

# Steel adapters

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## Adapters

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# Steel adapters

Fluid connectors identification

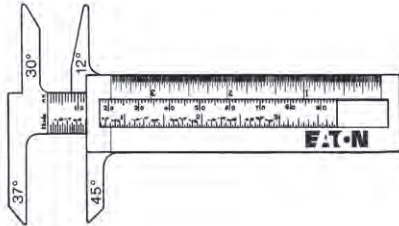
## Fluid connectors identification

Measuring Tools: A seat angle gauge, thread pitch gauge and an I.D./O.D. caliper are necessary to make accurate measurements of commonly used connectors. Eaton offers a unique new caliper than offers the capabilities of both a caliper and a seat angle gauge in one unit.

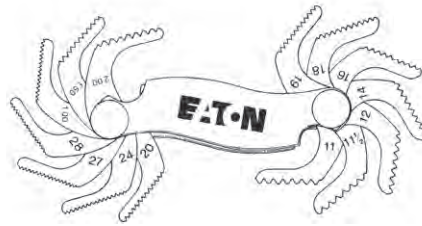


### FT1341

#### Identification Tool Kit

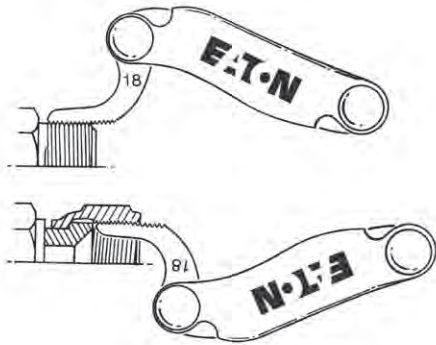


I.D./O.D. Angle gauge caliper

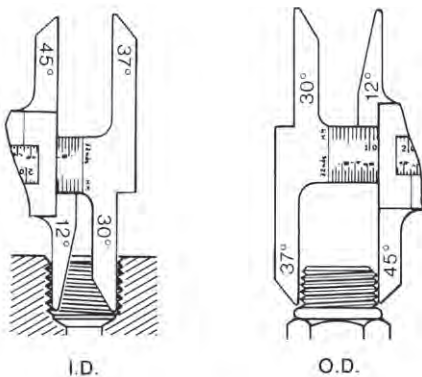


Thread pitch gauge

### How to measure threads



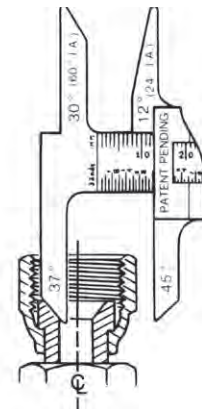
Use a thread pitch gauge to determine the number of threads per inch or the distance between threads in metric connections. Place the gauge on the threads until the fit is snug. Match the measurement to the charts.



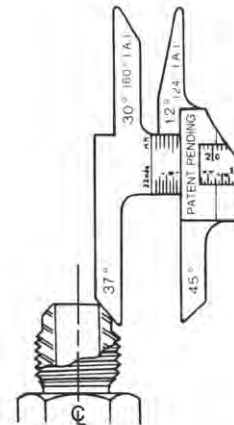
Measure the thread diameter with an I.D./O.D. caliper as shown. Match the measurements to the charts.

### How to measure sealing surface angles

**Female** connections are usually measured by inserting the gauge into the connection and placing it on the sealing surface. If the centerlines of the connection and gauge are parallel, the correct angle has been determined.



**Male flare type** connectors are usually measured by placing the gauge on the sealing surface. If the centerlines of the connection and gauge are parallel, the correct angle has been determined.



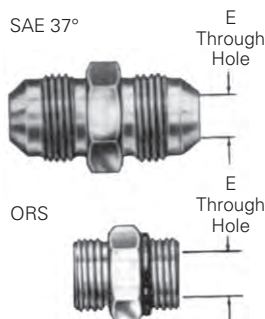
### Thread size chart

The following chart is intended as a quick reference guide for thread size by dash size.

Dash size	N.P.T.F.		N.P.S.M. approx. dia.		SAE 45° auto. refriger.		SAE 37° (J.I.C.) hydraulic		SAE O-Ring boss		P.T.T. 30° automotive		SAE invert. flare		ORS	
	Thread O.D.	Thread I.D.	Thread O.D.	Thread I.D.	Thread O.D.	Thread I.D.	Thread O.D.	Thread I.D.	Thread O.D.	Thread I.D.	Thread O.D.	Thread I.D.	Thread O.D.	Thread I.D.	Thread O.D.	Thread I.D.
-02	1/8-27		1/8-27		5/16-24		5/16-24		5/16-24		-		5/16-24		-	
-03	-		-		3/8-24		3/8-24		3/8-24		-		3/8-24		-	
-04	1/4-18		1/4-18		7/16-20		7/16-20		7/16-20		-		7/16-24		9/16-18	
-05	-		-		1/2-20		1/2-20		1/2-20		-		1/2-20		-	
-06	3/8-18		3/8-18		5/8-18		9/16-18		9/16-18		-		5/8-18		11/16-16	
-07	-		-		11/16-24		-		-		-		11/16-18		-	
-08	1/2-14		1/2-14		3/4-16		3/4-16		3/4-16		-		3/4-18		13/16-16	
-10	-		-		7/8-14		7/8-14		7/8-14		-		7/8-18		1-14	
-12	3/4-14		3/4-14		1 1/16-14		1 1/16-12		1 1/16-12		-		1 1/16-16		1 3/16-12	
-14	-		-		-		1 3/16-12		1 3/16-12		-		-		-	
-16	1-11 1/2		1-11 1/2		-		1 5/16-12		1 5/16-12		1 5/16-14		-		1 7/16-12	
-20	1 1/4-11 1/2		1 1/4-11 1/2		-		1 5/8-12		1 5/8-12		1 5/8-14		-		1 11/16-12	
-24	1 1/2-11 1/2		1 1/2-11 1/2		-		1 7/8-12		1 7/8-12		1 7/8-14		-		2-12	
-32	2-11 1/2		2-11 1/2		-		2 1/2-12		2 1/2-12		2 1/2-12		-		-	
-40	2 1/2-8		2 1/2-8		-		3-12		3-12		-		-		-	
-48	3-8		3-8		-		3 1/2-12		3 1/2-12		-		-		-	

### Through hole dimensions

All dimensions are nominal. In jump size bodies, the minimum through hole dimensions will correspond to the smallest dash size.



Dash size	E through hole			
	SAE 37°		ORS	
	mm	in	mm	in
-03	3,0	0.12	-	-
-04	4,3	0.17	4,3	0.17
-05	5,8	0.23	-	-
-06	7,6	0.30	6,6	0.26
-08	9,9	0.39	9,7	0.38
-10	12,2	0.48	12,2	0.48
-12	15,5	0.61	15,5	0.61
-16	21,3	0.84	20,6	0.81
-20	25,8	1.08	26,1	1.03
-24	33,3	1.31	32,0	1.26
-32	45,2	1.78	-	-

# Steel adapters

Non-threaded connections, American connections

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## How to measure non-threaded connections

### Four bolt flange

First measure the port hole diameter using the caliper. Next, measure the longest bolt hole spacing from center-to-center or measure the flange head diameter.

### Staplok

Measure the male diameter with the O.D. portion of the caliper. Measure the female half by inserting the I.D. portion of the caliper into the through hole.

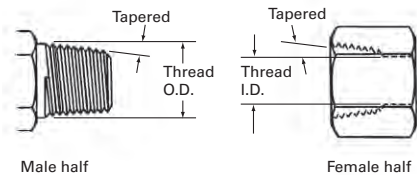
## Dash numbers

Most fluid piping system sizes in the United States are measured by dash numbers. These are universally used abbreviations for the size of the component expressed as the numerator of the fraction

with the denominator always being 16. For example, a -04 port is 4/16 or 1/4-inch. Dash numbers are usually nominal (in name only) and are abbreviations that make ordering of components easier.

## American connections

### NPTF (National pipe tapered fuel)



This connection is still widely used in fluid power systems, even though it is not recommended by the National Fluid Power Association (NFPA) for use in hydraulic

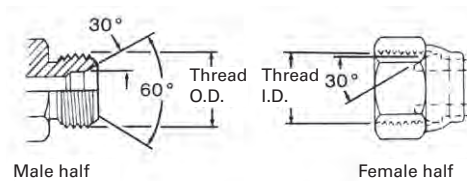
applications. The thread is tapered and the seal takes place by deformation of the threads.

### NPTF threads

Measure thread diameter and subtract 1/4-inch to find the nominal pipe size.

Inch size	Dash size.	Nominal thread size	Male thread O.D. inch		Female thread I.D. inch	
			Fract.	Dec.	Fract.	Dec.
1/8	02	1/8-27	13/32	0.41	3/8	0.38
1/4	04	1/4-18	17/32	0.54	1/2	0.49
3/8	06	3/8-18	11/16	0.68	5/8	0.63
1/2	08	1/2-14	27/32	0.84	25/32	0.77
3/4	12	3/4-14	1 1/16	1.05	1	0.98
1	16	1-11 1/2	1 5/16	1.32	1 1/4	1.24
1 1/4	20	1 1/4-11 1/2	1 21/32	1.66	1 19/32	0.58
1 1/2	24	1 1/2-11 1/2	1 29/32	1.90	1 13/16	1.82
2	32	2-11 1/2	2 3/8	2.38	2 5/16	2.30

### NPSM (National pipe straight mechanical)



This connection is sometimes used in fluid power systems. The female half has a straight thread and an inverted 30° seat. The male half of the connection has a straight thread and a 30° internal chamfer. The seal takes place by compression of the 30°

seat on the chamfer. The threads hold the connection mechanically.

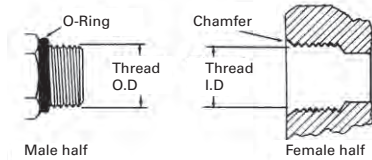
**Note:** A properly chamfered NPTF male will also seal with the NPSM female.

### NPSM threads

Inch size	Dash size.	Nominal thread size	Male thread O.D. inch		Female thread I.D. inch	
			Fract.	Dec.	Fract.	Dec.
1/8	02	1/8-27	13/32	0.41	3/8	0.38
1/4	04	1/4-18	17/32	0.54	1/2	0.49
3/8	06	3/8-18	11/16	0.68	5/8	0.63
1/2	08	1/2-14	27/32	0.84	25/32	0.77
3/4	12	3/4-14	1 1/16	1.05	1	0.98
1	16	1-11 1/2	1 5/16	1.32	1 1/4	1.24
1 1/4	20	1 1/4-11 1/2	1 21/32	1.66	1 19/32	0.58
1 1/2	24	1 1/2-11 1/2	1 29/32	1.90	1 13/16	1.82
2	32	2-11 1/2	2 3/8	2.38	2 5/16	2.30

### American connections

#### SAE J1926 straight thread O-Ring boss (ORB)

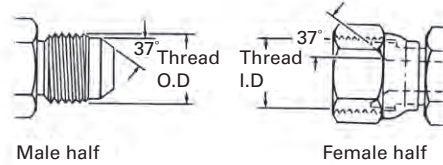


This port connection is recommended by the NFPA for optimum leakage control in medium and high pressure hydraulic systems. The male connector has a straight thread and an O-Ring. The female port has a straight

thread, a machined surface (minimum spotface) and a chamfer to accept the O-Ring. The seal takes place by compressing the O-Ring into the chamfer. The threads hold the connection mechanically.

Inch size	Dash size.	Nominal thread size	Male thread O.D. inch		Female thread I.D. inch	
			Fract.	Dec.	Fract.	Dec.
1/8	02	5/16-24	5/16	0.31	9/32	0.27
3/16	03	3/8-24	3/8	0.38	11/32	0.34
1/4	04	7/16-20	7/16	0.44	13/32	0.39
5/16	05	1/2-20	1/2	0.50	15/32	0.45
3/8	06	9/16-18	9/16	0.56	17/32	0.51
1/2	08	3/4-16	3/4	0.75	3/4	0.69
5/8	10	7/8-14	7/8	0.88	13/16	0.81
3/4	12	1 1/16-12	1 1/16	1.06	1	0.98
7/8	14	1 3/16-12	1 3/16	1.19	1 1/8	1.13
1	16	1 5/16-12	1 5/16	1.31	1 1/4	1.23
1 1/4	20	1 5/8-12	1 5/8	1.63	1 9/16	1.54
1 1/2	24	1 7/8-12	1 7/8	1.88	1 13/16	1.79
2	32	2 1/2-12	2 1/2	2.50	2 7/16	2.42

#### SAE 37° J514 hydraulic



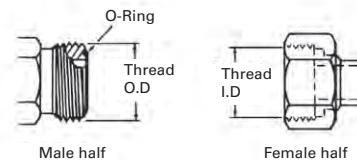
This connection is very common in fluid power systems. Both the male and female halves of the connections have SAE 37° seats. The seal takes place by establishing a line contact between the male flare and the female cone seat. The

threads hold the connection mechanically.

**Caution:** In the -02, -03, -04, -05, -08 and -10 sizes, the threads of the SAE 45° flare and the SAE 37° flare are the same. However, the sealing surface angles are not the same.

Inch size	Dash size.	Nominal thread size	Male thread O.D. inch		Female thread I.D. inch	
			Fract.	Dec.	Fract.	Dec.
1/8	02	5/16-24	5/16	0.31	9/32	0.27
3/16	03	3/8-24	3/8	0.38	11/32	0.34
1/4	04	7/16-20	7/16	0.44	13/32	0.39
5/16	05	1/2-20	1/2	0.50	15/32	0.45
3/8	06	9/16-18	9/16	0.56	17/32	0.51
1/2	08	3/4-16	3/4	0.75	3/4	0.69
5/8	10	7/8-14	7/8	0.88	13/16	0.81
3/4	12	1 1/16-12	1 1/16	1.06	1	0.98
7/8	14	1 3/16-12	1 3/16	1.19	1 1/8	1.13
1	16	1 5/16-12	1 5/16	1.31	1 1/4	1.23
1 1/4	20	1 5/8-12	1 5/8	1.63	1 9/16	1.54
1 1/2	24	1 7/8-12	1 7/8	1.88	1 13/16	1.79
2	32	2 1/2-12	2 1/2	2.50	2 7/16	2.42

#### ORS SAE J1453 O-Ring face seal



This connection offers the very best leakage control available today. The male connector has a straight thread and an O-Ring in the face. The female has a straight thread and a machined flat face.

The seal takes place by compressing the O-Ring onto the flat face of the female, similar to the split flange type fitting. The threads hold the connection mechanically.

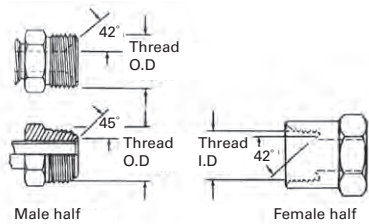
Inch size	Dash size.	Nominal thread size	Male thread O.D. inch		Female thread I.D. inch	
			Fraction	Decimal	Fraction	Decimal
1/4	04	9/16-18	9/16	0.56	17/32	0.51
3/8	06	11/16-16	11/16	0.69	5/8	0.63
1/2	08	13/16-16	13/16	0.82	3/4	0.75
5/8	10	1-14	1	1.00	15/16	0.93
3/4	12	1 3/16-12	1 3/16	1.19	1 1/8	1.11
1	16	1 7/16-12	1 7/16	1.44	1 3/8	1.36
1 1/4	20	1 11/16-12	1 11/16	1.69	1 5/8	1.61
1 1/2	24	2-12	2	2.00	1 15/16	1.92

# Steel adapters

## American connections

### American connections

#### SAE J512 inverted flare

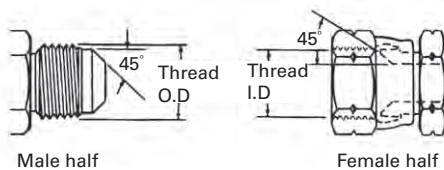


This connection is frequently used in automotive systems. The male connector can either be a 45° flare in the tube fitting form or a 42° seat in the machined adapter form.

The female has a straight thread with a 42° inverted flare. The seal takes place on the flared surfaces. The threads hold the connection mechanically.

Inch size	Dash size.	Nominal thread size	Male thread O.D. inch		Female thread I.D. inch	
			Fract.	Dec.	Fract.	Dec.
1/8	02	5/16-24	5/16	0.32	9/32	0.28
3/16	03	3/8-24	3/8	0.38	11/32	0.34
1/4	04	7/16-24	7/16	0.44	13/32	0.40
5/16	05	1/2-20	1/2	0.50	15/32	0.45
3/8	06	5/8-18	5/8	0.63	9/16	0.57
7/16	07	11/16-18	11/16	0.69	5/8	0.63
1/2	08	3/4-18	3/4	0.75	23/32	0.70
5/8	10	7/8-18	7/8	0.88	13/16	0.82
3/4	12	1 1/16-16	1 1/16	1.06	1	1.00

#### SAE J512 45°



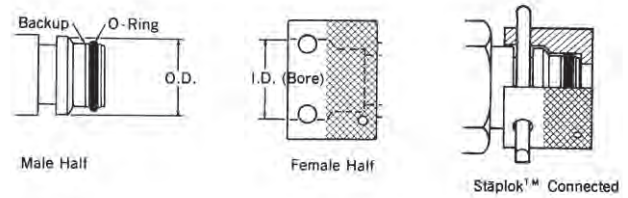
This connection is commonly used in refrigeration, automotive and truck piping systems. The connector is frequently made of brass. Both the male and female connectors have 45° seats. The seal takes place between the male flare the female cone seat.

The threads hold the connection mechanically.

**Caution:** In the -02, -03, -04, -05, -08 and -10 sizes, the threads of the SAE 45° flare and the SAE 37° flare are the same. However, the sealing surface angles are not the same.

Inch size	Dash size	Nominal thread size	Male thread O.D. inch		Female thread I.D. inch	
			Fract.	Dec.	Fract.	Dec.
1/8	02	5/16-24	5/16	0.31	9/32	0.27
3/16	03	3/8-24	3/8	0.38	11/32	0.34
1/4	04	7/16-20	7/16	0.44	13/32	0.39
5/16	05	1/2-20	1/2	0.50	15/32	0.45
3/8	06	5/8-18	5/8	0.63	9/16	0.57
1/2	08	3/4-16	3/4	0.75	11/16	0.69
5/8	10	7/8-14	7/8	0.88	13/16	0.81
3/4	12	1 1/16-14	1 1/16	1.06	1	0.99
7/8	14	1 1/4-12	1 1/4	1.25	1 5/32	1.16
1	16	1 3/8-12	1 3/8	1.38	1 9/32	1.29

#### Staplok (SAE J1467)



This is a radial O-Ring seal connection developed in Germany and commonly used for hydraulic application in underground mines. The male contains an exterior O-Ring and backup ring, plus a groove to accept the "staple". The female has a smooth bore

with two holes for the staple. A "U" shaped retaining clip or staple is inserted through the two holes, passing through the groove in the male to lock the connection together. The seal takes place by contact between the O-Ring in the male and the smooth bore of the female.

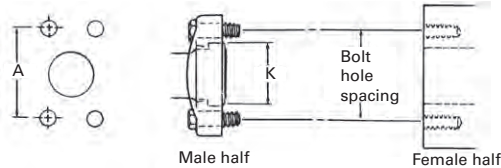
Inch size	Dash size.	Nominal thread size	Male thread O.D. inch		Female thread I.D. inch	
			Fraction	Decimal	Fraction	Decimal
1/4	04	-	9/32	0.586	1 9/32	0.597
3/8	06	-	25/32	0.783	51/64	0.794
1/2	08	-	15/16	0.940	61/64	0.951
3/4	12	-	1 9/64	1.137	1 9/64	1.148
1	16	-	1 17/32	1.529	1 35/64	1.540
1 1/4	20	-	1 13/16	1.806	1 13/16	1.817
1 1/2	24	-	2 5/32	2.163	2 11/64	2.174
2	32	-	2 33/64	2.517	2 17/32	2.528

## American connections

### How to measure 4-Bolt Flange

First measure the port hole diameter using the caliper. Next, measure the longest bolt hole spacing from center-to-center (Dimension "A") or measure the flanged head diameter.

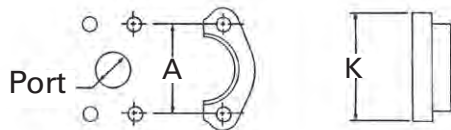
### SAE J518 Code 61/62 4-Bolt Flange\*



This connection is commonly used in fluid power systems. There are two pressure ratings. Code 61 is referred to as the "standard" series and Code 62 is the "6000 psi" series. The design concept for both series is the same, but the bolt hole spacing and flanged head diameters are larger for the higher pressure, Code 62 connection. The female (port) is an unthreaded hole with four bolt holes in a rectangular pattern around the port. The male consists of a flanged head, grooved

for an O-Ring, and either a captive flange or split flange halves with bolt holes to match the port. The seal takes place on the O-Ring, which is compressed between the flanged head and the flat surface surrounding the port. The threaded bolts hold the connection together.

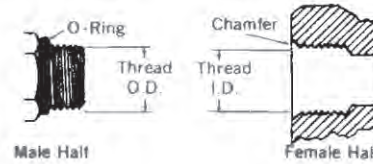
\* SAE J518, JIS B 8363, ISO/ DIS 6162 and DIN 20066 are interchangeable, except for bolt sizes.



Inch Size (dash size)	Port hole I.D. inch fract. (dec.)	Bolt dimension inch		Bolt hole spacing "A" inch (dec.)		Flanged head dia. "K" inch (dec.)	
		Cd. 61	Cd. 62	Cd. 61	Cd. 62	Cd. 61	Cd. 62
1/2 (08)	1/2 (0.50)	5/16-18x1-1/4	5/16-18x1-1/4	1-1/2 (1.50)	1-19/32 (1.59)	1-3/16 (1.19)	1-1/4 (1.25)
3/4 (12)	3/4 (0.75)	3/8-16x1-1/4	3/8-16x1-1/2	1-7/8 (1.88)	2.00 (2.00)	1-1/2 (1.50)	1-5/8 (1.63)
1.00 (16)	1.00 (1.00)	3/8-16x1-1/4	7/16-14x1-3/4	2-1/16 (2.06)	2 1/4 (2.25)	1-3/4 (1.75)	1-7/8 (1.88)
1-1/4 (20)	1-1/4 (1.25)	7/16-14x1-1/2	1/2-13x1-3/4	2-5/16 (2.31)	2-5/8 (2.63)	2.00 (2.00)	2-1/8 (2.13)
1-1/2 (24)	1-1/2 (1.50)	1/2-13x1-1/2	5/8-11x2-1/4	2-3/4 (2.75)	3-1/8 (3.12)	2-3/8 (2.38)	2-1/2 (2.50)
2.00 (32)	2.00 (2.00)	1/2-13x1-1/2	3/4-10x2-3/4	3-1/16 (3.06)	3-13/16 (3.81)	2-13/16 (2.81)	3-1/8 (3.12)

## ISO connections

### ISO 6149 Port and Stud Ends with ISO 261 Threads and O-Ring Seal



This port connection is similar to the SAE J514 Straight Thread O-Ring Boss (ORB). The major difference is that this connection uses metric threads. The male connector has a straight thread and an O-Ring. The female port has a straight thread, a machined

surface (minimum spotface) and a chamfer to accept the O-Ring. The seal takes place by compressing the O-Ring into the chamfer. The threads hold the connection mechanically.

Metric thread	Male thread O.D.	Female thread I.D.
	mm	mm
M8 x 1	8	7
M10 x 1	10	9
M12 x 1,5	12	10,5
M14 x 1,5*	14	12,5
M16 x 1,5	16	14,5
M18 x 1,5	18	16,5
M22 x 1,5	22	20,5
M27 x 2	27	25
M33 x 2	33	31
M42 x 2	42	40
M48 x 2	48	46
M60 x 2	60	58

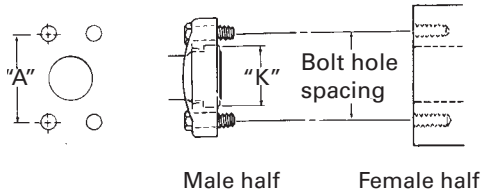
\* M14 x 1,5: Recommended for diagnostic port application.

# Steel adapters

ISO connections

## ISO connections

### ISO/DIS 6162 4-Bolt Flange\*



Male half

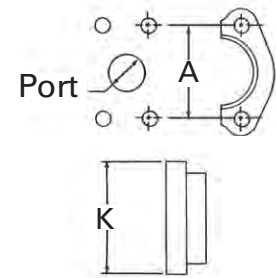
Female half

This connection is commonly used in fluid power systems. There are two pressure ratings. PN 35/350 bar (Code 61) is the "standard" series and PN 415 bar (Code 62) is the high pressure series. The design concept for both series is the same, but the bolt hole spacing and flanged head diameters are larger for the higher pressure, PN 415 bar connection. Both metric and inches bolts are used. The port will have an "M" stamped on it if metric bolts are required.

The female (port) is an unthreaded hole with four bolt holes in a rectangular pattern around the port. The male consists of a flanged head, grooved for an O-Ring, and either a captive flange or split flange halves with bolt holes to match the port. The seal takes place on the O-Ring, which is compressed between the flanged head and the flat surface surrounding the port. The threaded bolts hold the connection together.

\* ISO/DIS 6162, DIN 20066, JIS B 8363 and SAE J518 are interchangeable, except for bolt sizes.

Inch size	Flanged head dia. "K"			
	ISO 6162-1 Bar (Cd.61)		ISO 6162-2 Bar (Cd.62)	
	mm	in	mm	in
1/2	30.18	1.19	31.75	1.25
3/4	38.10	1.50	41.28	1.63
1	44.45	1.75	47.63	1.88
1 1/4	50.80	2.00	53.98	2.13
1 1/2	60.33	2.38	63.50	2.50
2	71.42	2.81	79.38	3.13



Size	Port hole	Bolt dimensions spacing		Bolt hole "A"	
		ISO 6162-1 Bar (Cd.61)	ISO 6162-2 Bar (Cd.62)	ISO 6162-1 Bar (Cd.61)	ISO 6162-2 Bar (Cd.62)
mm in (dash)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)
13(1/2) (08)	12,7 (.50)	M8 x 1.25x 30 (5/16-18 x 1 1/4)	M8 x 1.25 x 30 (5/16-18 x 1 1/4)	38.1 (1.50)	40.5 (1.57)
19(3/4) (12)	19,1 (.75)	M10 x 1.5 x 35 (3/8-16 x 1 1/4)	M10 x 1.5 x 40 (3/8-16 x 1 1/2)	47.6 (1.88)	50.8 (2.00)
25(1) (16)	25,4 (1.00)	M10 x 1.5 x 35 (3/8-16 x 1 1/4)	M12 x 1.75 x 45 (7/16-14 x 1 3/4)	52.4 (2.06)	57.2 (2.25)
32(1 1/4) (20)	31,8 (1.25)	M10 x 1.5 x 40 (7/16-14 x 1 1/2)	M14 x 2 x 50 (1/2-13 x 1 3/4)	58.7 (2.31)	66.7 (2.63)
38(1 1/2) (24)	38,1 (1.50)	M12 x 1.75 x 40 (1/2-13 x 1 1/2)	M16 x 2 x 55 (5/8-11 x 2 1/4)	69.9 (2.75)	79.4 (3.13)
51(2) (32)	50,8 (2.00)	M12 x 1.75 x 40 (1/2-13 x 1 1/2)	M20 x 2.5 x 70 (3/4-10 x 2 3/4)	77.8 (3.06)	96.8 (3.81)

## BROWSE: Tools

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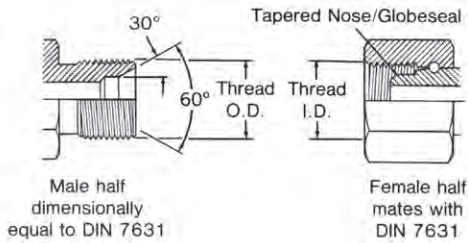
**Crimp Specs** +

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### German connections

#### Metric 30° (DIN 7631)



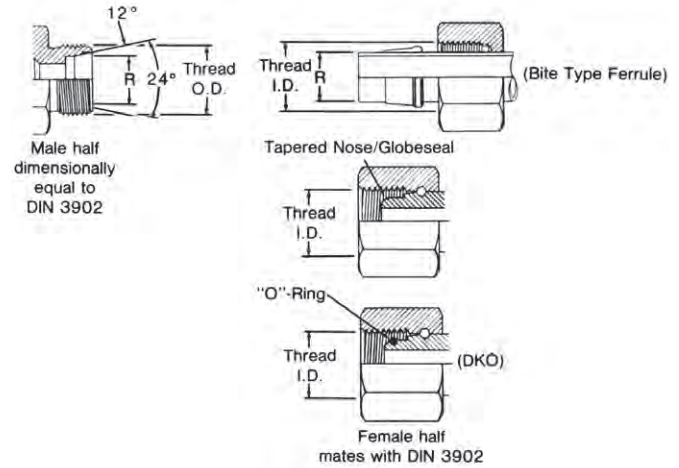
This connection is frequently used in hydraulic systems. The male has a straight metric thread and a 60° (included angle) recessed cone. The female has a straight thread and a tapered Nose/Globeseal

seat. The seal takes place by contact between the cone of the male and the nose of the tapered Nose/Globeseal flareless swivel.

The threads hold the connection mechanically.

Use with pipe/tube O.D.		Metric thread size	Male thread O.D.		Female thread I.D.	
mm	in		mm	in	mm	in
6	0.24	M12 x 1.5	12	0.47	10,5	0.41
8	0.32	M14 x 1.5	14	0.55	12,5	0.49
10	0.39	M16 x 1.5	16	0.63	14,5	0.57
12	0.47	M18 x 1.5	18	0.71	16,5	0.65
15	0.59	M22 x 1.5	22	0.87	20,5	0.81
18	0.71	M26 x 1.5	26	1.02	24,5	0.96
22	0.87	M30 x 1.5	30	1.18	28,5	1.12
28	1.10	M38 x 1.5	38	1.50	36,5	1.44
35	1.38	M45 x 1.5	45	1.77	43,5	1.71
42	1.65	M52 x 1.5	52	2.04	50,5	1.99

#### Metric 24° (DIN 3902)



This connection style consists of a common male and three different female halves. The male has a straight metric thread, a 24° included angle and a recessed counterbore that matches the tube O.D. used with it. The female may

be a tube, nut and ferrule, a tapered nose/Globeseal flareless swivel or a tapered Nose/Globeseal flareless swivel with an O-Ring in the Nose (DKO type).

Tube O.D. "R" Dim. l.Rh.*		Tube O.D. "R" Dim. s.Rh.†		Metric thread Size	Male thread O.D.		Female thread I.D.	
mm	in.	mm	in		mm	in	mm	in
6	0.24	-	-	M12 x 1.5	12	0.47	10.5	0.41
8	0.32	6	0.24	M14 x 1.5	14	0.55	12.5	0.49
10	0.39	8	0.32	M16 x 1.5	16	0.63	14.5	0.57
12	0.47	10	0.39	M18 x 1.5	18	0.71	16.5	0.65
-	-	12	0.47	M20 x 1.5	20	0.78	18.5	0.73
15	0.59	14	0.55	M22 x 1.5	22	0.87	20.5	0.81
-	-	16	0.63	M24 x 1.5	24	0.94	22.5	0.89
18	0.71	-	-	M26 x 1.5	26	1.02	24.5	0.96
22	0.87	20	0.78	M30 x 2.0	30	1.18	28	1.11
28	1.10	25	0.98	M36 x 2.0	36	1.41	34	1.34
-	-	30	1.18	M42 x 2.0	42	1.65	40	1.57
35	1.38	-	-	M45 x 2.0	45	1.77	43	1.70
42	1.65	38	1.50	M52 x 2.0	52	2.04	50	1.97

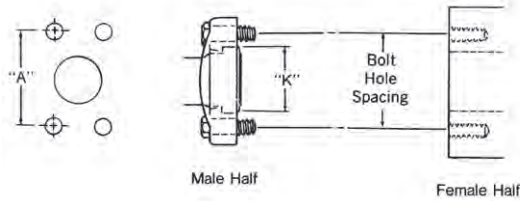
\*l.Rh. is a light duty system.  
†s.Rh. is a heavy duty system.

# Steel adapters

German connections

## German connections

### DIN 20066 4-bolt flange\*

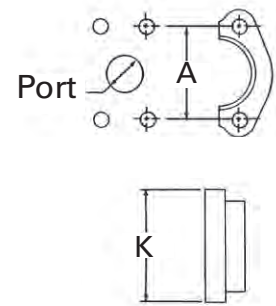


This connection is commonly used in fluid power systems. There are two pressure ratings. Form R (Code 61) is referred to as the "standard duty" series and Form S (Code 62) is the "heavy duty" series. The design concept for both series is the same, but the bolt hole spacing and flanged head diameters are larger for the higher pressure, Form S connection. Both metric and inch bolts are used. The female (port) is an unthreaded hole with four bolt holes in a rectangular pattern around the port. The male

consists of a flanged head, grooved for an O-Ring, and either a captive flange or split flange halves with bolt holes to match the port. The seal takes place on the O-Ring, which is compressed between the flanged head and the flat surface surrounding the port. The threaded bolts hold the connection together.

**Note:** \*DIN 20066, IS/DIS 6166, JIS B 8363 and SAE J518 are interchangeable, except for bolt sizes.

Inch size	Flanged head dia. "K"			
	Form R (Cd. 61)		Form S (Cd. 62)	
	mm	in	mm	in
1/2	30.18	1.19	31.75	1.25
3/4	38.10	1.50	41.28	1.63
1	44.45	1.75	47.63	1.88
1 1/4	50.80	2.00	53.98	2.13
1 1/2	60.33	2.38	63.50	2.50
2	71.42	2.81	79.38	3.13



Size	Port hole	Bolt dimensions		Bolt hole spacing	
		Form R (Cd. 61)	Form S (Cd. 62)	Form R (Cd. 61)	Form S (Cd. 62)
				mm (in)	mm (in)
12 (1/2) (08)	12,7 (0.50)	M8 x 1.25 x 30 5/16-18 x 1 1/4	M8 x 1.25 x 30 5/16-18 x 1 1/4	38.10 (1.50)	40.49 (1.57)
20 (3/4) (12)	19,1 (0.75)	M10 x 1.5 x 30 3/8-16 x 1 1/4	M10 x 1.5 x 40 3/8-16 x 1 1/2	47.63 (1.88)	50.80 (2.00)
25 (1) (16)	25,4 (1.00)	M10 x 1.5 x 35 3/8-16 x 1 1/4	M12 x 1.75 x 45 7/16-14 x 1 3/4	52.37 (2.06)	57.15 (2.25)
32 (1-1/4) (20)	31,7 (1.25)	M10 x 1.75 x 40 7/16-14 x 1 1/2	M14 x 2 x 45 1/2-13 x 1 3/4	58.72 (2.31)	66.68 (2.63)
40 (1-1/2) (24)	38,0 (1.50)	M12 x 1.75 x 40 1/2-13 x 1 1/2	M16 x 2 x 55 5/8-11 x 2 1/4	69.85 (2.75)	79.38 (3.13)
50 (2) (32)	50,8 (2.00)	M12 x 1.75 x 40 1/2-13 x 1 1/2	M20 x 2.5 x 70 3/4-10 x 2 3/4	77.77 (3.06)	96.82 (3.81)

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### German connections

#### DIN 3852 Male connectors and female ports

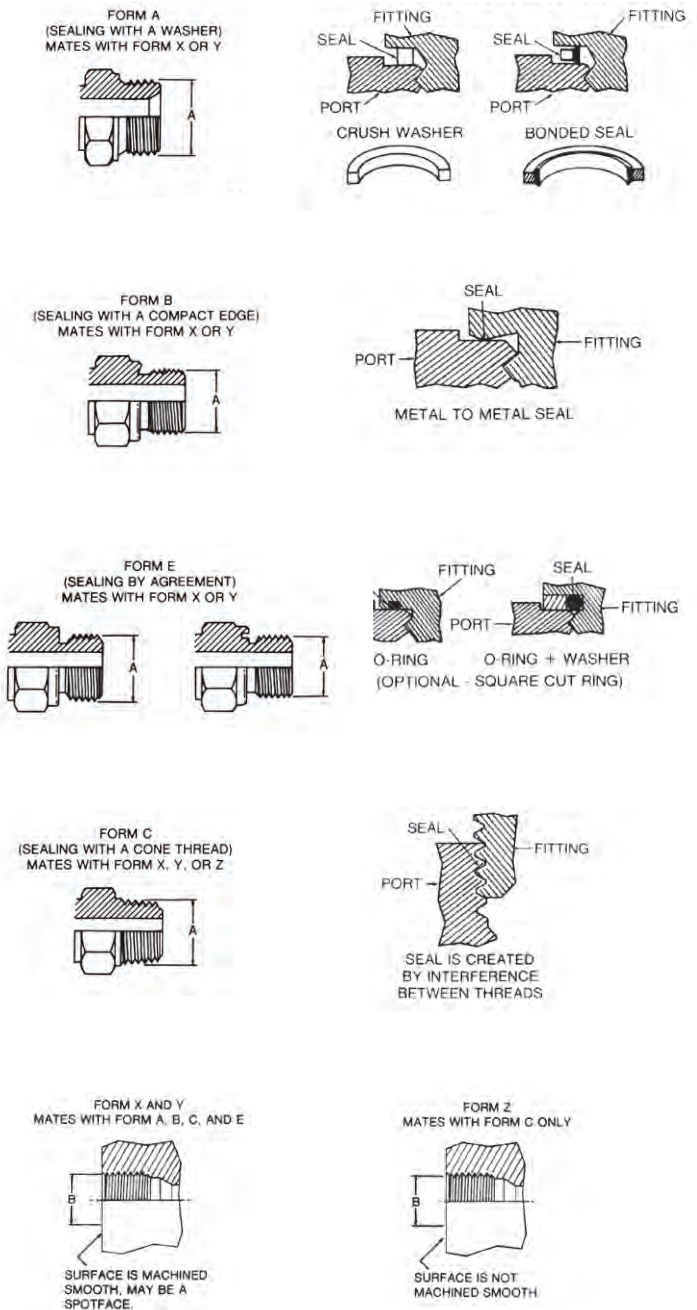
#### Metric (DIN 3852) threads

Metric thread	Male thread O.D. "A"		Female thread I.D. "B"	
	mm	(in)	mm	(in)
M12 x 1.5	12	0.47	10,5	0.41
M14 x 1.5	14	0.55	12,5	0.49
M16 x 1.5	16	0.63	14,5	0.57
M18 x 1.5	18	0.71	16,5	0.65
M20 x 1.5	20	0.78	18,5	0.73
M22 x 1.5	22	0.87	20,5	0.81
M24 x 1.5	24	0.94	22,5	0.89
M26 x 1.5	26	1.02	24,5	0.96
M27 x 2	27	1.06	25	0.98
M30 x 1.5	30	1.18	28,5	1.12
M30 x 2	30	1.18	28	1.10
M33 x 2	33	1.30	31	1.22
M36 x 1.5	36	1.41	34,5	1.36
M36 x 2	36	1.41	34	1.33
M38 x 1.5	38	1.49	36,5	1.43
M38 x 2	38	1.49	36	1.41
M42 x 1.5	42	1.65	40,5	1.60
M42 x 2	42	1.65	40	1.57
M45 x 1.5	45	1.77	43,5	1.71
M45 x 2	45	1.77	43	1.69
M48 x 1.5	48	1.89	46,5	1.83
M48 x 2	48	1.89	46	1.81
M52 x 1.5	52	2.04	50,5	1.89
M52 x 2	52	2.04	50	1.97

For DIN 3852 Whitworth pipe thread dimensions, see BSPT/BSPP dimensions. They are the same.

#### How the seal works

This DIN is controlled by Germany, but other countries may use it as a reference for their connector and port designs. The chart below illustrates the various forms and how they seal.



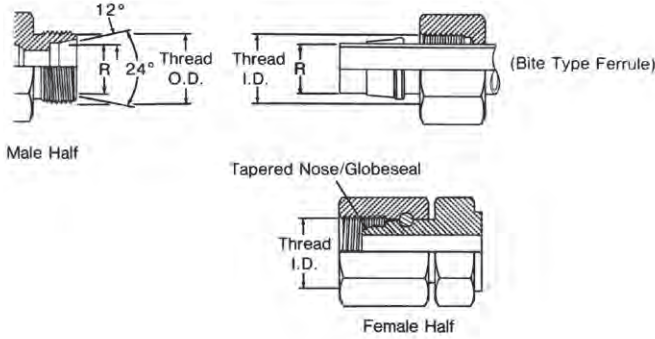
# Steel adapters

## French connections and British connections

J

### French connections

#### Millimetric and GAZ series

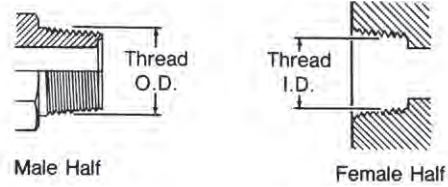


This connection consists of a common male and two different females. The millimetric series is used with

whole number metric O.D. tubing and the GAZ Series is used with fractional number metric O.D. pipe size tubing.

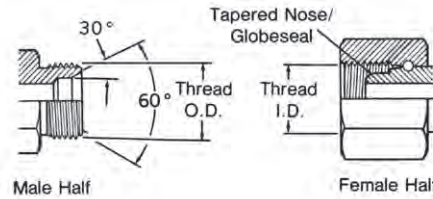
### British connections

#### British standard pipe (BSP/BSPP/BSPT)



This BSPT (tapered) connection is similar to the NPT, except that the thread pitches are different in most sizes, and the thread

form and O.D.s are close but not the same. Sealing is accomplished by thread distortion. A thread sealant is recommended.



The BSP (parallel) male is similar to the NPSM male except the thread pitches are different in most sizes.

The female swivel BSPP has a tapered nose/Globeseal flareless swivel which seals on the cone seat of the male.

#### Millimetric and GAZ threads

Tubing O.D. "R" dim.		"Gaz" pipe O.D. "R" dim.		Metric thread	Male Thread O.D. "A"		Female Thread I.D. "B"	
mm	in	mm	in		mm	in	mm	in
6	0.24	-	-	M12 x 1.5	12	0.47	11	0.43
8	0.32	-	-	M14 x 1.5	14	0.55	12.5	0.49
10	0.39	-	-	M16 x 1.5	16	0.63	14.5	0.57
12	0.47	-	-	M18 x 1.5	18	0.71	16.5	0.65
14	0.55	13.25	0.52	M20 x 1.5	20	0.78	18.5	0.73
15	0.59	-	-	M22 x 1.5	22	0.87	20.5	0.81
16	0.63	16.75	0.66	M24 x 1.5	24	0.94	22.5	0.89
18	0.71	-	-	M27 x 1.5	27	1.06	25.5	1.00
22	0.87	21.25	0.83	M30 x 1.5	30	1.18	28.5	1.12
25	0.98	-	-	M33 x 1.5	33	1.30	31.5	1.24
28	1.10	26.75	1.05	M36 x 1.5	36	1.41	34.5	1.36
30	1.18	-	-	M39 x 1.5	39	1.54	37.5	1.48
32	1.25	-	-	M42 x 1.5	42	1.65	40.5	1.60
35	1.38	33.50	1.32	M45 x 1.5	45	1.77	43.5	1.71
38	1.50	-	-	M48 x 1.5	48	1.89	46.5	1.83
40	1.57	42.25	1.66	M52 x 1.5	52	2.04	50.5	1.99
45	1.77	-	-	M54 x 2.0	54	2.12	52	2.05
-	-	48.25	1.90	M58 x 2.0	58	2.28	55	2.16

#### BSPT/BSPP threads

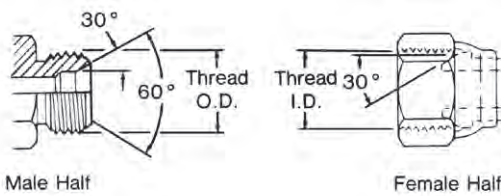
Inch size	Dash size	Nominal thread size	Male thread O.D.		Female thread I.D.	
			fraction	decimal	fraction	decimal
1/8	02	1/8-28	3/8	0.38	11/32	0.35
1/4	04	1/4-19	33/64	0.52	15/32	0.47
3/8	06	3/8-19	21/32	0.65	19/32	0.60
1/2	08	1/2-14	13/16	0.82	3/4	0.75
5/8	10	5/8-14	7/8	0.88	13/16	0.80
3/4	12	3/4-14	1 1/32	1.04	31/32	0.97
1	16	1-11	1 5/16	1.30	1 7/32	1.22
1 1/4	20	1 1/4-11	1 21/32	1.65	1 9/16	1.56
1 1/2	24	1 1/2-11	1 7/8	1.88	1 25/32	1.79
2	32	2-11	2 11/32	2.35	2 1/4	2.26

\*Frequently, the thread size is expressed as a fractional dimension preceded by the letter "G" or the letter "R". The "G" represents a parallel thread and the "R" indicates a tapered thread. For example, BSPP 3/8-19 may be expressed as G 3/8, and BSPT 3/8-19 may be expressed as R3/8.

### Japanese connections

#### JIS 30° male inverted seat, parallel pipe threads

(Threads per JIS B 0202)



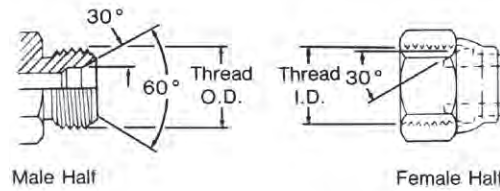
The JIS parallel is similar to the BSPP connection. The JIS parallel thread and

the BSPP connection are interchangeable.

Inch size	Dash size	Nominal thread size (similar to BSPP)	Male thread O.D.		Female thread O.D.	
			fract.	mm	fract.	mm
1/4	6 (04)	1/4-19	33/64	13.2	15/32	11.9
3/8	9 (06)	3/8-19	21/32	16.7	19/32	15.3
1/2	12 (08)	1/2-14	13/16	21.0	3/4	19.2
3/4	19 (12)	3/4-14	1 1/32	26.4	31/32	24.6
1	25 (16)	1-11	1 5/16	33.3	1 7/32	30.9
1 1/4	32 (20)	1 1/4-11	1 21/32	41.9	1 9/16	39.6
1 1/2	38 (24)	1 1/2-11	1 7/8	47.8	1 25/32	45.5
2	50 (32)	2-11	2 11/32	59.7	2 1/4	57.4

#### JIS 30° male inverted seat, parallel pipe threads

(Threads per JIS B 0207)



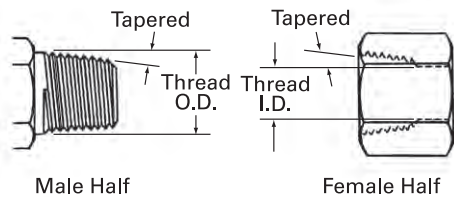
The JIS parallel (metric) is the same as the JIS parallel

(PF), except for the thread difference.

Inch size	Dash size equivalent	Thread size	Male thread O.D.		Female thread O.D.	
			mm	dec.	mm	dec.
6	04	M14 x 1.5	14	0.55	12.5	0.49
9	06	M18 x 1.5	18	0.71	16.5	0.65
12	08	M22 x 1.5	22	0.87	20.5	0.81
19	12	M30 x 1.5	30	1.18	28.5	1.12
25	16	M33 x 1.5	33	1.30	31.5	1.24
32	20	M42 x 1.5	42	1.65	40.5	1.60

#### JIS Tapered pipe (PT)

(Threads per JIS B 0203)



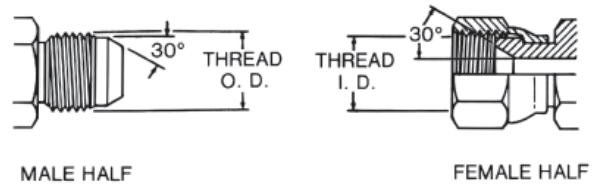
The JIS tapered thread is similar to the BSPT connection in design, appearance and dimensions.

The JIS tapered thread and the BSPT connection are interchangeable.

Inch size	Dash size	Nominal thread size (similar to BSPP)	Male thread O.D.		Female thread I.D.	
			fract.	mm.	fract.	mm
1/4	6 (04)	1/4-19	33/64	13.2	15/32	11.9
3/8	9 (06)	3/8-19	21/32	16.7	19/32	15.3
1/2	12 (08)	1/2-14	13/16	21.0	3/4	19.2
3/4	19 (12)	3/4-14	1 1/32	26.4	31/32	24.6
1	25 (16)	1-11	1 5/16	33.3	1 7/32	30.9
1 1/4	32 (20)	1 1/4-11	1 21/32	41.9	1 9/16	39.6
1 1/2	38 (24)	1 1/2-11	1 7/8	47.8	1 25/32	45.5
2	50 (32)	2-11	2 11/32	59.7	2 1/4	57.4

#### JIS 30° female (cone) seat, parallel pipe threads (PT)

(Threads per JIS B 0202)



The Japanese JIS 30° flare is similar to the American SAE 37° flare connection in application as well as sealing

principles. However, the flare angle and dimensions are different. The threads are similar to BSPP.

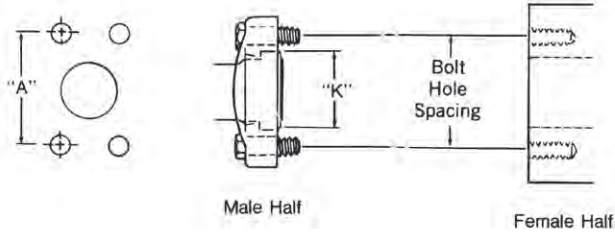
Inch size	Dash size	Nominal thread size (similar to BSPP)	Male thread O.D.		Female thread O.D.	
			fract.	mm	fract.	mm
1/4	6 (04)	1/4-19	33/64	13.2	15/32	11.9
3/8	9 (06)	3/8-19	21/32	16.7	19/32	15.3
1/2	12 (08)	1/2-14	13/16	21.0	3/4	19.2
3/4	19 (12)	3/4-14	1 1/32	26.4	31/32	24.6
1	25 (16)	1-11	1 5/16	33.3	1 7/32	30.9
1 1/4	32 (20)	1 1/4-11	1 21/32	41.9	1 9/16	39.6
1 1/2	38 (24)	1 1/2-11	1 7/8	47.8	1 25/32	45.5
2	50 (32)	2-11	2 11/32	59.7	2 1/4	57.4

# Steel adapters

## Japanese connections

### Japanese connections

#### JIS B 8363 4-bolt flange\*

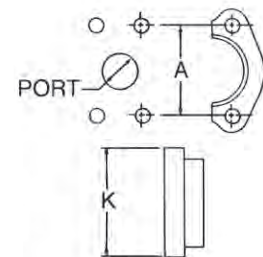


This connection is commonly used in fluid power systems. There are two pressure ratings. Type I (Code 61) is referred to as the “standard” series and Type II (Code 62) is the “6000 psi” series. The design concept for both series is the same, but the bolt hole spacing and flanged head diameters are larger for the higher pressure, Type II connection. Both metric and inch bolts are used. The female (port) is an unthreaded hole with four bolt holes in a rectangular pattern around the port. The male consists of a

flanged head, grooved for an O-Ring, and either a captive flange or split flange halves with bolt holes to match the port. The seal takes place on the O-Ring, which is compressed between the flanged head and the flat surface surrounding the port. The threaded bolts hold the connection together.

**Note:** \*JIS B 8363, ISO/DIS 6162, DIN 20066, and SAE J518 are interchangeable, except for bolt sizes.

Size	Flanged head dia. “K”				
	Type I bar (Cd. 61)		Type II bar (Cd. 62)		
in	mm	in	mm	in	mm
1/2	30,18	1.19	31,75	1.25	
3/4	38,10	1.50	41,28	1.63	
1	44,45	1.75	47,63	1.88	
1 1/4	50,80	2.00	53,98	2.13	
1 1/2	60,33	2.38	63,50	2.50	
2	71,42	2.81	79,38	3.13	



Size	Port hole	Bolt dimensions		Bolt hole spacing “A”	
		Type I (Cd. 61)	Type II (Cd. 62)	Type I (Cd. 61)	Type II (Cd. 62)
mm (in) (dash)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)
12 (1/2) (08)	12,7 (0.50)	M8 x 1.25 x 30 (5/16–18 x 1 1/4)	M8 x 1.25 x 30 (5/16–18 x 1 1/4)	38,1 (1.50)	40,49 (1.57)
19 (3/4) (12)	19,1 (0.75)	M10 x 1.5 x 30 (3/8–16 x 1 1/4)	M10 x 1.5 x 40 (3/8–16 x 1 1/2)	47,63 (1.88)	50,80 (2.00)
25 (1) (16)	25,4 (1.00)	M10 x 1.5 x 30 (3/8–16 x 1 1/4)	M12 x 1.75 x 45 (7/16–14 x 1 3/4)	52,37 (2.06)	57,15 (2.25)
32 (1 1/4) (20)	31,7 (1.25)	M10 x 1.5 x 40 (7/16–14 x 1 1/2)	M14 x 2 x 45 (1/2–13 x 1 3/4)	58,72 (2.31)	66,68 (2.63)
38 (1 1/2) (24)	38,0 (1.50)	M12 x 1.75 x 40 (1/2–13 x 1 1/2)	M16 x 2 x 55 (5/8–11 x 2 1/4)	69,85 (2.75)	79,38 (3.13)
50 (2) (32)	50,8 (2.00)	M12 x 1.75 x 40 (1/2–13 x 1 1/2)	M20 x 2.5 x 70 (3/4–10 x 2 3/4)	77,77 (3.06)	96,82 (3.81)

# Tools

## Cross Reference

Search by part number, part type and competitor

Search by part number... ➤

**Filters** Reset

Enter filter criteria to narrow choices

**Eaton Cross Reference**

Eaton

Recommendations may not be direct replacements. Please assess if the recommendation fulfills your needs.

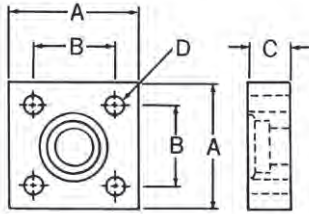
**Competitor Cross Reference**

<input type="checkbox"/> Piper Industries	<input type="checkbox"/> Powertrack
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<input type="checkbox"/> Smc Pneumatics	<input type="checkbox"/> Ssp
<input type="checkbox"/> Stratoflex	<input type="checkbox"/> Swagelok
<input type="checkbox"/> Synflex	<input type="checkbox"/> Tompkins
<input type="checkbox"/> Trident	<input type="checkbox"/> Velvac

[eatonpowersource.com](http://eatonpowersource.com)

### Japanese connections

#### JIS 210 Kg/cm<sup>2</sup> 4-bolt square flange

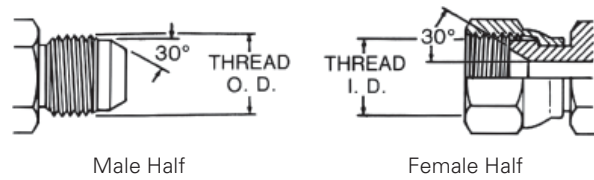


The JIS 4-bolt square flange connection is similar in concept to the SAE 4-bolt flange connection, except that

the JIS bolt pattern is square and the flange itself is different.

Size mm	Appx. inch size	Bolt size mm (bolt length for long design)	Dim. "A" mm (inch)	Dim. "B" mm (inch)	Dim. "C" mm (inch)	Bolt hole dia "D" mm (inch)
12	1/2	M10 x 1.5 x 55 (80)	63 (2.48)	40 (1.57)	22 (0.87)	11 (0.43)
19	3/4	M10 x 1.5 x 55 (80)	68 (2.67)	45 (1.77)	22 (0.87)	11 (0.43)
25	1	M12 x 1.75 x 70 (100)	80 (3.15)	53 (2.09)	28 (1.10)	13 (0.51)
32	1 1/4	M12 x 1.75 x 70 (100)	90 (3.54)	63 (2.48)	28 (1.10)	13 (0.51)
38	1 1/2	M16 x 2.0 x 90 (130)	100 (3.94)	70 (2.76)	36 (1.42)	18 (0.71)
50	2	M16 x 2.0 x 90 (130)	112 (4.41)	80 (3.15)	36 (1.42)	18 (0.71)

#### Komatsu 30° flare

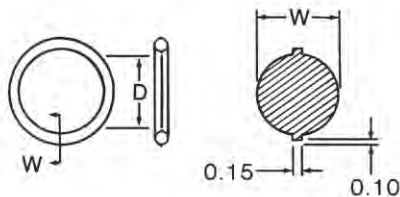


The Japanese Komatsu 30° flare is similar to the American SAE 37° flare connection in application as well as sealing

principles. However, the flare angle and dimensions are different. The threads are metric.

Komatsu Nominal size mm	Eaton equivalent	Komatsu Thread
02	04	M14 x 1.5
03	06	M18 x 1.5
04	08	M22 x 1.5
05	10	M24 x 1.5
06	12	M30 x 1.5
10	16	M33 x 1.5
12	20	M36 x 1.5
14	24	M42 x 1.5

#### JIS 210 Kg/cm<sup>2</sup> O-ring



Nominal size mm	Dim. "D" mm	Dim. "W" mm
12	24.4 ± 0.15	3.1 ± 0.1
19	29.4 ± 0.15	3.1 ± 0.1
25	34.4 ± 0.15	3.1 ± 0.1
32	39.4 ± 0.15	3.1 ± 0.1
38	49.4 ± 0.15	3.1 ± 0.1
50	59.4 ± 0.15	3.1 ± 0.1

# Steel adapters

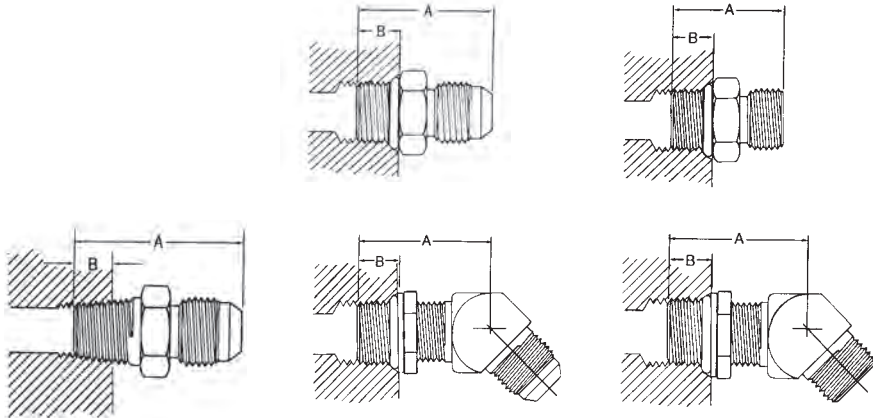
## Thread engagement nominal dimensions

J

### Thread engagement

Dimensions may vary due to tolerance conditions.

Listed below are the thread engagement dimensions (B) which must be taken into consideration when making connection with ports or appropriate female adapters. The "B" dimension must be subtracted from the overall length (A) to insure proper connection.



Dash size	Male pipe		SAE O-ring boss SAE J1926 with SAE 37° flare J514		SAE O-ring boss SAE J1926 with ORS J1453	
	Straight and angled dimension "B"		Straight and adjustable dimension "B"		Straight and adjustable dimension "B"	
	mm	in	mm	in	mm	in
-02	6,4	0.25	–	–	–	–
-04	9,7	0.38	9,1	0.36	10,9	0.43
-05	–	–	9,1	0.36	10,9	0.43
-06	9,7	0.38	9,1	0.39	11,9	0.47
-08	12,7	0.50	10,9	0.43	14,0	0.55
-10	–	–	12,7	0.50	16,0	0.63
-12	15,7	0.62	15,0	0.59	18,5	0.73
-14	–	–	15,0	0.59	–	–
-16	17,5	0.69	15,0	0.59	18,5	0.73
-20	17,5	0.69	15,0	0.59	18,5	0.73
-24	17,5	0.69	15,0	0.59	18,5	0.73
-32	19,1	0.75	15,0	0.59	–	–

### Allowable bulkhead thickness

#### For ORS

Dash size	Hole diameter	ORS bulkhead thickness			
		Min		Max	
		mm	in	mm	in
-04	0.575 +.015/-0.000	5,1	0.20	12,7	0.50
-06	0.700 +.015/-0.000	5,1	0.20	15,0	0.59
-08	0.825 +.015/-0.000	5,6	0.22	15,0	0.59
-10	1.015 +.015/-0.000	5,8	0.23	15,0	0.59
-12	1.200 +.015/-0.000	6,4	0.25	15,0	0.59
-16	1.450 +.015/-0.000	6,4	0.25	15,2	0.60
-20	1.715 +.015/-0.000	6,4	0.25	15,2	0.60
-24	2.030 +.015/-0.000	6,4	0.25	15,2	0.60

#### For SAE 37° flare

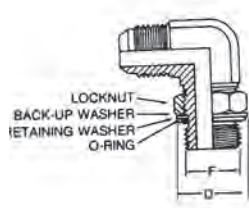
Dash size	Hole diameter	SAE 37° bulkhead thickness straights				SAE 37° bulkhead thickness shapes			
		Min		Max		Min		Max	
		mm	in	mm	in	mm	in	mm	in
-03	0.391 +.016/-0.000	1,3	0.05	10,4	0.41	3,3	0.13	6,4	0.25
-04	0.453 +.016/-0.000	1,3	0.05	10,4	0.41	3,3	0.13	7,1	0.28
-05	0.516 +.016/-0.000	1,3	0.05	10,4	0.41	3,3	0.13	7,1	0.28
-06	0.578 +.016/-0.000	1,3	0.05	11,2	0.44	3,3	0.13	7,6	0.30
-08	0.766 +.016/-0.000	1,3	0.05	11,2	0.44	4,1	0.16	8,6	0.34
-10	0.891 +.016/-0.000	1,3	0.05	11,9	0.47	4,1	0.16	9,1	0.36
-12	1.076 +.016/-0.000	1,3	0.05	11,9	0.47	4,1	0.16	9,7	0.38
-16	1.328 +.016/-0.000	1,3	0.05	11,9	0.47	4,1	0.16	9,7	0.38
-20	1.656 +.031/-0.000	1,3	0.05	11,9	0.47	4,1	0.16	9,7	0.38
-24	1.906 +.031/-0.000	1,3	0.05	11,9	0.47	4,1	0.16	9,7	0.38



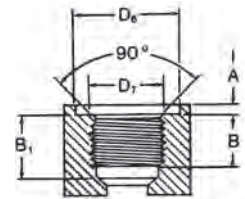
### Metric thread dimensions

#### Conversion adapters

Sealing is achieved by means of an O-Ring, retaining washer and a properly machined port. The O-Ring is "captured" by the I.D. of the retaining washer. The port may be of the spot faced or a flat machined surface as long as the D6 dimension is met. Assembly instructions for adjustable type adapters are presented on page 26.



