

Things to Know

Before getting into the next section of hose fittings and adaptors, it would be a good idea to review the terms and specifications listed below.

Under Head Length Distance from under hex to end of fitting or flair- important when threading into (female) ports so the fitting does not "bottom" on the hex prior to contacting the flair sealing surface.

Seals on Thread Taper contact seal with sealant or tape (NPT).

Seals on Flair -using one of each (concave & convex) flair to seal- angle may vary, but needs to be consistent between both sealing surfaces.

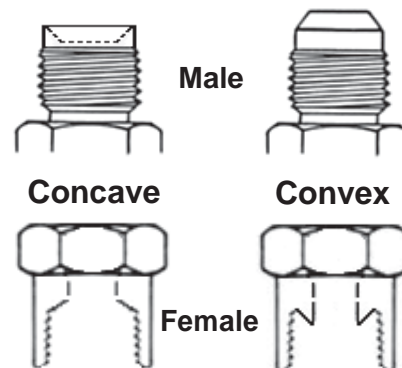
Convex Male flair seals common on -AN (male) and some metric (male) unions and some threaded ports. Convex male > seals on > Concave female

Concave Female flair seal common on -AN hose ends, most metric (male) unions and some threaded ports. Concave male < seals on < Convex female

Flat -no sealing surface; use crush-washer under hex head.

Inverted Flair (or reverse flair) is a term used in place of concave and convex, but always refers to- concave on male and convex on female.

Globe Seal BSP & Metric (female) hose ends- use a radius sealing surface designed seal on a range of fixed angles.



-AN/JIC (SAE 37)

O-Ring Boss (ORB)

Inch Size	Dash Size	Nominal Thread Size	Male Thread O.D. (A) (inches)	Female Thread O.D. (B) (inches)
1/8	2	5/16-24	.31	.27
3/16	3	3/8-24	.38	.34
1/4	4	7/16-20	.44	.39
5/16	5	1/2-20	.50	.45
3/8	6	9/16-18	.56	.51
1/2	8	3/4-16	.75	.69
5/8	10	7/8-14	.88	.81
3/4	12	1 1/16-12	1.06	.98
1	16	1 5/16-12	1.31	1.23
1 1/4	20	1 5/8-12	1.63	1.54

SAE 37 degree flair, aka -AN (Air Force/Navy) or JIC, is considered universal for aftermarket automotive plumbing. ORB version is similar thread but seals with o-ring rather than flair. SAE 45 seals on 45 degree flair and is similar in thread to SAE 37 (except -12 which is 14tpi). SAE45 is commonly used in automotive a/c plumbing.

British Standard Pipe (BSP)

Inch Size	Dash Size	Nominal Thread Size	Male Thread O.D. (A) (inches)	Female Thread I.D. (B) (inches)
1/8	2	1/8-28	.38	.35
1/4	4	1/4-19	.52	.47
3/8	6	3/8-19	.65	.60
1/2	8	1/2-14	.82	.75
5/8	10	5/8-14	.88	.80
3/4	12	3/4-14	1.04	.97

Very common British thread. The female could also have a 60 degree convex seat instead of globeseal.

National Pipe Tapered (NPT)

Inch Size	Dash Size	Nominal Thread Size	Male Thread O.D. (A) (inches)	Female Thread O.D. (B) (inches)
1/8	2	1/8-27	.41	.38
1/4	4	1/4-18	.54	.49
3/8	6	3/8-18	.68	.63
1/2	8	1/2-14	.84	.77
3/4	12	3/4-14	1.05	.98
1	16	1-11 1/2	1.32	1.24

NPT or NPTF is a popular American thread type often referred to as "pipe thread". NPT fittings are designed to seal with some thread deformation and use of teflon liquid or tape.

