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Kugel- und Rollenlagerwerk Leipzig GmbH

Securing damaged bearings

Identification and documentation

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Securing damaged bearings

The damage to the machine is often only noticed when massive damage to the components has already taken place. The measures for rapid repair are then usually in the foreground. Important information on finding the cause and thus avoiding the damage in the future is lost during disassembly or transport. What often remains are only the damaged components, which are subsequently used to determine the cause of the failure.

If you notice the following abnormalities, you should check your bearing for damage:

- Unusual operating behaviour of the bearing
- Changes in running behaviour
- Abnormal running noises
- Impeded running
- Sudden temperature increase
- Deterioration of working results (e.g. for machine tools)

Documentation of bearing failures

For a complete documentation please use the following form. Please note that all additional information (e. g. measurement reports) have to be added as a separate file and must be forwarded to the service team or your contact person after completion of the documentation form.

Before the disassembly

- Check the general condition of the machine and document it.
- Check the lubrication condition. If possible, take a sample of the lubricant.
- Are there any running noises? Do the sounds change or is there rhythmic disturbance in their frequency?
- Is the bearing mounted correctly? Are all retaining screw and nuts or clamping sleeves and withdrawal sleeves tightened correctly?

During the disassembly

- Avoid transferring the dismounting forces to the rolling elements.
- Are the rings noticeably easy or difficult to remove from the seat?
- Under no circumstances should the bearing be cleaned or lubricant be removed during or after the disassembly.
- All seals (uncleaned) must be handed over to the manufacturer for damage clarification.

After the disassembly

- Measure the diameter and roundness of the bearing seats of the shaft and housing. Write a measurement protocol and highlight:
  - Changes compared to the installation dimension
  - Roughness of the seats
  - Particles or other media

Ensure that the bearing is not contamined further!

- **Sealed rolling bearings should not be opened on site!**

Packaging

- Pack the bearing professionally, but preferably in the original packaging. Pay attention to:
  - Completeness of the bearing (rolling elements, rings, cage etc.)
  - Correct packaging of the lubricant sample
  - Placement of the bearing inside of the package
  - Securing and padding of the bearing
  - Correct labelling

- For correct packaging, please consult the following document: *Packing of damaged bearings*

All metallurgical tests are destructive! Please note that after the examination, a new bearing has to be purchased. Please contact the manufacturer regarding costs and further details.

Identification and documentation of damaged bearings

Checklist for data collection

Please note, that the following applicable data have to be fully recorded, so that no details are lost. All abnormalities have to be documented with photographs.

Date of the first installation	
Changes to the bearing location	
Previous failure details	
Calculated life	
Usually achieved life	
Particularities during the life	
Any repairs to other machines or components	
Interruption of operations, if any	
Transport routes and means of transport of bearings or machines	

Application data

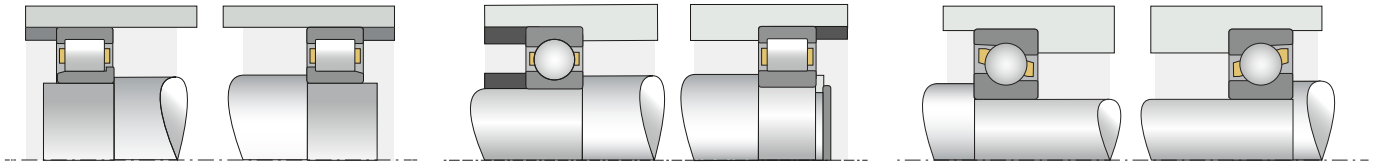
Please fill in as appropriate.

Machine	Bearing location	Mounting position	Achieved service life [h]	Number of identical machines	Number of failures on this machine

Bearing assembly

Please check only one choice!

Floating bearing (A)	Locating-floating bearing (B)	Adjusted bearing (C)	Special solution (Which one?)
☐	☐	☐	☐



(A) (B) (C)

History of the bearing

SECTION A - Information on operating conditions / operating data

Identification and documentation of damaged bearings

Checklist for data collection

Rotational speed

Mark the fitting options.

Constant or variable		Change in rotational direction		Rotating Ring Inner Ring / Outer Ring	
☐	☐	Yes ☐	No ☐	☐	☐

Load

Please fill in as appropriate.

Axial, radial or combined forces	
Tilting moment	
Constant, alternating or vibrating	
Centrifugal forces	

Surrounding components

Please fill in as appropriate. Please complete the measurement reports under section C.

