



Knowledge of bearings guarantees good maintenance.

LETS RECAP

- Bearings are identified by their **rolling elements and suffix codes**.
- **Different bearing types may share the same dimensions**, but using the wrong type can cause **catastrophic failure**.
- Always replace bearings with **the correct type and specification for the application**.
- **Suffix codes are critical** for correct fit, clearance, and performance.
- Changing bearing brands should be treated as a **technical decision**, not a purchasing decision.
- **Tampered numbers or modified bearings should never be used**.



Loads Acting on Bearings:

Radial Load

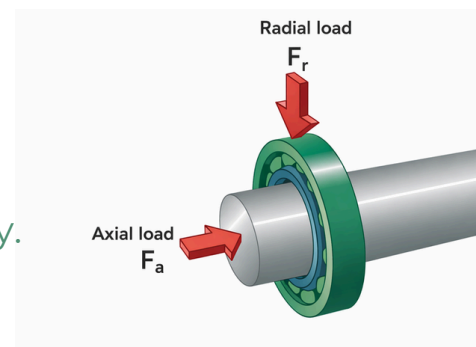
- Force acting perpendicular to the shaft
- The primary load most bearings are designed to carry.

Axial (Thrust) Load

- Force acting parallel to the shaft
- Most bearings are not designed to carry significant thrust loads.

⚠ Important:

99.9% of bearings should mainly carry radial loads.



Why Bearings Fail

A large percentage of bearing failures occur due to unwanted thrust (axial) loads acting on the bearing. Most bearings are designed primarily to carry radial loads, and excessive thrust loads can cause abnormal stress, overheating, and premature wear. These loads usually develop due to poor installation, misalignment, or lack of end-float in the bearing arrangement. Proper installation and maintenance practices are therefore essential to prevent premature bearing failure and extend equipment life.



Bearing Characteristics Overview

Typical performance of bearing types:

Typical characteristics of different bearing types:

Image	Bearing Type	High Speed (Grease lube)	Radial Load	Axial (Thrust) Load	Misalignment Capacity
	Ball	✓ Excellent	✓ Good	Poor	Limited to none
	Spherical Roller	✓ Very good	✓ Excellent	Fair to Good	Excellent
	Cylindrical Roller	✓ Excellent	✓ Excellent	Poor to None	Excellent
	Taper Roller	✓ Good	✓ Excellent	Very Good	None
	Needle Roller	✓ Good	✓ Excellent	Poor	None

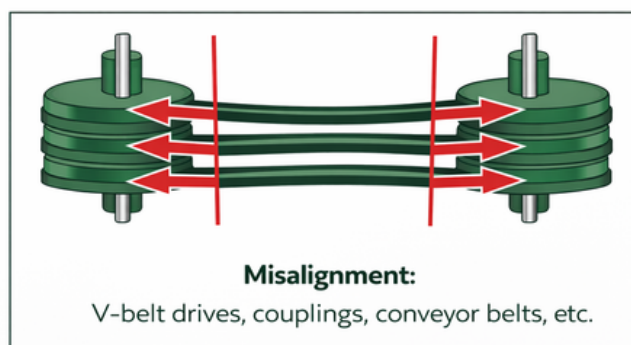
Main Causes of Thrust Load Development

1. Misalignment

Examples include:

- V-belt drives
- Couplings
- Conveyor belts

Misalignment creates **side forces on the bearing**, generating thrust loads.



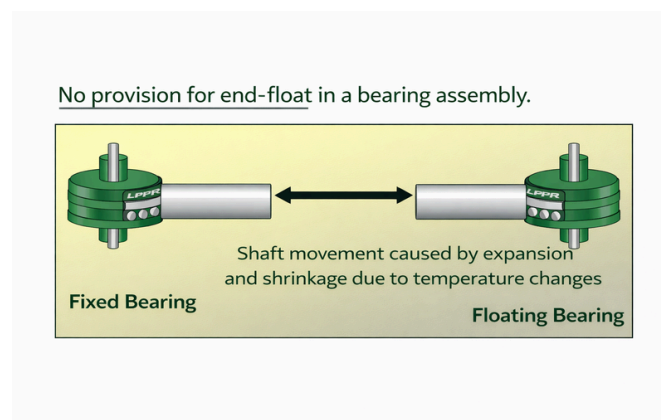


2. No End-Float Provision

When shafts expand or shrink due to **temperature changes**, movement must be allowed. Proper setups include:

- **Fixed bearing**
- **Floating bearing**

Without this allowance, **thermal expansion generates thrust loads**.

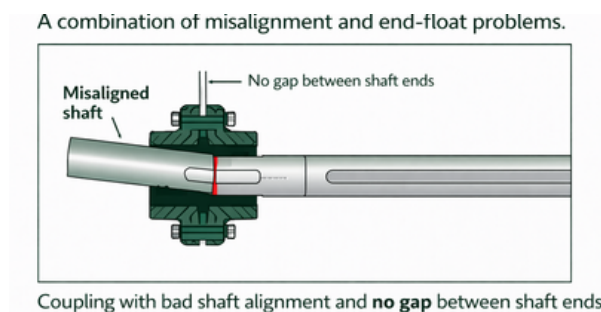


3. Combined Problems

The **worst case** is when:

- Shafts are **misaligned**
- There is **no gap between shaft ends**

This creates **severe thrust loading and rapid bearing failure**.



Final Learning Points

Most bearings are designed for radial loads only
 Unwanted thrust loads cause many bearing failures
 Poor installation and maintenance are the main reasons thrust loads develop
 Misalignment and lack of end-float are the most common causes