

Features, Four Bolt Flange Fittings

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

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: 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.

NPSM Swivels: Female threads for adapter union swivel nuts conform to the American Standard Straight Pipe Thread (NPSM) Series. These threads mate with either NPT or NPTF Series male threads to provide a mechanical connection between the adapter and mating male end. Sealing is provided by metal to metal contact between the machined 30 degree female seat on the NPT/NPTF male end and the nose of the swivel end. The NPSM swivel threads are not a sealing member.

Caution: For proper sealing, ensure that the mating male end has been machined with the proper 30 degree female seat.

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.

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



Table JF1. 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			
			MPa	psi	Mpa	psi	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 JF2. 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



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

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.

