

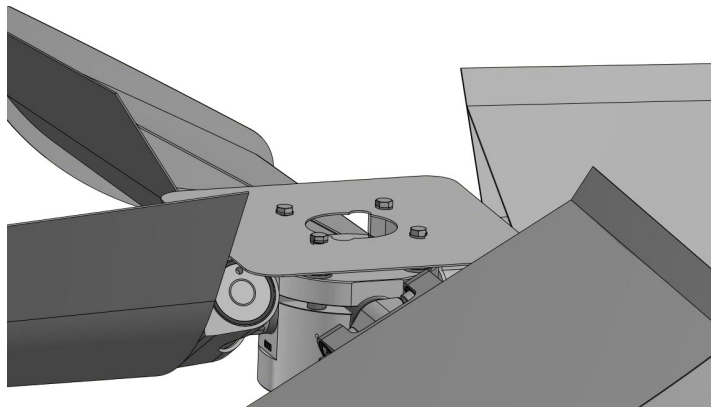
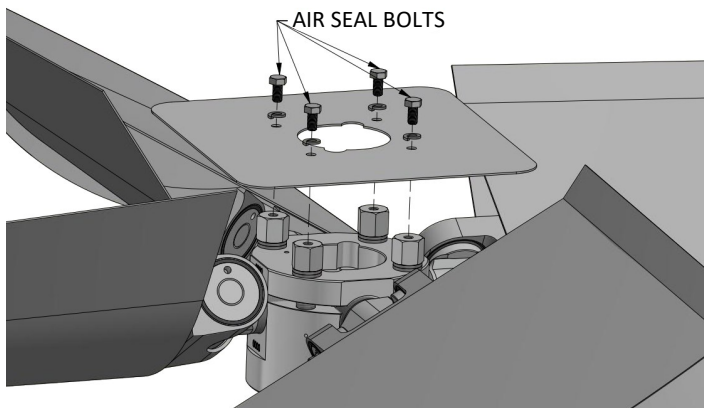


# CLASS 10000 HD

## SERIES 12

Installation Instructions

### INSTALL HUB AND AIR SEAL



#### Hub installation Instructions:

##### Lubrication:

The aluminum bushing is lubricated and pre-installed in the hub at the factory, no further lubrication is required prior to installation. **DO NOT** apply lubricant between the bushing bore and the shaft.

##### If bushing not pre-installed:

Install the bushing in the hub by aligning the threaded holes on the ID of the hub with the slots on the OD of the bushing with the cap screws captured between the bushing and the hub. Ensure that the shaft set screw in the bushing is on the same side as the access hole in the hub. Apply high quality grease to the tapered face then 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.

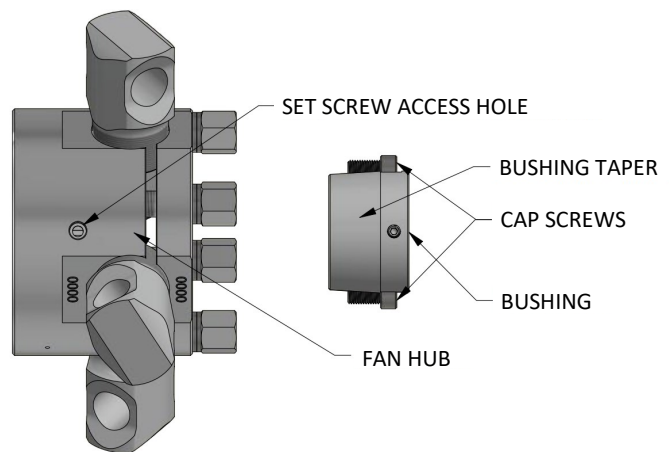
##### Installation:

Leave slight play between the bushing and hub to facilitate installation on the shaft. Place the hub/bushing on the shaft. Insert the key, and tighten the setscrew 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 of **50 FT-LBS (6.9 M-KG)** is reached.

