12 Failure of Cage

Phenomena, causes and countermeasures

Phenomena

1) Cracks and Chips
If a seriously cracked bearing is used under heavy operating conditions, it will fail.

2) Flaw and Distortion
- Since cages are made from soft material, they tend to be damaged or become distorted by external forces or from contact with other parts.
- Since cages with a serious flaw also have distortion, their accuracy may decrease.
And the motion of the rolling element is consequently affected; therefore, especially the size and location of the flaw should be checked with care.

3) Rust and Corrosion
If rust or corrosion is found on cages, it can be assumed that it is also occurring on the bearing ring and rolling element.

4) Wear
As described in Section 2, cages under the following conditions can no longer be used because proper rotation of the rolling element is hindered: cages whose pocket surface has been worn down in the shape of the rolling elements; cages which cannot maintain the rolling elements, and cages whose guide surface for the bearing ring has been eccentrically or severely worn.

5) Looseness and Improper Riveting
Looseness of the rivet is caused by an error in bearing mounting, moment load, variable load, vibration, etc.
If a bearing is operated with improper riveting, the bearing cannot be returned to service because the rivets may break.

Causes and countermeasures

1) Cracks and Chips
a) Careless handling.
b) Abnormal load, Vibration impact.

2) Flaw, Distortion
a) Careless handling.

3) Rust, Corrosion
a) Improvement of sealing capability.
Periodic inspection of lubricant.
b) Provision of adequate rust prevention during storage of bearings

4) Wear
a) Improper lubricant or shortage of lubricant ... Investigation followed by countermeasures involving lubricant and lubrication method.
b) Contamination by foreign matter ... Improvement of sealing capability.

5) Looseness and Cut-Off of Rivet
a) Improper bearing mounting ... Reduction of bearing inclination.
b) Severe load or vibration ... Consultation with Koyo.

Examples of failures

● Crack of Deep Groove Ball Bearing cage

(A-6455)

● Crack of Tapered Roller Bearing cage

(A-6670)

● Distortion of Cylindrical Roller Bearing cage

(A-7026)

● Looseness of Cylindrical Roller Bearing cage rivet

(A-6481)

● Rust on Tapered Roller bearing cage

(A-7131)