DIN 3852 large spot face



Equivalent to DIN 3852 form x

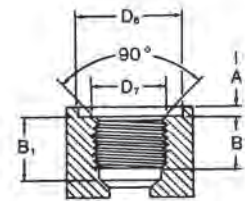
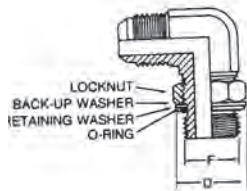
Thread size	M 10 x 1	M 12 x 1.5	M 14 x 1.5	M 16 x 1.5	M 18 x 1.5	M 20 x 1.5	M 22 x 1.5	M 26 x 1.5	M 27 x 2	M 33 x 2	M 42 x 2	M 48 x 2
<b>F Thread Dia.</b>	10.0	12.0	14.0	16.0	18.0	20.0	22.0	26.0	27.0	33.0	42.0	48.0
<b>A max</b>	1.0	1.5	1.5	1.5	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
<b>B min (full thread)</b>	12.0	12.0	12.0	12.0	12.0	14.0	14.0	16.0	16.0	18.0	20.0	22.0
<b>B1 min</b>	13.5	18.5	18.5	18.5	18.5	20.5	20.5	22.5	24.0	26.0	28.0	30.0
<b>D max</b>	15.7	18.7	19.7	23.2	26.2	28.2	30.2	35.2	36.2	43.2	52.7	58.7
<b>D6 min</b>	16.2	19.2	20.2	23.7	26.9	28.9	30.7	35.7	36.7	44.4	53.4	59.9
<b>D7 max</b>	10.2	12.2	14.2	16.2	18.2	20.2	22.2	26.2	27.2	33.3	42.3	48.3

#### BSPP (parallel) threads

Sealing is achieved by means of an O-Ring, retaining washer and a properly machined port.

The O-Ring is "captured" by the I.D. of the retaining washer. The compression is controlled by the thickness of the retaining washer.

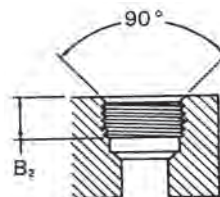
The port may be of the spot faced or a flat machined surface as long as the D6 dimension is met.



Thread size	G 1/8"-28		G 1/4"-19		G 3/8"-19		G 1/2"-14		G 3/4"-14		G 1"-11		G 1 1/4"-11		G 1 1/2"-11	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
<b>F Thread Dia.</b>	9,7	0.38	13,2	0.50	16,7	0.66	20,9	0.83	26,4	1.04	33,3	1.31	41,9	1.65	47,8	1.88
<b>A max</b>	1,0	0.04	2,0	0.08	2,05	0.10	2,5	0.10	2,5	0.10	2,5	0.10	2,5	0.10	2,5	0.10
<b>B1 min (full thread)</b>	8,0	0.31	12,0	0.47	12,0	0.47	14,0	0.63	16,0	0.63	18,0	0.71	20,0	0.79	22,0	0.87
<b>B1 min</b>	13,0	0.51	18,5	0.73	18,5	0.73	22,0	0.94	24,0	0.94	27,0	1.06	29,0	1.14	31,0	1.22
<b>D max</b>	15,7	0.62	19,7	0.78	24,0	0.94	28,7	1.38	35,2	1.38	43,2	1.70	52,7	2.07	58,7	2.31
<b>D6 min</b>	16,2	0.64	20,2	0.81	24,9	0.98	29,4	1.43	36,4	1.43	44,4	1.75	53,4	2.10	59,9	2.36
<b>D7 max</b>	10,0	0.39	13,4	0.53	16,9	0.67	21,2	1.05	26,7	1.05	33,6	1.32	42,3	1.67	48,2	1.90

#### BSPT (tapered) threads port sealing

Sealing is achieved by means of metal to metal deformation of the adapter and port threads.



Thread size 11	R 1/8"-28		R 1/4"-19		R 3/8"-19		R 1/2"-14		R 3/4"-14		R 1"-11		R 1 1/4"-11		R 1 1/2"-11	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
<b>B2 min (full thread)</b>	5,5	0.22	8,5	0.33	8,5	0.33	10,5	0.41	13,0	0.51	14,5	0.57	17,0	0.67	17,0	0.67

# Steel adapters

## Hose fitting pressure charts

J

### Pressure performance - Thread style

Eaton closely follows industry standards in design and in application recommendations. A key principle within ISO, SAE and other standards bodies is that the **maximum dynamic working pressure of the hose or adapter assembly** is the lesser of the hose and end connector(s) used.

The first table below provides excerpts from standard industry pressure rating charts for connector types as published by SAE (Society of Automotive Engineers).

**Note:** The tables below are applicable for low carbon free machining steels typically used in Fluid Power connections. For port type connections, the material and design of the port must be considered and may reduce expected strength.

For high pressure applications Eaton recommends the use of more robust connector designs such as Code 62 flange or O-Ring face seal.

### Selected SAE pressure ratings

Dash size	Inch size	SAE 37°	Pipe SAE J476	Male ORB SAE J1926 ORS adapt.	Male ORB SAE J1926 non-ORS adapt.	Adjustable SAE J1926 ORS	Adjustable ORB non-ORS	ORS	Inverted flare	Code 61 Flange	Code 62 Flange
-2	1/8	5000	5000	-	5000	-	5000	-	5000	-	-
-3	3/16	5000	-	9000	5000	6000	5000	-	5000	-	-
-4	1/4	4500	5000	9000	5000	6000	4500	9000	4500	-	-
-5	5/16	4000	-	9000	5000	6000	4500	9000	4000	-	-
-6	3/8	4000	4000	9000	5000	6000	4000	9000	4000	-	-
-8	1/2	4000	3000	9000	4500	6000	4000	9000	4000	5000	6000
-10	5/8	3000	-	9000	3500	6000	3000	6000	3000	-	-
-12	3/4	3000	2500	6000	3500	6000	3000	6000	3000	5000	6000
-14	7/8	2500	-	6000	3000	6000	2500	6000	2500	-	-
-16	1	2500	2000	6000	3000	5000	2500	6000	2500	5000	6000
-20	1 1/4	2000	1150	4000	2500	4000	2000	3600	2000	4000	6000
-24	1 1/2	1500	1000	4000	2500	3000	2000	3600	1500	3000	6000
-32	2	1125	1000	3000	2000	2500	1500	3000	1125	3000	6000

### International pressure rating charts

#### Maximum working pressure (PSI)

Hose fitting connection	Hose fitting size									
	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32
Male British Pipe (BSP)	5000	-	4000	4000	3500	4000	3500	2500	2,000	2000
Female British Pipe (BSP)	5000	-	4000	4000	3500	4000	3500	2500	2,000	2000
Female Pipe (JIS)	5000	-	5000	5000	-	4000	4000	-	-	-

#### Maximum working pressure (PSI)

Hose fitting Connection	Hose fitting size									
	-06	-08	-10	-12	-15	-18	-22	-28	-35	-42
DIN light	3625	3625	3625	3625	3625	2325	2325	1450	1450	1450

## Pressure performance - All Eaton Components

With higher pressures it is critical to know the construction materials and manufacturing method to ensure performance. When all components in a system are

Eaton supplied, for example an Eaton hose fitting is mated with an Eaton adapter or tube fitting, the combination may be used at higher pressures with confidence.

These higher ratings are noted in the chart below.

**Maximum dynamic working pressure of the hose or adapter assembly is the lesser of the hose and end connector(s) used.**

## All Eaton pressure ratings<sup>1</sup>

Dash Size	Inch Size	SAE 37° JIC	Male Pipe	Female Pipe <sup>2</sup>	Male ORB ORS Adapters	Male ORB Non-ORS Adapters	Adjustable ORB ORS Adapters	Adjustable ORB Non-ORS Adapters	ORS	Male Flareless Ermeto	Code 61	Code 62	STC
-2	1/8	-	10000	6000	-	5000	-	5000	-	5000	-	-	-
-3	3/16	-	-	-	9000	5000	6000	5000	-	5000	-	-	-
-4	1/4	7000	9500	5000	9000	5000	6000	4500	9000	4500	-	-	6000
-5	5/16	7000	-	-	9000	5000	6000	4500	-	4000	-	-	-
-6	3/8	5000	8000	4000	9000	5000	6000	4000	9000	4000	-	-	5000
-8	1/2	4000	6000	4000	9000	4500	6000	4000	9000	4000	5000	6000	4250
-10	5/8	3800	-	-	9000	3500	6000	3000	9000	3000	-	-	4000
-12	3/4	5000	5000	3500	6000	3500	6000	3000	6000	3000	5000	6000	4000
-14	7/8	-	-	-	6000	3000	6000	2500	-	2500	-	-	-
-16	1	5000	4000	3000	6000	3000	5000	2500	6000	2500	5000	6000	4000
-20	1 1/4	5000	3000	2000	4000	2500	4000	2000	4500	2000	4000	6000	-
-24	1 1/2	2100	2000	1500	4000	2500	3000	2000	4000	1500	3000	6000	-
-32	2	1750	2000	1500	3000	2000	2500	1500	3000	1125	3000	6000	-

1) These ratings are based on both brazed and one piece construction, one-piece pressures could be increased. Please contact Eaton in these situations.

2) This rating is for thin walled adapters or fittings, the use of manifolds or oversized female ports would allow full rated male pressures.

### Dynamic operating pressure

Dynamic operating conditions refers to cyclic pressure impulses, usually considered to be from near zero to the highest system pressure. Hydraulic standards typically represent these as square waves and expect a component to handle on the order of 200,000 to well over one million such cycles with a burst: operating safety factor of 4:1. The above charts are created with dynamic applications in mind. Most industrial and mobile hydraulic systems fit the dynamic operating pressure profile, for example hydraulic work circuits on construction equipment or on injection molding equipment.

### Static operating pressure

Static operating conditions typically range from zero to operating pressure, but with far fewer cycles expected for the system life – perhaps 30,000 to 50,000 cycles and sharp pressure spikes are not expected, allowing a burst: operating safety factor of 3:1 or less. For static operating conditions, the Eaton ratings above can be safely increased by 25-30%. For example, a 3000 psi dynamic rated hose might be used in a 4000 psi static pressure application. Typical examples of static applications are water blast and hydraulic jacking.

### Materials

The above tables represent performance using common low carbon steel material. Other materials and their

characteristics influence these ratings. Medium carbon steels or heat treated materials can support higher working pressures. Conversely non-ferrous materials such as aluminum or brass will have reduced capability – as much as 50%, or less, pressure handling capability. It is important to consider material properties in designing a system to ensure pressure rating compatibility of all materials.

### Design & application

Eaton's Fluid Conveyance engineering and support teams have many decades of experience in designing, manufacturing and servicing hydraulic and other fluid conveyance systems globally. Eaton's product line is designed as a comprehensive collection of hose, fittings,

connectors, couplings and accessories that allow a system designer to select components to complete a fluid power system or a service technician to replace a component with confidence. The individual product specifications, the above pressure ratings and other technical information are intended as supporting guidelines for system design and service needs and are not to be construed as a guarantee of performance of the system or of individual Eaton components. Eaton provides comprehensive technical support so please call with questions about pressure needs not covered by these charts or for specific application support.

# Steel adapters

Maximum operating pressure

J

## Hydraulic tubing—Maximum operating pressures

SAEJ356, J524, J525, J526, J527

Tube O.D.	Dash size	Tubing wall thickness (in inches)											
		0.028		0.035		0.049		0.065		0.083		0.095	
-	-	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
0.19	-03	297,0	4250	375,0	5450	-	-	-	-	-	-	-	-
0.25	-04	213,0	3100	272,0	3950	396,0	5750	420,0	6000	-	-	-	-
0.31	-05	169,0	2450	213,0	3100	315,0	4500	420,0	6000	-	-	-	-
0.38	-06	140,0	2000	175,0	2550	251,0	3650	350,0	5000	420,0	6000	420,0	6000
0.50	-08	-	-	127,0	1850	186,0	2700	251,0	3650	335,0	4800	388,0	5550
0.62	-10	-	-	105,0	1500	145,0	2100	196,0	2850	258,0	3750	299,0	4350
0.75	-12	-	-	84,0	1200	122,0	1750	162,0	2350	210,0	3050	248,0	3550
1.00	-16	-	-	62,0	900	89,0	1300	122,0	1750	157,0	2250	182,0	2600
1.25	-20	-	-	-	-	70,0	1000	93,0	1350	122,0	1750	143,0	2050
1.50	-24	-	-	-	-	-	-	79,0	1150	100,0	1450	119,0	1700
2.00	-32	-	-	-	-	-	-	58,0	850	77,0	1100	87,0	1250

Tube O.D.	Dash size	Tubing wall thickness (in inches)											
		0.109		0.120		0.134		0.148		0.156		0.188	
-	-	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
0.19	-03	-	-	-	-	-	-	-	-	-	-	-	-
0.25	-04	-	-	-	-	-	-	-	-	-	-	-	-
0.31	-05	-	-	-	-	-	-	-	-	-	-	-	-
0.38	-06	-	-	-	-	-	-	-	-	-	-	-	-
0.50	-08	420,0	6000	420,0	6000	-	-	-	-	-	-	-	-
0.62	-10	353,0	5050	392,0	5600	-	-	-	-	-	-	-	-
0.75	-12	286,0	4150	322,0	4600	-	-	-	-	-	-	-	-
1.00	-16	210,0	3000	231,0	3350	262,0	3800	294,0	4200	-	-	-	-
1.25	-20	162,0	2350	182,0	2650	189,0	2700	203,0	2950	217,0	3100	259,0	3750
1.50	-24	134,0	1950	148,0	2150	171,0	2450	171,0	2450	182,0	2600	220,0	3150
2.00	-32	100,0	1450	112,0	1600	126,0	1800	140,0	2000	147,0	2100	178,0	2550

Maximum operating pressure ratings at specified wall thickness are based upon recommended tubing ratings per SAEJ1065 as well as

limited laboratory test data. Operating pressures are based upon a 4:1 safety factor relative to tube burst data. Eaton recommends a

maximum operating pressure of the joint which is the lesser of the tubing rating or the mating connector rating.

## Recommended wall thickness for tube fitting applications

Tube	Dash	Versil-Flare SAE 37° flare	Versil-Flare SAE 37° flareless	ORS-BR ORB	ORS-TF
0.19	-03	0.028 - 0.035	0.028 - 0.035	-	-
0.25	-04	0.028 - 0.065	0.028 - 0.065	0.028 - 0.065	0.028 - 0.065
0.31	-05	0.028 - 0.065	0.028 - 0.065	-	-
0.38	-06	0.028 - 0.065	0.028 - 0.095	0.035 - 0.083	0.028 - 0.065
0.50	-08	0.035 - 0.083	0.035 - 0.120	0.035 - 0.109	0.035 - 0.120
0.62	-10	0.035 - 0.095	0.035 - 0.120	0.035 - 0.120	0.035 - 0.095
0.75	-12	0.035 - 0.109	0.035 - 0.120	0.035 - 0.120	0.049 - 0.120
1.00	-16	0.035 - 0.120	0.035 - 0.134	0.049 - 0.148	0.049 - 0.134
1.25	-20	0.049 - 0.120	0.049 - 0.188	0.049 - 0.188	0.049 - 0.156
1.50	-24	0.065 - 0.120	0.065 - 0.188	0.065 - 0.188	0.065 - 0.188
2.00	-32	0.065 - 0.134	0.065 - 0.188	-	-

## Recommended hydraulic tubing material specifications

### Hydraulic tubing SAE specifications

Versil-Flare SAE 37° flared	Versil-Flare SAE 37° flareless	ORS-BR ORS	ORS-TF ORS
SAEJ524	SAEJ356	SAEJ356	SAEJ356
SAEJ525	SAEJ524	SAEJ524	SAEJ524
-	SAEJ525	SAEJ525	SAEJ525
-	SAEJ527	SAEJ526	SAEJ526

### Hydraulic tubing material description

SAEJ356 electric resistance welded flash controlled low carbon steel, SAEJ524 seamless annealed low carbon steel, SAEJ525 electric resistance welded

cold worked annealed, SAEJ526 single wall welded low carbon steel (automotive), SAEJ527 brazed double wall low carbon steel (automotive). The maximum hardness of the above tubing should not exceed Rockwell B65.



EatonPowerSource.com

# Steel adapters

## Assembly torque

J

### Recommended parallel connection assembly torque

Eaton recommends that a torque wrench be used to assure proper fitting assembly of these connections.

The values listed are for steel connections. Contact Eaton for torque values for other materials.

#### ORB low pressure with SAE 37° (SAE J1926-3)

Dash size	Thread size (inches)	Jam nut or straight fitting torque lb.-ft.	Jam nut or straight fitting torque newton meters
-03	3/8-24	8-9	12-13
-04	7/16-20	13-15	18-20
-05	1/2-20	14-15	19-21
-06	9/16-18	23-24	32-33
-08	3/4-16	40-43	55-57
-10	7/8-14	43-48	59-64
-12	1 1/16-12	68-75	93-101
-14	1 3/16-12	83-90	113-122
-16	1 5/16-12	112-123	152-166
-20	1 5/8-12	146-161	198-218
-24	1 7/8-12	154-170	209-230
-32	2 1/2-12	218-240	296-325

#### ORB high pressure with ORS (SAE J1926-2)

Dash size	Thread size (inches)	Jam nut or straight fitting torque lb.-ft.	Jam nut or straight fitting torque newton meters
-03	3/8-24	8-10	11-13
-04	7/16-20	14-16	20-22
-05	1/2-20	18-20	24-27
-06	9/16-18	24-26	33-35
-08	3/4-16	50-60	68-78
-10	7/8-14	72-80	98-110
-12	1 1/16-12	125-135	170-183
-14	1 3/16-12	160-180	215-245
-16	1 5/16-12	200-220	270-300
-20	1 5/8-12	210-280	285-380
-24	1 7/8-12	270-360	370-490

#### ORS (SAE J1453)

Dash size	Thread size (inches)	Swivel nut torque lb.-ft.	Swivel nut torque newton meters
-04	9/16-18	10-12	14-16
-06	11/16-16	18-20	24-27
-08	13/16-16	32-35	43-47
-10	1-14	46-50	62-68
-12	1 3/16-12	65-70	88-95
-16	1 7/16-12	92-100	125-136
-20	1 11/16-12	125-140	170-190
-24	2-12	150-165	204-224

#### SAE 37° (SAE J514)

Dash size	Thread size (inches)	Swivel nut torque lb.-ft.	Swivel nut torque newton meters
-04	7/16-20	11-12	15-16
-05	1/2-20	15-16	20-22
-06	9/16-18	18-20	24-28
-08	3/4-16	38-42	52-58
-10	7/8-14	57-62	77-85
-12	1 1/16-12	79-87	108-119
-16	1 5/16-12	108-113	148-154
-20	1 5/8-12	127-133	173-182
-24	1 7/8-12	158-167	216-227
-32	2 1/2-12	245-258	334-352

## Recommended parallel connection assembly torque

Eaton recommends that a torque wrench be used to assure proper fitting assembly of these connections.

The values listed are for steel connections.  
Contact Eaton for torque values for other materials.

### Metric ISO 6149 (ISO 6149-2)

Thread size	Straight adapter or locknut torque	
	lb.-ft.	Newton meters
M10 x 1	13-15	18-20
M12 x 1.5	15-19	20-25
M14 x 1.5	19-23	25-30
M16 x 1.5	33-40	45-55
M18 x 1.5	37-44	50-60
M20 x 1.5	52-66	70-90
M22 x 1.5	55-70	75-95
M26 x 1.5	81-96	110-130
M27 x 2	96-111	130-150
M33 x 2	162-184	220-250
M42 x 2	170-192	230-260
M48 x 2	258-347	350-470

### BSPP (ISO 1179-3)

Nominal thread size	Straight adapter or locknut torque	
	lb.-ft.	Newton meters
G 1/8-28	13-15	18-20
G 1/4-19	19-23	25-30
G 3/8-19	33-40	45-55
G 1/2-14	55-70	75-95
G 3/4-14	103-118	140-160
G 1-11	162-184	220-250
G 1 1/4-11	170-192	230-260
G 1 1/2-11	258-347	350-470

\*\*\*"G" denotes parallel threads, other than ISO 6149. (Port connection only)

### DKO Light Duty (ISO 8434-1 L)

DN size	Tube O.D.	Thread	DKO Light Duty (L)		
			Swivel Nut Hex Size	Swivel Nut Torque	Swivel Nut Torque
			ISO 8434-1	lb-ft 10%	Nm +10%
5	6	M12x1,5	14	15	20
6	8	M14x1,5	17	18	25
8	10	M16x1,5	19	33	45
10	12	M18x1,5	22	37	50
12	15	M22x1,5	27	44	60
16	18	M26x1,5	32	52	70
20	22	M30x2	36	96	130
25	28	M36x2	41	133	180
32	35	M45x2	50	221	300
40	42	M52x2	60	236	320

### DKO Heavy Duty (ISO 8434-1 S)

DN size	Tube O.D.	Thread	DKO Heavy Duty (S)		
			Swivel Nut Hex Size	Swivel Nut Torque	Swivel Nut Torque
			ISO 8434-1	lb-ft +10%	Nm +10%
	6	M14x1,5	17	15	20
5	8	M16x1,5	19	26	35
6	10	M18x1,5	22	37	50
8	12	M20x1,5	24	48	65
10	14	M22x1,5	27	52	70
12	16	M24x1,5	30	63	85
16	20	M30x2	36	100	135
20	25	M36x2	41 (46)	125	170
25	30	M42x2	50	207	280
32	38	M52x2	60	236	320

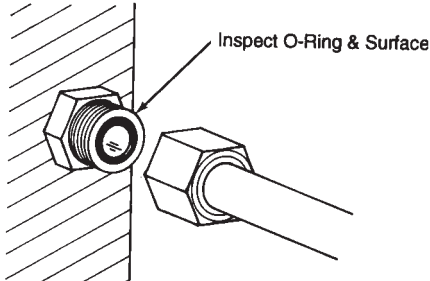
# Steel adapters

## Assembly instructions

J

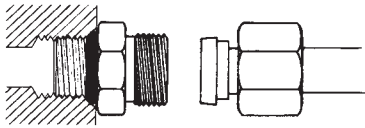
### ORS tube fittings, pipe threads and SAE 37° tube fittings

#### Assembly instruction for ORS Tube Fittings

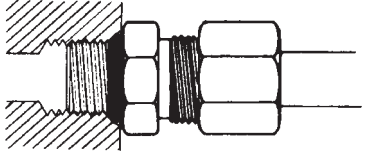


1. Inspect sealing surfaces and O-Ring groove for damage or foreign material. Check the O-Ring to insure that it is properly seated in the O-Ring groove.

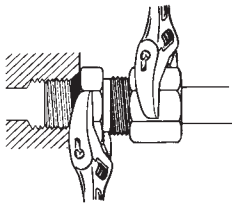
Align fittings



Hand tighten



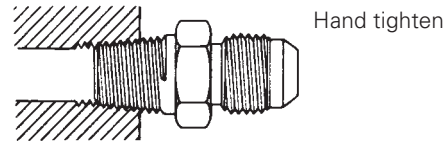
2. Lubricate threads with heavy lubricant (such as part number 222070 Lube).
3. Align the ORS Tube Fitting to the flat sealing connections and tighten the nut by hand. The nut should tighten easily by hand if properly aligned.



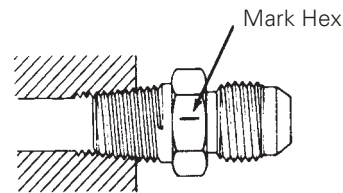
4. Complete the assembly by wrench tightening the nut to the recommended torque value on page J-22.

#### Assembly instructions for Pipe Threads

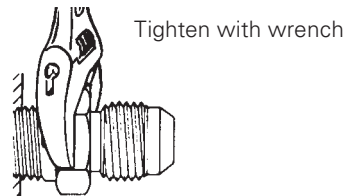
1. Assemble connection hand tight.



2. Mark male and female.



3. Rotate male; 1-1/2 turns if using thread sealant. 2 turns if not using thread sealant.





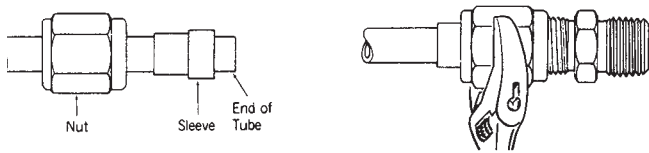
**ORS tube fittings, pipe threads and SAE 37° tube fittings**

continued

**Assembly instructions for standard SAE 37° flare type tube fitting**

Use SAE J524 or SAE J525 tubing for best bending and flaring results.

1. Cut the tubing with a tube cutter. If a fine tooth hacksaw is used, make sure cut-off is square; remove burrs with deburring tool, emery paper or fine file. Clean all dirt and grit from the I.D. and O.D. of the tube.
2. Place the nut and then the sleeve onto tube. The threaded end of nut and flared end of sleeve must face the end of tube.



3. Flare the tube end with a flaring tool to provide a SAE 37° flare. Check the flare for correct diameter, excessive thin out and burrs or cracks.
4. Lubricate all mating surfaces of nut, ferrule and body with a heavy lubricant such as 222070 Lube.
5. Assemble the nut and sleeve to body. Turn the nut hand tight then wrench tighten for a leakproof joint. See page J-22, torque values, for assembly using a torque wrench.

The Eaton standard SAE 37° flare fitting is easy to disassemble and may be reassembled repeatedly.

**Cutting**

To insure a leak-proof joint, the tubing should be cut square ( $\pm 1^\circ$ ). A tube cutter is preferred, but a hacksaw or abrasive wheel can be used.



Out of Square Cut

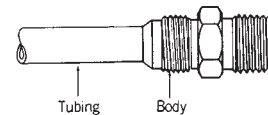


Square Cut

**Deburring**

All cut tubes should be deburred. However, deburring is even more important if the tubing was cut with a hacksaw or abrasive wheel. Remove any burrs, both internally and externally, with a deburring tool, emery paper or fine file.

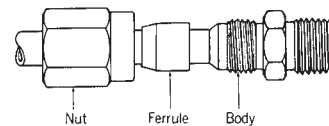
Clean the tube before assembly. Clean all dirt and grit from the I.D. and O.D. of the tube.

**Assembly instructions for Versil-Flare tube fitting****Tubing cut-off**

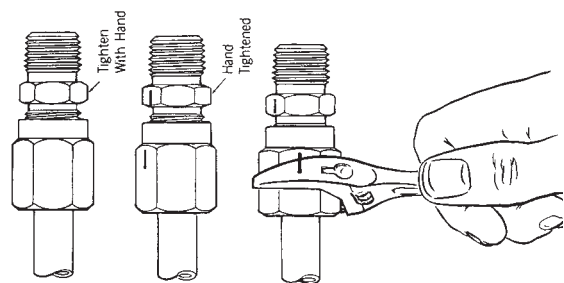
1. Tube should be cut to fit tight against the face of standard SAE 37° flare body.

**Initial assembly**

1. Deburr the end internally and externally. Clean all dirt and grit from I.D. and O.D.
2. Slide the nut and then the ferrule into the tube. Make sure the tapered end of ferrule points toward the nut.



3. Lubricate all mating surfaces of nut, ferrule and body with a heavy lubricant such as 222070 Lube.
4. Place end of tube against standard SAE 37° flare body.
5. Slide the ferrule and nut against body and tighten the nut onto the body "Hand Tight." Mark the nut in relation to the body for location.



6. Hold tube against body and tighten nut a total of 1-1/4 turns on -3 through -10 and 1-1/2 turns -12 through -32.

**Reassembly**

1. Slide nut against the body and tighten to "Hand tight." Mark the nut for location.
2. Tighten nut a minimum of one "Hex" flat. The Versil-Flare flareless tube fitting is designed for a maximum of 10 reassemblies.

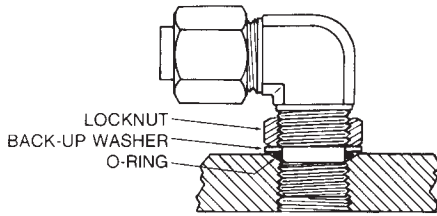
# Steel adapters

## Assembly instructions

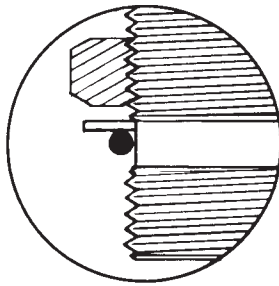
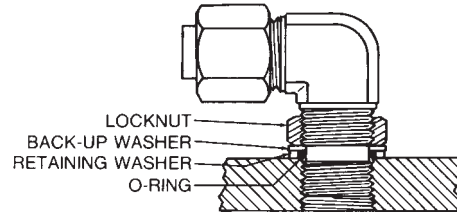
J

### Adjustable SAE O-Ring boss assembly instructions

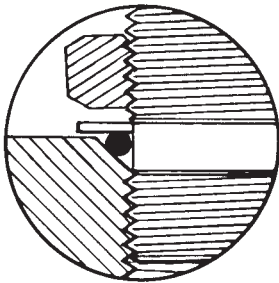
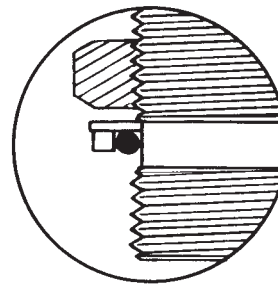
#### On SAE, and BSPP threads without retaining washer



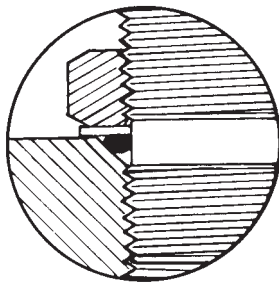
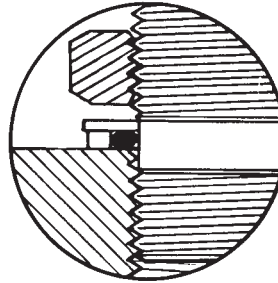
#### On BSPP threads with check washer



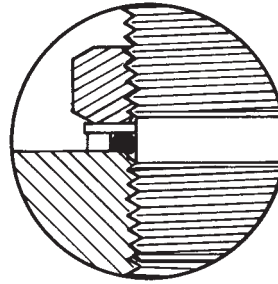
The O-Ring and back-up washer should be in the proper position on non-threaded section nearest to locknut. Lubrication of the O-Ring is recommended.



Tighten the fitting by hand into the straight threaded boss until back-up washer contacts face of boss (left) or retaining washer when thread is BSPP (right.)



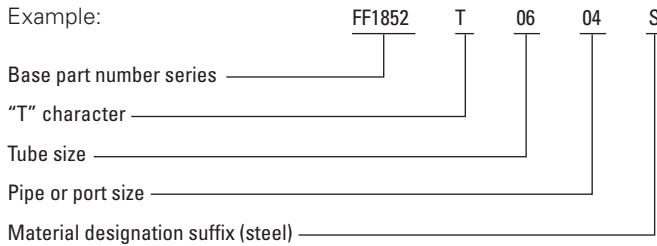
In order to position the fitting, unscrew up to one full turn then hold fitting in desired position and tighten locknut so that the back-up washer contacts face of boss and forces the O-Ring within boss cavity. With BSPP threads use same procedure. The difference between the two thread types exist in the retaining washer being in contact with face of boss (right inset). Assemble to the respective assembly torque specified on page J-22.



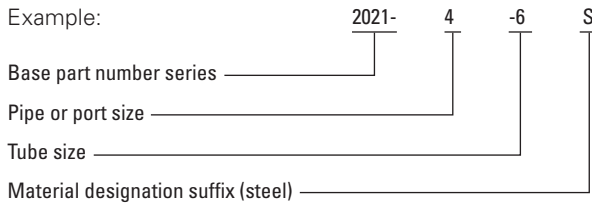
## How to read adapter part numbers

### Adapter part numbers

Adapter part numbers consist of a base number followed by a size designation. If the part number contains a "T" character between the base number and size designator, the first size designator signifies the tube size.

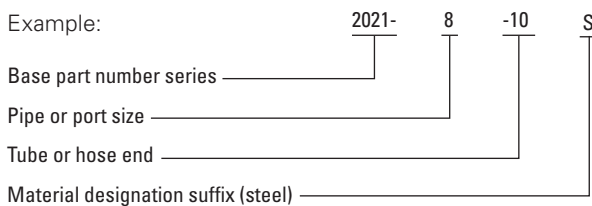


If the part number does not contain a "T" character between the base number and the size description, the first size designation signifies the pipe size.



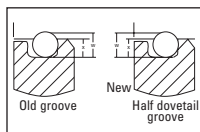
## How to order adapters

Adapters are ordered using the complete part number as shown on the adapter pages.



### ORS adapters conversion\*

ORS adapters come standard with the half dovetail groove design. The half dovetail groove is manufactured with an angle on the OD wall. This angle captures the O-Ring for maximum retention. For ease of installation, a half dovetail groove installation tool may be used.



\*Eaton reserves the right to use straight groove on some ORS.

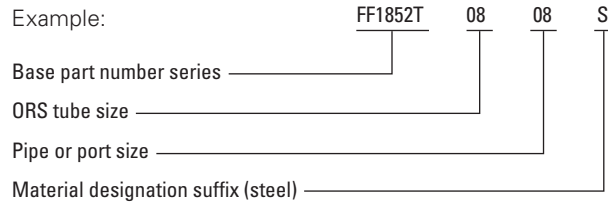
### Half dovetail groove installation tool

The half dovetail groove installation tool compresses the O-Ring, allowing it to easily slide into the groove in the adapter. Use of the tool maximizes efficiency and minimizes any fatigue that may be associated with repeated insertions over an extended period of time. One tool is required per dash size (or by adapter size). Each tool comes with an illustrated instruction sheet. Tools are available by using the following part numbers: FT1405-04, FT1405-06, FT1405-08, FT1405-10, FT1405-12, FT1405-16, FT1405-20, FT1405-24.

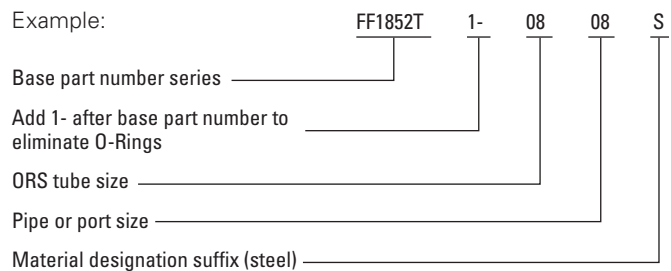


## How to order ORS adapters and tube fittings

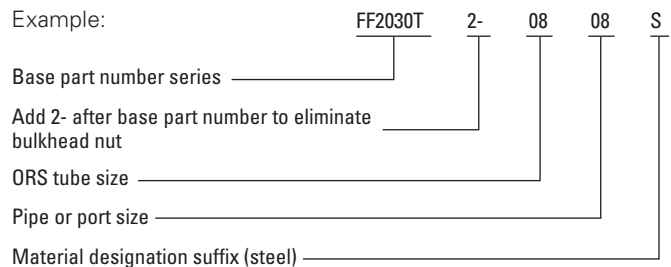
### ORS tube fitting body with O-Ring, locknut and washer, where applicable.



### ORS tube fitting body without O-Ring

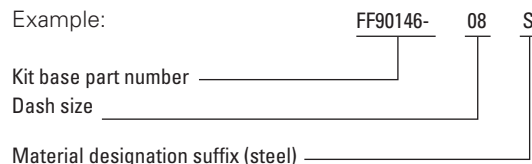


### ORS bulkhead tube fitting body without bulkhead nut or O-Ring



## ORS-TF tube fitting components

ORS-TF tube fittings, nut, ferrules, and sleeves can be ordered under the following kit part number:



By ordering a single part number in kit form, you will receive the components ready to be assembled to an ORS tube fitting body:

- Example: FF90146-08S includes:
- FC1851-08S (ORS-TF Nut)
  - FF90102-08S (ORS-TF Ferrule)
  - FF90103-08S (ORS-TF Sleeve)

# Steel adapters

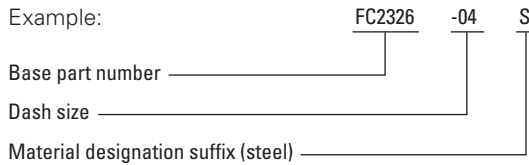
Part structure

## How to order ORS adapters and tube fittings

(continued)

### Nuts and shoulders (Braze type)

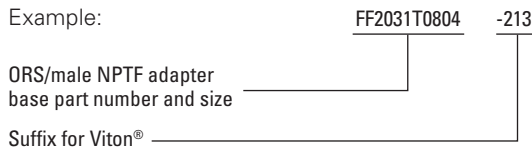
Nuts and shoulders can be ordered separately. Simply use the base number, dash size, and material designation.



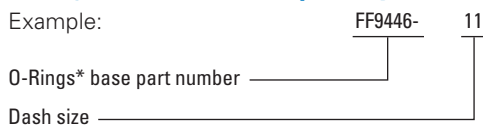
### O-Rings

Buna-N O-Rings are standard. Other materials may also be specified by adding a material designator prefix if the part number begins with a numeric, and a material designator suffix if the part number begins with an alpha character. In all cases, the suffix "S" shall be omitted.

Material designation prefix/suffix	Material	Operating temperature range
S	90 Durometer Buna-N Nitrile Rubber	-40°F to +250°F (-40°C to +121°C)
212	80 Durometer EPDM Ethylene propylene diene monomer	-65°F to +300°F (-55°C to +150°C)
213	90 Durometer Viton Fluoroelastomer	-15°F to +400°F (-26°C to +204°C)
214	90 Durometer Buna-N Low temperature Nitrile	-65°F to +225°F (-55°C to +100°C)
352	70 Durometer Neoprene	-65°F to +300°F (-55°C to +150°C)



### O-Rings can be ordered separately



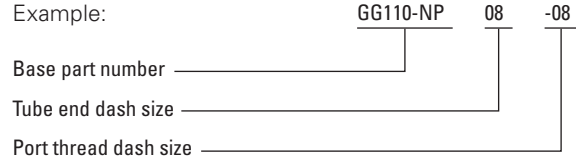
\*See ORS O-Ring chart on page J-115-117.

### Body material

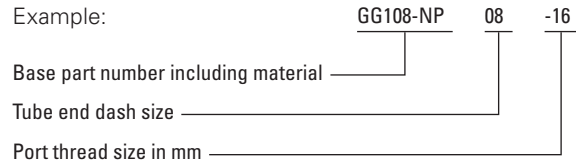
Steel is standard. Other materials may also be specified by adding a material designator prefix if the part number begins with a numeric, and a material designator suffix if the part number begins with an alpha character. In all cases, the suffix "S" shall be omitted.

Material designation prefix/suffix	Material
B (suffix only)	Brass
259	316-Stainless
4	Monel®
S	Steel

## How to order Conversion adapters BSPP/BSPT



### Metric



### Dimensions

Eaton tube fittings are ordinarily designed and produced to the functional requirements set forth in SAE Standards J512, J513, J514, J1926 and J1453. However, in some cases the envelope dimensions of certain components vary slightly from cataloged or SAE referenced dimensions. The SAE reference numbers and fitting descriptions given are in accordance with SAE Standard J846.

### Availability

All items listed in the current price schedule are normally carried in stock. Price and delivery of non-stocked and special parts may be obtained from your Eaton Sales Representative or Distributor.

### Loctite™ Vibra-Seal 516 for external pipe threads

Loctite Vibra-Seal has the following characteristics:

- Non-hardening thread sealant
- Resists shredding and peeling during assembly
- Can be reused up to 5 times without recoating
- Provides resistance to vibrational loosening
- Excellent resistance to solvents and oils
- Operating temperatures range -65°F to +250°F

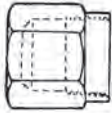
Machine applied so that it leaves first 1/2 to 2 threads uncovered for ease of assembly. Because of the excellent characteristics of this product, we are offering Loctite Vibra-Seal on all of our parts that have male pipe threads. Factory applied Loctite for external pipe threads may be ordered for steel parts by adding the prefix "307-" to the completed part number, and dropping suffix "S" if the part number begins with a numeral. Example: 307-2021-8-8.

If the part number begins with an alpha character, add the suffix "-307" to the completed part number and drop the suffix "S". Example: FF2031T0606-307.

Loctite is a trademark of The Henkel Corporation.  
Viton is a trademark of The Chemours Company FC, LLC.  
Monel is a registered trademark of Special Metals Corporation group of Companies.

### ORS-TF

FC1851  
Page J-40



FF90102  
Page J-40

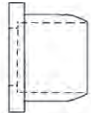


FF90103  
Page J-40

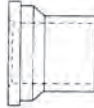


### ORS braze type

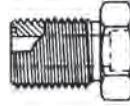
FC1229  
(former WH  
4165x)  
Page J-41



FC2325  
Page J-41



FF1922T  
Page J-42

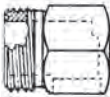


FF1851T  
Page J-42

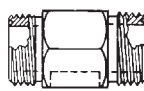


### ORS braze type (Continued)

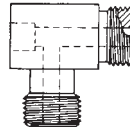
FF1856T  
Page J-42



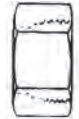
FF1858T  
Page J-43



FF2115T  
Page J-43

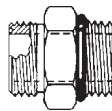


FC2326  
(former WH  
4105x)  
Page J-43



### ORS/SAE O-Ring boss

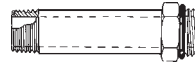
FF1852T  
(former WH  
4315x)  
Page J-44



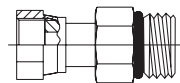
F2211T  
Page J-45



FF1854T  
(former WH  
4316x)  
Page J-45

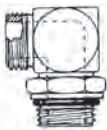


FF2130T  
Page J-45

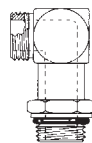


### ORS/SAE O-Ring boss (Continued)

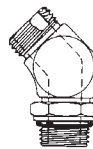
FF1868T  
(former WH  
4515x)  
Page J-46



FF2227T  
(former WH  
4515x-L)  
Page J-47



FF2068T  
(former WH  
4365x)  
Page J-47

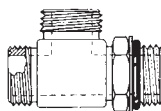


### ORS/SAE O-Ring boss (Continued)

FF1861T  
(former WH  
4715x)  
Page J-48

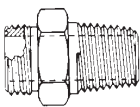


FF1865T  
(former WH  
4716x)  
Page J-48



### ORS-NPTF

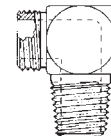
FF2031T  
(former WH  
4205x)  
Page J-49



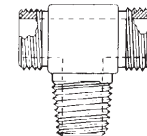
FF2093T  
(former WH  
4355x)  
Page J-49



FF2032T  
(former WH  
4405x)  
Page J-50

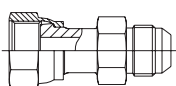


FF2001T  
Page J-50

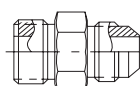


### ORS to SAE 37° flare

FF2209T  
(former WH  
4213x)  
Page J-51



FF2313T  
Page J-51



Items in parentheses are equivalent to former Weatherhead part series.

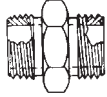
# Steel adapters

## Configuration index

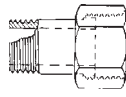
J

### ORS/ORS

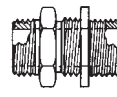
FF2000T  
(former WH  
4305x)  
Page J-52



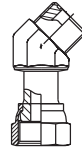
FF2281T  
Page J-52



FF1994T  
(former WH  
4325x)  
Page J-53

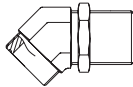


FF2133T  
Page J-53

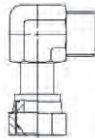


### ORS/ORS (Continued)

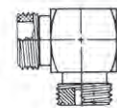
FF2144T  
Page J-53



FF2098T  
(former WH  
4506x)  
Page J-53

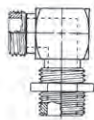


FF2035T  
(former WH  
4505x)  
Page J-54



### ORS/ORS (Continued)

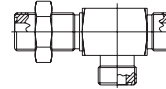
FF2030T  
(former WH  
4525x)  
Page J-54



FF1898T  
(former WH  
4706x)  
Page J-54

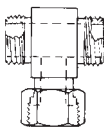


FF2174T  
(former WH  
4726x)  
Page J-55

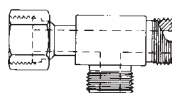


### ORS/ORS (Continued)

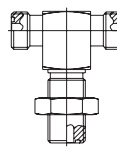
FF1857T  
(former WH  
4707x)  
Page J-55



FF2114T  
(former WH  
4706x)  
Page J-55



FF2033T  
Page J-55

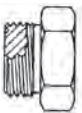


### ORS accessories

FF9768  
(former WH  
4924x)  
Page J-56



FF9767T  
(former WH  
4229x)  
Page J-56



FF9863  
(former WH  
4129x)  
Page J-56



### ORS accessories (Continued)

FF9766  
Page J-57



FF9075  
ORS silver  
braze ring  
Page J-57



### SAE O-Ring boss/SAE O-Ring boss

FF1010  
(former WH  
7033x)  
Page J-58



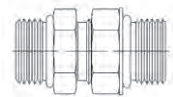
900598  
(former WH  
7237x)  
Page J-58



FF2138  
(former WH  
7238x)  
Page J-59

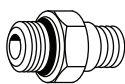


2220  
(former WH  
C5314x)  
Page J-59



### SAE O-Ring boss/SAE O-Ring boss (Continued)

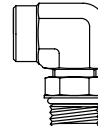
FF1796 (former  
WH C3249x)  
Page J-59



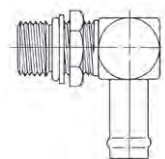
2229  
Page J-60



FF2591  
Page J-60

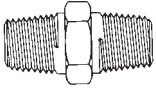
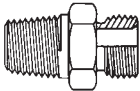
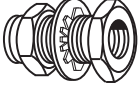
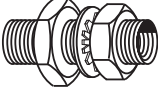


FF1167  
Page J-60

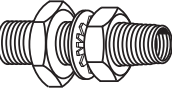

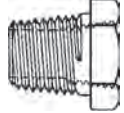
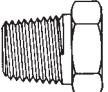


Items in parentheses are equivalent to former Weatherhead part series.

### Pipe to pipe

2083 (former WH C3069x) Page J-61		2015 Page J-61		FF4183 (former WH W series) Page J-62		FF4185 (former WH W series) Page J-62	
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### Pipe to pipe (Continued)

FF4186 (former WH W series) Page J-62		2084 Page J-63		2081 (former WH C3109x) Page J-63		2082 (former WH C3159x) Page J-64	
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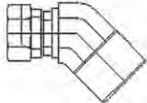
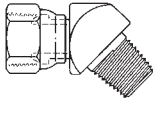
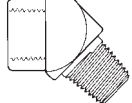
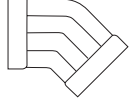
### Pipe to pipe (Continued)

FF4177 (former WH C3179x) Page J-64		FF91494 (former WH C3059x) Page J-64		2222 (former WH C3169x) Page J-65		2040 (former WH C3209x) Page J-65	
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### Pipe to pipe (Continued)

2045 (former WH 9205x) Page J-66		2046 (former WH 9255x) Page J-66		2096 (former WH C3309x) Page J-67		2247 Page J-67	
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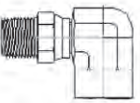
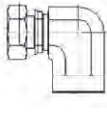
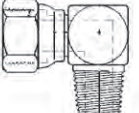
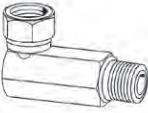
### Pipe to pipe (Continued)

2050 (former WH 9385x) Page J-67		2049 (former WH 9355x) Page J-68		2088 (former WH C3359x) Page J-68		2086-S (former WH C3559x) Page J-69	
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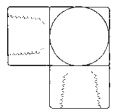
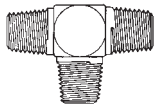
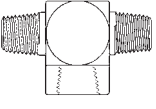
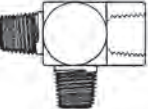
### Pipe to pipe (Continued)

2085 (former WH C3529x) Page J-69		FF1162 Page J-70		2251 (former WH 9435x) Page J-70		2089 (former WH C3409) Page J-70	
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### Pipe to pipe (Continued)

2252 Page J-71		2048 (former WH 9455) Page J-71		2047 (former WH 9405x) Page J-72		FF4175 (former WH 9405xLL) Page J-72	
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### Pipe to pipe (Continued)

2087 (former WH C3509x) Page J-73		2257 Page J-73		2256 Page J-74		2093 (former WH C3805x) Page J-74	
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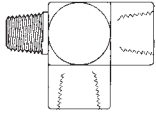
Items in parentheses are equivalent to former Weatherhead part series.

# Steel adapters

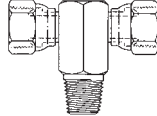
## Configuration index

### Pipe to pipe (Continued)

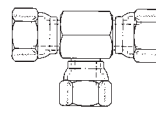
2092  
(former WH  
C3759x)  
Page J-74



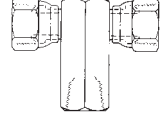
2254  
(former WH  
9406x)  
Page J-75



2255  
(former WH  
9705x)  
Page J-75

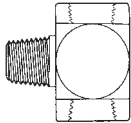


2253  
(former WH  
9456x)  
Page J-75

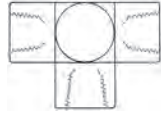


### Pipe to pipe (Continued)

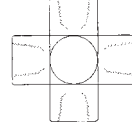
2091  
(former WH  
C3609x)  
Page J-76



2090  
(former WH  
C3709x)  
Page J-76

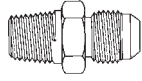


2080  
(former WH  
C3959x)  
Page J-76

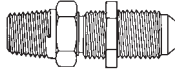


### Pipe to SAE 37° flare

2021  
(former WH  
C5205x)  
Page J-77



2240  
Page J-78



202113  
Page J-78

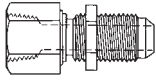


202114  
Page J-78

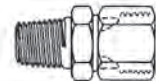


### Pipe to SAE 37° flare (Continued)

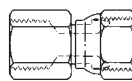
2239  
(former WH  
C5275x)  
Page J-79



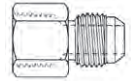
2018  
(former WH  
9100x)  
Page J-79



2242  
(former WH  
C5256x)  
Page J-79

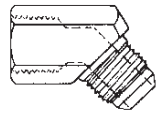


2022  
(former WH  
C5255x)  
Page J-80

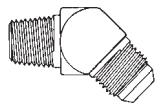


### Pipe to SAE 37° flare (Continued)

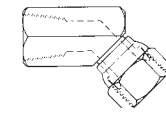
2044  
Page J-80



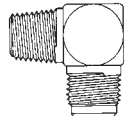
2023  
(former WH  
C5355x)  
Page J-81



2243  
Page J-81

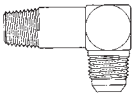


2024  
(former WH  
C5405x)  
Page J-82

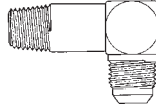


### Pipe to SAE 37° flare (Continued)

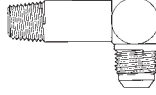
202411  
(former WH  
C5425x)  
Page J-83



202413  
(former WH  
C5435x)  
Page J-83



202414  
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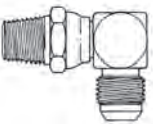


2250  
(former WH  
C5406x)  
Page J-84

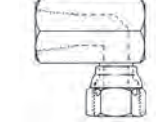


### Pipe to SAE 37° flare (Continued)

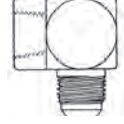
2249  
Page J-84



2244  
Page J-85



2025  
(former WH  
C5455x)  
Page J-85



203007  
Page J-85

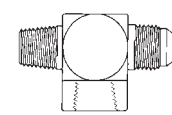


### Pipe to SAE 37° flare (Continued)

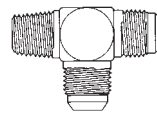
203301  
Page J-86



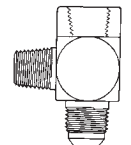
203103  
Page J-86



2028  
(former WH  
C5755x)  
Page J-86



203006  
Page J-87

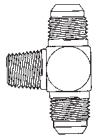


Items in parentheses are equivalent to former Weatherhead part series.

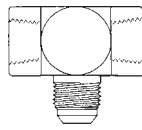


### Pipe to SAE 37° flare (Continued)

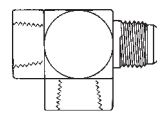
2030  
(former WH  
C5605x)  
Page J-87



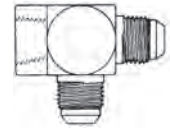
202901  
Page J-87



203104  
Page J-87

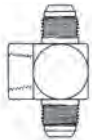


2029  
(former WH  
C5805x)  
Page J-88



### Pipe to SAE 37° flare (Continued)

2031  
(former WH  
5655x)  
Page J-88

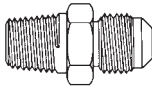


202003  
Page J-88

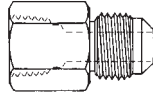


### Pipe to 45° flare - Brass

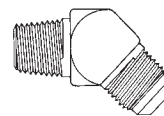
2000  
Page J-89



2001  
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2007  
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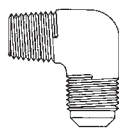


### Pipe to 45° flare - Brass (Continued)

2002  
Page J-90

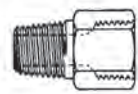


2003  
Page J-90

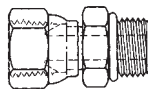


### Pipe to SAE O-Ring boss

2246  
(former WH  
C3239x)  
Page J-91



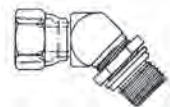
2066  
(former WH  
9315x)  
Page J-91



2216  
(former WH  
C3269x)  
Page J-92

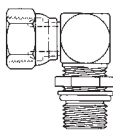


2067  
(former WH  
9365x)  
Page J-92

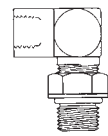


### Pipe to SAE O-Ring boss (Continued)

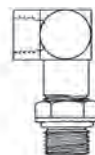
2068  
(former WH  
9515x)  
Page J-93



206801  
(former WH  
C3459x)  
Page J-93



206804  
(former WH  
C3469x)  
Page J-93



### Pipe to braze and weld

73056  
Page J-94

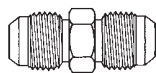


FF1159  
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### SAE 37° (JIC) flare union

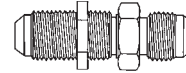
2027  
(former WH  
C5305x)  
Page J-94



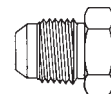
202712  
(former WH  
C5306x)  
Page J-95



2041  
(former WH  
C5325x)  
Page J-95



900599  
(former WH  
C5229x)  
Page J-95



Items in parentheses are equivalent to former Weatherhead part series.

# Steel adapters

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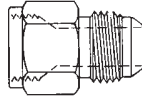
J

### SAE 37° (JIC) flare union (Continued)

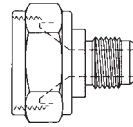
210292  
(former WH  
C5129x)  
Page J-96



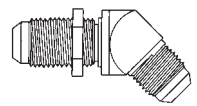
2215  
(former WH  
C5015x)  
Page J-96



221501  
(former WH  
C5015x)  
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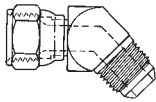


2042  
(former WH  
C5375x)  
Page J-97

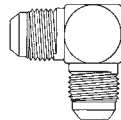


### SAE 37° (JIC) flare union (Continued)

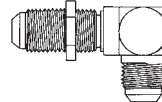
2070  
(former WH  
C5356x)  
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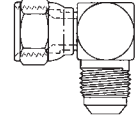
2039  
(former WH  
C5505x)  
Page J-98



2043  
(former WH  
C5525x)  
Page J-98

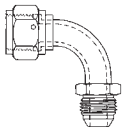


2071  
(former WH  
C5506x)  
Page J-98

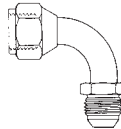


### SAE 37° (JIC) flare union (Continued)

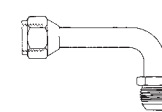
FF5163  
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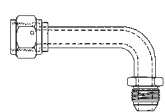
500454  
Page J-99



504095  
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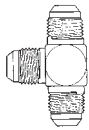


FF5164  
Page J-100

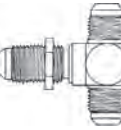


### SAE 37° (JIC) flare union (Continued)

2033  
(former WH  
5705x)  
Page J-100



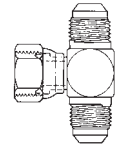
203002  
(former WH  
C5725x)  
Page J-100



203008  
Page J-101

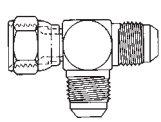


203101  
(former WH  
C5707x)  
Page J-101

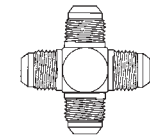


### SAE 37° (JIC) flare union (Continued)

203102  
(former WH  
C5706x)  
Page J-101



2020  
(former WH  
C5955x)  
Page J-102

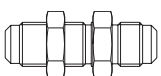


210212  
(former WH  
C5924x)  
Page J-102

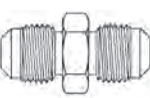


### SAE 45° flare union

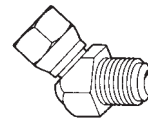
2056  
Page J-103



2060  
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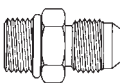


FF4174  
(former WH  
9154x)  
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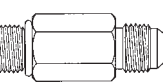


### SAE O-Ring boss to SAE 37° flare

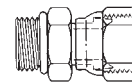
202702  
(former WH  
C5315x)  
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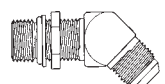
202713  
(former WH  
C5316x)  
Page J-105



2266  
(former WH  
C5216x)  
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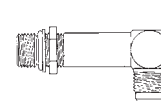


2061  
(former WH  
C5365x)  
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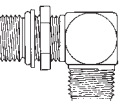


### SAE O-Ring boss to SAE 37° flare (Continued)

206209  
(former WH  
C5515xLL)  
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2062  
(former WH  
C5515x)  
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203005  
(former WH  
C5716x)  
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203003  
(former WH  
C5715x)  
Page J-108




FF3910  
(former WH  
C5515xL)  
Page J-106

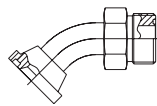
Items in parentheses are equivalent to former Weatherhead part series.

### SAE split flange to ORS

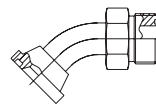
FF5943T  
Page J-114



FF6001T  
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FF6002T  
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### SAE split flange to ORS (Continued)

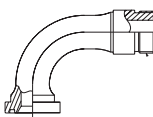
FF5946T  
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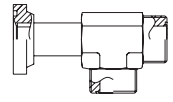
FF5945T  
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FF6062T  
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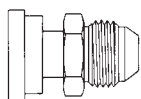


FF2522T  
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### SAE split flange to SAE 37° flare

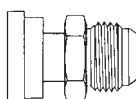
500025  
(former WH 500 series)  
Page J-116



FF5239  
(former WH 500 series)  
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FF5541  
(former WH 600 series)  
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FF5539  
(former WH 645 series)  
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### SAE split flange to SAE 37° flare (Continued)

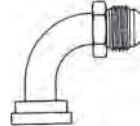
500023  
(former WH 545 series)  
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FF5238  
(former WH 545 series)  
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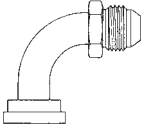


500024  
(former WH 590 series)  
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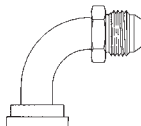


### SAE split flange to SAE 37° flare (Continued)

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### SAE swivel flange to SAE split flange

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### SAE flareless to 37° union


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### Braze and weld to split flange

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Items in parentheses are equivalent to former Weatherhead part series.

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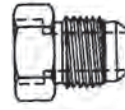


FC1132  
Page J-122

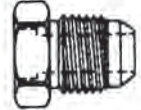


### Braze and weld to SAE 37° flare

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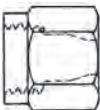


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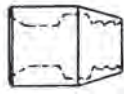


### Versil-Flare™ - flareless and flare

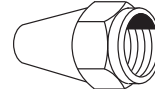
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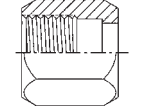
FF9605  
Page J-126



221000  
(former WH C5115x)  
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1290  
(former WH C5105x)  
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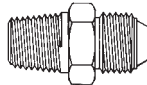
### Versil-Flare™ (Continued)

900605  
(former WH C5165x)  
Page J-127

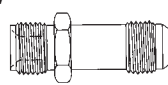


### Specials

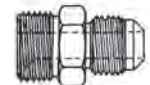
2004  
(former WH C92 series)  
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202124/FF1327  
(former WH C5880x)  
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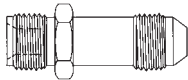


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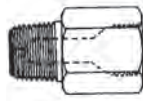


### Specials (Continued)

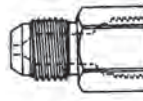
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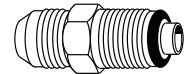
FF1980  
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FF1981  
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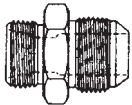


FF4184  
(former WH 41157x)  
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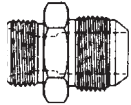


### Metric to SAE 37° flare

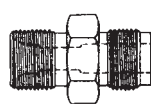
15.063  
(former WH MC5206x)  
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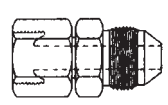
15.147  
(former WH MC5208x)  
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15.117  
(former WH MC5207x)  
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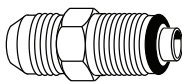


15.164  
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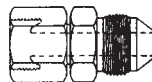


### Metric to SAE 37° flare (Continued)

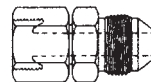
FF4215  
(former WH M41157x)  
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15.163  
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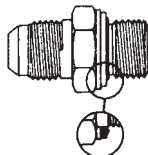


15.165  
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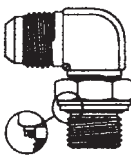


### Metric to SAE 37° flare (Continued)

GG108-NP  
(former WH MC5315x)  
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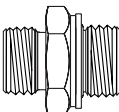


GG308-NP  
(former WH MC5515x)  
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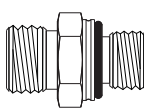


### ORS to metric

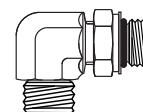
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FF2742T  
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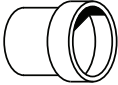
FF2744T  
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Items in parentheses are equivalent to former Weatherhead part series.

