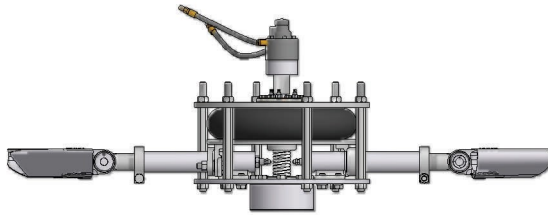




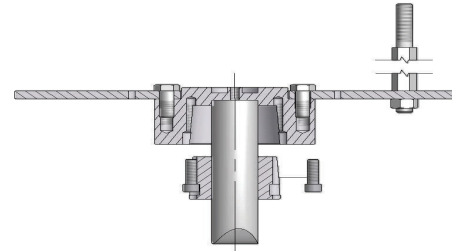
CLASS 10000 AUTO SC

Installation Instructions

INSTALL AUTOMATIC HUB AND AIR SEAL



AUTOMATIC FAN ONLY WITHOUT AIR SEAL



FAN SERIES	BUSHING TYPE	BUSHING OD	ALLEN HEAD BOLT	HEX KEY SIZE	REQUIRED TORQUE
24	T	3"	12 mm	10 mm	50 ft-lb (6.9 m-kg)
30-72	U	4"	12 mm	10 mm	50 ft-lb (6.9 m-kg)
30-72	W	5.5"	16 mm	14 mm	90 ft-lb (12.5 m-kg)

IF BUSHING IS NOT PRE-INSTALLED INTO HUB

Install the bushing in the hub by aligning the threaded holes on the I.D. of the hub with the slots on the OD of the bushing with the cap screws captured between the bushing and the hub. Insert the bushing in the hub. Using a hex key wrench, sequentially tighten the socket head cap screws until the bushing is almost fully engaged in the hub. Leave slight play between the bushing and hub to facilitate installation on the shaft.

IF BUSHING IS PRE-INSTALLED INTO HUB

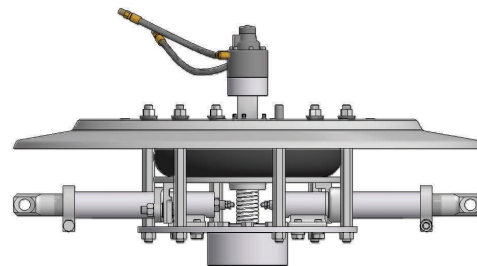
Place the hub/bushing on the shaft. Insert the key, and tighten the set-screw to secure the hub and key to the shaft. Now begin sequentially tightening the socket head cap screws (approximately 2-3 turns per cap screw initially) to firmly engage the bushing in the hub and seat the bushing on the shaft. Once the bushing/hub is firmly seated on the shaft, continue tightening the cap screws sequentially until the specified torque, shown in the following table, is reached. DO NOT over-tighten cap screws as this could cause damage to the hub.

To install the **air seal**, locate the air seal installation hardware in the plastic bag taped to one of the hub tubes. Remove the protective plastic caps from the bolts or studs. Place one aluminum washer and one resilient washer on each bolt or stud as shown in the drawings. Lower the air seal onto the bolts or stud and install the remaining hardware, follow the sequence shown in the drawings. Do not lubricate the end of the bolts or studs.

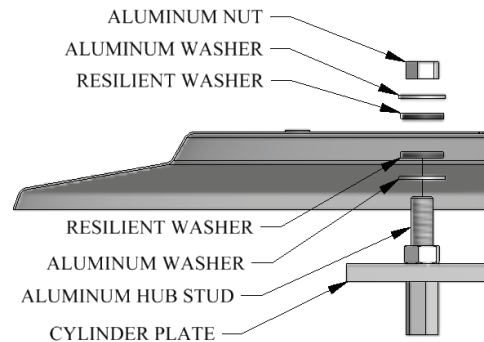
Note that the diameter of the resilient washers before they are compressed, is slightly less than the diameter of the aluminum washers. Tighten each nut until the resilient washer's diameter is the same as the aluminum washer. Do not over-tighten. The nut is over-tightened when the resilient washer has expanded in diameter larger than the diameter of the aluminum washer.