Shaft and housing seat, e.g. fit, clamping or withdrawal sleeves	
Fasteners, e.g. shaft nut, expansion screw, retaining ring	
Housing fastening, e.g. housing cap - gap size	

Sorrounding conditions

Please fill in as appropriate.

External heating or cooling	
Special conditions or media (e.g. nitrogen, vacuum, radiation, bento-nites, abrasive media)	
Vibrations at standstill or during operation	
Dust, dirt and/or moisture	
Corrosive or alkaline media	

Lubrication

For information on the extraction of an lubrication sample see page 5/ Section B.

Lubricant type	
Product name	
Manufacturer	
Lubricant quantity	
Lubricant feed and lubricant removal	
Relubrication intervals	
Last relubrication or oil change	

Identification and documentation of damaged bearings

Checklist for data collection

Sealing

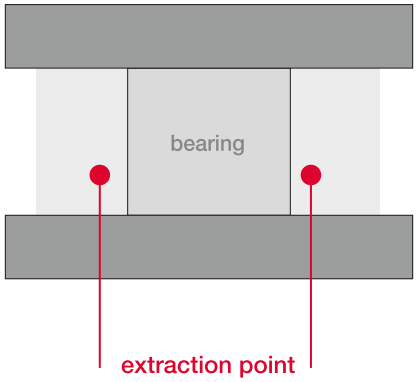
Please check as appropriate.

Contact sealing	Contact free sealing	Special solution (Which one?)
☐	☐	☐

Lubricant sample

Please check as appropriate.

Oil-lubricated bearings	Grease lubricated bearings
• Fill oil into a clean container • Close container securely • Pack the lubricant sample together with the bearing ☐	• Take a grease sample from the housing spaces on the side (see graphic below) • Extract the sample with either a syringe or a spatula • Fill grease into a clean container ☐



Simplified representation of the extraction points outside of the cage on the bearing end faces

On-Line Monitoring System Records

Please check as appropriate.

Temperature - Time pattern	Yes ☐	No ☐
Vibration - Time pattern	Yes ☐	No ☐

Please attach the corresponding monitoring protocols (printout or PDF) to the documentation!

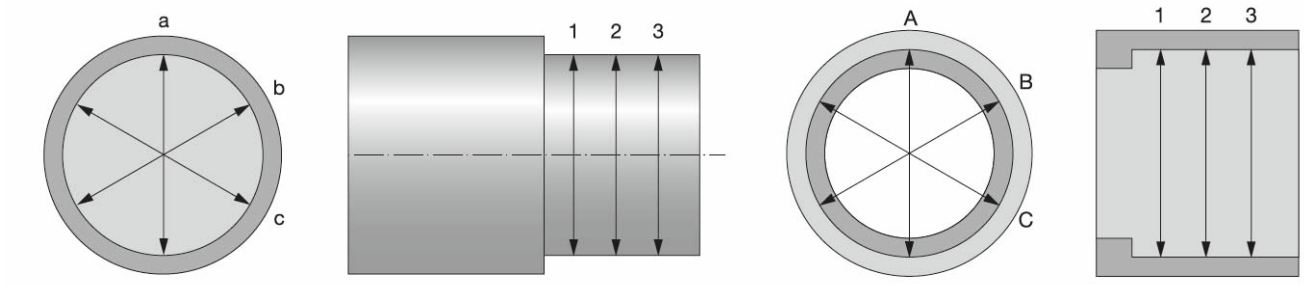
Notes (1)

Identification and documentation of damaged bearings

Checklist for data collection

Measurement report for shaft and housing seats

Bearing identification:	Serial number:
Bearing position:	



Measuring direction	Shaft		
	a_i	b_i	c_i
	Diameter d [mm]		
1			
2			
3			
	Average value according to equation e.g.: $(a_1+a_2+a_3)/3$		

Measuring direction	Housing		
	A_i	B_i	C_i
	Diameter d [mm]		
1			
2			
3			
	Average value according to equation e.g.: $(A_1+A_2+A_3)/3$		

Notes:	
Date:	Signature:

Identification and documentation of damaged bearings

Checklist for data collection

Photographic documentation

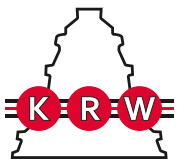
Please fill un as appropriate.

Machine	
Bearing location	
Bearing before disassembly	
Bearing during disassembly	
Bearing after disassembly	
Details of damaged bearing	
Others	

Please forward all files to the manufacturer or attach them to the checklist. The attached pictures must not be out of focus or blurred.

Notes (2)

For a short checklist please go to:
www.krw.de/en/download



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