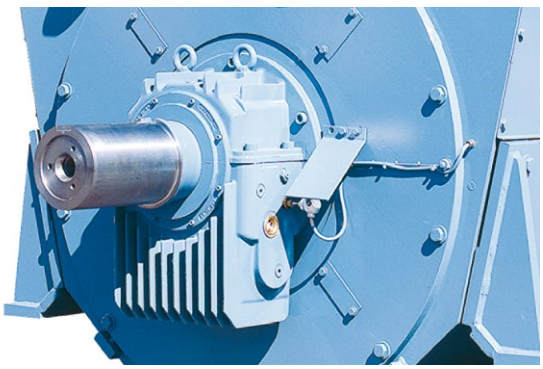
TECHNICAL NOTE

High voltage generators for engines
Bearings



ABB generators are ensured with smooth and stable operation with bearings that support the rotating shafts, allowing them to operate with minimal wear. ABB's flange and integral pedestal sleeve bearings are designed to perform well under various conditions like high temperatures, vibrations, and inclined positions.

The choice of bearing arrangement depends on factors like load capacity, rotation speed, and operating conditions such as temperature and vibrations. Flange sleeve bearings, standard for frame sizes 710-1120, are flange-mounted, handle high vibrations, and are suitable for high-speed applications due to excellent heat transfer. Integral pedestal sleeve bearings, standard frame sizes 1250-2500, share similar features but are mounted on a pedestal integrated into the stator frame, making them easy to mount and align. Both types are self-lubricated by oil rings, with additional lubrication needed for high temperatures or inclined positions. Operating conditions such as ambient temperature, air cleanliness, vibrations, shock and inclination (marine and offshore platforms) affecting the bearing are also considered.



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1. Flange sleeve bearing

Flange sleeve bearings
(standard for frame sizes 710-1120)
Sleeve bearings are flange-mounted on the end-shield. They not only withstand a high level of vibration but also offer excellent quality and performance, as well as first-class reliability when driven by engines:

- the bearing shells are seated in the housing, so the bearing assembly is highly suitable for static as well as radial and axial dynamic loads.
- excellent heat transfer through the contact surface of the shells makes these bearings especially suitable for high speed applications.
- they are of the split type and easy to maintain.

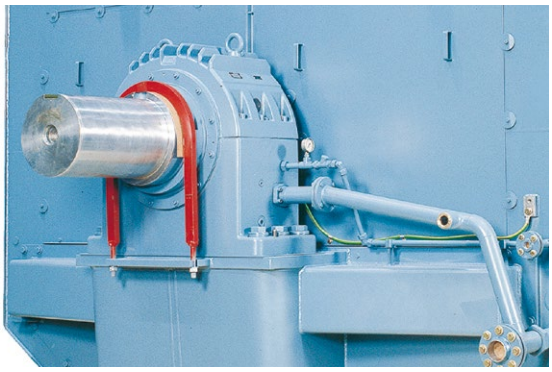
Provided that the operating conditions are carefully followed, their life expectancy is practically infinite.

To prevent bearing damage from circulating currents, all NDE (non-drive end) bearing housings are electrically insulated by means of non-conducting film.

The bearings are typically self-lubricated by oil rings. The lubricating oil is picked up by the oil ring and transferred directly to the shaft.

Integral pedestal sleeve bearings
(standard for frame sizes 1250-2500)
These bearings have the same fundamental features as flange sleeve bearings, except that they are mounted on a pedestal that is integrated into the stator frame. Generators with integral pedestal bearings are as easy to mount and align as generators with flange mounted bearings. The generators are delivered ready assembled and require no further assembly on site. The air gap between the stator and rotor is also factory set and does not need any further adjustment during coupling with the prime mover.

The bearings are lubricated by oil ring. In the case of high ambient temperature or inclined operating position (marine applications), an external lubrication unit for bearings may be necessary, unless lubrication oil is supplied from the engine lubrication system.



2. Integral pedestal sleeve bearing

Benefits

High vibration handling: Both flange and integral pedestal sleeve bearings can handle high vibrations.

Ease of mounting and alignment: Integral pedestal sleeve bearings are easy to mount and align.

Adaptability to operating conditions: Bearings are designed to perform well under various conditions like high temperatures, vibrations, and inclined positions.

For more information please visit:
new.abb.com/motors-generators/generators/generators-for-engines

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