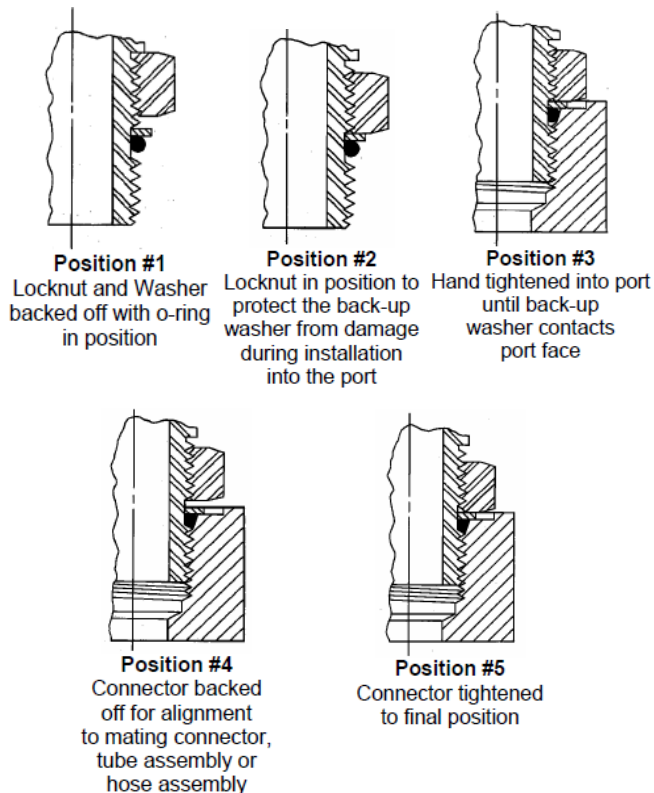


**Assembly Instructions for Adjustable Stud End O-Ring Port Fittings**

1. To protect the sealing surfaces and prevent dirt and other contaminants from entering the system, do not remove the protective caps and/or plugs until it is time to assemble the components.
2. Prior to assembly, remove protective caps and/or plugs and inspect the connector and the port to ensure both mating parts are free of burrs, nicks, scratches or any foreign material.
3. If O-Ring is not present, install O-Ring on the port end of the connector using a proper O-Ring installation tool, taking care not to cut or nick the O-Ring.
4. Lubricate the O-Ring with a light coat of system fluid or compatible oil.
5. Position #1 - The O-Ring should be located in the groove adjacent to the face of the back-up washer. The washer and O-Ring should be positioned at the extreme top end of the groove as shown.
6. Position #2 - Position the locknut to just touch the back-up washer as shown. The locknut in this position will eliminate potential back-up washer damage during the next step.
7. Position #3 - Install the connector into the straight thread port until the metal back-up washer contacts the face of the port as shown.  
*Caution: Over tightening beyond contact can cause washer damage, if the washer is not supported by the locknut.*
8. Position #4 – Adjust the connector to the proper position by turning out (counterclockwise) up to a maximum of one turn as shown to provide proper alignment with the mating connector, tube assembly or hose assembly.
9. Position #5 - Using two wrenches, use the backup wrench to hold the connector in the desired position and then use the torque wrench to the tighten the locknut to the appropriate torque level shown in the following tables.
10. Visually inspect the joint, where possible, to ensure the O-Ring is not pinched or bulging out from under the washer and that the backup washer is properly seated flat against the face of the port.



