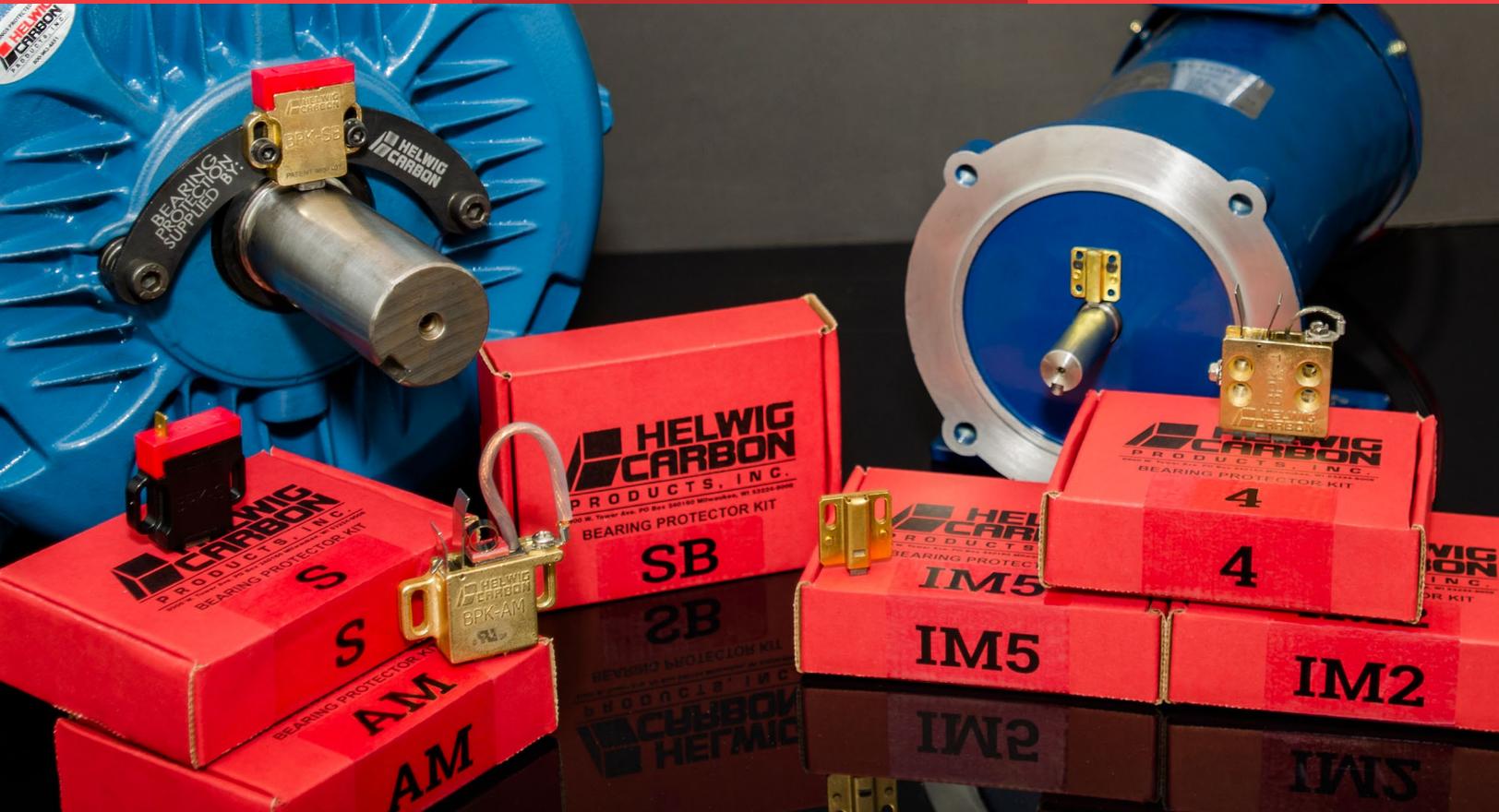


THE INDUSTRY'S BEST SHAFT GROUNDING SOLUTION

BEARING PROTECTION KITS™



helwigcarbon.com/shaft-grounding



PROVEN SILVER GRAPHITE BRUSH TECHNOLOGY

Helwig Carbon shaft grounding kits are specifically designed for unmatched reliability and superior performance

PREVENT BEARING DAMAGE

- Premature bearing failure is a major cause of motor downtime and costly repairs
- Helwig Carbon uses proven silver graphite brush technology in a variety of kits for motor shaft grounding
- Our kits effectively divert induced electrical currents away from the bearings, protecting them from damage and failure

THE CAUSES OF BEARING DAMAGE

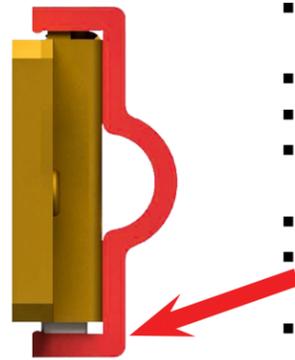
- Variable frequency drives (VFD) used on AC and DC motors produce induced electrical currents on the motor shaft
- These currents seek the path of least resistance to ground, which is typically through the motor bearings. When these currents pass through the bearings, electrical arcs take place leading to fluting, pitting, and bearing damage
- The fluted or damaged bearing surface causes noise, vibration, and premature bearing failure



