RM & DD Model Conveyor Bearing Information

General Overview: In an effort to alleviate bearing and pulley failures, EMI is providing the following information and recommendations. Information provided is based upon previous experiences, information from our market, and bearing manufacturers. Based on our experiences the largest factor into the life of the bearing and pulley systems used in our conveyors is the amount of belt tension applied through the tensioning system. The amount of force exerted on the pulley and bearings is drastically amplified when the conveyor belts are overtightened. Users of our conveyors should understand that the amount of surface area between the belt and pulley provide an adequate pulling surface with a minimal amount of tension applied to the belt.

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Belt Tensioning: While a tension measurement is not easily obtained from a sonic or mechanical instrument there is a method to correctly set the conveyor belt. After installation snug the belt to provide minimal contact between the pulley and belt. Apply 50 lbs to the belt (RM & DD type conveyors only) and apply tension until it can be pulled without slipping at the drive pulley. If there is belt stoppage or erratic movement gradually apply more tension to eliminate the erratic motion. The belt will visually appear loose. This is **NORMAL**. See picture below.

Once the belt has been properly tensioned you must next "Track" the belt to insure normal wear and adequate service life. This information can be found in the Conveyor Operation and Maintenance Manual provided with your conveyor or available online at EMIcorp.com.

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Bearing Lubrication: The service recommendation is to lube the bearings with a lithium based #2 grease (or compatible) every 1650 – 1700 hours of operation. The amount of grease inserted to the bearing should be minimal (2-3 pumps with a mechanical grease gun) Over greasing the bearing can be detrimental to the bearing seals. Over greasing will produce leakage at the seal immediately or after a short run time. Seeping or leaking grease should be removed to avoid dirt contamination and the amount of grease injected at the service interval should be reduced. Pictured below is an over lubricated bearing.

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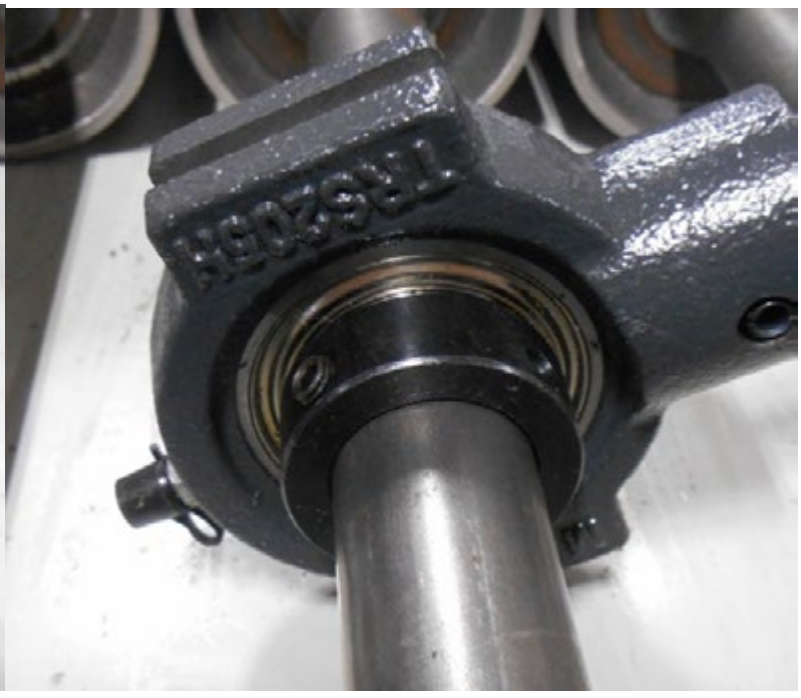
Bearing Alignment: Proper bearing alignment is crucial to the life of the bearing. When any repairs are made the bearing carrier itself or parts that could effect alignment the bearing should be allowed to re-align. With an RM style conveyor the lock collar should be loosened from the bearing inner race and the machine operated for a short period of time (approx 1 minute) then the collar can be reset to the bearing. Lock the collar in the same direction as the shaft rotation with minimal force and re-tighten the set screw. Use caution because overtightening the lock collar can crack/break the inner race and cause premature bearing failure. On a DD style conveyor you should loosen the set screws and operate the conveyor for a short time (approx 1 minute) to allow for alignment and then re-tighten the set screws. Illustrations of both styles are below:

DD Style



RM Style

The following pages are manufactures examples of the types of bearing failures associated with the previous items covered. They will assist with the proper analysis of the bearing failures encountered.

