

A dedicated remanufacturing program



Kaydon infinite® expertise in bearing design and manufacturing has established Kaydon as the world's leading remanufacturer of slewing ring and thin section bearings.

Our approach to bearing remanufacturing mirrors our manufacturing effort, with an experienced remanufacturing staff supported by expert engineers and dedicated, state-of-the-art equipment. Our Bearing Remanufacturing Program is designed to return a bearing to service in the shortest possible time, while ensuring the highest quality workmanship on a very cost-effective basis.

A bearing repaired by Kaydon will perform like a new bearing at a significantly lower cost, yet carry an equal warranty. One example is a big slewing ring bearing remanufactured at the request of a major U.S. mine operator — it easily passed its 35,000-hour inspection (30,000 hours is typical) and is still going strong.

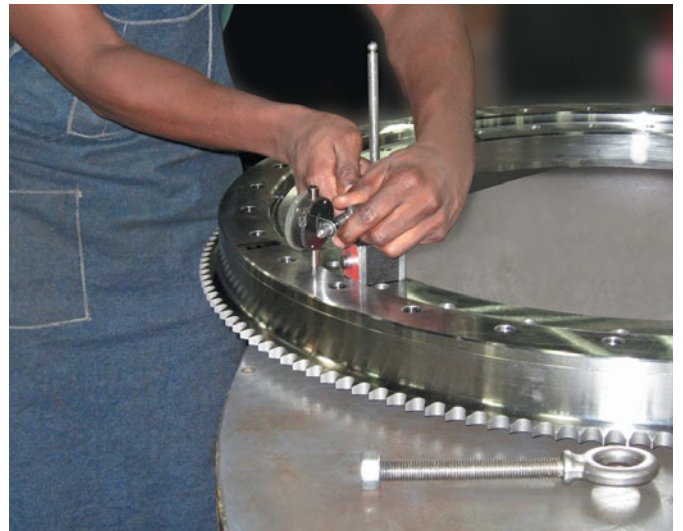
We can remanufacture bearings as small as 10" (25 cm) and as large as 240" (6.1 m). Kaydon infinite® remanufacturing solutions extend to all ball bearings and roller bearings, regardless of the original manufacturer. These include:

- Thrust ball bearings & thrust roller bearings
- Radial ball bearings & radial roller bearings
- Cross roller bearings
- Double row, angular contact bearings
- Three row roller bearings
- Ball bearings
- Multi-row/double-row ball bearings
- Cylindrical roller bearings
- Thin section ball bearings and roller bearings

The Kaydon remanufacturing program is not only dedicated, but comprehensive. It features:

- Free inspection on slewing ring bearings up to 8' in diameter
- Inspection in approximately one week
- Non-destructive testing performed on all bearings
- Engineering analysis
- Analysis reports provided for all inspections
- Four-week turnaround time for bearings 8' and under, and just a few more weeks for bearings 8' to 20' in diameter
- Substantial savings versus the cost of a new replacement bearing
- Stringent ISO 9001:2008 quality program
- Emergency remanufacturing services
- One year warranty for all remanufactured bearings

Kaydon also manufactures new replacement slewing ring bearings that meet original OEM specifications at substantial savings vs. OEM bearing prices. Our proven process features reverse engineering and comprehensive design analysis to maximize dynamic life and static capacity. And our strategically located facilities have the flexibility to fill high-volume and low-volume orders.



Remanufacturing Program

Kaydon's bearing repair program is designed to provide the best service options available – no matter the brand or size of bearing. Bearings are assessed for remanufacture from 10 inches to 240 inches in outside diameter (OD).

In this program optimized solutions are provided through our experienced sales team, international presence, and process capability. The process begins with the service engineering team partnering with the customer's maintenance or service groups to analyze the bearing.

