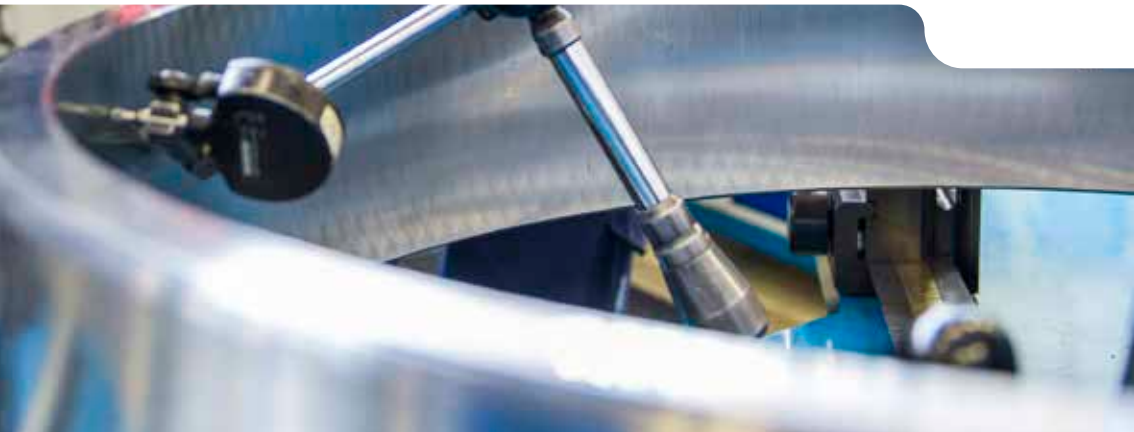




SKF[®]

Bearing damage evaluation guide

Industrial bearing remanufacturing services from SKF




Bearing damage evaluation guide

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Legends: RSC – SKF Remanufacturing Service Centre

 Remanufacturing possible

 Remanufacturing possible
depending on application

 Remanufacturing impossible



1 Guide introduction

This guide will assist you in the initial diagnosis of the bearing condition. It will help to determine if the bearing can be a candidate for remanufacturing.

- A** Focuses the investigation on the rings. Most of the other bearing components can be repaired or replaced.
- B** According to your initial diagnostic result:
- Remanufacturing possible → Send the bearing to an SKF bearing remanufacturing service center.
 - Remanufacturing not possible → Propose alternative solutions (new bearing, redesign, SKF maintenance program, etc.)



NOTE:

If in any doubt, ask SKF's remanufacturing specialists.

SKF specialists can make the final judgment

- A** Send the case data to an SKF bearing remanufacturing service, including:
- Detailed, close-up pictures of component damages
 - General pictures of bearing arrangement
 - Technical inputs such as:
 - Application description
 - Lubricant characteristics
 - Lubrication method
 - Bearing service time, loads and speed temperature



Alternatively

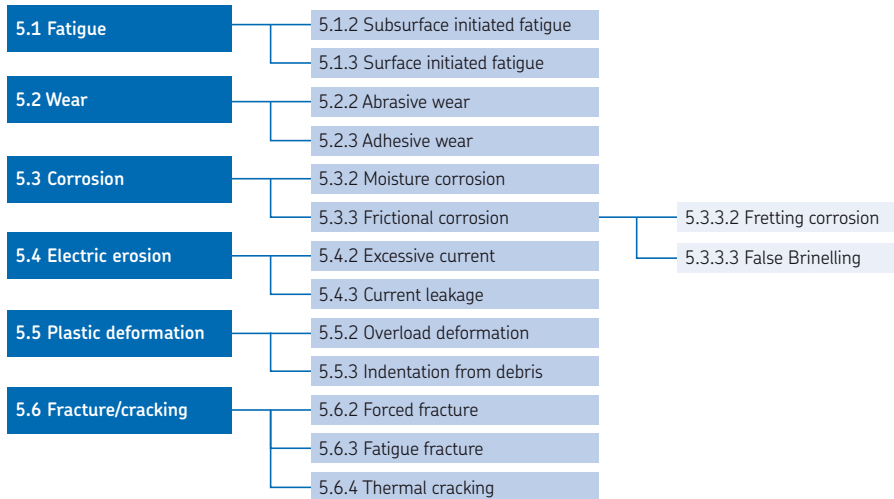
- B** Send the remanufacturing candidate directly to an SKF bearing remanufacturing service.