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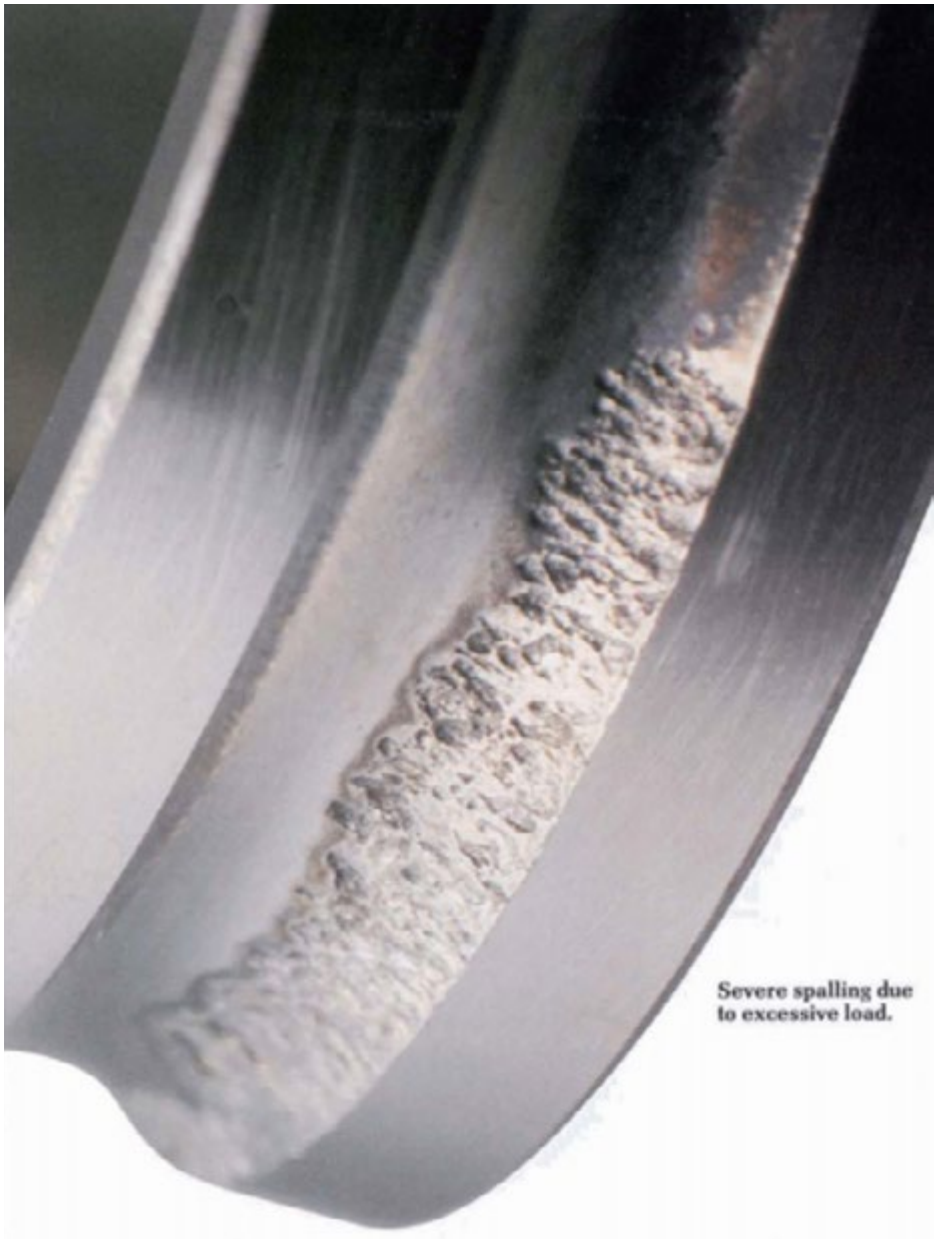
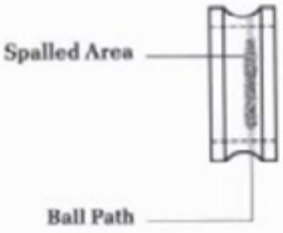


Severe spalling due to excessive load.

EXCESSIVE LOADS

Excessive loads usually cause premature fatigue. Tight fits, brinelling and improper preloading can also bring about early fatigue failure, (see Tight Fits, p. 15 and True Brinelling, p. 7). This type of failure looks the same as normal fatigue, although heavy ball wear paths, evidence of overheating and a more widespread spalling (fatigue area) are usually evident with shortened life.