TO INSTALL THE AIR SEAL:

Locate the air seal installation hardware in the plastic bag taped to one of the hub tubes. Install the air seal studs on the appropriate side of the hub tube and finger tighten. Place one resilient washer on each stud as shown in the drawings. Place the air seal onto the studs and install the remaining hardware, following the sequence shown in the drawings. Do not lubricate this end of the studs. Note that the diameter of the resilient washers, before they are compressed, is slightly less than the diameter of the aluminum washer. Tighten each nut until the resilient washer's di-



AIR SEAL INSTALLED ON AUTOMATIC HUB WITH POSITIONER



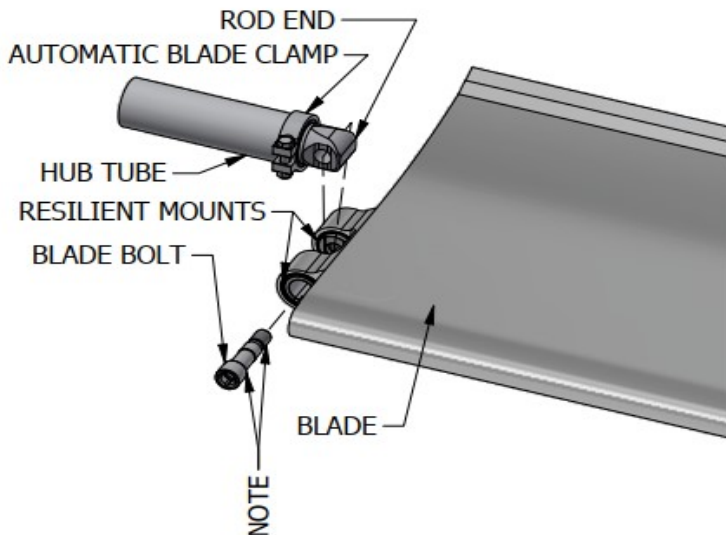
AIR SEAL INSTALLATION ON AUTOMATIC HUB

ameter is the same as the aluminum washer. Do not overtighten. Overtightness exists when the resilient washer has expanded in diameter larger than the diameter of the aluminum washer. Note: Some air seals are provided with more mounting holes than may be required. This is done intentionally to make the air seals more interchangeable between units. For example, an air seal with 8 mounting holes can be used with either a 4-blade or an 8-blade unit.

INSTALL AND ADJUST BLADES

Before installing blades check to see that the hub is level. If the drive shaft is not truly horizontal (or vertical), causing the hub to be cocked, it will be difficult to adjust blade angles accurately. Eccentric rotation of the fan can also cause serious vibration problems. If misalignment, vibration or unbalance in the system is present, it will be more easily identified and corrected at this time. Moore fan blades are carefully balanced to the same moment at the factory. Any Class 10000 blade of the same series and diameter may be installed on any hub furnished on the job. They are completely interchangeable. **Proper installation, with particular attention to tightening nuts to the specified torque, is essential to maintain the design integrity of these units.** Install one blade: Clean any dirt or grease from the rod end and the surfaces of the resilient mounts. Align the rod end hole with the holes in the resilient mounts and insert the blade mounting bolt first through the resilient mount with the recess to accept the bolt head, then through the rod end hole and screw the bolt into the second resilient mount lightly. A 3/4" drive torque wrench with a short extension may be used. The blade mounting bolt is supplied from the factory with grease on the threads and conical face.

Do NOT clean the grease from the bolt. Complete the installation of one blade by holding the blade so that the blade extends straight out from the hub tube. Holding the blade in this position, **tighten the bolt using a torque wrench set to 200 ft-lb (28 m-kg) making sure the rod end and the resilient mounts seat.** After installing the first blade, manually rotate the fan while moving the blade tip in and out to be sure the blade clears the ring or throat at all points. When the blade is held in alignment with the blade tube (that is, straight outward from the hub), it should clear the fan ring by a distance adequate to provide for any relative motion between the fan wheel and the ring. Excess clearance between the blade tips and the ring, however, should be avoided to prevent backflow which seriously reduces fan efficiency. If clearance is excessive, the diameter may be adjusted at this time. Install the rest of the blades so that they are identical with the first blade. A variation in the blade tip elevation is normal in the stop position. **Torque all bolts to 200 ft-lbs. (28 m-kg).** If blades are installed properly, they will return to their undisturbed position if the tips are pressed in the axial direction with moderate force (10 to 20 lb).



