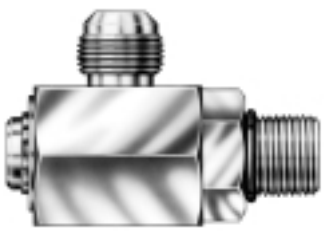
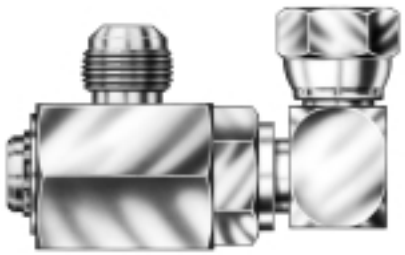
SWIVEL JOINTS





How to Order

When ordering a swivel joint, follow the steps below:

First, state the base part number, casing and sleeve port size, as shown.

Second, add the suffix code which indicates the seal required, as shown in the seal code chart at right. (See Fluid Compatibility Chart on page 232).

BD55000– 08 08– 01

Swivel Joint Base Number

Casing Port Size

Sleeve Port Size

Seal Code

Seal Material Options:

Seal Code	Material	Description	Application**
–75	**Hytrel/Buna**	Standard U-Cup Seal	Petroleum-Base Fluids, Phosphate Esters, Solvents
–74	**Urethane/Buna**	Optional U-Cup Seal	Hydraulic Fluids
–01*	**Buna-N**	Standard T-Ring Seal or O-Ring Seal	Hydraulic Oils, Water Glycol
–04*	**EPR**	Optional T-Ring Seal or O-Ring Seal	Brake Fluids, Water, Phosphate Ester, Alcohols
–06*	**Viton**†	Optional T-Ring Seal or O-Ring Seal	Chemicals, Gasoline, Aromatic Solvents

**Limited service life above 3000 psi in sizes above –08.*
***See Fluid Compatibility Chart on page 232 for additional information.*
†Viton is a DuPont trademark.

Advantages of using Aeroquip Swivel Joints

1. Better System Plumbing:

a) Because less hose is needed when swivel joints are used, the system is more space efficient (Figure 1).
b) Swivel joints can eliminate the need for tubing configurations to accommodate 90° and other angles.
c) Swivel joints can be directly connected to hose lines frequently eliminating the need for adapters.

2. Prevent Hose Twisting:

Because of the swivel action, swivel joints prevent hose twisting and kinking (Figure 2).

3. Less Downtime:

With the problem of hose twisting and kinking eliminated, hose line replacement becomes significantly less frequent.

4. Absorb System Shock:

Swivel joints are not rigid and therefore capable of absorbing some hose shortening when the system is pressurized.

5. Save Money:

Less hose, fewer adapters and tubing configurations and less downtime add up to saving money when swivel joints are used.

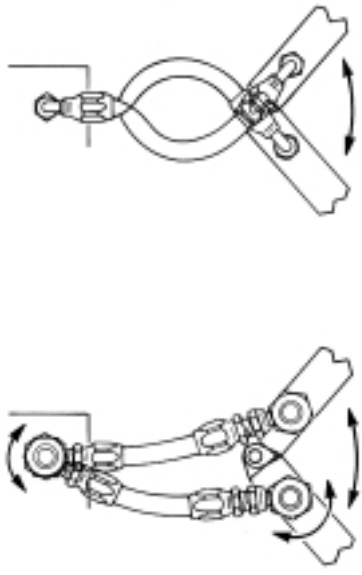


Figure 1

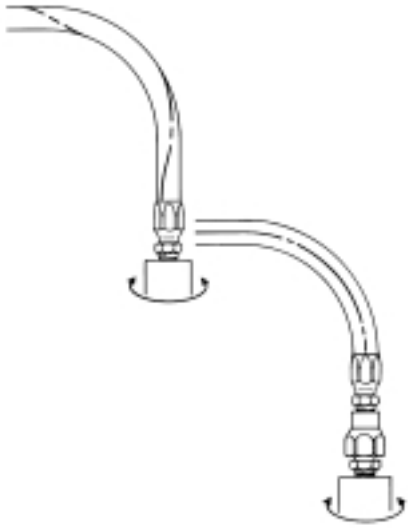


Figure 2

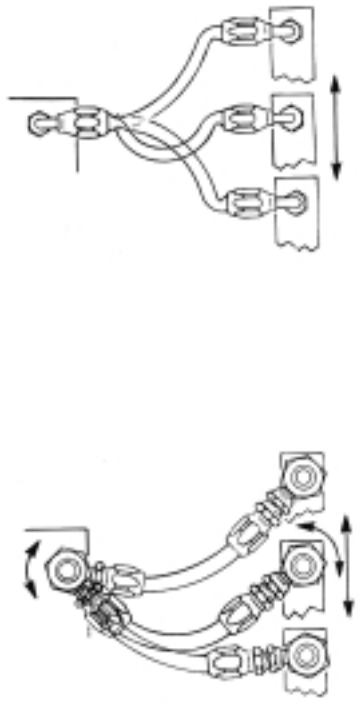


Figure 3

Selection Criteria and Product Safety Considerations

Many variables are involved in the application and selection of industrial swivel joints in a fluid power system. Careful consideration must be paid to each of the criteria listed below to achieve optimum efficiency from a swivel joint.

1. Pressure:

This is a force or thrust applied on the surface of a fluid carrying vehicle. System operating pressure must not exceed the rating of the swivel joint.

2. Temperature:

Both internal and ambient temperatures are important in proper swivel joint functioning. Internally, the temperature rating is determined by the seals. If the fluid is too hot, the seals will deteriorate and the swivel joint will leak and resist rotation. Externally, too high a temperature will damage the casing and seals causing similar problems. When selecting seals, always insure they meet the required temperature ranges.

3. Fluid Compatibility:

An important consideration in determining which joint and seal material to use is their compatibility with the agent to be conveyed in the system. Internal swivel joint components that are not suitable for the fluid being carried in the system will be severely damaged. Carefully check the fluid compatibility chart on Page 232.

4. Cost:

Cost, of course, is an important consideration. However, the initial cost of a swivel joint can be more than offset by cost reduction benefits such as an improved system routing with less hose, fewer adapters and tube fittings and longer service life.

5. Side Loading:

Defined as the stress caused by angular deflection in a piping system, side loading causes excessive wear on the bearing surfaces and inhibits smooth swivel joint operation. Care must be taken when plumbing a system with swivel joints to avoid stress situations.

6. Pressure Drop:

This is the resistance to the flow of the agent through the swivel joint measured in pounds per square inch (psi). The higher the resistance to flow, the greater is the loss of efficiency. Aeroquip swivel joints have been designed for minimal resistance to flow.

7. Torque:

Defined as the force that produces a rotation, torque is an important consideration when specifying swivel joints. Aeroquip swivel joints rotate freely with low torque even under pressures up to 10,000 psi. This permits consistent, trouble-free service.

8. Configurations:

The swivel joint configuration specified (straight or 90°) is determined by such factors as available space and system routing. Make sure the swivel joint configuration and envelope dimensions allow freedom of movement while maintaining compatibility with the system's routing.

9. Port Size:

Using the right port size and thread is a significant factor in the proper selection of a swivel joint. The port size and thread must match that of the end fitting on the connecting hose line.

10. Corrosion Resistance:

Make sure the environment in which the swivel joint works and the fluid carried are free of corrosive elements which could severely limit service life.

11. Rotation:

Rotation must be easy and unrestricted for proper service of the swivel joint. The joint and the connecting line must be allowed to rotate freely for optimum performance.

Selection Chart

	BD5500		FS5500	FS5900
Selection Criteria	**Brass/Steel**	**Steel**	**Steel**	**Steel**
Rated Operating Pressure (psi)	3,000	3,000	4,000*	5,000
Side Loading Capability**	G	G	VG	E
Configurations Available	90°	90°	90°	90° and Straight
Pressure Drop	Moderate	Moderate	Moderate	Low
Torque	Low	Low	Low	Moderate
Size Range	1/2" and 1"	1/4" – 1 1/2"	1/4" – 2"	1/4" – 1"
Corrosion Resistance**	E	VG	VG	VG

**In sizes –4 and –6.*

***Rating Codes: E = Excellent VG = Very Good G = Good*

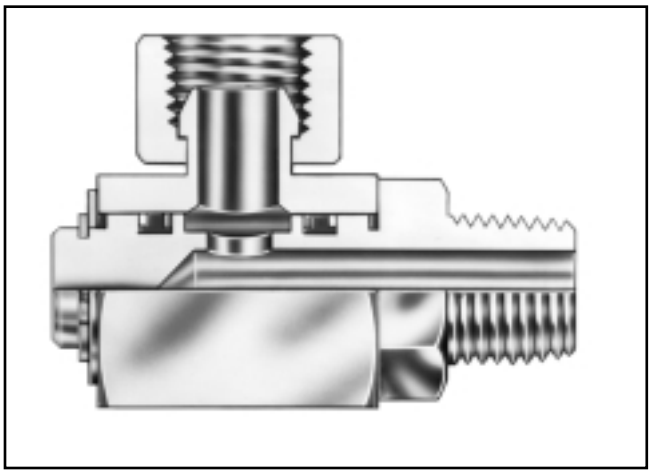
Fluid Compatibility Chart

This chart is intended as a guide only and is not a guarantee. Many factors such as concentration, fluid and ambient temperature, pressure, duration of exposure, etc., have a bearing on the suitability of each seal for a specific application. For further information on fluid compatibility, contact Eaton Aeroquip.

