Heavy-Duty TechTips

TIMKEN
Where You Turn

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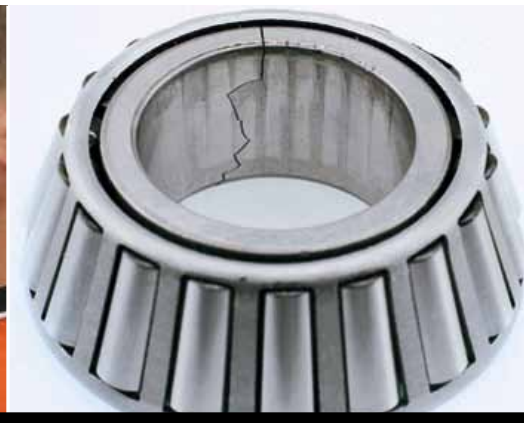
TAPERED ROLLER BEARING DAMAGE ANALYSIS



The most common types of bearing damage that may result in a reduction of bearing or application life are often caused by:

- ***insufficient maintenance practices***
- ***mishandling***
- ***improper installation and adjustment practices***
- ***inadequate lubrication***

The following offers a quick reference to the common types/causes of bearing damage.

FOREIGN MATERIAL

Abrasive wear: Fine abrasive particle contamination.

Bruising: Debris from other fatigued parts, inadequate sealing or poor maintenance.

Grooving: Large particle contamination embedding into soft cage material.

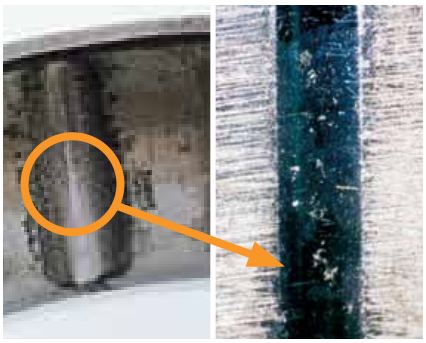
CORROSION/ETCHING

Staining: Surface stain with no significant corrosion from moisture exposure.

Etching: Rusting with pitting and corrosion from moisture/water exposure.

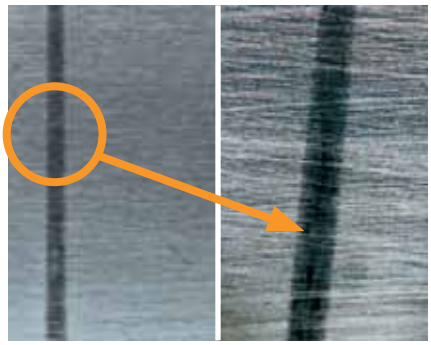
Line spalling: Roller spaced spalling from bearings operating after etching damage.

FALSE BRINELLING



Wear caused by vibration or relative axial movement between rollers and races.

TRUE BRINELLING



Damage from shock or impact.

HIGH SPOTS IN CUP SEATS

Localized spalling on the cup race from stress riser created by split housing pinch point.

IMPROPER FIT

Cone bore damage: Fractured cone due to out-of-round or oversized shaft.

Cup spinning: Loose cup fit in a rotating wheel hub.

MISALIGNMENT

Irregular roller path from deflection, inaccurate machining or wear of bearing seats.

ELECTRIC CURRENT

Electric arc pitting: Small burns created by arcs from improper electric grounding while the bearing is stationary.

Fluting: Series of small axial burns caused by electric current passing through the bearing while it is rotating.

⚠ WARNING ***Failure to observe the following warnings could create a risk of serious injury.***

Proper maintenance and handling procedures are critical. Always follow installation instructions and maintain proper lubrication.

Never spin a bearing with compressed air. The rollers may be forcefully expelled.

TechTips is not intended to substitute for the specific recommendations of your equipment suppliers.

Every reasonable effort has been made to ensure the accuracy of the information contained in this writing, but no liability is accepted for errors, omissions or for any other reason.

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