WARNING!
CUIDADO!
ATTENTION!

Blade bolt and clamp bolt **MUST** be tightened to torque values shown here for proper fan operation. It is also essential that the indicated surfaces are properly lubricated.

For further information, see the owner's manual, or call USA (660)376-3575
FAX(660)376-2909

ADJUST BLADE ANGLE

Hubs are shipped from the factory with the rod end set for the blade angle indicated by the design performance. A change in blade angle is sometimes necessary to adjust to actual site conditions. Failure to adjust the blade angle when required may result in blade or motor overload. To adjust, loosen the Clamp Nut just enough to allow the blade to be turned. Place an inclinometer on the flat surface of the mounts end. Turn the blade until the desired angle is achieved. Make a permanent record of

the final angle selected and take care that all blades on the fan are set at the same angle. A typical adjustment may be +/- 3°. **The maximum recommended blade angle is 30°.** Please consult the factory if it is desired to go above this. **Retighten the Clamp Nut to 50 ft-lbs. (7 m-kg)** while holding the blade in this position. **Recheck each blade angle after tightening.**

ADJUST DIAMETER IF REQUIRED

At times it may be necessary to adjust the fan diameter to suit a particular ring. To do so, loosen the clamp nut so that the rod end can be rotated in the hub tube. One complete revolution will increase or decrease the radius of the fan by .059" (1.5 mm). Take care that the rod end is returned to exactly the factory-set angle unless it is intended that the blade loading be changed as discussed in the previous section. A match mark

may be made at a point on the threads and the tube before turning to assure that exactly one revolution is made. **Tighten the clamp nut to 50 ft-lbs. (6.9 m-kg).** *Maximum adjustment possible is about +/- 0.75" (19 mm). At least 1.0" (25 mm) of rod end threads must remain in the tube. *Maximum adjustment possible on blades with ATEX tips is +1.0" & -.5".

INSTALL PNEUMATIC TUBING

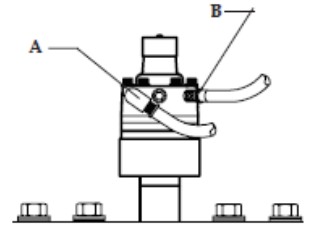
AUTOMATIC HUB WITH STANDARD POSITIONER

Connect the special flexible hoses provided to the instrument port "A" and the supply port "B" shown in the drawing. Use the elbow provided on one hose so that the hoses will be parallel. Support the positioner while tightening all fittings to prevent rotary union damage.

The flexible hoses supplied must be used and a slight amount of slack should be left when connecting to rigid piping to receive any abnormal loading of the rotary union internal bearings and seal.

The ends of the hoses must be capped if not coupled to the system piping immediately. The flexible hoses provided terminated in 1/4" N.P.T. male fittings.

Flexible Hoses Connected to Supply and Instrument Ports on Positioner



MAXIMUM SUPPLY PRESSURE:
65 P.S.I. (45 Kg/Cm2)

