



Exclusive Distributors of SGS™ Products

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USA



SHAFT GROUNDING ENGINEERING SPECIFICATION FOR AC MOTORS

Shaft Grounding Systems, Inc.

SPECIFICATION:

The VFD powered small AC motors (less than 200 hp or 147kw) shall have a single shaft grounding system to protect the bearings from capacitive discharge through the bearings. A shaft grounding system equal to that manufactured by Shaft Grounding Systems, Inc. or engineer approved equivalent shall be used. *(Note: If eddy currents are present or VFD powered motors are larger than 200 hp, then a modified application consisting of a shaft grounding system at each bearing or a combination of an isolated opposite drive end bearing and a drive end shaft grounding system should be considered.)*

The shaft grounding system shall reduce the shaft to frame voltage below 3 volts (as measured with 50 MHZ Fluke 97 oscilloscope), have low drag, be field installable with hand held tools, sealed to be resistant to weather and contaminants and require no periodic adjustments or maintenance for a normal running life of five to ten years at speed up to 1800 rpm. The grounding brush element must be changeable without shutting down or using special tools. Experience has shown that brush life may often be as long as ten years.

BACKGROUND: Modern AC variable speed motors have been shown to often develop an electrical potential between the shaft and the frame of the motor. This induced potential can result in capacitive electrical discharge through the bearings. A shaft-to-frame voltage above 3 volts (as measured with Fluke 97) generally is sufficient to cause current flow across the bearings. If the bearings are damaged by electrical current passage or other means, the potential required for current to pass through the bearings will tend to be less. When current flow across a bearing, metal is removed causing frosting, pitting and “fluting” of the bearing races leading to premature failure of the bearings. Properly grounding the shaft to the frame eliminates capacitive discharge bearing damage.

Product: SGS™ CR Series Patented Shaft Grounding System

Manufacturer: Shaft Grounding Systems, Inc.

Sales & Distribution: DP&A Sales is exclusive distributor of SGS™ products
P.O. Box 41,000 Florence, OR 97439
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SGS™ CR SERIES PRODUCT FEATURES:

The SGS™ patented CR series shaft grounding system is designed to reduce shaft voltage levels to less than 3 volts typically required for current to pass through bearings. Shaft voltages without SGS™ shaft grounding systems typically range from 3 volts to more than 30 volts. In cases where the bearings are damaged, the voltage level for current to pass through the bearings will generally be less.

The SGS™ CR series system is designed to be mounted on the opposite drive end (ODE) of common horizontal single shafted AC motors that have TEFC, TEAO or ODP enclosures. The SGS™ brush contact area is sealed to keep contaminants from entering the shaft grounding system. The SGS™ Shaft Grounding System will generate very small amounts of particulate wear products which are contained within a special sealed enclosure within the SGS™ shaft grounding system.

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The SGS™ CR series system has been used extensively inside clean room air handling systems. The wear products are from the carbon based electrical brush and the copper based material upon which the brush makes contact.

No maintenance is required within ten years other than the change of the SGS™ shaft grounding system brush which should be changed at approximately five to ten years depending upon current flow and rpm. This is based upon data obtained during ten years of continuous running experience at speed up to 1800 rpm. The brush change can be quickly done while the motor is running without the use of special tools. Specially developed proprietary and or patented methods are used in SGS™ shaft grounding systems to ensure sustained performance.

SAMPLE SPECIFICATION FOR ENGINEERS:

Motors shall have shaft grounding system to protect bearings, couplings and seals from electrical damage due to induced voltage. Shaft grounding system shall be sealed to resist dust, grease, weather and to retain wear products within the shaft grounding system. Shaft grounding system shall operate a minimum of five (5) years at 1800 rpm without periodic adjustments or maintenance. All consumables of the shaft grounding system shall be replaceable without shutdown of the motor or VFD. An example of such a system is the SGS™ patented CR series shaft grounding system as manufactured by:

Shaft Grounding Systems, Inc
Albany, Oregon USA
541-997-4068
541-997-7278
www.shaftgroundingsystems.com
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Or Engineer approved equivalent.

Note: Other non drive end and drive end SGS™ shaft grounding systems are available at DP&A Sales (541-997-4068 or sales@dpa-sales.com)

www.shaftgroundingsystems.com
sales@dpa-sales.com