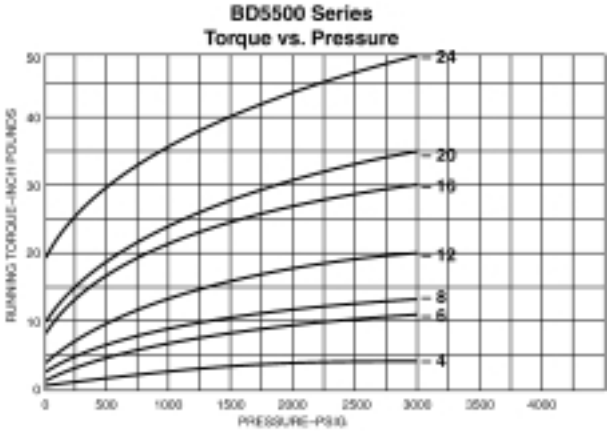
	Seals				
Fluids	**–75 (Hytrel†) –20°F to +250°F**	**–74 (Urethane) –40°F to +180°F**	**–06 (Viton†) –20°F to +300°F**	**–04 (EPR) – Note: 1 –60°F to +300°F**	**–01 (Buna-N) –40°F to +250°F**
Acetone	•			•	
Acetylene	•	•		•	•
Air	•	•			•
Alcohol – Ethyl, Methyl	•				•
Alcohol – Amyl, Isobutyl, Isopropyl	•			•	
Benzene	•		•		
Carbon Tetrachloride			•		
Cellulube - A60, 220, 300, 500				•	
Ethylene Glycol	•	•		•	
Gasoline – Refined	•	•	•		
Glycerin	•				•
Hydr. Oil – Petr. Base (Incl. 5606)	•	•			•
JP-4, JP-5, Kerosene	•	•	•		
Lindol, Hydr. Fluid				•	
Lube Oils – Petr. Base	•	•			•
Lube Oils – Diester Base			•		
Methyl Ethyl Ketone	•			•	
Naphtha	•	•	•		
Oronite – 8200, 8515		•	•		
Orthene	•		•		
Oxygen – Note: 2		•	•		
Pydraul – Series E				•	
Pydraul – Series C	•		•		
Silicone Oils, Skydrol 500A	•			•	
Trichloroethylene			•		
Water – Fresh – Note: 3	•	•		•	•
Xylene	•		•		

NOTES: (1) EPR Compounds must not contact Petroleum Base Lubricants. Use Silicone Grease.
(2) The Aeroquip swivel joints are not recommended for oxygen use in breathing applications.
(3) Hytrel seals rated for 180°F maximum in water and water base fluids.

†Hytrel and Viton are DuPont trademarks.



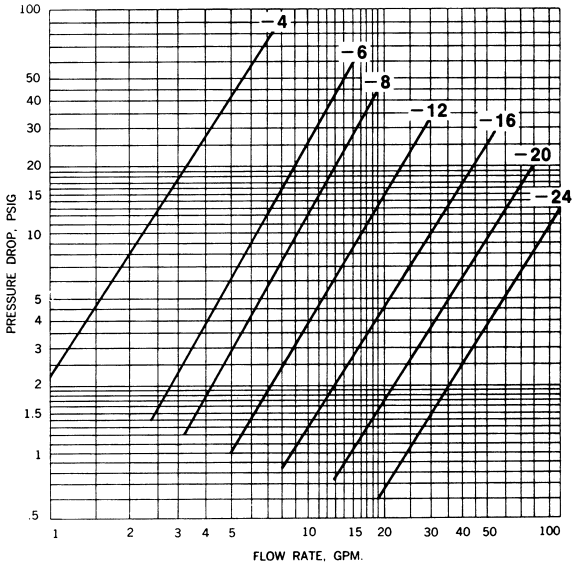
The Aeroquip BD5500 series industrial swivel joint's pressure balanced design distributes pressure evenly through the body of the joint which eliminates axial loading of the sleeve. This pressure balanced design allows the BD5500 series swivel joint to turn with very low torque even under pressures up to 3000 psi.



Torque vs Pressure

This chart shows the low torque required to rotate the BD5500 series swivel joint while under pressure. This data is based on actual testing of production assemblies.

Pressure Drop vs Flow



These test results for pressure drop at various flow rates were made with MIL-H-5606A oil at temperatures (+70°F to +80°F) on production assemblies.

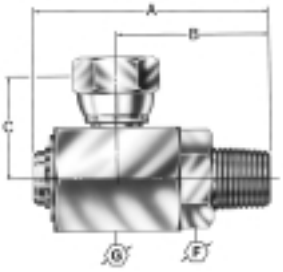
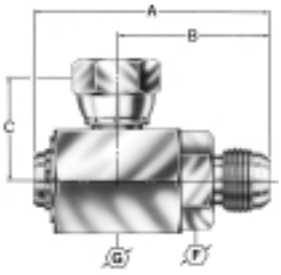
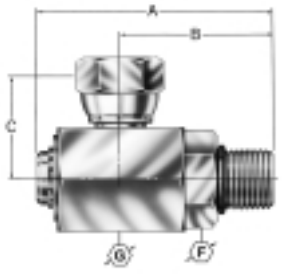
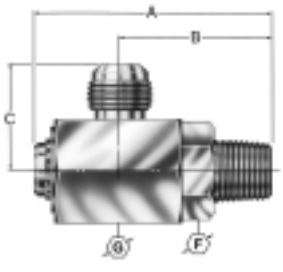
Seal Options:

Suffix Number	Material	Standard	Optional
–01	Buna-N	X	
–04	EPR		X
–06	Viton*		X

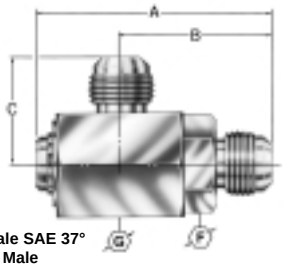
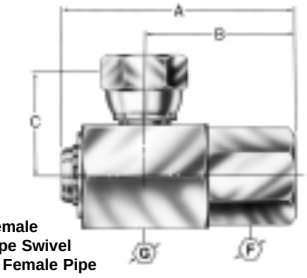
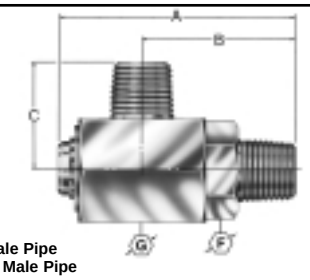
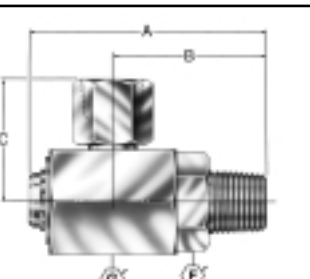
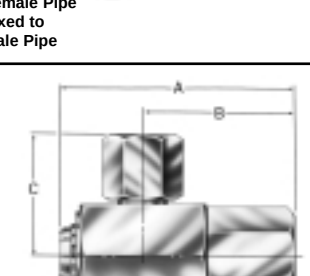
**Viton is a DuPont trademark.*

Pressure Rating for BD5500:

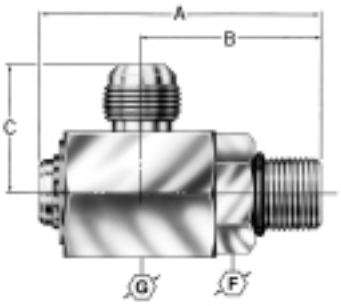
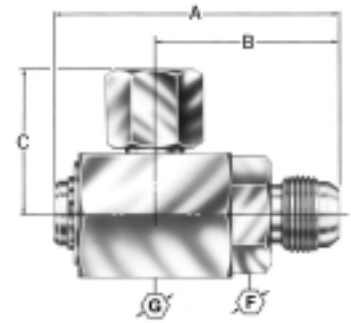
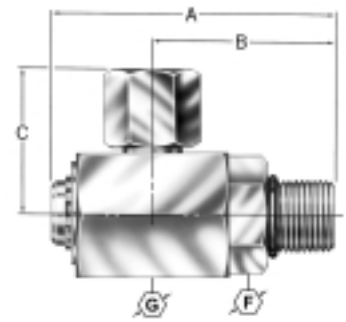
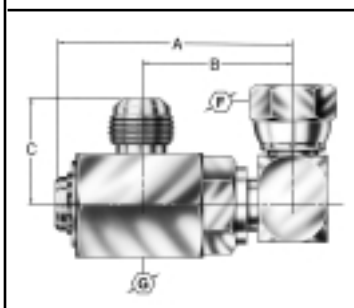
Size	Operating Pressure
All Sizes	25 in./Hg vacuum to 3000 psi

