Machine Parts No Longer in Production?

Solutions for Hard-to-find Bearings and Parts

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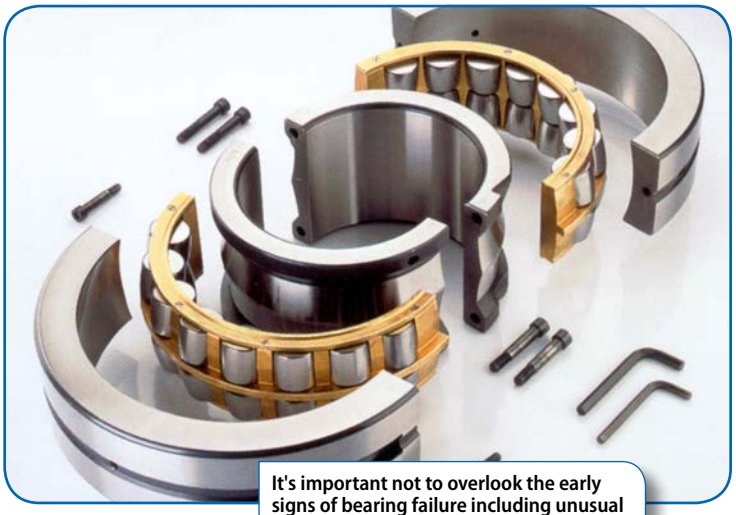
Good machinery can last a lifetime. But, replacement parts for older equipment may be near impossible to find. So, what do you do when you're looking to replace hard-to-find bearings and related parts for older machines?

Finding obsolete or hard-to-find-bearings and related parts is more advanced than ever before with today's search algorithms. But finding certain bearings, for instance very large bearings such as tunnel-boring 15-foot-diameter giants, is still a challenge. Custom work is often the only option.

To give you an example, a local elevator repair company working on a 100-year-old elevator contacted us for replacement parts. The roller chain and sprocket that were needed were just as old as the elevator, raising concerns that the parts wouldn't be available anymore. The customer brought the parts in and, through our extensive line of partners, we were able to identify someone who still made the chain and had it in stock. No one mass-produced the sprocket anymore, but custom work was still an option. Our team was able to reverse-engineer specifications from the old sprocket itself. Those plans turned into a new sprocket that would fit the lift perfectly.

When bearings and their related parts fail to work properly, all related processes have to shut down. Our goal is to improve machinery life, and when certain bearings or parts are no longer being mass produced, we're able to provide engineering assistance and custom parts development to ensure our customer has the right part to keep their equipment rolling for years to come. Of course, there are other factors that contribute to bearing longevity, including proper design, internal clearance and more as we've outlined below.

Factors that contribute to bearing longevity include proper design and internal clearance.



It's important not to overlook the early signs of bearing failure including unusual noises or increased temperature.

Application Changes Affect Bearing Design

Rarely do we come across a bearing that has been improperly designed into an application, but it is possible if factors within the larger application change.

How long a bearing lasts before it fails is known as bearing "service life". It is generally considered in terms of hours and is based on load and speed conditions.

Overloading and early bearing fatigue are often the result when loads become too high. Skidding and improper loading of the rolling elements will occur if they are too low. These issues will also occur with improper internal clearance. In all of these instances, early failure will be the result.

Early Signs of Failure

Don't ignore the early signs of bearing failure, specifically unusual noises or increased temperature.

Abnormal bearing sounds are indicative of specific issues in the bearing application. For example, hearing a buzz to roar noise, where the loudness and pitch changes with speed indicates issues such as poor fit, deformed bearing rings, vibration of raceways, balls or rollers and brinelling. Screeching or howling sounds generally indicate too large an internal clearance or poor lubrication on a cylindrical roller bearing. Crunching that is felt when the shaft is rotated by hand often indicates contamination of the raceways.

A desirable bearing temperature is below 100 C. At start-up, the temperature will rise, but then stabilize at a temperature slightly lower than at start-up, but somewhere between 10 to 40 C higher than room temperature. Increased temperature is another early sign of bearing failure.

Operational stresses in the applications can impact bearing life as well. It is critical to isolate vibrations in

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associated equipment as they can cause uneven running and unusual noises.

Improving Bearing Performance

What do you do if performance is less than optimal? Lubrication plays a critical role in bearing performance. Grease is the lubricant most often used because it is easy to handle and simplifies the sealing system. Oil is more appropriate for high speed or high temperature operations.

There are a couple of ways to upgrade bearing performance for a particular application. One efficient way is through lubrication, specifically, the use of high-end synthetic greases and solid lubricants that sit within the bearing cavity. What many don't realize is that it is important to use grease/lubrication that has an equal or better service life than the bearing. If the grease or lubrication used does not have the same life potential as the bearing, then the bearing will fail sooner than its service life expectancy. Replacing the grease with a high-end lubricant will vastly improve bearing performance and extend its service life.

Another way to improve bearing performance is by upgrading to a bearing made of higher quality material.

Machinery manufacturing and automotive industries still use bearings of a standard style in terms of envelope dimensions. But, what has changed is the range of choices in material. A number of industries have upgraded from traditional 52100 chrome steel to various styles of stainless steel, ceramics and even titanium races in severe applications with optimum results.

Asking the right questions is key when addressing the issue of bearings not meeting expectations. Is there too much stress on the bearing? Is the operating temperature too high? Is rotation lagging? Oftentimes, we find that by upgrading the bearing itself to one of higher quality or by upgrading the lubrication, we can better the running accuracy, lower operating temperatures, and improve overall performance while extending the service life of the bearing. **PTE**

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