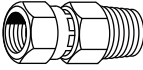
### Metric sleeve

FF91488  
(former WH  
C5165x\_M)  
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### Pipe to metric

FF4180  
(former WH  
M9700x)  
Page J-135

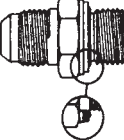


### BSPP to SAE 37° flare

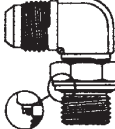
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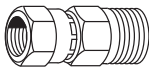
GG106-NP  
(former WH  
MB5315x)  
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GG306-NP  
(former WH  
MB5515x)  
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FF4179  
(former WH  
M9600x)  
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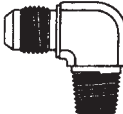


### BSPT to SAE 37° flare

GG110-NP  
(former WH  
MC5205x)  
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GG310-NP  
(former WH  
MC5405x)  
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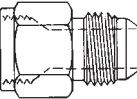


FF4181  
(former WH  
M9800x)  
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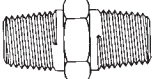
### JIS 30° to SAE 37° flare

FF2593  
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### Stainless steel - Pipe to pipe

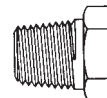
259-2083  
(former WH  
3081x)  
Page J-61




259-2081  
(former WH  
3121x)  
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259-2082  
(former WH  
3171x)  
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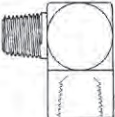


259-2096  
(former WH  
3321x)  
Page J-67

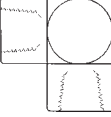


### Stainless steel - Pipe to pipe (Continued)

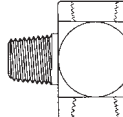
259-2089  
(former WH  
3421x)  
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259-2087  
(former WH  
3521x)  
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259-2091  
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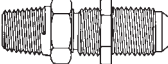


### Stainless steel - Pipe to SAE 37° flare

259-2021  
(former WH  
5217x)  
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259-2240  
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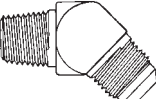


259-2022  
(former WH  
5267x)  
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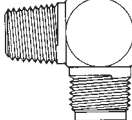


### Stainless steel - Pipe to SAE 37° flare (Continued)

259-2023  
(former WH  
5367x)  
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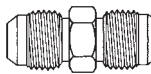


259-2024  
(former WH  
5417x)  
Page J-82

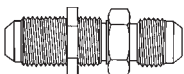


### Stainless steel - SAE 37° (JIC) flare union

259-2027  
(former WH  
5317x)  
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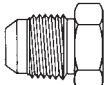


259-2041  
(former WH  
5337x)  
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### Stainless steel - SAE 37° (JIC) flare union (Continued)

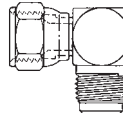
259-900599  
(former WH  
C5241x)  
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259-210292  
(former WH  
5141x)  
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259-2071  
(former WH  
5518x)  
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259-210212  
(former WH  
7936x)  
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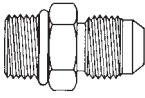
Items in parentheses are equivalent to former Weatherhead part series.

# Steel adapters

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
### Stainless steel - SAE O-Ring to SAE 37°

259-202702  
(former WH 5327x)  
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### Stainless steel - Versil-Flare™ flareless and flare

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(former WH 5117x)  
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259-900605  
(former WH 5177x)  
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### Ermeto

7165X  
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8165X  
Page J-144



7105X  
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8112X  
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### Ermeto (Continued)

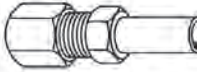
7129X  
Page J-145



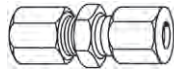
7229X  
Page J-145



7015X  
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7305X  
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### Ermeto (Continued)

7306X  
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7325X  
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7205X  
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7255X  
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### Ermeto (Continued)

7315X  
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7355X  
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7505X  
Page J-148




7405X  
Page J-149

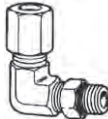


### Ermeto (Continued)

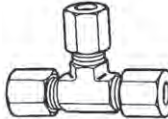
7455X  
Page J-149



7515X  
Page J-150

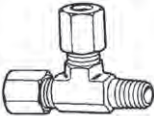


7705X  
Page J-150

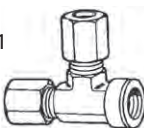


### Ermeto (Continued)

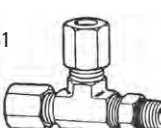
7755X  
Page J-150



7805X  
Page J-151



7716X  
Page J-151



### Ermeto (Continued)

7605X  
Page J-152

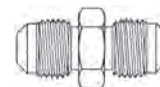


7655X  
Page J-152

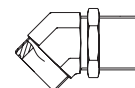


**Reminder – different types of adapters have different part number configurations.**

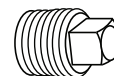
See Page J-27 for instructions and examples of how to read and order different part number configurations.



SAE



ORS



Pipe

Items in parentheses are equivalent to former Weatherhead part series.

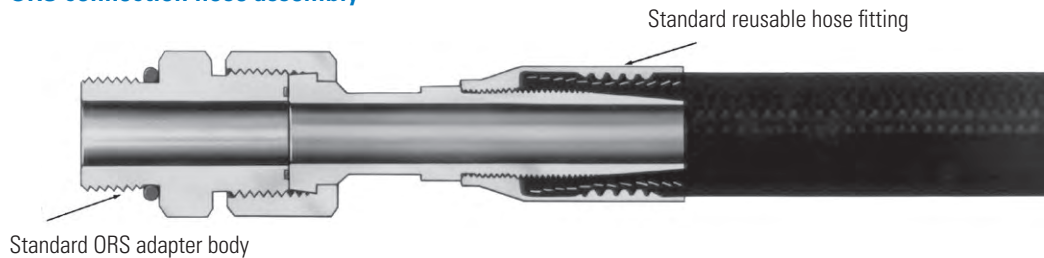
## ORS connections

The Eaton ORS™ connection is the universal answer to troublesome fluid leakage problems

### ORS connection hose assembly

The ORS connection can be used with flexible hydraulic hose, combining the reusability of the hose fitting and the ORS connection. The result is the ultimate reusable fitting.

#### ORS connection hose assembly



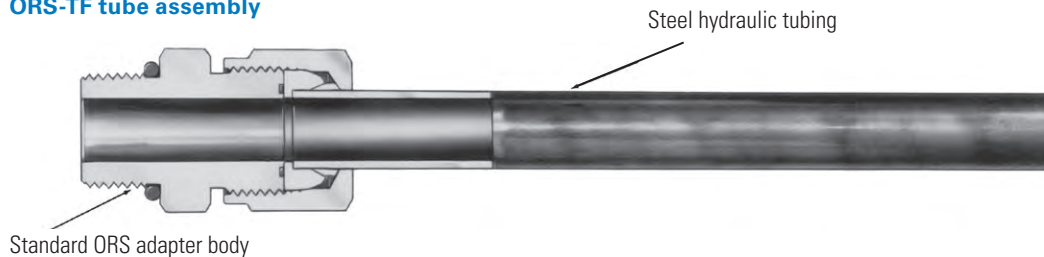
### ORS Tube assemblies

The ORS connection can be attached to hydraulic tubing to make a tube assembly.

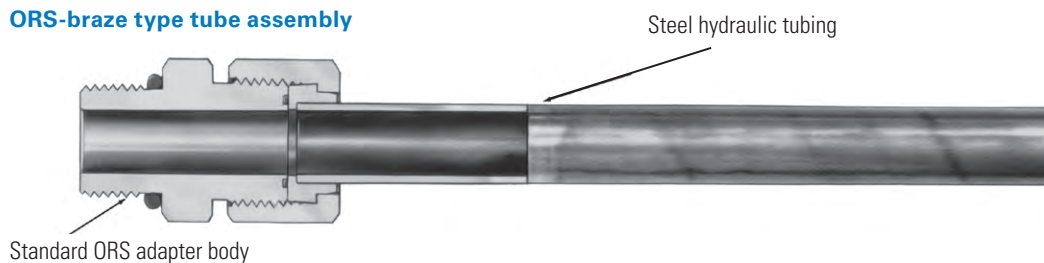
Two methods of attachment are available:

- ORS-TF:** The ORS female can be jointed directly to steel tubing with the ORS-TF (wedge-type) tube fitting, another Eaton innovation. The fitting becomes an integral part of your system at a fraction of the time and expense brazing requires. The versatility these options provides make ORS the only connection you need for high-pressure situations. It attaches to most types of fluid conveying lines, controlling most types of fluid, facing the toughest conditions.
- ORS-braze type:** The ORS component can be brazed to hydraulic tubing

#### ORS-TF tube assembly



#### ORS-braze type tube assembly



# Steel adapters

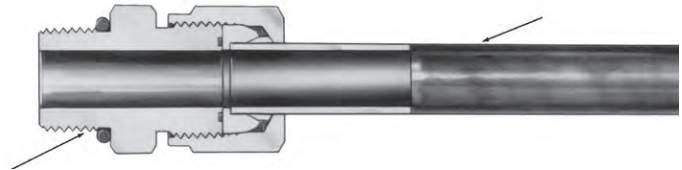
## ORS-TF tube fittings

J

### ORS-TF tube fittings

The ORS-TF tube fitting utilizing the ORS-TF nut, ferrule and sleeve can be joined directly to steel tubing to solve your fluid leakage problems. It does not require the time and expense of brazing and provides the advantage of repetitive reuse. It is a compression type fitting that works on a variety of tubing.

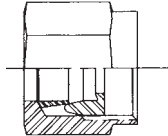
Keep it simple and clean with ORS



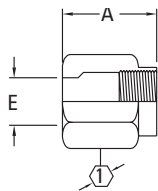
#### ORS-TF kit FF90146-(Size)

Includes:

- FC1851      ORS-TF Nut
- FF90102    ORS-TF Ferrule
- FF90103    ORS-TF Sleeve



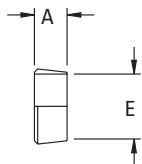
#### ORS-TF Nut



#### FC1851-(Dash size)

Dash size	Tube O. D.		Thread T1	A		E		①	
	mm	in		mm	in	mm	in	mm	in
04S	6,3	0.25	9/16-18	21,3	0.84	6,6	0.26	17,5	0.69
06S	9,6	0.38	11/16-16	23,6	0.93	9,6	0.38	20,6	0.81
08S	12,7	0.50	13/16-16	26,9	1.06	12,9	0.51	23,9	0.94
10S	16,0	0.63	1-14	28,7	1.13	16,0	0.63	28,4	1.12
12S	19,0	0.75	1 3/16-12	32,5	1.28	19,3	0.76	35,0	1.38
16S	25,4	1.00	1 7/16-12	34,3	1.35	25,6	1.01	41,1	1.62
20S	31,7	1.25	1 11/16-12	35,8	1.41	32,0	1.26	47,7	1.88
24S	38,1	1.50	2-12	37,3	1.47	38,3	1.51	57,1	2.25

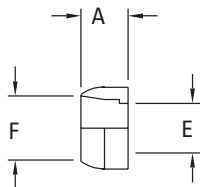
#### ORS-TF Ferrule



#### FF90102-(Dash size)

Dash size	Tube O. D.		A		E	
	mm	in	mm	in	mm	in
FF90102-04S	6,3	0.25	6,3	0.25	6,6	0.26
FF90102-06S	9,6	0.38	6,3	0.25	9,6	0.38
FF90102-08S	12,7	0.50	7,6	1.50	12,9	0.51
FF90102-10S	16,0	0.63	7,6	1.50	16,0	0.63
FF90102-12S	19,0	0.75	7,6	1.50	19,3	0.76
FF90102-16S	25,4	1.00	7,6	1.50	25,6	1.01
FF90102-20S	31,7	1.25	7,6	1.50	32,0	1.26
FF90102-24S	38,1	1.50	7,6	1.50	38,3	1.51

#### ORS-TF Sleeve



#### FF90103-(Dash size)

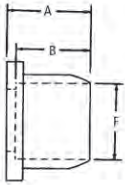
Dash size	Tube O. D.		A		E		F	
	mm	in	mm	in	mm	in	mm	in
FF90103-04S	6,3	0.25	8,1	0.32	4,3	0.17	6,3	0.25
FF90103-06S	9,6	0.38	8,6	0.34	6,6	0.26	9,6	0.38
FF90103-08S	12,7	0.50	9,4	0.37	9,6	0.38	12,7	0.50
FF90103-10S	16,0	0.63	10,2	0.40	12,2	0.48	16,0	0.63
FF90103-12S	19,0	0.75	11,2	0.44	15,5	0.61	19,3	0.76
FF90103-16S	25,4	1.00	12,7	0.50	20,6	0.81	25,4	1.00
FF90103-20S	31,7	1.25	14,2	0.56	26,7	1.05	32,0	1.26
FF90103-24S	38,1	1.50	15,7	0.62	32,0	1.26	38,3	1.51

Material: Corrosion-resistant plated steel.



## ORS braze type

## ORS-BR shoulder internal braze

**CAUTION**

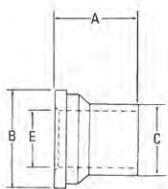
In applications exceeding +480°F (such as during brazing) order the oil-coated/ non-plated nut by using part number FC1857- Size-186. When plating is heated above +480°F, toxic gases are given off.

**FC1229-(Dash size)\*** (Ref. SAE 520115)  
(Formerly Weatherhead Series 4165x)

Dash size	Tube O. D.		A		B		F	
	mm	in	mm	in	mm	in	mm	in
0404S	6,4	0.25	7,4	0.29	6,4	0.25	6,4	0.25
0606S	9,7	0.38	7,4	0.29	6,4	0.25	9,7	0.38
0808S	12,7	0.50	10,7	0.42	9,7	0.38	12,7	0.50
1212S	19,0	0.75	11,2	0.44	9,7	0.38	19,0	0.75
1616S	25,4	1.00	14,2	0.56	12,7	0.50	25,4	1.00
2020S	31,8	1.25	14,2	0.56	12,7	0.50	31,8	1.25
2424S	38,1	1.50	14,2	0.56	12,7	0.50	38,1	1.50

\*Eaton braze counterbores are dimensioned for sized or emeryed tubing. If tubing is used as received, contact Eaton for appropriate part number.

## ORS-BR shoulder external braze/weld

**CAUTION**

In applications exceeding +480°F (such as during brazing) order the oil-coated/ non-plated nut by using part number FC1857- Size-186. When plating is heated above +480°F, toxic gases are given off.

**FC2325-(Dash size)\*** (Ref. SAE 520172)

Dash size	Tube O. D.		A		B		C		E	
	mm	in	mm	in	mm	in	mm	in	mm	in
0404S	6,4	0.25	22,3	0.88	12,7	0.50	6,4	0.25	4,3	0.17
0606S	9,7	0.38	24,4	0.96	15,7	0.62	9,7	0.38	6,6	0.26
0808S	12,7	0.50	31,8	1.25	18,8	0.74	12,7	0.50	9,1	0.36
1010S	16,0	0.63	34,0	1.34	23,4	0.92	15,7	0.62	11,4	0.45
1212S	19,0	0.75	36,6	1.44	27,7	1.09	19,0	0.75	14,0	0.55
1616S	25,4	1.00	41,4	1.63	34,0	1.34	25,4	1.00	19,8	0.78
2020S	31,8	1.25	41,4	1.63	40,4	1.59	31,8	1.25	26,7	1.05
2424S	38,1	1.50	41,4	1.63	48,5	1.91	38,1	1.50	32,0	1.26

\*Eaton braze counterbores are dimensioned for sized or emeryed tubing. If tubing is used as received, contact Eaton for appropriate part number.

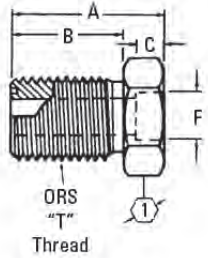
# Steel adapters

ORS braze type

J

## ORS braze type

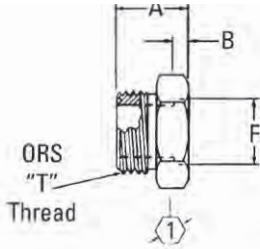
### ORS bulkhead male/braze adapter



**FF1922T(Dash size)\*** (Ref. SAE 520604)

Dash size	Tube O. D.		Thread T1	A		B		C		D		①
	mm	in		mm	in	mm	in	mm	in	mm	in	
0606S	9,7	0.38	11/16-16	43,7	1.72	34,0	1.34	6,4	0.25	9,7	0.38	1.00
1010S	16,0	0.63	1-14	53,6	2.11	40,6	1.60	9,7	0.38	15,7	0.62	1.31
1212S	19,0	0.75	1 3/16-12	55,4	2.18	41,6	1.64	9,7	0.38	19,0	0.75	1.50
1616S	25,4	1.00	1 7/16-12	61,7	2.43	42,2	1.66	12,7	0.50	25,4	1.00	1.75

### ORS/braze adapter

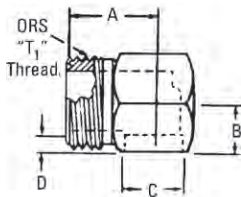


**FF1851T(Dash size)\*** (Ref. SAE 520104)

Dash size	Tube O. D.		Thread T1	A		B		F		①
	mm	in		mm	in	mm	in	mm	in	
0404S	6,4	0.25	9/16-18	19,8	0.78	6,4	0.25	6,4	0.25	0.62
0606S	9,7	0.38	11/16-16	21,0	0.83	6,4	0.25	9,7	0.38	0.75
0608S	9,7	0.38	11/16-16	24,1	0.95	9,7	0.38	12,7	0.50	0.75
0808S	12,7	0.50	13/16-16	25,8	1.01	9,5	0.38	12,8	0.50	0.88
1010S	16,0	0.63	1-14	28,5	1.12	9,7	0.38	15,7	0.62	1.06
1212S	19,0	0.75	1 3/16-12	30,7	1.21	9,7	0.38	19,0	0.75	1.25
1216S	19,0	0.75	1 3/16-12	36,8	1.45	12,7	0.50	25,4	1.00	1.50
1612S	25,4	1.00	1 7/16-12	30,7	1.21	9,7	0.38	19,0	0.75	1.50
1616S	25,4	1.00	1 7/16-12	37,3	1.47	12,7	0.50	25,4	1.00	1.50
1620S	25,4	1.00	1 7/16-12	37,3	1.47	12,7	0.50	31,8	1.25	1.75
2020S	31,8	1.25	1 11/16-12	37,3	1.47	12,7	0.50	31,8	1.25	1.75
2424S	38,1	1.50	2-12	37,3	1.47	12,7	0.50	38,1	1.50	2.12

\*Eaton braze counterbores are dimensioned for sized or emeryed tubing. If tubing is used as received, contact Eaton for appropriate part number.

### 90° ORS/braze port adapter

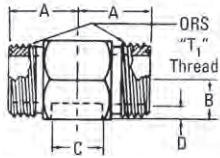


**FF1856T(Dash size)\*** (Ref. SAE 520204)

Dash size	Tube O. D.		Thread T1	A		B		C		D	
	mm	in		mm	in	mm	in	mm	in	mm	in
0606S	9,7	0.38	11/16-16	24,9	0.98	10,4	0.41	9,7	0.38	6,4	0.25
0808S	12,7	0.50	13/16-16	27,9	1.10	15,0	0.59	12,7	0.50	9,7	0.38
1010S	16,0	0.63	1-14	33,3	1.31	16,8	0.66	15,7	0.62	9,7	0.38
1212S	19,0	0.75	1 3/16-12	37,3	1.47	18,3	0.72	19,0	0.75	9,7	0.38
1616S	25,4	1.00	1 7/16-12	41,6	1.64	23,9	0.94	25,4	1.00	13,2	0.52
1820S	25,4	1.00	1 7/16-12	44,7	1.76	28,5	1.12	31,8	1.25	13,5	0.53
2424S	38,1	1.50	2-12	48,8	1.92	31,8	1.25	38,1	1.50	13,2	0.52

### ORS braze type

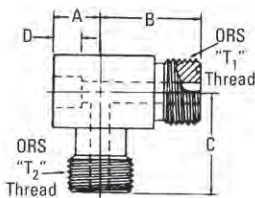
#### ORS/ORS/braze port adapter



**FF1858T(Dash size)\*** (Ref. SAE 520472)

Dash size	Tube O. D.		Thread T1	A		B		C		D	
	mm	in		mm	in	mm	in	mm	in	mm	in
0606S	9,7	0.38	11/16-16	24,9	0.98	9,9	0.39	9,7	0.38	6,4	0.25
1616S	25,4	1.00	1 7/16-12	41,6	1.64	23,1	0.91	25,4	1.00	13,2	0.52

#### ORS/braze/ORS port adapter

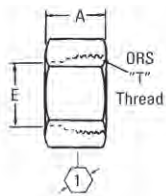


**FF2115T(Dash size)\*** (Ref. SAE 520472)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		C		D	
	mm	in			mm	in	mm	in	mm	in	mm	in
0606S	9,7	0.38	11/16-16	11/16-16	10,4	0.41	24,9	0.98	24,9	0.98	6,4	0.25

\*Eaton braze counterbores are dimensioned for sized or emeryed tubing. If tubing is used as received, contact Eaton for appropriate part number.

#### ORS-BR nut



**FC2326-(Dash size)** (Ref. SAE 520110)  
(Formerly Weatherhead Series 4105x)

Dash size	Tube O. D.		Thread T1	A		E		①	
	mm	in		mm	in	mm	in		
04S	6,4	0.25	9/16-18	14,7	0.58	10,4	0.41	17,5	0.69
06S	9,7	0.38	11/16-16	17,0	0.67	13,5	0.53	20,6	0.81
08S	12,7	0.50	13/16-16	21,0	0.83	16,5	0.65	23,9	0.94
10S	16,0	0.63	1-14	23,4	0.92	21,0	0.83	28,5	1.12
12S	19,0	0.75	1 3/16-12	25,9	1.02	24,1	0.95	35,1	1.38
16S	25,4	1.00	1 7/16-12	27,9	1.10	29,0	1.14	41,1	1.62
20S	31,8	1.25	1 11/16-12	27,9	1.10	36,1	1.42	47,7	1.88
24S	38,1	1.50	2-12	27,9	1.10	43,9	1.73	57,2	2.25

**CAUTION**

In applications exceeding +480°F (such as during brazing) order the oil-coated/non-plated nut by using part number FC1857- Size-186. When plating is heated above +480°F, toxic gases are given off.

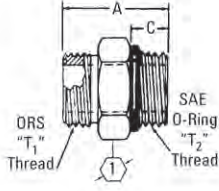
# Steel adapters

ORS/SAE O-Ring boss

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## ORS/SAE O-Ring boss

ORS/SAE O-Ring boss adapter

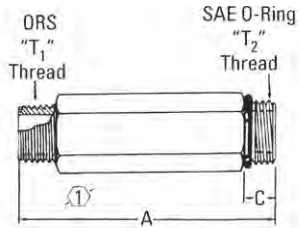


**FF1852T(Dash size)** (Ref. SAE 520120)  
(Formerly Weatherhead Series 4315x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		C		①	
	mm	in			mm	in	mm	in	mm	in
0403S	6,4	0.25	9/16-18	3/8-24	27,2	1.07	9,4	0.37	15,7	0.62
0404S	6,4	0.25	9/16-18	7/16-20	28,7	1.13	10,9	0.43	15,7	0.62
0405S	6,4	0.25	9/16-18	1/2-20	28,7	1.13	10,9	0.43	15,7	0.62
0406S	6,4	0.25	9/16-18	9/16-18	30,5	1.20	11,9	0.47	17,5	0.69
0408S	6,4	0.25	9/16-18	3/4-16	33,6	1.32	14,0	0.55	22,4	0.88
0603S	9,7	0.38	11/16-16	3/8-24	32,5	1.28	9,4	0.37	19,1	0.75
0604S	9,7	0.38	11/16-16	7/16-20	34,0	1.34	10,9	0.43	19,1	0.75
0605S	9,7	0.38	11/16-16	1/2-20	31,0	1.22	10,9	0.43	19,1	0.75
0606S	9,7	0.38	11/16-16	9/16-18	32,0	1.26	11,9	0.47	19,1	0.75
0608S	9,7	0.38	11/16-16	3/4-16	35,1	1.38	14,0	0.55	22,4	0.88
0610S	9,7	0.38	11/16-16	7/8-14	38,9	1.53	16,0	0.63	25,4	1.00
0612S	9,7	0.38	11/16-16	1 1/16-12	42,9	1.69	18,5	0.73	31,8	1.25
0616S	9,7	0.38	11/16-16	1 5/16-12	43,9	1.73	18,5	0.73	38,1	1.50
0806S	12,7	0.50	13/16-16	9/16-18	37,6	1.48	11,9	0.47	22,4	0.88
0808S	12,7	0.50	13/16-16	3/4-16	36,6	1.44	14,0	0.55	22,4	0.88
0810S	12,7	0.50	13/16-16	7/8-14	40,4	1.59	16,0	0.63	25,4	1.00
0812S	12,7	0.50	13/16-16	1 1/16-12	44,5	1.75	18,5	0.73	31,8	1.25
0814S	12,7	0.50	13/16-16	1 3/16-12	44,5	1.75	18,5	0.73	35,1	1.38
0816S	12,7	0.50	13/16-16	1 5/16-12	45,5	1.79	18,5	0.73	38,1	1.50
1008S	16,0	0.63	1-14	3/4-16	45,2	1.78	14,0	0.55	26,9	1.06
1010S	16,0	0.63	1-14	7/8-14	43,2	1.70	16,0	0.63	26,9	1.06
1012S	16,0	0.63	1-14	1 1/16-12	47,2	1.86	18,5	0.73	31,8	1.25
1206S	19,0	0.75	1 3/16-12	9/16-18	45,0	1.77	11,9	0.47	31,8	1.25
1208S	19,0	0.75	1 3/16-12	3/4-16	48,5	1.91	14,0	0.55	31,8	1.25
1210S	19,0	0.75	1 3/16-12	7/8-14	50,5	1.99	16,0	0.63	31,8	1.25
1212S	19,0	0.75	1 3/16-12	1 1/16-12	48,8	1.92	18,5	0.73	31,8	1.25
1214S	19,0	0.75	1 3/16-12	1 3/16-12	48,8	1.92	18,5	0.73	35,1	1.38
1216S	19,0	0.75	1 3/16-12	1 5/16-12	49,8	1.96	18,5	0.73	38,1	1.50
1608S	25,4	1.00	1 7/16-12	3/4-16	49,8	1.96	14,0	0.55	38,1	1.50
1610S	25,4	1.00	1 7/16-12	7/8-14	51,8	2.04	16,0	0.63	38,1	1.50
1612S	25,4	1.00	1 7/16-12	1 1/16-12	54,4	2.14	18,5	0.73	38,1	1.50
1614S	25,4	1.00	1 7/16-12	1 3/16-12	50,3	1.98	18,5	0.73	38,1	1.50
1616S	25,4	1.00	1 7/16-12	1 5/16-12	50,3	1.98	18,5	0.73	38,1	1.50
1620S	25,4	1.00	1 7/16-12	1 5/8-12	52,3	2.06	18,5	0.73	47,8	1.88
2016S	31,8	1.25	1 11/16-12	1 5/16-12	57,9	2.28	18,5	0.73	44,5	1.75
2020S	31,8	1.25	1 11/16-12	1 5/8-12	52,3	2.06	18,5	0.73	47,8	1.88
2024S	31,8	1.25	1 11/16-12	1 7/8-12	54,1	2.13	18,5	0.73	53,8	2.12
2420S	38,1	1.50	2-12	1 5/8-12	59,7	2.35	18,5	0.73	53,8	2.12
2424S	38,1	1.50	2-12	1 7/8-12	54,1	2.13	18,5	0.73	53,8	2.12

### ORS/SAE O-Ring boss

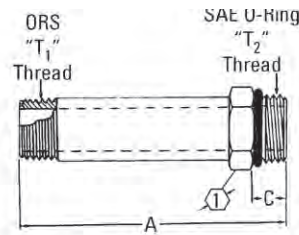
#### ORS/SAE O-Ring boss adapter



**FF2211T(Dash size)** (Ref. SAE 520122)

Dash size	Tube O. D.		Thread T1	Thread T2	A		C		①
	mm	in			mm	in	mm	in	
0808S	12,7	0.50	13/16-16	3/4-16	68,1	2.68	14,0	0.55	22,3 0.88
1212S	19,0	0.75	1 3/16-12	1 1/16-12	72,9	2.87	18,5	0.73	31,8 1.25
1616S	25,4	1.00	1 7/16-12	1 5/16-12	104,5	4.11	18,5	0.73	38,1 1.50

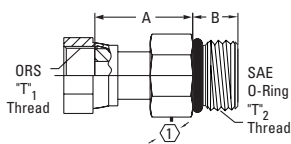
#### ORS/SAE O-Ring boss long adapter



**FF1854T(Dash size)** (Ref. SAE 520122)  
(Formerly Weatherhead Series 4316x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		C		①
	mm	in			mm	in	mm	in	
0404S	6,4	0.25	9/16-18	7/16-20	52,6	2.07	10,9	0.43	15,7 0.62
0606S	9,7	0.38	11/16-16	9/16-18	57,6	2.27	11,9	0.47	19,0 0.75
0808S	12,7	0.50	13/16-16	3/4-16	67,8	2.67	14,0	0.55	22,3 0.88
1010S	16,0	0.63	1-14	7/8-14	79,5	3.13	16,0	0.63	26,9 1.06
1212S	19,0	0.75	1 3/16-12	1 1/16-12	95,2	3.75	18,5	0.73	31,8 1.25
1616S	25,4	1.00	1 7/16-12	1 5/16-12	104,9	4.13	18,5	0.73	38,1 1.50
2020S	31,8	1.25	1 11/16-12	1 5/8-12	120,6	4.75	18,5	0.73	47,7 1.88
2424S	38,1	1.50	2-12	1 7/8-12	133,6	5.26	18,5	0.73	53,9 2.12

#### ORS female swivel/SAE O-Ring boss adapter



**FF2130T(Dash size)** (Ref. SAE 520181)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		①
	mm	in			mm	in	mm	in	
0606S	9,7	0.38	11/16-16	9/16-18	28,2	1.11	11,9	0.47	17,5 0.69
0808S	12,7	0.50	13/16-16	3/4-16	35,3	1.39	14,0	0.55	22,3 0.88
1212S	19,0	0.75	1 3/16-12	1 1/16-12	41,1	1.62	18,5	0.73	31,8 1.25
1616S	25,4	1.00	1 7/16-12	1 5/16-12	49,0	1.93	18,5	0.73	38,1 1.50
2020S	31,8	1.25	1 11/16-12	1 5/8-12	47,2	1.86	18,5	0.73	47,7 1.88

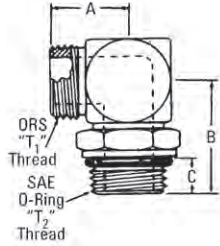
# Steel adapters

ORS/SAE O-Ring boss

J

## ORS/SAE O-Ring boss

90° ORS/SAE O-Ring boss (adj.) adapter

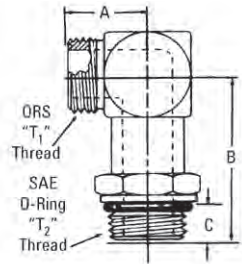


**FF1868T(Dash size)** (Ref. SAE 520220)  
(Formerly Weatherhead Series 4515x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
0403S	6,4	0.25	9/16-18	3/8-24	21,6	0.85	30,2	1.19	9,1	0.36
0404S	6,4	0.25	9/16-18	7/16-20	21,6	0.85	32,8	1.29	10,4	0.41
0405S	6,4	0.25	9/16-18	1/2-20	22,4	0.88	34,5	1.36	10,4	0.41
0406S	6,4	0.25	9/16-18	9/16-18	23,4	0.92	36,8	1.45	11,7	0.46
0408S	6,4	0.25	9/16-18	3/4-16	24,6	0.97	40,6	1.60	13,2	0.52
0604S	9,7	0.38	11/16-16	7/16-20	24,9	0.98	34,8	1.37	10,4	0.41
0605S	9,7	0.38	11/16-16	1/2-20	24,9	0.98	34,8	1.37	10,4	0.41
0606S	9,7	0.38	11/16-16	9/16-18	24,9	0.98	36,8	1.45	11,7	0.46
0608S	9,7	0.38	11/16-16	3/4-16	26,4	1.04	40,6	1.60	13,2	0.52
0610S	9,7	0.38	11/16-16	7/8-14	29,2	1.15	50,0	1.97	15,7	0.62
0612S	9,7	0.38	11/16-16	1 1/16-12	31,8	1.25	55,1	2.17	18,0	0.71
0806S	12,7	0.50	13/16-16	9/16-18	28,2	1.11	36,6	1.44	11,7	0.46
0808S	12,7	0.50	13/16-16	3/4-16	27,9	1.10	40,6	1.60	13,2	0.52
0810S	12,7	0.50	13/16-16	7/8-14	30,7	1.21	50,0	1.97	15,7	0.62
0812S	12,7	0.50	13/16-16	1 1/16-12	33,5	1.32	55,1	2.17	18,0	0.71
1008S	16,0	0.63	1-14	3/4-16	33,3	1.31	45,7	1.80	13,2	0.52
1010S	16,0	0.63	1-14	7/8-14	33,3	1.31	50,0	1.97	15,7	0.62
1012S	16,0	0.63	1-14	1 1/16-12	35,8	1.41	55,1	2.17	18,0	0.71
1208S	19,0	0.75	1 3/16-12	3/4-16	37,3	1.47	46,7	1.84	13,2	0.52
1210S	19,0	0.75	1 3/16-12	1 3/16-12	37,3	1.47	51,1	2.01	15,7	0.62
1212S	19,0	0.75	1 3/16-12	1 1/16-12	37,3	1.47	55,1	2.17	18,0	0.71
1214S	19,0	0.75	1 3/16-12	1 3/16-12	37,3	1.47	55,1	2.17	18,0	0.71
1216S	19,0	0.75	1 3/16-12	1 5/16-12	41,1	1.62	59,7	2.35	18,0	0.71
1612S	25,4	1.00	1 7/16-12	1 1/16-12	41,7	1.64	58,9	2.32	18,0	0.71
1614S	25,4	1.00	1 7/16-12	1 3/16-12	41,7	1.64	58,9	2.32	18,0	0.71
1616S	25,4	1.00	1 7/16-12	1 5/16-12	41,7	1.64	59,7	2.35	18,0	0.71
1620S	25,4	1.00	1 7/16-12	1 5/8-12	44,7	1.76	62,2	2.45	18,0	0.71
2012S	31,8	1.25	1 11/16-12	1 1/16-12	44,7	1.76	61,5	2.42	18,0	0.71
2016S	31,8	1.25	1 11/16-12	1 5/16-12	44,7	1.76	61,5	2.42	18,0	0.71
2020S	31,8	1.25	1 11/16-12	1 5/8-12	44,7	1.76	62,2	2.45	18,0	0.71
2420S	38,1	1.50	2-12	1 5/8-12	48,8	1.92	65,8	2.59	18,0	0.71
2424S	38,1	1.50	2-12	1 7/8-12	48,8	1.92	65,8	2.59	18,0	0.71

### ORS/SAE O-Ring boss

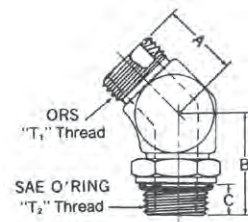
#### 90° ORS/SAE O-Ring boss (adj.) long adapter



**FF2227T(Dash size)** (Ref. SAE 521520)  
(Formerly Weatherhead Series 4515x-L)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
0404S	6,4	0.25	9/16-18	7/16-20	21,6	0.85	56,6	2.23	10,9	0.43
0606S	9,7	0.38	11/16-16	9/16-18	24,9	0.98	66,3	2.61	11,9	0.47
0808S	12,7	0.50	13/16-16	3/4-16	27,9	1.10	74,9	2.95	14,0	0.55
1010S	16,0	0.63	1-14	7/8-14	33,3	1.31	89,1	3.51	16,0	0.63
1212S	19,0	0.75	1 3/16-12	1 1/16-12	37,3	1.47	100,8	3.97	18,5	0.73
1616S	25,4	1.00	1 7/16-12	1 5/16-12	41,6	1.64	114,5	4.51	18,5	0.73
2020S	31,8	1.25	1 11/16-12	1 5/8-12	44,7	1.76	126,5	4.98	18,5	0.73

#### 45° ORS/SAE O-Ring boss (adj.) adapter



**FF2068T(Dash size)** (Ref. SAE 520320)  
(Formerly Weatherhead Series 4365x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
0404S	6,4	0.25	9/16-18	7/16-20	16,0	0.63	30,0	1.18	10,4	0.41
0406S	6,4	0.25	9/16-18	9/16-18	17,3	0.68	33,0	1.30	11,7	0.46
0408S	6,4	0.25	9/16-18	3/4-16	17,0	0.67	36,3	1.43	13,2	0.52
0604S	9,7	0.38	11/16-16	7/16-20	18,8	0.74	31,0	1.22	10,4	0.41
0606S	9,7	0.38	11/16-16	9/16-18	18,8	0.74	33,0	1.30	11,7	0.46
0608S	9,7	0.38	11/16-16	3/4-16	18,8	0.74	36,3	1.43	13,2	0.52
0806S	12,7	0.50	13/16-16	9/16-18	20,3	0.80	32,3	1.27	11,7	0.46
0808S	12,7	0.50	13/16-16	3/4-16	20,3	0.80	36,3	1.43	13,2	0.52
0810S	12,7	0.50	13/16-16	7/8-14	20,8	0.82	44,7	1.76	15,7	0.62
0816S	12,7	0.50	13/16-16	1 5/16-12	25,7	1.01	52,3	2.06	18,0	0.71
1008S	16,0	0.63	1-14	3/4-16	23,4	0.92	40,4	1.59	13,2	0.52
1010S	16,0	0.63	1-14	7/8-14	23,4	0.92	44,7	1.76	15,7	0.62
1012S	16,0	0.63	1-14	1 1/16-12	24,4	0.96	50,0	1.97	18,0	0.71
1210S	19,0	0.75	1 3/16-12	7/8-14	25,9	1.02	46,0	1.81	15,7	0.62
1212S	19,0	0.75	1 3/16-12	1 1/16-12	25,9	1.02	50,0	1.97	18,0	0.71
1216S	19,0	0.75	1 3/16-12	1 5/16-12	29,5	1.16	52,3	2.06	18,0	0.71
1612S	25,4	1.00	1 7/16-12	1 1/16-12	30,0	1.18	51,6	2.03	18,0	0.71
1616S	25,4	1.00	1 7/16-12	1 5/16-12	30,0	1.18	52,3	2.06	18,0	0.71
1620S	25,4	1.00	1 7/16-12	1 5/8-12	32,0	1.26	53,6	2.11	18,0	0.71
2020S	31,8	1.25	1 11/16-12	1 5/8-12	32,0	1.26	53,6	2.11	18,0	0.71
2424S	38,1	1.50	2-12	1 7/8-12	36,8	1.45	53,6	2.11	18,0	0.71

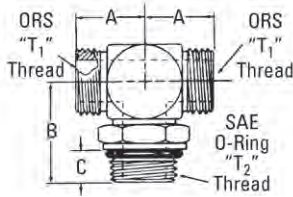
# Steel adapters

ORS/SAE O-Ring boss

J

## ORS/SAE O-Ring boss

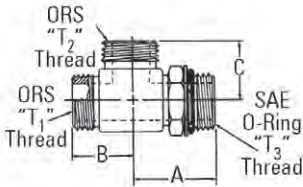
### ORS/ORS/SAE O-Ring boss (adj.) adapter



**FF1861T(Dash size)** (Ref. SAE 520429)  
(Formerly Weatherhead Series 4715x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
0404S	6,4	0.25	9/16-18	7/16-20	21,6	0.85	32,8	1.29	10,9	0.43
0606S	9,7	0.38	11/16-16	9/16-18	24,9	0.98	36,8	1.45	11,9	0.47
0608S	9,7	0.38	11/16-16	3/4-16	26,4	1.04	40,6	1.60	14,0	0.55
0806S	12,7	0.50	13/16-16	9/16-16	27,9	1.10	50,0	1.97	14,0	0.55
0808S	16,0	0.63	1-14	3/4-16	36,6	1.44	50,0	1.97	16,0	0.63
1010S	19,0	0.75	1 3/16-12	7/8-14	37,3	1.47	55,2	2.17	16,0	0.63
1210S	19,0	0.75	1 3/16-12	7/8-14	41,1	1.62	59,7	2.35	18,5	0.73
1212S	19,0	0.75	1 3/16-12	1 5/16-12	41,6	1.64	59,7	2.35	18,5	0.73
1216S	25,4	1.00	1 7/16-12	1 5/16-12	41,6	1.64	59,7	2.35	18,5	0.73
1616S	25,4	1.00	1 7/16-12	1 5/16-12	41,6	1.64	59,7	2.35	18,0	0.71
2020S	31,8	1.25	1 11/16-12	1 5/8-12	44,7	1.76	62,2	2.45	18,5	0.73

### ORS/ORS/SAE O-Ring boss (adj.) adapter



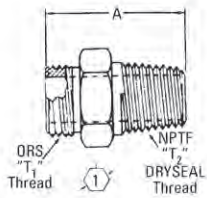
**FF1865T(Dash size)** (Ref. SAE 520428)  
(Formerly Weatherhead Series 4716x)

Dash size	Tube O. D.		Thread T1	Thread T2	Thread T3	A		B		C	
	mm	in				mm	in	mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	7/16-20	32,8	1.29	21,6	0.85	21,6	0.85
0406S	6,4	0.25	9/16-18	9/16-18	9/16-18	36,8	1.45	23,4	0.92	23,4	0.92
0604S	9,7	0.38	11/16-16	11/16-16	7/16-20	34,8	1.37	29,7	1.17	24,9	0.98
0606S	9,7	0.38	11/16-16	11/16-16	9/16-18	36,8	1.45	24,9	0.98	24,9	0.98
0806S	12,7	0.50	13/16-16	13/16-16	9/16-18	36,6	1.44	27,9	1.10	27,9	1.10
0808S	12,7	0.50	13/16-16	13/16-16	3/4-16	40,6	1.60	27,9	1.10	27,9	1.10
0812S	12,7	0.50	13/16-16	13/16-16	1 1/16-12	55,1	2.17	33,5	1.32	33,5	1.32
1010S	16,0	0.63	1-14	1-14	7/8-14	50,0	1.97	33,3	1.31	33,3	1.31
1012S	16,0	0.63	1-14	1-14	1 1/16-12	55,1	2.17	35,8	1.41	35,8	1.41
1212S	19,0	0.75	1 3/16-12	1 3/16-12	1 1/16-12	55,1	2.17	37,3	1.47	37,3	1.47
1220S	19,0	0.75	1 3/16-12	1 3/16-12	1 5/8-12	62,2	2.45	44,2	1.74	44,2	1.74
1616S	25,4	1.00	1 7/16-12	1 7/16-12	1 5/16-12	59,7	2.35	41,7	1.64	41,7	1.64
2020S	31,8	1.25	1 11/16-12	1 11/16-12	1 5/8-12	62,2	2.45	44,7	1.76	44,7	1.76
2424S	38,1	1.50	2-12	2-12	1 7/8-12	65,8	2.59	48,8	1.92	48,8	1.92



## ORS/NPTF

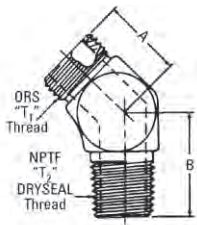
## ORS/male NPTF adapter



**FF2031T(Dash size)** (Ref. SAE 520102)  
(Formerly Weatherhead Series 4205x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		①	
	mm	in			mm	in	mm	in
0402S	6,4	0.25	9/16-18	1/8-27	26,2	1.03	15,7	0.62
0404S	6,4	0.25	9/16-18	1/4-18	31,5	1.24	15,7	0.62
0406S	6,4	0.25	9/16-18	3/8-18	31,5	1.24	19,1	0.75
0408S	6,4	0.25	9/16-18	1/2-14	37,8	1.49	22,4	0.88
0602S	9,7	0.38	11/16-16	1/8-27	28,4	1.12	19,1	0.75
0604S	9,7	0.38	11/16-16	1/4-18	33,0	1.30	19,1	0.75
0606S	9,7	0.38	11/16-16	3/8-18	33,0	1.30	19,1	0.75
0608S	9,7	0.38	11/16-16	1/2-14	39,4	1.55	22,4	0.88
0804S	12,7	0.50	13/16-16	1/4-18	34,5	1.36	22,4	0.88
0806S	12,7	0.50	13/16-16	3/8-18	34,5	1.36	22,4	0.88
0808S	12,7	0.50	13/16-16	1/2-14	40,9	1.61	22,4	0.88
0812S	12,7	0.50	13/16-16	3/4-14	42,7	1.68	26,9	1.06
1008S	16,0	0.63	1-14	1/2-14	43,7	1.72	26,9	1.06
1012S	16,0	0.63	1-14	3/4-14	45,2	1.78	26,9	1.06
1208S	19,0	0.75	1 3/16-12	1/2-14	46,7	1.84	31,8	1.25
1212S	19,0	0.75	1 3/16-12	3/4-14	46,7	1.84	31,8	1.25
1216S	19,0	0.75	1 3/16-12	1-11 1/2	51,6	2.03	35,1	1.38
1612S	25,4	1.00	1 7/16-12	3/4-14	47,2	1.86	38,1	1.50
1616S	25,4	1.00	1 7/16-12	1-11 1/2	52,1	2.05	38,1	1.50
1620S	25,4	1.00	1 7/16-12	1 1/4-11 1/2	54,9	2.16	42,9	1.69
2016S	31,8	1.25	1 11/16-12	1-11 1/2	54,1	2.13	44,5	1.75
2020S	31,8	1.25	1 11/16-12	1 1/4-11 1/2	54,9	2.16	44,5	1.75
2424S	38,1	1.50	2-12	1 1/2-11 1/2	57,4	2.26	53,8	2.12

## 45° ORS/male NPTF adapter



**FF2093T(Dash size)** (Ref. SAE 520302)  
(Formerly Weatherhead Series 4355x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0402S	6,4	0.25	9/16-18	1/8-27	16,0	0.63	17,3	0.68
0404S	6,4	0.25	9/16-18	1/4-18	17,3	0.68	23,6	0.93
0604S	9,7	0.38	11/16-16	1/4-18	18,8	0.74	23,6	0.93
0606S	9,7	0.38	11/16-16	3/8-18	18,8	0.74	26,4	1.04
0806S	12,7	0.50	13/16-16	3/8-18	20,3	0.80	26,4	1.04
0808S	12,7	0.50	13/16-16	1/2-14	20,8	0.82	30,5	1.20
1008S	16,0	0.63	1-14	1/2-14	23,4	0.92	30,5	1.20
1212S	19,0	0.75	1 3/16-12	3/4-14	25,9	1.02	31,2	1.23
1616S	25,4	1.00	1 7/16-12	1-11 1/2	30,0	1.18	38,3	1.51
2020S	31,8	1.25	1 11/16-12	1 1/4-11 1/2	32,0	1.26	42,9	1.69
2424S	38,1	1.50	2-12	1 1/2-11 1/2	36,8	1.45	45,7	1.80

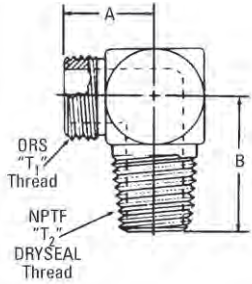
# Steel adapters

ORS/NPTF

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## ORS/NPTF

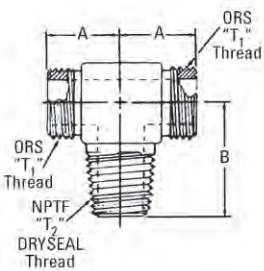
### 90° ORS/male NPTF adapter



**FF2032T(Dash size)** (Ref. SAE 520202)  
(Formerly Weatherhead Series 4405x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0402S	6,4	0.25	9/16-18	1/8-27	21,6	0.85	21,3	0.84
0404S	6,4	0.25	9/16-18	1/4-18	23,4	0.92	29,2	1.15
0406S	6,4	0.25	9/16-18	3/8-18	24,4	0.96	31,8	1.25
0602S	9,7	0.38	11/16-16	1/8-27	24,9	0.98	24,4	0.96
0604S	9,7	0.38	11/16-16	1/4-18	24,9	0.98	29,2	1.15
0606S	9,7	0.38	11/16-16	3/8-18	26,4	1.04	31,8	1.25
0608S	9,7	0.38	11/16-16	1/2-14	29,2	1.15	38,9	1.53
0802S	12,7	0.50	13/16-16	1/8-27	27,9	1.10	22,1	0.87
0806S	12,7	0.50	13/16-16	3/8-18	27,9	1.10	31,8	1.25
0808S	12,7	0.50	13/16-16	1/2-14	30,7	1.21	38,9	1.53
0812S	12,7	0.50	13/16-16	3/4-14	33,5	1.32	41,9	1.65
1008S	16,0	0.63	1-14	1/2-14	33,3	1.31	38,9	1.53
1012S	16,0	0.63	1-14	3/4-14	35,8	1.41	41,9	1.65
1208S	19,0	0.75	1 3/16-12	1/2-14	37,3	1.47	41,9	1.65
1212S	19,0	0.75	1 3/16-12	3/4-14	37,3	1.47	41,9	1.65
1216S	19,0	0.75	1 3/16-12	1-11 1/2	41,1	1.62	51,6	2.03
1612S	25,4	1.00	1 7/16-12	3/4-14	41,7	1.64	46,7	1.84
1616S	25,4	1.00	1 7/16-12	1-11 1/2	41,7	1.64	51,6	2.03
2016S	31,8	1.25	1 11/16-12	1-11 1/2	44,7	1.76	60,5	2.38
2020S	31,8	1.25	1 11/16-12	1 1/4-11 1/2	44,7	1.76	61,2	2.41
2424S	38,1	1.50	2-12	1 1/2-11 1/2	48,8	1.92	68,6	2.70

### ORS/ORS/male NPTF adapter

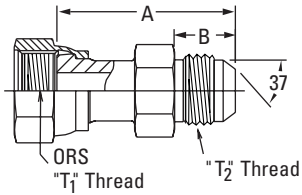


**FF2001T(Dash size)** (Ref. SAE 520425)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0404S	6,4	0.25	9/16-18	1/4-18	23,4	0.92	27,4	1.08
0604S	9,7	0.38	11/16-16	1/4-18	24,9	0.98	27,4	1.08
0606S	9,7	0.38	11/16-16	3/8-18	26,4	1.04	30,7	1.21
0806S	12,7	0.50	13/16-16	3/8-18	27,9	1.10	30,7	1.21
0808S	12,7	0.50	13/16-16	1/2-14	30,7	1.21	38,9	1.53
1212S	19,0	0.75	1 3/16-12	3/4-14	37,3	1.47	41,9	1.65
1616S	25,4	1.00	1 7/16-12	1-11 1/2	41,6	1.64	51,6	2.03

### ORS to SAE 37° flare

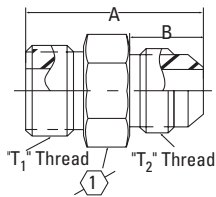
#### ORS female swivel/SAE 37° male flare



**FF2209T(Dash size)**  
(Formerly Weatherhead Series 4213x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0404S	6,4	0.25	9/16-18	7/16-20	38,1	1.50	14,0	1.55
0412S	6,4	0.25	9/16-18	1 1/16-12	50,5	1.99	21,8	0.86
0606S	9,7	0.38	11/16-16	9/16-18	41,4	1.62	14,2	0.56
0612S	9,7	0.38	11/16-16	1 1/16-12	52,6	2.07	21,8	0.86
0808S	12,7	0.50	13/16-16	3/4-16	51,6	2.03	16,8	0.66
0812S	12,7	0.50	13/16-16	1 1/16-12	57,2	2.25	21,8	0.86
1010S	16,0	0.63	1-14	7/8-14	53,6	2.11	19,3	0.76
1212S	19,0	0.75	1 3/16-12	1 1/16-12	62,0	2.44	21,8	0.86
1616S	25,4	1.00	1 7/16-12	1 5/16-12	71,6	2.82	23,1	0.91
2016S	31,8	1.25	1 11/16-12	1 5/16-12	73,1	2.88	23,1	0.91
2020S	31,8	1.35	1 11/16-12	1 5/8-12	76,7	3.02	24,3	0.96

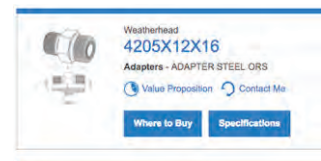
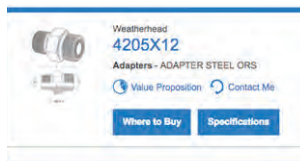
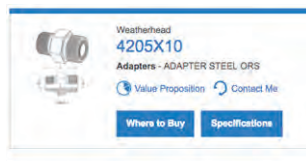
#### Male ORS/SAE 37° male flare



**FF2313T(Dash size)**

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		①
	mm	in			mm	in	mm	in	
0808S	12,7	0.50	13/16-16	3/4-16	39,1	1.54	16,8	0.66	22,3 0.88

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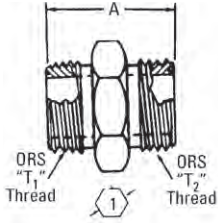
# Steel adapters

ORS/ORS

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## ORS/ORS

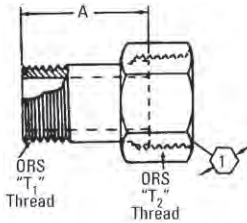
### ORS/ORS adapter



**FF2000T(Dash size)** (Ref. SAE 520101)  
(Formerly Weatherhead Series 4305x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		①	
	mm	in			mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	27,4	1.08	15,7	0.62
0604S	9,7	0.38	11/16-16	9/16-18	29,7	1.17	19,0	0.75
0606S	9,7	0.38	11/16-16	11/16-16	31,0	1.22	19,0	0.75
0806S	12,7	0.50	13/16-16	11/16-16	33,8	1.33	22,3	0.88
0808S	12,7	0.50	13/16-16	13/16-16	35,3	1.39	22,3	0.88
1008S	16,0	0.63	1-14	13/16-16	39,9	1.57	26,9	1.06
1010S	16,0	0.63	1-14	1-14	42,7	1.68	26,9	1.06
1208S	19,0	0.75	1 3/16-12	13/16-16	42,9	1.69	31,8	1.25
1210S	19,0	0.75	1 3/16-12	1-14	45,7	1.80	31,8	1.25
1212S	19,0	0.75	1 3/16-12	1 3/16-12	47,2	1.86	31,8	1.25
1612S	25,4	1.00	1 7/16-12	1 3/16-12	48,8	1.92	38,1	1.50
1616S	25,4	1.00	1 7/16-12	1 7/16-12	49,3	1.94	38,1	1.50
2020S	31,8	1.25	1 11/16-12	1 11/16-12	51,3	2.02	44,4	1.75
2424S	38,1	1.50	2-12	2-12	53,1	2.09	53,9	2.12

### ORS/ORS reducer adapter



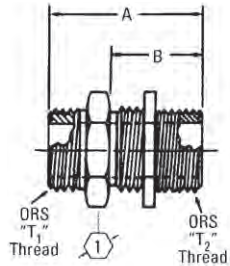
**FF2281T(Dash size)** (Ref. SAE 520123)

Dash size	Tube O. D.		Thread T1	Thread T2	A		①	
	mm	in			mm	in	mm	in
0406S	9,7	0.38	9/16-18	11/16-16	19,5	0.77	20,6	0.81
0408S†	12,7	0.50	9/16-18	13/16-16	21,8	0.86	23,9	0.94
0410S†	16,0	0.63	9/16-18	1-14	22,9	0.90	28,5	1.12
0412S†	19,0	0.75	9/16-18	1 3/16-12	24,9	0.98	35,1	1.38
0608S	12,7	0.50	11/16-16	13/16-16	22,3	0.88	23,9	0.94
0610S†	16,0	0.63	11/16-16	1-14	24,1	0.95	28,5	1.12
0612S†	19,0	0.75	11/16-16	1 3/16-12	26,2	1.03	35,1	1.38
0810S†	16,0	0.63	13/16-16	1-14	25,9	1.02	28,5	1.12
0812S†	19,0	0.75	13/16-16	1 3/16-12	27,9	1.10	35,1	1.38
0816S†	25,4	1.00	13/16-16	1 7/16-12	29,2	1.15	41,1	1.62
1012S	16,0	0.63	1 3/16-12	1-14	29,5	1.16	34,9	1.38
1216S	25,4	1.00	1 3/16-12	1 7/16-12	34,0	1.34	41,1	1.62
1220S†	31,8	1.25	1 3/16-12	1 11/16-12	33,5	1.32	47,7	1.88
1224S†	38,1	1.50	1 3/16-12	2-12	33,6	1.32	57,2	2.25
1620S	31,8	1.25	1 7/16-12	1 11/16-12	37,3	2.69	47,7	1.88
1624S†	38,1	1.50	1 7/16-12	2-12	34,0	1.34	57,2	2.25

† Available without nut. Order by part number FF2151T (Size).

### ORS/ORS

#### ORS/ORS bulkhead adapter

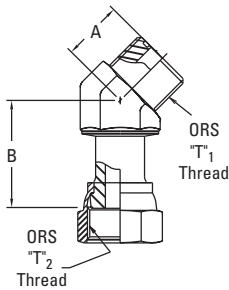


**FF1994T(Dash size)** (Ref. SAE 520601)  
(Formerly Weatherhead Series 4325x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		①
	mm	in			mm	in	mm	in	
0404S	6,4	0.25	9/16-18	9/16-18	48,3	1.90	31,5	1.24	20,6 0.81
0606S	9,7	0.38	11/16-16	11/16-16	53,1	2.09	34,0	1.34	25,4 1.00
0608S	9,7	0.38	11/16-16	13/16-16	56,9	2.24	36,6	1.44	28,4 1.12
0808S	12,7	0.50	13/16-16	13/16-16	58,4	2.30	36,6	1.44	28,4 1.12
1010S	16,0	0.63	1-14	1-14	66,5	2.62	40,6	1.60	33,3 1.31
1212S	19,0	0.75	1 3/16-12	1 3/16-12	69,1	2.72	41,7	1.64	38,1 1.50
1616S	25,4	1.00	1 7/16-12	1 7/16-12	70,1	2.76	42,2	1.66	44,5 1.75
2016S	31,8	1.25	1 11/16-12	1 7/16-12	70,1	2.76	42,2	1.66	44,5 1.75
2020S	31,8	1.25	1 11/16-12	1 11/16-12	70,1	2.76	42,2	1.66	50,8 2.00
2424S	38,1	1.50	2-12	2-12	70,1	2.76	42,2	1.66	60,5 2.38

Note: Available without nut. Order by Part no. FF1994H4-(dash size).

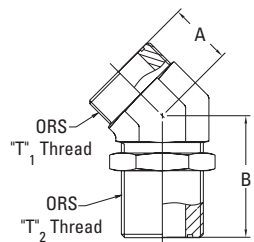
#### 45° ORS/ORS female adapter



**FF2133T(Dash size)**

Dash size	Tube O. D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0606S	9,7	0.38	11/16-16	11/16-16	18,8	0.74	26,9	1.06
0808S	12,7	0.50	13/16-16	13/16-16	20,3	0.80	35,6	1.40
1010S	16,0	0.63	1-14	1-14	23,4	0.92	38,6	1.52
1212S	19,0	0.75	1 3/16-12	1 3/16-12	25,9	1.02	42,4	1.67
1616S	25,4	1.00	1 7/6-12	1 7/6-12	30,0	1.18	42,9	1.69

#### 45° ORS/ORS bulkhead adapter

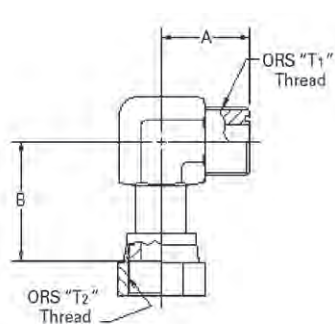


**FF2144T(Dash size)** (Ref. SAE 520801)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	16,0	0.63	43,9	1.73
0606S	9,7	0.38	11/16-16	11/16-16	18,8	0.74	48,5	1.91
0808S	12,7	0.50	13/16-16	13/16-16	20,3	0.80	51,1	2.01
1212S	19,0	0.75	1 3/16-12	1 3/16-12	25,9	1.02	60,7	2.39
1616S	25,4	1.00	1 7/16-12	1 7/16-12	30,0	1.18	65,3	2.57

Note: Available without nut. Order by Part no. FF2144H4-(dash size).

