



TRANE®

General Service Bulletin

CVHE/F/G and CDHF/G Thrust Bearing Center Race Retention

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Introduction

The purpose of this informational service bulletin is to advise service and maintenance persons of a service parts change to the direct drive CenTraVac thrust bearing center race retention, and to describe the new procedures for the proper service of the assembly.

NOTICE: Warnings and Cautions appear at appropriate sections throughout this literature. Read these carefully.

⚠ WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

CAUTION: Indicates a situation that may result in equipment or property-damage only accidents.

Units Affected

All CVHE/F/G or CDHF/G chillers with compressors of 1280 NTON or less.

The design of the thrust bearing center race retention on CVHF or CDHF extended capacity chillers with 1470 or 1720 NTON compressors is not changed, so this discussion does not apply to extended capacity chillers.

Discussion

There have been some reported cases where field installation of the tab washer, while the motor is in a horizontal plane, has resulted in a tab washer that is not properly centered on the shaft. If this occurs an uneven pre-load may be applied to the bearing center races.



Beginning Dec. 1, 2005, an upgraded self-locking thrust bearing retaining nut will be available from Trane.

The self-locking nut eliminates the use of the tab washer and the associated field service issues it can cause.

If you are installing new duplex ball thrust bearings onto a CVHE/F/G or CDHF/G compressor of 1280 NTON or less, it is recommended that you discard the older style lock nut and tab washer, and order and install the new style self-locking nut instead.

Application

Assembly procedure for the self-locking nut

- 1 If during a thrust bearing replacement an old type lock nut and tab washer are present, they should be discarded and a new style self-locking nut installed.
- 2 Verify the new style self-locking nut has a counter bore on one end and that the nut is labeled either SNSH-11 (for the small diameter shaft) or SNSH-18 (for the large diameter shaft).
- 3 After the new bearings have been properly mounted and hydraulically seated onto the shaft, as per the latest revision of service bulletin CVHE-SB-33, assemble the self-locking nut to the shaft threads.
 - Avoid the use of a hammer and spanner wrench to tighten the locknut. Use the proper size socket tool and follow the procedure as described below.
- 4 Torquing of the self-locking nut. Ideally, a torque wrench should be used to apply the required torque to the self-locking nut. This may be possible for the small diameter shaft units. For the large diameter shaft, a pneumatic impact wrench will be required to provide the torque required without allowing the rotor to turn in the stator. The following torque value is required:
 - Small diameter shaft with SNSH-11 nut - 60 to 80 Ft.-Lb.
 - Large diameter shaft with SNSH-18 nut - 160 to 200 Ft.-Lb.

Use the following method to obtain an accurate torque value and bearing pre-load when a torque wrench cannot be used:

- a Torque the nut to 10% of final torque value using a torque wrench and socket tool. This will require a torque of 6 to 8 Ft.-Lb. for the small nut and 16 to 20 Ft.Lb. for the large nut. Visually inspect the nut to confirm it has seated against the bearing inner race.
- b Mark the nut and inner race in a straight line to act as a reference point. Use a fine tipped marker pen or equivalent.
- c Mark the inner race in a clockwise direction the following distance from the first mark:
 - Small SNSH-11nut: 0.3" to 0.5" range. (7.62mm to 12.7mm range)
 - Large SNSH-18 nut: 0.5" to 0.7" range. (12.7mm to 17.78mm range)

This will provide a degree of rotation method for torquing the self-locking nut.

- d Use the appropriate socket tool for the size of nut and a pneumatic impact wrench to rotate the self-locking nut until the mark on the nut falls in the range stated in step c. If an air source is not available, a large cylinder of dry nitrogen with a regulator adjusted to 120 psi (827 kpa) can be used to power the pneumatic impact wrench. A 3/4" drive wrench is required for the large self-locking nut.
- e Tighten the set screws on the self-locking nut.

- Small SNSH-11 nut: Tighten the set screws to 35 in-lb. (2.92 ft.-lb.) of minimum torque. Use a 3/32" allen wrench socket, ensure it is in good condition to avoid stripping out the set screws.
- Large SNSH-18 nut: Tighten the set screws to 160 in-lb. (13.3 ft.-lb.) of minimum torque. Use a 5/32" allen wrench socket, ensure it is in good condition to avoid stripping out the set screws.
- f Complete the thrust bearing and motor assembly following the remainder of the procedures as shown in the latest revision of CVHE-SB-33.