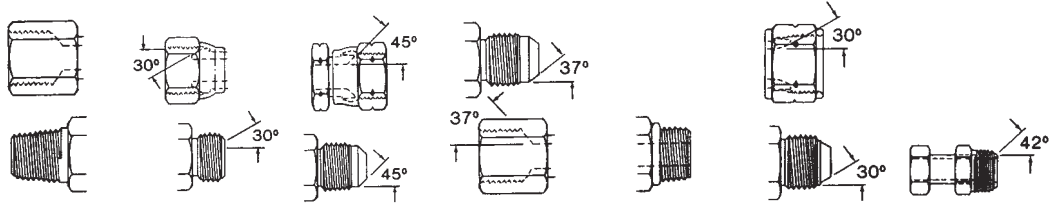
Metric DIN 7631 Series

Metric Thread Size	Male Thread O.D. (A) mm / inch	Male Thread I.D. (B) mm / inch
M10 x 1.0	10 / .39	8.5 / .33
M12 x 1.5	12 / .47	10.5 / .41
M14 x 1.5	14 / .55	12.5 / .49
M16 x 1.5	16 / .63	14.5 / .57
M18 x 1.5	18 / .71	16.5 / .65
M20 x 1.5	20 / .78	18.5 / .73
M22 x 1.5	22 / .87	20.5 / .81
M26 x 1.5	26 / 1.02	24.5 / .96
M30 x 1.5	30 / 1.18	28.5 / 1.12

Used throughout European car fluid systems. Radius "Globeseal" on female adapts to a variety of sealing flair angles. Some male ends have convex flair, but concave is more common.

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. Approximate Diameter	SAE 45° Automotive Refrigeration	SAE 37° AN	S.A.E. O-Ring Boss	P.T.T. 30° Automotive	S.A.E. Inverted Flare	Tubing O.D. Size
								INCHES
-02	1/8-27	1/8-27	5/16-24	5/16-24	5/16-24		5/16-24	1/8
-03			3/8-24	3/8-24	3/8-24		3/8-24	3/16
-04	1/4-18	1/4-18	7/16-20	7/16-20	7/16-20		7/16-24	1/4
-05			1/2-20	1/2-20	1/2-20		1/2-20	5/16
-06	3/8-18	3/8-18	5/8-18	9/16-18	9/16-18		5/8-18	3/8
-07			1 1/16-24				1-1/16-18	
-08	1/2-14	1/2-14	3/4-16	3/4-16	3/4-16		3/4-18	1/2
-10			7/8-14	7/8-14	7/8-14		7/8-18	5/8
-12	3/4-14	3/4-14	1-1/16-14	1-1/16-12	1-1/16-12		1-1/16-16	3/4
-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
-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		1-1/4
-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		1-1/2
-32	2-11-1/2	2-11-1/2		2-1/2-12	2-1/2-12	2-1/2-12		2

Through Hole Dimensions

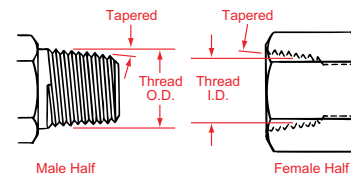
All dimensions are nominal. In jump size bodies, minimum through hole dimensions will correspond to the smallest dash size.

E THROUGH HOLE

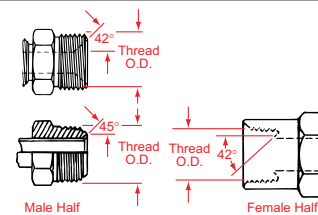
S.A.E. 37°	Dash Size	S.A.E. 37°
	-03	.12
	-04	.17
	-05	.23
	-06	.30
	-08	.39
	-10	.48
	-12	.61
	-16	.84
	-20	1.08
	-24	1.31
-32	1.78	

Common Thread Connections

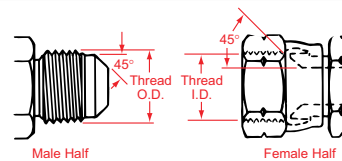
NPTF (NATIONAL PIPE TAPERED FUEL)



