SCHAEFFLER

We pioneer motion

Bearings for E-Mobility

Sensor Bearing

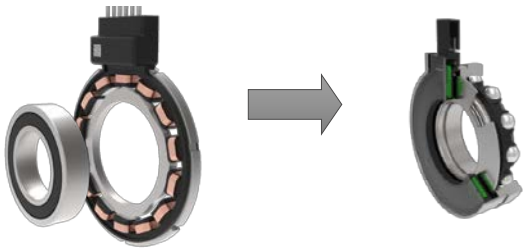
Two in one: High-speed bearing with integrated angular position sensor for electric traction machines

Advantages

- Weight and size advantages compared to state-of-the-art resolver solution
- Increase in efficiency due to measurement accuracy up to ±0,5 °
- Cost savings due to reduced ECU complexity
- Lower assembly effort and reduced cost for the housing due to less components
- Scalable and adaptable design: Flexible mechanical integration and easy adaption to different pole pairs

Features

- Bearing-integrated positioning sensor including signal provision
- High speed capability
- Robust und versatile: Suitable for dry and wet environment, oil sealed sensor up to 150 °C
- Applicable for EC-Motors as BLDC, permanent magnet synchronous motor
- Redundant design possible, up-to ISO 26262 ASIL-D applications



Insulation Bearing:
Effective prevention from circular currents

Innovative polymer insulation – replacement of ceramic solutions

Advantages

- Cost-savings up to 30 % in comparison to ceramic coating or ceramic balls
- Space-neutral replacement of hybrid bearings in most cases possible (depending on ring thickness)

Features

- Overmolded plastic layer on inner or outer ring, layer thickness approx. 1 mm
- High temperature stability up to 150 °C , suitable for wet or dry environment (sealed or non-sealed bearing)
- Equivalent mechanical characteristics (stiffness, precision, load capacity, high-speed capability)
- Very high electrical resistance / impedance close to hybrid bearings (ceramic balls)
- High speed capability

Shunt Bearing

Two in one: High speed bearing with integrated shunt element

Advantages

- Cost-savings on system level due less components and lower assembly effort
- Prevention of EDM current via rolling elements, therefore prevention of bearing damage and white etching cracks (WEC)
- EMC improvement

Features

- Grounding ring for better conductivity
- Very low electrical resistance / impedance even for µA currents
- Successful testing for conductivity, wear and friction
- High speed capability
- Only approx. 5 mm of additional axial space required in comparison to a conventional solution

Rotor Shaft Bearing with Unmatched Capabilities: High Speed Ball Bearing

Deep groove ball bearing for eApplications

Advantages

- High speed capability with speed factor up to n x dm = 2.0 x 10^6 mm/min
- High load capacity
- Low friction losses
- Low level of self-heating
- Low noise behaviour

Features

- Developed and especially suitable for rotor shaft bearing support of electric machines
- Bearing variants available for oil or grease lubrication
- Sealed and non-sealed bearing design possible, contactless seals available
- Special greases for high temperature stability
- Optimized cage design for high-speed applications, high quality of rolling elements and raceways

High Speed Cylindrical Roller Bearing

Robust, quiet and strong: Cylindrical roller bearing for eApplications

Advantages

- High speed capability
- High load capacity
- High robustness against overload
- Low noise level

Features

- Particularly suitable for input and intermediate shaft
- Optimized rib guided cage design suitable for high speeds
- High rolling element and raceway quality

Angular Roller Unit (ARU)

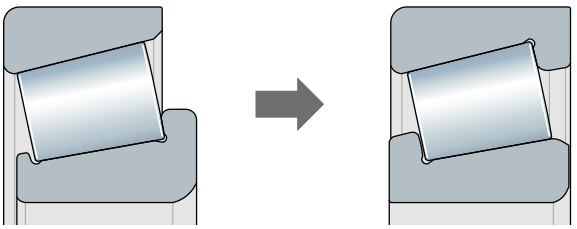
The highly performant locating bearing with small installation space

Advantages

- High load capacity (higher than DGBB)
- Significantly smaller installation space compared to DGBB at same load capacity level
- Low friction torque (due to locating and non-locating bearing arrangement)
- High robustness against overload

Features

- Alternative locating bearing based on tapered roller bearing
- Radial loads and axial loads applicable in both directions
- Self-retaining bearing unit (non-separable)
- Sealable on both sides



Tapered roller bearing ARU

Drawn Cup Cylindrical Roller Bearing

Versatile, simple and cost-efficient

Advantages

- High power density / load capacity with significantly more compact design space than DGBB
- Cost efficient bearing by use of deep drawing technology
- Weight saving potential by substitution of larger bearings
- High robustness against overload
- Low radial installation space

Features

- Deep drawing technology for roller bearing outer ring
- Applicable for differential shaft or intermediate shaft
- Low noise and friction level

High Efficiency Ball Bearing with Centrifugal Disc

Centrifugal disc – Combining the benefits of an open and a sealed bearing

Advantages

- Friction reduction up to 80 % compared to a common sealed bearing
- Lifetime up to 10 times higher compared to an open bearing, therefore cost saving by downsizing possible
- Cost reduction up to 5 % compared to common sealed bearing
- Friction reduction up to 60 % compared to an open bearing

Features

- Centrifugal disc prevents bearing from too high oil level and contamination
- High speed capability
- Centrifugal disc fixed on inner ring
- Optimized gap with optimized labyrinth between disc and outer ring