Features, Adjustable and O-Ring Fittings

O-Ring ports and stud ends per SAE J1926/ISO 11926 are the preferred port connection for use in hydraulic systems on industrial equipment and commercial products. The adjustable and O-Ring fittings described in this section provide a variety of options for connections between tube, hose or pipe ends to SAE J1926/1/ISO 11926-1 straight thread O-Ring ports or SAE J518 four-bolt flange ports. Fitting styles are available with male 37 degree tube ends, female 37 degree swivel ends, male or female NPTF pipe ends, female pipe swivels, adjustable and non-adjustable O-Ring studs, female O-Ring ports and low pressure beaded hose stem fittings.

The designs of the straight thread O-Ring stud per SAE J1926/3/ISO 11926-3 and the 37 degree flared fitting tube end per SAE J514/ISO 8434-2 are identical for either inch or metric tubing. With the exception of stock size, the flared tube fittings described in this section are interchangeable with the equivalent "inch" straight thread O-Ring stud fittings per ISO 8434-2. All 37 degree fitting styles are also available with the optional **FLARE-O®** tube end design.

Performance

Where applicable, fittings are designed and qualified to the requirements of SAE J514 and/or SAE J1926/3/ISO 11926-3. Beaded hose stem ends conform to SAE J1231 and are intended for suction or low pressure lines, typically less than 300 psi.

Construction

Unless otherwise specified, fittings are machined from cold drawn carbon steel barstock and forgings. Standard plating is electrodeposited zinc with a clear trivalent chromate conversion coating in accordance with ASTM B633 (Type V SC2). The minimum salt spray resistance is 240 hours to red corrosion when tested in accordance with ASTM B117

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. Maximum diameters of 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 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, 6405-8-6-O is 1/2" O-Ring stud end with 3/4-16 straight thread, and 3/8" female pipe thread. Jump size 6405-16-8-O is 1" O-Ring stud end with 1 5/16-12 straight thread and 1/2" female pipe thread. Pictorial views for each fitting style indicate the correct numbering sequence for fitting ends.

Adjustable and O-Ring fittings may be purchased in various stages of assembly. Catalog numbers include NWO as standard. For example, 6801-10-10-NWO would be assembled with "N"- Nut, "W"- Washer and "O"- O-Ring. 6801-10-10NW would be assembled with "N"- Nut and "W"- Washer only.

If information is needed for jump sizes not shown, please contact customer service for engineering assistance.

Table JA1. Pressure Ratings for 37 Deg. Flared Tube Ends, 37 Deg. Female Swivels, O-Ring Port Plugs and Straight Thread Stud Ends (Inch)										
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		SAE J514 (Inch) Port Plugs and Stud Ends Per SAE J1926/3/ISO 11926-3			
							Port Plugs/Non-Adjustable Studs		Adjustable Studs	
			MPa	psi	Mpa	psi	MPa	psi	MPa	psi
-2	1/8	5/16-24 UNF	34.5	5,000	34.5	5,000	34.5	5,000	34.5	5,000
-3	3/16	3/8-24 UNF	34.5	5,000	34.5	5,000	34.5	5,000	34.5	5,000
-4	1/4	7/16-20 UNF	34.5	5,000	31	4,500	34.5	5,000	31.5	4,500
-5	5/16	1/2-20 UNF	34.5	5,000	27.5	4,000	34.5	5,000	27.5	4,000
-6	3/8	9/16-18 UNF	34.5	5,000	27.5	4,000	34.5	5,000	27.5	4,000
-8	1/2	3/4-16 UNF	31	4,500	27.5	4,000	31	4,500	27.5	4,000
-10	5/8	7/8-14 UNF	24	3,500	21	3,000	24	3,500	21	3,000
-12	3/4	1-1/16-12 UN	24	3,500	21	3,000	24	3,500	21	3,000
-14	7/8	1-3/16-12 UN	21	3,000	17	2,500	21	3,000	17	2,500
-16	1	1-5/16-12 UN	21	3,000	17	2,500	21	3,000	17	2,500
-20	1 1/4	1-5/8-12 UN	17	2,500	14	2,000	17	2,500	14	2,000
-24	1 1/2	1-7/8-12 UN	14	2,000	10.5	1,500	14	2,000	10.5	1,500
-32	2	2-1/2-12 UN	10.5	1,500	8	1,125	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 JA2. Pressure Ratings for Fittings With NPTF Pipe Threads and Adapter Unions							
Nominal Pipe Size		Thread Size		Working Pressures			
Nom SAE Dash Size	Nom Inch Pipe O.D.	Dryseal Pipe Thread (NPTF[1]) Male and Female	Straight Pipe Thread (NPSM[2]) Female Swivels	Fittings With NPTF Pipe Threads		Adapter Unions	
				MPa	psi	MPa	psi
-2	1/8	1/8-27	1/8-27	34.5	5,000	34.5	5,000
-4	1/4	1/4-18	1/4-18	27.5	4,000	34.5	5,000
-6	3/8	3/8-18	3/8-18	21	3,000	27.6	4,000
-8	1/2	1/2-14	1/2-14	21	3,000	24.1	3,500
-12	3/4	3/4-14	3/4-14	17	2,500	15.5	2,250
-16	1	1-11-1/2	1-11-1/2	14	2,000	13.8	2,000
-20	1 1/4	1-1/4-11-1/2	1-1/4-11-1/2	8	1,150	11.2	1,625
-24	1 1/2	1-1/2-11-1/2	1-1/2-11-1/2	7	1,000	8.6	1,250
-32	2	2-11-1/2	2-11-1/2	7	1,000	7.8	1,125

1) Dryseal American Standard Taper Pipe Thread
2) American Standard Straight Pipe Thread for Mechanical Joints