#### 90° ORS/ORS female adapter



**FF2098T(Dash size)** (Ref. SAE 520221)  
(Formerly Weatherhead Series 4506x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	21,6	0.85	26,4	1.04
0606S	9,7	0.38	11/16-16	11/16-16	24,9	0.98	29,2	1.15
0808S	12,7	0.50	13/16-16	13/16-16	27,9	1.10	37,8	1.49
1010S	16,0	0.63	1-14	1-14	33,3	1.31	41,1	1.62
1212S	19,0	0.75	1 3/16-12	1 3/16-12	37,3	1.47	46,2	1.82
1616S	25,4	1.00	1 7/16-12	1 7/16-12	41,7	1.64	53,3	2.10
2020S	31,8	1.25	1 11/16-12	1 11/16-12	44,7	1.76	58,2	2.29
2424S	38,1	1.50	2-12	2-12	48,8	1.92	61,2	2.41

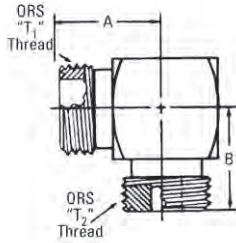
# Steel adapters

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## ORS/ORS

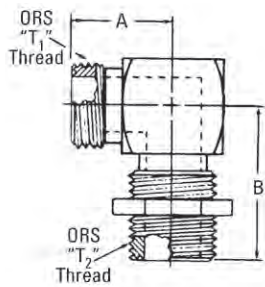
### 90° ORS/ORS adapter



**FF2035T(Dash size)** (Ref. SAE 520201)  
(Formerly Weatherhead Series 4505x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	21,6	0.85	21,6	0.85
0604S	9,7	0.38	11/16-16	9/16-18	24,9	0.98	23,4	0.92
0606S	9,7	0.38	11/16-16	11/16-16	24,9	0.98	24,9	0.98
0808S	12,7	0.50	13/16-16	13/16-16	27,9	1.10	27,9	1.10
1010S	16,0	0.63	1-14	1-14	33,3	1.31	33,3	1.31
1212S	19,0	0.75	1 3/16-12	1 3/16-12	37,3	1.47	37,3	1.47
1616S	25,4	1.00	1 7/16-12	1 7/16-12	41,6	1.64	41,6	1.64
2020S	31,8	1.25	1 11/16-12	1 11/16-12	44,7	1.76	44,7	1.76

### 90° ORS/ORS bulkhead adapter

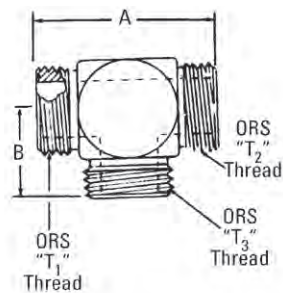


**FF2030T(Dash size)** (Ref. SAE 520701)  
(Formerly Weatherhead Series 4525x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		E	
	mm	in			mm	in	mm	in		
0404S	6,4	0.25	9/16-18	9/16-18	22,6	0.89	47,0	1.85	4,3	0.17
0606S	9,7	0.38	11/16-16	11/16-16	25,9	1.02	52,1	2.05	6,6	0.26
0806S	12,7	0.50	13/16-16	11/16-16	29,0	1.14	53,8	2.12	6,6	0.26
0808S	12,7	0.50	13/16-16	13/16-16	29,0	1.14	55,4	2.18	9,7	0.38
1010S	16,0	0.63	1-14	1-14	34,5	1.36	63,0	2.48	12,2	0.48
1212S	19,0	0.75	1 3/16-12	1 3/16-12	38,6	1.52	67,3	2.65	15,5	0.61
1616S	25,4	1.00	1 7/16-12	1 7/16-12	42,4	1.67	71,1	2.80	20,6	0.81
2020S	31,8	1.25	1 11/16-12	1 11/16-12	45,5	1.79	75,4	2.97	26,2	1.03

**Note:** Available without nut. Order by Part no. FF2030H4-(dash size).

### ORS/ORS/ORS

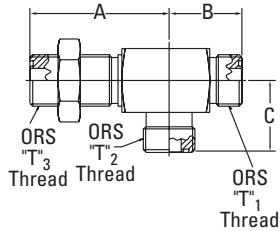


**FF1898T(Dash size)** (Ref. SAE 520401)  
(Formerly Weatherhead Series 4705x)

Dash size	Tube O. D.		Thread T1	Thread T2	Thread T3	A		B	
	mm	in				mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	9/16-18	43,2	1.70	21,6	0.85
0606S	9,7	0.38	11/16-16	11/16-16	11/16-16	49,8	1.96	24,9	0.98
0608S	9,7	0.38	11/16-16	11/16-16	13/16-16	52,8	2.08	27,9	1.10
0808S	12,7	0.50	13/16-16	13/16-16	13/16-16	55,9	2.20	27,9	1.10
1010S	16,0	0.63	1-14	1-14	1-14	66,5	2.62	33,3	1.31
1212S	19,0	0.75	1 3/16-12	1 3/16-12	1 3/16-12	74,7	2.94	37,3	1.47
1216S	19,0	0.75	1 3/16-12	1 3/16-12	1 7/16-12	82,3	3.24	44,7	1.76
1616S	25,4	1.00	1 7/16-12	1 7/16-12	1 7/16-12	83,3	3.28	41,6	1.64
2016S	31,8	1.25	1 11/16-12	1 11/16-12	1 7/16-12	89,4	3.52	44,7	1.76
2020S	31,8	1.25	1 11/16-12	1 11/16-12	1 11/16-12	89,4	3.52	44,7	1.76
2424S	38,1	1.50	2-12	2-12	2-12	97,5	3.84	48,8	1.92

## ORS/ORS

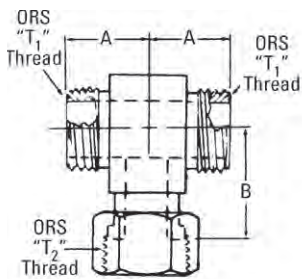
### ORS - bulkhead run tee



**FF2174T(Dash size)** (Ref. SAE 520958)  
(Formerly Weatherhead Series 4726x)

Dash size	Tube O. D.		Thread T1	Thread T2	Thread T3	A		B		C	
	mm	in				mm	in	mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	9/16-18	47,0	1.85	22,6	0.89	22,6	0.89
0606S	9,7	0.38	11/16-16	11/16-16	11/16-16	52,0	2.05	25,9	1.02	25,7	1.01
0808S	12,7	0.50	13/16-16	13/16-16	13/16-16	55,4	2.18	29,0	1.14	28,7	1.13
1212S	19,0	0.75	1 3/16-12	1 3/16-12	1 3/16-12	54,9	2.16	40,6	1.60	40,6	1.60
1616S	25,4	1.00	1 7/16-12	1 7/16-12	1 7/16-12	71,1	2.80	42,4	1.67	42,4	1.67
2020S	31,8	1.25	1 11/16-12	1 11/16-12	1 11/16-12	71,1	2.80	48,8	1.92	48,8	1.92

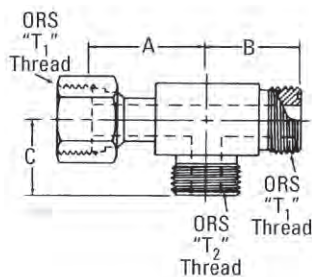
### ORS/ORS/ORS female adapter



**FF1857T(Dash size)** (Ref. SAE 520433)  
(Formerly Weatherhead Series 4707x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	21,6	0.85	26,4	1.04
0606S	9,7	0.38	11/16-16	11/16-16	24,9	0.98	29,2	1.15
0808S	12,7	0.50	13/16-16	13/16-16	27,9	1.10	37,8	1.49
1010S	16,0	0.63	1-14	1-14	33,3	1.31	41,1	1.62
1212S	19,0	0.75	1 3/16-12	1 3/16-12	37,3	1.47	46,2	1.82
1616S	25,4	1.00	1 7/16-12	1 7/16-12	41,6	1.64	53,3	2.10
2020S	31,8	1.25	1 11/16-12	1 11/16-12	44,7	1.76	58,2	2.29

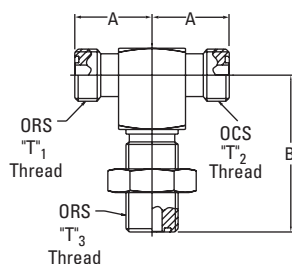
### ORS/ORS female/ORS adapter



**FF2114T(Dash size)** (Ref. SAE 520432)  
(Formerly Weatherhead Series 4706x)

Dash size	Tube O. D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
0404S	6,4	0.25	9/16-18	9/16-18	26,4	1.04	21,6	0.85	21,6	0.85
0606S	9,7	0.38	11/16-16	11/16-16	29,2	1.15	24,9	0.98	24,9	0.98
0808S	12,7	0.50	13/16-16	13/16-16	37,8	1.49	27,9	1.10	27,9	1.10
1010S	16,0	0.63	1-14	1-14	41,1	1.62	33,3	1.31	33,3	1.31
1212S	19,0	0.75	1 3/16-12	1 3/16-12	46,2	1.82	37,3	1.47	37,3	1.47
1616S	25,4	1.00	1 7/16-12	1 7/16-12	53,3	2.10	41,7	1.64	41,7	1.64
2020S	31,8	1.25	1 11/16-12	1 11/16-12	58,2	2.29	44,7	1.76	44,7	1.76
2424S	38,1	1.50	2-12	2-12	61,2	2.41	48,8	1.92	48,8	1.92

### ORS/ORS/ORS bulkhead adapter



**FF2033T(Dash size)** (Ref. SAE 520959)

Dash size	Tube O. D.		Thread T1	Thread T2	Thread T3	A		B	
	mm	in				mm	in	mm	in
0606S	9,7	0.38	11/16-16	11/16-16	11/16-16	25,7	1.01	52,0	2.05
0808S	12,7	0.50	13/16-16	13/16-16	13/16-16	28,7	1.13	55,4	2.18
1212S	19,0	0.75	1 3/16-12	1 3/16-12	1 3/16-12	40,6	1.60	67,3	2.65
1616S	25,4	1.00	1 7/16-12	1 7/16-12	1 7/16-12	42,4	1.67	71,1	2.80

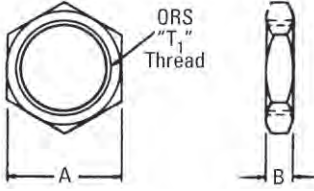
# Steel adapters

ORS accessories

J

## ORS accessories

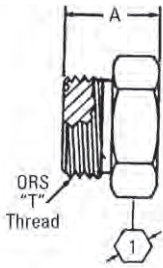
### ORS Bulkhead nut



**FF9768-(Dash size)** (Ref. SAE 520118)  
(Formerly Weatherhead Series 4924x)

Dash size	Tube O. D.		Thread T1	A		B	
	mm	in		mm	in	mm	in
04S	6,4	0.25	9/16-18	20,6	0.81	6,8	0.27
06S	9,7	0.38	11/16-16	25,4	1.00	7,9	0.31
08S	12,7	0.50	13/16-16	28,5	1.12	8,9	0.35
10S	16,0	0.63	1-14	33,3	1.31	10,4	0.41
12S	19,0	0.75	1 3/16-12	38,1	1.50	10,4	0.41
16S	25,4	1.00	1 7/16-12	44,4	1.75	10,4	0.41
20S	31,8	1.25	1 11/16-12	50,8	2.00	10,4	0.41
24S	38,1	1.50	2-12	60,4	2.38	10,4	0.41

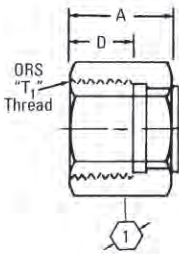
### ORS plug



**FF9767T-(Dash size)** (Ref. SAE 520109)  
(Formerly Weatherhead Series 4229x)

Dash size	Tube O. D.		Thread T1	A		B	
	mm	in		mm	in	mm	in
04-S	6,4	0.25	9/16-18	16,8	0.66	15,7	0.62
06-S	9,7	0.38	11/16-16	19,1	0.75	19,1	0.75
08-S	12,7	0.50	13/16-16	22,1	0.87	22,4	0.88
10-S	16,0	0.63	1-14	25,9	1.02	26,9	1.06
12-S	19,0	0.75	1 3/16-12	27,4	1.08	31,8	1.25
16-S	25,4	1.00	1 7/16-12	27,9	1.10	38,1	1.50
20-S	31,8	1.25	1 11/16-12	27,9	1.10	44,5	1.75
24-S	38,1	1.50	2-12	27,9	1.10	53,8	2.12

### ORS cap assembly



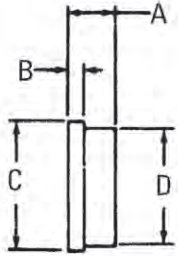
**FF9863-(Dash size)** (Ref. SAE 520112)  
(Formerly Weatherhead Series 4129x)

Dash size	Tube O. D.		Thread T1	A		D		E	
	mm	in		mm	in	mm	in		
04S	6,4	0.25	9/16-18	16,8	0.66	8,1	0.32	17,5	0.69
06S	9,7	0.38	11/16-16	19,1	0.75	9,7	0.38	20,6	0.81
08S	12,7	0.50	13/16-16	22,9	0.90	10,9	0.43	23,9	0.94
10S	16,0	0.63	1-14	25,4	1.00	13,5	0.53	28,4	1.12
12S	19,0	0.75	1 3/16-12	27,9	1.10	14,5	0.57	35,1	1.38
16S	25,4	1.00	1 7/16-12	29,7	1.17	14,7	0.58	41,1	1.62
20S	31,8	1.25	1 11/16-12	29,7	1.17	14,7	0.58	47,8	1.88
24S	38,1	1.50	2-12	29,7	1.17	14,7	0.58	57,2	2.25



### ORS accessories

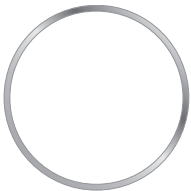
ORS cap (use with FC2326 nut)



#### FF9766-(Dash size)

Dash size	Tube O. D.		A		B		C		D	
	mm	in	mm	in	mm	in	mm	in	mm	in
04S	6,4	0.25	8,6	0.34	4,1	0.16	12,7	0.50	10,2	0.40
06S	9,7	0.38	9,4	0.37	4,6	0.18	15,7	0.62	13,2	0.52
08S	12,7	0.50	11,9	0.47	5,1	0.20	18,8	0.74	16,2	0.64
10S	16,0	0.63	11,9	0.47	6,1	0.24	23,4	0.92	20,8	0.82
12S	19,0	0.75	13,5	0.53	6,6	0.26	27,7	1.09	23,9	0.94
16S	25,4	1.00	15,0	0.59	7,1	0.28	34,0	1.34	28,7	1.13
20S	31,8	1.25	15,0	0.59	7,1	0.28	40,4	1.59	35,6	1.40
24S	38,1	1.50	15,0	0.59	7,1	0.28	48,5	1.91	43,4	1.71

ORS silver braze ring



#### FF9075-(Dash size)

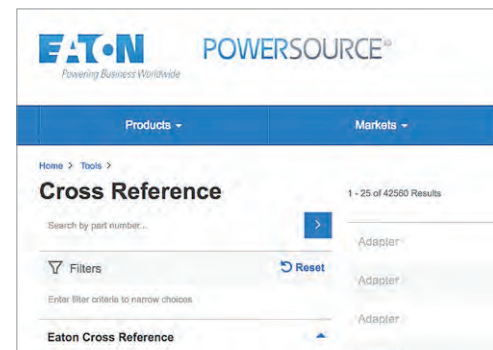
Dash size	Tube O. D.	
	mm	in
19	6,4	0.25
06	9,7	0.38
74	12,7	0.50
08	16,0	0.63
09	19,0	0.75
86	25,4	1.00
87	31,8	1.25
88	38,1	1.50

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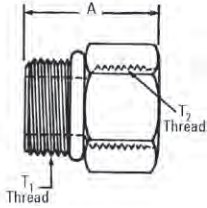
# Steel adapters

SAE O-Ring boss/SAE O-Ring boss

J

## SAE O-Ring boss/SAE O-Ring boss

### SAE O-Ring boss reducer

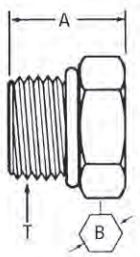


**FF1010-(Dash size)**  
(Formerly Weatherhead Series 7033x)

Dash size	Threads T1	Threads T2	A	
			mm	in
0304S	3/8-24	7/16-20	24,4	0.96
0406S	7/16-20	9/16-18	27,2	1.07
0408S	7/16-20	3/4-16	32,0	1.26
0604S	9/16-18	7/16-20	24,4	0.96
0806S	3/4-16	9/16-18	26,9	1.06
1006S	7/8-14	9/16-18	20,6	0.81
1008S	7/8-14	3/4-16	31,8	1.25
1206S	1 1/16-12	9/16-18	25,4	1.00
1208S	1 1/16-12	3/4-16	25,4	1.00
1210S	1 1/16-12	7/8-14	36,6	1.44
1216S	1 1/16-12	1 5/16-12	45,5	1.79
1412S	1 3/16-12	1 1/16-12	43,7	1.72
1608S	1 5/16-12	3/4-16	25,4	1.00
1610S	1 5/16-12	7/8-14	36,6	1.44
1612S	1 5/16-12	1 1/16-12	40,4	1.59
2012S	1 5/8-12	1 1/16-12	25,4	1.00
2016S	1 5/8-12	1 5/16-12	25,4	1.00
2412S	1 7/8-12	1 1/16-12	39,6	1.56
2416S	1 7/8-12	1 5/16-12	25,4	1.00
2420S	1 7/8-12	1 5/8-12	39,6	1.56

**Note:** Available without O-Ring, Order FF1009-(dash size)

### O-Ring boss plug



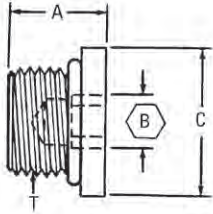
**900598-(Dash size)** (Ref. SAE 090109A)  
(Formerly Weatherhead Series 7237x)

Dash size	Threads T1	A		B	
		mm	in	mm	in
4S	7/16-20	17,0	0.67	14,2	0.56
5S	1/2-20	17,0	0.67	15,7	0.62
6S	9/16-18	18,5	0.73	17,5	0.69
8S	3/4-16	20,3	0.80	22,4	0.88
10S	7/8-14	23,6	0.93	25,4	1.00
12S	1 1/16-12	27,7	1.09	31,8	1.25
14S	1 3/16-12	27,7	1.09	35,1	1.38
16S	1 5/16-12	28,4	1.12	38,1	1.50
20S	1 5/8-12	30,5	1.20	47,8	1.88
24S	1 7/8-12	32,3	1.27	53,8	2.12
32S	2 1/2-12	36,3	1.43	69,9	2.75
2S	5/16-24	15,2	0.60	11,2	0.44
3S	3/8-24	15,2	0.60	12,7	0.50

**Note:** Available without O-Ring. Order as 900598-1-(dash size).  
(Formerly Weatherhead Series B7237x)

### SAE O-Ring boss/SAE O-Ring boss

#### SAE Male O-Ring boss (Hex socket)

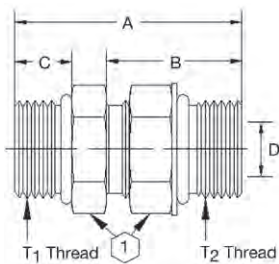


**FF2138-(Dash size)** (Ref. SAE 090109B)  
(Formerly Weatherhead Series 7238x)

Dash size	Tube O.D.		Threads T1	A		C (Round)		Hex	
	mm	in		mm	in	mm	in	mm	in
02S	3,3	0.13	5/16-24	10,2	0.40	11,2	0.44	3,3	0.13
03S	4,8	0.19	3/8-24	10,2	0.40	12,7	0.50	4,0	0.16
04S	6,3	0.25	7/16-20	11,9	0.47	14,3	0.56	4,8	0.19
05S	7,9	0.31	1/2-20	11,9	0.47	16,0	0.63	5,6	0.22
06S	9,6	0.38	9/16-18	12,8	0.50	17,5	0.69	6,4	0.25
08S	12,7	0.5	3/4-16	14,7	0.58	22,3	0.88	8,0	0.32
10S	16,0	0.63	7/8-14	16,5	0.65	25,4	1.00	9,6	0.38
12S	19,0	0.75	1 1/16-12	19,6	0.77	31,8	1.25	14,4	0.57
14S	22,2	0.88	1 3/16-12	19,6	0.77	35,0	1.38	14,4	0.57
16S	25,4	1.00	1 5/16-12	19,6	0.77	38,1	1.50	16,0	0.63
20S	31,8	1.25	1 5/8-12	19,6	0.77	47,8	1.88	19,1	0.75

**Note:** Available without O-Ring. Order as FF2137-(dash size)  
(Formerly Weatherhead series B7238x)

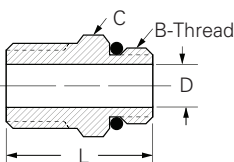
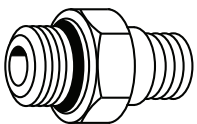
#### SAE O-Ring boss/adjustable SAE O-Ring boss



**2220-(Dash size)**  
(Formerly Weatherhead Series C5314x)

Dash size	Threads T1	A		B		D Hole		E Hex		F Hex	
		mm	in	mm	in	mm	in	mm	in	mm	in
4-4S	7/16-20	34,8	1.37	9,1	0.38	4,3	0.17	14,3	0.56	14,3	0.56
6-6S	9/16-18	37,8	1.49	9,9	0.39	7,6	0.30	17,5	0.69	17,5	0.69
8-8S	3/4-16	44,4	1.75	11,1	0.44	9,9	0.39	22,2	0.88	22,2	0.88
10-10S	7/8-14	51,8	2.04	12,7	0.50	12,2	0.48	25,4	1.00	25,4	1.00
12-12S	1 1/16-12	54,1	2.13	15,0	0.59	15,5	0.61	31,8	1.25	31,8	1.25
16-16S	1 5/16-12	59,9	2.36	15,0	0.59	21,3	0.84	38,1	1.50	38,1	1.50
20-20S	1 5/8-12	58,9	2.32	15,0	0.59	27,4	1.08	47,6	1.88	47,6	1.88
24-24S	1 7/8-12	63,0	2.48	15,0	0.59	33,3	1.32	54,0	2.13	54,0	2.13

#### SAE Male O-Ring boss/ NPTF external pipe



**FF1796-(Dash size)**  
(Formerly Weatherhead Series C3249x)

Dash size	Port size	Male pipe thread	Straight thread B	Hex C		D		L	
				mm	in	mm	in	mm	in
0402S	1/4	1/8	7/16-20	14,3	9/16	4.4	.172	26.7	1.05
0604S	3/8	1/4	9/16-18	17,5	11/16	7.1	.281	33.0	1.30
0806S	1/2	3/8	3/4-16	22,2	7/8	9.9	.391	34.5	1.36
0808S	1/2	1/2	3/4-16	22,2	7/8	9.9	.391	39.4	1.55
1008S	5/8	1/2	7/8-14	25,4	1	12.3	.484	42.9	1.69
1212S	3/4	3/4	1 1/16-12	31,8	1 1/4	15.5	.609	43.9	1.73
1616S	1	1	1 5/16-12	38,1	1 1/2	21.4	.844	52.3	2.06
2020S	1 1/4	1 1/4	1 5/8-12	47,6	1 7/8	27.4	1.078	55.1	2.17
2424S	1 1/2	1 1/2	1 7/8-12	54,0	2 1/8	33.3	1.312	57.4	2.26
3232S	2	2	2 1/2-12	70,0	2 3/4	45.2	1.781	62.7	2.47

Replacement O-Ring on page J-112.

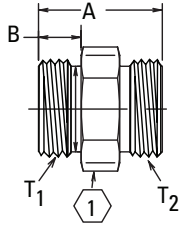
# Steel adapters

SAE O-Ring boss/SAE O-Ring boss

J

## SAE O-Ring boss/SAE O-Ring boss

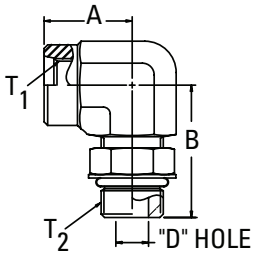
Male SAE O-Ring boss/male SAE O-Ring boss



### 2229-(Dash size)

Dash size	Tube O.D.		Threads T1	Thread T2	A		B		①
	mm	in			mm	in	mm	in	
8-8S	12,7	0.50	3/4-16	3/4-16	30,3	1.19	11,2	0.44	22,3 0.88
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	43,9	1.73	15,0	0.59	38,1 1.50

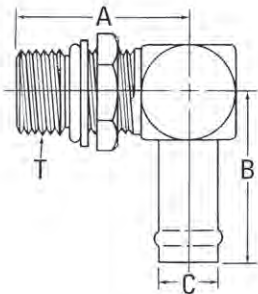
90° female SAE O-Ring boss/adjustable SAE O-Ring boss male



### FF2591-(Dash size)

Dash size	Tube O.D.		Threads T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0404S	6,4	0.25	7/16-20	7/16-20	21,6	0.85	32,0	1.26

SAE O-Ring boss (adj.)/hose connector



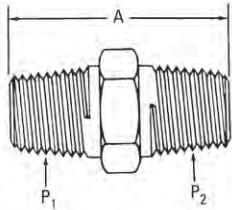
### FF1167-(Dash size)

Dash size	Tube O.D.		Threads T1	A		B		C	
	mm	in		mm	in	mm	in	mm	in
1212S	19,0	0.75	1 1/16-12	49,8	1.96	52,3	2.06	19,0	0.75

**Note:** Available without O-Ring - order by FF1161-(dash size).  
Clamp required.

## Pipe to pipe

### NPTE external pipe/ NPTF external pipe

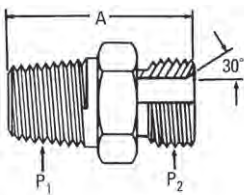


**2083-(Dash size)** (Ref. SAE 140137)  
(Formerly Weatherhead series C3069x)

Dash size	Threads P1	Thread P2	A	
			mm	in
1-1S	1/16-27	1/16-27	23,9	0.94
2-1S	1/8-27	1/16-27	24,6	0.97
2-2S*	1/8-27	1/8-27	26,9	1.06
4-2S*	1/4-18	1/8-27	32,0	1.26
4-4S*	1/4-18	1/4-18	36,8	1.45
6-2S	3/8-18	1/8-27	31,8	1.25
6-4S*	3/8-18	1/4-18	36,8	1.45
6-6S*	3/8-18	3/8-18	36,8	1.45
8-4S	1/2-14	1/4-18	43,2	1.70
8-6S	1/2-14	3/8-18	43,2	1.70
8-8S*	1/2-14	1/2-14	48,0	1.89
12-6S	3/4-14	3/8-18	45,0	1.77
12-8S	3/4-14	1/2-14	49,8	1.96
12-12S*	3/4-14	3/4-14	49,8	1.96
16-12S	1-11 1/2	3/4-14	54,6	2.15
16-16S*	1-11 1/2	1-11 1/2	59,4	2.34
20-16S	1 1/4-11 1/2	1-11 1/2	62,2	2.45
20-20S*	1 1/4-11 1/2	1 1/4-11 1/2	63,0	2.48
24-24S*	1 1/2-11 1/2	1 1/2-11 1/2	66,3	2.61
32-32S	2-11 1/2	2-11 1/2	71,6	2.82

\* Also available in stainless steel as part number 259-2083-(dash size)  
(formerly Weatherhead 3081x).

### NPTF external pipe/NPSM external pipe



**2015-(Dash size)**

Dash size	Threads P1	Thread P2	A	
			mm	in
8-8S	1/2-14	1/2-14	38,1	1.50
12-12S	3/4-14	3/4-14	41,1	1.62
16-16S	1-11 1/2	1-11 1/2	48,5	1.91
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	54,4	2.14

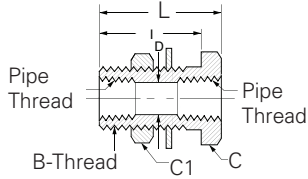
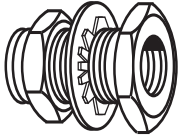
# Steel adapters

Pipe to pipe

J

## Pipe to pipe

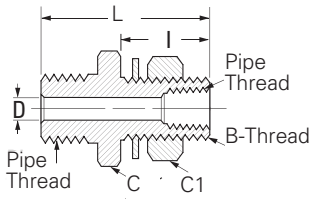
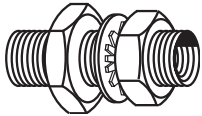
### NPTF bulkhead coupling



**FF4183-(Dash size)**  
(Formerly Weatherhead Series W)

Dash size	Female pipe thread	Thread Size B	Hex C		Hex C1		D		I		L	
			mm	in	mm	in	mm	in	mm	in	mm	in
-0404-1S	1/4	3/4-16	25,4	1	26,9	1-1/16	10,7	.422	31,8	1,25	38,1	1,50
-0404-2S	1/4	3/4-16	25,4	1	26,9	1-1/16	10,7	.422	17,5	.69	23,9	.94
-0606S	3/8	1-14	28,6	1-1/8	34,9	1-3/8	14,3	.563	26,9	1,06	33,3	1,31

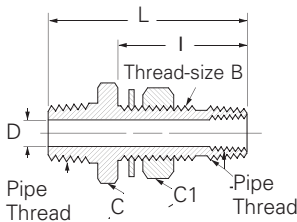
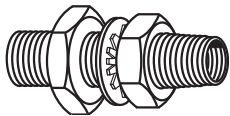
### NPTF bulkhead coupling



**FF4185-(Dash size)**  
(Formerly Weatherhead Series W)

Dash size	Male pipe thread	Female pipe thread	Thread Size B	Hex C		Hex C1		D		I		L	
				mm	in	mm	in	mm	in	mm	in	mm	in
-0804-1S	1/2	1/4	3/4-16	31,8	1-1/4	26,9	1-1/16	7,9	.312	28,7	1,13	54,8	2,16
-0804-2S	1/2	1/4	3/4-16	31,8	1-1/4	26,9	1-1/16	7,9	.312	38,8	1,53	64,2	2,53

### NPTF bulkhead coupling

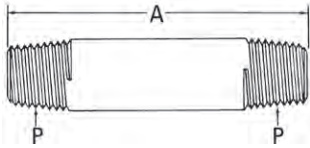


**FF4186-(Dash size)**  
(Formerly Weatherhead Series W)

Dash size	Male pipe thread	Female pipe thread	Thread Size B	Hex C		Hex C1		D		I		L	
				mm	in	mm	in	mm	in	mm	in	mm	in
-0804-1S	1/2	1/4	1-14	31,8	1-1/4	34,9	1-3/8	9,5	.375	47,6	1,88	74,7	2,94
-0804-2S	1/2	1/4	1-14	31,8	1-1/4	34,9	1-3/8	9,5	.375	73,2	2,88	100,0	3,94

## Pipe to pipe

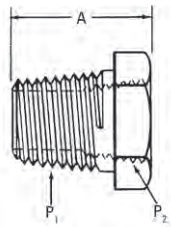
## NPTF external pipe/ NPTF external pipe



## 2084-(Dash size)

Dash size	Threads T1	A	
		mm	in
2S-3/4	1/8-27	19,0	0.75
2S-2	1/8-27	50,8	2.00
4S-7/8	1/4-18	22,3	0.88
4S-2	1/4-18	50,8	2.00
4S-3	1/4-18	76,2	3.00
4S-4	1/4-18	101,6	4.00
6S-1	3/8-18	25,4	1.00
6S-2	3/8-18	50,8	2.00
6S-3	3/8-18	76,2	3.00
6S-4	3/8-18	101,6	4.00
6S-6	3/8-18	152,4	6.00
8S-1 1/8	1/2-14	28,5	1.12
8S-2 1/2	1/2-14	63,5	2.50
12S-1 3/8	3/4-14	35,1	1.38
16S-1 1/2	1-11 1/2	38,1	1.50
20S-1 5/8	1 1/4-11 1/2	41,1	1.62
24S-1 3/4	1 1/2-11 1/2	44,4	1.75

## NPTF reducer-external pipe/ NPTF internal pipe

2081-(Dash size) (Ref. SAE 140140)  
(Formerly Weatherhead series C3109x)

Dash size	Thread P1	Thread P2	A	
			mm	in
4-2S*	1/4-18	1/8-27	21,6	0.85
6-2S*	3/8-18	1/8-27	21,6	0.85
6-4S*	3/8-18	1/4-18	25,4	1.00
8-2S	1/2-14	1/8-27	27,9	1.10
8-4S*	1/2-14	1/4-18	27,9	1.10
8-6S*	1/2-14	3/8-18	28,4	1.12
12-4S*	3/4-14	1/4-18	29,7	1.17
12-6S	3/4-14	3/8-18	29,7	1.17
12-8S	3/4-14	1/2-14	34,5	1.36
16-4S	1-11 1/2	1/4-18	34,5	1.36
16-6S	1-11 1/2	3/8-14	34,5	1.36
16-8S*	1-11 1/2	1/2-14	34,5	1.36
16-12S*	1-11 1/2	3/4-14	37,8	1.49
20-8S	1 1/4-11 1/2	1/2-14	37,3	1.47
20-12S*	1 1/4-11 1/2	3/4-14	37,3	1.47
20-16S*	1 1/4-11 1/2	1-11 1/2	40,9	1.61
24-12S	1 1/2-11 1/2	3/4-14	39,9	1.57
24-16S	1 1/2-11 1/2	1-11 1/2	39,9	1.57
24-20S	1 1/2-11 1/2	1 1/4-11 1/2	39,9	1.57
32-16S*	2-11 1/2	1-11 1/2	44,5	1.75
32-20S*	2-11 1/2	1 1/4-11 1/2	44,5	1.75
32-24S	2-11 1/2	1 1/2-11 1/2	44,5	1.75

\* Also available in stainless steel as part number 259-2081-(dash size)  
(formerly Weatherhead 3121x)

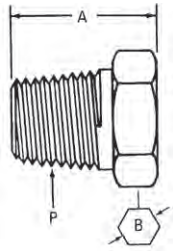
# Steel adapters

Pipe to pipe

J

## Pipe to pipe

### NPTF external pipe/Plug

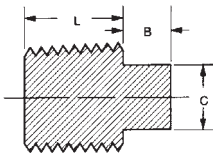
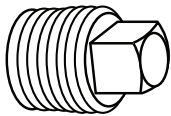


**2082-(Dash size)** (Ref. SAE 140109E)  
(Formerly Weatherhead series C3159x)

Dash size	Threads P1	A		B	
		mm	in	mm	in
2S*	1/8-27	14,7	0.58	11,2	0.44
4S*	1/4-18	19,3	0.76	14,2	0.56
6S*	3/8-18	20,1	0.79	22,3	0.69
8S	1/2-14	24,9	0.98	22,4	0.88
12S	3/4-14	27,4	1.08	26,9	1.06
16S	1-11 1/2	32,3	1.27	44,4	1.31
20S	1 1/4-11 1/2	33,0	1.30	44,5	1.75
24S	1 1/2-11 1/2	33,8	1.33	50,8	2.00
32S	2-11 1/2	35,3	1.39	60,5	2.38

\* Also available in stainless steel as part number 259-2082-(dash Size)  
(formerly Weatherhead 3171x)

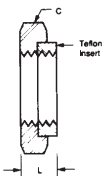
### NPTF square head plug thread



**FF4177-(Dash size)**  
(Formerly Weatherhead series C3179x)

Dash size	Male pipe thread	B		C		L	
		mm	in	mm	in	mm	in
02S	1/8	6,4	0.25	7,1	0.28	8,6	0.34
04S	1/4	7,4	0.29	9,7	0.38	13,0	0.51
06S	3/8	8,1	0.32	11,2	0.44	13,0	0.51
08S	1/2	10,2	0.40	14,2	0.56	17,3	0.68
12S	3/4	11,7	0.46	16,0	0.63	17,5	0.69
16S	1	13,2	0.52	16,7	0.81	21,6	0.85

### Seal-nut for NPTF male pipe thread



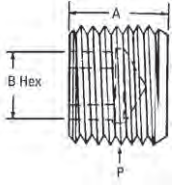
**FF91494-(Dash size)**  
(Formerly Weatherhead series C3059x)

Dash size	Pipe thread	Hex C		L	
		mm	in	mm	in
02S	1/8	15,9	5/8	3,8	.15
04S	1/4	19,5	3/4	6,4	.25
06S	3/8	22,2	7/8	6,4	.25
08S	1/2	28,6	1 1/8	6,4	.25
12S	3/4	33,3	1 5/16	6,4	.25
16S	1	41,3	1 5/8	8,6	.34



## Pipe to pipe

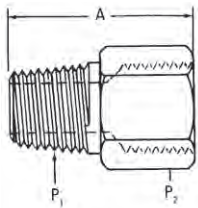
### NPTF external pipe/Plug countersunk hex



**2222-(Dash size)** (Ref. SAE 140109N)  
(Formerly Weatherhead series C3169x)

Dash size	Threads P1	A		B	
		mm	in	mm	in
2S	1/8-27	7,6	0.30	4,8	0.19
4S	1/4-18	11,7	0.46	6,4	0.25
6S	3/8-18	11,7	0.46	7,9	0.31
8S	1/2-14	15,5	0.61	9,7	0.38

### NPTF external pipe/ NPTF internal pipe



**2040-(Dash size)** (Ref. SAE 140139)  
(Formerly Weatherhead series C3209x)

Dash size	Threads P1	Threads P2	A	
			mm	in
2-2S	1/8-27	1/8-27	26,4	1.04
2-4S	1/8-27	1/4-18	30,7	1.21
2-8S	1/8-27	1/2-14	38,1	1.50
4-4S	1/4-18	1/4-18	35,3	1.39
4-6S	1/4-18	3/8-18	36,6	1.44
4-8S	1/4-18	1/2-14	42,7	1.68
4-12S	1/4-18	3/4-14	44,2	1.74
6-6S	3/8-18	3/8-18	36,6	1.44
6-8S	3/8-18	1/2-14	42,7	1.68
8-8S	1/2-14	1/2-14	47,5	1.87
8-12S	1/2-14	3/4-14	49,0	1.93
8-16S	1/2-14	1-11 1/2	53,1	2.09
12-12S	3/4-14	3/4-14	49,0	1.93
12-16S	3/4-14	1-11 1/2	55,4	2.18
16-16S	1-11 1/2	1-11 1/2	60,2	2.37
16-20S	1-11 1/2	1 1/4-11 1/2	62,5	2.46
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	63,2	2.49
20-24S	1 1/4-11 1/2	1 1/2-11 1/2	63,5	2.50
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	64,3	2.53
24-32S	1 1/2-11 1/2	2-11 1/2	66,8	2.63
32-32S	2-11 1/2	2-11 1/2	67,6	2.66

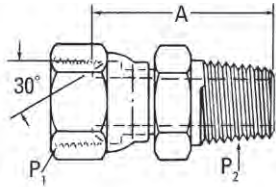
# Steel adapters

Pipe to pipe

J

## Pipe to pipe

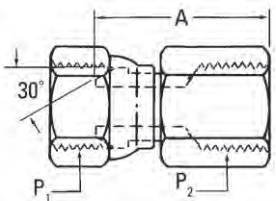
### NPSM internal pipe swivel/NPTF external pipe



**2045-(Dash size)** (Ref. SAE 140130)  
(Formerly Weatherhead series 9205x)

Dash size	Threads P1	Threads P2	A	
			mm	in
2-2S	1/8-27	1/8-27	24,4	0.96
2-4S	1/8-27	1/4-18	29,0	1.14
4-4S	1/4-18	1/4-18	32,0	1.26
4-6S	1/4-18	3/8-18	32,0	1.26
4-8S	1/4-18	1/2-14	38,4	1.51
6-4S	3/8-18	1/4-18	32,0	1.26
6-6S	3/8-18	3/8-18	33,5	1.32
6-8S	3/8-18	1/2-14	40,1	1.58
8-6S	1/2-14	3/8-18	34,8	1.37
8-8S	1/2-14	1/2-14	41,1	1.62
8-12S	1/2-14	3/4-14	41,1	1.62
12-8S	3/4-14	1/2-14	44,4	1.75
12-12S	3/4-14	3/4-14	44,5	1.75
12-16S	3/4-14	1-11 1/2	50,8	2.00
16-12S	1-11 1/2	3/4-14	44,7	1.76
16-16S	1-11 1/2	1-11 1/2	51,3	2.02
16-20S	1-11 1/2	1 1/4-11 1/2	52,8	2.08
20-16S	1 1/4-11 1/2	1-11 1/2	53,3	2.10
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	52,8	2.08
20-24S	1 1/4-11 1/2	1 1/2-11 1/2	54,4	2.14
24-20S	1 1/2-11 1/2	1 1/4-11 1/2	55,1	2.17
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	55,9	2.20
32-32S	2-11 1/2	2-11 1/2	60,7	2.39

### NPSM Internal pipe swivel/ NPTF external pipe



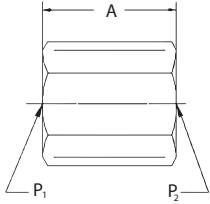
**2046-(Dash size)** (Ref. SAE 140131)  
(Formerly Weatherhead series 9255x)

Dash size	Threads P1	Threads P2	A	
			mm	in
2-2S	1/8-27	1/8-27	23,9	0.94
2-4S	1/8-27	1/4-18	26,9	1.06
4-4S	1/4-18	1/4-18	33,0	1.30
4-6S	1/4-18	3/8-18	33,3	1.31
6-6S	3/8-18	3/8-18	33,8	1.33
6-8S	3/8-18	1/2-14	36,8	1.45
8-6	1/2-14	3/8-18	35,3	1.39
8-8S	1/2-14	1/2-14	39,6	1.56
12-12S	3/4-14	3/4-14	45,0	1.77
12-16S	3/4-14	1-11 1/2	51,8	2.04
16-16S	1-11 1/2	1-11 1/2	52,3	2.06
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	52,3	2.06
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	55,4	2.18
32-32S	2-11 1/2	2-11 1/2	58,4	2.30

Pipe to pipe

Coupling – NPTF internal pipe/internal pipe

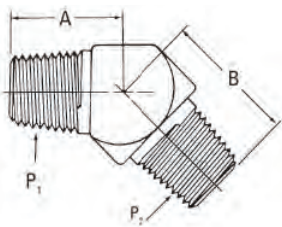
**2096-(Dash size)** (Ref. SAE 140138)  
(Formerly Weatherhead series C3309x)



Dash size	Threads P1	Thread P2	A	
			mm	in
2S	1/8-27	1/8-27	19,1	0.75
4-2S*	1/4-18	1/8-27	28,7	1.13
4S*	1/4-18	1/4-18	28,7	1.13
6-4S	3/8-18	1/4-18	28,7	1.13
6S*	3/8-18	3/8-18	28,7	1.13
8-4S	1/2-14	1/4-18	38,1	1.50
8-6S	1/2-14	3/8-18	38,1	1.50
8S*	1/2-14	1/2-14	38,1	1.50
12-8S	3/4-14	1/2-14	38,9	1.53
12S*	3/4-14	3/4-14	38,9	1.53
16-12S	1-11 1/2	3/4-14	48,0	1.89
16S	1-11 1/2	1-11 1/2	48,0	1.89
20S*	1 1/4-11 1/2	1 1/4-11 1/2	49,0	1.93
24S	1 1/2-11 1/2	1 1/2-11 1/2	49,0	1.93
32S	2-11 1/2	2-11 1/2	49,8	1.96

\* Also available in stainless steel as part number 259-2096-(dash size).  
(formerly Weatherhead 3321x)

NPTF external pipe/external pipe

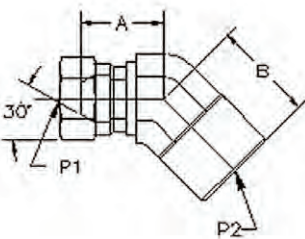


**2247-(Dash size)** (Ref. SAE 140337)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	17,0	0.67	17,0	0.67
4-4S	1/4-18	1/4-18	21,8	0.86	21,8	0.86
6-4S	3/8-18	1/4-18	24,1	0.95	24,1	0.95
6-6S	3/8-18	3/8-18	24,1	0.95	24,1	0.95
8-8S	1/2-14	1/2-14	28,7	1.13	29,7	1.17
12-12S	3/4-14	3/4-14	29,7	1.17	30,5	1.20
16-16S	1-11 1/2	1-11 1/2	30,5	1.20	37,6	1.48
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	47,7	1.88	39,1	1.54

NPSM Internal pipe swivel/ NPTF internal pipe

**2050-(Dash size)** (Ref. SAE 140331)  
(Formerly Weatherhead series 9385x)



Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	15,7	0.62	12,7	0.50
4-4S	1/4-18	1/4-18	20,1	0.79	24,6	0.97
4-6S	1/4-18	3/8-18	23,4	0.92	30,0	1.18
6-6S	3/8-18	3/8-18	23,4	0.92	30,0	1.18
6-8S	3/8-18	1/2-14	21,8	0.86	35,8	1.41
8-8S	1/2-14	1/2-14	23,1	0.91	35,8	1.41
12-12S	3/4-14	3/4-14	27,9	1.10	38,9	1.53
16-16S	1-11 1/2	1-11 1/2	32,0	1.26	38,9	1.53
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	31,2	1.23	36,6	1.44

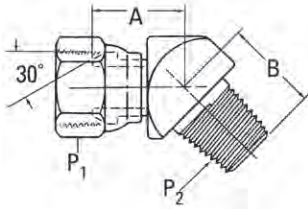
# Steel adapters

Pipe to pipe

J

## Pipe to pipe

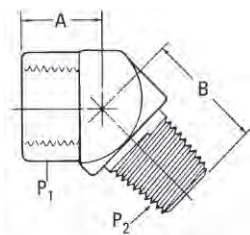
### NPSM internal pipe swivel/NPTF external pipe



**2049-(Dash size)** (Ref. SAE 140330)  
(Formerly Weatherhead series 9355x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	17,0	0.67	17,8	0.70
4-2S	1/4-18	1/8-27	20,1	0.79	17,0	0.67
4-4S	1/4-18	1/4-18	20,1	0.79	24,6	0.97
4-6S	1/4-18	3/8-18	20,3	0.80	26,9	1.06
4-8S	1/4-18	1/2-14	21,1	0.83	35,8	1.41
6-4S	3/8-18	1/4-18	23,4	0.92	25,4	1.00
6-6S	3/8-18	3/8-18	23,4	0.92	27,7	1.09
6-8S	3/8-18	1/2-14	23,4	0.92	35,8	1.41
8-6S	1/2-14	3/8-18	23,1	0.91	27,7	1.09
8-8S	1/2-14	1/2-14	23,1	0.91	35,8	1.41
8-12S	1/2-14	3/4-14	23,1	0.91	38,9	1.53
12-8S	3/4-14	1/2-14	27,9	1.10	38,9	1.53
12-12S	3/4-14	3/4-14	27,9	1.10	38,9	1.53
12-16S	3/4-14	1-11 1/2	26,2	1.03	38,1	1.50
16-12S	1-11 1/2	1/4-14	32,0	1.26	38,9	1.53
16-16S	1-11 1/2	1-11 1/2	32,0	1.26	38,9	1.53
16-20S	1-11 1/2	1 1/4-11 1/2	33,0	1.30	46,7	1.84
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	36,8	1.45	46,7	1.84
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	35,8	1.41	50,8	2.00

### NPTF internal pipe/NPTF external pipe

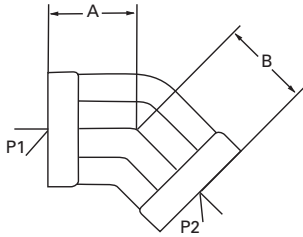


**2088-(Dash size)** (Ref. SAE 140339)  
(Formerly Weatherhead series C3359x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	11,9	0.47	18,3	0.72
4-4S	1/4-18	1/4-18	15,7	0.62	26,7	1.05
6-6S	3/8-18	3/8-18	18,3	0.72	26,9	1.06
8-8S	1/2-14	1/2-14	23,1	0.91	34,0	1.34
12-12S	3/4-14	3/4-14	24,6	0.97	35,1	1.38
16-16S	1-11 1/2	1-11 1/2	28,4	1.12	43,7	1.72

## Pipe to pipe

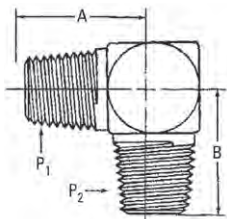
### NPTF 45° Female pipe elbow



**2086-S-(Dash size)** (Ref. SAE 140338)  
(Formerly Weatherhead series C3559x)

Dash size	Thread P1	Thread P2	A		B	
			mm	in	mm	in
4-4S	1/4-18	1/4-18	17,5	0.69	17,5	0.69
6-6S	3/8-18	3/8-18	19,0	0.75	19,0	0.75
8-8S	1/2-14	1/2-14	23,9	0.94	23,9	0.94
12-12S	3/4-14	3/4-14	25,4	1.00	25,4	1.00
16-16S	1-11 1/2	1-11 1/2	30,2	1.19	30,2	1.19

### NPTF external pipe/NPTF external pipe



**2085-(Dash size)** (Ref. SAE 140237)  
(Formerly Weatherhead series C3529x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	19,8	0.78	19,8	0.78
4-4S	1/4-18	1/4-18	27,7	1.09	27,7	1.09
6-4S	3/8-18	1/4-18	31,0	1.22	31,0	1.22
6-6S	3/8-18	3/8-18	31,0	1.22	31,0	1.22
8-6S	1/2-14	3/8-18	37,3	1.47	32,5	1.28
8-8S	1/2-14	1/2-14	37,3	1.47	37,3	1.47
12-8S	3/4-14	1/2-14	40,4	1.59	40,4	1.59
12-12S	3/4-14	3/4-14	40,4	1.59	40,4	1.59
16-12S	1-11 1/2	3/4-14	50,0	1.97	45,2	1.78
16-16S	1-11 1/2	1-11 1/2	50,0	1.97	50,0	1.97

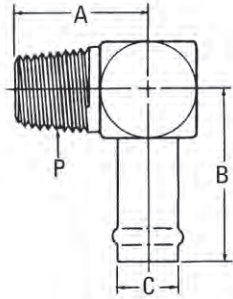
# Steel adapters

Pipe to pipe

J

## Pipe to pipe

### NPTF external pipe/hose Connector

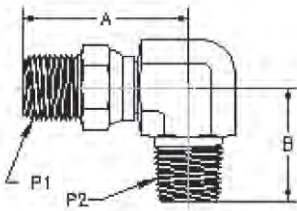


**FF1162-(Dash size)** (Ref. SAE 430260)

Dash size	Tube O.D.		Threads T1	A		B		C	
	mm	in		mm	in	mm	in	mm	in
0406S	9,7	0.38	1/4-18	27,7	1.09	39,1	1.54	9,7	0.38
1212S	19,0	0.75	3/4-14	35,8	1.41	46,5	1.83	19,0	0.75
1616S	25,4	1.00	1-11 1/2	50,0	1.97	49,3	1.94	25,4	1.00
2020S	31,8	1.25	1 1/4-11 1/2	49,8	1.96	54,6	2.15	31,7	1.25

**Note:** Clamp required.

### NPTF external pipe swivel/ NPTF external pipe



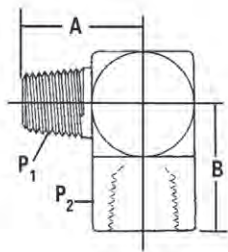
**2251-(Dash size)**

(Formerly Weatherhead series 9435x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
4-4S	1/4-18	1/4-18	43,7	1.72	27,7	1.09
6-6S	3/8-18	3/8-18	45,2	1.78	31,0	1.22
8-8S	1/2-14	1/2-14	54,4	2.14	37,3	1.47
12-12S	3/4-14	3/4-14	66,3	2.61	40,4	1.59

**Note:** The above adapter is not a rotating union or swivel joint. Care must be exercised to avoid misuse. To be used with petroleum or water glycol fluids.

### NPTF external pipe/ NPTF internal pipe



**2089-(Dash size)** (Ref. SAE 140239)

(Formerly Weatherhead series C3409x)

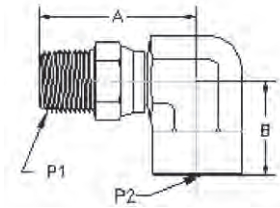
Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	19,8	0.78	16,8	0.66
2-4S	1/8-27	1/4-18	22,9	0.90	22,4	0.88
4-2S	1/4-18	1/8-27	27,7	1.09	17,0	0.67
4-4S	1/4-18	1/4-18	27,7	1.09	22,4	0.88
4-6S	1/4-18	3/8-18	31,0	1.22	25,9	1.02
6-4S	3/8-18	1/4-18	31,0	1.22	25,7	1.01
6-6S*	3/8-18	3/8-18	31,0	1.22	25,9	1.02
6-8S	3/8-18	1/2-14	32,5	1.28	31,2	1.23
8-6S	1/2-14	3/8-18	37,3	1.47	25,7	1.01
8-8S	1/2-14	1/2-14	37,3	1.47	31,2	1.23
8-12S	1/2-14	3/4-14	40,4	1.59	34,5	1.36
12-8S	3/4-14	1/2-14	40,4	1.59	34,3	1.35
12-12S	3/4-14	3/4-14	40,4	1.59	34,5	1.36
16-16S	1-11 1/2	1-11 1/2	50,0	1.97	41,1	1.62
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	60,5	2.38	43,2	1.70
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	67,1	2.64	52,8	2.08
32-32S	2-11 1/2	2-11 1/2	76,2	3.00	60,7	2.39

\* Also available in stainless steel as part number 259-2089-(dash Size). (Formerly Weatherhead 3421x)

## Pipe to pipe

### NPTF external pipe swivel/ NPTF internal pipe

#### 2252-(Dash size)

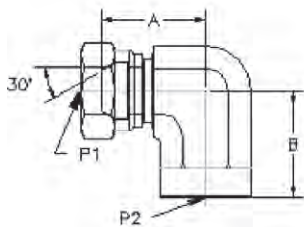


Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	35,1	1.38	17,3	0.68
4-4S	1/4-18	1/4-18	43,7	1.72	22,4	0.88
6-6S	3/8-18	3/8-18	45,2	1.78	25,9	1.02
8-8S	1/2-14	1/2-14	54,4	2.14	31,2	1.23
12-12S	3/4-14	3/4-14	66,3	2.61	40,4	1.59

**Note:** The above adapter is not a rotating union or swivel joint. Care must be exercised to avoid misuse. To be used with petroleum or water glycol fluids.

### NPSM internal pipe swivel/NPTF internal pipe

#### 2048-(Dash size) (Ref. SAE 140231) (Formerly Weatherhead series 9455x)



Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	19,8	0.78	16,8	0.66
4-4S	1/4-18	1/4-18	23,1	0.91	24,6	1.0
4-6S	1/4-18	3/8-18	25,4	1.00	27,7	1.09
4-8S	1/4-18	1/2-14	27,7	1.09	33,0	1.30
6-4S	3/8-18	1/4-18	24,6	0.97	24,6	0.97
6-6S	3/8-18	3/8-18	27,7	1.09	27,7	1.09
6-8S	3/8-18	1/2-14	27,9	1.10	34,0	1.34
8-6S	1/2-14	3/8-18	27,4	1.08	34,0	1.34
8-8S	1/2-14	1/2-14	27,4	1.08	34,0	1.34
8-12S	1/2-14	3/4-14	37,3	1.47	34,5	1.36
12-8S	3/4-14	1/2-14	31,5	1.24	31,2	1.23
12-12S	3/4-14	3/4-14	34,5	1.36	38,9	1.53
16-16S	1-11 1/2	1-11 1/2	39,6	1.56	45,2	1.78
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	46,2	1.82	51,6	2.03
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	51,3	2.02	57,9	2.28

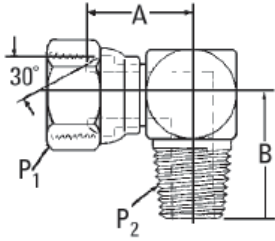
# Steel adapters

Pipe to pipe

J

## Pipe to pipe

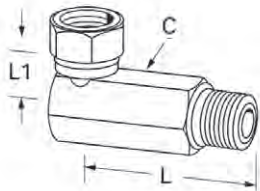
### NPSM internal pipe swivel/ NPTF external pipe



**2047-(Dash size)** (Ref. SAE 140230)  
(Formerly Weatherhead series 9405x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	18,0	0.71	26,2	1.03
2-4S	1/8-27	1/4-18	19,6	0.77	27,7	1.09
4-2S	1/4-18	1/8-27	22,4	0.88	22,9	0.90
4-4S	1/4-18	1/4-18	23,1	0.91	32,5	1.28
4-6S	1/4-18	3/8-18	27,7	1.09	38,9	1.53
4-8S	1/4-18	1/2-14	26,2	1.03	46,7	1.84
6-4S	3/8-18	1/4-18	25,1	0.99	31,0	1.22
6-6S	3/8-18	3/8-18	27,7	1.09	38,9	1.53
6-8S	3/8-18	1/2-14	26,2	1.03	46,7	1.84
6-12S	3/8-18	3/4-14	32,0	1.26	40,4	1.59
8-6S	1/2-14	3/8-18	27,4	1.08	41,9	1.65
8-8S	1/2-14	1/2-14	27,4	1.08	46,7	1.84
8-12S	1/2-14	3/4-14	31,5	1.24	51,6	2.03
12-8S	3/4-14	1/2-14	34,5	1.36	51,6	2.03
12-12S	3/4-14	3/4-14	34,5	1.36	51,6	2.03
12-16S	3/4-14	1-11 1/2	38,4	1.51	61,2	2.41
16-12S	1-11 1/2	3/4-14	38,9	1.53	56,4	2.22
16-16S	1-11 1/2	1-11 1/2	38,9	1.53	61,2	2.41
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	46,2	1.82	67,3	2.65
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	51,3	2.02	72,1	2.84
32-32S	2-11 1/2	2-11 1/2	60,2	2.37	84,8	3.34

### 90° Elbow long – Female pipe swivel/NPTF male pipe



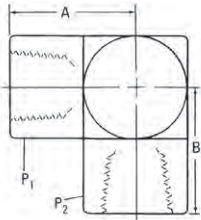
**FF4175-(Dash size)**  
(Formerly Weatherhead series 9405xLL)

Dash size	NPSM Swivel nut	Male pipe thread	Hex C		L		L1	
			mm	in	mm	in	mm	in
0202S	1/8-27	1/8-27	14,2	0.56	48,2	1.90	17,8	0.70
0404S	1/4-18	1/4-18	17,5	0.69	65,3	2.57	19,5	0.75
0606S	3/8-18	3/8-18	20,6	0.81	80,3	3.16	22,9	0.90
0808S	1/2-14	1/2-14	25,4	1.00	93,2	3.67	25,9	1.02
1212S	3/4-14	3/4-14	31,8	1.25	109,0	4.29	30,5	1.20
1616S	1-11 1/2	1-11 1/2	38,1	1.50	128,5	5.06	37,1	1.46



## Pipe to pipe

## NPTF internal pipe/NPTF internal pipe

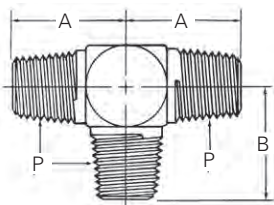


**2087-(Dash size)** (Ref. SAE 140238)  
(Formerly Weatherhead series C3509x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	16,8	0.66	16,8	0.66
4-2S	1/4-18	1/8-27	22,4	0.88	17,0	0.67
4-4S*	1/4-18	1/4-18	22,4	0.88	22,4	0.88
6-4S	3/8-18	1/4-18	25,9	1.02	25,7	1.01
6-6S	3/8-18	3/8-18	25,9	1.02	25,9	1.02
8-6S	1/2-14	3/8-18	31,2	1.23	25,7	1.01
8-8S	1/2-14	1/2-14	31,2	1.23	31,2	1.23
12-8S	3/4-14	1/2-14	34,5	1.36	34,3	1.35
12-12S	3/4-14	3/4-14	34,5	1.36	34,5	1.36
16-12S	1-11 1/2	3/4-14	41,1	1.62	35,3	1.39
16-16S	1-11 1/2	1-11 1/2	41,1	1.62	41,1	1.62
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	43,2	1.70	43,2	1.70
24-24S	1 1/2-11 1/2	1 1/2-11 1/2	52,8	2.08	52,8	2.08

\* Also available in stainless steel as part number 259-2087-(dash size).  
(Formerly Weatherhead 3521x)

## NPTF external pipe/NPTF external pipe



**2257-(Dash size)**

Dash size	Threads P1	A		B	
		mm	in	mm	in
2-2S	1/8-27	19,8	0.78	19,8	0.78
4-4S	1/4-18	27,7	1.09	27,7	1.09
6-6S	3/8-18	31,0	1.22	31,0	1.22
8-8S	1/2-14	37,3	1.47	37,3	1.47
12-12S	3/4-14	40,4	1.59	40,4	1.59
16-16S	1-11 1/2	50,0	1.97	50,0	1.97

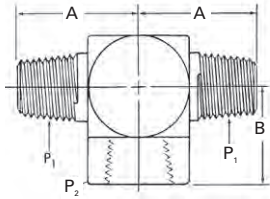
# Steel adapters

Pipe to pipe

J

## Pipe to pipe

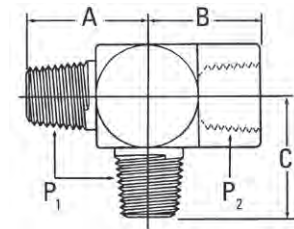
### NPTF external pipe/NPTF internal pipe



#### 2256-(Dash size)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	19,8	0.78	16,8	0.66
4-4S	1/4-18	1/4-18	27,7	1.09	22,3	0.88
6-6S	3/8-18	3/8-18	31,0	1.22	25,9	1.02
8-8S	1/2-14	1/2-14	37,3	1.47	31,2	1.23
12-12S	3/4-14	3/4-14	40,4	1.59	34,5	1.36
16-16S	1-11 1/2	1-11 1/2	65,3	2.57	43,2	1.70

### NPTF external pipe/NPTF internal pipe

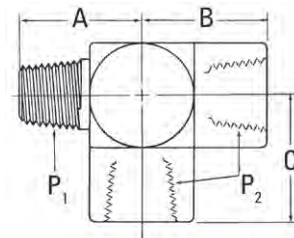


#### 2093-(Dash size)

(Formerly Weatherhead series C3805x)

Dash size	Threads P1	Thread P2	A		B		C	
			mm	in	mm	in	mm	in
2-2S	1/8-27	1/8-27	19,8	0.78	16,8	0.66	19,8	0.78
4-4S	1/4-18	1/4-18	27,7	1.09	22,3	0.88	27,7	1.09
6-6S	3/8-18	3/8-18	31,0	1.22	25,9	1.02	31,0	1.22
8-8S	1/2-14	1/2-14	37,3	1.47	31,2	1.23	37,3	1.47
12-12S	3/4-14	3/4-14	40,4	1.59	34,5	1.36	40,4	1.59
16-16S	1-11 1/2	1-11 1/2	50,0	1.97	41,1	1.62	50,0	1.97

### NPTF external pipe/NPTF internal pipe



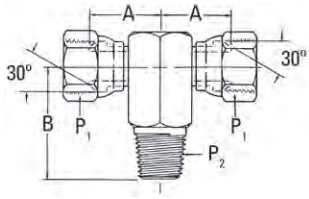
#### 2092-(Dash size) (Ref. SAE 140424)

(Formerly Weatherhead series C3759x)

Dash size	Threads P1	Thread P2	A		B		C	
			mm	in	mm	in	mm	in
2-2S	1/8-27	1/8-27	19,8	0.78	16,8	0.66	16,8	0.66
4-4S	1/4-18	1/4-18	27,7	1.09	22,4	0.88	22,4	0.88
6-6S	3/8-18	3/8-18	31,0	1.22	25,9	1.02	25,9	1.02
8-8S	1/2-14	1/2-14	37,3	1.47	31,2	1.23	31,2	1.23
12-12S	3/4-14	3/4-14	40,4	1.59	34,5	1.36	34,5	1.36
16-16S	1-11 1/2	1-11 1/2	50,0	1.97	41,1	1.62	41,1	1.62
20-20S	1 1/4-11 1/2	1 1/4-11 1/2	60,5	2.38	43,2	1.70	43,2	1.70

## Pipe to pipe

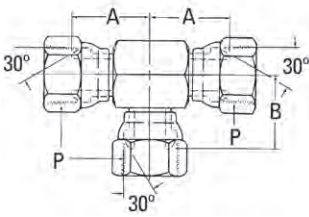
### NPSM internal pipe swivel/NPTF external pipe



**2254-(Dash size)**  
(Formerly Weatherhead series 9406x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	17,8	0.7	18,3	0.72
4-4S	1/4-18	1/4-18	22,4	0.88	27,7	1.09
4-6S	1/4-18	3/8-18	25,1	0.99	31,0	1.22
4-8S	1/4-18	1/2-14	25,9	1.02	37,3	1.47
6-6S	3/8-18	3/8-18	27,7	1.09	38,9	1.53
6-8S	3/8-18	1/2-14	27,7	1.09	37,3	1.47
8-8S	1/2-14	1/2-14	27,9	1.10	37,3	1.47
12-12S	3/4-14	3/4-14	34,5	1.36	51,6	2.03

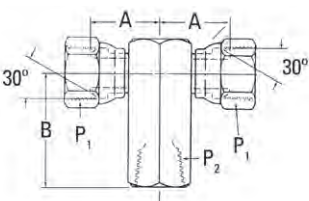
### NPSM internal pipe swivel



**2255-(Dash size)**  
(Formerly Weatherhead series 9705x)

Dash size	Threads P1	A		B	
		mm	in	mm	in
2-2S	1/8-27	18,0	0.71	18,0	0.71
4-4S	1/4-18	23,1	0.91	23,1	0.91
6-6S	3/8-18	25,1	0.99	25,1	0.99
8-8S	1/2-14	27,4	1.08	27,4	1.08
12-12S	3/4-14	34,5	1.36	34,5	1.36

### NPSM internal pipe swivel/ NPTF internal pipe



**2253-(Dash size)**  
(Formerly Weatherhead series 9456x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
6-6S	3/8-18	3/8-18	26,9	1.06	25,9	1.02
8-8S	1/2-14	1/2-14	31,5	1.24	31,2	1.23
12-12S	3/4-14	3/4-14	36,5	1.44	34,5	1.36

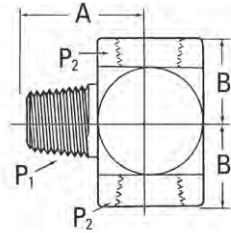
# Steel adapters

Pipe to pipe

J

## Pipe to pipe

### NPTF external pipe/ NPTF internal pipe

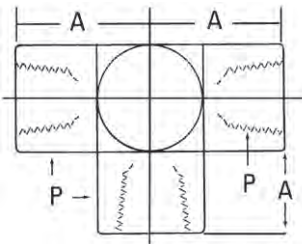


**2091-(Dash size)** (Ref. SAE 140425)  
(Formerly Weatherhead series C3609x)

Dash size	Threads P1	Thread P2	A		B	
			mm	in	mm	in
2-2S	1/8-27	1/8-27	19,8	0.78	16,8	0.66
4-4S*	1/4-18	1/4-18	27,7	1.09	22,4	0.88
6-6S	3/8-18	3/8-18	31,0	1.22	25,9	1.02
8-8S	1/2-14	1/2-14	37,3	1.47	31,2	1.23
12-12S	3/4-14	3/4-14	40,4	1.59	34,5	1.36
16-16S	1-11 1/2	1-11 1/2	50,0	1.97	41,1	1.62

\* Also available in stainless steel as part number 259-2091-(dash size).

