

Nidec Motor Corporation

Revolutionizes the Vertical Motor Industry with Shaft Grounding Ring

The use of inverters in pumping applications has increased dramatically over the past few years. The combination of an inverter and induction motor with a pump produces an economical variable speed drive system that has the potential to provide energy savings and process optimization. It may also lead to improved system reliability.

Unfortunately, inverters can be tough on electric motors. Inverters used to supply adjustable frequency power to induction motors do not produce sinusoidal output voltage waveforms. Most inverters use a control topology called Pulse Width Modulation (PWM) to change the voltage and frequency of the power applied to the motor. The switching frequency of the PWM control system generates steep-fronted voltage spikes that can damage motor insulation. U.S. MOTORS® was the first to recognize the need for special inverter duty insulation system and introduced our Inverter Grade® Insulation system. This system meets NEMA MG1 Part 31 insulation requirements for inverter-fed motors.

PWM inverters also generate common mode voltage which may produce a shaft voltage. Shaft voltage can result in bearing currents which may damage motor bearings. While the number of occurrences of bearing damage due to shaft voltage is small, the cost to replace failed bearings is high.

Nidec Motor Corporation is once again leading the vertical motor industry by introducing a line of stock Vertical HOLLOSHAFT® inverter duty motors with a bearing protection system to help mitigate bearing problems caused by shaft voltage. Motors 40 HP and larger now include a shaft ground ring to short-circuit current that can damage bearings.

Stock Vertical HOLLOSHAFT® Inverter Duty Motors Feature:

- Premium Efficiency
- Inverter Grade® Insulation system
- Winding thermostats

Motors 100 HP and larger also include an insulated bearing to prevent circulating bearing currents.

These features are also available on our custom engineered-to-order products.



Bearing Cap with Shaft Ground Ring



Insulated bearing mounts on 100 HP and larger



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