Assembly Torque, SAE J1926-2 Heavy Duty (S series) Stud Ends (Ref. SAE J1453 ORFS Fittings)			
Tube Size	Thread Size	Ft. Lbs.	Nm.
-3	3/8-24	8-10	11-13
-4	7/16-20	14-16	20-22
-5	1/2-20	30-33	40-44
-6	9/16-18	33-37	45-50
-8	3/4-16	63-69	85-94
-10	7/8-14	85-94	115-127
-12	1-1/16-12	125-138	170-187
-14	1-3/16-12	160-175	215-237
-16	1-5/16-12	200-220	270-300
-20	1-5/8-12	210-231	285-313
-24	1-7/8-12	273-300	370-407

Assembly Torque, SAE J1926-3 Light Duty (L series) Stud Ends (Ref. SAE J514 Tube Fittings and Port Plugs)			
Tube Size	Thread Size	Ft. Lbs.	Nm.
-2	5/16-24	6-7	8-9
-3	3/8-24	8-9	11-12
-4	7/16-20	13-15	18-20
-5	1/2-20	17-19	23-26
-6	9/16-18	22-24	29-33
-8	3/4-16	36-39	49-53
-10	7/8-14	43-48	59-64
-12	1-1/16-12	68-75	93-102
-14	1-3/16-12	90-99	122-134
-16	1-5/16-12	112-123	151-166
-20	1-5/8-12	146-161	198-218
-24	1-7/8-12	154-170	209-231
-32	2-1/2-12	218-240	296-325

Assembly Torque, ISO 1179-3 Light Duty (L series) Stud Ends – Types G & H			
Dash Size	Thread Size	Ft. Lbs.	Nm.
-2	G 1/8	18-20	25-28
-4	G 1/4	37-41	50-55
-6	G 3/8	59-65	80-88
-8	G 1/2	77-85	105-116
-12	G 3/4	162-178	220-242
-16	G 1	273-300	370-407
-20	G 1-1/4	369-405	500-550
-24	G 1-1/2	442-486	600-660

<b>Assembly Torque, ISO 6149-3 Light Duty (L Series) Stud Ends</b>			
<b>Tube Size mm</b>	<b>Thread Size</b>	<b>Ft. Lbs.</b>	<b>Nm.</b>
-4	M8 x 1	6-7	8-9
-5	M10 x 1	11-12	15-17
-6	M12 x 1.5	18-20	25-28
-8	M14 x 1.5	26-28	35-39
-10	M16 x 1.5	29-32	40-44
-12	M18 x 1.5	33-36	45-50
-16	M22 x 1.5	44-49	60-66
-20	M27 x 2	74-81	100-110
-22	M30 x 2	96-105	130-143
-25	M33 x 2	118-130	160-176
-30	M42 x 2	155-170	210-231
-38	M48 x 2	192-211	260-286
-50	M60 x 2	232-255	315-347

<b>Assembly Torque, ISO 6149-2 Heavy Duty (S Series) Stud Ends</b>			
<b>Tube Size mm</b>	<b>Thread Size</b>	<b>Ft. Lbs.</b>	<b>Nm.</b>
-4	M8 x 1	7-8	10-11
-5	M10 x 1	15-16	20-22
-6	M12 x 1.5	26-28	35-39
-8	M14 x 1.5	33-36	45-50
-10	M16 x 1.5	41-45	55-61
-12	M18 x 1.5	52-57	70-77
-14	M20 x 1.5	59-65	80-88
-16	M22 x 1.5	74-81	100-110
-20	M27 x 2	125-138	170-187
-22	M30 x 2	158-174	215-237
-25	M33 x 2	228-251	310-341
-30	M42 x 2	243-268	330-363
-38	M48 x 2	310-340	420-462
-50	M60 x 2	369-405	500-550

<b>Assembly Torque, ISO 9974-2 Light Duty Stud Ends (O-Ring/Retaining Ring Type)</b>			
<b>Tube Size mm</b>	<b>Thread Size</b>	<b>Ft. Lbs.</b>	<b>Nm.</b>
-5	M10 x 1	15-16	20-22
-6	M12 x 1.5	22-24	30-33
-8	M14 x 1.5	37-41	50-55
-10	M16 x 1.5	44-49	60-66
-12	M18 x 1.5	59-65	80-88
-16	M22 x 1.5	103-113	140-154
-20	M27 x 2	147-162	200-220
-25	M33 x 2	280-308	380-418
-30	M42 x 2	369-405	500-550
-38	M48 x 2	442-486	600-660