PRESSURE REQUIREMENTS		
	P.S.I.	Kg/Cm2
INSTRUMENT SUPPLY	3 to 15 (Std)	0.21 to 1.05 (STD)
	55	3.9

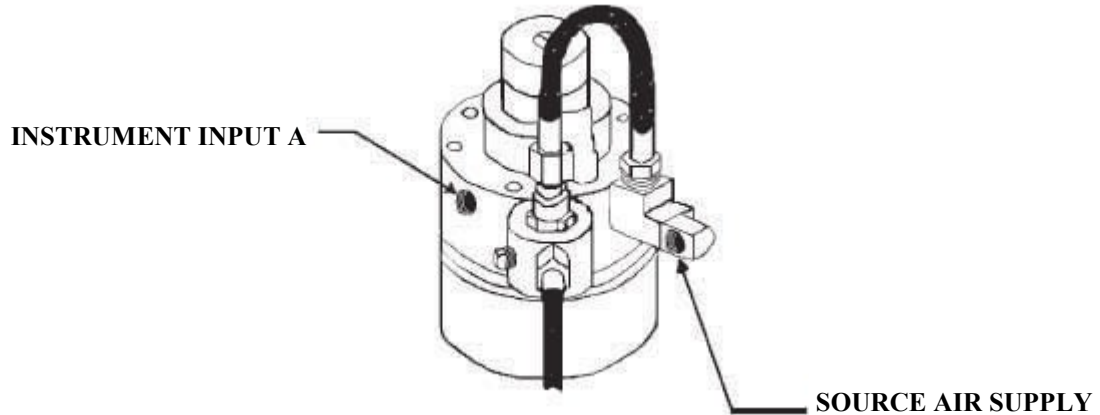
FOR POSITIONER WITH FAIL LOCKED IN LAST POSITION

When a fan is specified to fail locked in the last position, pressure is retained in the actuator chamber if the system pressure falls abruptly. This retained pressure prevents the blade angle from changing when a failure occurs in the system supply pressure.

Connect hoses "A" to the instrument port as described in 2.4.1. Hose "B", which is normally connected to the supply port is to be connected to the fitting labeled "source air supply". The flexible hoses

provided must be used and a little slack must be left in them to prevent damage to the bearing or seal in the rotary union.

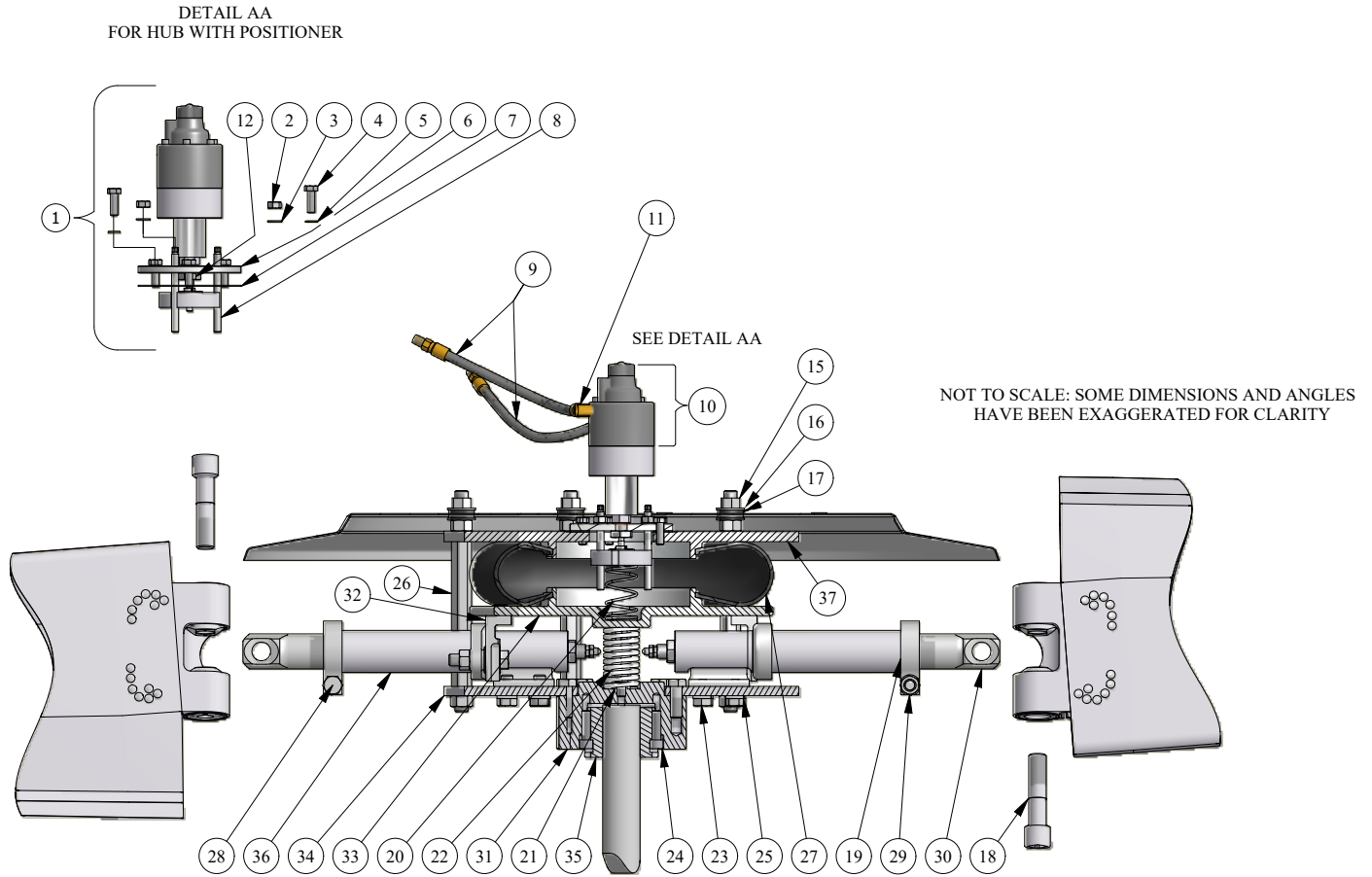
When the system is charged, normal pressure at the valve keeps it in the open position and flow occurs in either direction between the positioner and the supply actuator. If the system pressure fails, the valve automatically closes, retaining pressure in the actuator.