	Part Number	Nom. Size	Casing Thread	Sleeve Thread	A	B	C	F	G
 Female Pipe Swivel to Male Pipe	BD55000–0404–01	1/4"	1/4-18NPSM	1/4-18NPTF	2.21	1.47	.91	.62	1.00
	BD55000–0606–01	3/8"	3/8-18NPSM	3/8-NPTF	2.74	1.80	1.12	.94	1.25
	BD55000–0808–01	1/2"	1/2-14NPSM	1/2-14NPTF	3.09	2.06	1.16	1.00	1.38
	BD55000–1212–01	3/4"	3/4-14NPSM	3/4-14NPTF	3.48	2.36	1.46	1.25	1.75
	BD55000–1616–01	1"	1-11 1/2NPSM	1-11 1/2NPTF	3.94	2.64	1.70	1.50	2.12
	BD55000–2020–01	1 1/4"	1 1/4-11 1/2NPSM	1 1/4-11 1/2NPTF	4.88	3.16	2.00	1.75	2.50
	BD55000–2424–01	1 1/2"	1 1/2-11 1/2NPSM	1 1/2-11 1/2NPTF	5.30	3.50	2.25	2.12	3.00
 Female Pipe Swivel to Male SAE 37°	BD55001–0404–01	1/4"	1/4-18NPSM	7/16-20UNF-2A	2.37	1.60	.91	.62	1.00
	BD55001–0405–01	1/4"	1/4-18NPSM	1/2-20UNF-2A	2.21	1.47	.91	.62	1.00
	BD55001–0606–01	3/8"	3/8-18NPSM	9/16-18UNF-2A	2.82	1.85	1.12	.94	1.25
	BD55001–0608–01	3/8"	3/8-18NPSM	3/4-16UNF-2A	2.83	1.89	1.12	.94	1.25
	BD55001–0808–01	1/2"	1/2-14NPSM	3/4-16UNF-2A	3.09	2.03	1.16	1.00	1.38
	BD55001–0810–01	1/2"	1/2-14NPSM	7/8-14UNF-2A	3.10	2.07	1.16	1.00	1.38
	BD55001–1212–01	3/4"	3/4-14NPSM	1 1/16-12UN-2A	3.48	2.36	1.46	1.25	1.75
	BD55001–1616–01	1"	1-11 1/2NPSM	1 5/16-12UN-2A	3.94	2.64	1.70	1.50	2.12
	BD55001–2020–01	1 1/4"	1 1/4-11 1/2NPSM	1 5/8-12UN-2A	4.88	3.16	2.00	1.75	2.50
	BD55001–2424–01	1 1/2"	1 1/2-11 1/2NPSM	1 7/8-12UN-2A	5.30	3.50	2.25	2.12	3.00
 Female Pipe Swivel to Male SAE O-Ring	BD55004–0404–01	1/4"	1/4-18NPSM	7/16-20UNF-2A	2.17	1.41	.91	.62	1.00
	BD55004–0405–01	1/4"	1/4-18NPSM	1/2-20UNF-2A	2.07	1.34	.91	.62	1.00
	BD55004–0606–01	3/8"	3/8-18NPSM	9/16-18UNF-2A	2.65	1.68	1.12	.94	1.25
	BD55004–0608–01	3/8"	3/8-18NPSM	3/4-16UNF-2A	2.70	1.76	1.12	.94	1.25
	BD55004–0808–01	1/2"	1/2-14NPSM	3/4-16UNF-2A	2.84	1.81	1.16	1.00	1.38
	BD55004–0810–01	1/2"	1/2-14NPSM	7/8-14UNF-2A	2.92	1.90	1.16	1.00	1.38
	BD55004–1212–01	3/4"	3/4-14NPSM	1 1/16-12UN-2A	3.29	2.18	1.46	1.25	1.75
	BD55004–1616–01	1"	1-11 1/2NPSM	1 5/16-12UN-2A	3.74	2.45	1.70	1.50	2.12
	BD55004–2020–01	1 1/4"	1 1/4-11 1/2NPSM	1 5/8-12UN-2A	4.60	2.89	2.00	1.88	2.50
	BD55004–2424–01	1 1/2"	1 1/2-11 1/2NPSM	1 7/8-12UN-2A	5.06	3.27	2.25	2.12	3.00
 Male SAE 37° to Male Pipe	BD55005–0404–01	1/4"	7/16-20UNF-2A	1/4-18NPTF	2.21	1.47	1.06	.62	1.00
	BD55005–0504–01	1/4"	1/2-20UNF-2A	1/4-18NPTF	2.21	1.47	1.06	.62	1.00
	BD55005–0606–01	3/8"	9/16-18UNF-2A	3/8-18NPTF	2.74	1.80	1.19	.94	1.25
	BD55005–0806–01	3/8"	3/4-16UNF-2A	3/8-18NPTF	2.74	1.80	1.28	.94	1.25
	BD55005–0808–01	1/2"	3/4-16UNF-2A	1/2-14NPTF	3.09	2.06	1.39	1.00	1.38
	BD55005–1008–01	1/2"	7/8-14UNF-2A	1/2-14NPTF	3.09	2.06	1.47	1.00	1.38
	BD55005–1212–01	3/4"	1 1/16-12UN-2A	3/4-14NPTF	3.48	2.36	1.74	1.25	1.75
	BD55005–1616–01	1"	1 5/16-12UN-2A	1-11 1/2NPTF	3.94	2.64	1.97	1.50	2.12
	BD55005–2020–01	1 1/4"	1 5/8-12UN-2A	1 1/4-11 1/2NPTF	4.88	3.16	2.20	1.75	2.50
	BD55005–2424–01	1 1/2"	1 7/8-12UN-2A	1 1/2-11 1/2NPTF	5.30	3.50	2.57	2.12	3.00

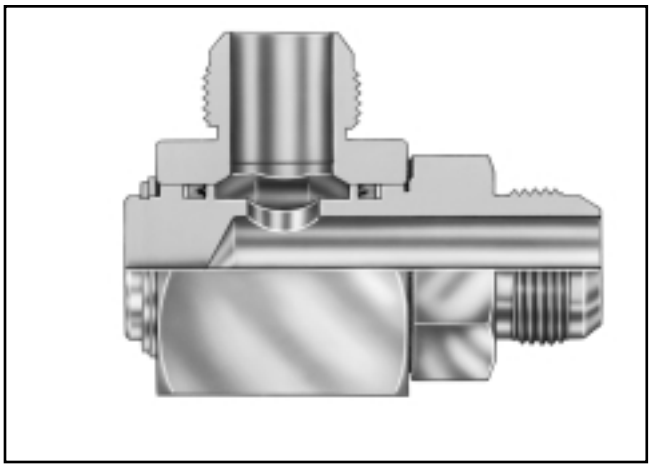
All dimensions in inches.