**DO NOT over-tighten cap screws as this could cause damage to the hub.**

##### Caution:

If bushing is expected to see frequent oscillating loads (greater than 50% of nominal expected static torque), fan should be operated for approximately 15 minutes and then re-torque bushing cap screws.



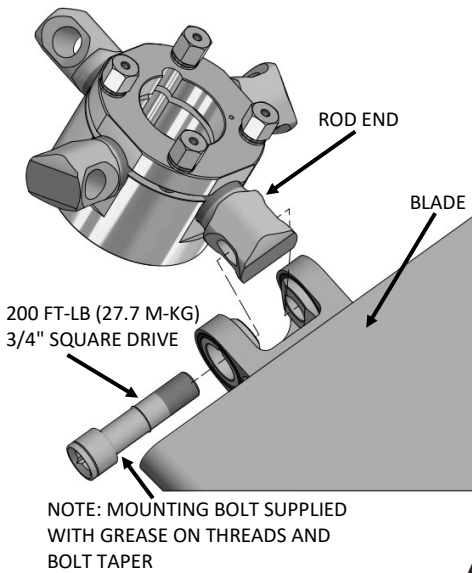
#### To install the air seal:

Align notches in air seal with bushing bolts and align mounting holes with holes on top of clamp bolts. Insert air seal bolt with lock nuts through air seal and finger tighten in clamp bolts. Carefully tighten lock nuts to 50 lb-in (5.6 N-m)

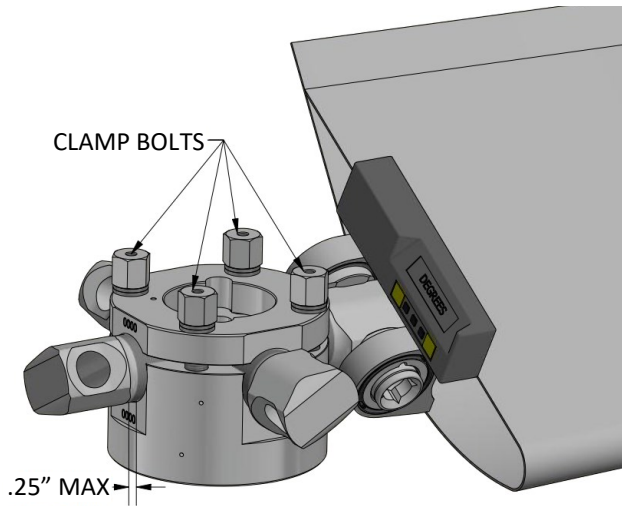
# INSTALL AND ADJUST BLADES

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 same job. They are completely interchangeable. **Proper installation, with particular attention to tightening bolts 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 mounts and insert the blade mounting bolt first through the mount with the recess to accept the bolt head, then through the rod end hole and screw the bolt into the second 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 rod end. Holding the blade in this position, **tighten the bolt using a torque wrench set to 200 ft-lb (27.6 m-kG) making sure the rod end and the resilient mounts seat.** After installing the first blade, manually rotate the fan to be sure the blade clears the ring or throat at all points. When the blade is held in alignment with the rod end (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 remaining 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 (27.6 mkg).** 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 Bolts just enough to allow the blade to be turned. Place an inclinometer on the flat surface of the root section as shown in the illustration above. 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° from design angle (+/- .5° tolerance blade to blade). **The maximum recommended blade angle is 30°.** Please consult the factory if it is desired to go above this. **Retighten the Clamp Bolts To 60 FT-LBS (8.3 M-KG). 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 bolts so that the rod end can be rotated in the hub. One complete revolution will increase or decrease the radius of the fan by 1.5 mm (.06 in). Take care that the blade 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 clamp block before turning to assure that exactly one revolution is made. **Tighten the clamp bolts to 60 FT-LBS.** Maximum adjustment possible is +0" -.25" (6.35 mm) radially (.5" on diameter). No more than .25" (6.35 mm) of rod end threads can remain outside the clamp block. **Fans with ATEX tips do not have any inward diameter adjustment.**