

## Features, Stainless Steel Braze Fittings For Tubing

The fittings described in this section provide braze on end connections for tube assembly/fabrication requirements. Fitting styles are available with male 37 degree tube ends and male NPTF pipe ends. 37 degree tube end fittings are also available with the optional **Flare-O™** tube end design.

Additional braze fitting styles are available on request. Refer to the carbon steel braze fittings section for commonly used configurations.

Standard braze joint designs provide a slip fit to nominal O.D. inch size tubing and are intended for silver brazing. Press fit counterbores and other special designs are available on request.

## Performance

Where applicable, fittings are designed and qualified to the requirements of SAE J514. The rated working pressures for braze fittings are based on the standard pressure rating of the separable fitting end. For proper performance, the design of any hydraulic system should take into consideration the rated working pressures for each of the components of the system, including standard ratings for hose and tubing components. For brazed tube assemblies, these factors include the tubing material specifications, fabrication techniques and braze processes.

## Construction

Stainless steel fittings are machined from 316 stainless steel barstock. Fittings are passivated following machining.

## 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

**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 silver brazing and fitting 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: Tubing for single flare tube ends should be either seamless or welded and drawn, fully annealed tubing per ASTM A213, ASTM A249 or ASTM A269 respectively.

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 torque.

## Ordering Information

Size of fittings is 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. For stainless steel fittings, an SS prefix indicates 316SS material. Stainless **Flare-O™** fittings use an FS prefix.

Order standard fittings from appropriate chart indicating required dash numbers. For example, SS403-8-8 is a straight connector with 1/2" nominal braze counterbore and 1/2" 37 degree male tube end (3/4-16 thread). Jump size SS403-10-8 is a straight connector with 5/8" nominal braze counterbore and 1/2" 37 degree male tube end (3/4-16 thread). Pictorial views for each fitting style indicate the correct numbering sequence for fitting ends. If information is needed for jump sizes not shown, please contact customer service for engineering assistance.



**Table SB1. Pressure Ratings for 37 Deg. 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.	37 Deg. Tube Ends <sup>1</sup>	37 Deg. Tube Ends	
			MPa	psi
-2	1/8	5/16-24 UNF	34.5	5,000
-3	3/16	3/8-24 UNF	34.5	5,000
-4	1/4	7/16-20 UNF	34.5	5,000
-5	5/16	1/2-20 UNF	34.5	5,000
-6	3/8	9/16-18 UNF	34.5	5,000
-8	1/2	3/4-16 UNF	31	4,500
-10	5/8	7/8-14 UNF	24	3,500
-12	3/4	1-1/16-12 UN	24	3,500
-14	7/8	1-3/16-12 UN	21	3,000
-16	1	1-5/16-12 UN	21	3,000
-20	1 1/4	1-5/8-12 UN	17	2,500
-24	1 1/2	1-7/8-12 UN	14	2,000
-32	2	2-1/2-12 UN	10.5	1,500

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

**Table SB2. 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