	Part Number	Nom. Size	Casing Thread	Sleeve Thread	A	B	C	F	G
 **Male SAE 37° to Male SAE 37°**	BD55009–0404–01	1/4"	7/16-20UNF-2A	7/16-20UNF-2A	2.37	1.60	1.06	.62	1.00
	BD55009–0505–01	1/4"	1/2-20UNF-2A	1/2-20UNF-2A	2.21	1.47	1.06	.62	1.00
	BD55009–0606–01	3/8"	9/16-18UNF-2A	9/16-18UNF-2A	2.82	1.85	1.19	.94	1.25
	BD55009–0808–01	3/8"	3/4-16UNF-2A	3/4-16UNF-2A	2.83	1.89	1.28	.94	1.25
	BD55009–1010–01	1/2"	7/8-14UNF-2A	7/8-14UNF-2A	3.10	2.07	1.47	1.00	1.38
	BD55009–1212–01	3/4"	1 1/16-12UN-2A	1 1/16-12UN-2A	3.48	2.36	1.74	1.25	1.75
	BD55009–1616–01	1"	1 5/16 12UN-2A	1 5/16-12UN-2A	3.94	2.64	1.97	1.50	2.12
	BD55009–2020–01	1 1/4"	1 5/8 12UN-2A	1 5/8-12UN-2A	4.88	3.16	2.20	1.75	2.50
	BD55009–2424–01	1 1/2"	1 7/8-12UN-2A	1 7/8-12UN-2A	5.30	3.50	2.57	2.12	3.00
 **Female Pipe Swivel to Female Pipe**	BD55011–0404–01	1/4"	1/4-18NPSM	1/4-18NPTF	2.14	1.40	.91	.75	1.00
	BD55011–0606–01	3/8"	3/8-18NPSM	3/8-18NPTF	2.54	1.60	1.12	.94	1.25
	BD55011–0808–01	1/2"	1/2-14NPSM	1/2-14NPTF	2.97	1.94	1.16	1.06	1.38
	BD55011–1212–01	3/4"	3/4-14NPSM	3/4-14NPTF	3.12	2.00	1.46	1.31	1.75
	BD55011–1616–01	1"	1-11 1/2NPSM	1-11 1/2NPTF	3.68	2.38	1.70	1.62	2.12
	BD55011–2020–01	1 1/4"	1 1/4-11 1/2NPSM	1 1/4-11 1/2NPTF	4.50	2.78	2.00	2.00	2.50
	BD55011–2424–01	1 1/2"	1 1/2-11 1/2NPSM	1 1/2-11 1/2NPTF	4.62	2.82	2.25	2.38	3.00
 **Male Pipe to Male Pipe**	BD55012–0404–01	1/4"	1/4-18NPTF	1/4-18NPTF	2.21	1.47	1.06	.62	1.00
	BD55012–0606–01	3/8"	3/8-18NPTF	3/8-18NPTF	2.74	1.80	1.28	.94	1.25
	BD55012–0808–01	1/2"	1/2-14NPTF	1/2-14NPTF	3.09	2.06	1.42	1.00	1.38
	BD55012–1212–01	3/4"	3/4-14NPTF	3/4-14NPTF	3.48	2.36	1.71	1.25	1.75
	BD55012–1616–01	1"	1-11 1/2NPTF	1-11 1/2NPTF	3.94	2.64	1.98	1.50	2.12
	BD55012–2020–01	1 1/4"	1 1/4-11 1/2NPTF	1 1/4-11 1/2NPTF	4.88	3.16	2.27	1.75	2.50
	BD55012–2424–01	1 1/2"	1 1/2-11 1/2NPTF	1 1/2-11 1/2NPTF	5.30	3.50	2.54	2.12	3.00
 **Female Pipe Fixed to Male Pipe**	BD55014–0404–01	1/4"	1/4-18NPTF	1/4-18NPTF	2.21	1.47	1.44	.62	1.00
	BD55014–0606–01	3/8"	3/8-18NPTF	3/8-18NPTF	2.74	1.80	1.49	.94	1.25
	BD55014–0808–01	1/2"	1/2-14NPTF	1/2-14NPTF	3.09	2.06	1.80	1.00	1.38
	BD55014–1212–01	3/4"	3/4-14NPTF	3/4-14NPTF	3.48	2.36	2.02	1.25	1.75
	BD55014–1616–01	1"	1-11 1/2NPTF	1-11 1/2NPTF	3.94	2.64	2.44	1.50	2.12
	BD55014–2020–01	1 1/4"	1 1/4-11 1/2NPTF	1 1/4-11 1/2NPTF	4.88	3.16	2.77	1.75	2.50
	BD55014–2424–01	1 1/2"	1 1/2-11 1/2NPTF	1 1/2-11 1/2NPTF	5.30	3.50	3.02	2.12	3.00
 **Female Pipe Fixed to Female Pipe**	BD55015–0404–01	1/4"	1/4-18NPTF	1/4-18NPTF	2.14	1.40	1.44	.75	1.00
	BD55015–0606–01	3/8"	3/8-18NPTF	3/8-18NPTF	2.54	1.60	1.49	.94	1.25
	BD55015–0808–01	1/2"	1/2-14NPTF	1/2-14NPTF	2.97	1.94	1.80	1.06	1.38
	BD55015–1212–01	3/4"	3/4-14NPTF	3/4-14NPTF	3.12	2.00	2.02	1.31	1.75
	BD55015–1616–01	1"	1-11 1/2NPTF	1-11 1/2NPTF	3.68	2.38	2.44	1.62	2.12
	BD55015–2020–01	1 1/4"	1 1/4-11 1/2NPTF	1 1/4-11 1/2NPTF	4.50	2.78	2.77	2.00	2.50
	BD55015–2424–01	1 1/2"	1 1/2-11 1/2NPTF	1 1/2-11 1/2NPTF	4.62	2.82	3.02	2.38	3.00

All dimensions in inches.

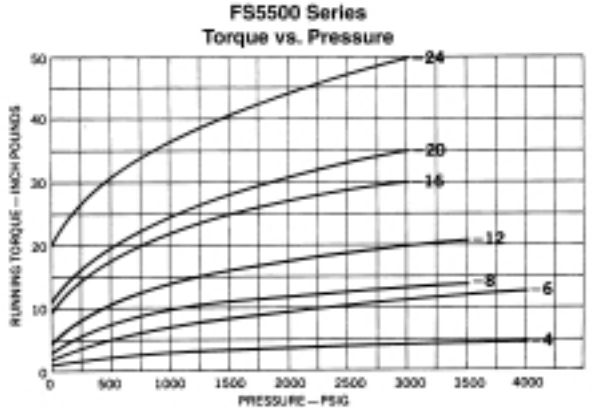
	Part Number	Nom. Size	Casing Thread	Sleeve Thread	A	B	C	F	G
 Male SAE 37° to Male SAE O-Ring	BD55021–0404–01	1/4"	7/16-20UNF-2A	7/16-20UNF-2A	2.17	1.41	1.06	.62	1.00
	BD55021–0505–01	1/4"	1/2-20UNF-2A	1/2-20UNF-2A	2.07	1.34	1.06	.62	1.00
	BD55021–0606–01	3/8"	9/16-18UNF-2A	9/16-18UNF-2A	2.65	1.68	1.19	.94	1.25
	BD55021–0808–01	3/8"	3/4-16UNF-2A	3/4-16UNF-2A	2.70	1.76	1.28	.94	1.25
	BD55021–1010–01	1/2"	7/8-14UNF-2A	7/8-14UNF-2A	2.92	1.90	1.47	1.00	1.38
	BD55021–1212–01	3/4"	1 1/16-12UN-2A	1 1/16-12UNF-2A	3.29	2.18	1.74	1.25	1.75
	BD55021–1616–01	1"	1 5/16-12UN-2A	1 5/16-12UN-2A	3.74	2.45	1.97	1.50	2.12
	BD55021–2020–01	1 1/4"	1 5/8-12UN-2A	1 5/8-12UN-2A	4.60	2.89	2.20	1.88	2.50
	BD55021–2424–01	1 1/2"	1 7/8-12UN-2A	1 7/8-12UN-2A	5.06	3.27	2.57	2.12	3.00
 Female Pipe Fixed to Male SAE 37°	BD55029–0404–01	1/4"	1/4-18NPTF	7/16-20UNF-2A	2.37	1.60	1.44	.62	1.00
	BD55029–0405–01	1/4"	1/4-18NPTF	1/2-20UNF-2A	2.21	1.47	1.44	.62	1.00
	BD55029–0606–01	3/8"	3/8-18NPTF	9/16-18UNF-2A	2.82	1.85	1.49	.94	1.25
	BD55029–0608–01	3/8"	3/8-18NPTF	3/4-16UNF-2A	2.83	1.89	1.49	.94	1.25
	BD55029–0808–01	1/2"	1/2-14NPTF	3/4-16UNF-2A	3.09	2.03	1.80	1.00	1.38
	BD55029–0810–01	1/2"	1/2-14NPTF	7/8-14UNF-2A	3.10	2.07	1.80	1.00	1.38
	BD55029–1212–01	3/4"	3/4-14NPTF	1 1/16-12UN-2A	3.48	2.36	2.02	1.25	1.75
	BD55029–1616–01	1"	1-11 1/2NPTF	1 5/16-12UN-2A	3.94	2.64	2.44	1.50	2.12
	BD55029–2020–01	1 1/4"	1 1/4-11 1/2NPTF	1 5/8-12UN-2A	4.88	3.16	2.77	1.75	2.50
	BD55029–2424–01	1 1/2"	1 1/2-11 1/2NPTF	1 7/8-12UN-2A	5.30	3.50	3.02	2.12	3.00
 Female Pipe Fixed to Male SAE O-Ring	BD55031–0404–01	1/4"	1/4-18NPTF	7/16-20UNF-2A	2.17	1.41	1.44	.62	1.00
	BD55031–0405–01	1/4"	1/4-18NPTF	1/2-20UNF-2A	2.07	1.34	1.44	.62	1.00
	BD55031–0606–01	3/8"	3/8-18NPTF	9/16-18UNF-2A	2.65	1.68	1.49	.94	1.25
	BD55031–0608–01	3/8"	3/8-18NPTF	3/4-16UNF-2A	2.70	1.76	1.49	.94	1.25
	BD55031–0808–01	1/2"	1/2-14NPTF	3/4-16UNF-2A	2.84	1.81	1.80	1.00	1.38
	BD55031–0810–01	1/2"	1/2-14NPTF	7/8-14UNF-2A	2.92	1.90	1.80	1.00	1.38
	BD55031–1212–01	3/4"	3/4-14NPTF	1 1/16-12UN-2A	3.29	2.18	2.02	1.25	1.75
	BD55031–1616–01	1"	1-11 1/2NPTF	1 5/16-12UN-2A	3.74	2.45	2.44	1.50	2.12
	BD55031–2020–01	1 1/4"	1 1/4-11 1/2NPTF	1 5/8-12UN-2A	4.60	2.89	2.77	1.88	2.50
	BD55031–2424–01	1 1/2"	1 1/2-11 1/2NPTF	1 7/8-12UN-2A	5.06	3.27	3.02	2.12	3.00
 Male SAE 37° to Female SAE 37° Swivel	BD55058–1616–01	1"	1 5/16-12UN-2A	1 5/1612UN-2B	3.56	2.26	1.97	1.50	2.12

