

II . Bearing Failure

1. Types of failure

Defects in the appearance of bearings are referred to as bearing failures. Table 2-1 describes bearing failures, first assigning a general term to each type of failure, then adding more detailed classifications.

Table 2-1 Bearing Failure

| Bearing failures | | Main cause (reference) |
|------------------|--|------------------------|
| Failures | Failure details | |
| Rolling fatigue | Flaking, Pitting | Unavoidable |
| Wear | Wear, Fretting | |
| Fracture | Cracks, Chips | Improper handling |
| Flaw | Brinelling, Nicks, Scratches, Scuffing | |
| Rust | Rust, Corrosion | |
| Seizure | Seizure, Discoloration, Smearing | Improper lubrication |
| Creep | Creep | Improper fitting |
| Electric pitting | Electric pitting | Passage of electricity |

2. Types of failure and parts in which they occur

Table 2-2 describes bearing failures, parts where they occur, and standards for judging the failures.

Table 2-2 Bearing Failures, Parts in which they Occur, and Standards for Judging Failures

| Bearing failure | Bearing ring, Rolling element | | | Bearing ring | Cage | |
|------------------|--|---|----------|-------------------|-------------------------------------|---------|
| | · Raceway surface · Rolling surface | · Roller guide surface · Cage guide surface · Roller end face | · Others | · Fitting surface | · Pocket surface · Guide surface | · Rivet |
| Flaking, Pitting | × | — | — | — | — | — |
| Wear | ○ | ○ | ○ | ○ | ○ | × |
| Fretting | ○ | — | — | ○ | — | — |
| Cracks | × | × | × | × | × | × |
| Chips | × | × | ○ | × | × | × |
| Brinelling | ○ | ○ | ○ | ○ | — | — |
| Nicks | ○ | ○ | ○ | ○ | ○ | ○ |
| Scratches | ○ | ○ | ○ | ○ | ○ | ○ |
| Scuffing | ○ | ○ | ○ | ○ | — | — |
| Rust | ○ | ○ | ○ | ○ | ○ | ○ |
| Corrosion | ○ | ○ | ○ | ○ | ○ | ○ |
| Pear skin | ○ | — | — | — | — | — |
| Discoloration | ○ | ○ | ○ | ○ | — | — |
| Smearing | ○ | ○ | — | — | — | — |
| Creep | — | — | — | ○ | — | — |
| Electric pitting | ○ | ○ | — | — | ○ | — |
| Seizure | × | × | × | × | × | — |
| Failure of cage | — | — | — | — | ○ | × |

Notes) × : In principle, not reusable.
 ○ : Reusable in accordance with seriousness of failure, by repairing or meeting required conditions.
 — : No failure of this part.