

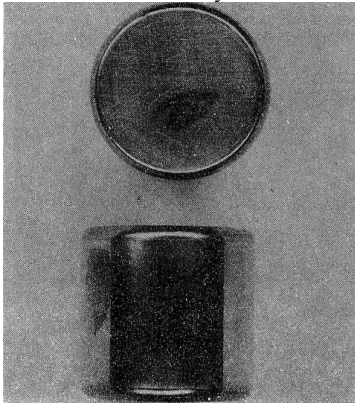
FATIGUE FLAKE

Characteristics

Flaking with conchoidal or ripple pattern extending evenly across the loaded part of the race.

Causes

Fatigue due to repeated stressing of the metal. This is not a fault condition but it is the form by which a rolling element bearing should eventually fail. The multitude of small dents are caused by the debris and are a secondary effect.



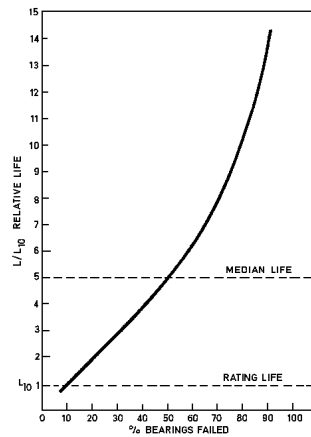
ROLLER STAINING

Characteristics

Dark patches on rolling surfaces and end faces of rollers in bearings with yellow metal cages. The patches usually conform in shape to the cage bars.

Causes

Bi-metallic corrosion in storage. May be due to poor storage conditions or insufficient cleaning during manufacture. Special packings are available for severe conditions. Staining, as shown, can be removed by the manufacturer, to whom the bearing should be returned.



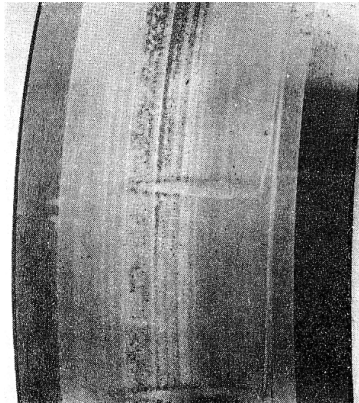
EARLY FATIGUE FLAKE

Characteristics

A normal fatigue flake but occurring in a comparatively short time. Appearance as for fatigue flake.

Causes

Wide life-expectancy of rolling bearings. The graph shows approximate distribution for all types. Unless repeated, there is no fault. If repeated, load is probably higher than estimated; check thermal expansion and centrifugal loads.



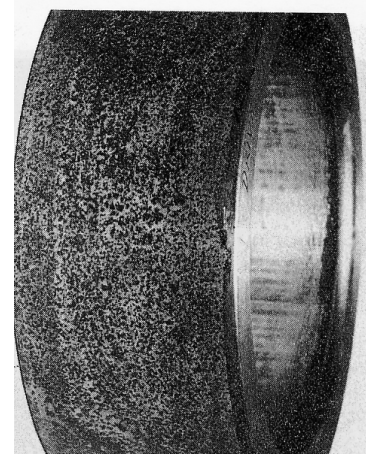
BRUISING (OR TRUE BRINELLING)

Characteristics

Dents or grooves in the bearing track conforming to the shape of the rolling elements. Grinding marks not obliterated and the metal at the edges of the dents has been slightly raised.

Causes

The rolling elements have been brought into violent contact with the race; in this case during assembly using impact.



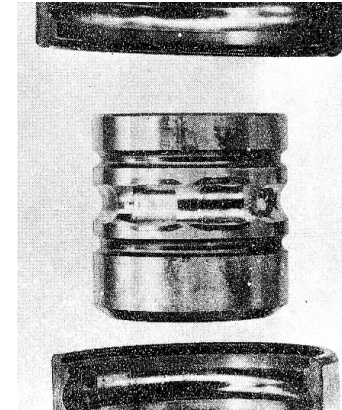
ATMOSPHERIC CORROSION

Characteristics

Numerous irregular pits, reddish brown to dark brown in colour. Pits have rough irregular bottoms.

Causes

Exposure to moist conditions, use of a grease giving inadequate protection against water corrosion.



FALSE BRINELLING

Characteristics

Depressions in the tracks which may vary from shallow marks to deep cavities. Close inspection reveals that the depressions have a roughened surface texture and that the grinding marks have been removed. There is usually no tendency for the metal at the groove edges to have been displaced.

Causes

Vibration while the bearing is stationary or a small oscillating movement while under load.