

## Features, Flare-O™ 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 37 degree tube ends/female swivels and 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 **Flare-O™** tube ends, adjustable and non-adjustable O-ring studs and SAE J518 Four-Bolt Split Flange ends.

The designs of the straight thread O-ring stud per SAE J1926/3/ISO 11926-3 and the 37 degree **Flare-O™** fitting tube end are identical for either inch or metric tubing. With the exception of stock size, the **Flare-O™** tube fittings described in this section are interchangeable with the equivalent "inch" straight thread O-ring stud fittings per ISO 8434-2.

SAE J518, Code 61 and Code 62 Four-Bolt Split Flange connections are non-threaded port ends which utilize O-rings for sealing. They are assembled to ports with split flange clamp halves and clamping pressure is provided by bolts or socket head cap screws of SAE Grade 5 material or better as specified in SAE J429. Rated design factor for these connections is dependent on the selected grade for the clamp bolts.

Flanged head ends are incorporated into fittings having suitable means for attachment to tubes, pipes or hoses to provide connection ends.

## Performance

Where applicable, fittings are designed and qualified to the requirements of SAE J514 and/or SAE J1926/3/ISO 11926-3. Four bolt flange ends conform to SAE J518.

## 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:** External straight threads conform to the Unified National Class 2A. Maximum diameters of plated external threads may conform to Class 3A maximum diameters after plating.

## 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.

**Note:** 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 **Flare-O™** 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. For **Flare-O™** fittings, an F prefix indicates a **Flare-O™** style tube end. Stainless steel **Flare-O™** fittings are also available and are designated by an FS prefix.

Order standard fittings from appropriate chart indicating required dash numbers. For example, F6400-8-8-O is -8 (3/4-16) **Flare-O™** tube end and -8 (3/4-16 straight thread) O-ring stud end. Jump size F6400-16-8-O is -16 (1-5/16-12) **Flare-O™** tube end and -8 (3/4-16 straight thread) O-ring stud end. 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, F6801-10-10-NWO would be assembled with "N"- Nut, "W"- Washer and "O"- O-ring. F6801-10-10NW 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 FO1. Pressure Ratings for 37 Deg. Flare-O™ Tube Ends and Straight Thread Stud Ends (Inch)

Nominal Tube Size		Thread Size	Working Pressures					
Nom SAE Dash Size	Nom Inch Tube O.D.	SAE J514/37 Deg. Flare-O™ Tube Ends and SAE J1926/3/ ISO 11926-3 O-Ring Ports (Notes 1&2)	37 Deg. Flare-O™ Tube Ends		SAE J514 (Inch) Stud Ends Per SAE J1926/3/ISO 11926-3			
					Non-Adjustable Studs		Adjustable Studs	
			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
-3	3/16	3/8-24 UNF	34.5	5,000	34.5	5,000	34.5	5,000
-4	1/4	7/16-20 UNF	34.5	5,000	34.5	5,000	31.5	4,500
-5	5/16	1/2-20 UNF	34.5	5,000	34.5	5,000	27.5	4,000
-6	3/8	9/16-18 UNF	34.5	5,000	34.5	5,000	27.5	4,000
-8	1/2	3/4-16 UNF	31	4,500	31	4,500	27.5	4,000
-10	5/8	7/8-14 UNF	24	3,500	24	3,500	21	3,000
-12	3/4	1-1/16-12 UN	24	3,500	24	3,500	21	3,000
-14	7/8	1-3/16-12 UN	21	3,000	21	3,000	17	2,500
-16	1	1-5/16-12 UN	21	3,000	21	3,000	17	2,500
-20	1 1/4	1-5/8-12 UN	17	2,500	17	2,500	14	2,000
-24	1 1/2	1-7/8-12 UN	14	2,000	14	2,000	10.5	1,500
-32	2	2-1/2-12 UN	10.5	1,500	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 FO2. Pressure Ratings for Code 61 Four-Bolt Split Flange Ends

Nominal Flange Size		Bolt Dimensions			Working Pressures @ Recommended Torque (Note: See Below)			
Nom SAE Dash Size	Nom Inch Pipe O.D.	Thread	Length		Maximum Recommended Working Pressure		Recommended Torque Range	
			mm	inch	MPa	psi	Nm	lb-in
-8	1/2	5/16-18	32	1-1/4	34.5	5,000	20-25	175-225
-12	3/4	3/8-16	32	1-1/4	34.5	5,000	28-40	250-350
-16	1	3/8-16	32	1-1/4	34.5	5,000	37-48	325-425
-20	1 1/4	7/16-14	38	1-1/2	27.6	4,000	48-62	425-550
-24	1 1/2	1/2-13	38	1-1/2	20.7	3,000	62-79	550-700
-32	2	1/2-13	38	1-1/2	20.7	3,000	73-90	650-800

Table FO3. Pressure Ratings for Code 62 Four-Bolt Split Flange Ends

Nominal Flange Size		Bolt Dimensions			Working Pressures @ Recommended Torque (Note: See Below)			
Nom SAE Dash Size	Nom Inch Pipe O.D.	Thread	Length		Maximum Recommended Working Pressure		Recommended Torque Range	
			mm	inch	MPa	psi	Nm	lb-in
-8	1/2	5/16-18	32	1-1/4	41.4	6,000	20-25	175-225
-12	3/4	3/8-16	38	1-1/2	41.4	6,000	34-45	300-400
-16	1	7/16-14	44	1-3/4	41.4	6,000	56-68	500-600
-20	1 1/4	1/2-13	44	1-3/4	41.4	6,000	85-102	750-900
-24	1 1/2	5/8-11	57	2-1/4	41.4	6,000	158-181	1400-1600
-32	2	3/4-10	70	2-3/4	41.4	6,000	271-294	2400-2600

**Note:** SAE J518, Code 61 and Code 62 Four-Bolt Split Flange connections are non-threaded port ends which utilize O-rings for sealing. They are assembled to ports with split flange clamp halves and clamping pressure is provided by bolts or socket head cap screws of SAE Grade 5 material or better as specified in SAE J429.

Rated design factor for these connections is dependent on the selected grade for the clamp bolts. Flanged head ends are incorporated into fittings having suitable means for attachment to tubes, pipes or hoses to provide connection ends.

