

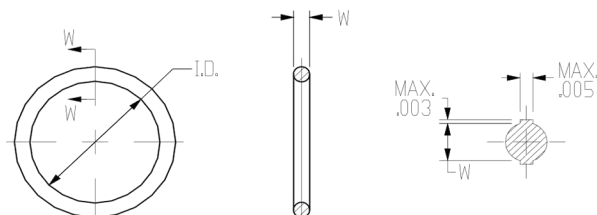


Product Data

Adjustable and O-Ring Fittings

JA37

O-RINGS FOR SAE J-1926/2/3 INCH STUD ENDS



TUBE FITTING SIZE	TUBE O.D.	STANDARD A-W PART #	OPTIONAL COMPOUNDS				SAE AS568A REF. #	I.D.	W
		CH (BUNA-N) 4000	HK (VITON) 4001	CH (HI-TEMP) ⁽¹⁾ 4002	CA (EPDM) 4006				
-2	1/8	4000-2	*	*	*		902	.239 ± .005	.064 ± .003
-3	3/16	4000-3	*	*	*		903	.301 ± .005	.064 ± .003
-4	1/4	4000-4	*	*	*		904	.351 ± .005	.072 ± .003
-5	5/16	4000-5	*	*	*		905	.414 ± .005	.072 ± .003
-6	3/8	4000-6	*	*	*		906	.468 ± .005	.078 ± .003
-8	1/2	4000-8	*	*	*		908	.644 ± .009	.087 ± .003
-10	5/8	4000-10	*	*	*		910	.755 ± .009	.097 ± .003
-12	3/4	4000-12	*	*	*		912	.924 ± .009	.116 ± .004
-14	7/8	4000-14	*	*	*		914	1.048 ± .010	.116 ± .004
-16	1	4000-16	*	*	*		916	1.171 ± .010	.116 ± .004
-20	1 ¼	4000-20	*	*	*		920	1.475 ± .014	.118 ± .004
-24	1 ½	4000-24	*	*	*		924	1.720 ± .014	.118 ± .004
-32	2	4000-32	*	*	*		932	2.337 ± .018	.118 ± .004

SAE Type CH was SAE Type 1 Type CA was SAE Type 2 and Type HK was SAE Type 3.

Specification	SAE/ASTM Type CH	SAE/ASTM Type CA	SAE/ASTM Type HK
Usage	Nitrile Elastomer, 90 Durometer Hardness, for petroleum based fluids	EPDM Elastomer, 80 Durometer Hardness, for water based hydraulic or nonpetroleum based fluids	Fluorocarbon Elastomer, 90 Durometer Hardness, for petroleum or nonpetroleum based fluids
General Service	High pressure applications of pneumatics, water based hydraulic fluids, lubricating oils, hydraulic oils, and gasoline	High pressure applications of nonflammable hydraulic fluids of phosphate ester base type	High pressure, high temperature applications of pneumatic, water based hydraulic fluids, lubricating oils, hydraulic oils, and fuels
Temperature	-35°C to 125°C (-30°F to 250°F)	-40°C to 125°C (-40°F to 250°F)	-15°C to 275°C (5°F to 525°F)
Shore Hardness	90 pts ± 5 pts	80 pts ± 5 pts	90 pts ± 5 pts
Elongation	100% min	150% min	100% min
Tensile	10 MPa min	10 MPa min	10 MPa min
Compound	Nitrile (Buna-N) to ASTM D 2000 or SAE J200 M4CH910B14E015E35F16	EPDM to ASTM D 2000 or SAE J200 M7CA810A25B35F17	M7HK910A1-11B38EF31E088Z1 Z1 = TR 10 temperature -15°C or lower (similar to MIL-R 83248 Type 1, Class 2)
Lubrication	When assembling Type CH O-Ring with O-Ring style fittings, the O-Ring shall be coated with the fluid used or petrolatum before assembly to ease installation.	When assembling Type CA O-Ring with O-Ring style fittings, lubricate the O-Ring with the fluid used in the system. Do not use a petroleum based lubricant.	When assembling Type HK O-Rings with O-Ring style fittings, the O-Ring shall be coated with the fluid used or petrolatum before assembly to ease installation.

1. Type CH(HI-TEMP) Air-Way part #4002, 90 Durometer Nitrile Compound, temperature range -32°C to 135°C (-25°F to 275°F). Approved compounds National O-Ring Compound C67-90, Parker Seal Groove Compound N1059-90.



Air-Way Manufacturing Co.
Hydraulic Fittings and Accessories

586 North Main Street
Olivet, Michigan 49076



Product Data

Tube Fittings

Features, 37 Degree Flare-O™ Tube Fittings

37 degree **Flare-O™** tube fittings provide leakproof, full flow connections in hydraulic systems operating at working pressures as specified in the tables below. A broad range of fitting styles are available which include 37 degree **Flare-O™** tube ends, bulkheads, female 37 degree swivel ends and male or female NPTF pipe ends.