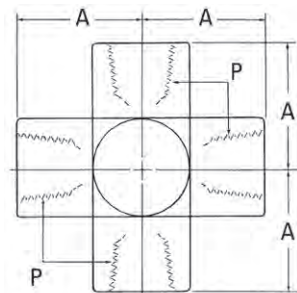
### NPTF internal pipe/NPTF internal pipe



**2090-(Dash size)** (Ref. SAE 140438)  
(Formerly Weatherhead series C3709x)

Dash size	Threads P1	A	
		mm	in
2-2S	1/8-27	16,8	0.66
4-4S	1/4-18	22,4	0.88
6-6S	3/8-18	25,9	1.02
8-8S	1/2-14	31,2	1.23
12-12S	3/4-14	34,5	1.36
16-16S	1-11 1/2	41,1	1.62
20-20S	1 1/4-11 1/2	43,2	1.70
24-24S	1 1/2-11 1/2	52,8	2.08

### NPTF internal pipe/NPTF internal pipe

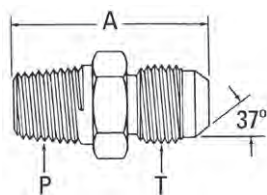


**2080-(Dash size)**  
(Formerly Weatherhead series C3959x)

Dash size	Threads P1	A	
		mm	in
2-2S	1/8-27	16,8	0.66
4-4S	1/4-18	22,3	0.88
6-6S	3/8-18	25,9	1.02
8-8S	1/2-14	31,2	1.23
12-12S	3/4-14	34,5	1.36
16-16S	1-11 1/2	41,1	1.62

## Pipe to SAE 37° flare

## NPTF external pipe/SAE 37° flare



**2021-(Dash size)** (Ref. SAE 070102)  
(Formerly Weatherhead series C5205x)

Dash size	Tube O. D.		Thread P	Thread T	A	
	mm	in			mm	in
2-2S	3,3	0.13	1/8-27	5/16-24	28,2	1.11
2-3S	4,8	0.19	1/8-27	3/8-24	29,0	1.14
2-4S*	6,3	0.25	1/8-27	7/16-20	31,0	1.22
2-5S	7,9	0.31	1/8-27	1/2-20	31,0	1.22
2-6S	9,6	0.38	1/8-27	9/16-18	31,5	1.24
2-8S	12,7	0.50	1/8-27	3/4-16	34,0	1.34
4-4S*	6,3	0.25	1/4-18	7/16-20	36,1	1.42
4-5S*	7,9	0.31	1/4-18	1/2-20	36,1	1.42
4-6S*	9,6	0.38	1/4-18	9/16-18	36,3	1.43
4-8S*	12,7	0.50	1/4-18	3/4-16	38,9	1.53
6-4S*	6,3	0.25	3/8-18	7/16-20	36,1	1.42
6-5S	7,9	0.31	3/8-18	1/2-20	36,1	1.42
6-6S*	9,6	0.38	3/8-18	9/16-18	36,3	1.43
6-8S*	12,7	0.50	3/8-18	3/4-16	38,9	1.53
6-10S*	16,0	0.63	3/8-18	7/8-14	43,2	1.70
6-12S	19,0	0.75	3/8-18	1 1/16-12	44,5	1.75
8-4S	6,3	0.25	1/2-14	7/16-20	42,7	1.68
8-6S*	9,6	0.38	1/2-14	9/16-18	42,9	1.69
8-8S*	12,7	0.50	1/2-14	3/4-16	45,5	1.79
8-10S*	16,0	0.63	1/2-14	7/8-14	48,0	1.89
8-12S*	19,0	0.75	1/2-14	1 1/16-12	52,3	2.06
8-16S	25,4	1.00	1/2-14	1 5/16-12	53,6	2.11
12-6S	9,6	0.38	3/4-14	9/16-18	44,5	1.75
12-8S*	12,7	0.50	3/4-14	3/4-16	47,0	1.85
12-10S*	16,0	0.63	3/4-14	7/8-14	49,5	1.95
12-12S*	19,0	0.75	3/4-14	1 1/16-12	52,3	2.06
12-14S	22,3	0.88	3/4-14	1 3/16-12	53,1	2.09
12-16S*	25,4	1.00	3/4-14	1 5/16-12	53,6	2.11
16-10S	16,0	0.63	1-11 1/2	7/8-14	54,6	2.15
16-12S	19,0	0.75	1-11 1/2	1 1/16-12	57,2	2.25
16-16S*	25,4	1.00	1-11 1/2	1 5/16-12	58,4	2.30
16-20S	31,7	1.25	1-11 1/2	1 5/8-12	61,5	2.42
16-24S	38,1	1.50	1-11 1/2	1 7/8-12	66,5	2.62
16-32S	50,8	2.00	1-11 1/2	2 1/2-12	76,7	3.02
20-12S	19,0	0.75	1 1/4-11 1/2	1 1/16-12	59,9	2.36
20-16S*	25,4	1.00	1 1/4-11 1/2	1 5/16-12	61,0	2.40
20-20S*	31,7	1.25	1 1/4-11 1/2	1 5/8-12	62,2	2.45
20-24S*	38,1	1.50	1 1/4-11 1/2	1 7/8-12	67,3	2.65
20-32S	50,8	2.00	1 1/4-11 1/2	2 1/2-12	77,5	3.05
24-12S	19,0	0.75	1 1/2-11 1/2	1 1/16-12	62,5	2.46
24-16S	25,4	1.00	1 1/2-11 1/2	1 5/16-12	63,8	2.51
24-20S	31,7	1.25	1 1/2-11 1/2	1 5/8-12	64,8	2.55
24-24S*	38,1	1.50	1 1/2-11 1/2	1 7/8-12	68,1	2.68
24-32S	50,8	2.00	1 1/2-11 1/2	2 1/2-12	78,2	3.08
32-32S*	50,8	2.00	2-11 1/2	2 1/2-12	79,0	3.11
40-40S	63,5	2.50	2 1/2-8	3-12	85,9	3.38

\* Also available in stainless steel as part number 259-2021-(dash size).  
(Formerly Weatherhead 5217x).

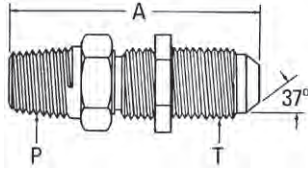
# Steel adapters

Pipe to SAE 37° flare

J

## Pipe to SAE 37° flare

NPTF external pipe/SAE 37° flare bulkhead

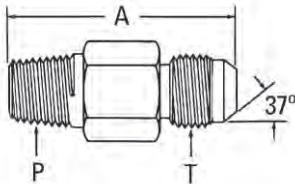


### 2240-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A	
	mm	in			mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	46,7	1.84
4-4S	6,3	0.25	1/4-18	7/16-20	51,6	2.03
4-6S	9,6	0.38	1/4-18	9/16-18	53,8	2.12
6-8S	12,7	0.50	3/8-18	3/4-16	59,9	2.36
8-10S	16,0	0.63	1/2-14	7/8-14	68,8	2.71
12-12S	19,0	0.75	3/4-14	1 1/16-12	74,2	2.92
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	79,0	3.11

Note: Also available in stainless steel as 259-2240-(dash size).

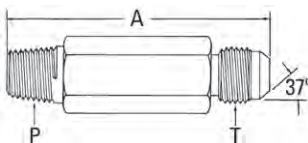
NPTF external pipe/SAE 37° flare



### 202113-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A	
	mm	in			mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	46,0	1.81
2-5S	7,9	0.31	1/8-27	1/2-20	49,3	1.94
4-4S	6,3	0.25	1/4-18	7/16-20	57,2	2.25
4-5S	7,9	0.31	1/4-18	1/2-20	57,2	2.25
4-6S	9,6	0.38	1/4-18	9/16-18	57,2	2.25
6-6S	9,6	0.38	3/8-18	9/16-18	63,5	2.50
6-8S	12,7	0.50	3/8-18	3/4-16	69,8	2.75
8-8S	12,7	0.50	1/2-14	3/4-16	70,9	2.79
8-10S	16,0	0.63	1/2-14	7/8-14	79,2	3.12
8-12S	19,0	0.75	1/2-14	11/16-12	83,3	3.28
12-12S	19,0	0.75	3/4-14	11/16-12	88,9	3.50
16-16S	25,4	1.00	1-11 1/2	15/16-12	101,6	4.00
20-20S	38,1	1.50	1 1/4-11 1/2	1 5/8-12	114,3	4.50
24-24S	38,1	1.50	1 1/2-11 1/2	1 7/8-12	123,9	4.88
32-32S	50,8	2.00	2-11 1/2	2 1/2-12	142,7	5.62

NPTF external pipe/SAE 37° flare

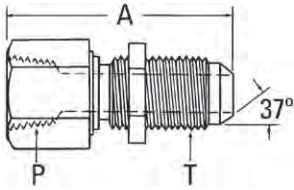


### 202114-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A	
	mm	in			mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	65,0	2.56
4-4S	6,3	0.25	1/4-18	7/16-20	82,5	3.25
4-5S	7,9	0.31	1/4-18	1/2-20	82,5	3.25
4-6S	9,6	0.38	1/4-18	9/16-18	82,5	3.25
6-8S	12,7	0.50	3/8-18	3/4-16	101,6	4.00
8-6S	9,6	0.38	1/2-14	9/16-18	105,9	4.17
8-10S	16,0	0.63	1/2-14	7/8-14	111,2	4.38
12-12S	19,0	0.75	3/4-14	1 1/16-12	127,0	5.00
12-16S	25,4	1.00	3/4-14	1 5/16-12	141,2	5.56
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	146,0	5.75

### Pipe to SAE 37° flare

#### NPTF internal pipe/SAE 37° flare bulkhead

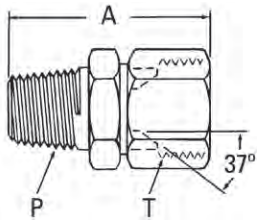


**2239-(Dash size)** (Ref. SAE 070603)  
(Formerly Weatherhead series C5275x)

Dash size	Tube O. D.		Thread P	Thread T	A	
	mm	in			mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	52,8	2.08
4-6S	9,6	0.38	1/4-18	9/16-18	54,6	2.15
6-8S	12,7	0.50	3/8-18	3/4-16	63,0	2.48
8-10S	16,0	0.63	1/2-14	7/8-14	72,1	2.84
12-12S	19,0	0.75	3/4-14	1 1/16-12	77,5	3.05
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	82,6	3.25

**Note:** Available without nut. Order by part number 2239-1-(dash size).

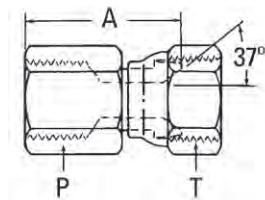
#### NPTF external pipe/ SAE 37° flare swivel



**2018-(Dash size)**  
(Formerly Weatherhead series 9100x)

Dash size	Tube O. D.		Thread P	Thread T	A	
	mm	in			mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	33,6	1.32
4-4S	6,3	0.25	1/4-18	7/16-20	38,1	1.50
4-5S	7,9	0.31	1/4-18	1/2-20	39,4	1.55
4-6S	9,6	0.38	1/4-18	9/16-18	40,4	1.59
6-6S	9,6	0.38	3/8-18	9/16-18	40,4	1.59
6-8S	12,7	0.50	3/8-18	3/4-16	44,2	1.74
6-10S	16,0	0.63	3/8-18	7/8-14	48,8	1.92
8-8S	12,7	0.50	1/2-14	3/4-16	49,0	1.93
8-10S	16,0	0.63	1/2-14	7/8-14	53,8	2.12
8-12S	19,0	0.75	1/2-14	1 1/16-12	56,4	2.22
12-12S	19,0	0.75	3/4-14	1 1/16-12	54,6	2.15
12-16S	25,4	1.00	3/4-14	1 5/16-12	59,6	2.35
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	64,5	2.54
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	70,6	2.78

#### NPTF internal pipe/ SAE 37° flare swivel



**2242-(Dash size)** (Ref. SAE 070603)  
(Formerly Weatherhead series C5256x)

Dash size	Tube O. D.		Thread P	Thread T	A	
	mm	in			mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	21,6	0.85
2-5S	7,9	0.31	1/8-27	1/2-20	22,1	0.87
4-4S	6,3	0.25	1/4-18	7/16-20	28,2	1.11
4-5S	7,9	0.31	1/4-18	1/2-20	27,9	1.10
4-6S	9,6	0.38	1/4-18	9/16-18	30,0	1.18
6-6S	9,6	0.38	3/8-18	9/16-18	29,5	1.16
6-8S	12,7	0.50	3/8-18	3/4-16	30,5	1.20
8-6S	9,6	0.38	1/2-14	9/16-18	36,1	1.42
8-8S	12,7	0.50	1/2-14	3/4-16	37,6	1.48
8-10S	16,0	0.63	1/2-14	7/8-14	37,3	1.47
8-12S	19,0	0.75	1/2-14	1 1/16-12	36,8	1.45
12-12S	19,0	0.75	3/4-14	1 1/16-12	37,8	1.49
12-14S	22,3	0.88	3/4-14	1 3/16-12	39,4	1.55
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	47,0	1.85
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	51,3	2.02

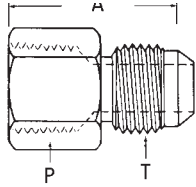
# Steel adapters

Pipe to SAE 37° flare

J

## Pipe to SAE 37° flare

### NPTF internal pipe/SAE 37° flare

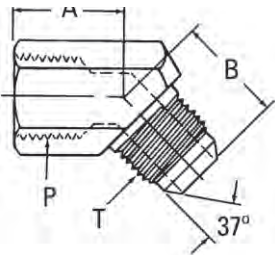


**2022-(Dash size)** (Ref. SAE 070103)  
(Formerly Weatherhead series C5255x)

Dash size	Tube O. D.		Thread P	Thread T	A	
	mm	in			mm	in
2-2S	4,8	0.13	1/8-27	5/16-24	28,4	1.12
2-3S	4,8	0.19	1/8-27	3/8-24	28,7	1.13
2-4S	6,4	0.25	1/8-27	7/16-20	30,2	1.19
2-5S	7,9	0.31	1/8-27	1/2-20	29,7	1.17
4-3S	4,8	0.19	1/4-18	3/8-24	33,5	1.32
4-4S*	6,4	0.25	1/4-18	7/16-20	35,3	1.39
4-5S	7,9	0.31	1/4-18	1/2-20	35,3	1.39
4-6S	9,7	0.38	1/4-18	9/16-18	35,6	1.40
4-8S	12,7	0.50	1/4-18	3/4-16	39,4	1.55
6-6S*	9,7	0.38	3/8-18	9/16-18	37,1	1.46
6-8S*	12,7	0.50	3/8-18	3/4-16	39,6	1.56
6-10S	16,0	0.63	3/8-18	7/8-14	42,9	1.69
8-4S	6,4	0.25	1/2-14	7/16-20	42,7	1.68
8-6S	9,7	0.38	1/2-14	9/16-18	42,9	1.69
8-8S*	12,7	0.50	1/2-14	3/4-16	45,5	1.79
8-10S	16,0	0.63	1/2-14	7/8-14	48,0	1.89
8-12S	19,1	0.75	1/2-14	1 1/16-12	52,1	2.05
12-8S	12,7	0.50	3/4-14	3/4-16	47,0	1.85
12-10S	16,0	0.63	3/4-14	7/8-14	49,5	1.95
12-12S	19,1	0.75	3/4-14	1 1/16-12	52,3	2.06
12-16S	25,4	1.00	3/4-14	1 5/16-12	53,8	2.12
16-12S	19,1	0.75	1-11 1/2	1 1/16-12	58,4	2.30
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	59,7	2.35
20-16S	25,4	1.00	1 1/4-11 1/2	1 5/16-12	62,0	2.44
20-20S	31,8	1.25	1 1/4-11 1/2	1 5/8-12	63,2	2.49
24-24S	38,1	1.50	1 1/2-11 1/2	1 7/8-12	66,5	2.62
32-32S	50,8	2.00	2-11 1/2	2-11 1/2	75,4	2.97

\* Also available in stainless steel as part number 259-2022-(dash size).  
(Formerly Weatherhead 5267x)

### NPTF internal pipe/SAE 37° flare



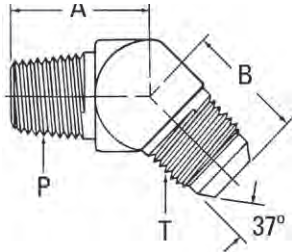
**2044-(Dash size)**

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
4-6S	9,6	0.38	1/4-18	9/16-18	15,7	0.62	21,0	0.83
6-8S	12,7	0.50	3/8-18	3/4-16	18,3	0.72	24,9	0.98
8-10S	16,0	0.63	1/2-14	7/8-14	23,1	0.91	28,2	1.11
12-12S	19,0	0.75	3/4-14	1 1/16-12	24,6	0.97	34,3	1.35



## Pipe to SAE 37° flare

### NPTF external pipe/SAE 37° flare

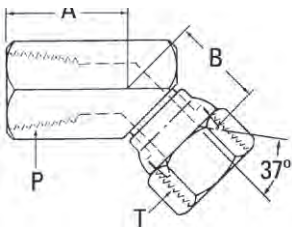


**2023-(Dash size)** (Ref. SAE 070302)  
(Formerly Weatherhead series C5355x)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-3S	4,8	0.19	1/8-27	3/8--24	18,3	0.72	21,1	0.83
2-4S	6,3	0.25	1/8-27	7/16-20	16,3	0.64	18,3	0.72
2-5S	7,9	0.31	1/8-27	1/2-20	16,3	0.64	19,6	0.77
2-6S	9,6	0.38	1/8-27	9/16-18	17,0	0.67	21,1	0.83
4-4S	6,3	0.25	1/4-18	7/16-20	21,8	0.86	20,8	0.82
4-5S	7,9	0.31	1/4-18	1/2-20	21,8	0.86	20,8	0.82
4-6S*	9,6	0.38	1/4-18	9/16-18	21,8	0.86	21,1	0.83
4-8S	12,7	0.50	1/4-18	3/4-16	24,1	0.95	24,9	0.98
6-4S	6,3	0.25	3/8-18	7/16-20	24,1	0.95	21,6	0.85
6-6S	9,6	0.38	3/8-18	9/16-18	24,1	0.95	22,1	0.87
6-8S	12,7	0.50	3/8-18	3/4-16	24,1	0.95	24,9	0.98
6-10S	16,0	0.63	3/8-18	7/8-14	24,9	0.98	28,2	1.11
6-12S	19,0	0.75	3/8-18	1 1/16-12	25,7	1.01	32,5	1.28
8-6S	9,6	0.38	1/2-14	9/16-18	29,7	1.17	22,4	0.88
8-8S	12,7	0.50	1/2-14	3/4-16	29,7	1.17	25,1	0.99
8-10S	16,0	0.63	1/2-14	7/8-14	29,7	1.17	28,2	1.11
8-12S	19,0	0.75	1/2-14	1 1/16-12	30,5	1.20	32,5	1.28
12-8S	12,7	0.50	3/4-14	3/4-16	30,5	1.20	26,4	1.04
12-10S	16,0	0.63	3/4-14	7/8-14	30,5	1.20	29,5	1.16
12-12S	19,0	0.75	3/4-14	1 1/16-12	30,5	1.20	32,5	1.28
12-16S	25,4	1.00	3/4-14	1 5/16-12	32,8	1.29	37,3	1.47
16-12S	19,0	0.75	1-11 1/2	1 1/16-12	37,6	1.48	36,1	1.42
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	37,6	1.48	37,3	1.47
16-20S	31,7	1.25	1-11 1/2	1 5/8-12	41,7	1.64	40,4	1.59
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	42,4	1.67	40,4	1.59
24-24S	38,1	1.50	1 1/2-11 1/2	1 7/8-12	45,0	1.77	45,2	1.78
32-32S	50,8	2.00	2-11 1/2	2 1/2-12	53,6	2.11	56,4	2.22

\* Also available in stainless steel as part number 259-2023-(dash size).  
(Formerly Weatherhead 5367x)

### NPTF internal pipe/SAE 37° flare swivel



**2243-(Dash size)**

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
8-6S	9,6	0.38	1/2-14	9/16-18	23,1	0.91	21,3	0.84
8-10S	16,0	0.63	1/2-14	7/8-14	23,1	0.91	23,9	0.94

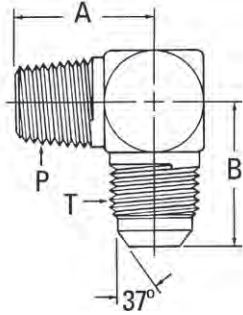
# Steel adapters

Pipe to SAE 37° flare

J

## Pipe to SAE 37° flare

NPTF external pipe/SAE 37° flare



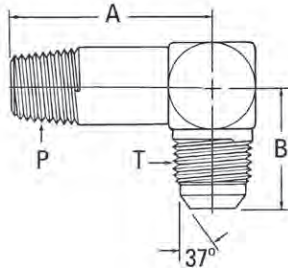
**2024-(Dash size)** (Ref. SAE 070202)  
(Formerly Weatherhead series C5405x)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-3S	4,8	0.19	1/8-27	3/8-24	18,3	0.72	21,1	0.83
2-4S*	6,3	0.25	1/8-27	7/16-20	19,8	0.78	22,6	0.89
2-5S	7,9	0.31	1/8-27	1/2-20	19,8	0.78	24,1	0.95
2-6S	9,6	0.38	1/8-27	9/16-18	22,9	0.90	26,9	1.06
4-4S*	6,3	0.25	1/4-18	7/16-20	27,7	1.09	26,7	1.05
4-5S	7,9	0.31	1/4-18	1/2-20	27,7	1.09	26,7	1.05
4-6S*	9,6	0.38	1/4-18	9/16-18	27,7	1.09	26,9	1.06
4-8S	12,7	0.50	1/4-18	3/4-16	31,0	1.22	31,8	1.25
6-4S	6,3	0.25	3/8-18	7/16-20	31,0	1.22	28,4	1.12
6-5S	7,9	0.31	3/8-18	1/2-20	31,0	1.22	28,4	1.12
6-6S	9,6	0.38	3/8-18	9/16-18	31,0	1.22	29,0	1.14
6-8S	12,7	0.50	3/8-18	3/4-16	31,0	1.22	31,8	1.25
6-10S	16,0	0.63	3/8-18	7/8-14	32,5	1.28	36,8	1.45
6-12S	19,0	0.75	3/8-18	1 1/16-12	35,6	1.40	42,2	1.66
8-4S	6,3	0.25	1/2-14	7/16-20	37,3	1.47	30,7	1.21
8-6S	9,6	0.38	1/2-14	9/16-18	37,3	1.47	31,0	1.22
8-8S*	12,7	0.50	1/2-14	3/4-16	37,3	1.47	33,8	1.33
8-10S	16,0	0.63	1/2-14	7/8-14	37,3	1.47	36,8	1.45
8-12S	19,0	0.75	1/2-14	1 1/16-12	40,4	1.59	42,2	1.66
8-16S	25,4	1.00	1/2-14	1 5/16-12	45,2	1.78	46,0	1.81
12-6S	9,6	0.38	3/4-14	9/16-18	40,4	1.59	33,3	1.31
12-8S	12,7	0.50	3/4-14	3/4-16	40,4	1.59	36,1	1.42
12-10S	16,0	0.63	3/4-14	7/8-14	40,4	1.59	39,1	1.54
12-12S	19,0	0.75	3/4-14	1 1/16-12	40,4	1.59	42,2	1.66
12-16S	25,4	1.00	3/4-14	1 5/16-12	45,2	1.78	46,0	1.81
16-8S	12,7	0.50	1-11 1/2	3/4-16	50,0	1.97	38,6	1.52
16-12S	19,0	0.75	1-11 1/2	1 1/16-12	50,0	1.97	44,7	1.76
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	50,0	1.97	46,0	1.81
16-20S	31,7	1.25	1-11 1/2	1 5/8-12	59,7	2.35	52,3	2.06
20-16S	25,4	1.00	1 1/4-11 1/2	1 5/16-12	60,5	2.38	51,1	2.01
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	60,5	2.38	52,3	2.06
20-24S	38,1	1.50	1 1/4-11 1/2	1 7/8-12	66,3	2.61	59,2	2.33
24-20S	31,7	1.25	1 1/2-11 1/2	1 5/8-12	67,1	2.64	55,9	2.20
24-24S	38,1	1.50	1 1/2-11 1/2	1 7/8-12	67,1	2.64	59,2	2.33
24-32S	50,8	2.00	1 1/2-11 1/2	2 1/2-12	75,4	2.97	77,7	3.06
32-32S	50,8	2.00	2-11 1/2	2 1/2-12	76,2	3.00	77,7	3.06

\* Also available in stainless steel as part number 259-2024-(dash size)  
(Formerly Weatherhead 5417x)

### Pipe to SAE 37° flare

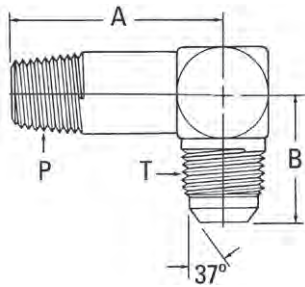
#### Extra pipe/SAE 37° flare



**202411-(Dash size)** (Ref. SAE 071502)  
(Formerly Weatherhead series C5425x)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	29,7	1.17	22,6	0.89
2-5S	7,9	0.31	1/8-27	1/2-20	29,7	1.17	24,1	0.95
4-4S	6,3	0.25	1/4-18	7/16-20	40,1	1.58	26,7	1.05
4-6S	9,6	0.38	1/4-18	9/16-18	40,1	1.58	26,9	1.06
4-8S	12,7	0.50	1/4-18	3/4-16	46,2	1.82	31,8	1.25
6-6S	9,6	0.38	3/8-18	9/16-18	46,2	1.82	29,0	1.14
6-8S	12,7	0.50	3/8-18	3/4-16	46,2	1.82	31,8	1.25
8-8S	12,7	0.50	1/2-14	3/4-16	55,1	2.17	33,8	1.33
8-10S	16,0	0.63	1/2-14	7/8-14	55,1	2.17	36,8	1.45
12-10S	16,0	0.63	3/4-14	7/8-14	62,0	2.44	39,1	1.54
12-12S	19,0	0.75	3/4-14	1 1/16-12	62,0	2.44	42,2	1.66
12-16S	25,4	1.00	3/4-14	1 5/16-12	71,6	2.82	46,0	1.81
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	76,5	3.01	46,0	1.81
20-20S	31,70	1.25	1 1/4-11 1/2	1 5/8-12	93,7	3.69	52,3	2.06

#### Long NPTF external pipe/SAE 37° flare



**202413-(Dash size)** (Ref. SAE 071602)  
(Formerly Weatherhead series C5435x)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	39,6	1.56	22,6	0.89
2-5S	7,9	0.31	1/8-27	1/2-20	41,4	1.63	24,1	0.95
4-4S	6,3	0.25	1/4-18	7/16-20	52,6	2.07	26,7	1.05
4-5S	7,9	0.31	1/4-18	1/2-20	52,6	2.07	26,7	1.05
4-6S	9,6	0.38	1/4-18	9/16-18	52,6	2.07	26,9	1.06
6-6S	9,6	0.38	3/8-18	9/16-18	61,5	2.42	29,0	1.14
6-8S	12,7	0.50	3/8-18	3/4-16	61,5	2.42	31,8	1.25
8-8S	12,7	0.50	1/2-14	3/4-16	72,9	2.87	33,8	1.33
8-10S	16,0	0.63	1/2-14	7/8-14	72,9	2.87	36,8	1.45
8-12S	19,0	0.75	1/2-14	1 1/16-12	83,3	3.28	42,2	1.66
12-12S	19,0	0.75	3/4-14	1 1/16-12	83,3	3.28	42,2	1.66
12-16S	25,4	1.00	3/4-14	1 5/16-12	98,0	3.86	46,0	1.81
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	102,9	4.05	46,0	1.81
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	122,9	4.84	52,3	2.06

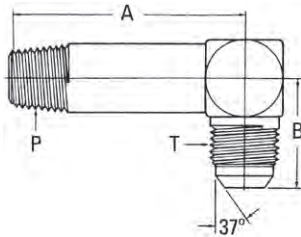
# Steel adapters

Pipe to SAE 37° flare

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## Pipe to SAE 37° flare

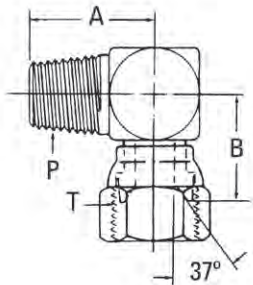
### Extra long NPTF external pipe/SAE 37° flare



#### 202414-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	58,7	2.31	22,6	0.89
4-4S	6,3	0.25	1/4-18	7/16-20	75,9	2.99	24,6	0.97
4-6S	9,6	0.38	3/8-18	9/16-18	77,7	3.06	26,9	1.06
8-10S	16,0	0.63	1/2-14	7/8-14	114,5	4.51	36,8	1.45

### NPTF external pipe/SAE 37° flare swivel

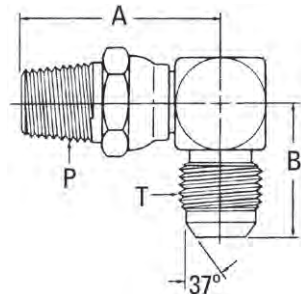


#### 2250-(Dash size)

(Formerly Weatherhead series C5406x)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	19,8	0.78	16,8	0.66
2-5S	7,9	0.31	1/8-27	1/2-20	19,8	0.78	17,3	0.68
4-4S	6,3	0.25	1/4-18	7/16-20	27,7	1.09	20,8	0.82
4-6S	9,6	0.38	1/4-18	9/16-18	27,7	1.09	22,3	0.88
6-6S	9,6	0.38	3/8-18	9/16-18	31,0	1.22	21,6	0.85
6-8S	12,7	0.50	3/8-18	3/4-16	31,0	1.22	24,4	0.96
8-8S	12,7	0.50	1/2-14	3/4-16	37,3	1.47	25,4	1.00
8-10S	16,0	0.63	1/2-14	7/8-14	37,3	1.47	28,5	1.12
12-8S	12,7	0.50	3/4-14	3/4-16	40,4	1.59	29,7	1.17
12-12S	19,0	0.75	3/4-14	1 1/16-12	40,4	1.59	30,3	1.19
12-14S	22,3	0.88	3/4-14	1 3/16-12	42,9	1.69	30,5	1.20
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	50,0	1.97	35,8	1.41
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	60,4	2.38	42,7	1.68
24-24S	38,1	1.50	1 1/2-11 1/2	1 7/8-12	67,0	2.64	47,2	1.86
32-32S	50,8	2.00	2-11 1/2	2 1/2-12	76,2	3.00	62,0	2.44

### NPTF external pipe swivel/SAE 37° flare



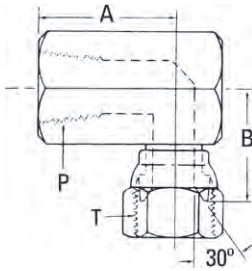
#### 2249-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
4-6S	9,6	0.38	1/4-18	9/16-18	40,6	1.60	26,9	1.06
6-8S	12,7	0.50	3/8-18	3/4-16	43,4	1.71	31,0	1.22
8-10S	16,0	0.63	1/2-14	7/8-14	50,8	2.00	36,8	1.45
12-12S	19,0	0.75	3/4-14	1 1/16-12	41,1	1.62	42,2	1.66

**Note:** The above adapter is not a rotating union or swivel joint. Care must be exercised to avoid misuse. To be used with petroleum or water glycol fluids.

## Pipe to SAE 37° flare

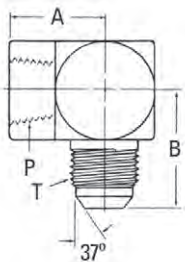
### NPTF internal pipe/SAE 37° flare swivel



#### 2244-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
6-6S	9,6	0.38	3/8-18	9/16-18	25,9	1.02	23,4	0.92
8-8S	12,7	0.50	1/2-14	3/4-16	31,2	1.23	27,4	1.08
8-10S	16,0	0.63	1/2-14	7/8-14	31,2	1.23	28,5	1.12

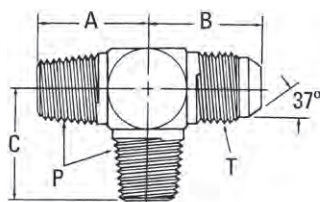
### NPTF internal pipe/SAE 37° flare



#### 2025-(Dash size) (Ref. SAE 070203) (Formerly Weatherhead series C5455x)

Dash size	Tube O. D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	16,8	0.66	27,4	1.08
2-5S	7,9	0.31	1/8-27	1/2-20	16,8	0.66	27,4	1.08
2-6S	9,6	0.38	1/8-27	9/16-18	17,0	0.67	31,2	1.23
4-4S	6,3	0.25	1/4-18	7/16-20	22,4	0.88	31,0	1.22
4-5S	7,9	0.31	1/4-18	1/2-20	22,4	0.88	31,0	1.22
4-6S	9,6	0.38	1/4-18	9/16-18	22,4	0.88	31,2	1.23
4-8S	12,7	0.50	1/4-18	3/4-16	25,7	1.01	36,1	1.42
6-4S	6,3	0.25	3/8-18	7/16-20	25,9	1.02	32,8	1.29
6-5S	7,9	0.31	3/8-18	1/2-20	25,9	1.02	32,8	1.29
6-6S	9,6	0.38	3/8-18	9/16-18	25,9	1.02	33,3	1.31
6-8S	12,7	0.50	3/8-18	3/4-16	25,9	1.02	36,1	1.42
8-4S	6,3	0.25	1/2-14	7/16-20	31,2	1.23	35,6	1.40
8-8S	12,7	0.50	1/2-14	3/4-16	31,2	1.23	38,6	1.52
8-10S	16,0	0.63	1/2-14	7/8-14	31,2	1.23	41,7	1.64
8-12S	19,0	0.75	1/2-14	1 1/16-12	34,3	1.35	48,0	1.89
12-12S	19,0	0.75	3/4-14	1 1/16-12	34,5	1.36	48,0	1.89
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	41,1	1.62	55,1	2.17
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	43,2	1.70	59,2	2.33
24-24S	38,1	1.50	1 1/2-11 1/2	1 7/8-12	52,8	2.08	73,4	2.89
32-32S	50,8	2.00	2-11 1/2	2 1/2-12	60,7	2.39	83,8	3.30

### NPTF external pipe/SAE 37° flare



#### 203007-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A		B		C	
	mm	in			mm	in	mm	in		
2-4S	6,3	0.25	1/8-27	7/16-20	19,8	0.78	22,6	0.89	19,8	0.78
4-6S	9,6	0.38	1/4-18	9/16-18	27,7	1.09	26,9	1.06	27,7	1.09
6-8S	12,7	0.50	3/8-18	3/4-16	31,0	1.22	31,8	1.25	31,0	1.22
12-12S	19,0	0.75	3/4-14	1 1/16-12	40,4	1.59	42,2	1.66	40,4	1.59
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	50,0	1.97	46,0	1.81	50,0	1.97

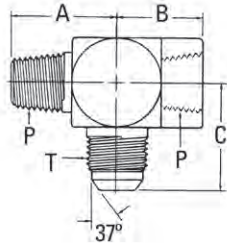
# Steel adapters

Pipe to SAE 37° flare

J

## Pipe to SAE 37° flare

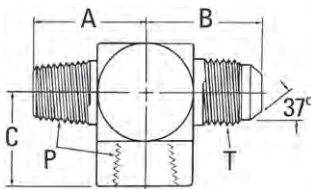
NPTF external pipe/ NPTF internal pipe/SAE 37° flare



### 203301-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A		B		C	
	mm	in			mm	in	mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	19,8	0.78	16,8	0.66	27,4	1.08
4-6S	9,6	0.38	1/4-18	9/16-18	27,7	1.09	22,3	0.88	31,2	1.23
6-8S	12,7	0.50	3/8-18	3/4-16	31,0	1.22	25,9	1.02	36,1	1.42
8-10S	16,0	0.63	1/2-14	7/8-14	37,3	1.47	31,2	1.23	41,6	1.64
12-12S	19,0	0.75	3/4-14	1 1/16-12	40,4	1.59	34,5	1.36	48,0	1.89
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	50,0	1.97	41,1	1.62	55,2	2.17

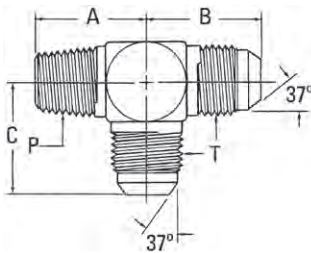
NPTF external pipe/SAE 37° flare/NPTF internal pipe



### 203103-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A		B		C	
	mm	in			mm	in	mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	19,8	0.78	27,4	1.08	16,8	0.66
4-6S	9,6	0.38	1/4-18	9/16-18	27,7	1.09	31,2	1.23	22,3	0.88
6-6S	9,6	0.38	3/8-18	9/16-18	31,0	1.22	33,3	1.31	25,9	1.02
6-8S	12,7	0.50	3/8-18	3/4-16	31,0	1.22	36,1	1.42	25,9	1.02
8-10S	16,0	0.63	1/2-14	7/8-14	37,3	1.47	41,6	1.64	31,2	1.23
12-12S	19,0	0.75	3/4-14	1 1/16-12	40,4	1.59	48,0	1.89	34,5	1.36
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	53,1	2.09	53,1	2.09	42,1	1.62

NPTF external pipe/SAE 37° flare

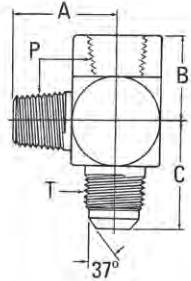


### 2028-(Dash size) (Ref. SAE 070424) (Formerly Weatherhead series C5755x)

Dash size	Tube O. D.		Thread P	Thread T	A		B		C	
	mm	in			mm	in	mm	in	mm	in
2-3S	4,8	0.19	1/8-27	3/8-24	18,3	0.72	21,1	0.83	21,1	0.83
2-4S	6,3	0.25	1/8-27	7/16-20	19,8	0.78	22,6	0.89	22,6	0.89
4-4S	6,3	0.25	1/4-18	7/16-20	27,7	1.09	26,7	1.05	26,7	1.05
4-5S	7,9	0.31	1/4-18	1/2-20	27,7	1.09	26,7	1.05	26,7	1.05
4-6S	9,6	0.38	1/4-18	9/16-18	27,7	1.09	26,9	1.06	26,9	1.06
6-6S	9,6	0.38	3/8-18	9/16-18	31,0	1.22	29,0	1.14	29,0	1.14
6-8S	12,7	0.50	3/8-18	3/4-16	31,0	1.22	31,8	1.25	31,8	1.25
8-8S	12,7	0.50	1/2-14	3/4-16	37,3	1.47	33,8	1.33	33,8	1.33
8-10S	16,0	0.63	1/2-14	7/8-14	37,3	1.47	36,8	1.45	36,8	1.45
8-12S	19,0	0.75	1/2-14	1 1/16-12	40,4	1.59	42,2	1.66	42,2	1.66
12-10S	16,0	0.63	3/4-14	7/8-14	40,4	1.59	39,1	1.54	39,1	1.54
12-12S	19,0	0.75	3/4-14	1 1/16-12	40,4	1.59	42,2	1.66	42,2	1.66
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	50,0	1.97	46,0	1.81	46,0	1.81
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	60,5	2.38	52,3	2.06	52,3	2.06
24-24S	38,1	1.50	1 1/2-11 1/2	1 7/8-12	67,1	2.64	59,2	2.33	59,2	2.33
32-32S	50,8	2.00	2-11 1/2	2 1/2-12	76,2	3.00	77,7	3.06	77,7	3.06

### Pipe to SAE 37° flare

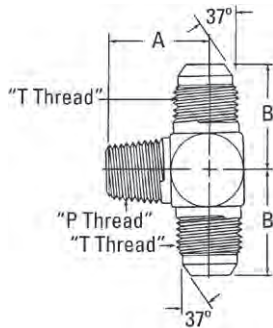
#### NPTF external pipe/ NPTF internal pipe/SAE 37° flare



#### 203006-(Dash size)

Dash size	Tube O. D.		Thread P	Thread T	A		B		C	
	mm	in			mm	in	mm	in	mm	in
4-6S	9,6	0.38	1/4-18	9/16-18	27,7	1.09	22,3	0.88	31,2	1.23
6-8S	12,7	0.50	3/8-18	3/4-16	31,0	1.22	25,9	1.02	36,1	1.42
8-10S	16,0	0.63	1/2-14	7/8-14	41,7	1.64	31,2	1.23	37,3	1.47
12-12S	19,0	0.75	3/4-14	1 1/16-12	40,4	1.59	34,5	1.36	48,0	1.89
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	50,0	1.97	42,1	1.62	55,1	2.17
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	59,2	2.33	43,2	1.70	60,5	2.38

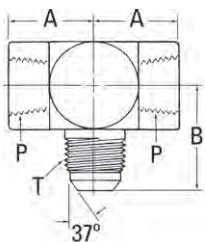
#### NPTF external pipe/SAE 37° flare



#### 2030-(Dash size) (Ref. SAE 070425) (Formerly Weatherhead series C5605x)

Dash size	Tube O.D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	19,8	0.78	22,6	0.89
2-5S	7,9	0.31	1/8-27	1/2-20	19,8	0.78	24,1	0.95
4-4S	6,3	0.25	1/4-18	7/16-20	27,7	1.09	26,7	1.05
4-5S	7,9	0.31	1/4-18	1/2-20	27,7	1.09	26,7	1.05
4-6S	9,6	0.38	1/4-18	9/16-18	27,7	1.09	26,9	1.06
6-6S	9,6	0.38	3/8-18	9/16-18	31,0	1.22	29,0	1.14
6-8S	12,7	0.50	3/8-18	3/4-16	31,0	1.22	31,8	1.25
8-6S	9,6	0.38	1/2-14	9/16-18	37,3	1.47	31,0	1.22
8-8S	12,7	0.50	1/2-14	3/4-16	37,3	1.47	33,8	1.33
8-10S	16,0	0.63	1/2-14	7/8-14	37,3	1.47	36,8	1.45
12-12S	19,0	0.75	3/4-14	1 1/16-12	40,4	1.59	42,2	1.66
12-16S	25,4	1.00	3/4-14	1 5/16-12	45,2	1.78	46,0	1.81
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	50,0	1.97	46,0	1.81
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-12	60,5	2.38	52,3	2.06

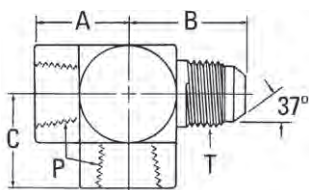
#### NPTF internal pipe/SAE 37° flare



#### 202901-(Dash size)

Dash size	Tube O.D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
4-6S	9,6	0.38	1/4-18	9/16-18	22,3	0.88	31,2	1.23
12-12S	19,0	0.75	3/4-14	1 1/16-12	34,5	1.36	48,0	1.89
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	42,1	1.62	55,1	2.17

#### NPTF internal pipe/ NPTF internal pipe/SAE 37° flare



#### 203104-(Dash size) (Ref. SAE 070427)

Dash size	Tube O.D.		Thread P	Thread T	A		B		C	
	mm	in			mm	in	mm	in	mm	in
4-6S	9,6	0.38	1/4-18	9/16-18	22,3	0.88	31,2	1.23	22,3	0.88
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	42,1	1.62	55,1	2.17	42,1	1.62

# Steel adapters

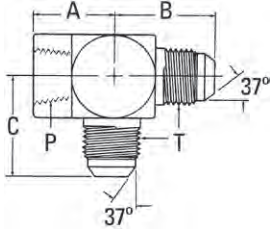
Pipe to SAE 37° flare

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## Pipe to SAE 37° flare

### NPTF internal pipe/SAE 37° flare

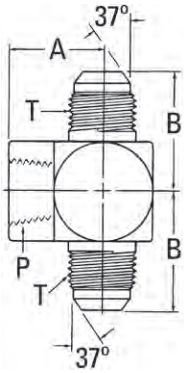
**2029-(Dash size)** (Ref. SAE 070426)  
(Formerly Weatherhead series C5805x)



Dash size	Tube O.D.		Thread P	Thread T	A		B		C	
	mm	in			mm	in	mm	in	mm	in
2-4S	6,3	0.25	1/8-27	7/16-20	16,8	0.66	27,4	1.08	24,1	0.95
4-4S	6,3	0.25	1/4-18	7/16-20	22,4	0.88	25,4	1.00	25,4	1.00
4-6S	9,6	0.38	1/4-18	9/16-18	22,6	0.89	31,2	1.23	28,2	1.11
8-8S	12,7	0.50	1/2-14	3/4-16	31,2	1.23	36,1	1.42	35,6	1.40
12-12S	19,0	0.75	3/4-14	1 1/16-12	34,5	1.36	48,0	1.89	48,0	1.89
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	41,1	1.62	55,2	2.17	53,1	2.09

### NPTF internal pipe/ SAE 37° flare swivel

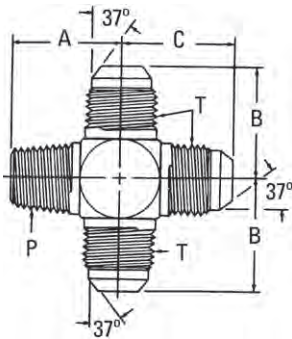
**2031-(Dash size)** (Ref. SAE 070427)  
(Formerly Weatherhead series 5655x)



Dash size	Tube O.D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-3S	4,8	0.19	1/8-27	3/8-24	16,8	0.66	26,2	1.03
2-4S	6,3	0.25	1/8-27	7/16-20	16,8	0.66	27,4	1.08
4-4S	6,3	0.25	1/4-18	7/16-20	22,4	0.88	31,0	1.22
4-6S	9,6	0.38	1/4-18	9/16-18	22,4	0.88	31,2	1.23
6-8S	12,7	0.50	3/8-18	3/4-16	25,9	1.02	36,1	1.42
8-8S	12,7	0.50	1/2-14	3/4-16	31,2	1.23	38,6	1.52
8-10S	16,0	0.63	1/2-14	7/8-14	31,2	1.23	41,6	1.64
12-12S	19,0	0.75	3/4-14	1 1/16-12	34,5	1.36	48,0	1.89
16-16S	25,4	1.00	1-11 1/2	1 5/16-12	41,1	1.62	53,1	2.09
32-32S	50,8	2.00	2-11 1/2	2 1/2-12	60,7	2.39	83,8	3.30

### NPTF external pipe/SAE 37° flare

**202003-(Dash size)**



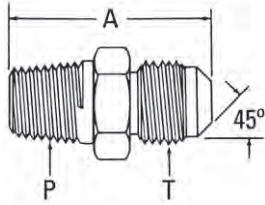
Dash size	Tube O.D.		Thread P	Thread T	A		B		C	
	mm	in			mm	in	mm	in	mm	in
6-6S	9,6	0.38	3/8-18	9/16-18	26,9	1.06	26,9	1.06	26,9	1.06



### Pipe to 45° flare – Brass

#### NPTF external pipe/ SAE 45° flare

**2000-(Dash size)** (Ref. SAE 010102)



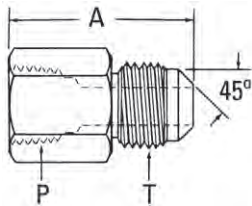
**WARNING:** California Proposition 65, see A-2.

Dash size	Tube O.D.		Thread P	Thread T	A	
	mm	in			mm	in
2-4B	6,3	0.25	1/8-27	7/16-20	26,9	1.06
2-5B	7,9	0.31	1/8-27	1/2-20	29,5	1.16
2-6B	9,6	0.38	1/8-27	5/8-18	31,8	1.25
4-4B	6,3	0.25	1/4-18	7/16-20	31,8	1.25
4-5B	7,9	0.31	1/4-18	1/2-20	34,0	1.34
4-6B	9,6	0.38	1/4-18	5/8-18	36,6	1.44
4-8B	12,7	0.50	1/4-18	3/4-16	41,1	1.62
6-4B	6,3	0.25	3/8-18	7/16-20	33,3	1.31
6-5B	7,9	0.31	3/8-18	1/2-20	35,1	1.38
6-6B	9,6	0.38	3/8-18	5/8-18	36,6	1.44
6-8B	12,7	0.50	3/8-18	3/4-16	41,1	1.62
6-10B	16,0	0.63	3/8-18	7/8-14	46,0	1.81
8-4B	6,3	0.25	1/2-14	7/16-20	39,6	1.56
8-6B	9,6	0.38	1/2-14	5/8-18	42,9	1.69
8-8B	12,7	0.50	1/2-14	3/4-16	46,0	1.81
8-10B	16,0	0.63	1/2-14	7/8-14	50,8	2.00
8-12B	19,0	0.75	1/2-14	1 1/16-14	55,6	2.19
12-8B	12,7	0.50	3/4-14	3/4-16	49,3	1.94
12-10B	16,0	0.63	3/4-14	7/8-14	52,3	2.06
12-12B	19,0	0.75	3/4-14	1 1/16-14	55,6	2.19

For more brass fittings see E-BRFI-MC001-E

#### NPTF internal pipe/ SAE 45° flare

**2001-(Dash size)** (Ref. SAE 010103)



**WARNING:** California Proposition 65, see A-2.

Dash size	Tube O.D.		Thread P	Thread T	A	
	mm	in			mm	in
2-4B	6,3	0.25	1/8-27	7/16-20	26,9	1.06
2-5B	7,9	0.31	1/8-27	1/2-20	29,5	1.16
2-6B	6,3	0.25	1/8-27	9/16-18	28,4	1.12
4-4B	6,3	0.25	1/4-18	7/16-20	30,3	1.19
4-5B	7,9	0.31	1/4-18	1/2-20	31,8	1.25
6-4B	6,3	0.25	3/8-18	7/16-20	30,3	1.19
6-6B	9,6	0.38	3/8-18	5/8-18	33,3	1.31
6-8B	12,7	0.50	3/8-18	3/4-16	39,6	1.56
6-10B	16,0	0.63	3/8-18	7/8-14	39,6	1.56
8-6B	9,6	0.38	1/2-14	5/8-18	38,1	1.50
8-8B	12,7	0.50	1/2-14	3/4-16	41,1	1.62
8-10B	16,0	0.63	1/2-14	7/8-14	46,0	1.81
8-12B	19,0	0.75	1/2-14	1 1/16-14	50,8	2.00
12-10B	16,0	0.63	3/4-14	7/8-14	46,0	1.81
12-12B	19,0	0.75	3/4-14	1 1/16-14	49,3	1.94

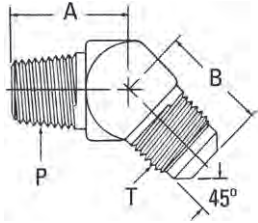
# Steel adapters

Pipe to 45° flare

J

## Pipe to 45° flare – Brass

### NPTF external pipe/ SAE 45° flare



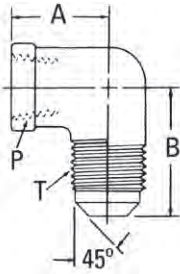
**2007-(Dash size)** (Ref. SAE 010302)

Dash size	Tube O.D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4B	6,3	0.25	1/8-27	7/16-20	16,2	0.64	17,3	0.68
4-4B	6,3	0.25	1/4-18	7/16-20	20,8	0.82	17,8	0.70
4-6B	9,6	0.38	1/4-18	5/8-18	21,8	0.86	22,6	0.89
6-6B	9,6	0.38	3/8-18	5/8-18	24,1	0.95	24,6	0.97
6-8B	12,7	0.50	3/8-18	3/4-16	24,4	0.96	29,2	1.15
6-10B	16,0	0.63	3/8-18	7/8-14	24,9	0.98	31,2	1.23
8-6B	9,6	0.38	1/2-14	5/8-18	29,7	1.17	25,1	0.99
8-8B	12,7	0.50	1/2-14	3/4-16	29,7	1.17	28,5	1.12
8-10B	16,0	0.63	1/2-14	7/8-14	29,7	1.17	31,2	1.23

**WARNING:** California Proposition 65, see page A-2.

For more brass fittings see E-BRFI-MC001-E

### NPTF internal pipe/ SAE 45° flare

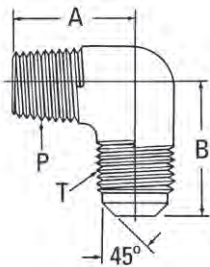


**2002-(Dash size)** (Ref. SAE 010203)

Dash size	Tube O.D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4B	6,3	0.25	1/8-27	7/16-20	11,7	0.46	22,9	0.90
4-4B	6,3	0.25	1/4-18	7/16-20	17,5	0.69	25,4	0.97
4-6B	9,6	0.38	1/4-18	5/8-18	17,5	0.69	27,7	1.09
6-4B	6,3	0.25	3/8-18	7/16-20	14,5	0.57	26,2	1.03
6-6B	9,6	0.38	3/8-18	5/8-18	27,7	1.09	26,9	1.06
6-8B	12,7	0.50	3/8-18	3/4-16	28,4	1.12	32,5	1.28
6-10B	16,0	0.63	3/8-18	7/8-14	31,0	1.22	34,3	1.35
8-8B	12,7	0.50	1/2-14	3/4-16	23,9	0.94	35,1	1.38
8-10B	16,0	0.63	1/2-14	7/8-14	25,4	1.00	38,1	1.50
8-12B	19,0	0.75	1/2-14	1 1/16-14	26,9	1.06	41,4	1.63
12-12B	19,0	0.75	3/4-14	1 1/16-14	26,9	1.06	45,2	1.78

**WARNING:** California Proposition 65, see page A-2.

### NPTF external pipe/ SAE 45° flare



**2003-(Dash size)** (Ref. SAE 010202)

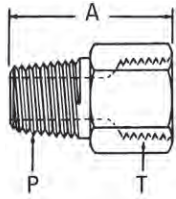
Dash size	Tube O.D.		Thread P	Thread T	A		B	
	mm	in			mm	in	mm	in
2-4B	6,3	0.25	1/8-27	7/16-20	19,3	0.76	20,1	0.79
2-5B	7,9	0.31	1/8-27	1/2-20	19,8	0.78	23,1	0.91
2-6B	9,6	0.38	1/8-27	5/8-18	23,1	0.91	26,2	1.03
4-4B	6,3	0.25	1/4-18	7/16-20	22,4	0.88	25,1	0.99
4-5B	7,9	0.31	1/4-18	1/2-20	23,3	0.92	24,1	0.95
4-6B	9,6	0.38	1/4-18	5/8-18	26,7	1.05	24,7	0.98
4-8B	12,7	0.50	1/4-18	3/4-16	30,2	1.19	31,2	1.23
6-4B	6,3	0.25	3/8-18	7/16-20	26,2	1.03	23,9	0.94
6-5B	7,9	0.31	3/8-18	1/2-20	23,1	0.91	25,4	1.00
6-6B	9,6	0.38	3/8-18	5/8-18	27,7	1.09	26,4	1.04
6-8B	12,7	0.50	3/8-18	3/4-16	28,4	1.12	31,2	1.23
6-10B	16,0	0.63	3/8-18	7/8-14	31,0	1.22	36,1	1.42
8-6B	9,6	0.38	1/2-14	5/8-18	34,3	1.35	29,5	1.16
8-8B	12,7	0.50	1/2-14	3/4-16	31,8	1.25	33,5	1.32
8-10B	16,0	0.63	1/2-14	7/8-14	34,8	1.37	36,1	1.42
8-12B	19,0	0.75	1/2-14	1 1/16-14	37,6	1.48	41,1	1.62
12-8B	12,7	0.50	3/4-14	3/4-16	37,6	1.48	41,1	1.62
12-10B	16,0	0.63	3/4-14	7/8-14	33,3	1.31	36,3	1.43
12-12B	19,0	0.75	3/4-14	1 1/16-14	38,1	1.50	41,1	1.62

**WARNING:** California Proposition 65, see page A-2.

For more brass fittings see document E-BRFI-MC001-E

## Pipe to SAE O-Ring boss

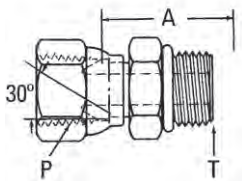
## NPTF external pipe/SAE O-Ring boss (internal)

**2246-(Dash size)**

(Formerly Weatherhead series C3239x)

Dash size	Thread P	Thread T	A	
			mm	in
2-4S	1/8-27	7/16-20	27,7	1.09
2-5S	1/8-27	1/2-20	27,7	1.09
4-6S	1/4-18	9/16-18	34,5	1.36
6-6S	3/8-18	9/16-18	35,1	1.38
6-8S	3/8-18	3/4-16	36,8	1.45
8-6S	1/2-14	9/16-18	40,6	1.60
8-8S	1/2-14	3/4-16	42,4	1.67
8-10S	1/2-14	7/8-14	45,2	1.78
12-12S	3/4-14	1 1/16-12	48,8	1.92
12-14S	3/4-14	1 3/16-12	48,8	1.92
16-16S	1-11 1/2	1 5/16-12	54,1	2.13

## NPSM internal pipe swivel/SAE O-Ring boss

**2066-(Dash size)**

(Formerly Weatherhead series 9315x)

Dash size	Thread P	Thread T	A	
			mm	in
4-4S	1/4-18	7/16-20	26,7	1.05
4-5S	1/4-18	1/2-20	25,9	1.02
4-6S	1/4-18	9/16-18	29,0	1.14
4-8S	1/4-18	3/4-16	32,0	1.26
6-4S	3/8-18	7/16-20	26,6	1.05
6-6S	3/8-18	9/16-18	29,0	1.14
6-8S	3/8-18	3/4-16	30,3	1.19
6-10S	3/8-18	7/8-14	33,5	1.32
8-6S	1/2-14	9/16-18	31,0	1.22
8-8S	1/2-14	3/4-16	31,2	1.23
8-10S	1/2-14	7/8-14	33,0	1.30
8-12S	1/2-14	1 1/16-12	37,1	1.46
12-8S	3/4-14	3/4-16	37,8	1.49
12-10S	3/4-14	7/8-14	39,4	1.55
12-12S	3/4-14	1 1/16-12	40,1	1.58
12-14S	3/4-14	1 3/16-12	40,1	1.58
12-16S	3/4-14	1 5/16-12	47,2	1.86
16-16S	1-11 1/2	1 5/16-12	40,4	1.59
16-20S	1-11 1/2	1 5/8-12	40,4	1.59
20-20S	1 1/4-11 1/2	1 5/8-12	48,5	1.91
24-24S	1 1/2-11 1/2	1 7/8-12	51,3	2.02

**Note:** Available without O-Ring. Order by 206604-(dash size).

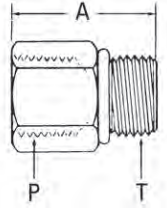
# Steel adapters

Pipe to SAE O-Ring boss

J

## Pipe to SAE O-Ring boss

NPTF internal pipe/SAE O-Ring boss

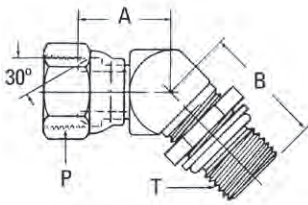


**2216-(Dash size)**  
(Formerly Weatherhead series C3269x)

Dash size	Thread P	Thread T	A	
			mm	in
2-4S	1/8-27	7/16-20	23,4	0.92
2-5S	1/8-27	1/2-20	31,0	1.22
4-4S	1/4-18	7/16-20	30,5	1.20
4-5S	1/4-18	1/2-20	30,5	1.20
4-6S	1/4-18	9/16-18	31,5	1.24
4-8S	1/4-18	3/4-16	26,9	1.06
4-10S	1/4-18	7/8-14	20,6	0.81
6-6S	3/8-18	9/16-18	33,0	1.30
6-6S	3/8-18	9/16-18	33,0	1.30
6-8S	3/8-18	3/4-16	31,8	1.25
6-10S	3/8-18	7/8-14	31,7	1.25
8-6S	1/2-14	9/16-18	37,1	1.46
6-12S	3/8-18	1 1/16-12	34,0	1.34
8-8S	1/2-14	3/4-16	41,9	1.65
8-10S	1/2-14	7/8-14	39,1	1.54
8-12S	1/2-14	1 1/16-12	43,7	1.72
8-16S	1/2-14	1 5/16-12	25,4	1.00
12-10S	3/4-14	7/8-14	45,0	1.77
12-12S	3/4-14	1 1/16-12	42,4	1.67
12-14S	3/4-14	1 3/16-12	42,7	1.68
12-16S	3/4-14	1 5/16-12	25,4	1.00
16-16S	1-11 1/2	1 5/16-12	48,5	1.91
16-20S	1-11 1/2	1 5/8-12	25,4	1.00
20-20S	1 1/4-11 1/2	1 5/8-12	50,8	2.00
24-24S	1 1/2-11 1/2	1 7/8-12	50,8	2.00
32-32S	2-11 1/2	2 1/2-12	53,3	2.10

**Note:** Also available without O-Ring. Order by 2216-1-(dash size).

NPSM internal pipe swivel/SAE O-Ring boss (adj.)