Bearing Failure Warning Signs

Perhaps the most difficult task is determining if and when a bearing needs to be serviced. This determination requires much more than a quick visual inspection. Below are a few signs to look for when inspecting bearings that may need to be repaired:

- The bearing is nearing its suggested life expectancy.
- The bearing has exceeded an operating temperature of 200° F (93° C).
- The bearing has been exposed to excessive vibration.
- The bearing experienced a sudden drop or gain in lubrication.
- The bearing has a missing or torn seal.
- The bearing exhibits excessive rotational resistance.
- The structure has excessive movement or rocking during operation.
- The mating structure and hardware is damaged, e.g. cracked, broken, distorted, or even missing.
- The bearing exhibits limited rotation, uncharacteristic vibrations, or noise.
- Visible damage to gear or bearing

Paying attention to these details during regular maintenance checks can help you determine whether a bearing needs maintenance before it causes unnecessary downtime and expense. Careful observation is the first step in creating a program that monitors your bearings and surrounding operations.



WARNING: Proper maintenance and handling practices are critical. Failure to follow installation, maintenance, and operating instructions can result in equipment failure, creating a risk of bodily injury or death.

To provide the correct repair solution to the damaged bearing, the cause and extent of the damage must be understood. Environmental issues, such as ingress of contamination and water into the bearing, are the common causes of premature bearing failure. Following are typical causes of damage found on bearings and precautions that can be taken to prolong life.

■ Improper Handling:

Cage deformation and nicks or gouges can result from improper installation, handling or removal.

Precautions: Use proper handling practices along with the correct handling, mounting and disassembly tools.

■ Inadequate Lubrication:

Scoring of components or severe bearing deformation can result from inadequate or incorrect lubrication.

Precautions: Inspect and replace the lubricant at the manufacturer's recommended interval or as needed, whichever occurs first. If necessary, change or improve lubricant.

■ Corrosion and Etching:

Exposure to moisture can lead to etching, pitting, then rusting of bearing components. Spalling may result from bearings that operate after such damage.

Precautions: Check seals regularly, ensure proper sealing and store bearings properly.

■ Electric Current:

Passage of electric current while a bearing is rotating may cause fluting or grooving. Improper electric grounding while a bearing is stationary can create small burns.

Precautions: Shunt the current around the bearing with the proper earth connection before welding.

Remanufacturing Program

■ Foreign Material:

Abrasions, bruising and grooving can result from abrasive particle contamination and debris.

Precautions: Remove the debris, change the lubricant, and check/replace the seals.

■ Misalignment:

Geometric stress concentration and spalling can result from misalignment, deflections or heavy loading.

Precautions: Machine the bearing seats and shoulders accurately. Check accuracy of shaft and housing seats, ensure proper shaft/housing alignment and confirm or reduce operating forces.

■ Overloading:

Improper use for the intended application can lead to overload conditions accelerating wear.

Precautions: Utilize the equipment for the intended application within the load limits defined.

Kaydon Service Options

The initial analysis covers the cleaning, verification of internal clearances, disassembly, and inspection of the bearing assembly. The engineering team then assesses the damage and provides a quotation based on the most appropriate remanufacturing type to restore the bearing to full operation. The three repair classifications are:

Class A Repair

To ensure correct geometry and alignment, bearing assemblies require machining of rolling element pathways and the surfaces that interface with the mounting structure for correct installation. Oversize rolling elements are used to restore the desired internal clearance or preload and new spacers and seals are fitted.

Class B Repair

Bearing assemblies require polishing or other surface alterations to relieve stressed or corroded areas on the raceway or mounting surfaces. The bearing is re-assembled with new rolling elements, spacers, and seals as required.

Class R Repair

Bearing assemblies require a completely new bearing ring to match an existing repairable ring. The existing raceway is machined to give correct geometry and the new ring and raceway are manufactured to match the repaired component. New rolling elements, spacers, and seals complete the refurbishment.

Taking the Next Step

1. Contact Kaydon's remanufacturing service for a customized solution:
 - call 800-286-6274 ext. 226
 - or visit www.kaydonbearings.com/remanufacturing.htm
2. The Kaydon representative will work to assess the bearing repair needs.
3. Kaydon will physically assess the bearing's condition and provide a quotation.
4. When the repair is authorized, the plant will perform all necessary repairs and return the bearing within the promised lead time. If it is decided not to proceed with the repair, the damaged bearing will be disposed of or returned disassembled.