



AutoCare

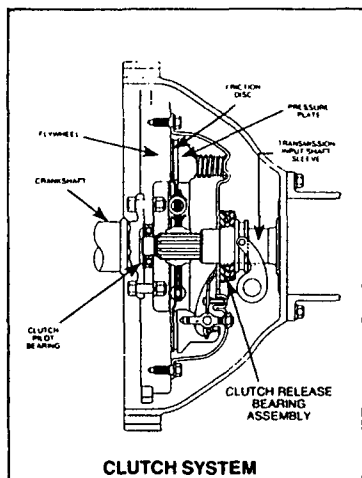
TechTips

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Proper installation can save clutch release bearings

As a large supplier of clutch release bearings, our reputation has been built on the quality and integrity of our bearings. One of the major causes of clutch bearing failure has been traced to improper installation procedures. This article will provide installation tips so that you can take full advantage of NAPA Bearings quality. But first, it's essential to understand the clutch release bearing's function.

Clutch release bearings on most automobiles are driver activated by a



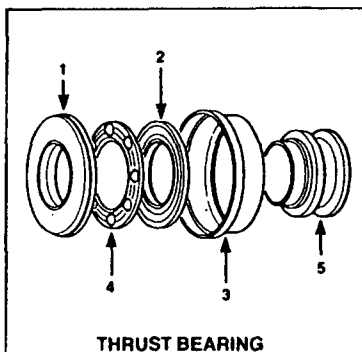
CLUTCH SYSTEM

linkage from the clutch pedal. (Some cars and trucks use a hydraulic system in which a clutch pedal-activated hydraulic cylinder transfers pressure to a remote hydraulic cylinder which, in turn, operates the clutch release bearing.)

When activated, the bearing is pressed forward and comes in contact with the clutch release lever, or fingers. (Some cars have bearings that are constantly engaged to the clutch release lever under a very light load of 10 to 20 pounds.) These release levers pivot and pull up on the pressure plate. With the pressure plate in this position, the friction disc is released from its grip between the pressure plate and flywheel. In essence, the engine is disconnected from the transmission, enabling the driver to shift gears.

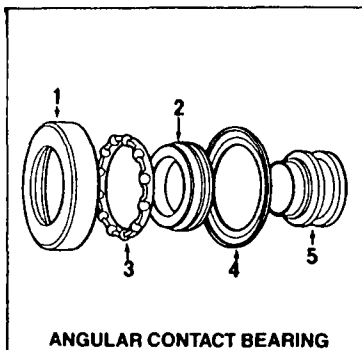
There are two basic types of clutch release bearings—thrust and angular contact. The following description and diagram show you the main difference between them.

In the thrust-type clutch release bearing, the main elements are two washer-shaped rings (1,2) in which the raceways for the balls are precisely ground. A housing (3) completes the bearing by holding the rings parallel, with the retainer and balls (4) sandwiched in between. The retainer



THRUST BEARING

spaces the balls evenly throughout the raceways. The bearing is then pressed onto the carrier (5) to complete the assembly.



ANGULAR CONTACT BEARING

In the angular contact-type clutch release bearing, the main elements are the inner and outer rings (1,2). These rings also have precision ground raceways. Unlike the thrust-type bearing, the rings, the retainer (3) and balls are held together by a snap fit in the outer ring. These bearings are assembled by heating the outer ring so that the inner ring and ball assembly can be slipped under the snap. Once the outer ring cools, a non-separable assembly is produced. Then a seal or housing (4) is assembled to the outer ring. Like the thrust-type bearing, it is pressed onto a carrier (5). When either type of bearing is pressed on a carrier, the bearings must be rotating. This will reduce the possibility of raceway damage during assembly.

In most cases, the thrust-type clutch release bearing will give suitable service life. However, in applications where the clutch bearing is in continuous operation, or misalignment is present, the angular contact bearing should be used.

The design of the clutch release bearing will only allow for slight misalignment between the clutch release levers and the bearing. When misalignment does exist,

the balls are forced to constantly change speeds. This can cause raceway damage and premature ball retainer wear. Also, excessive heat caused by friction can damage the lubricant and, ultimately, the bearing.

NAPA clutch release bearings are permanently lubricated at the factory and require no additional lubricant. Some heavy-duty trucks may have clutch release bearing assemblies with grease fittings. Consult your manufacturer's specifications for proper maintenance procedures. Be sure that the groove inside of the bearing carrier is packed with grease. In addition, lightly coat the input shaft sleeve with lubricant. Under normal operating conditions, the bearing should have a service life at least as long as the clutch disc.

Installation Checklist

The following list of installation tips can ensure bearing performance and long service life:

- Check for misalignment in the clutch system prior to assembly.
- Inspect clutch release fork and replace if worn or warped.
- Inspect transmission input shaft sleeve and replace if worn or corroded.
- Tighten engine mounts to prevent loss of linkage adjustment.
- Inspect clutch linkage and replace any worn pivot points—lubricate as required.
- Pack the groove inside the bearing carrier with grease. Lightly coat the input shaft sleeve with grease.
- Check assembly of clutch fork and bearing.
- Adjust clutch free-play according to manufacturer's specifications.

By making the necessary repairs to the clutch system that created the premature failure of the previous clutch release bearing, you will receive excellent performance and long service life from NAPA Bearings clutch release bearings.

For further information, write:

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For technical, application or interchange information, call our answer line 1-800-521-0102 (in Michigan, call 1-800-572-9206) for fast assistance.