

## Features, 37 Degree Tube Fittings

37 degree flared tube fittings provide leakproof, full flow connections in hydraulic systems operating at working pressures as specified in the tables below. A large variety of fitting styles are available to allow connection of flared tube ends, machined male or female 37 degree ends or male or female NPTF pipe or hose ends. Also included in this section are low-pressure beaded hose stem fittings.

37 degree flared fittings are the most commonly used tube connection in worldwide use today. Tube preparation and flaring processes are easily accomplished with either hand or power tools. The large variety of fitting configurations and jump sizes available provide for simplified fabrication requirements and reduced parts count in complex systems.

The design of the 37 degree flared fitting tube end is identical for either inch or metric tubing. With the exception of stock size, the flared tube fittings described in this section are interchangeable with equivalent fitting styles (unions, bulkheads, tees, etc.) per ISO 8434-2.

All 37 degree fitting styles are also available with the optional **Flare-O™** tube end design. Call for details.

## Performance

Where applicable, fittings are designed and qualified to the requirements of SAE J514.

## Construction

Unless otherwise specified, fittings are machined from carbon steel and may utilize brazed construction for shaped fittings. Standard plating is Zinc with a yellow Dichromate finish per ASTM B633 (Type II SC2) and is rated at 96 hours minimum salt spray resistance.

## Threads

**Straight Threads:** Internal and external straight threads conform to the Unified National Class 2A and Class 2B Series respectively, with modified minor diameters where specified. Plated external threads may conform to Class 3A maximum diameters after plating.

**NPTF Threads:** Male and female pipe threads conform to the Dryseal American Standard Taper Pipe Thread (SAE J476a, NPTF) Series which will provide pressure tight joints without the use of a lubricant or sealer. Use of these fittings with non-dryseal NPT pipe or hose ends is not recommended for high-pressure applications.

**Note:** Where not functionally objectionable, use of a compatible lubricant/sealant is recommended for either NPT or NPTF threads to minimize the possibility of galling in assembly.

## Assembly Information

For assembly instructions, refer to the Technical Data Section for the appropriate fitting end. Also, refer to the Technical Data Section for recommendations regarding tubing pressure ratings, tube flares and hose/tube routing information. Please note the following:

Tubing for single flare tube ends should be either seamless or welded and drawn, fully annealed tubing per SAE J524 or J525. For double flaring, tubing per SAE J356, J524, J525 or J526 may be used.

For proper sealing with 37 degree flared fittings, flares for tubing should conform to the requirements of SAE J533. For heavy wall tubing, the optional tube preparation and single flare configuration specified in SAE J533 is also recommended. This optional configuration provides extended sealing surface contact area versus conventional flares.

In the design and fabrication of tubing or hose runs for any hydraulic system, precautions should be taken to allow for sufficient adjustment of the hose or tubing so that proper alignment can be attained at the fitting connections. Improper fit-up or misalignment should be corrected before final connections are made. Location of fitting connections should be planned to maximize accessibility. Whenever possible, use a torque wrench to tighten connections to the recommended installation torque.

## Ordering Information

Size of fittings are indicated by dash number relating to sixteenths of an inch for the nominal O.D. of the tube size used. Example: 1/2 inch tube = 8/16 or (-8) size.

Order standard fittings from appropriate chart indicating required dash numbers. For example, 2501-8-6 is 1/2" tube end with 3/4-16 straight thread and 3/8" male pipe thread. Jump size 2501-8-12 is 1/2" tube end with 3/4-16 straight thread and 3/4" male pipe thread. Pictorial views for each fitting style indicate the correct numbering sequence for fitting ends.

Bulkhead fittings may be ordered with or without lock nuts. To order fittings with lock nut, add (-LN) suffix to base catalog part number.

If information is needed for jump sizes not shown, please contact customer service for engineering assistance. Dimensions are rounded for brevity. Please contact factory for exact dimensions and tolerances.



**Table JT1. Pressure Ratings for 37 Deg. Flared Tube Ends, Unions, Bulkheads and 37 Deg. Female Swivels**

Nominal Tube Size		Thread Size	Working Pressures			
Nom SAE Dash Size	Nom Inch Tube O.D.	SAE J514 Flared Tube End and SAE J1926/3/ ISO 11926-3 O-Ring Port Thread Size (Notes 1&2)	37 Deg. Flared Tube Ends, Unions and Bulkheads		37 Deg. Female Swivels	
			MPa	psi	MPa	psi
-2	1/8	5/16-24 UNF	34.5	5,000	34.5	5,000
-3	3/16	3/8-24 UNF	34.5	5,000	34.5	5,000
-4	1/4	7/16-20 UNF	34.5	5,000	31	4,500
-5	5/16	1/2-20 UNF	34.5	5,000	27.5	4,000
-6	3/8	9/16-18 UNF	34.5	5,000	27.5	4,000
-8	1/2	3/4-16 UNF	31	4,500	27.5	4,000
-10	5/8	7/8-14 UNF	24	3,500	21	3,000
-12	3/4	1-1/16-12 UN	24	3,500	21	3,000
-14	7/8	1-3/16-12 UN	21	3,000	17	2,500
-16	1	1-5/16-12 UN	21	3,000	17	2,500
-20	1 1/4	1-5/8-12 UN	17	2,500	14	2,000
-24	1 1/2	1-7/8-12 UN	14	2,000	10.5	1,500
-32	2	2-1/2-12 UN	10.5	1,500	8	1,125

1) Threads per SAE J475 Class 2A ext. Class 2B int. (Ref. ISO-263/ISO-R725)

2) Unified class 2B threads apply to swivel nuts and with minor diameter modified to class 3B limits for locknuts

**Table JT2. Pressure Ratings for Fittings With NPTF Pipe Threads**

Nominal Pipe Size		Thread Size	Working Pressures	
Nom SAE Dash Size	Nom Inch Pipe O.D.	Dryseal Pipe Thread (NPTF <sup>1</sup> ) Male and Female	Fittings With NPTF Pipe Threads	
			MPa	psi
-2	1/8	1/8-27	34.5	5,000
-4	1/4	1/4-18	27.5	4,000
-6	3/8	3/8-18	21	3,000
-8	1/2	1/2-14	21	3,000
-12	3/4	3/4-14	17	2,500
-16	1	1-11-1/2	14	2,000
-20	1 1/4	1-1/4-11-1/2	8	1,150
-24	1 1/2	1-1/2-11-1/2	7	1,000
-32	2	2-11-1/2	7	1,000

1) Dryseal American Standard Taper Pipe Thread

