

Thrust Ball Bearings

Axial load direction, support geometry and lubrication guide

A selection checklist for predominantly axial-load applications.

What this guide helps you do

Thrust ball bearings are designed primarily for axial loads. Many common designs are not intended to carry meaningful radial load, and some arrangements support axial load in only one direction. Correct selection requires clear identification of load direction, shaft/housing washer support, alignment, speed and lubrication.

At a glance

Question	Why it matters
What is the application?	Defines load direction, duty cycle, environment and required life.
What is the complete arrangement?	Bearing, shaft, housing, seals, lubricant and mounting structure work together.
What must be confirmed before ordering?	Full designation, dimensions, load/speed conditions and approved technical data.

Document status: Technical reference guide · Revision 1.0 · October 2026

Prepared for engineering review and RFQ preparation. It is not a released product drawing, guaranteed rating, certificate or substitute for the selected manufacturer's catalogue.

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1. Understand the bearing arrangement

Start by defining the function the bearing must perform. Similar-looking bearings can differ in load direction, stiffness, speed capability, mounting requirements and maintenance needs.

Application fit

- **Axial-load applications:** Useful in mechanisms where the dominant load is parallel to the shaft axis and suitable supporting faces are available.
- **Radial load warning:** Do not assume a thrust ball bearing can guide or support a radial load; confirm the exact design and permissible combined loading.
- **Alignment sensitivity:** Shaft and housing washers must be properly supported and aligned to avoid uneven ball loading.

Design variants to compare

Configuration / feature	Selection notes
Single direction	Supports axial load in one direction; the opposite direction requires a separate reaction arrangement if present.
Double direction	Can support axial load in both directions in an appropriate assembly; verify washer arrangement and space requirements.
Flat or aligning seat arrangements	Seat geometry affects alignment capability and load distribution; use only the intended washer and housing arrangement.
Cage and lubricant	Cage design, speed, lubricant and temperature affect operating limits and must be checked for the chosen model.

Do not compare price or nominal size until the configuration, suffixes and interface dimensions are aligned. If a part is replacing an existing bearing, use the complete designation and drawing rather than appearance alone.

2. Selection inputs and interface checks

The table below is a working checklist. Record known values and mark unknown values for confirmation before quotation or engineering approval.

Input	What to provide / verify
Axial load	Magnitude, direction, shock, oscillation and duty cycle.
Radial load	Identify whether radial load exists and how it is carried by other components.
Speed	Continuous/peak speed, lubrication method, cage design and heat dissipation.
Support faces	Washer seating diameter, flatness, perpendicularity, shoulder geometry and housing rigidity.
Lubrication	Grease/oil type, viscosity, supply, replenishment and contamination.
Operating environment	Temperature, moisture, dust, corrosion and maintenance access.

Questions to resolve before approval

- Are loads steady, intermittent, reversing or shock-loaded?
- Is the stated speed continuous, peak, or a short-duration value?
- Are shaft and housing fits, shoulders and support stiffness known?
- Will temperature, lubricant or sealing requirements change during operation?
- Is interchangeability required, and what drawing or source confirms it?

When data are missing, state the assumption explicitly. Do not turn an unknown load, speed, clearance or preload into an invented numerical value.

3. Installation, lubrication and maintenance

Many early bearing failures are associated with contamination, poor fits, misalignment, inappropriate lubrication or installation damage. Follow the selected product’s installation instructions and document the final setting where relevant.

Installation checklist

- Identify shaft washer and housing washer before assembly; fit each against the correct support face.
- Check washer seating, flatness, perpendicularity and shoulder geometry.
- Do not use the thrust bearing to compensate for shaft misalignment or inadequate radial guidance.
- Use the specified lubricant and quantity, especially where the bearing operates at speed.
- Check free rotation, axial setting, temperature and noise under representative conditions.

Symptom-to-check guide

Observed symptom	First checks
Uneven ball tracks	Check washer alignment, support-face flatness and load distribution.
Heat or lubricant breakdown	Review speed, lubricant viscosity/quantity, contamination and axial load.
Cage wear	Check speed, lubrication, alignment and whether the selected design matches the duty.
Unexpected radial damage	Determine whether radial load or misalignment is being transmitted through a bearing not designed for it.
Noise or roughness	Inspect contamination, raceway condition, washer seating and mounting damage.

Record the operating condition when a symptom appears: load, speed, temperature, noise/vibration, lubrication state, recent maintenance and any change to the surrounding structure. This information helps separate a bearing issue from an installation or system issue.

4. RFQ checklist — send the right information

A complete RFQ reduces clarification cycles and helps the supplier check whether the requested bearing and arrangement match the application. Provide drawings or photos where dimensions and interfaces are difficult to describe.

- Complete bearing designation, single- or double-direction arrangement.
- Axial load and direction, speed, duty cycle and required life.
- Any radial load and the component that carries it.
- Shaft/housing drawings, washer support dimensions, flatness and alignment.
- Lubrication, operating temperature, contamination and maintenance interval.
- Precision, noise, inspection documentation and traceability requirements.
- Quantity, packaging and delivery destination.

Suggested RFQ email structure

Field	Your information
Product / full designation	<div></div>
Quantity and annual demand	<div></div>
Application / equipment	<div></div>
Loads, speed and duty cycle	<div></div>
Dimensions / drawing number	<div></div>
Operating environment / lubricant	<div></div>
Quality documents / inspection	<div></div>
Delivery destination / target date	<div></div>

Need help confirming a designation or a substitution? Send the full model number, drawing, quantity and operating conditions to service@eimbearing.com or visit www.eimbearing.com.

5. Technical boundaries and final verification

This document provides general selection and procurement guidance. It does not provide product-specific rated loads, fatigue-life guarantees, maximum speeds, permissible misalignment, preload values, fit tolerances or installation torque unless those values are stated in an approved drawing or product-specific data sheet.

Before release to production

- Confirm the full bearing designation, suffixes and dimensional drawing.
- Confirm the source and revision of any load, speed, life or precision rating used in calculations.
- Verify the bearing, shaft, housing, seals, lubricant and mounting fasteners as a complete system.
- Record any deviations, substitutions and approval responsibilities.
- Follow the supplier's current installation, lubrication and maintenance instructions.

Important note

Catalogue values and suffix meanings may vary by manufacturer and product family. Where a guide describes a general bearing arrangement, it should not be interpreted as proof that two products are interchangeable. Confirm final technical suitability with the applicable product drawing and written supplier confirmation.

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End of guide · Revision 1.0 · October 2026