

# IMO - Pitch Bearing spares you can trust on!



## 2-row 4-point contact ball pitch bearing

often used as spare part in original configuration in cases of

- fair wear and tear
- inadequate lubrication (excess wear)
- raceway corrosion (ingress of water)
- component failures (broken balls) & raceway issues (core crushing, surface fatigue & spalling, false brinelling)
- grease leakage

**IMO pitch bearing spares include design and quality improvements to address these known failure modes to ensure it lasts longer than the original.**

## T-Solid – a patented 3-raceway/3-ring design with load independent contact angle

Strongly recommended in **cases of prematurely failing pitch bearings** due to

- raceway edge loading (contact ellipse truncation, edge break)
- cage wear and fracture
- heavily deforming raceways (inadequate hub stiffness)
- stress corrosion (cracking rings through bolt holes)
- inadequate strength or structural durability (cracks through filling plug holes, or near stiffening or lifting plates)

**Provides for the same form, fit & function.** More information: [www.t-solid.de](http://www.t-solid.de)

### Wind farmers recommend T-Solid!

*„We are fully satisfied with the T-Solid pitch bearing. All tests performed by our engineering department confirmed the efficiency of this bearing type. It is operating on our 100 m rotor since August 2018 without any issue. We definitely recommend T-Solid!“*

Gabriel Negrescu - CEO Tomis Team – part of CEZ Group Romania



## Bearing features for long service life:

- ✓ rings made from 42CrMo4QT
- ✓ proven EU and U.S. quality balls
- ✓ corrosion protection to the highest level
- ✓ sand blasted & zinc flame sprayed surfaces
- ✓ salt spray tested bolt hole corrosion protection
- ✓ non-corroding seal running surfaces
- ✓ induction hardening depth 100% tested



## Benchmark IMO seal

- ✓ patented seal with barbed hook (no pull-out)
- ✓ lab tested up to 2bars (rotat.) and 5bars (stat.)
- ✓ all seals replaceable in the field
- ✓ no grease leakage
- ✓ no contamination ingress (dust, moisture)
- ✓ field tested on turbines with direct seal exposure to sun and weather

## Accessories & Shipment

- ✓ bearings supplied including hardware (blade & hub studs, hex bolts, nuts, washers)
- ✓ seaworthy packed in sets or single crates
- ✓ shipment VCI ® corrosion protected
- ✓ retrofit kits available (3 bearings & full hardware set in same crate)



# Spare parts catalog - Wind turbine pitch bearing replacements

Wind turbine platform	Lead time category & pitch bearing replacement options <sup>2)</sup>	
	on stock <sup>1)</sup> in Germany and/or in USA	manufacture on demand
V42, V47, NM54		improved 2r4p
V80	improved 2r4p	
V82, NM72/82	improved 2r4p	
V90, V100	improved 2r4p	
V110	improved 2r4p	T-Solid <sup>3)</sup>
V112		improved 2r4p
V117, V126		improved 2r4p or T-Solid <sup>3)</sup>
S6x (S60, S62, S64, S66)	improved 2r4p	
S82		improved 2r4p
S88, S9x	improved 2r4p	
SWT-1.3		improved 2r4p
SWT-2.3-93	improved 2r4p	
SWT-2.3-101/108/113/120		improved 2r4p
SWT-3.0-101/108/113		improved 2r4p
G47, G52, G58		improved 2r4p
G8x		improved 2r4p
G9x, G97		improved 2r4p
G114 2.0MW	improved 2r4p	T-Solid
G114 2.5MW		improved 2r4p or T-Solid <sup>3)</sup>
G126, G128, G132		improved 2r4p
GE 1.5s/sl/sle		improved 2r4p or T-Solid
GE 1.5xle, GE 1.6-82.5, GE 1.85-87	T-Solid	improved 2r4p
GE 1.7-100/103, GE 2.5-100, GE 2.5xl	T-Solid	improved 2r4p
GE 2.85-100/103, GE 3.2-103	T-Solid	improved 2r4p
GE 2.x-116, GE 2.x-127	T-Solid (GE 2.x-127)	T-Solid (GE 2.x-116) <sup>3)</sup>
MD 70/77, MD 80/82		improved 2r4p
MM 82		improved 2r4p
MM 92, MM 100	improved 2r4p	T-Solid <sup>3)</sup>
3.XM DFIG, 3.XM NES		improved 2r4p or T-Solid <sup>3)</sup>
AW-1500		improved 2r4p
AW-3000		improved 2r4p or T-Solid <sup>3)</sup>
E-40/44/48		improved 2r4p
E-66/70/82/92		improved 2r4p
E-101/115		improved 2r4p
E-126/138		improved 2r4p
DongFang DF110-2500		T-Solid
Mitsubishi MWT-1000		improved 2r4p
Alstom ECO 80/86		improved 2r4p

1) usually on stock (subject to prior sale), exact delivery time upon request

2) 2r4p = 2-row 4-point contact ball bearing, for some platforms T-Solid® is available and recommended ([www.t-solid.com](http://www.t-solid.com))

3) T-Solid in design phase, or under evaluation

**Pitch bearing and yaw bearing replacements for other platforms as well as spare parts, e.g. seals, upon request. Contact us for details!**