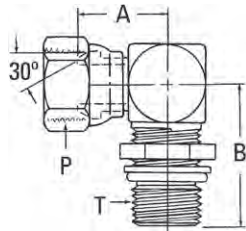
**2067-(Dash size)**  
(Formerly Weatherhead series 9365x)

Dash size	Thread P	Thread T	A		B	
			mm	in	mm	in
4-4S	1/4-18	7/16-20	15,5	0.61	27,4	1.08
6-4S	3/8-18	7/16-18	20,1	0.72	28,0	1.10
6-6S	3/8-18	9/16-18	23,4	0.92	30,5	1.20
6-8S	3/8-18	3/4-16	23,4	0.92	33,8	1.33
8-6S	1/2-14	9/16-18	23,1	0.91	30,5	1.20
8-8S	1/2-14	3/4-16	23,1	0.91	35,3	1.39
8-10S	1/2-14	7/8-14	23,1	0.91	39,4	1.55
12-8S	3/4-14	3/4-16	27,9	1.10	36,6	1.44
12-12S	3/4-14	1 1/16-12	27,9	1.10	44,7	1.76
12-16S	3/4-14	1 5/16-12	27,9	1.10	48,0	1.89
16-16S	1-11 1/2	1 5/16-12	32,0	1.26	48,0	1.89
20-20S	1 1/4-11 1/2	1 5/8-12	30,5	1.20	48,5	1.91

**Note:** Available without O-Ring. Order by 2067-1-(dash size).

### Pipe to SAE O-Ring boss

#### NPSM internal pipe swivel/SAE O-Ring boss (adj.)

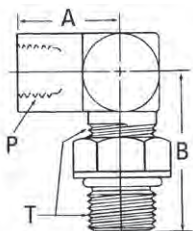


#### 2068-(Dash size) (Formerly Weatherhead series 9515x)

Dash size	Thread P	Thread T	A		B	
			mm	in	mm	in
4-4S	1/4-18	7/16-20	23,1	0.91	29,5	1.16
4-6S	1/4-18	9/16-18	23,1	0.91	31,0	1.22
6-4S	3/8-18	7/16-20	27,7	1.09	33,8	1.33
6-6S	3/8-18	9/16-18	27,7	1.09	34,3	1.35
6-8S	3/8-18	3/4-16	27,7	1.09	37,6	1.48
6-10S	3/8-18	7/8-14	27,7	1.09	42,4	1.67
8-6S	1/2-14	9/16-18	27,4	1.08	38,4	1.51
8-8S	1/2-14	3/4-16	27,4	1.08	38,4	1.51
8-10S	1/2-14	7/8-14	27,4	1.08	42,4	1.67
8-12S	1/2-14	1 1/16-12	30,0	1.18	50,0	1.97
12-8S	3/4-14	3/4-16	33,0	1.30	41,9	1.65
12-10S	3/4-14	7/8-14	33,5	1.32	46,0	1.81
12-12S	3/4-14	1 1/16-12	34,5	1.36	50,0	1.97
12-16S	3/4-14	1 5/16-12	35,8	1.41	53,8	2.12
16-16S	1-11 1/2	1 5/16-12	38,9	1.53	53,8	2.12
20-16S	1 1/4-11 1/2	1 5/16-12	46,2	1.82	63,5	2.50
20-20S	1 1/4-11 1/2	1 5/8-12	46,2	1.82	63,5	2.50

**Note:** Available without O-Ring. Order by 2068-1-(dash size).

#### NPTF internal pipe/SAE O-Ring boss (adj.)

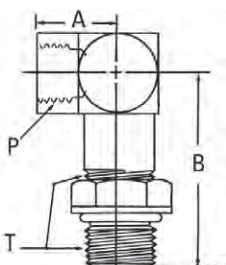


#### 206801-(Dash size) (Formerly Weatherhead series C3459x)

Dash size	Thread P	Thread T	A		B	
			mm	in	mm	in
4-6S	1/4-18	9/16-18	22,4	0.88	34,3	1.35
6-8S	3/8-18	3/4-16	25,9	1.02	41,1	1.62
8-8S	1/2-14	3/4-16	31,2	1.23	43,9	1.73
8-10S	1/2-14	7/8-14	31,2	1.23	48,0	1.89
12-12S	3/4-14	1 1/16-12	34,5	1.36	55,2	2.17
16-16S	1-11 1/2	1 5/16-12	41,1	1.62	61,2	2.41
20-20S	1 1/4-11 1/2	1 5/8-12	43,2	1.70	63,5	2.50

**Note:** Available without O-Ring. Order by 206801-1-(dash size).

#### NPTF internal pipe/SAE O-Ring boss (adj.)



#### 206804-(Dash size) (Formerly Weatherhead series C3469x)

Dash size	Thread P	Thread T	A		B	
			mm	in	mm	in
6-8S	3/8-18	3/4-16	25,9	1.02	75,4	2.97
8-10S	1/2-14	7/8-14	31,2	1.23	90,4	3.56
12-12S	3/4-14	1 1/16-12	34,5	1.36	104,6	4.12
16-16S	1-11 1/2	1 5/16-12	41,1	1.62	117,8	4.64

**Note:** Available without O-Ring. Order by 206804-1-(dash size).

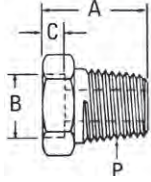
# Steel adapters

Pipe to braze and weld  
SAE 37° flare union

J

## Pipe to braze and weld

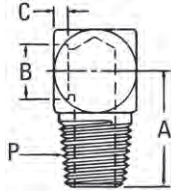
### Braze port/ NPTF external pipe



#### 73056-(Dash size)

Dash size	Tube O.D.		Thread P	A		B		C	
	mm	in		mm	in	mm	in	mm	in
2-4S	6,3	0.25	1/8-27	16,8	0.66	6,3	0.25	4,0	0.16
2-6S	9,6	0.38	1/8-27	18,0	0.71	9,6	0.38	4,0	0.16
4-6S	9,6	0.38	1/4-18	22,5	0.89	9,6	0.38	4,0	0.16
16S	25,4	1.00	1-11 1/2	33,6	1.32	25,4	1.00	6,4	0.25

### Braze port/ NPTF external pipe

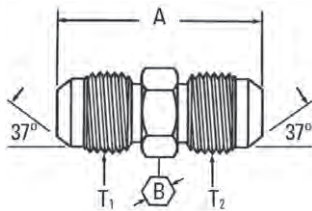


#### FF1159-(Dash size)

Dash size	Tube O.D.		Thread P	A		B		C	
	mm	in		mm	in	mm	in	mm	in
0406S	9,6	0.38	1/4-18	22,9	0.90	9,7	0.38	4,0	0.16
2020S	31,7	1.25	1 1/4-11 1/2	59,7	2.35	31,8	1.25	6,4	0.25

## SAE 37° (JIC) flare union

### Union SAE 37° flare/SAE 37° flare



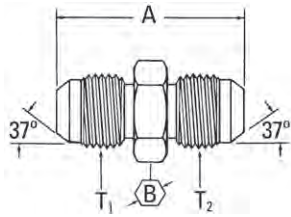
#### 2027-(Dash size) (Ref. SAE 070101) (Formerly Weatherhead series C5305x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
2-2S	3,3	0.13	5/16-24	5/16-24	29,7	1.17	11,2	0.44
3-3S	4,8	0.19	3/8-24	3/8-24	31,2	1.23	11,2	0.44
4-3S	4,8	0.19	7/16-20	3/8-24	33,0	1.30	12,7	0.50
4-4S*	6,3	0.25	7/16-20	7/16-20	34,8	1.37	12,7	0.50
5-4S	6,3	0.25	1/2-20	7/16-20	34,8	1.37	14,2	0.56
5-5S	7,9	0.31	1/2-20	1/2-20	34,8	1.37	14,2	0.56
6-4S	6,3	0.25	9/16-18	7/16-20	35,6	1.40	15,7	0.62
6-5S	7,9	0.31	9/16-18	1/2-20	35,6	1.40	15,7	0.62
6-6S*	9,6	0.38	9/16-18	9/16-18	35,8	1.41	15,7	0.62
8-4S	6,3	0.25	3/4-16	7/16-20	38,4	1.51	20,6	0.81
8-6S	9,6	0.38	3/4-16	9/16-18	38,6	1.52	20,6	0.81
8-8S*	12,7	0.50	3/4-16	3/4-16	41,1	1.62	20,6	0.81
10-6S	9,6	0.38	7/8-14	9/16-18	42,7	1.68	23,9	0.94
10-8S	12,7	0.50	7/8-14	3/4-16	45,2	1.78	23,9	0.94
10-10S	16,0	0.63	7/8-14	7/8-14	47,8	1.88	23,9	0.94
12-8S	9,6	0.38	1 1/16-12	3/4-16	49,5	1.95	28,4	1.12
12-10S	15,5	0.61	1 1/16-12	7/8-14	52,1	2.05	28,4	1.12
12-12S*	19,0	0.75	1 1/16-12	1 1/16-12	54,9	2.16	28,4	1.12
14-14S	21,1	0.83	1 3/16-12	1 3/16-12	56,1	2.21	31,8	1.25
16-12S	19,0	0.75	1 5/16-12	1 1/16-12	55,9	2.20	35,1	1.38
16-16S*	25,4	1.00	1 5/16-12	1 5/16-12	57,2	2.25	35,1	1.38
20-16S	25,4	1.00	1 5/8-12	1 5/16-12	60,5	2.38	42,7	1.68
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	61,7	2.43	42,9	1.69
24-24S	38,1	1.50	1 7/8-12	1 7/8-12	69,9	2.75	50,8	2.00
32-32S	50,8	2.00	2 1/2-12	2 1/2-12	86,4	3.40	66,5	2.62

\* Also available in stainless steel as 259-2027-(dash size).  
(Formerly Weatherhead 5317x)

## SAE 37° flare union

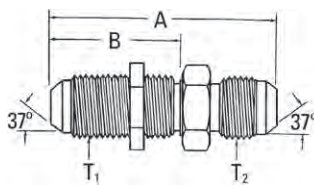
## SAE 37° flare/SAE 37° flare (large hex)



**202712-(Dash size)** (Ref. SAE 070119)  
(Formerly Weatherhead series C5306x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	34,8	1.37	17,5	0.69
6-4S	6,3	0.25	9/16-18	7/16-20	35,6	1.40	20,6	0.81
6-6S	7,9	0.31	9/16-18	9/16-18	35,6	1.40	20,6	0.81
8-8S	12,7	0.50	3/4-16	3/4-16	41,1	1.62	25,4	1.00
10-8S	12,7	0.50	7/8-14	3/4-16	45,2	1.78	28,5	1.12
10-10S	16,0	0.63	7/8-14	7/8-14	47,7	1.88	28,5	1.12
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	54,9	2.16	35,1	1.38
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	57,2	2.25	41,1	1.62
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	61,7	2.43	47,6	1.88

## SAE 37° flare bulkhead/SAE 37° flare



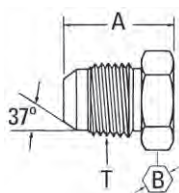
**2041-(Dash size)** (Ref. SAE 070601)  
(Formerly Weatherhead series C5325x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
3-3S	4,80	0.19	3/8-24	3/8-24	48,3	1.9	29,0	1.14
4-4S	6,3	0.25	7/16-20	7/16-20	52,6	2.07	31,2	1.23
4-6S	9,6	0.38	7/16-20	9/16-18	53,3	2.10	31,2	1.23
5-5S	7,9	0.31	1/2-20	1/2-20	52,6	2.07	31,2	1.23
6-6S	9,6	0.38	9/16-18	9/16-18	55,4	2.18	33,3	1.31
8-8S*	12,7	0.50	3/4-16	3/4-16	62,0	2.44	37,3	1.47
10-10S	16,0	0.63	7/8-14	7/8-14	69,6	2.74	40,9	1.61
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	78,5	3.09	45,2	1.78
12-16S	25,4	1.00	1 1/16-12	1 5/16-12	79,8	3.14	45,2	1.78
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	79,8	3.14	45,2	1.78
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	84,1	3.31	46,5	1.83
24-24S	38,1	1.50	1 7/8-12	1 7/8-12	89,4	3.52	46,7	1.84

**Note:** Available without nut. Order by 2041-1-(dash size).

\* Also available in stainless steel without nut as part number 259-2041-1-(dash size). (Formerly Weatherhead 5337x)

## SAE 37° flare plug



**900599-(Dash size)** (Ref. SAE 070109)  
(Formerly Weatherhead series C5229x)

Dash size	Tube O.D.		Thread T1	A		B	
	mm	in		mm	in	mm	in
3S	4,8	0.19	3/8-24	18,5	0.73	11,2	0.44
4S	6,3	0.25	7/16-20	20,3	0.80	12,7	0.50
5S	7,9	0.31	1/2-20	20,3	0.80	14,2	0.56
6S*	9,6	0.38	9/16-18	21,3	0.84	15,7	0.62
8S	12,7	0.50	3/4-16	23,9	0.94	20,6	0.81
10S	16,0	0.63	7/8-14	27,9	1.10	23,9	0.94
12S*	19,0	0.75	1 1/16-12	32,5	1.28	28,4	1.12
14S	21,1	0.83	1 3/16-12	33,3	1.31	31,8	1.25
16S	25,4	1.00	1 5/16-12	33,8	1.33	35,1	1.38
20S	31,7	1.25	1 5/8-12	36,8	1.45	42,9	1.69
24S	38,1	1.50	1 7/8-12	41,9	1.65	50,8	2.00
32S	50,8	2.00	2 1/2-12	52,1	2.05	66,5	2.62

\* Also available in stainless steel as part number 259-900599-(dash size).  
(Formerly Weatherhead 5241x).

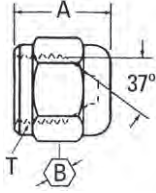
# Steel adapters

SAE 37° flare union

J

## SAE 37° flare union

### Cap nut

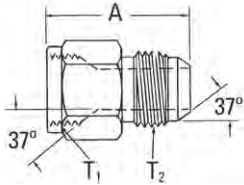


**210292-(Dash size)** (Ref. SAE 070112)  
(Formerly Weatherhead series C5129x)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
3S	4,8	0.19	3/8-24	14,2	0.56	11,2	0.44
4S*	6,3	0.25	7/16-20	15,0	0.59	14,2	0.56
5S	7,9	0.31	1/2-20	15,5	0.61	15,7	0.62
6S*	9,6	0.38	9/16-18	15,7	0.62	17,6	0.69
8S*	12,7	0.50	3/4-16	19,0	0.75	22,4	0.88
10S	16,0	0.63	7/8-14	21,3	0.84	25,4	1.00
12S*	19,0	0.75	1 1/16-12	23,1	0.91	31,8	1.25
16S	25,4	1.00	1 5/16-12	25,9	1.02	38,1	1.50
20S	31,7	1.25	1 5/8-12	26,9	1.06	50,8	2.00
24S	38,1	1.50	1 7/8-12	30,3	1.19	57,2	2.25
32S	50,8	2.00	2 1/2-12	36,6	1.44	73,1	2.88

\* Also available in stainless steel as stainless steel as 259-210292-(dash size)  
(Formerly Weatherhaed 5141x)

### SAE 37° flare (internal)/SAE 37° flare



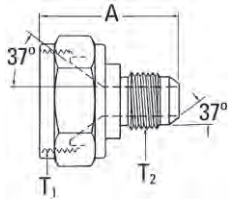
**2215-(Dash size)**  
(Formerly Weatherhead series C5015x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
4-6S	9,6	0.38	7/16-20	9/16-18	31,8	1.25
6-5S	7,9	0.31	9/16-18	1/2-20	30,0	1.18
8-10S	16,0	0.63	3/4-16	7/8-14	38,4	1.51
10-4S	6,3	0.25	7/16-20	7/8-14	35,6	1.40
10-6S	9,6	0.38	9/16-18	7/8-14	35,8	1.41
10-8S	12,7	0.50	7/8-14	3/4-16	38,9	1.53
10-12S	19,0	0.75	7/8-14	1 1/16-12	44,2	1.74
12-10S	16,0	0.63	1 1/16-12	7/8-14	43,9	1.73
12-16S	25,4	1.00	1 1/16-12	1 5/16-12	50,8	2.00
14-8S	12,7	0.50	1 3/16-12	3/4-16	42,9	1.69
16-8S	12,7	0.50	3/4-16	1 5/16-12	42,4	1.67
16-10S	16,0	0.63	7/8-14	1 5/16-12	45,2	1.78
16-20S	31,8	1.25	1 5/16-12	1 5/8-12	58,4	2.30
20-16S	25,4	1.00	1 5/8-12	1 5/16-12	50,3	1.98
24-16S	25,4	1.00	1 7/8-12	1 5/16-12	58,7	2.31
24-20S	31,8	1.25	1 7/8-12	1 5/8-12	58,4	2.30
24-32S	50,8	2.00	1 7/8-12	2 1/2-12	68,1	2.68
32-24S	38,1	1.50	1 7/8-12	2 1/2-12	64,0	2.52



### SAE 37° flare union

#### SAE 37° flare swivel reducer/SAE 37° flare

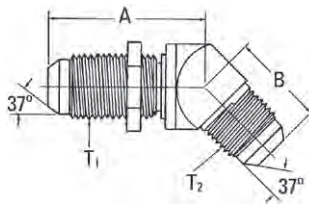


**221501-(Dash size)** (Ref. SAE 070123)  
(Formerly Weatherhead series C5015x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
6-4S	6,3	0.25	9/16-18	7/16-20	35,6	1.40
8-4S	6,3	0.25	3/4-16	7/16-20	38,1	1.50
8-6S	9,6	0.38	3/4-16	9/16-18	38,1	1.50
10-6S	9,6	0.38	7/8-14	9/16-18	41,1	1.62
12-4	6,3	0.25	1 1/16-12	7/16-20	27,7	1.09
12-6S	9,6	0.38	1 1/16-12	9/16-18	42,9	1.69
12-8S	12,7	0.50	1 1/16-12	3/4-16	45,5	1.79
16-6S	9,6	0.38	1 5/16-12	9/16-18	46,7	1.84
16-8S	12,7	0.50	1 5/16-12	3/4-16	49,3	1.94
16-10S	16,0	0.63	1 5/16-12	7/8-14	51,8	2.04
16-12S	19,0	0.75	1 5/16-12	1 1/16-12	54,6	2.15
20-12	19,0	0.75	1 5/8-12	1 1/16-12	38,1	1.50
20-16S	25,4	1.00	1 5/8-12	1 5/16-12	56,6	2.23

Note: Available without nut. Order by Part no. FF1066-(dash size).

#### SAE 37° flare bulkhead/SAE 37° flare

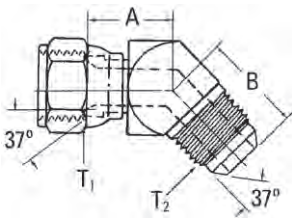


**2042-(Dash size)** (Ref. SAE 070801)  
(Formerly Weatherhead series C5375x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	38,9	1.53	18,3	0.72
5-5S	7,9	0.31	1/2-20	1/2-20	42,2	1.66	19,6	0.77
6-6S	9,6	0.38	9/16-18	9/16-18	42,4	1.67	21,1	0.83
8-8S	12,7	0.50	3/4-16	3/4-16	49,3	1.94	24,9	0.98
10-10S	16,0	0.63	7/8-14	7/8-14	55,1	2.17	28,2	1.11
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	35,8	1.41	59,9	2.36
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	37,3	1.47	63,5	2.58
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	64,3	2.53	42,9	1.69

Note: Available without nut. Order by 2042-1-(dash size).

#### SAE 37° flare swivel/SAE 37° flare



**2070-(Dash size)** (Ref. SAE 070321)  
(Formerly Weatherhead series C5356x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	15,2	0.60	18,3	0.72
5-5S	7,9	0.31	1/2-20	1/2-20	15,7	0.62	19,6	0.77
6-6S	9,6	0.38	9/16-18	9/16-18	18,8	0.74	21,1	0.83
8-8S	12,7	0.50	3/4-16	3/4-16	21,8	0.86	24,9	0.98
10-10S	16,0	0.63	7/8-14	7/8-14	23,9	0.94	28,2	1.11
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	23,9	0.94	32,5	1.28
14-14S	22,3	0.88	1 3/16-12	1 3/16-12	26,4	1.04	36,8	1.45
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	29,5	1.16	37,3	1.47
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	35,6	1.40	40,4	1.59

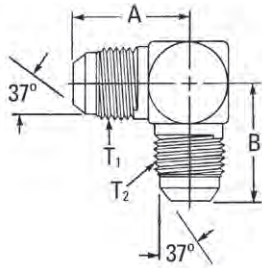
# Steel adapters

SAE 37° flare union

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## SAE 37° flare union

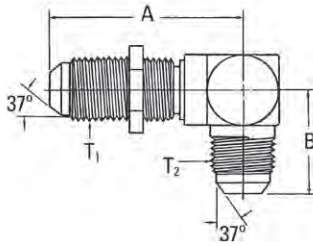
SAE 37° flare/SAE 37° flare



**2039-(Dash size)** (Ref. SAE 070201)  
(Formerly Weatherhead series C5505x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	22,6	0.89	22,6	0.89
5-5S	7,9	0.31	1/2-20	1/2-20	24,1	0.95	24,1	0.95
6-6S	9,6	0.38	9/16-18	9/16-18	26,9	1.06	26,9	1.06
8-6S	9,6	0.38	3/4-16	9/16-16	31,8	1.25	29,0	1.14
8-8S	12,7	0.50	3/4-16	3/4-16	31,8	1.25	31,8	1.25
10-10S	16,0	0.63	7/8-14	7/8-14	36,8	1.45	36,8	1.45
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	42,2	1.66	42,2	1.66
16-12S	19,0	0.75	1 5/16-12	1 1/16-12	46,0	1.81	44,7	1.76
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	46,0	1.81	46,0	1.81
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	52,3	2.06	52,3	2.06
24-24S	38,1	1.50	1 7/8-12	1 7/8-12	59,2	2.33	59,2	2.33
32-32S	50,8	2.00	2 1/2-12	2 1/2-12	77,7	3.06	77,7	3.06

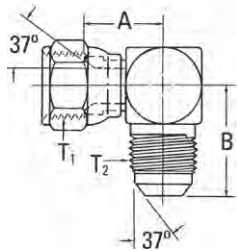
SAE 37° flare bulkhead/SAE 37° flare



**2043-(Dash size)** (Ref. SAE 070701)  
(Formerly Weatherhead series C5525x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	40,4	1.59	24,6	0.97
5-5S	7,9	0.31	1/2-20	1/2-20	43,7	1.72	26,9	1.06
6-6S	9,6	0.38	9/16-18	9/16-18	46,0	1.81	27,7	1.09
8-8S	12,7	0.50	3/4-16	3/4-16	53,6	2.11	34,5	1.36
10-10S	16,0	0.63	7/8-14	7/8-14	60,7	2.39	39,6	1.56
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	67,8	2.67	45,2	1.78
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	71,1	2.80	49,3	1.94

SAE 37° flare swivel/SAE 37° flare



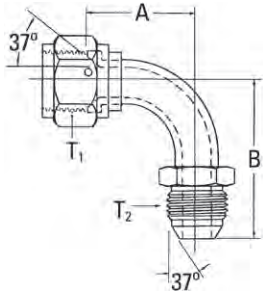
**2071-(Dash size)** (Ref. SAE 070221)  
(Formerly Weatherhead series C5506x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S*	6,3	0.25	7/16-20	7/16-20	16,8	0.66	22,6	0.89
4-6S	9,6	0.38	7/16-20	9/16-18	20,8	0.82	26,9	1.06
5-5S	7,9	0.31	1/2-20	1/2-20	17,3	0.68	24,1	0.95
6-4S	6,3	0.25	9/16-18	7/16-20	22,4	0.88	26,7	1.05
6-6S*	9,6	0.38	9/16-18	9/16-18	22,4	0.88	26,9	1.06
8-6S	9,6	0.38	3/4-16	9/16-18	24,4	0.96	29,0	1.14
8-8S	12,7	0.50	3/4-16	3/4-16	24,4	0.96	31,8	1.25
8-10S	16,0	0.63	3/4-16	7/8-14	25,4	1.00	36,8	1.45
10-8S	12,7	0.50	7/8-14	3/4-16	28,4	1.12	33,8	1.33
10-10S	16,0	0.63	7/8-14	7/8-14	28,4	1.12	36,8	1.45
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	30,2	1.19	42,2	1.66
14-14S	22,3	0.88	1 3/16-12	1 3/16-12	30,5	1.20	45,7	1.80
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	35,8	1.41	46,0	1.81
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	42,7	1.68	52,3	2.06
24-24S	38,1	1.50	1 7/8-12	1 7/8-12	47,2	1.86	59,2	2.33
32-32S	50,8	2.00	2 1/2-12	2 1/2-12	62,0	2.44	77,7	3.06

\* Also available in stainless steel as part number 259-2071-(dash size).  
(Formerly Weatherhead 5518x)

### SAE 37° flare union

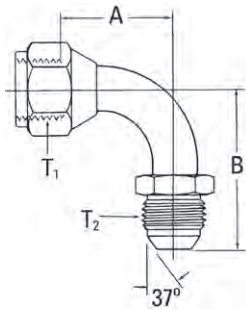
#### SAE 37° flare swivel/SAE 37° flare



#### FF5163-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0808S	12,7	0.50	3/4-16	3/4-16	47,5	1.87	54,9	2.16
1212S	19,0	0.75	1 1/16-12	1 1/16-12	59,7	2.35	71,4	2.81
1616S	25,4	1.00	1 5/16-12	1 5/16-12	77,2	3.04	86,6	3.41
2020S	31,7	1.25	1 5/8-12	1 5/8-12	86,4	3.40	94,2	3.71
2424S	38,1	1.50	1 7/8-12	1 7/8-12	100,3	3.95	110,0	4.33

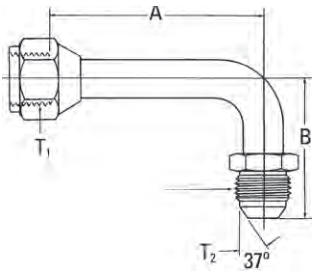
#### SAE 37° flare swivel/SAE 37° flare



#### 500454-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4S	6,3	0.25	7/16-20	7/16-20	17,3	0.68	28,5	1.12
6S	9,6	0.38	9/16-18	9/16-18	21,6	0.85	33,3	1.31
8S	12,7	0.50	3/4-16	3/4-16	27,7	1.09	42,2	1.66
10S	16,0	0.63	7/8-14	7/8-14	31,2	1.23	46,2	1.82
12S	19,0	0.75	1 1/16-12	1 1/16-12	46,2	1.82	63,2	2.49
16S	25,4	1.00	1 5/16-12	1 5/16-12	60,7	2.39	70,9	2.79
20S	31,7	1.25	1 5/8-12	1 5/8-12	69,8	2.75	79,7	3.14

#### SAE 37° flare swivel/SAE 37° flare



#### 504095-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4S	6,3	0.25	7/16-20	7/16-20	45,7	1.80	28,5	1.12
5S	7,9	0.31	1/2-20	1/2-20	44,9	1.77	31,5	1.24
6S	9,6	0.38	9/16-18	9/16-18	55,4	2.18	33,3	1.31
8S	12,7	0.50	3/4-16	3/4-16	61,7	2.43	45,2	1.78
10S	16,0	0.63	7/8-14	7/8-14	65,3	2.57	52,6	2.07
12S	19,0	0.75	1 1/16-12	1 1/16-12	94,7	3.73	63,2	2.49
16S	25,4	1.00	1 5/16-12	1 5/16-12	116,3	4.58	70,9	2.79
20S	31,7	1.25	1 5/8-12	1 5/8-12	140,5	5.53	79,7	3.14

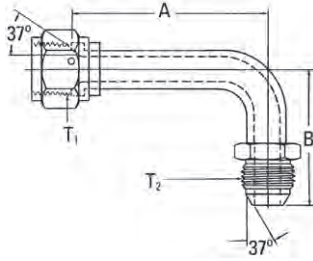
# Steel adapters

SAE 37° flare union

J

## SAE 37° flare union

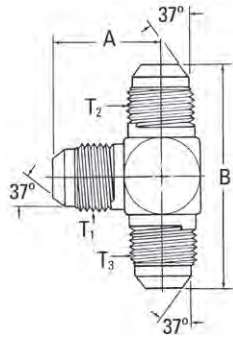
SAE 37° flare swivel/SAE 37° flare



### FF5164-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0808S	12,7	0.50	3/4-16	3/4-16	84,8	3.34	54,9	2.16
1212S	19,0	0.75	1 1/16-12	1 1/16-12	112,0	4.41	71,4	2.81
1616S	25,4	1.00	1 5/16-12	1 5/16-12	133,1	5.24	86,6	3.41
2020S	31,7	1.25	1 5/8-12	1 5/8-12	164,6	6.48	94,2	3.71

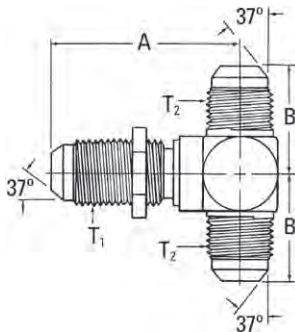
SAE 37° flare/SAE 37° flare/SAE 37° flare



### 2033-(Dash size) (Ref. SAE 070401) (Formerly Weatherhead series C5705x)

Dash size	Tube O.D.		Thread T	Thread T2	Thread T3	A		B	
	mm	in				mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	7/16-20	22,6	0.89	45,2	1.78
5-5S	7,9	0.31	1/2-20	1/2-20	1/2-20	24,1	0.95	48,3	1.90
6-6S	9,6	0.38	9/16-18	9/16-18	9/16-18	26,9	1.06	53,8	2.12
8-6-6S	9,6	0.38	3/4-16	9/16-18	9/16-18	31,8	1.25	57,9	2.28
8-8S	12,7	0.50	3/4-16	3/4-16	3/4-16	31,8	1.25	63,5	2.50
8-12-12S	19,0	0.75	3/4-16	1 1/16-12	1 1/16-12	36,1	1.42	84,3	3.32
10-10S	16,0	0.63	7/8-14	7/8-14	7/8-14	36,8	1.45	73,7	2.90
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	1 1/16-12	42,2	1.66	84,3	3.32
12-12-16S	19,0	0.75	1 1/16-12	1 1/16-12	1 5/16-12	44,7	1.76	92,7	3.65
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	1 5/16-12	46,0	1.81	91,9	3.62
16-16-20S	31,7	1.25	1 5/16-12	1 5/16-12	1 5/8-12	50,8	2.00	103,1	4.06
20-16-16S	25,4	1.00	1 5/8-12	1 5/16-12	1 5/16-12	52,3	2.06	102,1	4.02
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	1 5/8-12	52,3	2.06	104,6	4.12
24-24S	38,1	1.50	1 7/8-12	1 7/8-12	1 7/8-12	59,2	2.33	118,4	4.66

SAE 37° flare bulkhead/SAE 37° flare



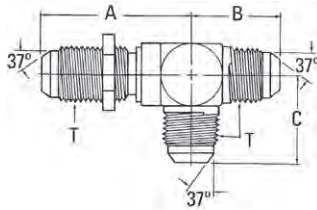
### 203002-(Dash size) (Ref. SAE 070959) (Formerly Weatherhead series C5725x)

Dash size	Tube O.D.		Thread T	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	40,4	1.59	24,6	0.97
5-5S	7,9	0.31	1/2-20	1/2-20	43,7	1.72	26,9	1.06
6-6S	9,6	0.38	9/16-18	9/16-18	46,0	1.81	27,7	1.09
8-8S	12,7	0.50	3/4-16	3/4-16	53,6	2.11	34,5	1.36
10-10S	16,0	0.63	7/8-14	7/8-14	60,7	2.39	39,6	1.56
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	67,8	2.67	45,2	1.78
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	71,1	2.80	49,3	1.94

Note: Available without nut. Order by 203002-1-(dash size).

### SAE 37° flare union

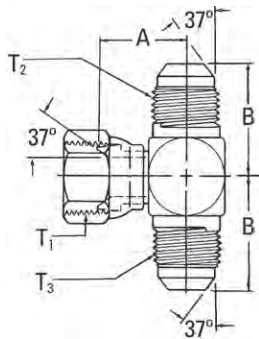
#### SAE 37° flare bulkhead/SAE 37° flare



**203008-(Dash size)** (Ref. SAE 070958)

Dash size	Tube O.D.		Thread T	A		B		C	
	mm	in		mm	in	mm	in	mm	in
6-6S	9,6	0.38	9/16-18	46,0	1.81	27,7	1.09	27,7	1.09
8-8S	12,7	0.50	3/4-16	53,6	2.11	34,5	1.36	34,5	1.36
12-12S	19,0	0.75	1 1/16-12	67,8	2.67	45,2	1.78	45,2	1.78
16-16S	25,4	1.00	1 5/16-12	71,1	2.80	49,3	1.94	49,3	1.94
20-20S	31,7	1.25	1 5/8-12	79,2	3.12	55,1	2.17	55,1	2.17

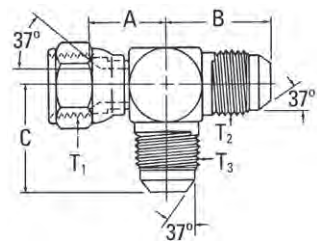
#### SAE 37° flare swivel/SAE 37° flare



**203101-(Dash size)** (Ref. SAE 070433)  
(Formerly Weatherhead series C5707x)

Dash size	Tube O.D.		Thread T	Thread T2	Thread T3	A		B	
	mm	in				mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	7/16-20	16,8	0.66	22,6	0.89
5-5S	7,9	0.31	1/2-20	1/2-20	1/2-20	17,3	0.68	24,1	0.95
6-5S	7,9	0.31	9/16-18	9/16-18	9/16-18	22,4	0.88	26,7	1.05
6-6S	9,6	0.38	9/16-18	9/16-18	9/16-18	22,4	0.88	26,9	1.06
8-8S	12,7	0.50	3/4-16	3/4-16	3/4-16	24,4	0.96	31,8	1.25
10-10S	16,0	0.63	7/8-14	7/8-14	7/8-14	28,4	1.12	36,8	1.45
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	1 1/16-12	30,0	1.18	42,2	1.66
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	1 5/16-12	35,6	1.40	46,0	1.81
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	1 5/8-12	42,7	1.68	52,3	2.06

#### SAE 37° flare bulkhead/SAE 37° flare



**203102-(Dash size)** (Ref. SAE 070432)  
(Formerly Weatherhead series C5706x)

Dash size	Tube O.D.		Thread T	Thread T2	Thread T3	A		B		C	
	mm	in				mm	in	mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	7/16-20	16,8	0.66	22,6	0.89	22,6	0.89
5-5S	7,9	0.31	1/2-20	1/2-20	1/2-20	17,5	0.69	24,1	0.95	24,1	0.95
6-6S	9,6	0.38	9/16-18	9/16-18	9/16-18	22,4	0.88	26,9	1.06	26,9	1.06
8-8S	12,7	0.50	3/4-16	3/4-16	3/4-16	24,4	0.96	31,8	1.25	31,8	1.25
10-10S	16,0	0.63	7/8-14	7/8-14	7/8-14	28,4	1.12	36,8	1.45	36,8	1.45
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	1 1/16-12	30,2	1.19	42,2	1.66	42,2	1.66
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	1 5/16-12	35,8	1.41	46,0	1.81	46,0	1.81
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	1 5/8-12	42,7	1.68	52,3	2.06	52,3	2.06

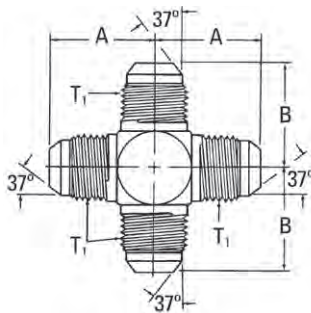
# Steel adapters

SAE 37° flare union

J

## SAE 37° flare union

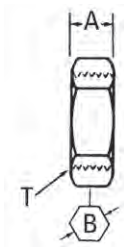
### SAE 37° flare



**2020-(Dash size)** (Ref. SAE 070501)  
(Formerly Weatherhead series C5955x)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
4-4S	6,3	0.25	7/16-20	22,6	0.89	22,6	0.89
6-6S	9,6	0.38	9/16-18	26,9	1.06	26,9	1.06
8-8S	12,7	0.50	3/4-16	31,8	1.25	31,8	1.25
12-12S	19,0	0.75	1 1/16-12	42,2	1.66	44,2	1.74
16-16S	25,4	1.00	1 5/16-12	46,0	1.81	49,8	1.96

### Bulkhead lock nut



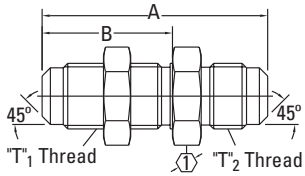
**210212-(Dash size)** (Ref. SAE 070118)  
(Formerly Weatherhead series C5924x)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
4S	6,3	0.25	7/16-20	6,4	0.25	17,6	0.69
5S	7,9	0.31	1/2-20	6,4	0.25	19,0	0.75
6S*	9,6	0.38	9/16-18	6,8	0.27	20,6	0.81
8S*	12,7	0.50	3/4-16	7,9	0.31	25,4	1.00
10S	16,0	0.63	7/8-14	9,1	0.36	28,5	1.12
12S*	19,0	0.75	1 1/16-12	10,4	0.41	35,1	1.38
16S	25,4	1.00	1 5/16-12	10,4	0.41	41,1	1.62
20S	31,7	1.25	1 5/8-12	10,4	0.41	47,7	1.88
24S	38,1	1.50	1 7/8-12	10,4	0.41	53,9	2.12

\* Also available in stainless steel as part number 259-210212-(dash size).  
(Formerly Weatherhead 7936x).

### SAE 45° flare union

#### SAE 45° flare bulkhead/45° flare

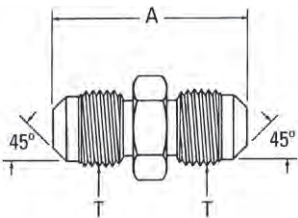


#### 2056-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B		1	
	mm	in			mm	in	mm	in	mm	in
10-10S	16,0	0.63	7/8-14	7/8-14	75,9	2.99	43,9	1.73	28,5	1.12

**Note:** Available without nut. Order by 2056-1-(dash size).

#### 45° flare/45° flare

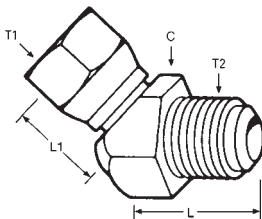


#### 2060-(Dash size) (Ref. SAE 010101)

Dash size	Tube O.D.		Thread T	A	
	mm	in		mm	in
4-4B	6,3	0.25	7/16-20	30,3	1.19
5-5B	7,9	0.31	1/2-20	34,0	1.34
6-6B	9,6	0.38	5/8-18	38,1	1.50
8-8B	12,7	0.50	3/4-16	46,0	1.81
10-10B	16,0	0.63	7/8-14	53,9	2.12
12-12B	19,0	0.75	1 1/16-14	62,0	2.44

**WARNING:** California Proposition 65, see page A-2.

#### 45° swivel elbow female 45° SAE /male 45° SAE (Steel)



#### FF4174-(Dash size)

(Formerly Weatherhead series 9154x)

Dash size	Tube O.D.		Hex C		L		L1		T1	T2
	mm	in	mm	in	mm	in	mm	in		
0606S	9,7	.38	19,0	.75	35,6	1.40	10,9	.43	5/8-18	5/8-18
0808S	12,7	.50	25,4	1.00	44,7	1.76	15,2	.60	3/4-16	3/4-16
1010S	15,9	.63	31,8	1.25	48,8	1.92	16,4	.65	7/8-14	7/8-14

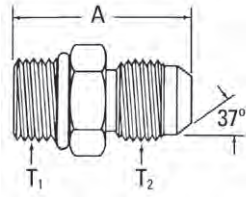
# Steel adapters

SAE O-Ring boss to SAE 37° flare

J

## SAE O-Ring boss to SAE 37° flare

SAE O-Ring boss/SAE 37° flare



**202702-(Dash size)** (Ref. SAE 070120)  
(Formerly Weatherhead series C5315x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
2-2S	3,3	0.13	5/16-24	5/16-24	26,9	1.06
3-3S	4,8	0.19	3/8-24	3/8-24	27,9	1.10
4-4S*	6,3	0.25	7/16-20	7/16-20	31,2	1.23
4-5S	7,9	0.31	7/16-20	1/2-20	31,2	1.23
4-6S	9,6	0.38	7/16-20	9/16-18	32,3	1.27
4-8S	12,7	0.50	7/16-20	3/4-16	37,8	1.49
5-4S	6,3	0.25	1/2-20	7/16-20	31,2	1.23
5-5S	7,9	0.31	1/2-20	1/2-20	31,2	1.23
5-6S	9,6	0.38	1/2-20	9/16-18	32,3	1.27
6-4S	6,3	0.25	9/16-18	7/16-20	32,8	1.29
6-5S	7,9	0.31	9/16-18	1/2-20	32,8	1.29
6-6S*	9,6	0.38	9/16-18	9/16-18	33,0	1.30
6-8S	12,7	0.50	9/16-18	3/4-16	36,6	1.44
6-10S	16,0	0.63	9/16-18	7/8-14	43,4	1.71
8-4S	6,3	0.25	3/4-16	7/16-20	34,8	1.37
8-5S	7,9	0.31	3/4-16	1/2-20	34,8	1.37
8-6S*	9,6	0.38	3/4-16	9/16-18	35,1	1.38
8-8S*	12,7	0.50	3/4-16	3/4-16	37,6	1.48
8-10S	16,0	0.63	3/4-16	7/8-14	41,7	1.64
8-12S	19,0	0.75	3/4-16	1 1/16-12	49,3	1.94
10-4S	6,3	0.25	7/8-14	7/16-20	37,8	1.49
10-6S	9,6	0.38	7/8-14	9/16-18	38,1	1.50
10-8S	12,7	0.50	7/8-14	3/4-16	40,6	1.60
10-10S	16,0	0.63	7/8-14	7/8-14	43,2	1.70
10-12S	19,0	0.75	7/8-14	1 1/16-12	47,8	1.88
10-16S	25,4	1.00	7/8-14	1 5/16-12	52,6	2.07
12-6S	9,6	0.38	1 1/16-12	9/16-18	42,2	1.66
12-8S	12,7	0.50	1 1/16-12	3/4-16	44,7	1.76
12-10S	16,0	0.63	1 1/16-12	7/8-14	47,2	1.86
12-12S*	19,0	0.75	1 1/16-12	1 1/16-12	50,0	1.97
12-14S	22,3	0.88	1 1/16-12	1 3/16-12	50,5	1.99
12-16S	25,4	1.00	1 1/16-12	1 5/16-12	51,8	2.04
12-20S	31,7	1.25	1 1/16-12	1 5/8-12	58,4	2.30
14-10S	16,0	0.63	1 3/16-12	7/8-14	47,2	1.86
14-12S	19,0	0.75	1 3/16-12	1 1/16-12	49,8	1.96
14-14S	22,3	0.88	1 3/16-12	1 3/16-12	50,5	1.99
14-16S	25,4	1.00	1 3/16-12	1 5/16-12	51,8	2.04
16-8S*	12,7	0.50	1 5/16-12	3/4-16	45,5	1.79
16-10S	16,0	0.63	1 5/16-12	7/8-14	48,0	1.89
16-12S	19,0	0.75	1 5/16-12	1 1/16-12	50,5	1.99
16-16S*	25,4	1.00	1 5/16-12	1 5/16-12	51,8	2.04
16-20S	31,7	1.25	1 5/16-12	1 5/8-12	59,2	2.33
20-12S	19,0	0.75	1 5/8-12	1 1/16-12	52,8	2.08

**Note:** Also available in stainless steel without O-ring, order 259-202701-(Dash size).

\*Also available in stainless steel as 259-202702-(dash size).  
(Formerly Weatherhead part number 5327x)

(continued next page)

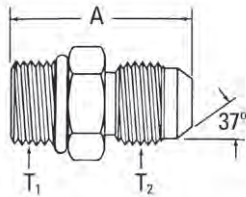


### SAE O-Ring boss to SAE 37° flare

#### SAE O-Ring boss/SAE 37° flare

(continued from previous page)

**202702-(Dash size)** Continued (Ref. SAE 070120)  
(Formerly Weatherhead series C5315x)



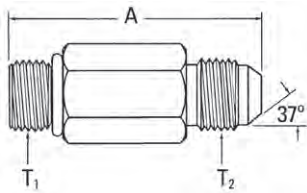
Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
20-16S	25,4	1.00	1 5/8-12	1 5/16-12	53,8	2.12
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	55,1	2.17
20-24S	38,1	1.50	1 5/8-12	1 7/8-12	64,3	2.53
24-16S	25,4	1.00	1 7/8-12	1 5/16-12	55,9	2.20
24-20S	31,7	1.25	1 7/8-12	1 5/8-12	56,9	2.24
24-24S	38,1	1.50	1 7/8-12	1 7/8-12	60,2	2.37
24-32S	50,8	2.00	1 7/8-12	2 1/2-12	74,7	2.94
32-32S	50,8	2.00	2 1/2-12	2 1/2-12	70,6	2.78

**Note:** Also available in stainless steel without O-ring, order 259-202701-(dash size).

\*Also available in stainless steel as 259-202702-(dash size).

(Formerly Weatherhead part number 5327x)

#### SAE O-Ring boss/SAE 37° flare

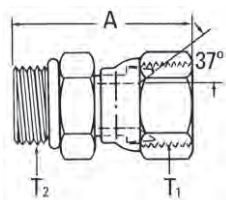


Straight thread O-ring extended connector

**202713-(Dash size)** (Ref. SAE 070122)  
(Formerly Weatherhead series C5316x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	52,8	2.08
6-6S	9,6	0.38	9/16-18	9/16-18	58,7	2.31
6-8S	12,7	0.50	9/16-18	3/4-16	60,5	2.38
8-8S	12,7	0.50	3/4-16	3/4-16	68,6	2.70
10-10S	16,0	0.63	7/8-14	7/8-14	77,2	3.04
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	91,7	3.61
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	101,1	3.98

#### SAE O-Ring boss/SAE 37° flare swivel



**2266-(Dash size)**  
(Formerly Weatherhead series C5216x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
4-4S	6,4	0.25	7/16-20	7/16-20	32,6	1.28
6-4S	6,3	.025	7/16-20	9/16-18	33,5	1.32
6-6S	9,6	0.38	9/16-18	9/16-18	35,6	1.40
6-8S	12,7	0.50	3/4-16	9/16-18	41,4	1.63
8-6S	9,6	0.38	9/16-18	3/4-16	36,8	1.45
8-8S	12,7	0.50	3/4-16	3/4-16	39,4	1.55
10-10S	16,0	0.63	7/8-14	7/8-14	43,7	1.72
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	48,3	1.90
12-16S	19,0	0.75	1 5/16-12	1 1/16-12	56,6	2.23
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	53,6	2.11
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	64,5	2.54
24-24S	38,1	1.50	1 7/8-12	1 7/8-12	68,3	2.69

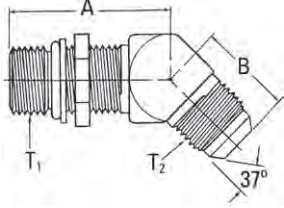
# Steel adapters

SAE O-Ring boss to SAE 37° flare

J

## SAE O-Ring boss to SAE 37° flare

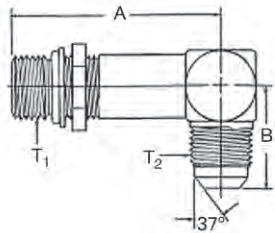
SAE O-Ring boss (adj.)/SAE 37° flare



**2061-(Dash size)** (Ref. SAE 070320)  
(Formerly Weatherhead series C5365x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	26,7	1.05	18,3	0.72
5-5S	7,9	0.31	1/2-20	1/2-20	26,7	1.05	19,6	0.77
6-4S	6,3	0.25	9/16-18	7/16-20	29,0	1.14	20,8	0.82
6-6S	9,6	0.38	9/16-18	9/16-18	29,0	1.14	21,1	0.83
6-8S	12,7	0.50	9/16-18	3/4-16	30,5	1.20	24,9	0.98
8-6S	9,6	0.38	3/4-16	9/16-18	33,0	1.30	22,1	0.87
8-8S	12,7	0.50	3/4-16	3/4-16	33,0	1.30	24,9	0.98
8-10S	16,0	0.63	3/4-16	7/8-14	34,5	1.36	28,2	1.11
10-8S	12,7	0.50	7/8-14	3/4-16	38,6	1.52	25,1	0.99
10-10S	16,0	0.63	7/8-14	7/8-14	38,6	1.52	28,2	1.11
10-12S	19,0	0.75	7/8-14	1 1/16-12	39,9	1.57	32,5	1.28
12-8S	12,7	0.50	1 1/16-12	3/4-16	43,9	1.73	26,4	1.04
12-10S	16,0	0.63	1 1/16-12	7/8-14	43,9	1.73	29,5	1.16
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	43,9	1.73	32,5	1.28
12-16S	25,4	1.00	1 1/16-12	1 5/16-12	47,2	1.86	37,3	1.47
14-14S	22,3	0.88	1 3/16-12	1 3/16-12	47,2	1.86	36,8	1.45
16-12S	19,0	0.75	1 5/16-12	1 1/16-12	47,2	1.86	36,1	1.42
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	47,2	1.86	37,3	1.47
16-20S	31,7	1.25	1 5/16-12	1 5/8-12	48,5	1.91	40,4	1.59
20-16S	25,4	1.00	1 5/8-12	1 5/16-12	48,5	1.91	39,1	1.54
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	48,5	1.91	40,4	1.59

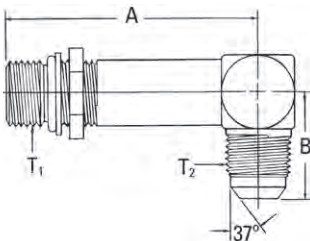
SAE O-Ring flare (adj.)/SAE 37° flare - Long



**FF3910-(Dash size)**  
(Formerly Weatherhead series C5515xL)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
6-6S	9,6	0.38	9/16-18	9/16-18	42,2	1.66	26,9	1.06
8-8S	12,7	0.50	3/4-16	3/4-16	45,9	1.81	31,8	1.25
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	62,7	2.47	42,2	1.66

SAE O-Ring flare (adj.)/SAE 37° flare - Extra long

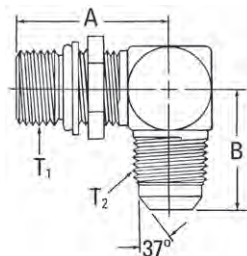


**206209-(Dash size)**  
(Formerly Weatherhead series C5515xLL)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	43,9	1.73	22,6	0.89
6-6S	9,6	0.38	9/16-18	9/16-18	52,8	2.08	26,9	1.06
8-8S	12,7	0.50	3/4-16	3/4-16	63,0	2.48	31,8	1.25
8-10S	16,0	0.63	3/4-16	7/8-14	64,0	2.52	36,8	1.45
10-10S	16,0	0.63	7/8-14	7/8-14	73,4	2.89	36,8	1.45
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	84,8	3.34	42,2	1.66
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	94,5	3.72	46,0	1.81

## SAE O-Ring boss to SAE 37° flare

## SAE O-Ring boss (adj.)/SAE 37° flare



**2062-(Dash size)** (Ref. SAE 070220)  
(Formerly Weatherhead series C5515x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	26,2	1.03	22,6	0.89
4-5S	7,9	0.31	7/16-20	1/2-20	28,7	1.13	24,1	0.95
4-6S	9,6	0.38	7/16-20	9/16-18	30,2	1.19	26,9	1.06
5-4S	6,3	0.25	1/2-20	7/16-20	28,7	1.13	24,1	0.95
5-5S	7,9	0.31	1/2-20	1/2-20	28,7	1.13	24,1	0.95
5-6S	9,6	0.38	1/2-20	9/16-18	30,2	1.19	26,9	1.06
6-4S	6,3	0.25	9/16-18	7/16-20	31,8	1.25	26,7	1.05
6-5S	7,9	0.31	9/16-18	1/2-20	31,8	1.25	26,7	1.05
6-6S	9,6	0.38	9/16-18	9/16-18	31,8	1.25	26,9	1.06
6-8S	12,7	0.50	9/16-18	3/4-16	33,5	1.32	31,8	1.25
8-6S	9,6	0.38	3/4-16	9/16-18	36,8	1.45	29,0	1.14
8-8S	12,7	0.50	3/4-16	3/4-16	36,8	1.45	31,8	1.25
8-10S	16,0	0.63	3/4-16	7/8-14	39,1	1.54	36,8	1.45
8-12S	19,0	0.75	3/4-16	1 1/16-12	41,1	1.62	42,2	1.66
10-6S	9,6	0.38	7/8-14	9/16-18	43,2	1.70	31,0	1.22
10-8S	12,7	0.50	7/8-14	3/4-16	43,2	1.70	33,8	1.33
10-10S	16,0	0.63	7/8-14	7/8-14	43,2	1.70	36,8	1.45
10-12S	19,0	0.75	7/8-14	1 1/16-12	45,2	1.78	42,2	1.66
12-8S	12,7	0.50	1 1/16-12	3/4-16	49,3	1.94	36,1	1.42
12-10S	16,0	0.63	1 1/16-12	7/8-14	49,3	1.94	39,1	1.54
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	49,3	1.94	42,2	1.66
12-16S	25,4	1.00	1 1/16-12	1 5/16-12	52,1	2.05	46,0	1.81
12-20S	31,7	1.25	1 1/16-12	1 5/8-12	57,2	2.25	52,3	2.06
14-16S	25,4	1.00	1 3/16-12	1 5/16-12	52,1	2.05	46,0	1.81
16-8S	12,7	0.50	1 5/16-12	3/4-16	52,1	2.05	38,6	1.52
16-10S	16,0	0.63	1 5/16-12	7/8-14	52,1	2.05	41,7	1.64
16-12S	19,0	0.75	1 5/16-12	1 1/16-12	52,1	2.05	44,7	1.76
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	52,1	2.05	46,0	1.81
16-20S	31,7	1.25	1 5/16-12	1 5/8-12	57,2	2.25	52,3	2.06
20-16S	25,4	1.00	1 5/8-12	1 5/16-12	57,2	2.25	51,1	2.01
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	57,2	2.25	52,3	2.06
20-24S	38,1	1.50	1 5/8-12	1 7/8-12	60,7	2.39	59,2	2.33
24-20S	31,7	1.25	1 7/8-12	1 5/8-12	60,7	2.39	55,9	2.20
24-24S	38,1	1.50	1 7/8-12	1 7/8-12	60,7	2.39	59,2	2.33

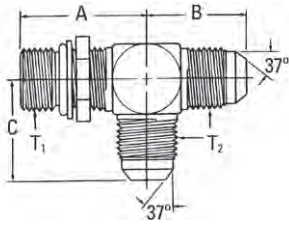
# Steel adapters

SAE O-Ring boss to SAE 37° flare

J

## SAE O-Ring boss to SAE 37° flare

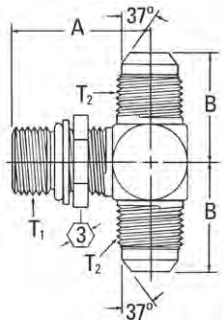
SAE O-Ring boss (adj.)/SAE 37° flare



**203005-(Dash size)** (Ref. SAE 070428)  
(Formerly Weatherhead series C5716x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	26,2	1.03	22,6	0.89	22,6	0.89
5-5S	7,9	0.31	1/2-20	1/2-20	28,7	1.13	24,1	0.95	24,1	0.95
6-4-4S	6,3	0.25	9/16-18	7/16-20	31,8	1.25	26,7	1.05	26,7	1.05
6-6S	9,6	0.38	9/16-18	9/16-18	31,8	1.25	26,9	1.06	26,9	1.06
8-8S	12,7	0.50	3/4-16	3/4-16	36,8	1.45	31,8	1.25	31,8	1.25
10-10S	16,0	0.63	7/8-14	7/8-14	43,2	1.70	36,8	1.45	36,8	1.45
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	49,3	1.94	42,2	1.66	42,2	1.66
12-16-16S	25,4	1.00	1 1/16-12	1 5/16-12	52,1	2.05	46,0	1.81	46,0	1.81
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	52,1	2.05	46,0	1.81	46,0	1.81
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	57,2	2.25	52,3	2.06	52,3	2.06

SAE O-Ring boss (adj.)/SAE 37° flare



**203003-(Dash size)** (Ref. SAE 070429)  
(Formerly Weatherhead series C5715x)

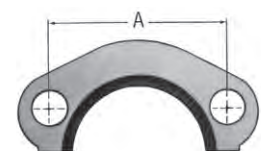
Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
4-4S	6,3	0.25	7/16-20	7/16-20	26,2	1.03	22,6	0.89
6-6S	9,6	0.38	9/16-18	9/16-18	31,8	1.25	26,9	1.06
8-8S	12,7	0.50	3/4-16	3/4-16	36,8	1.45	31,8	1.25
10-10S	16,0	0.63	7/8-14	7/8-14	43,2	1.70	36,8	1.45
10-12-12S	19,0	0.95	7/8-14	1 1/16-12	45,2	1.78	42,2	1.66
12-12S	19,0	0.75	1 1/16-12	1 1/16-12	49,3	1.94	42,2	1.66
12-16-16S	25,4	1.00	1 1/16-12	1 5/16-12	52,1	2.05	46,0	1.81
16-16S	25,4	1.00	1 5/16-12	1 5/16-12	52,1	2.05	46,0	1.81
20-20S	31,7	1.25	1 5/8-12	1 5/8-12	57,2	2.25	52,3	2.06

### Split flanges

#### Split flanges

Eaton has standard pressure series (code 61) and high pressure series (code 62) split flange components in kit form that save time in selecting and ordering. Each kit includes two flange halves, four grade-8 hex bolts, four lock washers and an O-Ring. The standard kit has a Buna-N 90 durometer O-Ring that is compatible with petroleum and water-base hydraulic fluids. Optional kits contain EPDM and Viton\* O-Ring for applications where fluid compatibility or high temperatures require other than Buna-N O-Ring.

\*Viton is a trademark of The Chemours Company FC, LLC.



Two methods can be used to determine the flange dash size and code. The first is by measuring the flange head diameter on the fitting itself. This is referred to as the "K" dimension. The second is by measuring the "A" dimension on the flange or the flange port. Either will determine the dash size and the code since these dimensions are exclusive to either code 61 or code 62 split flange kits. See chart below for these dimensions.

In some cases, split flange fittings are available for hoses which exceed the pressures listed; when ordering fittings or hose assemblies, the terminal end performance rating may reduce the overall rating of the assembly.

"A" Dim.	"K" Flange head diameter	Flange dash size	Maximum operating pressure*		Recommended bolt torque
			in	psi	
in	in	mm	bar	psi	lb-in
<b>Code 61</b>					
1.50	1.19	-08	350,0	5000	175-225
1.88	1.50	-12	350,0	5000	225-350
2.06	1.75	-16	350,0	5000	325-425
2.31	2.00	-20	280,0	4000	425-550
2.75	2.38	-24	210,0	3000	550-700
3.06	2.81	-32	210,0	3000	650-800
3.50	3.31	-40	175,0	2500	950-1100
4.19	4.00	-48	140,0	2000	1650-1800
<b>Code 62</b>					
1.59	1.25	-08	420,0	6000	175-225
2.00	1.63	-12	420,0	6000	300-400
2.25	1.88	-16	420,0	6000	500-600
2.62	2.12	-20	420,0	6000	750-900
3.12	2.50	-24	420,0	6000	1400-1600
3.81	3.12	-32	420,0	6000	2400-2600

\*Per SAE J518 standard.

#### Assembly procedure

Many leakage problems can be avoided if the split flanges are properly assembled.

#### To properly assemble

1. Clean all mating surfaces.
2. Lubricate the O-Ring.
3. Partially tighten each bolt in rotation until all are fully tightened to the recommended torque value.

#### How to order

1. Determine the dash size and the code.
2. Select O-Ring for fluid compatibility.
3. Order by kit number shown on page J-110.

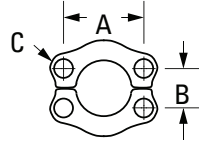
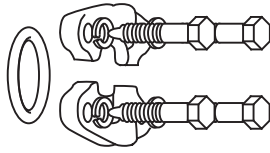
# Steel adapters

Split flanges, O-Ring and kits

J

## Split flange kits

**SAE standard pressure series  
(Code 61) SAE J518**



**O-Rings material:**  
Buna-N 90 Durometer  
**Temperature range:**  
-40°F to +250°F  
(-40°C to + 121°C)

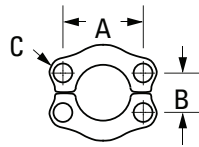
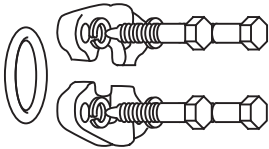
Nominal flange size	Complete kit	*Flange halves 2 required	*Buna-N O-Ring 1 required	*Bolts 4 required	*Lock washer 4 required	A	B	C	Bolt torque lb.-in
1/2	FF593-08	449-74446-8	FF9446-210	FF9442-0520-94	210104-5S	1.50	0.68	0.34	175-225
3/4	FF593-12	449-74446-12	FF9446-214	FF9442-0620-94	210104-6S	1.88	0.88	0.41	250-350
1	FF593-16	449-74446-16	FF9446-219	FF9442-0620-94	210104-2-6S	2.06	1.04	0.41	325-425
1-1/4	FF593-20	449-74446-20	FF9446-222	FF9442-0724-94	210104-7S	2.31	1.18	0.48	425-550
1-1/2	FF593-24	449-74446-24	FF9446-225	FF9442-0824-94	210104-8S	2.75	1.40	0.53	550-700
2	FF593-32	449-74446-32	FF9446-228	FF9442-0824-94	210104-8S	3.06	1.68	0.53	650-800
2-1/2	FF593-40	449-74446-40	FF9446-232	FF9442-0828-94	210104-8S	3.50	2.00	0.53	950-1100
3	FF593-48	449-74446-48	FF9446-237	FF9442-1028-94	210104-10S	4.19	2.44	0.66	1650-1800

\* Included in kit.

\*Viton kit available as part number FF687-Size. EPDM kit available as part number FF688-size. See page J-111 for Viton and EPDM O-Ring part numbers.

**Note:** All measurements in inches.

**SAE high pressure series  
(Code 62) SAE J518**



**O-Ring material:**  
Buna-N 90 Durometer  
**Temperature range:**  
-40°F to +250°F  
(-40°C to + 121°C)

**Note:** Code 62 split flange kits cannot be used with Cat flange fittings. Use existing split flanges.

Nominal flange size	Complete kit	*Flange halves 2 required	*Buna-N O-Ring 1 required	*Bolts 4 required	*Lock washer 4 required	A	B	C	Bolt torque lb.-in
3/4	FF595-12	FC3425-12-449	FF9446-214	FF9442-0624-94	210104-6S	2.00	0.94	0.42	300-400
1	FF595-16	FC3425-16-449	FF9446-219	FF9442-0728-94	210104-7S	2.25	1.10	0.50	500-600
1-1/4	FF595-20	FC3425-20-449	FF9446-222	FF9442-0828-94	210104-8S	2.62	1.24	0.60	750-900
1-1/2	FF595-24	FC3425-24-449	FF9446-225	FF9442-1036-94	210104-10S	3.12	1.44	0.66	1400-1600
2	FF595-32	FC3425-32-449	FF9446-228	FF9442-1244-94	210104-12S	3.81	1.76	0.78	2400-2600

\* Included in kit.