37 degree flared fittings are the most commonly used tube connection in worldwide use today. The addition of an O-Ring in the 37 degree male sealing surface provides a leak proof, drop in replacement for standard 37 degree SAE/JIC/ISO tube fittings. Tube preparation and flaring processes are easily accomplished with either hand or power tools. The large variety of fitting configurations and jump sizes available provides for simplified fabrication requirements and reduced part counts in complex systems.

The design of the 37 degree **Flare-O™** fitting tube end is 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 equivalent fitting styles (unions, bulkheads, tees, etc.) per ISO 8434-2.

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. 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.

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 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. 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, F2501-8-6 is 1/2" **Flare-O™** (3/4-16) tube end and 3/8" male pipe thread. Jump size F2501-8-12 is 1/2" **Flare-O™** (3/4-16) tube end 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.





Product Data

Tube Fittings

Table FT1. Pressure Ratings for 37 Deg. Flare-O™ 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 J514/37 Deg. Flare-O™ Tube Ends (Notes 1&2)	37 Deg. Flare-O™ 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 FT2. 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 ¹) 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



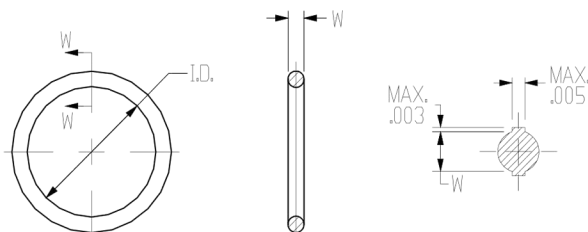


P30

Product Data

Accessories

O-Rings For SAE J-1453 ORFS Ends



TUBE SIZE	STANDARD A-W PART #	ITEM #	OPTIONAL COMPOUND ITEM #			SAE AS568A REF. #	I.D.	W
	CH (BUNA-N) FF4000		HK (VITON) FF64001-	CH (HI-TEMP) ⁽¹⁾ FF64002-	CA (EPDM) FF64006-			
-4	FF4000-4	0100	0100	*	*	011	.301 ±.005	.070 ±.003
-6	FF4000-6	0200	0200	*	*	012	.364 ±.005	.070 ±.003
-8	FF4000-8	0300	0300	*	*	014	.489 ±.005	.070 ±.003
-10	FF4000-10	0400	0400	*	*	016	.614 ±.005	.070 ±.003
-12	FF4000-12	0500	0500	*	*	018	.739 ±.005	.070 ±.003
-16	FF4000-16	0600	0600	*	*	021	.926 ±.006	.070 ±.003
-20	FF4000-20	0700	0700	*	*	025	1.176 ±.006	.070 ±.003
-24	FF4000-24	0800	0800	*	*	029	1.489 ±.010	.070 ±.003
-32	FF4000-32	0900	0900	*	*	135	1.925 ±.017	.103 ±.003

SAE Type CH was SAE Type 1 Type CA was SAE Type 2 and Type HK was SAE Type 3.

Specification	SAE/ASTM Type CH	SAE/ASTM Type CA	SAE/ASTM Type HK
Usage	Nitrile Elastomer, 90 Durometer Hardness, for petroleum based fluids	EPDM Elastomer, 80 Durometer Hardness, for water based hydraulic or nonpetroleum based fluids	Fluorocarbon Elastomer, 90 Durometer Hardness, for petroleum or nonpetroleum based fluids
General Service	High pressure applications of pneumatics, water based hydraulic fluids, lubricating oils, hydraulic oils, and gasoline	High pressure applications of nonflammable hydraulic fluids of phosphate ester base type	High pressure, high temperature applications of pneumatic, water based hydraulic fluids, lubricating oils, hydraulic oils, and fuels
Temperature	-35°C to 125°C (-30°F to 250°F)	-40°C to 125°C (-40°F to 250°F)	-15°C to 275°C (5°F to 525°F)
Shore Hardness	90 pts ±5 pts	80 pts ±5 pts	90 pts ±5 pts
Elongation	100% min	150% min	100% min
Tensile	10 MPa min	10 MPa min	10 MPa min
Compound	Nitrile (Buna-N) to ASTM D 2000 or SAE J200 M4CH910B14E015E35Z1 Z1 = TR 10 temperature -21° C or lower. Alternate Low Temperature Product Test, 5 hours at -30° C, rings compressed 25% of ID, no cracks.	EPDM to ASTM D 2000 or SAE J200 M7CA810A25B35F17	M7HK910A1-11B38EF31E088Z1 Z1 = TR 10 temperature -15°C or lower (similar to MIL-R 83248 Type 1, Class 2)
Lubrication	When assembling Type CH O-rings with O-ring style fittings, the O-ring shall be coated with the fluid used or petrolatum before assembly to ease installation.	When assembling Type CA O-rings with O-ring style fittings, lubricate the O-ring with the fluid used in the system. Do not use a petroleum-based lubricant.	When assembling Type HK O-rings with O-ring style fittings, the O-ring shall be coated with the fluid used or petrolatum before assembly to ease installation.

1. Type CH(HI-TEMP) Air-Way part #FF4002, 90 Durometer Nitrile Compound, temperature range -32°C to 135°C(-25°F to 275°F). Approved compounds National O-ring Compound C67-90, Parker Seal Groove Compound N1059-90.



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