All dimensions in inches.



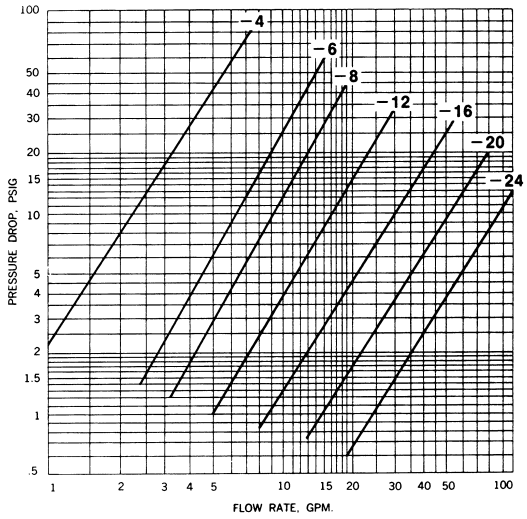
The Aeroquip FS5500 series swivel joint is a heavy duty version of the BD5500 series. The FS5500 series has a special hardened casing and heavy duty U-Cup seals which permit a pressure range from vacuum up to 4,000 psi. The balanced pressure design allows the FS5500 series swivel joint to rotate with low torque even when exposed to maximum pressures and side loads.

Torque vs Pressure



This chart shows the low torque required to rotate the FS5500 series swivel joint while under pressure. This data is based on actual testing of production assemblies.

Pressure Drop vs Flow



These test results for pressure drop at various flow rates were made with MIL-H-5606A oil at temperatures (+70°F to +80°F) on production assemblies.

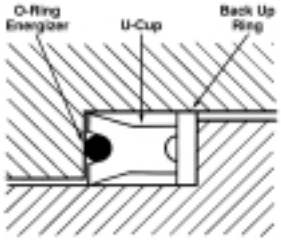
Seal Options:

Style	Suffix No.	Material	Standard	Optional
U-Cup	–75	Hytrel/ Buna-N	X(–08 & up)	
U-Cup	–74	Urethane		X
T-Ring†	–01	Buna-N	X(–04 & –06)	X(–08 & up)
T-Ring†	–04	EPR		X
T-Ring	–06	Viton*		X

†Reduced service life in sizes –12 and larger when used above 3,000 psi operating pressure.
**Viton is a DuPont trademark.*

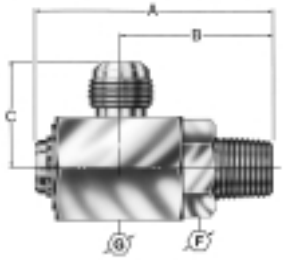
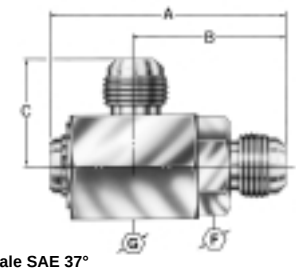
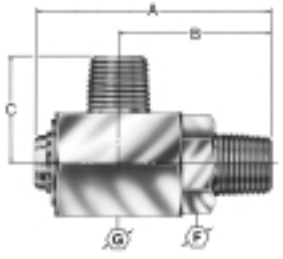
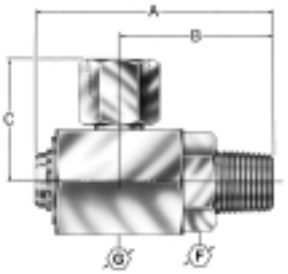
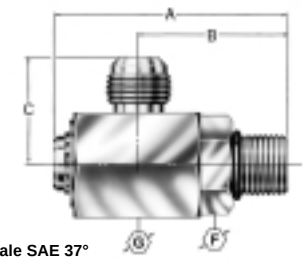
Pressure Rating for FS5500:

Size	Operating Pressure
–04 & –06	25 in./Hg vacuum to 4,000 psi
–08 & –12	25 in./Hg vacuum to 3,500 psi
–16, –20 & –24	25 in./Hg vacuum to 3,000 psi

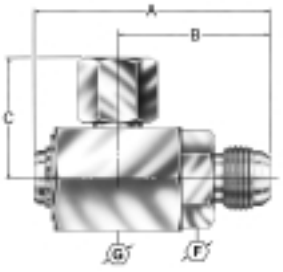
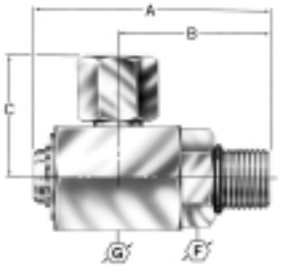
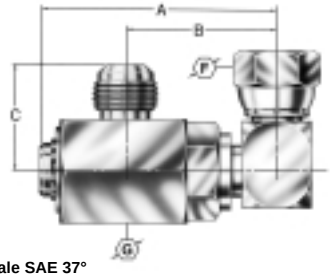
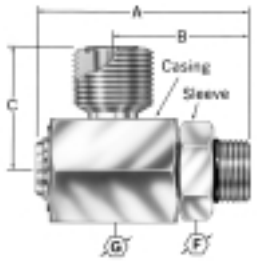