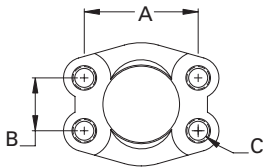
\* Viton kit available as part number FF689-size. See Page J-111 for Viton O-Ring part numbers.

**Note:** All measurements in inches.

Viton is a trademark of The Chemours Company FC, LLC.

## Split flange kits

### 4 hole flange SAE standard pressure series (Code 61) SAE J518

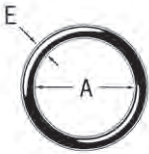


Nominal flange size	4 bolt flange	A	B	C (Threaded)
3/4	FC2119-12-449	1.88	0.88	3/8-16
1	FC2119-16-449	2.06	1.03	7/16-14
1-1/4	FC2119-20-449	2.31	1.19	3/8-16
1-1/2	FC2119-24-449	2.75	1.41	1/2-13
2	FC2119-32-449	3.06	1.69	1/2-13
2-1/2	FC2119-40-449	3.50	2.00	1/2-13

\*Available without threads as part number FC3459-size-449.

**Note:** All measurements in inches.

### O-Ring for SAE J518 Split flange



O-Ring base number	Material	Operating temperature range
FF9016 EPDM	80 Durometer	-65°F to +300°F (-55°C to +150°C)
FF9446 Buna-N	90 Durometer Buna-N	-40°F to +250°F (-40°C to +121°C)
22046 Viton	90 Durometer	-15°F to +400°F (-25°C to +205°C)

O-Ring dash size designation	Flange dash size	Nominal flange size	A		E	
			mm	in	mm	in
-210	08	1/2	18,5	0.734	3,5	0.139
-214	12	3/4	24,9	0.984	3,5	0.139
-219	16	1	32,9	1.296	3,5	0.139
-222	20	1 1/4	37,7	1.484	3,5	0.139
-225	24	1 1/2	47,2	1.859	3,5	0.139
-228	32	2	56,7	2.234	3,5	0.139
-232	40	2 1/2	69,4	2.734	3,5	0.139
-237	48	3	85,3	3.359	3,5	0.139

Viton is a trademark of The Chemours Company FC, LLC.

# Steel adapters

Split flanges, O-Ring and kits

J

## O-Rings and kits

### O-Ring seal kit FF16087-01

Includes: metal box,  
O-Rings for ORS -4 through -24,  
O-Ring boss -04 through -32,  
Split flange -08 through -32,  
24 packages with twelve  
90 durometer nitrile  
O-Ring per package.  
Replacement O-Ring can be  
ordered individually by  
part number listed.

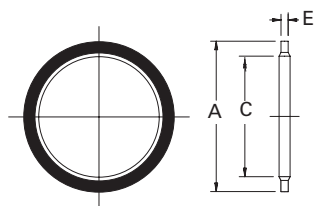


FF16087-01

Connection	Size	Individual O-Ring part no.
ORS	-04	FF9446-11
ORS	-06	FF9446-12
ORS	-08	FF9446-14
ORS	-10	FF9446-16
ORS	-12	FF9446-18
ORS	-16	FF9446-21
ORS	-20	FF9446-25
ORS	-24	FF9446-29
O-Ring Boss	-04	22617-4
O-Ring Boss	-05	22617-5
O-Ring Boss	-06	22617-6
O-Ring Boss	-08	22617-8
O-Ring Boss	-10	22617-10
O-Ring Boss	-12	22617-12
O-Ring Boss	-16	22617-16
O-Ring Boss	-20	22617-20
O-Ring Boss	-24	22617-24
O-Ring Boss	-32	22617-32
Split Flange	-08	FF9446-210
Split Flange	-12	FF9446-214
Split Flange	-16	FF9446-219
Split Flange	-20	FF9446-222
Split Flange	-24	FF9446-225
Split Flange	-32	FF9446-228

### BSPB bonded seal for DIN 3852-2 ports

#### FF9895



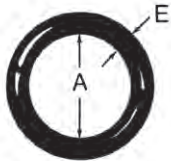
Bonded seal part number	BSPB thread size	A Ref	C Ref	E Ref
		inch	inch	inch
FF9895-02	1/8-28	0.625	0.403	0.080
FF9895-04	1/4-19	0.810	0.536	0.080
FF9895-06	3/8-19	0.937	0.675	0.080
FF9895-08	1/2-14	1.125	0.843	0.097
FF9895-10	5/8-14	1.250	0.920	0.097
FF9895-12	3/4-14	1.375	1.060	0.097
FF9895-16	1-11	1.685	1.329	0.133
FF9895-20	1 1/4-11	2.062	1.685	0.133
FF9895-24	1 1/2-11	2.307	1.902	0.133
FF9895-32	2-11	2.875	2.380	0.133

Material: Steel with bonded Nitrile (Buna-N) seal.



## Designating separate SAE O-Ring boss

To order Eaton O-Ring separately without fittings specify the size and material by using the O-Ring base number and dash size. The charts offer a simple method to assure the correct O-Ring for your application.

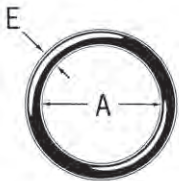


O-Ring base no.	Material	Operating temperature range
22617 (Standard)	Buna-N Nitrile rubber 90 Durometer	-30°F to +250°F (-34°C to +121°C)
22033	EPDM Ethylene propylene diene monomer	-65°F to +212°F (-55°C to +100°C)
22068	Viton Fluoroelastomer 90 Durometer	-15°F to +400°F (-25°C to +205°C)
22012	Buna-N, Low temperature nitrile rubber 90 Durometer	-65°F to +225°F (-55°C to +107°C)

O-Ring dash size	Tube size	A		E	
		mm	in	mm	in
-4	-04 (1/4)	8,9	0.351	1,8	0.072
-6	-06 (3/8)	11,9	0.468	2,0	0.078
-8	-08 (1/2)	16,3	0.644	2,3	0.087
-10	-10 (5/8)	19,3	0.755	2,5	0.097
-12	-12 (3/4)	23,4	0.924	3,0	0.116
-16	-16 (1)	29,7	1.171	3,0	0.116
-20	-20 (1 1/4)	37,6	1.475	3,0	0.118
-24	-24 (1 1/2)	43,7	1.720	3,0	0.118

## Designating separate ORS O-Ring

To order Eaton O-Ring separately without fittings specify the size and material by using the O-Ring designator and O-Ring base number. The charts to the right offer a simple method to assure the correct O-Ring for your application.



O-Ring base no.	Material	Operating temperature range
FF9446 (Standard)	Buna-N Nitrile Rubber 90 Durometer	-40°F to +250°F (-40°C to +121°C)
FF9807	EPDM Ethylene propylene diene monomer	-65°F to +300°F (-55°C to +150°C)
22046	Viton Fluoroelastomer 90 Durometer	-15°F to +400°F (-25°C to +205°C)
FF9855	Buna-N, Low Temperature Nitrile Rubber 90 Durometer	-65°F to +225°F (-55°C to +107°C)
22546	Neoprene 90 Durometer	-65°F to +300°F (-55°C to +150°C)

O-Ring dash size	Tube size	A		E	
		mm	in	mm	in
-11	-04	7,6	0.301	1,8	0.07
-12	-06	9,2	0.364	1,8	0.07
-14	-08	12,4	0.489	1,8	0.07
-16	-10	15,6	0.614	1,8	0.07
-18	-12	18,8	0.739	1,8	0.07
-21	-16	23,5	0.926	1,8	0.07
-25	-20	29,9	1.176	1,8	0.07
-29	-24	37,8	1.489	1,8	0.07

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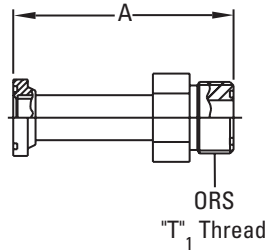
# Steel adapters

SAE split flange to ORS

J

## SAE split flange to ORS

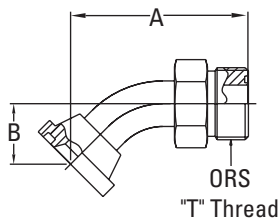
ORS/split flange (Code 62)



### FF5943T(Dash size)

Dash size	Tube O.D.		Thread T1	A	
	mm	in		mm	in
1212S	19,0	0.75	1 3/16-12	77,7	3.06
1616S	25,4	1.00	1 7/16-12	90,7	3.57

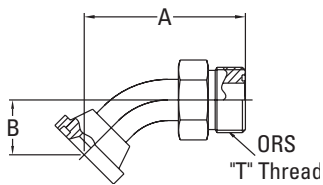
45° ORS/split flange (Code 61)



### FF6001T(Dash size)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
1216S	19,0	0.75	1 3/16-12	74,7	2.94	25,4	1.00

45° ORS/split flange (Code 62)

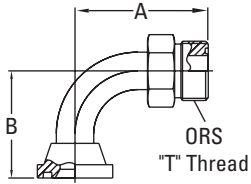


### FF6002T(Dash size)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
1212S	19,0	0.75	1 3/16-12	74,7	2.94	25,4	1.00
1616S	25,4	1.00	1 7/16-12	86,6	3.41	26,9	1.06

### SAE split flange to ORS

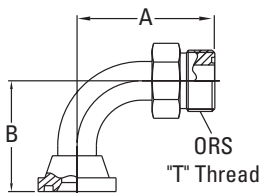
#### 90° ORS/split flange (Code 61)



#### FF5946T(Dash size)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
1212S	19,0	0.75	1 3/16-12	67,3	2.65	54,1	2.13
1216S	19,0	0.75	1 3/16-12	67,3	2.65	54,1	2.13
1616S	25,4	1.00	1 7/16-12	81,8	3.22	60,2	2.37
2020S	31,7	1.25	1 11/16-12	88,1	3.47	66,5	2.62
2424S	38,1	1.50	2-12	100,8	3.97	79,2	3.12

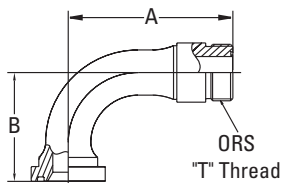
#### 90° ORS/split flange (Code 62)



#### FF5945T(Dash size)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
1212S	19,0	0.75	1 3/16-12	67,3	2.65	54,1	2.13
1612S	25,4	1.00	1 7/16-12	67,3	2.65	54,1	2.13
1616S	25,4	1.00	1 7/16-12	81,8	3.22	60,2	2.37
1620S	25,4	1.00	1 7/16-12	88,1	3.47	66,5	2.62
2020S	31,7	1.25	1 11/16-12	88,1	3.47	66,5	2.62
2424S	38,1	1.50	2-12	100,8	3.97	79,2	3.12

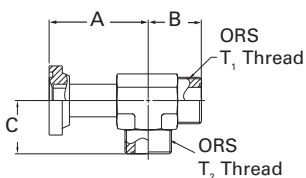
#### 90° ORS/split flange (Code 62)



#### FF6062T(Dash size)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
1616S	25,4	1.00	1 7/16-12	105,9	4.17	70,1	2.76

#### ORS/split flange (Code 62)



#### FF2522T(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
1624S	38,1	1.50	1 7/16-12	1 7/16-12	77,8	3.06	41,7	1.64	41,7	1.64

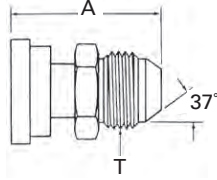
# Steel adapters

SAE split flange to SAE 37° flare

J

## SAE split flange to SAE 37° flare

**Split flange/SAE 37° flare**  
Standard pressure series (Code 61)

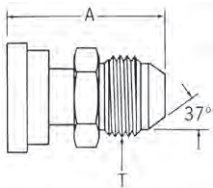


**500025-(Dash size)** (mates with 449-74446 flanges)  
(Formerly Weatherhead 500 series)

The performance rating of these adapters is the lower of the two terminal ends. These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A	
		mm	in		mm	in
8S	1/2	12,7	0.50	3/4-16	42,2	1.66
12S	3/4	19,0	0.75	1 1/16-12	48,5	1.91
12-8S	3/4	12,7	0.50	3/4-16	51,6	2.03
16S	1	25,4	1.00	1 5/16-12	51,1	2.01
16-10S	1	16,0	0.63	7/8-14	47,2	1.86
16-12S	1	19,0	0.75	1 1/16-12	58,4	2.30
20S	1 1/4	31,7	1.25	1 5/8-12	62,5	2.46
20-16S	1 1/4	25,4	1.00	1 5/16-12	59,7	2.35
20-24S	1 1/4	38,1	1.50	1 7/8-12	67,0	2.64
24S	1 1/2	38,1	1.50	1 7/8-12	68,8	2.71
24-16S	1 1/2	25,4	1.00	1 5/16-12	61,2	2.41
24-20S	1 1/2	31,7	1.25	1 5/8-12	62,5	2.46
32-16S	2	25,4	1.00	1 5/16-12	58,9	2.32
32-20S	2	31,7	1.25	1 5/8-12	64,0	2.52
32-24S	2	38,1	1.50	1 7/8-12	68,8	2.71
40-24S	2 1/2	38,1	1.50	1 7/8-12	70,4	2.77

**Split flange/SAE 37° flare**  
Standard pressure series (Code 61) -  
Long adapter

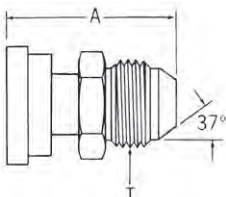


**FF5239-(Dash size)** (mates with 449-74446 flanges)  
(Formerly Weatherhead 500 series)

The performance rating of these adapters is the lower of the two terminal ends. These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A	
		mm	in		mm	in
3232S	2	50,8	2.00	2 1/2-12	143,0	5.63

**Split flange/SAE 37° flare**  
Standard pressure series (Code 62)



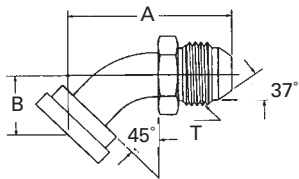
**FF5541-(Dash size)** (mates with FC3425- size-449 flanges)  
(Formerly Weatherhead 600 series)

The performance rating of these adapters is the lower of the two terminal ends. These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A	
		mm	in		mm	in
1212S	3/4	19,0	0.75	1 1/16-12	80,5	3.17
1616S	1	25,4	1.00	1 5/16-12	95,5	3.76
2016S	1 1/4	25,4	1.00	1 5/16-12	95,5	3.76
2020S	1 1/4	31,7	1.25	1 5/8-12	97,5	3.84
2416S	1 1/2	25,4	1.00	1 5/16-12	95,5	3.76
2420S	1 1/2	31,7	1.25	1 5/8-12	97,5	3.84
2424S	1 1/2	38,1	1.50	1 7/8-12	118,6	4.67

### SAE split flange to SAE 37° flare

#### Split flange/SAE 37° flare Standard pressure series (Code 62) - Long adapter

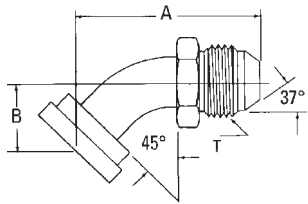


**FF5539-(Dash size)** (mates with FC3425-size-449 flanges)  
(Formerly Weatherhead 645 series)

The performance rating of these adapters is the lower of the two terminal ends.  
These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A		B	
		mm	in		mm	in	mm	in
12-12S	3/4	19,0	0.75	1 1/16-12	79,8	3.14	25,9	1.02
1612S	1	19,0	0.75	1 1/16-12	78,5	3.09	25,4	1.00
1616S	1	25,4	1.00	1 5/16-12	91,4	3.60	26,9	1.06
2016S	1 1/4	25,4	1.00	1 5/16-12	91,4	3.60	26,9	1.06
2020S	1 1/4	31,7	1.25	1 5/8-12	98,0	3.86	29,2	1.15
2416S	1 1/2	25,4	1.00	1 5/16-12	103,1	4.06	31,8	1.25
2420S	1 1/2	31,7	1.25	1 5/8-12	98,0	3.86	29,2	1.15
2424S	1 1/2	38,1	1.50	1 7/8-12	117,1	4.61	35,8	1.41

#### Split flange/SAE 37° flare Standard pressure series (Code 61)

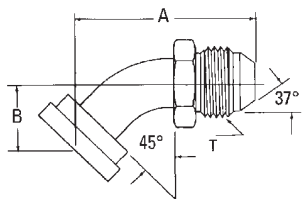


**500023-(Dash size)** (mates with 449-74446 flanges)  
(Formerly Weatherhead 545 series)

The performance rating of these adapters is the lower of the two terminal ends.  
These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A		B	
		mm	in		mm	in	mm	in
8S	1/2	12,7	0.50	3/4-16	59,4	2.34	25,4	1.00
12S	3/4	19,0	0.75	1 1/16-12	70,3	2.77	25,7	1.01
12-8S	3/4	12,7	0.50	3/4-16	59,4	2.34	25,4	1.00
16S	1	25,4	1.00	1 5/16-12	77,2	3.04	28,7	1.13
16-10S	1	16,0	0.63	7/8-14	65,5	2.58	25,4	1.00
16-12S	1	19,0	0.75	1 1/16-12	70,3	2.77	25,7	1.01
16-20S	1	31,7	1.25	1 5/8-12	82,4	3.25	28,5	1.13
20-12S	1 1/4	19,0	0.75	1 1/16-12	70,3	2.77	25,7	1.01
20-16S	1 1/4	25,4	1.00	1 5/16-12	77,2	3.04	28,7	1.13
24-16S	1 1/2	25,4	1.00	1 5/16-12	78,2	3.08	29,7	1.17
24-20S	1 1/2	31,7	1.25	1 5/8-12	82,3	3.24	28,5	1.12
24-32S	1 1/2	50,8	2.00	2 1/2-12	99,3	3.91	28,5	1.12
40S	2 1/2	63,5	2.50	3-12	131,6	5.18	42,2	1.66
40-24S	2 1/2	38,1	1.50	1 7/8-12	90,9	3.58	29,7	1.17

#### Split flange/SAE 37° flare Standard pressure series (Code 61) - Long adapter



**FF5238-(Dash size)** (mates with 449-74446 flanges)  
(Formerly Weatherhead 545 series)

The performance rating of these adapters is the lower of the two terminal ends.  
These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A		B	
		mm	in		mm	in	mm	in
1212S	3/4	19,0	0.75	1 1/16-12	78,5	3.09	25,4	1.00
1616S	1	25,4	1.00	1 5/16-12	91,4	3.60	26,9	1.06
1620S	1	31,7	1.25	1 5/8-12	92,6	3.64	26,9	1.06
2020S	1 1/4	31,7	1.25	1 5/8-12	98,0	3.86	29,2	1.15
2420S	1 1/2	31,7	1.25	1 5/8-12	98,0	3.86	35,8	1.41
2424S	1 1/2	38,1	1.50	1 7/8-12	117,1	4.61	35,8	1.41
3232S	2	50,8	2.00	2 1/2-12	153,4	6.04	50,8	2.00

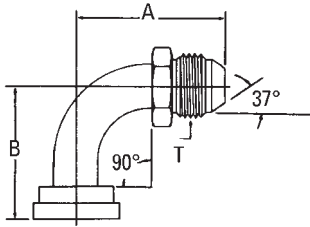
# Steel adapters

SAE split flange to SAE 37° flare

J

## SAE split flange to SAE 37° flare

**Split flange/SAE 37° flare**  
Standard pressure series (Code 61)

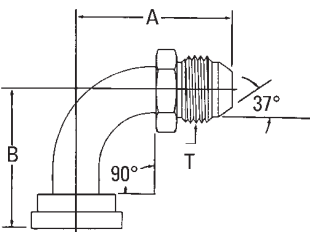


**500024-(Dash size)** (mates with 449-74446 flanges)  
(Formerly Weatherhead 590 series)

The performance rating of these adapters is the lower of the two terminal ends. These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A		B	
		mm	in		mm	in	mm	in
8S	1/2	12,7	0.50	3/4-16	45,2	1.78	41,1	1.62
12-8S	3/4	12,7	0.50	3/4-16	45,2	1.78	41,1	1.62
12-10S	3/4	16,0	0.63	7/8-14	60,4	2.38	54,6	2.15
16-10S	1	16,0	0.63	7/8-14	54,9	2.16	53,9	2.12
16-12S	1	19,0	0.75	1 1/16-12	63,2	2.49	54,6	2.15
20-12S	1 1/4	19,0	0.75	1 1/16-12	63,2	2.49	54,6	2.15
20-24S	1 1/4	38,1	1.50	1 7/8-12	90,9	3.58	68,3	2.69
24-16S	1 1/2	25,4	1.00	1 5/16-12	70,9	2.79	62,0	2.44
24-20S	1 1/2	31,7	1.25	1 5/8-12	79,7	3.14	63,5	2.50
24-32S	1 1/2	50,8	2.00	1 7/8-12	100,4	3.95	69,8	2.75
32-20S	2	31,7	1.25	1 5/8-12	79,7	3.14	65,0	2.56
32-24S	2	38,1	1.50	1 7/8-12	90,9	3.58	69,8	2.75
40-24S	2 1/2	38,1	1.50	1 7/8-12	90,9	3.58	71,4	2.81
40-32S	2 1/2	50,8	2.00	2 1/2-12	113,3	4.46	84,1	3.31
40-40S	2 1/2	63,5	2.50	3-12	148,8	5.86	131,8	5.19

**Split flange/SAE 37° flare**  
Standard pressure series (Code 61)



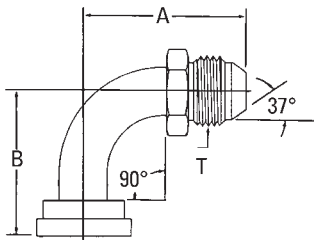
**FF5162-(Dash size)** (mates with 449-74446 flanges)  
(Formerly Weatherhead 590 series)

The performance rating of these adapters is the lower of the two terminal ends. These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A		B	
		mm	in		mm	in	mm	in
0808S	1/2	12,7	0.50	3/4-16	54,9	2.16	41,1	1.62
1212S	3/4	19,0	0.75	1 1/16-12	71,4	2.81	54,1	2.13
1612S	1	19,0	0.75	1 1/16-12	71,4	2.81	54,1	2.13
1616S	1	25,4	1.00	1 5/16-12	86,6	3.41	60,4	2.38
1620S	1	31,7	1.25	1 5/8-12	87,9	3.46	60,4	2.38
2016S	1 1/4	25,4	1.00	1 5/16-12	86,6	3.41	60,4	2.38
2020S	1 1/4	31,7	1.25	1 5/8-12	94,2	3.71	66,5	2.62
2416S	1 1/2	25,4	1.00	1 5/16-12	86,6	3.41	60,4	2.38
2420S	1 1/2	31,7	1.25	1 5/8-12	94,2	3.71	66,5	2.62
2424S	1 1/2	38,1	1.50	1 7/8-12	110,0	4.33	79,2	3.12
3232S	2	50,8	2.00	2 1/2-12	145,0	5.71	114,3	4.50

## SAE split flange to SAE 37° flare

### Split flange/SAE 37° flare High pressure series (Code 62)



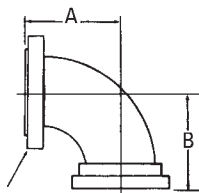
#### FF5540-(Dash size) (mates with FC3425 - size-449 flanges)

The performance rating of these adapters is the lower of the two terminal ends. These adapters are rated to JIC pressures as specified in SAE J514.

Dash size	Split flange size	Tube O.D.		Thread T	A		B	
		mm	in		mm	in	mm	in
1212S	3/4	19,0	0.75	1 1/16-12	71,4	2.81	54,1	2.13
1612S	1	19,0	0.75	1 1/16-12	71,4	2.81	54,1	2.13
1616S	1	25,4	1.00	1 5/16-12	86,6	3.41	60,4	2.38
2020S	1 1/4	31,7	1.25	1 5/8-12	94,2	3.71	66,5	2.62
2416S	1 1/2	25,4	1.00	1 5/16-12	86,6	3.41	69,8	2.75
2420S	1 1/2	31,7	1.25	1 5/8-12	94,2	3.71	66,5	2.62
2424S	1 1/2	38,1	1.50	1 7/8-12	110,0	4.33	79,2	3.12

## SAE swivel flange to SAE split flange

### SAE swivel flange/split flange SAE Standard pressure series (Code 61)

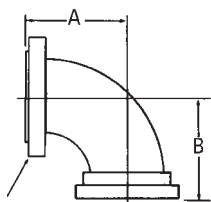


#### 504089-(Dash size)

(suitable for pressures through SAE 100R16 2 wire braid hose)

Dash size	Shoulder size	Flange size	A		B	
			mm	in	mm	in
16S	1	1	52,3	2.06	60,2	2.37
20S	1 1/4	1 1/4	58,7	2.31	63,5	2.50
24S	1 1/2	1 1/2	66,5	2.62	69,8	2.75
32S	2	2	79,2	3.12	82,5	3.25
40S	2 1/2	2 1/2	119,1	4.69	131,8	5.19

### SAE swivel flange/split flange SAE Standard pressure series (Code 61)



#### FF5321-(Dash size)

(suitable for pressures through SAE 100R12 4 spiral hose)

Dash size	Shoulder size	Flange size	A		B	
			mm	in	mm	in
1616S	1	1	60,4	2.38	60,4	2.38
2020S	1 1/4	1 1/4	66,5	2.62	66,5	2.62
2424S	1 1/2	1 1/2	79,2	3.12	79,2	3.12
3232S	2	2	114,3	4.50	114,3	4.50

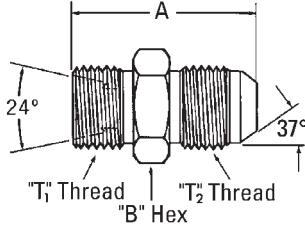
# Steel adapters

SAE flareless to SAE 37° union

J

## SAE flareless to SAE 37° union

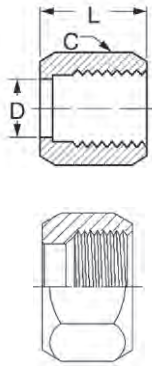
Male SAE flareless/SAE 37° flare\*



### FF1315-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
0404S	6,3	0.25	7/16-20	7/16-20	31,0	1.22	12,7	0.50
0604S	9,6	0.38	9/16-18	7/16-20	32,3	1.27	15,7	0.62
0606S	9,6	0.38	9/16-18	9/16-18	32,5	1.28	15,7	0.62
0806S	12,7	0.50	3/4-16	9/16-18	34,8	1.37	20,6	0.81
0808S	12,7	0.50	3/4-16	3/4-16	37,3	1.47	20,6	0.81
1008S	16,0	0.63	7/8-14	3/4-16	40,4	1.59	23,9	0.94
1010S	16,0	0.63	7/8-14	7/8-14	42,9	1.69	23,9	0.94
1212S	19,0	0.75	1 1/16-12	1 1/16-12	49,0	1.93	28,5	1.12
1616S	25,4	1.00	1 5/16-12	1 5/16-12	50,3	1.98	35,1	1.38

Flareless tube nut\*

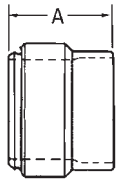


### 210294-(Dash size)

Use with FF1315-(Dash size) body only  
(Ref. SAE 080110)

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
4S	6,3	0.25	7/16-20	17,8	0.70	14,2	0.56
6S	9,6	0.38	9/16-18	19,0	0.75	17,6	0.69
8S	12,7	0.50	3/4-16	21,3	0.84	22,4	0.88
10S	16,0	0.63	7/8-14	23,4	0.92	25,4	1.00
12S	19,0	0.75	1 1/16-12	24,6	0.97	31,8	1.25
14S	22,3	0.88	1 3/16-12	25,4	1.00	35,1	1.38
16S	25,4	1.00	1 5/16-12	26,7	1.05	38,1	1.50

Ferrule-style A\*  
(for flareless tube fittings)



### FF9173-(Dash size)

Use with FF1315-(Dash size) body only  
(Ref. SAE 080115A)

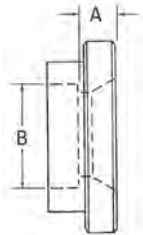
Dash size	Tube O.D.		A	
	mm	in	mm	in
04S	6,3	0.25	9,1	0.36
06S	9,6	0.38	9,9	0.39
08S	12,7	0.50	10,9	0.43
10S	16,0	0.63	11,2	0.44
12S	19,0	0.75	11,9	0.47
16S	25,4	1.00	12,2	0.48

**Note:** \*All three components (adapter FF1315, tube nut 210294 and ferrule FF9173) required for assembly. Order by Part Number FF1316-(dash size) for complete assembly.



## Brace and weld to split flange

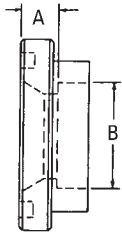
**Brace/solid flanged head SAE**  
Standard pressure series (Code 61)



### 71418-(Dash size)

Dash size	Split flange size	Tube O.D.		A		B	
		mm	in	mm	in	mm	in
12-12S	3/4	19,0	0.75	7,9	0.31	19,0	0.75
16-12S	3/4	25,4	1.00	7,9	0.31	25,4	1.00
16-16S	1	25,4	1.00	7,9	0.31	25,4	1.00
20-20S	1 1/4	31,7	1.25	7,9	0.31	31,8	1.25
24-24S	1 1/2	38,1	1.50	9,7	0.38	38,1	1.50
32-32S	2	50,8	2.00	9,7	0.38	50,8	2.00
40-40S	2 1/2	63,5	2.50	11,2	0.44	63,5	2.50

**Brace/(flanged head) SAE**  
Standard pressures series (Code 61)



### 4624-(Dash size)

Dash size	Split flange size	Tube O.D.		A		B	
		mm	in	mm	in	mm	in
12S	3/4	19,0	0.75	7,9	0.31	19,0	0.75
12-16S	3/4	25,4	1.00	7,9	0.31	25,4	1.00
16S	1	25,4	1.00	7,9	0.31	25,4	1.00
16-12S	1	19,0	0.75	7,9	0.31	19,0	0.75
16-20S	1	31,7	1.25	7,9	0.31	31,8	1.25
20S	1 1/4	31,7	1.25	7,9	0.31	31,8	1.25
20-16S	1 1/4	25,4	1.00	7,9	0.31	25,4	1.00
24S	1 1/2	38,1	1.50	9,7	0.38	38,1	1.50
24-16S	1 1/2	25,4	1.00	9,7	0.38	25,4	1.00
24-20S	1 1/2	31,7	1.25	7,9	0.31	31,8	1.25
32S	2	50,8	2.00	9,7	0.38	50,8	2.00
32-16S	2	25,4	1.00	7,1	0.28	25,4	1.00
32-24S	2	38,1	1.50	9,7	0.38	38,1	1.50
40-32S	2 1/2	50,8	2.00	11,2	0.44	50,8	2.00

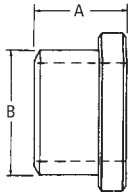
# Steel adapters

Braze and weld to split flange

J

## Braze and weld to split flange

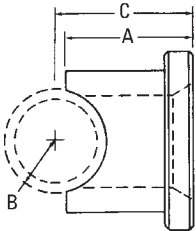
Buttweld (pipe)/solid flanged head SAE  
Standard pressure series (Code 61)



### 71416-(Dash size)

Dash size	Flange size	A		B	
		mm	in	mm	in
16S	1	27,4	1.08	33,6	1.32
20S	1 1/4	27,4	1.08	42,2	1.66
24S	1 1/2	29,0	1.14	48,3	1.90
32S	2	29,0	1.14	60,4	2.38

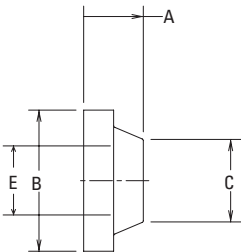
Saddle weld (pipe)/solid flanged head SAE  
Standard pressure series (Code 61)



### 71422-(Dash size)

Dash size	Flange size	A		B		C	
		mm	in	mm	in	mm	in
20-20S	1 1/4	32,3	1.27	21,0	0.83	44,9	1.77

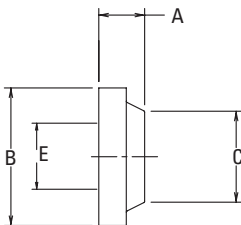
Braze/(flanged head) SAE  
High pressure series (Code 62)



### FC1102-(Dash size)

Dash size	Tube O.D.		A		B		C		E	
	mm	in	mm	in	mm	in	mm	in	mm	in
0808S	12,7	0.50	15,7	0.62	31,7	1.25	17,8	0.70	9,9	0.39
1208S	12,7	0.50	15,7	0.62	41,4	1.63	24,1	0.95	9,9	0.39
1212S	19,0	0.75	17,5	0.69	41,4	1.63	24,1	0.95	14,7	0.58
1612S	25,4	1.00	17,5	0.69	47,7	1.88	31,5	1.24	14,7	0.58
1616S	25,4	1.00	15,7	0.62	47,7	1.88	31,5	1.24	20,8	0.82
2012S	31,7	1.25	15,7	0.62	54,1	2.13	38,3	1.51	19,0	0.75
2016S	31,7	1.25	15,7	0.62	54,1	2.13	38,3	1.51	20,8	0.82
2020S	31,7	1.25	15,7	0.62	54,1	2.13	38,1	1.50	26,7	1.05
2416S	38,1	1.50	15,7	0.62	63,5	2.50	46,5	1.83	20,8	0.82
2420S	38,1	1.50	15,7	0.62	63,5	2.50	46,5	1.83	26,7	1.05
2424S	38,1	1.50	19,0	0.75	63,5	2.50	46,5	1.83	32,2	1.27
3224S	50,8	2.00	19,0	0.75	79,5	3.13	63,0	2.48	32,2	1.27
3232S	50,8	2.00	28,4	1.12	79,5	3.13	58,7	2.31	43,7	1.72

Braze/solid flanged head SAE  
High pressure series (Code 62)

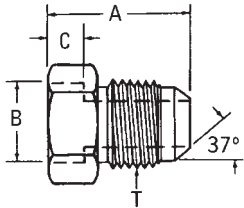


### FC1132-(Dash size)

Dash size	Tube O.D.		A		B		C		E	
	mm	in	mm	in	mm	in	mm	in	mm	in
1616	25,4	1.00	15,7	0.62	47,7	1.88	31,5	1.24	20,5	0.81

## Braze and weld to SAE 37° flare

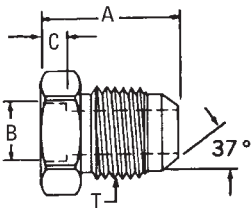
### Weld port/SAE 37° flare



#### 202232-(Dash size)

Dash size	IPS Size		Thread T	A		B		C	
	mm	in		mm	in	mm	in	mm	in
1/4-8S	6,3	0.25	3/4-16	30,5	1.20	14,2	0.56	9,7	0.38
1/2-12S	12,7	0.50	1 1/16-12	39,1	1.54	21,8	0.86	12,7	0.50
1-20S	25,4	1.00	1 5/8-12	46,0	1.81	34,0	1.34	16,0	0.63

### Braze port/SAE 37° flare



#### 73014-(Dash size)

Dash size	Tube O.D.		Thread T	A		B		C	
	mm	in		mm	in	mm	in	mm	in
4S	6,3	0.25	7/16-20	18,8	0.74	6,4	0.25	4,0	0.16
5S	7,9	0.31	1/2-20	20,3	0.80	7,9	0.31	4,0	0.16
6S	9,6	0.38	9/16-18	20,6	0.81	9,7	0.38	4,0	0.16
8S	12,7	0.50	3/4-16	23,9	0.94	12,7	0.50	4,0	0.16
8-6S	12,7	0.50	9/16-18	21,3	0.84	12,7	0.50	4,0	0.16
10S	15,7	0.62	7/8-14	27,2	1.07	15,7	0.62	4,0	0.16
12S	19,0	0.75	1 1/16-12	31,5	1.24	19,0	0.75	6,4	0.25
12-10S	19,0	0.75	7/8-14	28,7	1.13	19,0	0.75	6,4	0.25
16S	25,4	1.00	1 5/16-12	32,8	1.29	25,4	1.00	6,4	0.25
16-12S	25,4	1.00	1 1/16-12	31,5	1.24	25,4	1.00	6,4	0.25
16-20S	31,7	1.25	1 5/8-12	35,6	1.40	25,4	1.00	6,4	0.25
20S	31,7	1.25	1 5/8-12	35,6	1.40	31,8	1.25	6,4	0.25
20-16S	31,7	1.25	1 5/16-12	32,8	1.29	31,8	1.25	6,4	0.25
24S	38,1	1.50	1 7/8-12	40,1	1.58	38,1	1.50	6,4	0.25
24-20S	38,1	1.50	1 5/8-12	37,1	1.46	38,1	1.50	6,4	0.25
24-32S	38,1	1.50	2 1/2-12	49,5	1.95	38,1	1.50	6,4	0.25
32S	50,8	2.00	2 1/2-12	49,8	1.96	50,8	2.00	6,4	0.25
40S	63,5	2.50	3-12	47,2	1.86	63,5	2.50	6,4	0.25

# Steel adapters

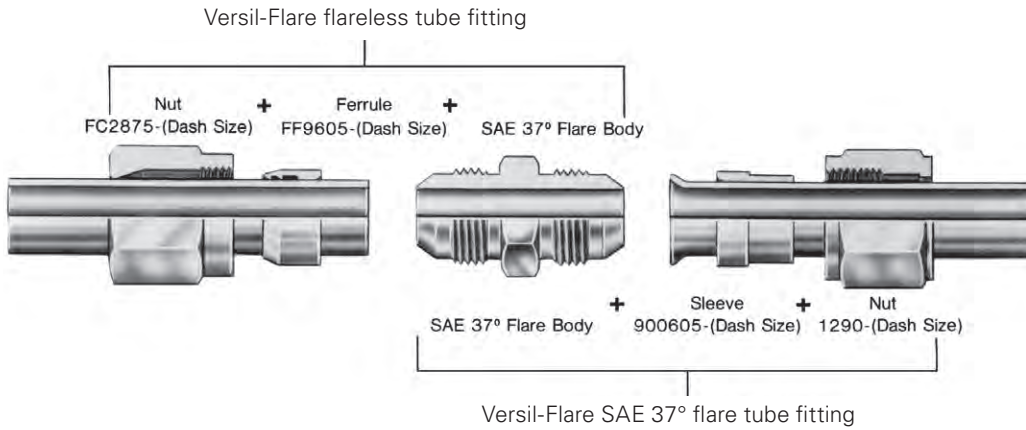
## Application data

J

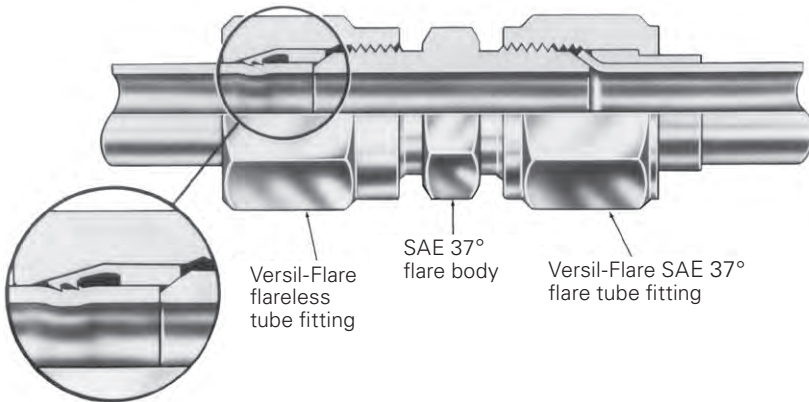
### Versil-Flare™ flareless and Versil-Flare SAE 37° flared type

Both styles use the same SAE 37° flared body

#### Before connection

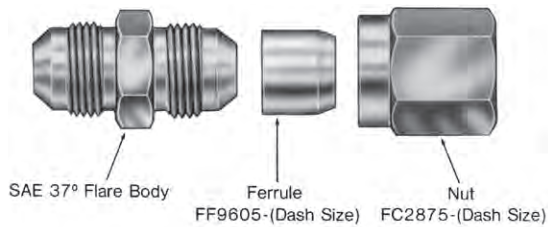


#### After connection



One inventory of bodies (any standard SAE 37° flare fitting) allows both flareless and flared type connection of standard steel hydraulic tubing. It is no longer necessary to inventory flared tube fittings plus the special bodies, nuts and sleeves for flareless tube fittings. The Eaton total tube fitting concept reduces inventory expense.

### Versil-Flare™ flareless tube fitting



The Eaton Versil-Flare flareless tube fitting can use any standard SAE 37° male flare adapter or hose fitting as a body. This eliminates the need to inventory special flareless tube fitting bodies and results in reduced inventory expense. Eaton Versil-Flare flareless tube fittings are available in size from 3/16" tube O.D. to 2" tube O.D.

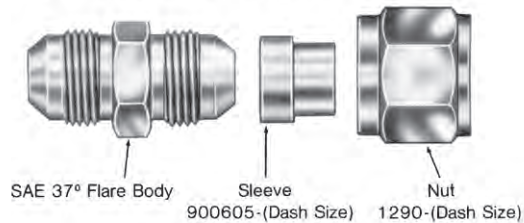
Presetting tools and extra assembly time are eliminated because there's no need for flaring, special preparation or presetting with the Eaton Versil-Flare flareless tube fitting. The chance of assembly error is reduced because the ferrule can be installed only one way and assembly is the same for all sizes and tube wall thicknesses. This assures a tight joint every time. These features improve production rates.

### Selection and sizing for both Eaton Versil-Flare flareless and Versil-Flare flared tube fittings

#### Tube selection and sizing

Both Eaton Versil-Flare flareless and flared tube fittings can be used with SAE J-525 electric resistance welded, cold worked annealed, SAE J-524 seamless annealed tubing and SAE J527 brazed double wall low carbon steel tubing. SAE J356 welded flash controlled normalized steel tubing can only be used with Eaton Versil-Flare flareless tube fittings. **The maximum hardness of the above tubing should not exceed Rockwell B65.** Selection of proper tubing material, size and wall thickness depends on corrosion conditions, pressure and flow requirements and other operating requirements of the system.

### Versil-Flare™ flared tube fitting



The Eaton industrial standard three piece Versil-Flare flared type tube fitting can be used on the full range of standard steel hydraulic tubing in various wall thicknesses from 3/16" tube O.D. to 2" tube O.D. All three components are constructed from high quality zinc plated steel for long service life.

The standard SAE 37° flare angle is used to produce a highly efficient seal under hydraulic pressures. The sleeve is used to help support the tube and absorb vibration.

Assembly is easy. A properly sized wrench and flaring tool are all that is necessary. This is important in tight locations. Eaton standard SAE 37° flare type fittings can also be dis-assembled and reassembled repeatedly.

Eaton quality is built into every component to assure leakproof connections. The Eaton standard SAE 37° flare type tube fitting conforms to the following hydraulic tube fitting standards. Society of Automotive Engineers, SAE J514.

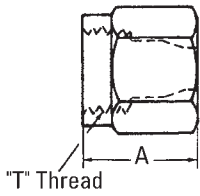
# Steel adapters

Versil-Flare™ - flareless and flared

J

## Versil-Flare - flareless and flared

### Versil-Flare flareless tube nut

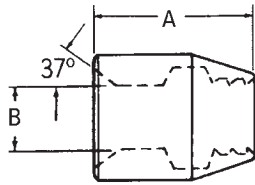


#### FC2875-(Dash size)

Use with FF9605-(Dash size) ferrule only

Dash size	Tube O.D.		Thread T	A	
	mm	in		mm	in
03S	4,8	0.19	3/8-24	20,1	0.79
04S	6,3	0.25	7/16-20	20,8	0.82
05S	7,9	0.31	1/2-20	20,8	0.82
06S	9,6	0.38	9/16-18	21,8	0.86
08S	12,7	0.50	3/4-16	27,4	1.08
10S	16,0	0.63	7/8-14	28,5	1.12
12S	19,0	0.75	1 1/16-12	34,5	1.36
16S	25,4	1.00	1 5/16-12	35,6	1.40
20S	31,7	1.25	1 5/8-12	45,7	1.80
24S	38,1	1.50	1 7/8-12	46,7	1.84

### Versil-Flare flareless tube ferrule

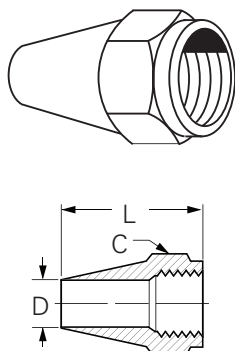


#### FF9605-(Dash size)

Use with FC2875-(Dash size) nut only

Dash size	Tube O.D.		A		B	
	mm	in	mm	in	mm	in
03S	4,8	0.19	10,2	0.40	4,8	0.19
04S	6,3	0.25	10,7	0.42	6,4	0.25
05S	7,9	0.31	10,7	0.42	7,9	0.31
06S	9,6	0.38	11,7	0.46	9,7	0.38
08S	12,7	0.50	14,5	0.57	12,7	0.50
10S	16,0	0.63	14,7	0.58	15,7	0.62
12S	19,0	0.75	17,8	0.70	19,0	0.75
16S	25,4	1.00	17,8	0.70	25,4	1.00
20S	31,7	1.25	25,4	1.00	31,8	1.25
24S	38,1	1.50	25,4	1.00	38,1	1.50
32S	50,8	2.00	29,7	1.17	50,8	2.00

### Versil-Flare SAE 37° Nut



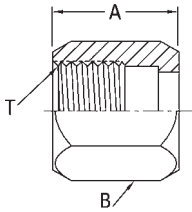
#### 221000-(Dash size) (Ref. SAE 070111)

(Formerly Weatherhead series C5115x)

Dash size	Tube O.D.		Hex C		D		L
	mm	in	mm	in	mm	in	
4S	6,3	1/4	14,3	9/16	6,4	.255	25,4 1.00
5S	7,9	5/16	16,0	5/8	7,9	.318	26,9 1.06
6S	9,6	3/8	17,8	11/16	9,7	.380	27,6 1.09
8S	12,7	1/2	22,3	7/8	12,8	.505	32,5 1.28
10S	16,0	5/8	25,4	1	16,0	.631	37,6 1.48
12S	19,0	3/4	31,7	1-1/4	19,2	.756	42,2 1.66
14S	22,2	7/8	34,9	1-3/8	22,4	.881	46,0 1.81
16S	25,4	1	38,1	1-1/2	25,6	1.006	49,3 1.94

## Versil-Flare - flareless and flared

### Versil-Flare SAE 37° flared style "B" nut

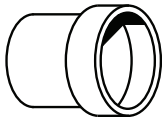


**1290-(Dash size)** (Ref. SAE 070110)  
(Formerly Weatherhead series C5105x)  
Use with 900605 tube sleeve only

Dash size	Tube O.D.		Thread T	A		B	
	mm	in		mm	in	mm	in
2S	3,3	0.13	5/16-24	14,0	0.55	9,5	0.38
3S	4,8	0.19	3/8-24	15,2	0.60	11,2	0.44
4S*	6,3	0.25	7/16-20	15,7	0.62	14,2	0.56
5S	7,9	0.31	1/2-20	17,0	0.67	15,7	0.62
6S*	9,6	0.38	9/16-18	18,3	0.72	17,6	0.69
8S*	12,7	0.50	3/4-16	21,3	0.84	22,4	0.88
10S*	16,0	0.63	7/8-14	24,6	0.97	25,4	1.00
12S*	19,0	0.75	1 1/16-12	25,9	1.02	31,8	1.25
14S	22,3	0.88	1 3/16-12	27,4	1.08	35,1	1.38
16S*	25,4	1.00	1 5/16-12	28,5	1.12	38,1	1.50
20S	31,7	1.25	1 5/8-12	31,0	1.22	50,8	2.00
24S*	38,1	1.50	1 7/8-12	35,8	1.41	57,2	2.25
32S	50,8	2.00	2 1/2-12	40,4	1.59	73,1	2.88

\* Also available in stainless steel as 259-1290-(dash size).  
(Formerly Weatherhead part number 5117x)

### Versil-Flare SAE 37° flared sleeve



**900605-(Dash size)** (Ref. SAE 070115)  
(Formerly Weatherhead series C5165x)  
Use with 1290 short nut only

Dash size	Tube O.D.		A	
	mm	in	mm	in
2S	3,3	0.13	8,6	0.34
3S	4,8	0.19	8,6	0.34
4S	6,3	0.25	10,4	0.41
5S	7,9	0.31	11,2	0.44
6S	9,6	0.38	12,7	0.50
8S	12,7	0.50	14,2	0.56
10S	16,0	0.63	16,8	0.66
12S	19,0	0.75	17,6	0.69
14S	22,3	0.88	19,3	0.76
16S	25,4	1.00	19,8	0.78
20S	31,7	1.25	23,1	0.91
24S	38,1	1.50	28,5	1.12
32S	50,8	2.00	30,3	1.19

\* Also available in stainless steel as 259-900605-(dash size).  
(Formerly Weatherhead part number 5177x)

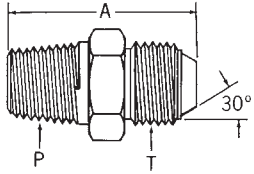
# Steel adapters

Specials

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## Specials

### External pipe/30° flare

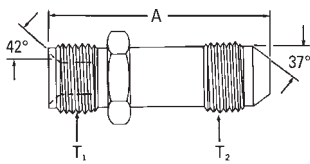


#### 2004-(Dash size)

(Formerly Weatherhead series C92)

Dash size	Tube O.D.		Thread P	Thread T	A	
	mm	in			mm	in
12-16S	25,4	1.00	3/4-14	1 5/16-14	46,7	1.84
16-16S	25,4	1.00	1-11 1/2	1 5/16-14	51,6	2.03
20-20S	31,7	1.25	1 1/4-11 1/2	1 5/8-14	59,4	2.34

### 42° Inverted flare/SAE 37° flare



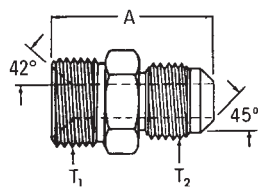
#### 202124-(Dash size) and FF1327-(Dash size) Long\*

(Formerly Weatherhead series C5880x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
3-3S	4,8	0.19	3/8-24	3/8-24	27,2	1.07
3-4S	6,3	0.25	3/8-24	7/16-20	29,0	1.14
0304S*	6,3	0.25	3/8-24	7/16-20	61,0	2.40
4-4S	6,3	0.25	7/16-24	7/16-20	29,0	1.14
0404S*	6,3	0.25	7/16-24	7/16-20	61,0	2.40
5-4S	6,3	0.25	1/2-20	7/16-20	29,5	1.16
5-5S	7,9	0.31	1/2-20	1/2-20	29,0	1.14
5-6S	9,6	0.38	1/2-20	9/16-18	30,2	1.19
6-6S	9,6	0.38	5/8-18	9/16-18	31,0	1.22
8-8S	12,7	0.50	3/4-18	3/4-18	37,1	1.46

\*Length required to insert adapter at installation.

### 42° Inverted flare/SAE 37° flare (Brass)



#### 200001-(Dash size)

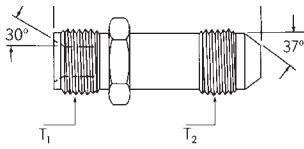
Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
4-4B	6,3	0.25	7/16-24	7/16-20	27,7	1.09
4-5B	7,9	0.31	7/16-24	1/2-20	28,5	1.12
4-6B	9,6	0.38	7/16-24	5/8-18	30,7	1.21
5-4B	6,3	0.25	1/2-20	7/16-20	27,9	1.10
5-5B	7,9	0.31	1/2-20	1/2-20	29,5	1.16
5-6B	9,6	0.38	1/2-20	5/8-18	31,8	1.25
6-5B	7,9	0.31	5/8-18	1/2-20	31,0	1.22
6-6B	9,6	0.38	5/8-18	5/8-18	32,5	1.28
7-6B	9,6	0.38	11/16-18	5/8-18	36,3	1.43
7-8B	12,7	0.50	11/16-18	3/4-16	39,6	1.56
8-6B	9,6	0.38	3/4-18	5/8-18	36,3	1.43
8-8B	12,7	0.50	3/4-18	3/4-16	39,6	1.56
10-10B	16,0	0.63	7/8-18	7/8-14	44,7	1.76
12-12B	19,0	0.75	1 1/16-16	1 1/16-14	52,0	2.05

**WARNING:** California Proposition 65, see page A-2.



### Specials

#### 30° Inverted flare/SAE 37° flare

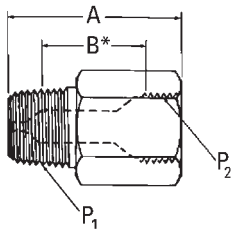


#### FF1353-(Dash size) and FF1354-(Dash size) long\*

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
0404S	6,3	0.25	7/16-20	7/16-20	33,8	1.33
0404S*	6,3	0.25	7/16-20	7/16-20	63,5	2.50

\*Length required to insert adapter at installation.

#### Restrictor male pipe/female pipe



#### FF1980-(Dash size)†

Dash size	Tube O.D.		Thread P1	Thread P2	A		B*	
	mm	in			mm	in	mm	in
0404	6,3	0.25	1/4-18	1/4-18	35,3	1.39	16,2	0.64
0606	9,6	0.38	3/8-18	3/8-18	36,6	1.44	17,6	0.69
0808	12,7	0.50	1/2-14	1/2-14	47,5	1.87	22,1	0.87

\*Length required to insert adapter at installation.

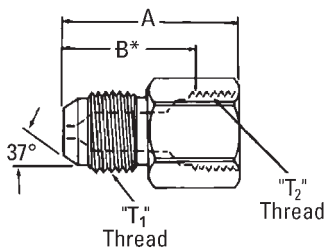
† Ordering Information: Eaton Restrictor Adapters are available in orifice sizes from 0.60 to 0.25 inches.

When ordering restrictor adapters, it is important to indicate the drill size required.

For example: For a 0.125 drill size in FF1980-0404 adapter, order as FF1980-125-0404.

If you indicate the desired orifice size in inches, the appropriate 3 digit number will be assigned.

#### Restrictor SAE 37° male flare/SAE 37° female



#### FF1981-(Dash size)†

Dash size	Tube O.D.		Thread T1	Thread T2	A		B*	
	mm	in			mm	in	mm	in
0404	6,3	0.25	7/16-20	7/16-20	28,9	1.14	17,5	0.69
0606	9,6	0.38	9/16-18	9/16-18	30,2	1.19	18,3	0.72
0808	12,7	0.50	3/4-16	3/4-16	34,5	1.36	25,6	1.01

\*Length required to insert adapter at installation.

† Ordering Information: Eaton Restrictor Adapters are available in orifice sizes from 0.60 to 0.25 inches.

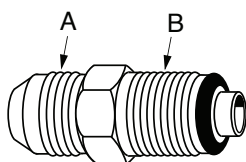
When ordering restrictor adapters, it is important to indicate the drill size required.

For example: For a 0.125 drill size in FF1980-0404 adapter, order as FF1980-125-0404.

If you indicate the desired orifice size in inches, the appropriate 3 digit number will be assigned.

#### SAE 37° flare to O-Ring port (steel)

Includes O-ring



#### FF4184-(Dash size)

(Formerly Weatherhead series 41157x)

Dash size	Tube size	Thread A	Thread B
-0404S	1/4	7/16-20	7/16-24
-0606S	3/8	9/16-18	5/8-18
-0808S	1/2	3/4-16	3/4-16
-1010S	5/8	7/8-14	7/8-14
-1212S	3/4	1 1/16-12	1 1/16-16

Includes O-Ring.

# Steel adapters

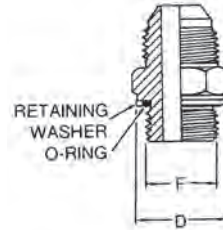
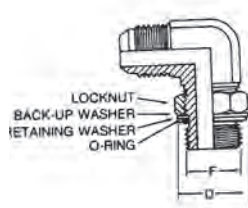
## Metric thread dimensions

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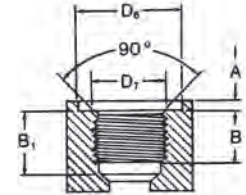
### Metric thread dimensions

#### Conversion adapters

Sealing is achieved by means of an O-Ring, retaining washer and a properly machined port. The O-Ring is "captured" by the I.D. of the retaining washer. The port may be of the spot faced or a flat machined surface as long as the D6 dimension is met. For assembly instructions for adjustable type adapters page J-26.



DIN 3852 large spot face



Equivalent to DIN 3852 form x

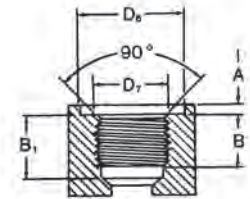
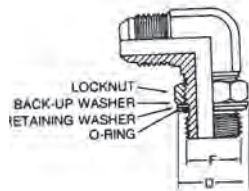
Thread size	M 10 x 1	M 12 x 1.5	M 14 x 1.5	M 16 x 1.5	M 18 x 1.5	M 20 x 1.5	M 22 x 1.5	M 26 x 1.5	M 27 x 2	M 33 x 2	M 42 x 2	M 48 x 2
<b>F Thread Dia.</b>	10.0	12.0	14.0	16.0	18.0	20.0	22.0	26.0	27.0	33.0	42.0	48.0
<b>A max</b>	1.0	1.5	1.5	1.5	2.0	2.0	2.5	2.5	2.5	2.5	2.5	2.5
<b>B min (full thread)</b>	12.0	12.0	12.0	12.0	12.0	14.0	14.0	16.0	16.0	18.0	20.0	22.0
<b>B1 min</b>	13.5	18.5	18.5	18.5	18.5	20.5	20.5	22.5	24.0	26.0	28.0	30.0
<b>D max</b>	15.7	18.7	19.7	23.2	26.2	28.2	30.2	35.2	36.2	43.2	52.7	58.7
<b>D6 min</b>	16.2	19.2	20.2	23.7	26.9	28.9	30.7	35.7	36.7	44.4	53.4	59.9
<b>D7 max</b>	10.2	12.2	14.2	16.2	18.2	20.2	22.2	26.2	27.2	33.3	42.3	48.3

### BSPP (parallel) threads

Sealing is achieved by means of an O-Ring, retaining washer and a properly machined port.

The O-Ring is "captured" by the I.D. of the retaining washer. The compression is controlled by the thickness of the retaining washer.

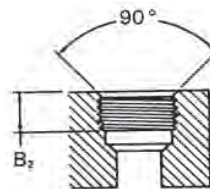
The port may be of the spot faced or a flat machined surface as long as the D6 dimension is met.



Thread size	G 1/8"-28		G 1/4"-19		G 3/8"-19		G 1/2"-14		G 3/4"-14		G 1"-11		G 1 1/4"-11		G 1 1/2"-11	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
<b>F Thread Dia.</b>	9,7	0.38	13,2	0.50	16,7	0.66	20,9	0.83	26,4	1.04	33,3	1.31	41,9	1.65	47,8	1.88
<b>A max</b>	1,0	0.04	2,0	0.08	2,05	0.10	2,5	0.10	2,5	0.10	2,5	0.10	2,5	0.10	2,5	0.10
<b>B1 min (full thread)</b>	8,0	0.31	12,0	0.47	12,0	0.47	14,0	0.63	16,0	0.63	18,0	0.71	20,0	0.79	22,0	0.87
<b>B1 min</b>	13,0	0.51	18,5	0.73	18,5	0.73	22,0	0.94	24,0	0.94	27,0	1.06	29,0	1.14	31,0	1.22
<b>D max</b>	15,7	0.62	19,7	0.78	24,0	0.94	28,7	1.38	35,2	1.38	43,2	1.70	52,7	2.07	58,7	2.31
<b>D6 min</b>	16,2	0.64	20,2	0.81	24,9	0.98	29,4	1.43	36,4	1.43	44,4	1.75	53,4	2.10	59,9	2.36
<b>D7 max</b>	10,0	0.39	13,4	0.53	16,9	0.67	21,2	1.05	26,7	1.05	33,6	1.32	42,3	1.67	48,2	1.90

### BSPT (tapered) threads port sealing

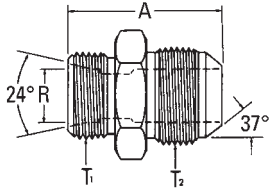
Sealing is achieved by means of metal to metal deformation of the adapter and port threads.