CAUTION:

After dismounting, never disassemble, clean or wash the bearing and protect it against dust or damp before sending it for investigation and remanufacturing. All evidence from the usage is vital to make a correct investigation and analysis.



2 SKF classification adapted from ISO 15243:2017 and remanufacturability examples

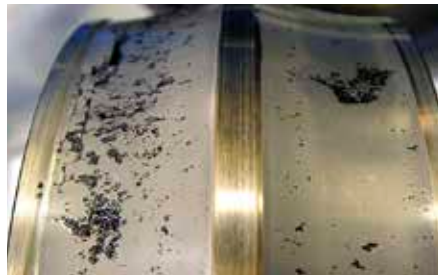


Failure mode 5.1: Fatigue

5.1.2 Subsurface initiated fatigue



5.1.3 Surface initiated fatigue



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible





Failure mode 5.2: Wear

5.2.2 Abrasive wear



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible

Failure mode 5.2: Wear

5.2.3 Adhesive wear



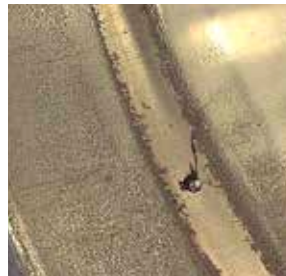
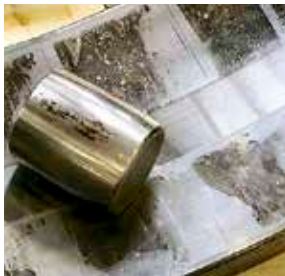
- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible





Failure mode 5.3: Corrosion

5.3.2 Moisture corrosion



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible

Failure mode 5.3: Corrosion

5.3.3 Frictional corrosion

5.3.3.2 Fretting corrosion



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible





Failure mode 5.3: Corrosion

5.3.3 Frictional corrosion

5.3.3.3 False Brinelling



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible

Failure mode 5.4: Electric erosion

5.4.2 Excessive current



5.4.3 Current leakage



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible





Failure mode 5.5: Plastic deformation

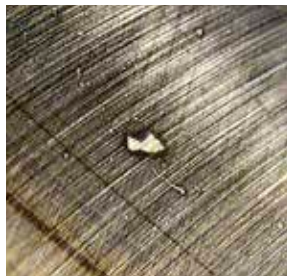
5.5.2 Overload deformation



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible

Failure mode 5.5: Plastic deformation

5.5.3 Indentation from debris



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible





Failure mode 5.6: Fracture/cracking

5.6.2 Forced fracture



5.6.3 Fatigue fracture



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible

Failure mode 5.6: Fracture/cracking

5.6.4 Thermal cracking



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible



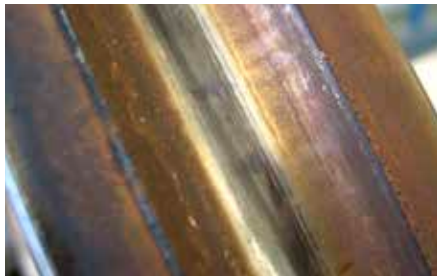


Other: Discolouration

Overheating



Chemical



- Remanufacturing possible
- Remanufacturing possible depending on application
- Remanufacturing impossible

3 SKF industrial bearing remanufacturing services

SKF is using its new bearings manufacturing standard, processes, equipment, quality assurance, knowledge and competences as the basis for its bearings remanufacturing service.

This includes acceptance criteria that deliver high quality results, even when extensive remanufacturing is needed.

To provide full traceability SKF has developed and uses an advanced management system. By uniquely marking each asset during the remanufacturing processes, you will be able to trace your bearing through its life cycle.

In addition to standard remanufacturing, we can also remanufacture your bearings to a new or higher specification. This can include mounting sensors and the provision of other enhancements such as integrated lubrication, sealing solutions and rework to other specifications.





