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# **INSTALLATION AND MAINTENANCE**

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## **Installation of General Purpose Clutches**

### **Pre-Installation Checklist:**

#### **Engine Shaft Size**

Most of the time, general purpose clutches are mounted directly onto the engine shaft. If the installation is not on an engine shaft, please make sure that the tolerances are close enough to provide a snug fit between the bore of the clutch and the shaft (all engine manufactures should produce shafts within the required tolerances). Also, a standard rule of thumb is that the minimum amount of shaft engagement is the diameter of the shaft for one-piece designs (two-piece designs would require shaft engagement in both pieces). The shaft step radius needs to be smaller than the fillet on the clutch bearing or the clutch will not seat properly. If it does not, a spacer with a proper chamfer is required.

#### **Direction of Rotation**

Clutches can operate either clockwise or counter-clockwise. They can be mounted with the pulley toward the engine or away from the engine. This mounting is critical because this determines which direction the leaf springs are oriented. If springs are not run in tension, they could suffer premature failure because they will be running in compression.

#### **Torque Tab Restraint**

Prior to installation, it is critical to determine the torque tab placement. The function of the torque tab is to keep the lead wires from pulling out of the clutch due to the bearing drag. This torque tab should have a freedom of movement both axially and radially of about 1/16 of an inch. The simplest type of torque tab restraint is some type of U-bracket that captures the torque tab but does not grab it firmly. In heavy vibration applications, a larger surface area is required to prevent notching of the torque tab and the restraining pin or bracket.

#### **Key Length and Height**

In many of the clutches, the key does not go all the way through the clutch. Therefore, the key length can only be as long as the keyway length within the rotor. Please check this before installation. In some clutches, the bearing inner race may be exposed on the top of the keyway. In this case, the key needs to be slightly undersized in this area so it does not force itself against the bearing inner race.

## **Installation Procedure**

- 1.** Slide the clutch onto the shaft (for a two-piece clutch, slide the pieces on one at a time). Please make sure that the key is in the proper location. Do not force the clutch onto the shaft because if the key is slightly off, this can damage the key or the clutch bore. The shaft should extend into the clutch enough to support each component. The clutch should be slid onto the shaft until the bearing inner race on the clutch contacts a step, washer, or drive pulley. In all cases, the mounting surfaces of these components need to be parallel to each other within 0.003” TIR. If these surfaces are not parallel, the clutch could become cocked on the shaft (this would show up as a wobbling pulley). The contact of these components to the bearing inner race can extend beyond the inner race because the seal is recessed (if you are using a washer, make sure it is not cupped; otherwise this could dig into the bearing seal). Please be sure to check the fillet on the ground drive pulley, washer, or clutch so that they do not interfere with the radius on the step in the engine crankshaft. On some of our clutches, the bearing is kept on the inner sleeve via a snap ring (pulley side). With this design, the rotor would then contact the appropriate step on the shaft.
- 2.** A center bolt and washer (customer-supplied) is then placed into the end of the tapped shaft and tightened down. The washer should be at least ¼” in thickness. Bolt tightening torque will vary depending on the bolt used in the application. This can be anywhere from 20 to 50ft-lbs. If vibration is heavy, an adhesive may be required to prevent the bolt from becoming loose. The washer should contact the inner race of the bearing. It can extend beyond the inner race as long as it does not contact the outer race.
- 3.** At this point, the torque tab should be held in the appropriate position. Please make sure that there is freedom of movement both axially and radially of about 1/16”. Double check the installation by pushing and pulling against the back of the field to move it slightly from side to side. Under no circumstances should the torque tab be tightened down firmly. This will cause failure of the field bearings.
- 4.** In order to get maximum torque, the clutch should be burnished. Burnishing is a procedure where the clutch is cycled 30 ~ 50 times at half the normal operating speed of the clutch. The cycle rate can be 2 ~ 6 cycles per minute depending on inertia. Please consult with your local representative to determine max cycle rate. Proper burnishing allows the wear surfaces to mate together to produce maximum torque. However, improper burnishing can damage the surfaces. Please take care to allow enough time between cycles so that the surfaces are not damaged.

## **Troubleshooting**

For problems during installation or operation, please refer to the troubleshooting section on the website. If you still have questions, please contact us directly for assistance.

## **Contamination**

Care should be taken so that contaminants such as oil, grease, etc. do not come in contact with the working faces of the unit. In some cases it may be necessary to provide a cover or baffle to prevent this. Oil and grease on the friction surfaces should be removed by wiping with a small amount of environmentally friendly grease solvent. However, depending on the permeability of the grease or oil, it may be impossible to remove completely, so if the unit shows signs of slippage it needs to be replaced.