

**Always prime the lubrication system before the engine is started the first time.**

CAM BEARINGS HAVE BEEN INSTALLED AND A CAMSHAFT HAS BEEN INSTALLED TO ENSURE CLEARANCES AND CHECK THAT IT TURNS FREELY. ALL OIL HOLES AND LINES ARE FREE FROM DEBRIS.

**NO WARRANTY ON SPUN OR DAMAGED CAM BEARINGS.**

IF CAM BEARING FAILURE OCCURS:

### **POSSIBLE CAUSES**

1. Improper cleaning of the engine and parts prior to assembly.
2. Road dirt and sand entering the engine through the air-intake manifold or faulty air filtration.
3. Wear of other engine parts, resulting in small fragments of these parts entering the engine's oil supply.
4. Neglected oil filter and/or air filter replacement.
5. Broken or plugged oil passages, prohibiting proper oil flow.
6. A malfunctioning oil pump or pressure relief valve.
7. Lubrication system not primed before start up.

### **CORRECTIVE ACTION**

1. Recommend that the operator have the oil, air filter, oil filter and crankcase breather-filter replaced as recommended by the manufacturer.
2. Check engine for possible blockage of oil passages, oil suction screen and oil filter.
3. Check the operation of the oil pump and pressure relief valve.
4. **Always prime the lubrication system before the engine is started the first time.**

## **CAUTION:**

Lack of lubrication is one of the most common causes of camshaft failure during the initial start-up. If the camshaft and other valve train components are not properly **pre-lubricated**, they can be damaged within the first few camshaft revolutions. Once the damage has occurred, no amount of lubrication will prevent the impending failure of these parts. Use a high quality break-in lube as you reassemble the engine. This will help prevent scuffing and galling during the initial start-up caused by the high loads placed on valve train components. The adhesion quality also will prevent the lubricant from draining off the components. “Cold Start” can destroy bearing surfaces and lead to progressive failure. “Cold Start” failure is caused by lack of lubrication at startup. It is well understood that most engine wear happens during cold starts. That is because vital oil that is needed to protect the bearings and other moving parts of the engine drains back to the sump. Even overnight oil films can become very thin leaving the stage set for a bearing to “wipe”. If direct metal to metal contact occurs during startup your engine is never the same. The damage caused by the first wipe will generate more friction and heat leading to progressive damage that soon requires an expensive rebuild.

## **Installation**

Thoroughly coat the camshaft lobes, bearing journals. Some OEMs require the use of special oil additives for camshaft break-in. Carefully slide the new camshaft into the engine block or head, taking precautions not to damage the cam bearing surfaces. When the new camshaft is installed, check that it turns freely in the engine. Start-up procedures begin with priming the oiling system.