Note:

After installing hub onto bushing: check the hub and positioner for run out. Maximum run out of positioner in the horizontal direction is $\pm 1/8$ " (3mm). If outside the tolerance, slightly adjust the bushing nuts to level the fan hub.

AUTOMATIC FANS PARTS LIST



ITEM	PART #	DESCRIPTION
1	2624	CSP UNION ASSEMBLY (WITH POSITIONER)
2	1625	10mm STAINLESS STEEL NUT (3)
3	733	3/8" SEALED WASHER (3)
4	771	10mm x 30mm STAINLESS STEEL BOLT (6)
5	179	3/8" FIBER WASHER (6)
6	162	UNION PLATE
7	163	UNION PLATE GASKET
8	159	STAINLESS STEEL STOP STUD (3)
9	257	12" STANDARD NEOPRENE AIR HOSE ASSEMBLY WITH 1/4" NPT EXTERNAL THREADS BOTH ENDS
10	21	POSITIONER
11	210	1/4" BRASS STREET ELL
12	344	5/8-18 LH LOCKNUT
15	1532	18mm ALUMINUM NUT
16	164	3/4" ALUMINUM FLAT WASHER
17	52	5/8" RESILIENT WASHER
18	2886	24mm ALUMINUM CLEVIS/BLADE BOLT
19	644	SMALL CLEVIS CLAMP
20		RANGE SPRING
21		RETURN SPRING SHIM

ITEM	PART #	DESCRIPTION
22		RETURN SPRING
23	4515	16mm x 32mm ALUMINUM ANCHOR TEE BOLT (4 per BLADE)
24		12mm HEX BOLT FOR T BUSHING (2) 12mm HEX BOLT FOR U BUSHING (4) 16mm HEX BOLT FOR W BUSHING (4)
25	152	5/8" ALUMINUM LOCK WASHER (4 per BLADE)
26	1530	18mm x 302mm ALUMINUM HUB STUD
27	16	DIAPHRAGM ACTUATOR
28	167	16mm x 70mm ALUMINUM BOLT
29	169	16mm ALUMINUM NUT
30		ROD END
31		AUTOMATIC FAN BUSHING ADAPTER
32		PISTON STRUT ASSEMBLY WITH HARDWARE
33		PISTON PLATE
34		AUTOMATIC HUB PLATE
35		T BUSHING (3") U BUSHING (4") W BUSHING (5.5")
36		HUB TUBE ASSEMBLY WITH HARDWARE
37		CYLINDER PLATE