

Rod and Main Bearings

PART I—SIZE AVAILABILITY AND RETURN POLICY

None of us want to grind a crankshaft any more than necessary and part of being a full line engine parts supplier is making sure we can offer our customers as many different oversize bearings as possible. Howard Enterprises strives to come up with good, high quality bearings of all the oversizes that fall in the safe category for grinding, which, of course, is determined by the crankshaft hardness. This sometimes requires going all over the world to find a quality manufacturer willing to make the bearings needed. Even with all the searching we go through, we still have some problems with some of the older applications at times. Rest assured, we are constantly striving to keep the sizes you need in stock.

We understand how things change when it comes to bearing sizes. More than once, a repair shop or implement dealer has been told one thing and received another when it comes to the grind of a crankshaft. Due to the nature of crankshaft regrinding, it is sometimes impossible to know until the grinding is completed. Howard Enterprises is happy to accommodate you when swapping out bearings, however, there are a few things to know that make the exchange work successfully. Most manufacturers package main bearing sets in plastic, heated shrink wrap. Once that plastic shrink wrap is broken open, it is almost impossible to put them back in the plastic. Due to the damage the bearings receive in shipping when not in the tight shrink wrap, they are considered non-returnable. Please check to make sure they are the correct bearings before breaking the plastic. Another aspect to keep in mind is the boxes the bearings come in. Please try to keep the boxes clean in the event they have to be exchanged for a different size.

PART II—INSTALLATION PROCEDURES

To most of you, installing rod and main bearings is a simple task that you could do in your sleep. However, when things go wrong, the results can be catastrophic and everything has to be examined closely to determine the cause of the failure. After doing it so many times, it is easy to become complacent and perhaps forget an important step because of a phone call or being called away from the job for various reasons.

Bearing Lubricants: We are not going to talk much about bearing lubricants except to say that everyone has their favorite, and that white lithium grease is probably the most common of those on the market.

Plastiguage: This is used to check clearances but is not always used. If you check your crankshaft closely with a micrometer, it is not always necessary to use plastiguage but can certainly help alert you to a potential problem.

Assembly: Some of the more obvious things that can happen in bearing assembly are: Bearing Halves Reversed, Bearing Caps in Wrong or Reversed position, Bearing Oil Hole Not Aligned with Oil Passage Hole, Position of Offset Connecting Rod Reversed, or Locating Lugs Improperly Nested. One of the problems that occurs when installing bearings, when the block and crank stay in the tractor, is figuring out what size the old bearings are. We can and will try to cross down the numbers off the old bearings whenever possible but is not always totally accurate and it is best to measure the crank journals with a micrometer to be totally sure you have the correct size and proper clearance. Getting the size right the first time is critical since the main bearings are packaged in plastic and are non-returnable once the plastic is broken.

Specifications: We have access to most all of the crank and block specifications and clearances should you need them. We will try to assist you in any way possible to help you install your engine bearings in a safe and correct manner.

PART III—FAILURE ANALYSIS

When it comes to bearing failure analysis, the old bearings can really tell you a story of what happened and alert you to potential problems before they happen to you. The major causes of premature bearing failure are as follows: Dirt - 45%, Misassembly - 13%, Misalignment - 13%, Insufficient Lubrication - 11%, Overloading - 10%, Corrosion - 4%, Other - 4%.

There are 14 major categories we can put these failures into and by looking at the old bearings, we can usually get some idea what happened. These categories are:

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| 1) Surface fatigue | 2) Foreign particles in lining | 3) Foreign particles in bearing back |
| 4) Out-of-round bore | 5) Excessive crush | 6) Insufficient crush |
| 7) Bent or twisted connecting rod | 8) Shifted bearing cap | 9) Distorted crankcase |
| 10) Bent crankshaft | 11) Out-of-shape journal | 12) Fillet ride |
| 13) Oil starvation | 14) Misassembly | |

You can tell normal wear from problems and what is necessary to fix them however, the next time you replace bearings, take a look and think about some of the things listed above. There are times when bearings are so destroyed that nothing can be told from them. In these cases, everything has to be checked thoroughly. The appearance of the bearing shows us the damaging action. Once we know the damaging action, we can list out possible causes and take corrective action.