



# BEARING PROTECTION COMPARISON



Carbon Fiber Rings



**Helwig BPK™  
Bearing Protection Kit**

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

## Carbon Fiber Rings

## Helwig BPK™ Bearing Protection Kit

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

### 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.



8900 West Tower Avenue • Milwaukee, WI 53224-2849  
 Toll Free Phone: 800.962.4851 • [helwigcarbon.com](http://helwigcarbon.com)  
 Email: [carboncrew@helwigcarbon.com](mailto:carboncrew@helwigcarbon.com)

ISO Certified • MADE IN AMERICA



TECH-100