The solution is to reduce the load or redesign using a bearing with greater capacity.



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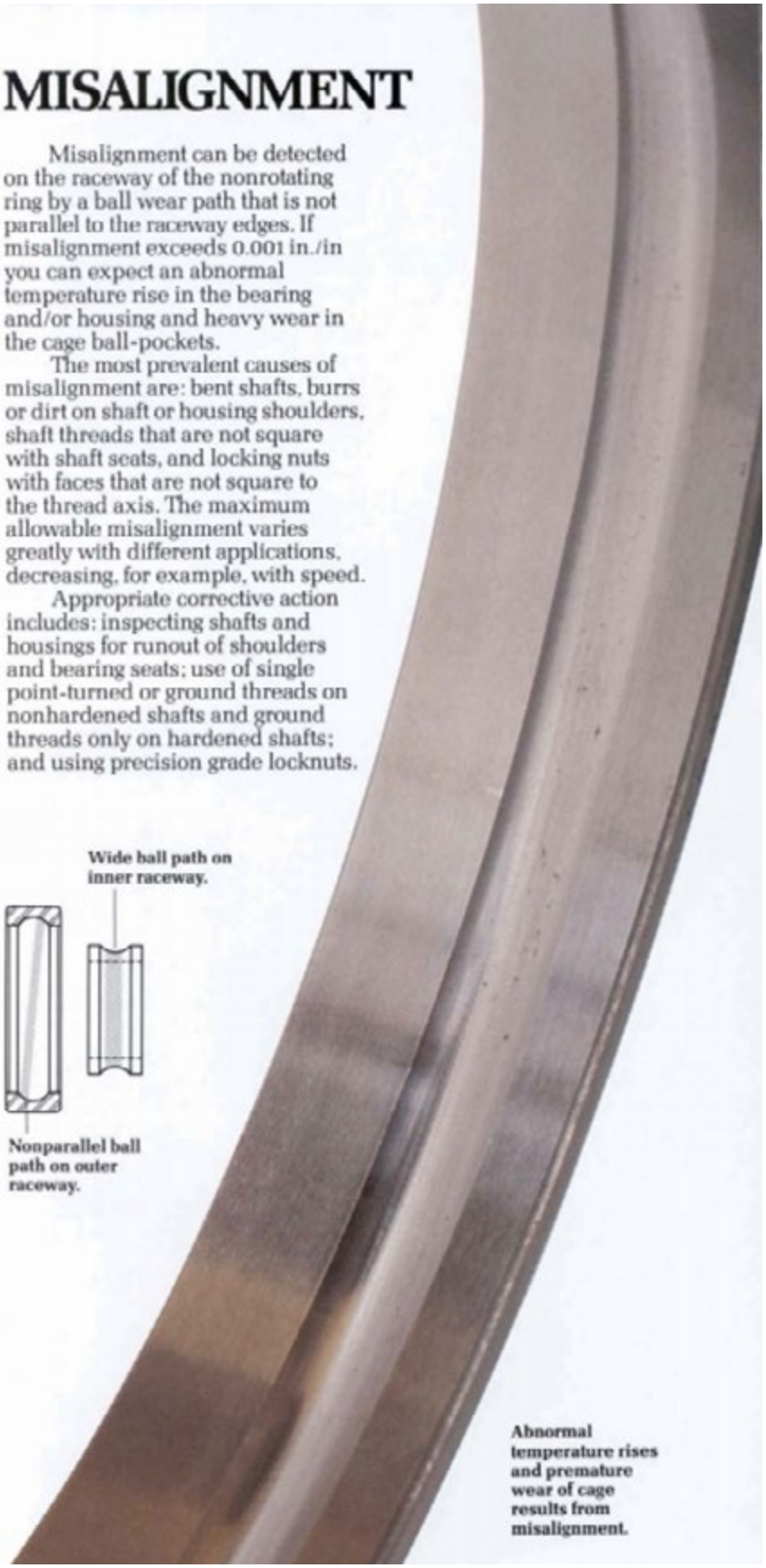
MISALIGNMENT

Misalignment can be detected on the raceway of the nonrotating ring by a ball wear path that is not parallel to the raceway edges. If misalignment exceeds 0.001 in./in you can expect an abnormal temperature rise in the bearing and/or housing and heavy wear in the cage ball-pockets.

The most prevalent causes of misalignment are: bent shafts, burrs or dirt on shaft or housing shoulders, shaft threads that are not square with shaft seats, and locking nuts with faces that are not square to the thread axis. The maximum allowable misalignment varies greatly with different applications, decreasing, for example, with speed.

