

TIMKEN

LONGER BEARING AND GEARBOX LIFE WITH TIMKEN® TDI MAINSHAFT ROLLER BEARINGS

CHANGE THE BEARING; IMPROVE PERFORMANCE

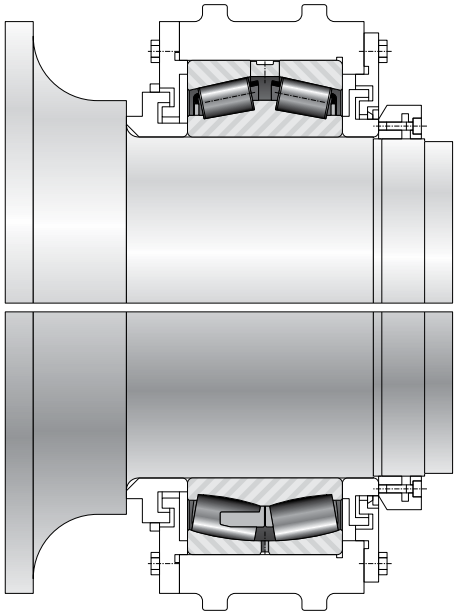
Timken® Tapered Double Inner (TDI) Roller Bearing is designed to extend bearing life and improve system performance for three-point mount wind turbines.

As a global leader in wind bearing design and manufacturing, Timken collaborates with wind turbine owners and operators to help solve mainshaft application issues and improve drivetrain performance. Timken® TDI Roller Bearing for mainshaft wind energy applications is the result of working with our end-users.

Mainshaft Bearing Performance

Tapered Double Inner Roller Bearing (TDI)

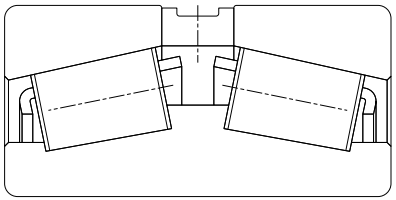
When a TDI bearing is used in mainshaft applications, axial thrust is absorbed before it reaches the gearbox components. Wear is reduced and gearbox component life is extended.



Spherical Roller Bearing (SRB)

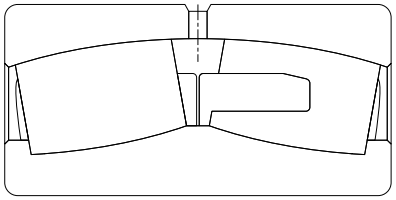
When a spherical roller bearing (SRB) is used in mainshaft applications, axial thrust is transmitted to the gearbox. This causes increased wear on gearbox components.

TDI



- Limits misalignment through preload
- Accommodates some misalignment through internal geometry and roller profiles
- Absorbs thrust

SRB

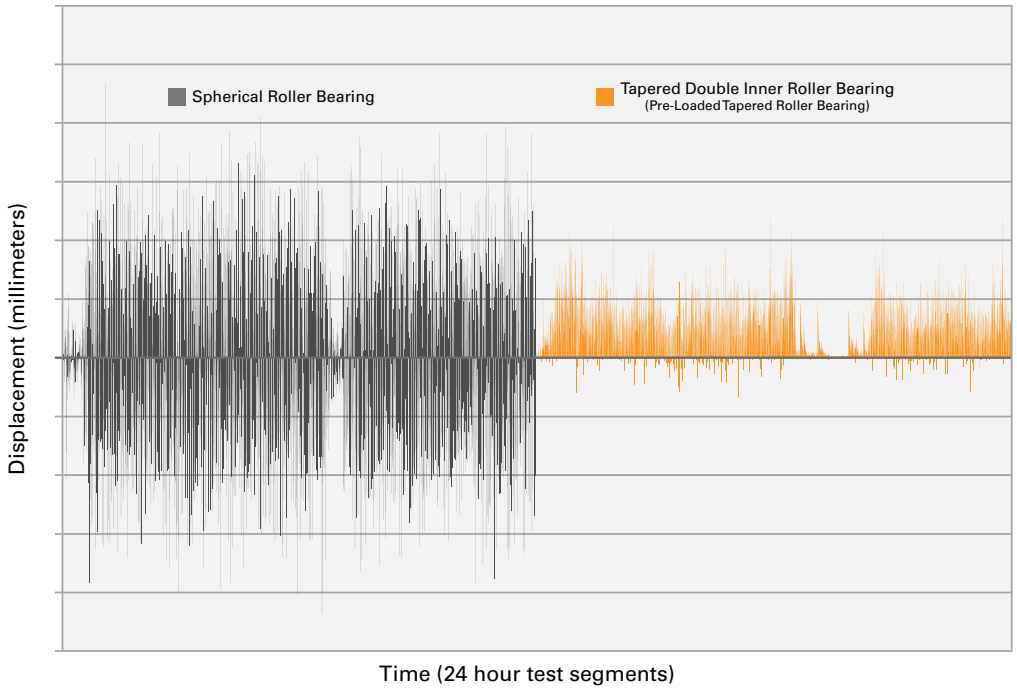


- Accommodates some misalignment through clearance and shape
- Transmits thrust

Minimize Wear With TDI Bearing

Timken® TDI bearings reduce axial thrust into the gearbox by 67% which improves bearing and gearbox component life.

Time Series Plot of Main Shaft Axial Displacement



Timken Bearings Tested:
SRB Wear Resistant for Wind Turbines: Timken® 240/600YMDWEW919C6
TDI Roller Bearing for Wind Turbines: Timken® NP822933-90WA1

Displacement Range:
SRB 1.143mm (0.045 inches)
TDI 0.381 mm (0.015 inches)

LONGER LIFE AND REDUCED WEAR

Longer bearing life, reduced component wear and better drivetrain performance are key to reducing costly wind turbine repairs. The TDI bearing is designed to be a drop-in replacement for the mainshaft spherical roller bearing (SRB). With the TDI bearing, wind turbine operators have these advantages:

Ease of Installation: The existing OE housing can be used when installing a TDI bearing to replace a mainshaft SRB.

Extend Bearing Life: Using a preloaded TDI bearing helps significantly reduce skidding and smearing damage, and also minimizes edge loading common with mainshaft SRBs. As a result, there is less wear and less debris, further extending bearing life.

Reduce Gearbox Wear: The preloaded TDI bearing increases system rigidity and decreases axial thrust into the gearbox load. This reduces wear and extends gearbox component life.



Timken Wind Energy Upgrades

- Enhanced Gearbox Planet Bearings
- Enhanced High Speed Gearbox Bearings
- Timken® Black Oxide Bearings
- Timken® High-Speed Wind Turbine Bearings
- Timken® UltraWind Tapered Roller Bearings
- Timken® Wear-Resistant Bearings

See your Timken sales engineer for gearbox model part numbers, and request an interchange guide for ordering specifications. To learn more about our wind energy products and services, visit www.timken.com/windenergy.

TIMKEN

The Timken team applies their know-how to improve the reliability and performance of machinery in diverse markets worldwide. The company designs, makes and markets high-performance mechanical components, including bearings, gears, belts, chain and related mechanical power transmission products and services.

Stronger. **Commitment.** Stronger. **Value.** Stronger. **Worldwide.** Stronger. **Together.** | **Stronger** By Design.

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