



GEBR. REINFURT GMBH & CO. KG
EXTREME-PRECISION BALL BEARINGS

bearing failures

Rotated by GRW

Handling of bearings

- Clean and dry storage
- Usage of gloves or tools
- Clean and hard base
- Relubricate with the same lubricant
- No contact of the bearing components with glue
- No passage of current
- Selection of bearings with the same tolerances
→ perfect bearing seat
- Unpackaging first if the bearing is needed
- Take care by mounting and choice of the tools



Bearing damage (potential failure causes)

possible cause	contamination	assembly	gluten	lubrication	overload			storage	ambient media	fitting	assembly tools	construction
					load	temperature	rotation speed					
the customer complains												
noise	X	X	X	X								X
bearing blocked	X	X	X		X	X	X			X		
breakage					X					X		
corrosion								X	X	X		
mounting problems										X	X	X
discoloration						X			X			

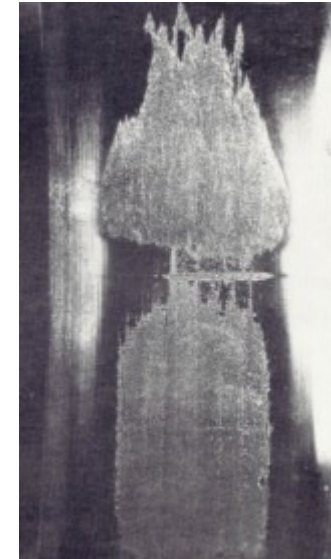


Discharging mark

Description: Raceways with marks of small discharges over a far-flung surface especially on the non-loaded parts of the bearing

Reason: Existence of electromotive forces caused by currents or derivation.

Preventive measure: planning of a current bridge insulation of the bearing
hybrid bearing use of a
conductive lubricant

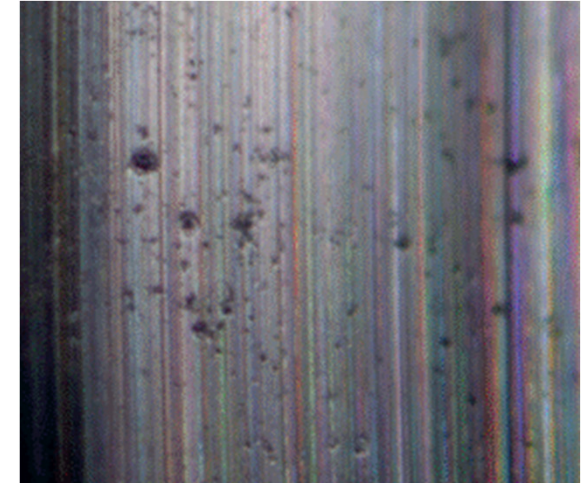


particle indentations

Description: Pittings on the raceways

Reason: Pollution in the bearing.

Preventive measure: Usage of shielded or sealed bearings.
Attention to the handling hints.



Peelings

Description: The raceway surfaces show wear marks.
In the further course occur clearly visible fractures and peelings.



Reason: Loads are too high, wrong handling, insufficient precision of shaft or housing fits, bearing clearance is too low, foreign particles, corrosion, hardness decrease because of too high operating temperature. Pollution in the bearing.

Preventive measure: Checking of the bearing load, choice of another bearing version, checking of the bearing clearance, checking of shaft resp. housing fits,



Shifting or gliding

Description: Bore or outer diameter surfaces are as smooth as glass or discolored, visible score marks.

Reason: Interference is too low, adapter sleeve is insufficiently tightened, varying thermal expansion, load is too high

Preventive measure: Checking of fits, checking of operating conditions, checking of the precision of the fits

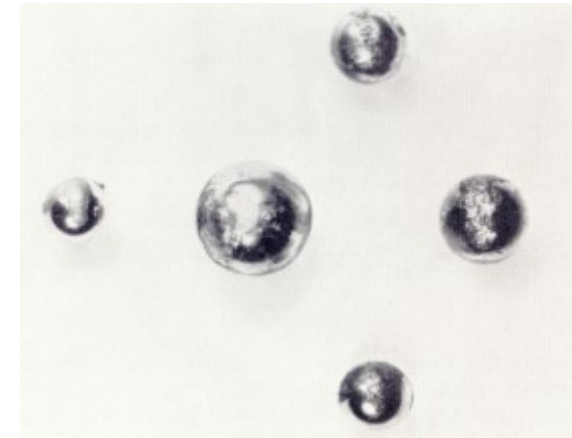
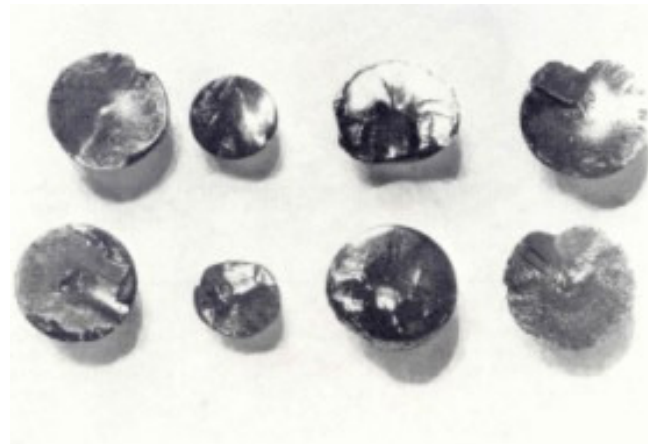


Broken balls and ball fractures

Description: broken balls or material fractures at the ball

Reason: over loading; extended operation period, material fatigue

Preventive measure: use of bearings with higher load capacity.



Breaking of the cage

Description: Coming off or breaking of the retainer connection

Reason: misalignment is too strong, too high speed or acceleration, insufficient lubrication, external force during mounting procedure, operating temperatures are too high (plastic retainer)

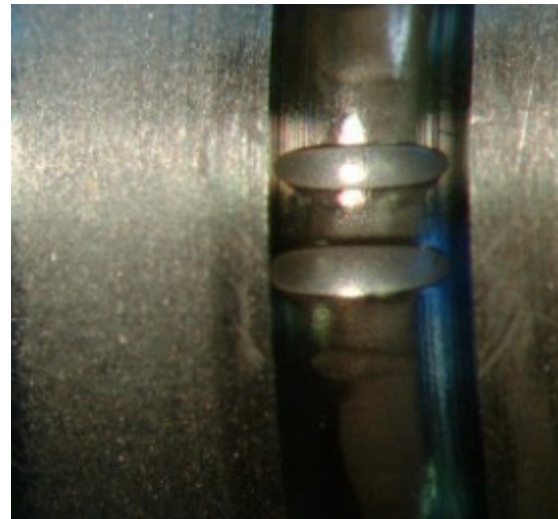
Preventive measure: proper mounting different retainer material and design; improved lubrication controlled bearing adjustment



Standstill corrosion

Description: Depressions in the raceways between the rolling body distances.
The surface of the depressions is roughened and do not show any bulges at the edges.

Reason: Such damages occur if the bearings in standing condition are exposed to vibrations for a longer period of time, e.g. during transport.



top left:
particle indentations

top right:
ball indentations

below left:
IR dry run,
AR wrong position

below right:
AR dry run

bearing damages