U-Cup Seal

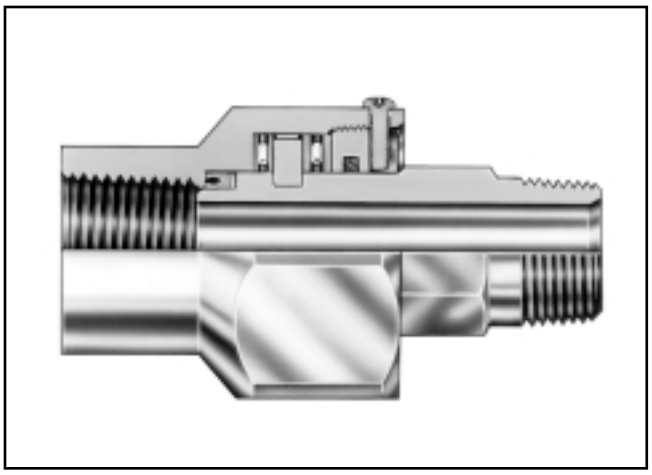
T-Ring Seal

	Part Number	Nom. Size	Casing Thread	Sleeve Thread	A	B	C	F	G
 Male SAE 37° to Male Pipe	FS55005–0404–01	1/4"	7/16-20UNF-2A	1/4-18NPTF	2.21	1.47	1.06	.62	1.00
	FS55005–0504–01	1/4"	1/2-20UNF-2A	1/4-18NPTF	2.21	1.47	1.06	.62	1.00
	FS55005–0606–01	3/8"	9/16-18UNF-2A	3/8-18NPTF	2.74	1.80	1.19	.94	1.25
	FS55005–0806–01	3/8"	3/4-16UNF-2A	3/8-18NPTF	2.74	1.80	1.28	.94	1.25
	FS55005–0808–75	1/2"	3/4-16UNF-2A	1/2-14NPTF	3.09	2.06	1.39	1.00	1.38
	FS55005–1212–75	3/4"	1 1/16-12UN-2A	3/4-14NPTF	3.48	2.36	1.74	1.25	1.75
	FS55005–1616–75	1"	1 5/16-12UN-2A	1-11 1/2NPTF	3.94	2.64	1.97	1.50	2.12
	FS55005–2020–75	1 1/4"	1 5/8-12UN-2A	1 1/4-11 1/2NPTF	4.88	3.16	2.20	1.75	2.50
	FS55005–2424–75	1 1/2"	1 7/8-12UN-2A	1 1/2-11 1/2NPTF	5.30	3.50	2.57	2.12	3.00
 Male SAE 37° to Male SAE 37°	FS55009–0404–01	1/4"	7/16-20UNF-2A	7/16-20UNF-2A	2.37	1.60	1.06	.62	1.00
	FS55009–0505–01	1/4"	1/2-20UNF-2A	1/2-20UNF-2A	2.21	1.47	1.06	.62	1.00
	FS55009–0606–01	3/8"	9/16-18UNF-2A	9/16-18UNF-2A	2.82	1.85	1.19	.94	1.25
	FS55009–0808–01	3/8"	3/4-16UNF-2A	3/4-16UNF-2A	2.83	1.89	1.28	.94	1.25
	FS55009–1010–75	1/2"	7/8-14UNF-2A	7/8-14UNF-2A	3.10	2.07	1.47	1.00	1.38
	FS55009–1212–75	3/4"	1 1/16-12UN-2A	1 1/16-12UN-2A	3.48	2.36	1.74	1.25	1.75
	FS55009–1616–75	1"	1 5/16 12UN-2A	1 5/16-12UN-2A	3.94	2.64	1.97	1.50	2.12
	FS55009–2020–75	1 1/4"	1 5/8 12UN-2A	1 5/8-12UN-2A	4.88	3.16	2.20	1.75	2.50
	FS55009–2424–75	1 1/2"	1 7/8-12UN-2A	1 7/8-12UN-2A	5.30	3.50	2.57	2.12	3.00
 Male Pipe to Male Pipe	FS55012–0404–01	1/4"	1/4-18NPTF	1/4-18NPTF	2.21	1.47	1.06	.62	1.00
	FS55012–0606–01	3/8"	3/8-18NPTF	3/8-18NPTF	2.74	1.80	1.28	.94	1.25
	FS55012–0808–75	1/2"	1/2-14NPTF	1/2-14NPTF	3.09	2.06	1.42	1.00	1.38
	FS55012–1212–75	3/4"	3/4-14NPTF	3/4-14NPTF	3.48	2.36	1.71	1.25	1.75
	FS55012–1616–75	1"	1-11 1/2NPTF	1-11 1/2NPTF	3.94	2.64	1.98	1.50	2.12
	FS55012–2020–75	1 1/4"	1 1/4-11 1/2NPTF	1 1/4-11 1/2NPTF	4.88	3.16	2.27	1.75	2.50
	FS55012–2424–75	1 1/2"	1 1/2-11 1/2NPTF	1 1/2-11 1/2NPTF	5.30	3.50	2.54	2.12	3.00
 Female Pipe Fixed to Male Pipe	FS55014–0404–01	1/4"	1/4-18NPTF	1/4-18NPTF	2.21	1.47	1.44	.62	1.00
	FS55014–0606–01	3/8"	3/8-18NPTF	3/8-18NPTF	2.74	1.80	1.49	.94	1.25
	FS55014–0808–75	1/2"	1/2-14NPTF	1/2-14NPTF	3.09	2.06	1.80	1.00	1.38
	FS55014–1212–75	3/4"	3/4-14NPTF	3/4-14NPTF	3.48	2.36	2.02	1.25	1.75
	FS55014–1616–75	1"	1-11 1/2NPTF	1-11 1/2NPTF	3.94	2.64	2.44	1.50	2.12
	FS55014–2020–75	1 1/4"	1 1/4-11 1/2NPTF	1 1/4-11 1/2NPTF	4.88	3.16	2.77	1.75	2.50
	FS55014–2424–75	1 1/2"	1 1/2-11 1/2NPTF	1 1/2-11 1/2NPTF	5.30	3.50	3.02	2.12	3.00
 Male SAE 37° to Male SAE O-Ring	FS55021–0404–01	1/4"	7/16-20UNF-2A	7/16-20UNF-2A	2.17	1.41	1.06	.62	1.00
	FS55021–0505–01	1/4"	1/2-20UNF-2A	1/2-20UNF-2A	2.07	1.34	1.06	.62	1.00
	FS55021–0606–01	3/8"	9/16-18UNF-2A	9/16-18UNF-2A	2.65	1.68	1.19	.94	1.25
	FS55021–0808–01	3/8"	3/4-16UNF-2A	3/4-16UNF-2A	2.70	1.76	1.28	.94	1.25
	FS55021–1010–75	1/2"	7/8-14UNF-2A	7/8-14UNF-2A	2.92	1.90	1.47	1.00	1.38
	FS55021–1212–75	3/4"	1 1/16-12UN-2A	1 1/16-12UN-2A	3.29	2.18	1.74	1.25	1.75
	FS55021–1616–75	1"	1 5/16-12UN-2A	1 5/16-12UN-2A	3.74	2.45	1.97	1.50	2.12
	FS55021–2020–75	1 1/4"	1 5/8-12UN-2A	1 5/8-12UN-2A	4.60	2.89	2.20	1.88	2.50
	FS55021–2424–75	1 1/2"	1 7/8-12UN-2A	1 7/8-12UN-2A	5.06	3.27	2.57	2.12	3.00

All dimensions in inches.

	Part Number	Nom. Size	Casing Thread	Sleeve Thread	A	B	C	(F)	(G)
 Female Pipe Fixed to Male SAE 37°	FS55029–0404–01	1/4"	1/4-18NPTF	7/16-20UNF-2A	2.37	1.60	1.44	.62	1.00
	FS55029–0405–01	1/4"	1/4-18NPTF	1/2-20UNF-2A	2.21	1.47	1.44	.62	1.00
	FS55029–0606–01	3/8"	3/8-18NPTF	9/16-18UNF-2A	2.82	1.85	1.49	.94	1.25
	FS55029–0608–01	3/8"	3/8-18NPTF	3/4-16UNF-2A	2.83	1.89	1.49	.94	1.25
	FS55029–0808–75	1/2"	1/2-14NPTF	3/4-16UNF-2A	3.09	2.03	1.80	1.00	1.38
	FS55029–0810–75	1/2"	1/2-14NPTF	7/8-14UNF-2A	3.10	2.07	1.80	1.00	1.38
	FS55029–1212–75	3/4"	3/4-14NPTF	1 1/16-12UN-2A	3.48	2.36	2.02	1.25	1.75
	FS55029–1616–75	1"	1-11 1/2NPTF	1 5/16-12UN-2A	3.94	2.64	2.44	1.50	2.12
	FS55029–2020–75	1 1/4"	1 1/4-11 1/2NPTF	1 5/8-12UN-2A	4.88	3.16	2.77	1.75	2.50
	FS55029–2424–75	1 1/2"	1 1/2-11 1/2NPTF	1 7/8-12UN-2A	5.30	3.50	3.02	2.12	3.00
 Female Pipe Fixed to Male SAE O-Ring	FS55031–0404–01	1/4"	1/4-18NPTF	7/16-20UNF-2A	2.17	1.41	1.44	.62	1.00
	FS55031–0405–01	1/4"	1/4-18NPTF	1/2-20UNF-2A	2.07	1.34	1.44	.62	1.00
	FS55031–0606–01	3/8"	3/8-18NPTF	9/16-18UNF-2A	2.65	1.68	1.49	.94	1.25
	FS55031–0608–01	3/8"	3/8-18NPTF	3/4-16UNF-2A	2.70	1.76	1.49	.94	1.25
	FS55031–0808–75	1/2"	1/2-14NPTF	3/4-16UNF-2A	2.84	1.81	1.80	1.00	1.38
	FS55031–0810–75	1/2"	1/2-14NPTF	7/8-14UNF-2A	2.92	1.90	1.80	1.00	1.38
	FS55031–1212–75	3/4"	3/4-14NPTF	1 1/16-12UN-2A	3.29	2.18	2.02	1.25	1.75
	FS55031–1616–75	1"	1-11 1/2NPTF	1 5/16-12UN-2A	3.74	2.45	2.44	1.50	2.12
	FS55031–2020–75	1 1/4"	1 1/4-11 1/2NPTF	1 5/8-12UN-2A	4.60	2.89	2.77	1.88	2.50
	FS55031–2424–75	1 1/2"	1 1/2-11 1/2NPTF	1 7/8-12UN-2A	5.06	3.27	3.02	2.12	3.00
 Male SAE 37° to Female SAE 37° Swivel	FS55058–1616–75	1"	1 5/16-12UN-2A	1 5/16-12UN-2B	3.56	2.26	1.97	1.50	2.12
 ORS® Male to Male SAE O-Ring	FS55059–1212–75	3/4"	1 3/16-12UN-2A	1 1/16-12UN-2A	3.29	2.18	1.54	1.25	1.75

All dimensions in inches.

