HELWIG CARBON PRODUCTS, INC.

BEARING PROTECTION COMPARISON

Carbon Fiber Rings

Helwig BPK™ Bearing Protection Kit

Shaft Grounding Effectiveness	Carbon fibers have higher electrical resistance. The **fibers can wear over time** from mechanical friction. This will lead to decreased grounding effectiveness and increased likelihood of bearing damage.	Engineered silver graphite brush has lower resistance than the carbon fibers. The constant force spring ensures **continuous contact to the motor shaft**, which effectively diverts shaft currents to ground.
Wear/Life	The carbon fibers on the ring are **prone to mechanical wear** from friction with the shaft. Eventually, the fibers will no longer contact the shaft and replacement is required for effective shaft grounding.	Proprietary silver graphite material will have virtually no electrical wear, which leads to long life. **Typically, the brush will outlast the life expectancy of the motor.**
Installation	The fiber ring can be **difficult to install** and may require uncoupling the motor to slide the ring over the shaft. The fiber ring requires shaft preparation with expensive silver epoxy to enhance performance.	BPK units offer **quick & easy installation**: either drill & tap or attach with 3M Dual Lock. Custom brackets are also available on many OEM motor frame sizes.
Product Selection	**Requires a different product for each shaft size, leading to increased inventory,** longer lead times, and added expense. A new ring model is needed if shaft diameter changes by as little as one mm.	**One BPK model can fit many shaft diameters**, which reduces inventory and lead times. Reference Helwig's BPK Selection Guide for more information.

	Carbon Fiber Rings	**Helwig BPK™ Bearing Protection Kit**
High Frequency VFD Currents	Carbon fibers have **higher electrical resistance**. Over time, this may lead to ineffective performance at higher frequencies.	The **proprietary silver graphite brush works well** at the frequencies expected for motor shaft grounding
Periodic Shaft Maintenance	Fiber ring may require periodic maintenance to clear contamination between the shaft and fibers. **Regular application of expensive silver epoxy is recommended** to inhibit oxidation and create a conductive shaft surface.	**BPK models require very little maintenance.** The cleaning properties of the silver graphite brush, plus a constant force spring, ensure a clean brush track. Patina formation is normal and contributes to successful performance.
Performance in Contaminated Environments	Contaminants in oil and grease increase the electrical resistance of carbon fibers and **may make the fibers ineffective**.	Positive spring force on the brush **maintains good shaft contact even when contaminants in oil and grease are present.**
Replacement	Replacement is needed periodically as the fibers wear from friction and increase the resistance to ground. **Replacement may require uncoupling the motor or expensive alternative.**	**BPK models rarely need replacement.** Kits can be replaced quickly and easily, without uncoupling the motor.
Cost Effectiveness	**A different model is required for each shaft size**. Larger diameter rings are expensive. Silver epoxy adds to the cost.	Helwig BPKs can be **universally applied to a wide range of motor frames.** Standard kits are in stock and reasonably priced.
Third Party Validation	**None**.	Stock BPK models are **validated by Underwriters Laboratory** (UL listed).

ABOUT HELWIG CARBON

Helwig Carbon Products, Inc. produces a full line of precision-made carbon brushes, brush holders and specialty carbon graphite components. Proud to be American owned for over 90 years.

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