Removal Procedure for the Self-Locking nut:

- 1 Remove the torque on the 3 set screws of the self-locking nut by loosening them ½ turn. Use the proper allen wrench or allen socket, ensure it is in good condition to avoid stripping out the set screws.
- 2 Re-set the internal brass keys of the self-locking nut by tapping on the nut at the 3 set screw locations. Use a non-marring hammer. Use great care to avoid damage to the motor coils, shaft threads, etc.
- 3 Using a spanner wrench and hammer, carefully loosen the self-locking nut ¼ turn to remove the bearing pre-load, then repeat step 2.
- 4 Using a spanner wrench and hammer, carefully remove the self-locking nut from the shaft. If the self-locking nut does not begin to rotate freely you may need to repeat steps 2 and 3 several more times. Extra force on the spanner wrench or socket may be needed to help wear and release the internal brass keys.
- 5 After removal the self-locking nut must be discarded. The self-locking nut cannot be reused, always install only new self-locking nuts.

Parts Identification

- NUT01056, Self-Locking Nut SNSH-11 for the small diameter shaft, use with thrust bearings: BRG00913, BRG00609, BRG01209, and BRG01507.
- NUT01057, Self-Locking Nut SNSH-18 for the large diameter shaft, use with thrust bearings: BRG00914, BRG00610, BRG01210, and BRG01508.

In addition to being available separately, beginning in 1st qtr 2006 the self-locking nut will be included in thrust bearing sets ordered from Trane parts. The standard locknut and tab washer will no longer be included with thrust bearing sets.

Service Tools

At this time the proper socket tools necessary to tighten or loosen the new self-locking nut are not available as a service part. However, it is possible to have a local machine shop modify the existing socket tools that were sold for use with the original locknut. Refer to Figure 1.

After the modification the same socket tools can be easily configured to function with the original locknut, or with the new self-locking nut.

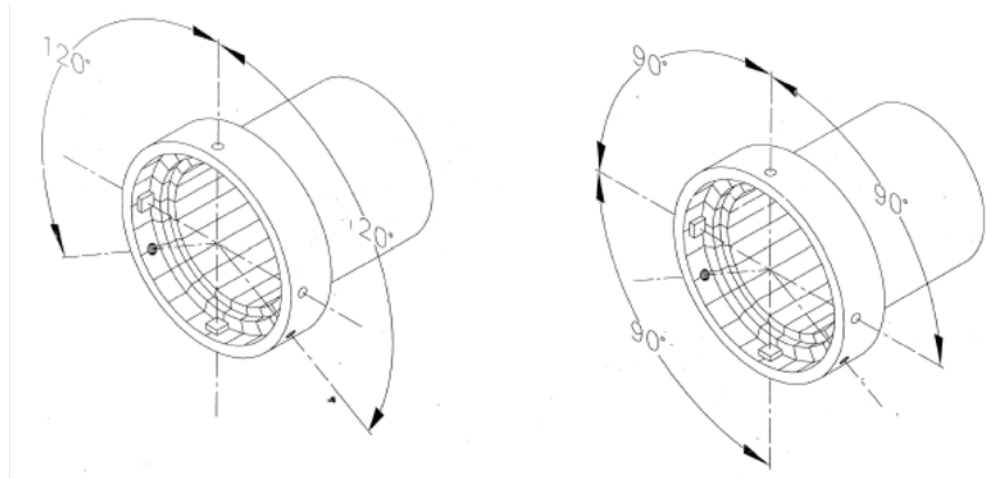
1/2" drive socket tool for small locknut:

- TOL00194 (Must be field modified to use with the self-locking nut)

3/4" drive socket tool for large locknut:

- TOL00193 (Must be field modified to use with the self-locking nut)

Figure 1: Socket Tools



Machine Shop Instructions:

Remove 3 of the 4 nut driver tangs located at 90° from each other.
Drill 2 holes at + and - 120° from existing nut driver tang.
Mount 2 of the 3 nut driver tangs in new holes.
Socket should now have 3 equally spaced nut driver tangs located at 120° from each other.

Material and Labor Authorization

No material or labor is authorized.

Material Disposition

There are no materials to return.

Recommended Action

Discard the older design locknut and tabwasher when changing or installing thrust bearings onto CVHE/F/G and CDHF/G chillers with compressors of 1280 NTON or less. Use only the new self-locking nut.

Expiration Date

There is no expiration date for this bulletin.

Questions

For general questions contact the Product Technical Service department in La Crosse at 608-787-3943 or e-mail at TechService@Trane.com



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For more information contact your local district office or e-mail us at comfort@trane.com

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