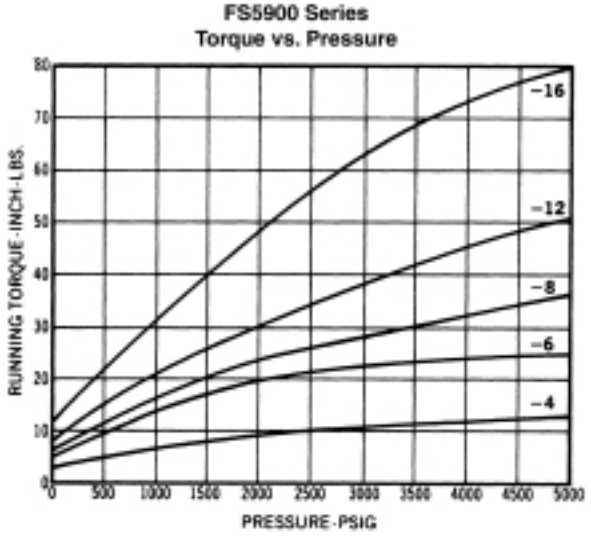


The Aeroquip FS5900 series swivel joint is designed for 25 in./Hg vacuum to 5000 psi operating pressure service made possible by advanced design needle bearings and seals. In addition to high pressures the FS5900 series provides full fluid flow with minimal pressure drop.

The excellent corrosion resistance of the FS5900 series is made possible by the plated steel components.

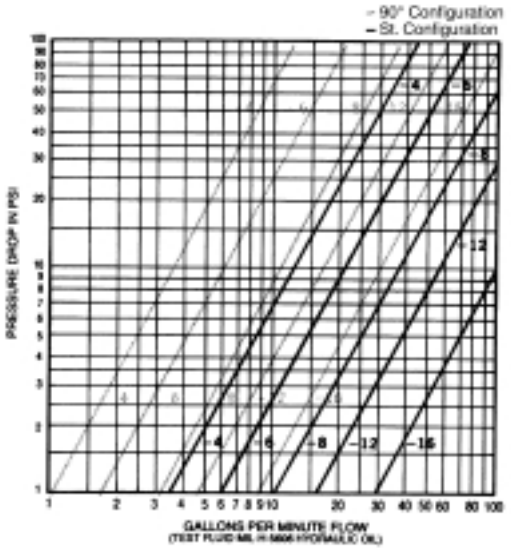
Both field and laboratory testing have proven the FS5900 series swivel joints can withstand greater side loads than conventional swivel joints. High pressure impulse life has also been improved.

Torque vs Pressure



Testing to determine the torque required to rotate an FS5900 series swivel joint was conducted on actual production assemblies.

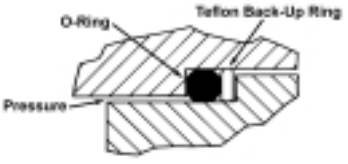
Pressure Drop vs Flow



Testing for pressure drop at various flow rates was conducted with MIL-H-5606 hydraulic oil at temperatures (+70°F to +80°F).

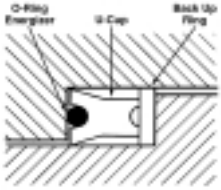
Seal Options:

O-Ring Seals (1/4 inch size only)



Suffix Number	Material	Temperature Range	Standard	Optional
–01	Buna-N	–40°F to 250°F	X	
–04	EPR	–60°F to 300°F		X
–06	Viton*	–20°F to 300°F		X

U-Cup Seals (3/8" through 1" sizes)



Suffix Number	Material	Temperature Range	Standard	Optional
–75	Hytrel/Buna	–20°F to 250°F	X	
–74	Urethane/Buna	–40°F to 180°F		X

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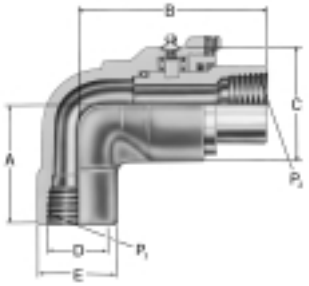
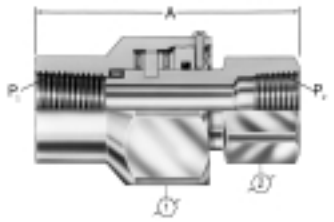


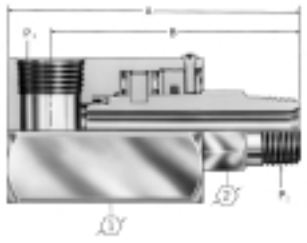
Female Pipe to Female Pipe
**1000 psi operating pressure*

Part Number	Nom. Size	Thread P_1	Thread P_2	A	B	C	D	E
FS59000–1616–01*	1”	1-11 1/2 NPTF	1-11 1/2 NPTF	2.50	3.87	2.41	1.62	1.91



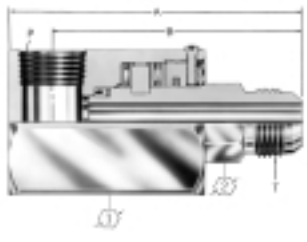
(Straight)
Female Pipe to Female Pipe

		P_1	P_2				1	2
FS59001–1616–75	1”	1-11 1/2 NPTF	1-11 1/2 NPTF	4.31			2.50	1.62



Female Pipe to Male Pipe

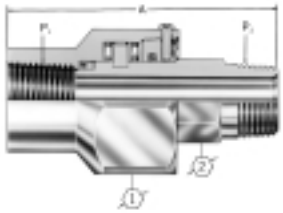
Part Number	Nom. Size	Thread P_1	Thread P_2	A	B	1	2
FS59002-0404-01	1/4”	1/4-18 NPTF	1/4-18 NPTF	3.20	2.82	1.19	.56
FS59002-0606-75	3/8”	3/8-18 NPTF	3/8-18 NPTF	3.67	3.21	1.88	.94
FS59002-0808-75	1/2”	1/2-14 NPTF	1/2-14 NPTF	4.01	3.45	1.88	.94
FS59002-1212-75	3/4”	3/4-14 NPTF	3/4-14 NPTF	4.32	3.64	2.12	1.19
FS59002-1616-75	1”	1-11 1/2 NPTF	1-11 1/2 NPTF	4.88	4.08	2.50	1.44



Female Pipe to Male SAE 37°

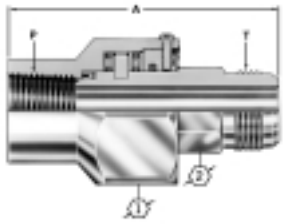
	Nom. Size	P	T				
FS59003-0405-01	1/4”	1/4-18 NPTF	1/2-20 UNF-2A	3.19	2.81	1.19	.56
FS59003-0608-75	3/8”	3/8-18 NPTF	3/4-16 UNF-2A	3.77	3.31	1.88	.94
FS59003-0810-75	1/2”	1/2-14 NPTF	7/8-14 UNF-2A	4.00	3.44	1.88	.94
FS59003-1212-75	3/4”	3/4-14 NPTF	1 1/16-12 UN-2A	4.43	3.75	2.12	1.19
FS59003-1616-75	1”	1-11 1/2 NPTF	1 5/16-12 UN-2A	4.85	4.05	2.50	1.44

All dimensions in inches.