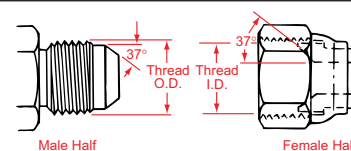
S.A.E. INVERTED FLARE



S.A.E. 45°



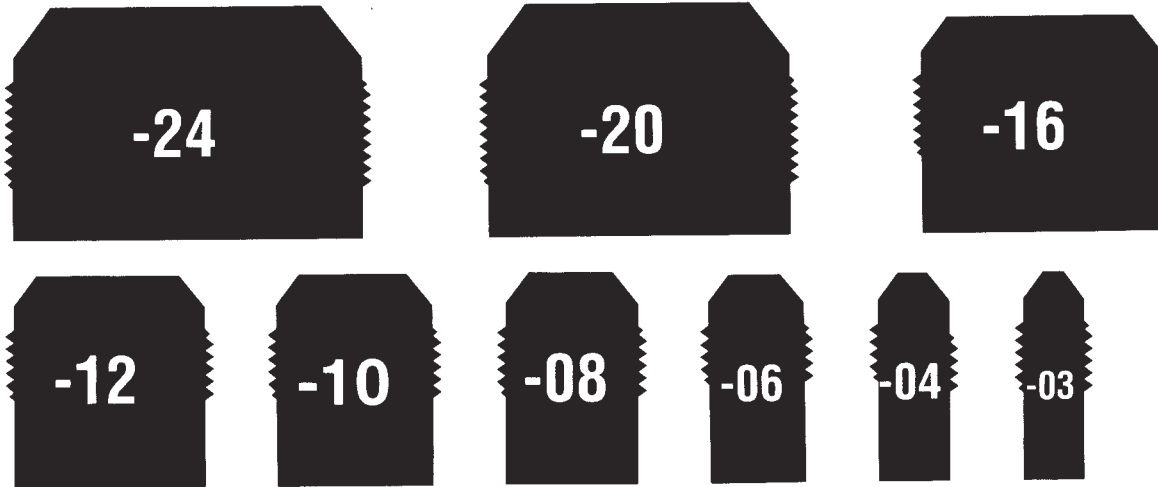
S.A.E. 37° (AN)



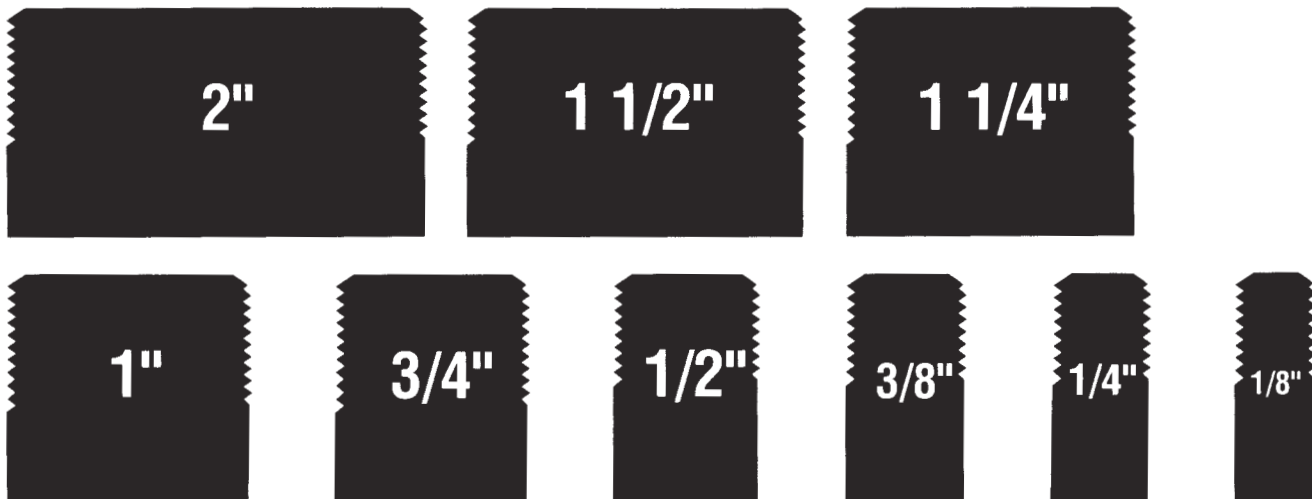
Actual Fitting Sizes

Note: deselect "scale to fit or shrink to fit" when printing this page and scale will be 1:1. Simply compare by laying male fitting over appropriate outline for size for confirmation.

SAE 37° AN FITTINGS



PIPE THREADS



"Dash" Size/Fractional Equivalent Guide

The following chart gives fractional equivalents to hose and fitting dash

sizes. Dash sizes are the numerators of fractions with a denominator of 16.

For example, -08 is equal to 8/16 which is equal to 1/2.

DASH SIZE/FRACTIONAL EQUIVALENT GUIDE

S.A.E. 37° (AN) Dash Size	Nominal Fractional Equivalent
	INCHES
-02	1/8
-03	3/16
-04	1/4
-05	5/16
-06	3/8
-08	1/2
-10	5/8

DASH SIZE/FRACTIONAL EQUIVALENT GUIDE

S.A.E. 37° (AN) Dash Size	Nominal Fractional Equivalent
	INCHES
-12	3/4
-14	7/8
-16	1
-20	1-1/4
-24	1-1/2
-32	2