Thread size 11	R 1/8"-28		R 1/4"-19		R 3/8"-19		R 1/2"-14		R 3/4"-14		R 1"-11		R 1 1/4"-11		R 1 1/2"-11	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
<b>B2 min (full thread)</b>	5,5	0.22	8,5	0.33	8,5	0.33	10,5	0.41	13,0	0.51	14,5	0.57	17,0	0.67	17,0	0.67

## Metric to SAE 37° flare

### Metric 24° (DIN 3901/3902 I.Rh)/SAE 37° flare

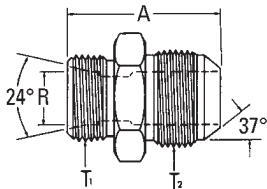


#### 15.063-(Dash size)

(Formerly Weatherhead series MC5206x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		Rø	
	mm	in			mm	in	mm	in
6-4	6,4	0.25	M12 x 1.5	7/16-20	31,0	1.22	6,0	0.24
8-6	9,7	0.38	M14 x 1.5	9/16-18	31,0	1.22	8,0	0.31
10-8	12,7	0.50	M16 x 1.5	3/4-16	34,5	1.36	10,0	0.39
12-8	12,7	0.50	M18 x 1.5	3/4-16	34,5	1.36	12,0	0.47
15-10	16,0	0.63	M22 x 1.5	7/8-14	39,1	1.54	15,0	0.59
18-12	19,0	0.75	M26 x 1.5	1 1/16-12	42,9	1.69	18,0	0.71
22-16	25,4	1.00	M30 x 2.0	1 5/16-12	46,0	1.81	22,0	0.87

### Metric 24° (DIN 3902 s.Rh)/SAE 37° flare

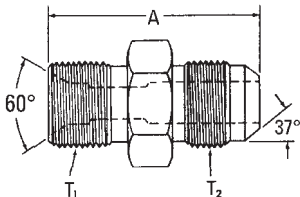


#### 15.147-(Dash size)

(Formerly Weatherhead series MC5208x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		Rø	
	mm	in			mm	in	mm	in
6-6	9,7	0.38	M14 x 1.5	9/16-18	33,0	1.30	6,0	0.24
10-8	12,7	0.50	M18 x 1.5	3/4-16	35,6	1.40	10,0	0.39
14-10	16,0	0.63	M22 x 1.5	7/8-14	40,4	1.59	14,0	0.55
16-12	19,0	0.75	M24 x 1.5	1 1/16-12	44,9	1.77	16,0	0.63
20-16	25,4	1.00	M30 x 2.0	1 5/16-12	48,0	1.89	20,0	0.79

### Metric 60° (DIN 7631)/SAE 37° flare



#### 15.117-(Dash size)

(Formerly Weatherhead series MC5207x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
4-4	6,3	0.25	M12X1.5	7/16-20	31,0	1.22
6-6	9,7	0.38	M14 x 1.5	9/16-18	31,0	1.22
8-6	9,7	0.38	M16 x 1.5	9/16-18	32,0	1.26
8-8	12,7	0.50	M16 x 1.5	3/4-16	34,5	1.36
10-8	12,7	0.50	M18 x 1.5	3/4-16	34,5	1.36
16-12	19,0	0.75	M26 x 1.5	1 1/16-12	42,9	1.69
20-16	50,8	2.00	M30X1,5	1 5/16-12	46,0	1.81
25-20	31,8	1.25	M38 x 1.5	1 5/8-12	47,5	1.87

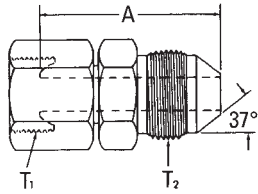
# Steel adapters

Metric to SAE 37° flare

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## Metric to SAE 37° flare

Metric 24° (DIN 3902 s.Rh)/SAE 37° flare

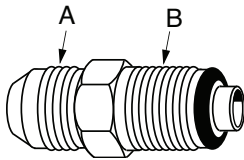


### 15.164-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
6-6	9,7	0.38	M14 x 1.5	9/16-18	35,1	1.38
10-8	12,7	0.50	M18 x 1.5	3/4-16	38,1	1.50
14-10	16,0	0.63	M22 x 1.5	7/8-14	40,9	1.61
16-12	19,0	0.75	M24 x 1.5	1 1/16-12	43,4	1.71
20-16	25,4	1.00	M30 x 2.0	1 5/16-12	47,0	1.85
30-24	38,1	1.50	M42 x 2.0	1 7/8-12	53,9	2.12

## SAE 37° flare to metric O-Ring port adapter (steel)

Includes O-ring



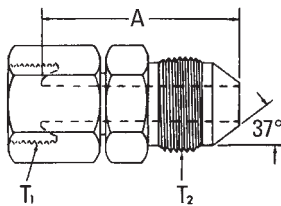
### FF4215-(Dash size)

(Formerly Weatherhead series M41157x)

Dash size	Tube size	Thread A	Thread B
-0614S	3/8	9/16-18	M14X1.5
-0616S	3/8	9/16-18	M16X1.5
-0618S	3/8	9/16-18	M18X1.5

Includes O-Ring.

Metric 24° (DIN 3901/3902 I.Rh)/SAE 37° flare



### 15.163-(Dash size)

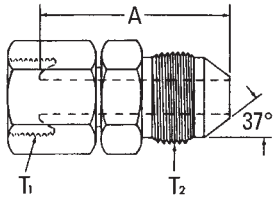
Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
4-4 †	6,4	0.25	M12 x 1.5	7/16-20	34,5	1.36
6-6 †	9,7	0.38	M14 x 1.5	9/16-18	34,5	1.36
8-6 †	9,7	0.38	M16 x 1.5	9/16-18	35,6	1.40
8-8 †	12,7	0.50	M16 x 1.5	3/4-16	38,1	1.50
10-8 †	12,7	0.50	M18 x 1.5	3/4-16	38,1	1.50
13-10 †	16,0	0.63	M22 x 1.5	7/8-14	40,9	1.61
16-12 †	19,0	0.75	M26 x 1.5	1 1/16-12	47,5	1.87

†Universal fitting also mates with 60° DIN 7631/7647 connections.

For additional Metric 24° adapters please refer to Eaton's Walterscheid metric tube fittings catalog E-MEFI-MC002-E1 (or E-MEFI-MC001-M2 for the global version).

### Metric to SAE 37° flare

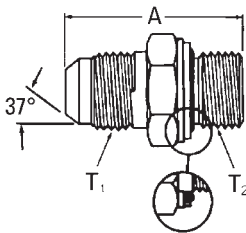
#### Metric 60° (DIN 7631)/SAE 37° flare



#### 15.165-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
20-16	25,4	1.00	M30 x 1.5	1 5/16-12	46,0	1.81
25-20	31,7	1.25	M38 x 1.5	1 5/8-12	49,5	1.95
32-24	38,1	1.50	M45 x 1.5	1 7/8-12	52,6	2.07

#### SAE 37° male/DIN 3852 metric male

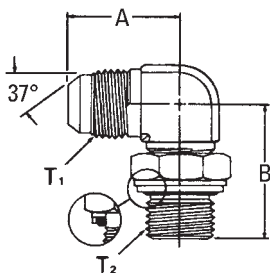


#### GG108-NP(Size)-(Dash size)

(Formerly Weatherhead series MC5315x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
04-10	6,4	0.25	7/16-20	M10 x 1.0	29,0	1.14
04-12	6,4	0.25	7/16-20	M12 x 1.5	33,0	1.30
04-14	6,4	0.25	7/16-20	M14 x 1.5	34,0	1.34
05-10	7,9	0.31	1/2-20	M10 x 1.0	29,0	1.14
06-14	9,7	0.38	9/16-18	M14 x 1.5	34,0	1.34
06-16	9,7	0.38	9/16-18	M16 x 1.5	34,0	1.34
08-16	12,7	0.50	3/4-16	M16 x 1.5	37,1	1.46
08-18	12,7	0.50	3/4-16	M18 x 1.5	37,6	1.48
08-22	12,7	0.50	3/4-16	M22 x 1.5	40,1	1.58
10-18	16,0	0.63	7/8-14	M18 x 1.5	40,1	1.58
10-20	16,0	0.63	7/8-14	M20 x 1.5	42,9	1.69
10-22	16,0	0.63	7/8-14	M22 x 1.5	42,9	1.69
12-22	19,0	0.75	1 1/16-12	M22 x 1.5	46,5	1.83
12-27	19,0	0.75	1 1/16-12	M27 x 2.0	49,5	1.95
16-33	25,4	1.00	1 5/16-12	M33 x 2.0	53,6	2.11
20-42	31,8	1.25	1 5/8-12	M42 x 2.0	58,5	2.30

#### SAE 37° male 90° adjustable elbow/ DIN 3852 metric male



#### GG308-NP(Size)-(Dash size)

(Formerly Weatherhead series MC5515x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		Rø	
	mm	in			mm	in	mm	in
04-10	6,4	0.25	7/16-20	M10 x 1	22,6	0.89	25,9	1.02
04-12	6,4	0.25	7/16-20	M12 x 1.5	26,9	1.06	31,5	1.24
06-14	9,7	9,7	9/16-18	M14 x 1.5	27,0	1.06	31,5	1.24
06-16	9,7	0.38	9/16-18	M16 x 1.5	28,5	1.12	36,6	1.44
08-18	12,7	0.50	3/4-16	M18 x 1.5	31,5	1.24	36,6	1.44
10-18	16,0	0.63	7/8-14	M18 x 1.5	36,6	1.44	39,6	1.56
10-20	16,0	0.63	7/8-14	M20 x 1.5	36,6	1.44	42,9	1.69
10-22	16,0	0.63	7/8-14	M22 x 1.5	36,6	1.44	42,9	1.69
12-22	19,0	0.75	1 1/16-12	M22 x 1.5	41,9	1.65	45,5	1.79
12-27	19,0	0.75	1 1/16-12	M27 x 2.0	41,9	1.65	49,0	1.93

# Steel adapters

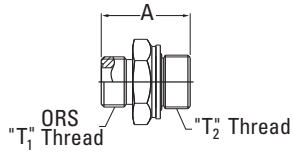
ORS to metric

J

## ORS to metric

### ORS – Special metric connector

(mates with DIN 3852 large spotface)

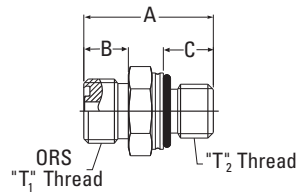


#### FF2485T(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	Ref A	
	mm	in			mm	in
0818S	12,7	0.50	13/16-16	M18 x 1.5	33,6	1.32
0822S	12,7	0.50	13/16-16	M22 x 1.5	36,3	1.43

### ORS/male ISO 6149 O-Ring seal

(S-series)

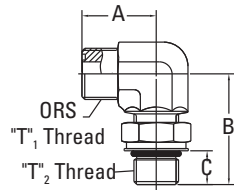


#### FF2742T(Dash size) (Ref. SAE 52M0187)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
0612S	9,7	0.38	11/16-16	M12 x 1.5	32,0	1.26	11,2	0.44	10,9	0.43
0614S	9,7	0.38	11/16-16	M14 x 1.5	32,0	1.26	11,2	0.44	10,9	0.43
0818S	12,7	0.50	13/16-16	M18 x 1.5	38,1	1.50	12,7	0.50	14,0	0.55
0822S	12,7	0.50	13/16-16	M22 x 1.5	39,4	1.55	12,7	0.50	15,0	0.59
1022S	16,0	0.63	1-14	M22 x 1.5	41,9	1.65	15,5	0.61	15,0	0.59
1222S	19,0	0.75	1 3/16-12	M22 x 1.5	43,4	1.71	17,0	0.67	15,0	0.59

### 90° ORS/ISO 6149 O-Ring seal

(S-series)

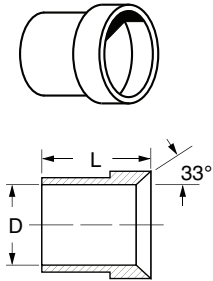


#### FF2744T(Dash size) (Ref. SAE 52M0287)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B		C	
	mm	in			mm	in	mm	in	mm	in
0818S	12,7	0.50	13/16-16	M18 x 1.5	29,7	1.17	44,2	1.74	14,2	0.56

## Metric sleeve

### Sleeve 3-piece metric



**FF91488-(Dash size)** (Ref. SAE 070115)  
(Formerly Weatherhead series C5165x\_\_M)

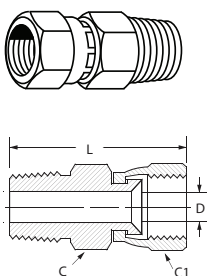
Dash size	Tube O.D.	D		L	
	in	mm	in	mm	in
-0406S	1/4	6,1	.241	10,4	.41
-0508S	5/16	8,1	.320	11,2	.44
-0610S	3/8	10,1	.399	12,7	.50
-0812S	1/2	12,1	.478	14,2	.56
-1014S	5/8	14,1	.556	16,8	.66
-1015S	5/8	15,1	.596	16,8	.66
-1016S	5/8	16,2	.636	16,8	.66
-1218S	3/4	18,2	.717	17,3	.68
-1420S	7/8	20,1	.793	19,3	.76
-2030S	1-1/4	30,2	1.191	23,1	.91
-2032S	1-1/4	32,3	1.270	23,1	.91

Adapts Standard SAE Flare-Twin® Hose Ends for use with metric tubing.

## Pipe to metric

### Female SAE 37° swivel to male metric taper pipe thread

(Pipe thread per DIN 3852)



**FF4180-(Dash size)**  
(Formerly Weatherhead series M9700x)

Dash size	Tube O.D	Taper pipe thread metric	Hex C		Hex C1		D		L	
			mm	in	mm	in	mm	in	mm	in
-0406S	1/4	M10x1.0	14,2	9/16	14,2	9/16	4,4	.172	31,8	1.25
-0508S	5/16	M12x1.5	17,5	11/16	15,9	5/8	5,9	.234	39,1	1.54
-0610S	3/8	M14x1.5	17,5	11/16	17,5	11/16	7,5	.297	40,6	1.60
-0812S	1/2	M16x1.5	22,2	7/8	22,2	7/8	9,9	.391	45,2	1.78
-1014S	5/8	M20x1.5	25,4	1	25,4	1	12,3	.484	48,5	1.91
-1220S	3/4	M24x1.5	28,6	1-1/8	28,6	1-1/8	15,4	.609	51,8	2.04
-1625S	1	M27x2.0	34,9	1-3/8	38,1	1-1/2	21,5	.845	58,4	2.30
-2032S	1-1/4	M36x2.0	47,6	1-7/8	50,8	2	27,4	1.079	61,7	2.43

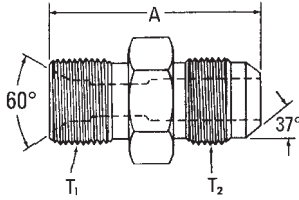
# Steel adapters

BSPP to SAE 37° flare

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## BSPP to SAE 37° flare

BSPP (parallel)/SAE 37° flare

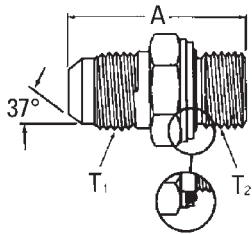


### 2063-(Dash size)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
2-4S	6,4	0.25	G 1/8-28	7/16-20	35,1	1.38
4-4S	6,4	0.25	G 1/4-19	7/16-20	35,1	1.38
4-5S	7,9	0.31	G 1/4-19	1/2-20	35,1	1.38
4-6S	9,7	0.38	G 1/4-19	9/16-18	35,1	1.38
6-6S	9,7	0.38	G 3/8-19	9/16-18	36,3	1.43
6-8S	12,7	0.50	G 3/8-19	3/4-16	38,9	1.53
8-8S	12,7	0.50	G 1/2-14	3/4-16	41,4	1.63
8-10S	16,0	0.63	G 1/2-14	7/8-14	43,9	1.73
10-12S	19,0	0.75	G 5/8-14	1 1/16-12	49,3	1.94
12-10S	16,0	0.63	G 3/4-14	7/8-14	47,7	1.88
12-12S	19,0	0.75	G 3/4-14	1 1/16-12	50,5	1.99
16-16S	25,4	1.00	G 1-11	1 5/16-12	53,1	2.09

**Note:** The BSPP male end mates with a BSPP female swivel nut. Use GG106 conversion adapters for port connections.

SAE 37° male/BSPP male



### GG106-NP(Size)-(Dash size)

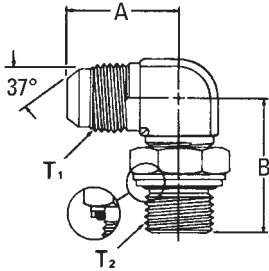
(Formerly Weatherhead series MB5315x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
04-02	6,4	0.25	7/16-20	G1/8-28	29,0	1.14
04-04	6,4	0.25	7/16-20	G1/4-19	34,5	1.36
04-06	6,4	0.25	7/16-20	G3/8-19	34,5	1.36
04-08	6,4	0.25	7/16-20	G1/2-14	38,1	1.50
05-04	6,3	0.25	1/2-20	G1/4-19	34,5	1.36
06-04	9,7	0.38	9/16-18	G1/4-19	34,5	1.36
06-06	9,7	0.38	9/16-18	G3/8-19	34,5	1.36
06-08	9,7	0.38	9/16-18	G1/2-14	38,1	1.50
08-04	12,7	0.50	3/4-16	G1/4-19	37,6	1.48
08-06	12,7	0.50	3/4-16	G3/8-19	37,6	1.48
08-08	12,7	0.50	3/4-16	G1/2-14	40,9	1.61
08-12	12,7	0.50	3/4-16	G3/4-14	44,9	1.77
10-06	16,0	0.63	7/8-14	G3/8-19	40,4	1.59
10-08	16,0	0.63	7/8-14	G1/2-14	43,4	1.71
10-12	19,0	0.75	7/8-14	G 3/4-14	47,5	1.87
12-08	19,0	0.75	1 1/16-12	G1/2-14	47,0	1.85
12-12	19,0	0.75	1 1/16-12	G3/4-14	50,0	1.97
12-16	19,0	0.75	1 1/16-12	G1-11	52,6	2.07
16-12	25,4	1.00	1 1/16-12	G3/4-14	51,1	2.01
16-16	25,4	1.00	1 5/16-12	G1-11	53,6	2.11
16-20	25,4	1.00	1 5/16-12	G1 1/4-11	56,9	2.24
20-20	31,8	1.25	1 5/8-12	G1 1/4-11	58,4	2.30



## BSPP to SAE 37° flare

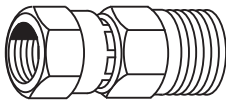
90° adjustable elbow SAE 37° male/BSPP male adjustable



### GG306-NP(Size)-(Dash size)

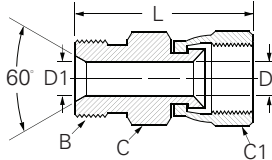
Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
04-04	6,4	0.25	7/16-20	G1/4-19	26,9	1.06	31,5	1.24
05-04	7,9	0.31	1/2-20	G1/4-19	26,9	1.06	31,5	1.24
06-04	9,7	0.38	9/16-18	G1/4-19	26,9	1.06	31,5	1.24
06-06	9,7	0.38	9/16-18	G3/8-19	28,5	1.12	36,6	1.44
08-06	12,7	0.50	3/4-16	G3/8-19	31,5	1.24	36,6	1.44
08-08	12,7	0.50	3/4-16	G1/2-14	34,0	1.34	42,9	1.69
12-12	19,0	0.75	1 1/16-12	G3/4-14	41,9	1.65	49,0	1.93
16-16	25,4	1.00	1 5/16-12	G1-11	46,0	1.81	52,6	2.07
20-20	31,8	1.25	1 5/8-12	G1 1/4-11	52,0	2.05	56,9	2.24

SAE 37° female swivel/ BSPP male



### FF4179-(Dash size)

(Formerly Weatherhead series M9600x)

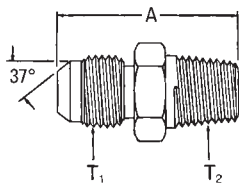


Dash size	Tube O.D.		BSPP pipe	Hex size		Hex C1		D		D1		L	
	mm	in		mm	mm	in	mm	in	mm	in	mm	in	mm
-0404S	6,4	1/4	G 1/4-19	14,3	9/16	14,3	9/16	4,4	.172	5,0	.198*	36,3	1.43
-0604S	9,7	3/8	G 1/4-19	17,5	11/16	17,5	11/16	7,5	.297	5,0	.198	39,6	1.56
-0606S	9,7	3/8	G 3/8-19	17,5	11/16	17,5	11/16	7,5	.297	8,4	.322*	42,2	1.66
-0806S	12,7	1/2	G 3/8-19	22,2	7/8	22,2	7/8	9,9	.391	8,4	.322	45,0	1.77
-0808S	12,7	1/2	G 1/2-14	22,2	7/8	22,2	7/8	9,9	.391	11,4	.448*	48,8	1.92
-1008S	15,9	5/8	G 1/2-14	25,4	1	25,4	1	12,3	.484	11,4	.448	50,0	1.97
-1212S	19,0	3/4	G 3/4-14	31,7	1-1/4	28,6	1-1/8	15,4	.609	16,9	.666*	55,9	2.25
-1616S	25,4	1	G 1-11	38,1	1-1/2	34,9	1-3/8	21,5	.845	22,5	.885*	62,9	2.48
-2020S	31,8	1-1/4	G 1-1/4-11	50,8	2	47,6	1-7/8	27,4	1.078	28,6	1.125*	67,1	2.64

\*Optional counterbore.

## BSPT to SAE 37° flare

SAE 37° male/BSPT male



### GG110-NP(Size)-(Dash size)

(Formerly Weatherhead series MC5205x)

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
04-02	6,4	0.25	7/16-20	R1/8-28	29,0	1.14
04-04	6,4	0.25	7/16-20	R1/4-19	33,0	1.30
06-04	9,7	0.38	9/16-18	R1/4-19	33,6	1.32
06-06	9,7	0.38	9/16-18	R3/8-19	33,6	1.32
08-06	12,7	0.50	3/4-16	R3/8-19	36,6	1.44
08-08	12,7	0.50	3/4-16	R1/2-14	40,4	1.59
10-08	16,0	0.63	7/8-14	R1/2-14	42,9	1.69
12-08	19,0	0.75	1 1/16-12	R1/2-14	47,5	1.87
12-12	19,0	0.75	1 1/16-12	R3/4-14	49,5	1.95
16-16	25,4	1.00	1 5/16-12	R1-11	52,6	2.07

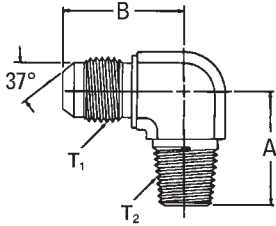
# Steel adapters

BSPT to SAE 37° flare  
JIS 30° to SAE 37° flare

J

## BSPT to SAE 37° flare

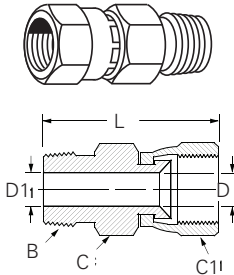
90° elbow, SAE 37° male/BSPT male



**GG310-NP(Size)-(Dash size)**  
(Formerly Weatherhead series MC5405x)

Dash size	Tube O.D.		Thread T1	Thread T2	A		B	
	mm	in			mm	in	mm	in
04-04	6,4	0.25	7/16-20	R1/4-19	27,4	1.08	27,0	1.06
05-04	7,9	0.31	1/2-20	R1/4-19	27,4	1.08	27,0	1.06
06-04	9,7	0.38	9/16-18	R1/4-19	27,5	1.08	27,0	1.06
06-06	9,7	0.38	9/16-18	R3/8-19	31,0	1.22	28,5	1.12
06-08	9,7	0.38	9/16-18	R1/2-14	37,1	1.46	31,0	1.22
08-06	12,7	0.50	3/4-16	R3/8-19	31,0	1.22	31,5	1.24
08-08	12,7	0.50	3/4-16	R1/2-14	37,1	1.46	34,0	1.34
10-12	19,0	0.75	7/8-14	R3/4-14	40,5	1.59	39,5	1.55
12-12	19,0	0.75	1 1/16-12	R3/4-14	40,4	1.59	41,9	1.65
16-16	25,4	1.00	1 5/16-12	R1-11	50,0	1.97	46,0	1.81
20-20	31,7	1.25	1 5/8-12	R1 1/4-11	60,0	2.36	52,0	2.05

SAE 37° Female swivel to BSPT male pipe thread



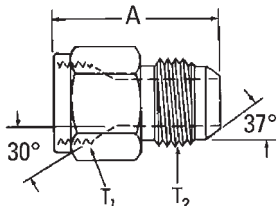
**FF4181-(Dash size)**  
(Formerly Weatherhead series M9800x)

Dash size	Tube O.D.		BSPT pipe	Hex size		Hex C1		D		D1		L	
	mm	in		mm	in	mm	in	mm	in	mm	in	mm	in
-0404S	6,4	1/4	G 1/4-19	14,3	9/16	14,3	9/16	4,4	.172	7,1	.281*	39,6	1.56
-0504S	7,9	5/16	G 1/4-19	17,5	11/16	15,9	5/8	5,9	.234	7,1	.281*	41,4	1.63
-0604S	9,7	3/8	G 1/4-19	17,5	11/16	17,5	11/16	7,5	.297	7,1	.281	42,9	1.69
-0804S	12,7	1/2	G 1/4-19	22,2	7/8	22,2	7/8	9,9	.391	7,1	.281	47,5	1.87
-0806S	12,7	1/2	G 3/8-19	22,2	7/8	22,2	7/8	9,9	.391	10,3	.406*	47,5	1.87
-0808S	12,7	1/2	G 1/2-14	22,2	7/8	22,2	7/8	9,9	.391	13,5	.531*	52,3	2.06
-1008S	16,0	5/8	G 1/2-14	25,4	1	25,4	1	12,3	.484	13,5	.531*	53,6	2.11
-1208S	19,0	3/4	G 1/2-14	28,6	1 1/8	31,7	1 1/4	15,5	.609	13,5	.531	56,1	2.21
-1212S	19,0	3/4	G 3/4-14	28,6	1 1/8	31,7	1 1/4	15,5	.609	18,3	.719*	56,9	2.24
-1612S	25,4	1	G 3/4-14	34,9	1 3/8	38,1	1 1/2	21,5	.845	18,3	.719	60,7	2.39
-1616S	25,4	1	G 1-11	34,9	1 3/8	38,1	1 1/2	21,5	.845	23,8	.938*	64,8	2.55
-2020S	38,1	1-1/4	G 1 1/4-11	47,6	1 7/8	50,8	2	27,4	1.079	28,6	1.125*	69,3	2.73

\*Optional counterbore.

## JIS 30° to SAE 37° flare

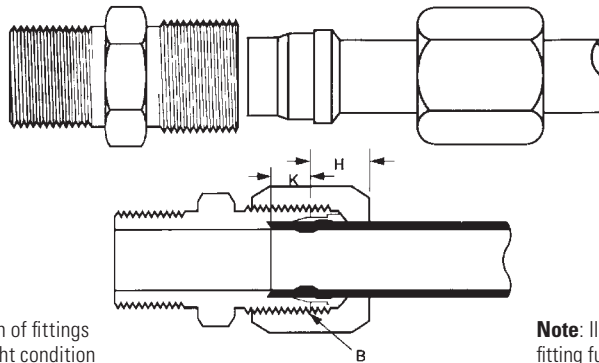
JIS 30° Female cone seat/SAE 37° Male



**FF2593-(Dash size)**

Dash size	Tube O.D.		Thread T1	Thread T2	A	
	mm	in			mm	in
0404S	6,4	0.25	G1/4-19	7/16-20	30,3	1.19
0606S	9,7	0.38	G3/8-19	9/16-18	30,7	1.21
0808S	12,7	0.50	G1/2-14	3/4-16	35,8	1.41
1212S	19,0	0.75	G3/4-14	1 1/16-12	43,2	1.70

### 7000 series Ermeto



**Note:** "H" is dimension of fittings assembled to hand tight condition

**Note:** Illustration shows fitting fully assembled.

<b>Tube O.D.</b>	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	2
<b>Thread size-B</b>	5/16-24	3/8-24	7/16-20	1/2-20	9/16-18	3/4-16	7/8-14	1 1/16-12	1 3/16-12	1 5/16-12	1 5/8-12	1 7/8-12	2 1/2-12
<b>Seat depth-K</b>	0.19	0.24	0.24	0.26	0.26	0.31	0.36	0.36	0.36	0.42	0.42	0.49	0.49
<b>H (Ref.)</b>	0.31	0.30	0.39	0.41	0.47	0.48	0.53	0.55	0.53	0.63	0.56	0.61	0.64

#### Typical application

Hydraulic, instrumentation and chemical processing systems. Highly recommended for high pressure applications

#### Pressure

Operating pressure up to 10,000 psi depending on tube and fitting size.

#### Vibration

Excellent resistance

#### Temperature range

-65°F to +400°F (-53°C to +204°C) at maximum operating pressures. Has been used at 800°F and 1000 psi to 4000 psi depending on tube size.

#### Material

Carbon steel plating - Zinc Trivalent

#### Advantages

An excellent high pressure fitting - NO TUBE FLARING. Used with extra heavy wall tubing. Broad selection of sizes and styles.

#### Conformance

Meets specifications and standards of ASME and SAE.

#### How to order

For complete assembly (body, nut sleeve) order individually by part number. Example: 7205x4.

To order body only (less nut and sleeve), prefix the part number with the letter 'B'. Example: B7205X4.

Nuts and sleeves can be ordered separately by part number.

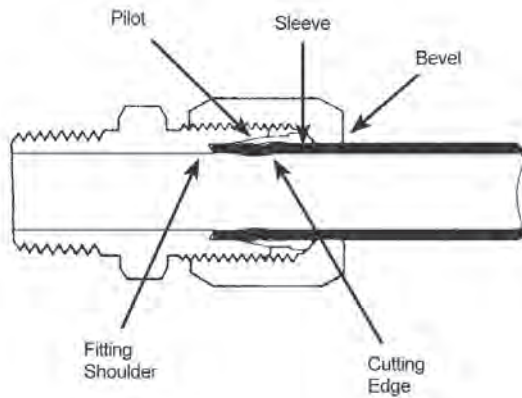
# Steel adapters

## 7000 series Ermeto fittings

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### 7000 series Ermeto fittings

Ermeto fittings (7000 Series) are especially designed for making leak-proof tube connections. This fitting will effectively withstand high pressure, severe vibration and extreme temperature. No special tools are needed for assembly. Simply cut tube square, preset sleeve on tubing and assemble.



### 7000 series fittings

Specifically designed to meet all SAE approved standards for hydraulic flareless tube fittings. Available in a complete range of standard body styles.

#### Carbon steel 7000 series

Eaton Ermeto fittings have a zinc trivalent finish, which fully resists the effects of nonflammable hydraulic fluids.

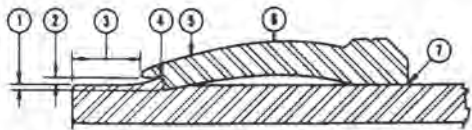
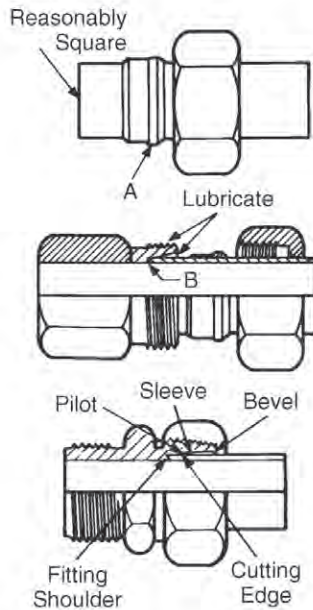
#### Ermeto design principle provides positive seal

1. In presetting, as the nut is tightened it forces the sleeve forward into the body taper. See page J-145 for preset instructions.
2. Pilot of sleeve contracts, forcing the cutting edge of sleeve to shear a groove into outer surface of the tube, making a tight joint between fitting and tube.
3. In assembling the preset sleeve and tube into the fitting body, the nut presses on the bevel at rear of sleeve causing it to clamp tightly to the tube. Resistance to vibration is concentrated at this point rather than at the sleeve cut.
4. When fully tightened, the case hardened sleeve is bowed slightly at the midsection and acts as a spring. This spring action of the sleeve maintains a constant tension between the body and the nut, and thus prevents the nut from loosening.
5. After the first assembly, the sleeve is permanently attached to the tube. Disassembly and reassembly of the fitting can be made without loss of strength or sealing qualities.

In general, the "bite-action" of the sleeves in any given material varies as shown in the following table:

"7000" Series Sleeve	Sleeve Material	Tubing used 303 to 316 Stainless and Cupro-Nickel	"Bite-action"
7165	Heat treated carbon steel (Standard carbon)	Fully annealed to 1/8 hard	Excellent

## 7000 series Ermeto fittings assembly instructions



### Presetting operation

#### Preset with preset tool:

1. Slide nut and then sleeve on tube. Shoulder of sleeve "A" must be toward nut.
2. Insert tube into presetting tool. Be sure that tube is bottomed on fitting tube stop at point "B". Lubricate threads, seat of fitting and shoulder of sleeve with good grade of lubricant.
3. Turn nut slowly with wrench while turning tube with other hand. When the sleeve grips the tube, that is, when the tube can no longer be turned by hand - STOP - and note the position of the wrench. This is the "Ring Grip" point.
4. Tighten nut an additional number of turns past the ring grip point per tube size and wall thickness as shown in Table 1, page J-142.
5. Disassemble from preset tool.

#### Preset in fitting body:

Follow same procedure as when presetting with preset tool. Once the fitting nut has been turned the proper number of turns past ring grip, the fitting assembly is complete and ready for use.

### Fitting installation

1. After sleeve and nut have been preset on the tubing and checked as described, the assembly is ready for installation into the Ermeto fitting seat.
2. Lubricate threads, seat of fitting and shoulder of sleeve with a good grade of lubricant compatible with system fluid.
3. Insert tube assembly into fitting and tighten nut until sharp rise in torque is felt.
4. Starting at the position of sharp torque rise, tighten nut 1/4 turn to complete assembly.

#### When the assembly procedure for Ermeto fittings is followed correctly, these points will be evident:

1. Cutting edge of sleeve will be imbedded in tubing to its full depth.
2. Pilot edge of sleeve should be close to or touching O.D. of tubing.
3. Distance between end of tube and leading or pilot edge of sleeve will be at least 1/8".
4. Metal will be piled ahead of cutting edge of sleeve under pilot.
5. Contact area of sleeve will show evidence of being in perfect contact with tapered seat of fitting.
6. Sleeve will show evidence of being bowed within its elastic limits.
7. Back of sleeve will be in contact with tube.

**Note:** Performance of fitting will not be affected if sleeve rotates on tube after disassembly.

### For re-installation of fitting after disassembly

1. Insert tube assembly into fitting, tighten nut until a sharp rise in torque is felt.
2. Starting at the position of sharp torque rise, tighten nut 1/4 turn to complete the re-installation.

# Steel adapters

Presetting Ermeto fittings

J

## Presetting Ermeto fittings

**Table 1: Number of additional turns from “Ring grip” for hand presetting operation—Ermeto sleeve**

Tube Size	Tube Material**	Tube wall thickness									
		.018	.022	.028	.035	.049	.065	.083	.095	.109	.120
2	C 1010	1-1/6	1-1/6	1-1/6	1-1/6						
	MiL-T-8504	1-1/6	1-1/6	1-1/6	1-1/6						
3	C 1010	1-1/6	1-1/6	1-1/6	1						
	MiL-T-8504	1-1/6	1-1/6	1-1/6	1						
4	C 1010			1-1/6	1-1/6	1-1/6	1				
	MiL-T-8504			1-1/6	1	1	5/6				
5	C 1010			1-1/6	1-1/6	1-1/6	1				
	MiL-T-8504			1-1/6	1-1/6	1	1				
6	C 1010				1-1/6	1-1/6	1	1			
	MiL-T-8504				1-1/6	5/6	5/6	1			
8	C 1010				1-1/6	1-1/6	1	1	1		
	MiL-T-8504				1-1/6	1	5/6	5/6	5/6		
10	C 1010					1-1/6	1	5/6	5/6	5/6	5/6
	MiL-T-8504					1-1/6	1	5/6	5/6	5/6	5/6
12	C 1010					1	1	5/6	5/6	5/6	
	MiL-T-8504					1-1/6	1	5/6	5/6	5/6	
16	C 1010					1-1/6	1-1/6	5/6	5/6	5/6	
	MiL-T-8504					1-1/6	1-1/6	5/6	5/6	5/6	
20	C 1010					1-1/6	1	1	1	5/6	5/6
	MiL-T-8504					1	1	1	1	5/6	5/6
24	C 1010								1	1	1
	MiL-T-8504								1	1	1
32	C 1010								1	1	1
	MiL-T-8504								1	1	1

\*\* C 1010 – carbon steel tubing

\*\* MiL-T-8504 – Annealed stainless steel

### Ermeto hand presetting tools 7000 series



Presetting tools provide a more accurate and positive leak-proof method of coupling flareless fittings. Presetting steel Ermeto sleeves on tubing prior to fitting assembly will permit the maximum high performance obtainable with flareless fittings.

Catalog number	Tube O.D.	Thread size
	inches	
T-7002	1/8	5/16-24
T-7003	3/16	3/8-24
T-7004	1/4	7/16-20
T-7005	5/16	1/2-20
T-7006	3/8	9/16-18
T-7008	1/2	3/4-16
T-7010	5/8	7/8-14
T-7012	3/4	1 1/16-12
T-7016	1	1 5/16-12
T-7020	1 1/4	1 5/8-12
T-7024	1 1/2	1 7/8-12
T-7032	2	2 1/2-12

## Ermeto flareless fittings

### Hydraulic pressure data

Ermeto fittings have been used with success on many and varied applications far exceeding the conservative conditions presented below. Specifically:

- Temperatures up to 800°F, in carbon steel have been handled without failure
- Burst pressures up to 32,000 psi with 1/4" tubing
- Vibration conditions of 1/8" off-center amplitude with 12" overhang in 1/4" tubing have been withstood at rated operating pressure with 4-to-1 safety factors for over ten million cycles

Obviously under extreme conditions of pressure, temperature and/or vibration, the safety factor is proportionately reduced.

The Ermeto flareless fitting is the ultimate hydraulic fitting available today. Special performance conditions as outlined can be accommodated; however, it is recommended that your local Eaton representative be consulted for engineering assistance prior to finalizing design.

The values shown in the following table are pressure ratings of Ermeto flareless fittings under various surge conditions. They apply and are recommended for conservative operating conditions.

Size no.	Size in inches	Maximum pressure † No surges PSI	Maximum pressure † With surges to 50%	Maximum pressure † With surges of 50% to 100%	Maximum pressure † With surges to 150%
2	1/8	10,000	6,500	5,000	4,000
3	3/16	9,000	6,000	4,500	3,600
4	1/4	8,000	5,250	4,000	3,200
5	5/16	8,000	5,250	4,000	3,200
6	3/8	7,500	5,000	3,750	3,000
8	1/2	7,000	4,500	3,500	2,700
10	5/8	5,000	3,250	2,500	2,000
12	3/4	5,000	3,250	2,500	2,000
14	7/8	3,750	2,500	1,800	1,500
16	1	3,600	2,400	1,800	1,400
20	1 1/4	3,200	2,100	1,600	1,275
24	1 1/2	3,000	2,000	1,500	1,200
32	2	2,750	1,800	1,350	1,100

†Pressures shown do not apply to pneumatic applications.

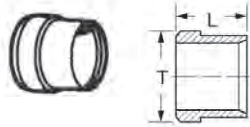
# Steel adapters

Ermeto

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## Ermeto

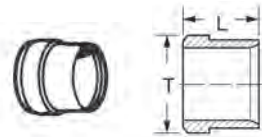
### Sleeve



#### 7165x (Ref. SAE No. 080115B)

Part number	Tube O.D.	L	Dia. T
7165x2	1/8	0.28	0.20
7165x3	3/16	0.28	0.31
7165x4	1/4	0.34	0.36
7165x5	5/16	0.34	0.42
7165x6	3/8	0.38	0.48
7165x8	1/2	0.38	0.63
7165x10	5/8	0.42	0.75
7165x12	3/4	0.42	0.88
7165x14	7/8	0.42	1.00
7165x16	1	0.42	1.13
7165x20	1 1/4	0.42	1.41
7165x24	1 1/2	0.42	1.66
7165x32	2	0.45	2.19

### Sleeve

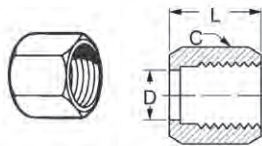


#### 8165x

Part number	Tube O.D.	L	Dia. T
8165x4	1/4	0.34	0.38
8165x5	5/16	0.34	0.44
8165x6	3/8	0.38	0.50

For use with 8112x diesel nuts only.

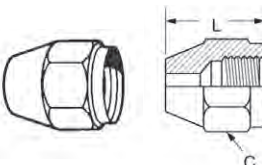
### Nut



#### 7105x (Ref. SAE No. 080110)

Part number	Tube O.D.	Hex C	L	D Dia
7105x2	1/8	3/8	0.53	0.132
7105x3	3/16	7/16	0.61	0.195
7105x4	1/4	9/16	0.70	0.257
7105x5	5/16	5/8	0.72	0.320
7105x6	3/8	1 1/16	0.75	0.382
7105x8	1/2	7/8	0.84	0.508
7105x10	5/8	1	0.92	0.634
7105x12	3/4	1 1/4	0.97	0.759
7105x14	7/8	1 3/8	1.00	0.884
7105x16	1	1 1/2	1.05	1.009
7105x20	1 1/4	2	1.05	1.263
7105x24	1 1/2	2 1/4	1.03	1.513
7105x32	2	2 7/8	1.12	2.017

### Diesel nut



#### 8112x

Part number	Tube O.D.	Thread number	Hex C	L
8112x4	1/4	9/16-18	3/4	.94
8112x5	5/16	5/8-18	1 3/16	1.00
8112x6	3/8	3/4-16	1 5/16	1.13

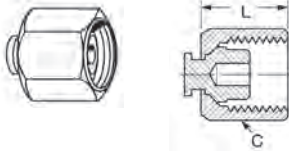
For use with 8165x sleeve only.

**Note:** All measurements are in inches.



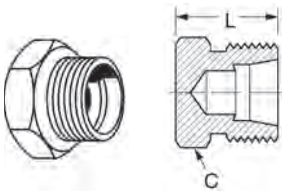
## Ermeto

## Cap

**7129x** (Ref. SAE No. 080112)

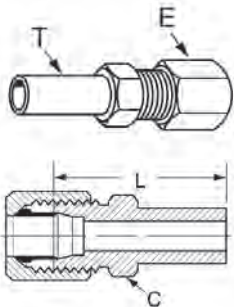
Part number	Tube O.D	Hex C	L
7129x4	1/4	9/16	0.70
7129x6	3/8	1 1/16	0.75
7129x8	1/2	7/8	0.84
7129x10	5/8	1	0.92
7129x12	3/4	1 1/4	0.97
7129x16	1	1 1/2	1.05
7129x20	1 1/4	2	1.05

## Plug

**7229x** (Ref. SAE No. 080109)

Part number	Tube O.D	Hex C	L
7229x2	1/8	7/16	0.63
7229x4	1/4	1/2	0.71
7229x5	5/16	9/16	0.71
7229x6	3/8	5/8	0.75
7229x8	1/2	1 3/16	0.85
7229x10	5/8	1 5/16	0.97
7229x12	3/4	1 1/8	1.10
7229x16	1	1 3/8	1.10

## Reducer

**7015x** (Ref. SAE No. 080123)

Part number	Body size T	Tube size	Hex C	L
7015x6x4	3/8	1/4	1/2	1.61
7015x8x4	1/2	1/4	9/16	1.73
7015x8x6	1/2	3/8	5/8	1.77
7015x10x8	5/8	1/2	1 3/16	1.96
7015x12x6	3/4	3/8	1 3/16	1.93
7015x12x8	3/4	1/2	1 3/16	2.03
7015x20x16	1 1/4	1	1 3/8	2.28

**Note:** All measurements are in inches.

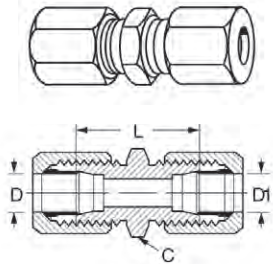
# Steel adapters

Ermeto

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## Ermeto

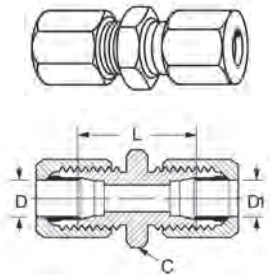
### Small hex union



**7305x** (Ref. SAE No. 080101)

Part number	Tube O.D.	Hex C	D	D1	L
7305x2	1/8	7/16	0.093	0.093	1.02
7305x3	3/16	7/16	0.125	0.125	1.11
7305x4	1/4	1/2	0.203	0.203	1.18
7305x5	5/16	9/16	0.234	0.234	1.18
7305x6	3/8	5/8	0.281	0.281	1.24
7305x6x4	3/8 & 1/4	5/8	0.281	0.203	1.22
7305x8	1/2	13/16	0.422	0.422	1.42
7305x8x6	1/2 & 3/8	13/16	0.422	0.281	1.33
7305x10	5/8	15/16	0.500	0.500	1.61
7305x12	3/4	1 1/8	0.656	0.656	1.81
7305x14	7/8	1 1/4	0.718	0.718	1.81
7305x16	1	1 3/8	0.875	0.875	1.81
7305x20	1 1/4	1 11/16	1.093	1.093	1.89
7305x24	1 1/2	2	1.344	1.344	1.96

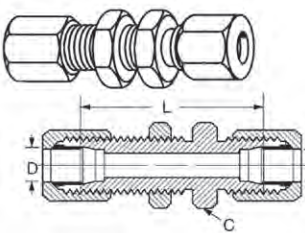
### Large hex union



**7306x** (Ref. SAE No. 080119)

Part number	Tube O.D.	Hex C	D	D1	L
7306x4	1/4	11/16	0.203	0.203	1.18
7306x6	3/8	13/16	0.281	0.281	1.24
7306x8	1/2	1	0.422	0.281	1.33
7306x8x6	1/2 & 3/8	1	0.422	0.422	1.42
7306x12	3/4	1 3/8	0.656	0.656	1.81
7306x16	1	1 5/8	0.875	0.875	1.81

### Bulkhead union



**7325x** (Ref. SAE No. 080601)

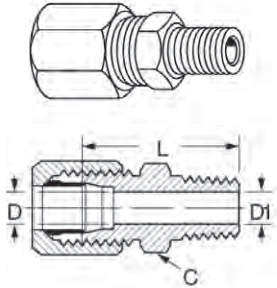
Bulkhead nut included, for replacement nuts use 210212-

Part number	Tube O.D.	Hex C	D	L
7325x4	1/4	11/16	0.203	1.89
7325x6	3/8	13/16	0.281	1.98
7325x8	1/2	1	0.422	2.22
7325x12	3/4	1 3/8	0.656	2.72
7325x16	1	1 5/8	0.875	2.72

**Note:** All measurements are in inches.

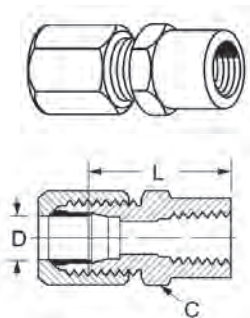
## Ermeto

## Male connector

**7205x** (Ref. SAE No. 080102)

Part number	Tube O.D.	Male pipe thread	Hex C	D1 D	Opt.	L
7205x2	1/8	1/8-27	7/16	0.093	0.188	1.04
7205x2X4	1/8	1/4-18	9/16	0.093	0.281	1.25
7205x3	3/16	1/8-27	7/16	0.125	0.188	1.09
7205x4	1/4	1/8-27	1/2	0.203	0.188	1.12
7205x4X4	1/4	1/4-18	9/16	0.203	0.281	1.32
7205x4X6	1/4	3/8-18	3/4	0.203	0.406	1.33
7205x4X8	1/4	1/2-14	7/8	0.203	0.531	1.58
7205x5	5/16	1/8-27	9/16	0.234	0.188	1.12
7205x5X4	5/16	1/4-18	9/16	0.234	0.281	1.32
7205x6	3/8	1/4-18	5/8	0.281	0.281	1.34
7205x6X2	3/8	1/8-27	5/8	0.281	0.188	1.15
7205x6X6	3/8	3/8-18	3/4	0.281	0.406	1.35
7205x6X8	3/8	1/2-14	7/8	0.281	0.531	1.60
7205x8	1/2	3/8-18	13/16	0.422	0.406	1.44
7205x8X4	1/2	1/4-18	13/16	0.422	0.281	1.44
7205x8X8	1/2	1/2-14	7/8	0.422	0.531	1.69
7205x8X12	1/2	3/4-14	1 1/8	0.422	0.719	1.76
7205x10	5/8	1/2-14	15/16	0.500	0.531	1.75
7205x10X6	5/8	3/8-18	15/16	0.500	0.406	1.56
7205x12	3/4	1/2-14	1 1/8	0.656	0.531	1.88
7205x12X8	3/4	3/4-14	1 1/8	0.656	0.719	1.88
7205x14	7/8	3/4-14	1 1/4	0.718	0.719	1.88
7205x16	1	1-11 1/2	1 3/8	0.875	0.938	2.07
7205x16X12	1	3/4-14	1 3/8	0.875	0.719	1.88
7205x20	1 1/4	1 1/4-11 1/2	1 11/16	1.093	1.250	2.18
7205x24	1 1/2	1 1/2-11 1/2	2	1.344	1.500	2.28

## Female connector

**7255x** (Ref. SAE No. 080103)

Part number	Tube O.D.	Female pipe thread	Hex C	D	L
7255x2	1/8	1/8-27	9/16	0.093	1.05
7255x3	3/16	1/8-27	9/16	0.125	1.08
7255x4	1/4	1/8-27	9/16	0.203	1.09
7255x4x4	1/4	1/4-18	3/4	0.203	1.20
7255x5	5/16	1/8-27	9/16	0.234	1.08
7255x6	3/8	1/4-18	3/4	0.281	1.31
7255x6x6	3/8	3/8-18	7/8	0.281	1.40
7255x8	1/2	3/8-18	7/8	0.422	1.47
7255x8x4	1/2	1/4-18	7/8	0.422	1.38
7255x8x8	1/2	1/2-14	1 1/8	0.422	1.63
7255x10	5/8	1/2-14	1 1/8	0.500	1.76
7255x12	3/4	3/4-14	1 3/8	0.656	1.89
7255x14	7/8	3/4-14	1 3/8	0.718	1.86
7255x16	1	1-11 1/2	1 5/8	0.875	2.13
7255x20	1 1/4	1 1/4-11 1/2	2	1.093	2.22

**Note:** All measurements are in inches.

# Steel adapters

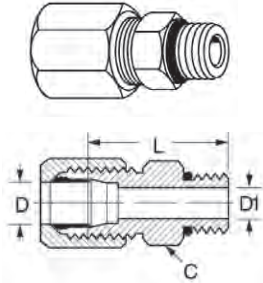
Ermeto

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## Ermeto

### Straight thread O-Ring connector

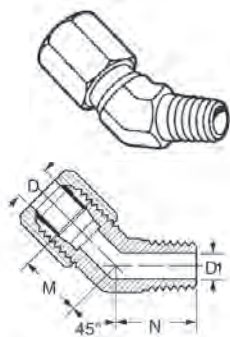
**7315x** (Ref. SAE No. 080120)



Part number	Tube O.D.	Port size	Hex C	D	L	D1 opt.
7315x4	1/4	1/4	9/16	0.203	1.13	-
7315x4x5	1/4	5/16	5/8	0.203	1.13	-
7315x4x6	1/4	3/8	11/16	0.203	1.19	0.281
7315x5	5/16	5/16	5/8	0.234	1.13	-
7315x6	3/8	3/8	11/16	0.281	1.21	-
7315x6x8	3/8	1/2	7/8	0.281	1.29	0.422
7315x8	1/2	1/2	7/8	0.422	1.38	-
7315x8x10	1/2	5/8	1	0.422	1.51	0.500
7315x8x12	1/2	3/4	1 1/4	0.422	1.67	0.656
7315x10	5/8	5/8	1	0.500	1.57	-
7315x12	3/4	3/4	1 1/4	0.656	1.79	-
7315x16	1	1	1 1/2	0.875	1.82	-
7315x16x12	1	3/4	1 1/2	0.875	1.82	0.656
7315x20	1 1/4	1 1/4	1 7/8	1.093	1.90	-

### 45° male elbow

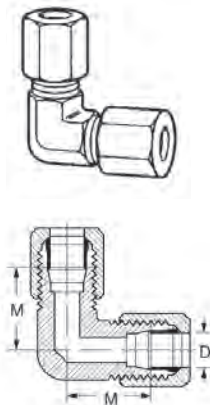
**7355x** (Ref. SAE No. 080302)



Part number	Tube O.D.	Male pipe thread	D	D1	M	N	Across flats
7355x4x4	1/4	1/4-18	0.203	0.281	0.83	0.86	9/16
7355x6	3/8	1/4-18	0.281	0.281	0.83	0.86	9/16
7355x8	1/2	3/8-18	0.422	0.406	0.98	0.95	3/4
7355x10	5/8	1/2-14	0.500	0.531	1.08	1.17	7/8
7355x12	3/4	3/4-14	0.656	0.719	1.27	1.20	1 1/16
7355x16	1	1-11 1/2	0.875	0.938	1.36	1.48	1 5/16

### 90° union elbow

**7505x** (Ref. SAE No. 080201)

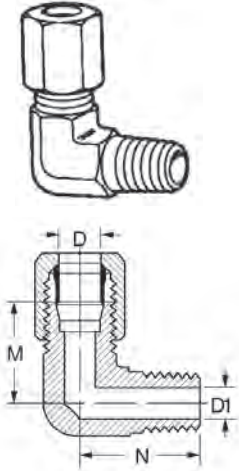


Part number	Tube O.D.	D	M	Across flats
7505x4	1/4	0.203	0.89	7/16
7505x5	5/16	0.234	0.95	1/2
7505x6	3/8	0.281	1.05	9/16
7505x8	1/2	0.422	1.25	3/4
7505x10	5/8	0.500	1.42	7/8
7505x12	3/4	0.656	1.58	1 1/16
7505x14	7/8	0.718	1.66	1 5/16
7505x16	1	0.875	1.73	1 5/16
7505x20	1 1/4	1.093	1.89	1 5/8
7505x24	1 1/2	1.346	2.02	1 7/8

**Note:** Available in stainless steel. All measurements are in inches.

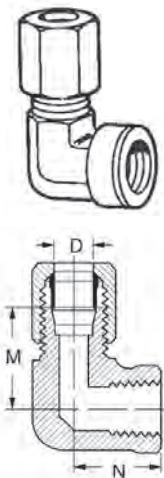
## Ermeto

## 90° male elbow

**7405x** (Ref. SAE No. 080202)

Part number	Tube O.D.	Male Pipe thread	D	D1	M	N	Across flats
7405x2	1/8	1/8-27	0.093	0.188	0.77	0.72	7/16
7405x3	3/16	1/8-27	0.125	0.188	0.83	0.72	7/16
7405x4	1/4	1/8-27	0.203	0.188	0.89	0.78	7/16
7405x4x4	1/4	1/4-18	0.203	0.281	1.03	1.09	9/16
7405x5	5/16	1/8-27	0.234	0.188	0.95	0.81	1/2
7405x5x4	5/16	1/4-18	0.234	0.281	1.03	1.09	9/16
7405x6	3/8	1/4-18	0.281	0.281	1.05	1.09	9/16
7405x6x2	3/8	1/8-27	0.281	0.188	1.05	0.90	9/16
7405x6x6	3/8	3/8-18	0.281	0.406	1.16	1.22	3/4
7405x6x8	3/8	1/2-14	0.281	0.531	1.24	1.47	7/8
7405x8	1/2	3/8-18	0.422	0.406	1.25	1.22	3/4
7405x8x4	1/2	1/4-18	0.422	0.281	1.25	1.22	3/4
7405x8x8	1/2	1/2-14	0.422	0.531	1.35	1.47	7/8
7405x10	5/8	1/2-14	0.500	0.531	1.42	1.47	7/8
7405x10x6	5/8	3/8-18	0.500	0.406	1.42	1.28	7/8
7405x12	3/4	3/4-14	0.656	0.719	1.58	1.59	1 1/16
7405x12x8	3/4	1/2-14	0.656	0.531	1.58	1.59	1 1/16
7405x14	7/8	3/4-14	0.718	0.719	1.62	1.69	1 5/16
7405x16	1	1-11 1/2	0.875	0.938	1.73	1.97	1 5/16
7405x16x12	1	3/4-14	0.875	0.719	1.73	1.78	1 5/16
7405x20	1 1/4	1 1/4-11 1/2	1.093	1.250	1.89	2.38	1 5/8
7405x24	1 1/2	1 1/2-11 1/2	1.344	1.500	2.02	2.64	1 7/8

## 90° female elbow

**7455x** (Ref. SAE No. 080203)

Part number	Tube O.D.	Female Pipe thread	D	M	N	Across flats
7455x4	1/4	1/8-27	0.203	0.89	0.66	9/16
7455x4x4	1/4	1/4-18	0.203	1.03	0.88	3/4
7455x6	3/8	1/4-18	0.281	1.05	0.88	3/4
7455x6x6	3/8	3/8-18	0.281	1.14	1.02	7/8
7455x8	1/2	3/8-18	0.422	1.23	1.02	7/8
7455x8x8	1/2	1/2-14	0.422	1.35	1.23	1 1/16
7455x10	5/8	1/2-14	0.500	1.42	1.23	1 1/16
7455x12	3/4	3/4-14	0.656	1.58	1.36	1 5/16
7455x14	7/8	3/4-14	0.718	1.66	1.42	1 5/16
7455x16	1	1-11 1/2	0.875	1.73	1.62	1 5/8

**Note:** All measurements are in inches.

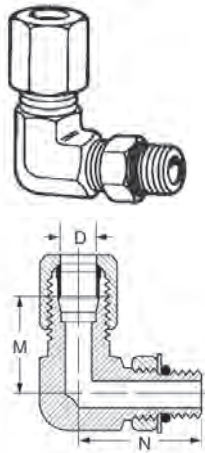
# Steel adapters

Ermeto

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## Ermeto

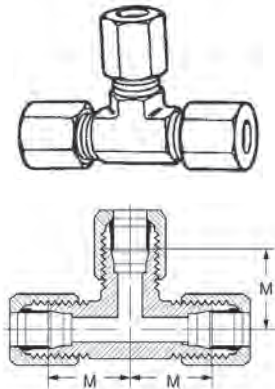
### 90° elbow - straight thread O-Ring



**7515x** (Ref. SAE No. 080220)

Part number	Tube O.D.	Port size	D	M	N	Across flats
7515x4	1/4	1/4	0.203	0.89	1.03	7/16
7515x5	5/16	5/16	0.234	0.96	2.13	9/16
7515x6	3/8	3/8	0.281	1.05	1.25	9/16
7515x8	1/2	1/2	0.422	1.25	1.45	3/4
7515x10	5/8	5/8	0.500	1.42	1.70	7/8
7515x12	3/4	3/4	0.656	1.58	1.94	1 1/16
7515x16	1	1	0.875	1.73	2.05	1 5/16
7515x20	1 1/4	1 1/4	1.093	1.89	2.25	1 5/8

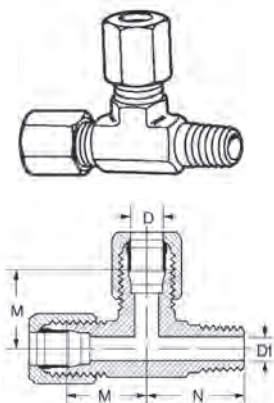
### Union tee



**7705x** (Ref. SAE No. 080401)

Part number	Tube O.D.	D	M	Across flats
7705x3	3/16	0.125	0.83	7/16
7705x4	1/4	0.203	0.89	7/16
7705x5	5/16	0.234	0.95	9/16
7705x6	3/8	0.281	1.05	9/16
7705x8	1/2	0.422	1.25	3/4
7705x10	5/8	0.500	1.42	7/8
7705x12	3/4	0.656	1.58	1 1/16
7705x14	7/8	0.718	1.62	1 5/16
7705x16	1	0.875	1.73	1 5/16

### Male run tee



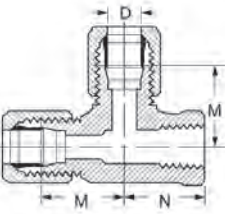
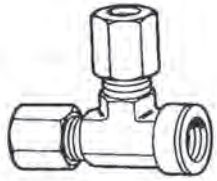
**7755x** (Ref. SAE No. 080424)

Part number	Tube O.D.	Male pipe thread	D	D1	M	N	Across flats
7755x4	1/4	1/8-27	0.203	0.188	0.89	0.78	7/16
7755x4x4x4	1/4	1/4-18	0.203	0.281	1.03	1.09	9/16
7755x6	3/8	1/4-18	0.281	0.281	1.05	1.09	9/16
7755x8	1/2	3/8-18	0.422	0.422	1.25	1.22	3/4
7755x8x8x8	1/2	1/2-14	0.422	0.531	1.35	1.47	7/8
7755x10	5/8	1/2-14	0.500	0.531	1.42	1.47	7/8
7755x12	3/4	3/4-14	0.656	0.719	1.58	1.59	1 1/16
7755x16	1	1-11 1/2	0.875	0.938	1.73	1.97	1 5/16

**Note:** All measurements are in inches.

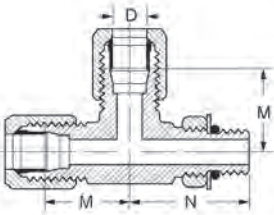
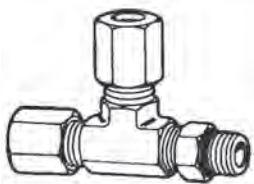
## Ermeto

## Female run tee

**7805x** (Ref SAE No. 080426)

Part number	Tube O.D.	Female pipe thread	D	M	N	Across flats
7805x4	1/4	1/8-27	0.203	0.89	0.66	9/16
7805x4x4x4	1/4	1/4-18	0.200	1.03	0.88	3/4
7805x6	3/8	1/4-18	0.281	1.05	0.88	3/4
7805x8	1/2	3/8-18	0.422	1.23	1.02	7/8
7805x10	5/8	1/2-14	0.500	1.42	1.23	1

## Straight thread O-Ring run tee

**7716x** (Ref. SAE No. 080428)

Part number	Tube O.D.	Port size	D	M	N	Across flats
7716x4	1/4	1/4	0.203	0.89	1.03	7/16
7716x6	3/8	3/8	0.281	1.05	1.25	9/16
7716x8	1/2	1/2	0.420	1.25	1.45	3/4

**Note:** All measurements are in inches.

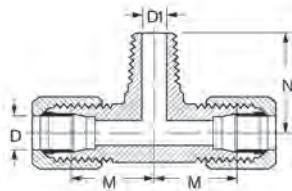
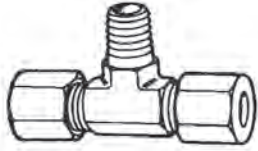
# Steel adapters

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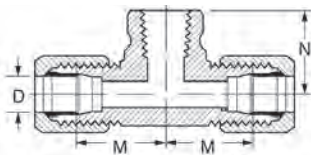
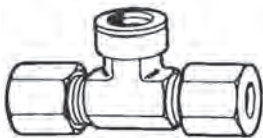
### Male branch tee



**7605x** (Ref. SAE No. 080425)

Part number	Tube O.D.	Male pipe thread	D	D1	M	N	Across flats
7605x4	1/4	1/8-27	0.203	0.188	0.89	0.78	7/16
7605x4x4x4	1/4	1/4-18	0.203	0.281	1.03	1.09	9/16
7605x6	3/8	1/4-18	0.281	0.281	1.05	1.09	9/16
7605x8	1/2	3/8-18	0.422	0.406	1.25	1.22	3/4
7605x8x8x8	1/2	1/2-14	0.422	0.531	1.35	1.47	7/8
7605x10	5/8	1/2-14	0.500	0.531	1.42	1.47	7/8
7605x12	3/4	3/4-14	0.656	0.719	1.58	1.59	1 1/16
7605x16	1	1-11 1/2	0.875	0.938	1.73	1.97	1 5/16

### Female branch tee



**7655x** (Ref. SAE No. 080427)

Part number	Tube O.D.	Female pipe thread	D	M	N	Across flats
7655x4	1/4	1/8-27	0.203	0.89	0.66	9/16
7655x4x4x4	1/4	1/4-18	0.203	1.03	0.88	3/4
7655x6	3/8	1/4-18	0.281	1.05	0.88	3/4
7655x8	1/2	3/8-18	0.422	1.23	1.02	7/8
7655x10	5/8	1/2-14	0.500	1.42	1.23	1 1/16
7655x12	3/4	3/4-14	0.656	1.58	1.36	1 5/16
7655x16	1	1-11 1/2	0.875	1.73	1.62	1 5/8

**Note:** All measurements are in inches.



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Walterscheid  
master catalog  
for metric  
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Literature  
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E-MEFI-  
MC002-E1.

# Steel adapters

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