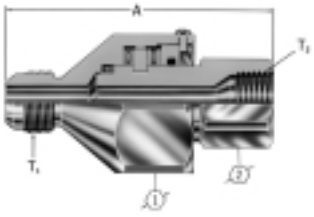
Female Pipe to Male Pipe

Part Number	Nom. Size	Thread P_1	Thread P_2	A	B	⬡1	⬡2
FS59004-0404-01	1/4"	1/4-18 NPTF	1/4-18 NPTF	3.23		1.19	.56
FS59004-0606-75	3/8"	3/8-18 NPTF	3/8-18 NPTF	3.62		1.88	.94
FS59004-0808-75	1/2"	1/2-14 NPTF	1/2-14 NPTF	3.97		1.88	.94
FS59004-1212-75	3/4"	3/4-14 NPTF	3/4-14 NPTF	4.04		2.12	1.19
FS59004-1616-75	1"	1-11 1/2 NPTF	1-11 1/2 NPTF	4.57		2.50	1.44



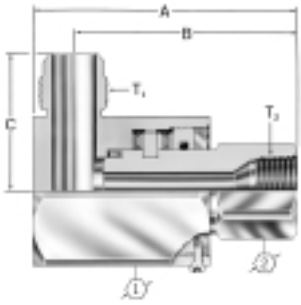
Female Pipe to Male SAE 37°

		P	T				
FS59005-0405-01	1/4"	1/4-18 NPTF	1/2-20 UNF-2A	3.22		1.19	.56
FS59005-0608-75	3/8"	3/8-18 NPTF	3/4-16 UNF-2A	3.72		1.88	.94
FS59005-0810-75	1/2"	1/2-14 NPTF	7/8-14 UNF-2A	3.96		1.88	.94
FS59005-1212-75	3/4"	3/4-14 NPTF	1 1/16-12 UN-2A	4.15		2.12	1.19
FS59005-1616-75	1"	1-11 1/2 NPTF	1 5/16-12 UN-2A	4.54		2.50	1.44



Male SAE 37°to Female SAE 37°

Part Number	Nom. Size	Thread T_1	Thread T_2	A	B	C	⬡1	⬡2
FS59006–0505–01	1/4"	1/2-20 UNF-2A	1/2-20 UNF-2B	2.98			1.19	.62
FS59006–0808–75	3/8"	3/4-16 UNF-2A	3/4-16 UNF-2B	3.48			1.88	.94
FS59006–1010–75	1/2"	7/8-14 UNF-2A	7/8-14 UNF-2B	3.74			1.88	1.00
FS59006–1212–75	3/4"	1 1/16-12 UN-2A	1 1/16-12 UN-2B	3.88			2.12	1.25
FS59006–1616–75	1"	1 5/16-12 UN-2A	1 5/16-12 UN-2B	4.03			2.50	1.50

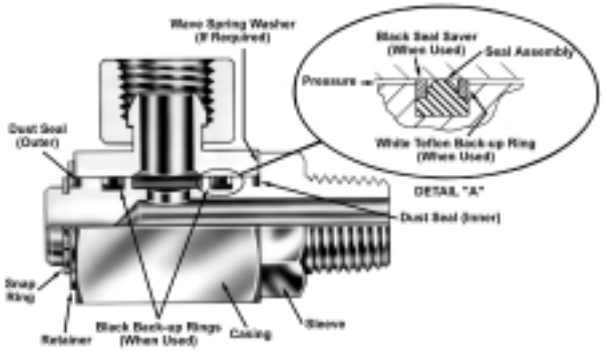


Male SAE 37°to Female SAE 37°

		T_1	T_2					
FS59011–0505–01	1/4"	1/2-20 UNF-2A	1/2-20 UNF-2B	2.69	2.41	1.16	1.19	.62
FS59011–0808–75	3/8"	3/4-16 UNF-2A	3/4-16 UNF-2B	3.08	2.73	1.59	1.88	.94
FS59011–1010–75	1/2"	7/8-14 UNF-2A	7/8-14 UNF-2B	3.46	3.06	1.70	1.88	1.00
FS59011–1212–75	3/4"	1 1/16-12 UN-2A	1 1/16-12 UN-2B	3.58	3.08	1.93	2.12	1.25
FS59011–1616–75	1"	1 5/16-12 UN-2A	1 5/16-12 UN-2B	3.91	3.29	2.16	2.50	1.50

All dimensions in inches.

BD5500 and FS5500 Swivel Joint Repair Kits



Replacement seal kit consists of (2) TRI-RING SEAL™ assemblies, (2) dust seals, (1) washer and (1) snap ring.

Seal Type	Seal Kit Part Numbers						
Nominal Size	**1/4"**	**3/8"**	**1/2"**	**3/4"**	**1"**	**1 1/4"**	**1 1/2"**
Buna-N (Code –01)	10–62017–01	10–62018–01	10–62019–01	10–62020–01	10–62021–01	10–62022–01	10–62023–01
EPR (Code –04)	10–62017–04	10–62018–04	10–62019–04	10–62020–04	10–62021–04	10–62022–04	10–62023–04
Viton* (Code –06)	10–62017–06	10–62018–06	10–62019–06	10–62020–06	10–62021–06	10–62022–06	10–62023–06

Note: *–74 and –75 Seals are not field serviceable. Contact Eaton Aeroquip.*
**Viton is a DuPont trademark.*

FS5900 Swivel Joint Repair Kits

The FS5900 series swivel joints are easily field repaired. Two different kits are available. The choice of which kit to use is dependent upon the extent of repairs necessary.

***FF974 Kits** include:* a replacement seal assembly, back-up rings and a new dust seal.
***FF975 Kits** include:* a replacement seal assembly, back-up rings, a new dust seal and two sets of bearings and races.
For FS59000–1616–01 order repair kit ***FF028–16–01*** includes: a replacement seal assembly, back-up rings and a new dust seal.

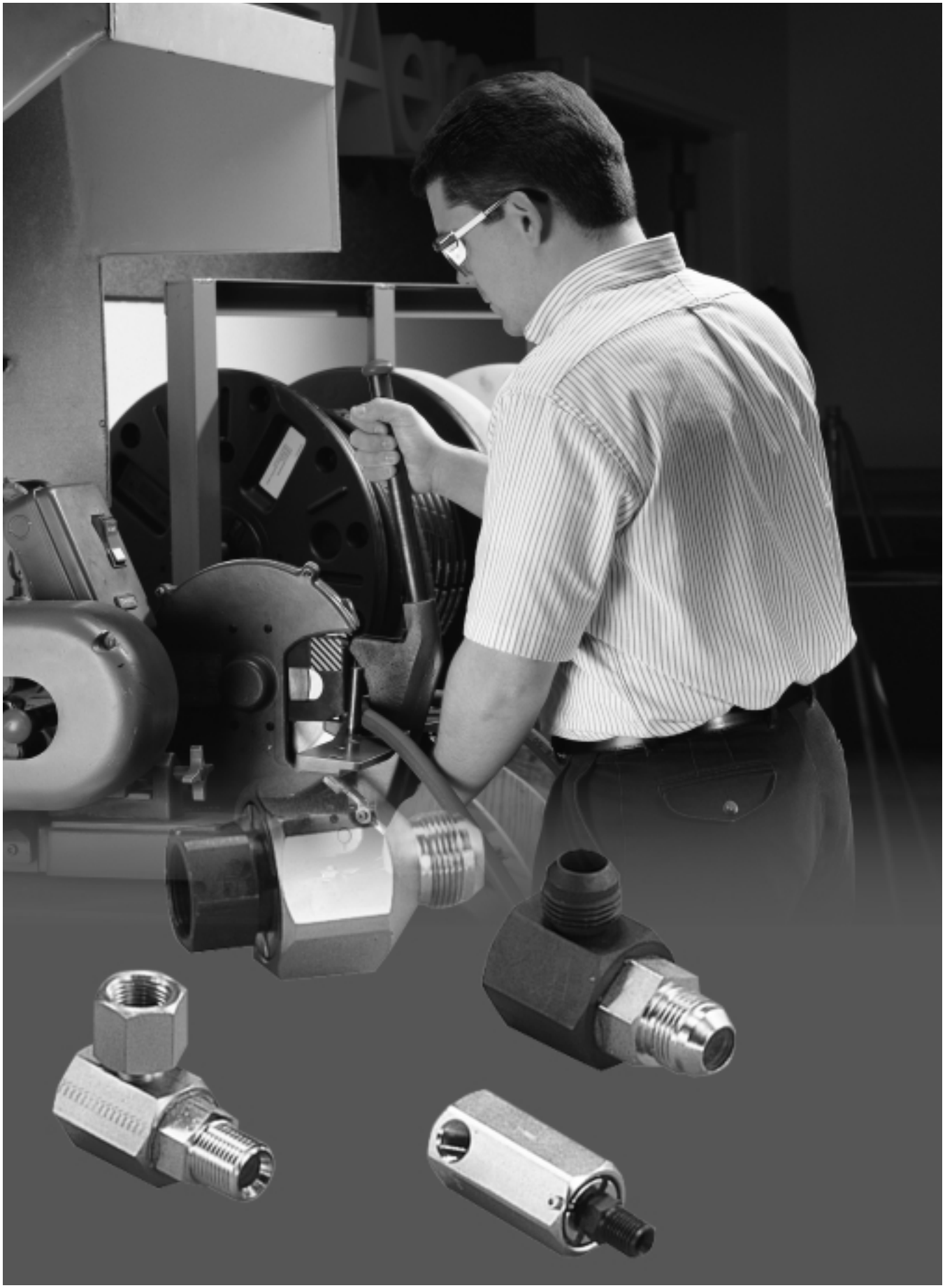
To order FF974 and FF975 Kits: **FF974– 08– 75**

Kit Base Number

Joint Size (Swivel Joint Nominal size 1/2**")**

Seal Material Code
(see Seal Material Options chart on page 230)

NOTE: Use swivel joint nominal size when ordering kits, not port size.



RETURN TO CONTENTS PAGE