Appropriate corrective action includes: inspecting shafts and housings for runout of shoulders and bearing seats; use of single point-turned or ground threads on nonhardened shafts and ground threads only on hardened shafts; and using precision grade locknuts.



Abnormal temperature rises and premature wear of cage results from misalignment.

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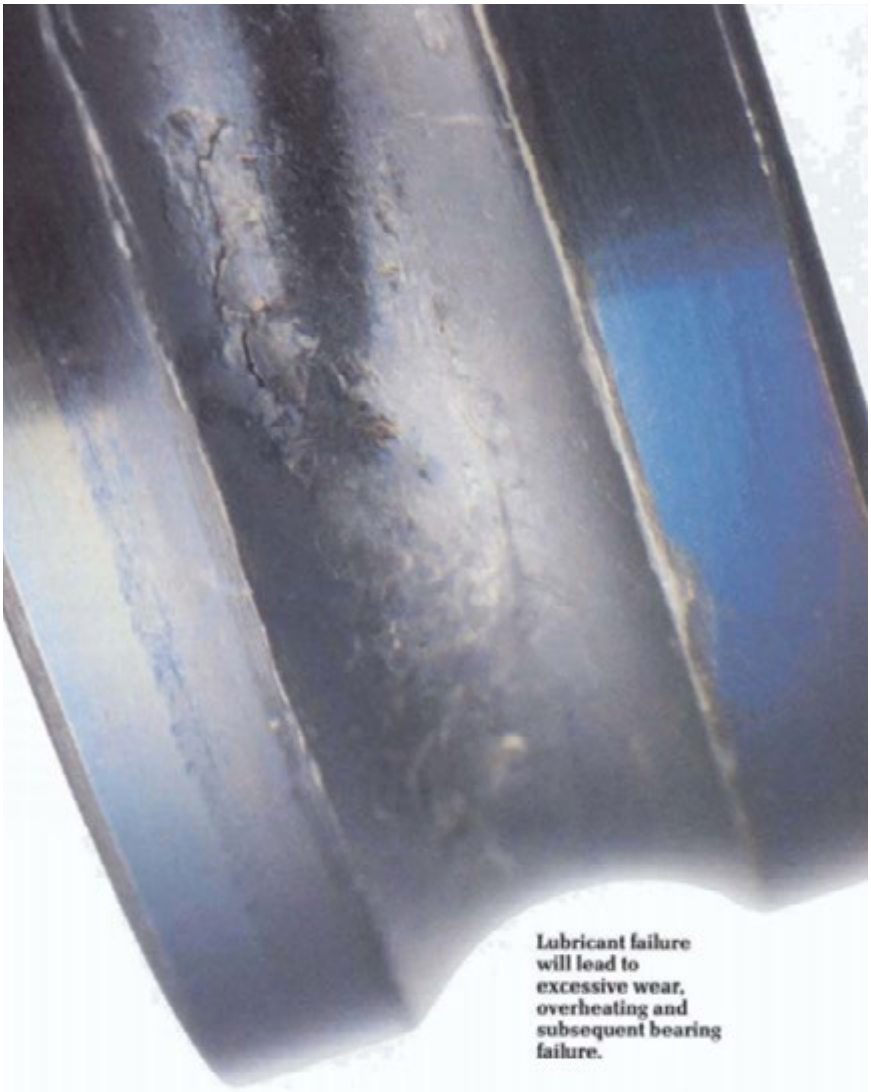
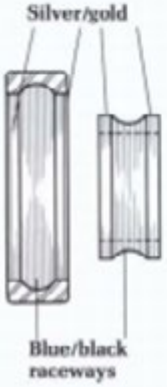


Lubricant failure will lead to excessive wear, overheating and subsequent bearing failure.

LUBRICANT FAILURE

Balls will also be blue/black.



Discolored (blue/brown) ball tracks and balls are symptoms of lubricant failure. Excessive wear of balls, ring, and cages will follow, resulting in overheating and subsequent catastrophic failure.

Ball bearings depend on the continuous presence of a very thin—millionths of an inch—film of lubricant between balls and races, and between the cage, bearing rings, and balls. Failures are typically caused by restricted lubricant flow or excessive temperatures that degrade the lubricant's properties.

Barden engineers can advise users on the most suitable lubricant type and quantity to use. Refer to lubricant section of Barden C-10 catalog for more information. Also, any steps taken to correct improper fit, control preload better, and cool the shafts and housings will reduce bearing temperatures and improve lubricant life.