-RF	2.40	4.92	1.23	0.88	1 3/8	1.92	3.54
2	50	SS-3200-F50A-10K-RF	4.01	6.10	2.66	1.81	2 3/4	2.54	4.72
<b>Dimensions, mm</b>									
12	15	SS-12M0-F15A-10K-RF	46.5	95.0	22.8	9.5	20	36.3	70.0
18	15	SS-18M0-F15A-10K-RF	48.5	95.0	24.4	15.1	32	38.4	70.0
25	25	SS-25M0-F25A-10K-RF	61.0	125	31.3	21.8	35	48.8	90.0

## Ordering Information, Special-Order Flange Adapters

For standard stainless steel flange adapters, select an ordering number from the tables on page 3 and 4.

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

**SS - 6M0 - F25 M - 40 - C**

### Flange Material

- SS** = 316 stainless steel<sup>①</sup>
- C20** = Alloy 20
- M** = Alloy 400
- INC** = Alloy 600
- HC** = Alloy C-276

<sup>①</sup> 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-6M0-F25M-40-C-**BM**

### End Connection Size

#### Swagelok Tube Fitting

Fractional	Metric
<b>100</b> = 1/16 in.	<b>3M0</b> = 3 mm
<b>200</b> = 1/8 in.	<b>6M0</b> = 6 mm
<b>400</b> = 1/4 in.	<b>8M0</b> = 8 mm
<b>600</b> = 3/8 in.	<b>10M0</b> = 10 mm
<b>810</b> = 1/2 in.	<b>12M0</b> = 12 mm
<b>1210</b> = 3/4 in.	<b>18M0</b> = 18 mm
<b>1610</b> = 1 in.	<b>20M0</b> = 20 mm
<b>2400</b> = 1 1/2 in.	<b>22M0</b> = 22 mm
<b>3200</b> = 2 in.	<b>25M0</b> = 25 mm
	<b>28M0</b> = 28 mm
	<b>32M0</b> = 32 mm
	<b>38M0</b> = 38 mm
	<b>50M0</b> = 50 mm

#### Swagelok Tube Adapter<sup>①</sup>

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

<sup>①</sup> Over 1 in. and over 25 mm tube adapter fittings are furnished with nuts and preswaged ferrules.

### Sealing Face (Raised Face Standard)

**ANSI** (no designator)

#### DIN

**C**  
**D**  
**E** } See DIN EN 1092-1 for surface finish details

#### EN

**B1**  
**B2** } See EN 1092-1 for surface finish details

#### JIS

**RF**

For other sealing faces, including flat face, RTJ, and tongue-and-groove, contact your authorized Swagelok sales and service representative for more information.

### Pressure Class

#### ANSI

**150** = 150                      **900** = 900  
**300** = 300                      **1500** = 1500  
**600** = 600                      **2500** = 2500

#### DIN

**40** = PN 40                      **160** = PN 160  
**63** = PN 63                      **250** = PN 250  
**100** = PN 100                      **320** = PN 320

#### EN

**40** = PN 40  
**63** = PN 63  
**100** = PN 100

#### JIS

**10K** = 10 kg/cm<sup>2</sup>              **30K** = 30 kg/cm<sup>2</sup>  
**16K** = 16 kg/cm<sup>2</sup>              **40K** = 40 kg/cm<sup>2</sup>  
**20K** = 20 kg/cm<sup>2</sup>              **63K** = 63 kg/cm<sup>2</sup>

### Flange Standard

**A** = JIS  
**E** = EN  
**M** = DIN  
No designator = ANSI

### Nominal Flange Size

Fractional (ANSI)	Metric (DIN, EN, JIS)
<b>F8</b> = NPS 1/2 in.	<b>F15</b> = DN 15
<b>F12</b> = NPS 3/4 in.	<b>F20</b> = DN 20
<b>F16</b> = NPS 1 in.	<b>F25</b> = DN 25
<b>F24</b> = NPS 1 1/2 in.	<b>F50</b> = DN 50
<b>F32</b> = NPS 2 in.	

## 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 $\mu\text{in.}$	SS-600-1-0151
10 mm	(3.2 to 6.4 $\mu\text{m}$ )	SS-10M0-1-0005

## Swagelok Tube Fittings

See the Swagelok *Gaugeable Tube Fittings and Adapter Fittings* catalog, MS-01-140, for more information.



## Tubing Products

Swagelok also offers a wide variety of tubing products. Contact your authorized Swagelok representative for details.



## Tubing Data

See Swagelok *Tubing Data*, MS-01-107, for more information on tubing data.

## Tube Benders

See the Swagelok *Tubing Tools and Accessories* catalog, MS-01-179, for more information.



## Multihead Hydraulic Swaging Unit

See the Swagelok *Gaugeable Tube Fittings and Adapter Fittings* catalog, MS-01-140, for more 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.**

**Caution: Do not mix or interchange parts with those of other manufacturers.**

## 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.