3.1 Candidates for remanufacturing

Typical bearing types suitable for remanufacturing of all brands are shown below.

Large size bearings



Spherical roller bearing



Tapered roller bearing



Tapered roller bearing (multi row)



Cylindrical roller bearing



Deep groove ball bearing



Spherical roller thrust bearing

Other



CARB toroidal roller bearing



Backing bearings



Stewing bearings



Split castor bearing and housing

NOTE:

Remanufacturing can also include related equipment such as housings, bearing units and cassettes, etc.

3.2 Benefits

The SKF professional bearing remanufacturing services available worldwide can bring advantages and benefits like:

- reduced total life cycle costs
- extended bearing service life
- reduced machine downtime
- reduced environmental impact
- maintained stock of replacement bearings
- improved overall asset reliability

Depending on the amount of remanufacturing required, up to 90% less energy is needed to repair a bearing instead of manufacturing a new one. Furthermore, cost-benefit analysis shows that significant cost savings can be achieved by remanufacturing bearings – depending on bearing size, complexity, bearing condition and price.

In addition to reducing the energy use, SKF's remanufacturing services help protect the environment by responsible cleaning of used bearings and handling of waste.





3.3 Our global network

SKF's bearing remanufacturing network is present in most parts of the world and is continuously expanding with new service centres. All centres for remanufacturing have highly trained teams with special competencies.

Operating as a global network, we share knowledge, specific spare part procurement, and capability development. As a result, we can offer the agility and flexibility of a small company, but with the capacity, core competencies, and peace of mind achieved through working with an industry leader.

These and other services are delivered by SKF Solution Factory, a global network of facilities staffed by experts from every SKF discipline. SKF Solution Factory brings people, services and technologies together to deliver customized solutions to industry challenges.

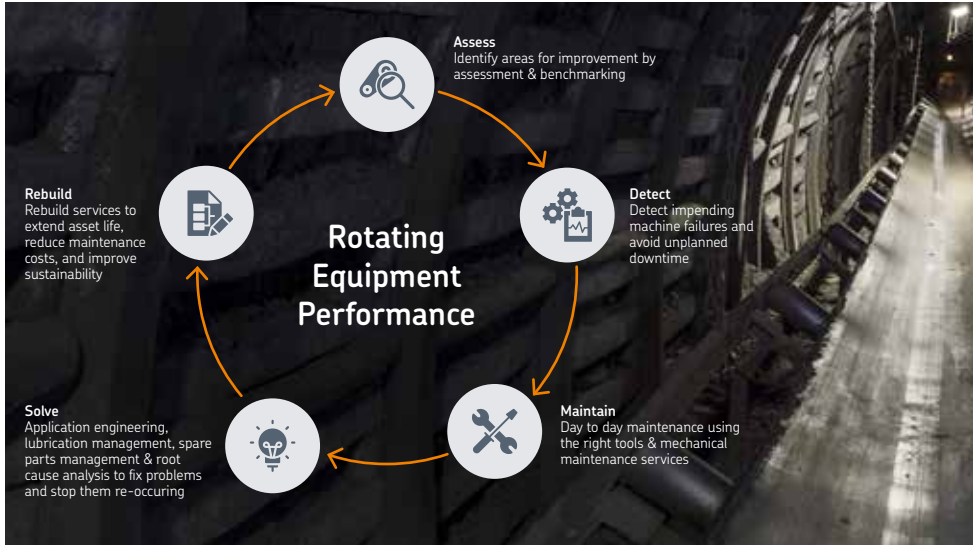
Your local SKF representative can connect you to a SKF Solution Factory near you.

www.skf.com/services

3.4 Improving rotating equipment performance

Getting the right performance from rotating equipment can help meet business objectives and give you a competitive edge. But the right performance is different for every customer. This is why we have engineered a broad range of products, technologies and services combined with flexible new business models, to meet your unique requirements. So, whether you want to solve a specific rotating equipment problem, increase your plant and equipment performance, or improve your overall maintenance strategy and efficiency, SKF is your partner. With access to unique application insights and the right products, technologies and solutions, we can help you achieve the performance you are looking for from your rotating equipment.







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PUB BU/S9 07038/4 EN - October 2018

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