TRANE

Installation

Installation Procedure for the Motor Shaft Grounding System

Models: CVHE, CVHF, CVHG

PART-SVN79A-EN

Installation

Instructions

- Remove the thrust bearing inspection cover, if the thrust bearings are to be changed at this time follow the applicable instructions for thrust bearing removal as detailed in Service Bulletin CVHE-SB-33B.
- *Note:* Drilling and tapping the motor shaft for the grounding system can be done with the thrust bearings and bearing bracket already installed, but great care must be taken to prevent contamination of the thrust bearings. It is recommended, but not required, that the drilling and tapping be accomplished with the thrust bearings removed.

CAUTION
Thrust Bearing Damage!

Extreme care must be taken when drilling and tapping the motor shaft with the thrust bearings and bearing brackets installed. Failure to follow this recommendation may lead to contamination and damage of the thrust bearings.

- Follow all warnings and cautions as stated in bulletin CVHE-SB-33B
- Use paper or plastic sheeting and tape to seal the bearing and motor cavity. Use the tape to seal the shaft to the sheeting, and the sheeting to the motor housing. This is done to keep the motor and housing CLEAN!
- Use the 1/4” drill bit provided and carefully drill the center of the motor shaft, using the existing shaft center dimple and hole as a guide. Keep the drill bit well lubricated and drill to a depth of 2.0” to 2.2” from the end of the shaft. Drill straight into the shaft.
- Use the 25/64” drill bit provided and carefully enlarge the 1/4” hole drilled in the step above. Keep the drill bit well lubricated and drill to a depth of 2.0” to 2.2” from the end of the shaft.
- Flush any remaining chips or debris from the drilled hole.
- Use the 7/16-20 LH tap provided and carefully tap the 25/64” hole that was drilled in the end of the motor shaft. Note the tap is LEFT-HAND. Keep the tap well lubricated and clean. Tap the hole in small steps, reversing the tap often to keep it clean. Tap to a minimum of 1.75” depth from the end of the shaft.
- Flush any remaining chips or debris from the drilled and tapped hole.
- Properly place the belleview washer onto the rotor grounding bolt provided. Note that the washer MUST be placed such that the concave side of the washer will be towards the motor shaft. The washer, when properly collapsed, will provide spring-tension to the bolt. See Figure 1. You may apply a small amount of Loctite 271 to the threads of the bolt.

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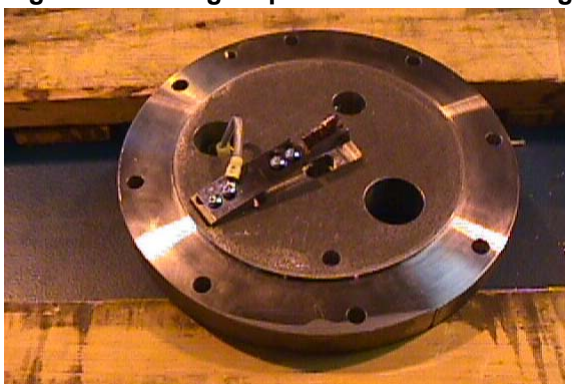
Figure 1. Rotor grounding bolt and washer

- Install the rotor grounding bolt and washer onto the end of the shaft using a 1-1/8” socket. Note that the bolt has left-hand threads. Hold the shaft and tighten the bolt to 55-65 ft lbs. The belleview washer should be evenly centered during tightening and fully compressed afterwards.
- Collect any debris and remove the sheeting and tape from the shaft and housing. Visually inspect the motor and remove any debris found.
- If not already done, re-install the inner bearing cap and install the new thrust bearings onto the shaft. Follow the standard SKF mounting instructions for heating and pressing the bearings as provided in Service Bulletin CVHE-SB-33B. Install the bearing tab washer and locknut. Tighten and secure the locknut using the instructions in Service Bulletin CVHE-SB-33B.
- Continue to use CVHE-SB-33B to position the inner seal, re-install the motor bearing bracket, and re-install the bearing retaining ring and bolts. Use CTV-SB-66F for guidance on the use of Loctite.
- Prepare the new inspection cover for installation onto the chiller:
    - Transfer the bearing temperature sensor well (or plug, if the unit is not equipped with a bearing temp sensor) from the original bearing inspection cover to the new bearing inspection cover.

Figure 2. Bearing inspection cover with the grounding brush installed



- With care, properly install the new inspection cover with the brush assembly onto the motor. Reassemble bearing oil supply and return lines. Pressurize and leak test the chiller. Follow the instructions in CVHE-SB-33B and CVHE-SB-66F.
- Install the new grounding strap provided, between the AFD drive module and frame of the transition piece, between the drive enclosure and the chiller’s motor housing.

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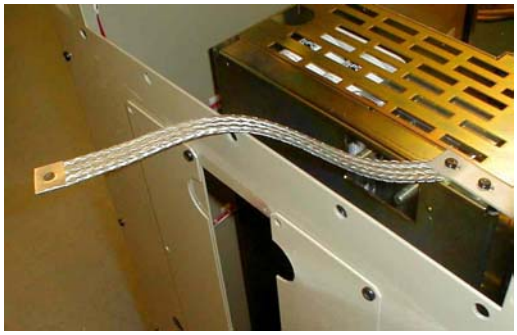
- The grounding strap secures to the top left corner of the power module chassis, under the top support bracket.
    - Loosen both bolts that secure the bracket to the power module chassis. The bolts are Torx T-30 M6 (*Note:* some units may have phillips head screws installed)
    - Remove the outboard bolt completely, then insert the ground strap under the bracket, then re-install the bolt through the bracket and ground strap.
    - Remove the other bolt from the mounting bracket, then insert a washer between the bracket and the power module, then re-install the bolt through the bracket and washer. Tighten both bolts to 24-28 ft. lbs.
    - Refer to Figure 3.
- Secure the other end of the ground strap to the transition bracket.
    - Drill a 1/2” or 7/16” hole through the bottom panel of the transition box, between the drive and the motor terminal board, at a location 4 inches into and centered to the AFD transition opening (as viewed looking into the motor terminals). Use care to prevent debris from entering into the drive.
    - Remove the paint around the drilled hole with emery cloth or sandpaper to an area sufficient to land the ground strap terminal.
    - Align the ground strap terminal over the drilled hole with a 3/8” flat washer on top of the ground strap terminal.
    - Install a 3/8” x 1” bolt (from the top) with an external star or serrated locknut (at bottom) to fasten. Tighten securely.

Figure 3. Termination of the grounding strap on the drive



Installation

Materials and Tools

Provided from La Crosse

- Bearing inspection cover and shaft grounding brush assemblies
- Rotor grounding bolt with belleview washer
- 4-bolt gasket for oil return line
- Drill bit, 1/4”
- Drill bit, 25/64”
- Tap, Left-Hand, 7/16-20 LH

Provided by the local office

- All tools and materials commonly needed for a CenTraVac chiller thrust bearing replacement, as described in Service Bulletin CVHE-SB-33B.
- Loctite 515 Gasket Eliminator
- Loctite 271 Thread Locker
- Solvent/cleaner
- Touch-up paint
- Masking or duct tape
- Paper or plastic sheeting
- Refrigeration Oil (Trane OIL00022) 1 gallon
- Asst. Torx drivers
- Asst. Hex drivers
- Tap handle (from tap and die set)
- 3/8” or 1/2” electric drill
- Torque wrench
- Service Bulletins CVHE-SB-33B and CTV-SB-66F

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