KEY ADVANTAGES

- Typically reduces shaft voltage to less than 1V at frequencies greater than 1MHz
- BPKs™ use highly conductive silver graphite brushes, not carbon brushes
- Kits will typically last 10 years or more*
- Provides lowest resistance path to ground
- Stock kits fit most motors and multiple shaft sizes, reducing overall inventory
- Easy to install, with negligible maintenance
- Red retaining clip helps determine correct kit mounting height
- Internal mount options avoid exposure to outside and contaminated environments

*subject to motor specifications, product selection, and operating conditions

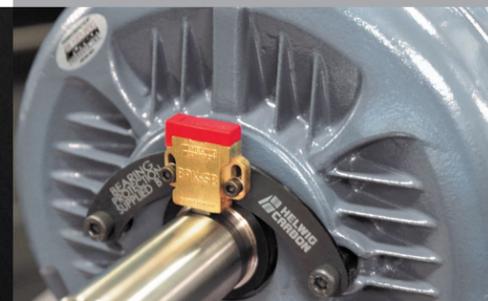


HELWIG CARBON ADVANTAGES

- The Industry's Best Shaft Grounding Solution
- Extensive experience with field service and support
- Custom engineered solutions for superior BPK™ performance
- Expert problem diagnosis and technical recommendations

PROTECTS:
 HVAC UNITS
 PUMP MOTORS
 FANS/AIR HANDLING
 WIND PITCH MOTORS
 PROPULSION SYSTEMS
 COMPRESSORS
 ELEVATORS
 DATA CENTERS
 CHILLERS
 CONVEYORS

OR ANY MOTOR DRIVEN BY VFDs!



BPK™ Product Line

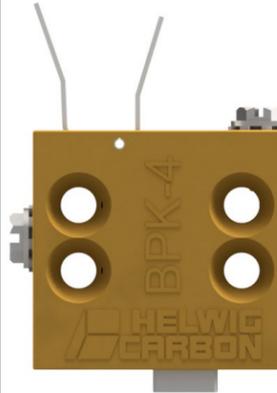


IM2

- Smallest BPK
- Typical Applications: HVAC, Small Pumps, Fans, Internal Mounts
- Dimensions:
 - .241" x .75" x .75" inch (6.1 x 19 x 19mm)

IM5

- Like the IM2, the IM5 has a slightly larger brass holder
- Typical Applications: HVAC, Small-Medium size Pumps, Fans, Internal Mounts
- Dimensions:
 - .325" x 1.0" x 1.0" inch (8.26 x 25.4 x 25.4mm)



4

- The Original Bearing Protection Kit – protecting bearings for over 25 years
- Typical Applications: Industrial, Manufacturing, Medical, Elevator
- Dimensions:
 - .5" x 1.5" x 1.38" inch (12.7 x 38 x 35mm)

S

- Patented BPK-S uses a sealed holder
- Typical Applications: Pulp & Paper, Foodservice, or any contaminated environment
- Dimensions:
 - .45" x 1.63" x 1.50" inch (11.4 x 41.4 x 38mm)



SB

- Our Patented BPK-SB uses a sealed brass holder
- Typical Applications: Motor OEMS, Paper, or any contaminated environment
- Dimensions:
 - .45" x 1.59" x 1.52" inch (11.4 x 41.3 x 38.1mm)



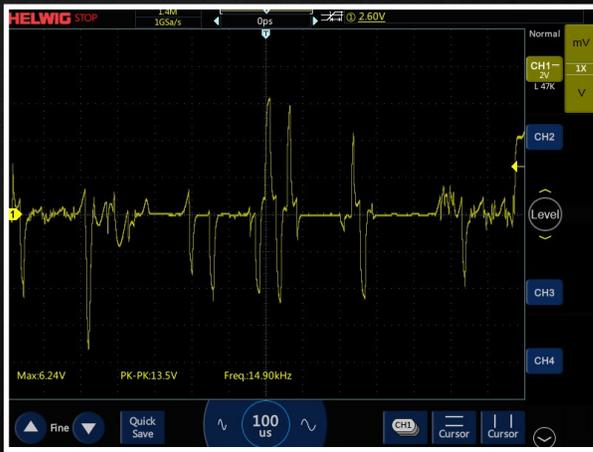
AM

- Our largest BPK has a heavy-duty brass holder
- Typical Applications: Large Industrial, Shafts larger than 4", Marine and Military
- Dimensions:
 - .63" x 2.09" x 1.26" inch (16 x 53 x 32mm)

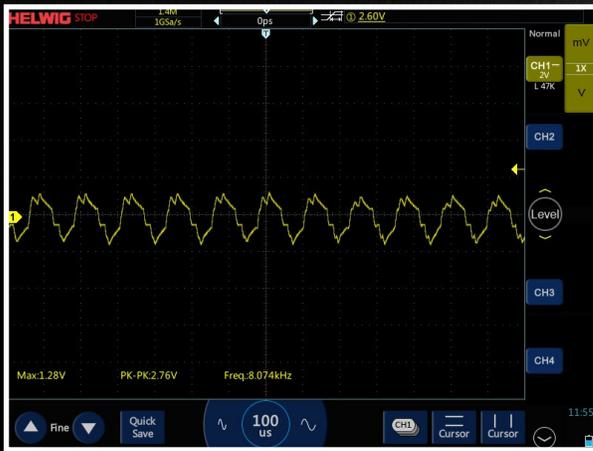
- Dedicated & knowledgeable Customer Service team
- On-time delivery averaged better than 98%
- ISO 9001 Certified for accuracy and consistency
- Made In The USA

MORE EFFECTIVE THAN THE CARBON-FIBER RING

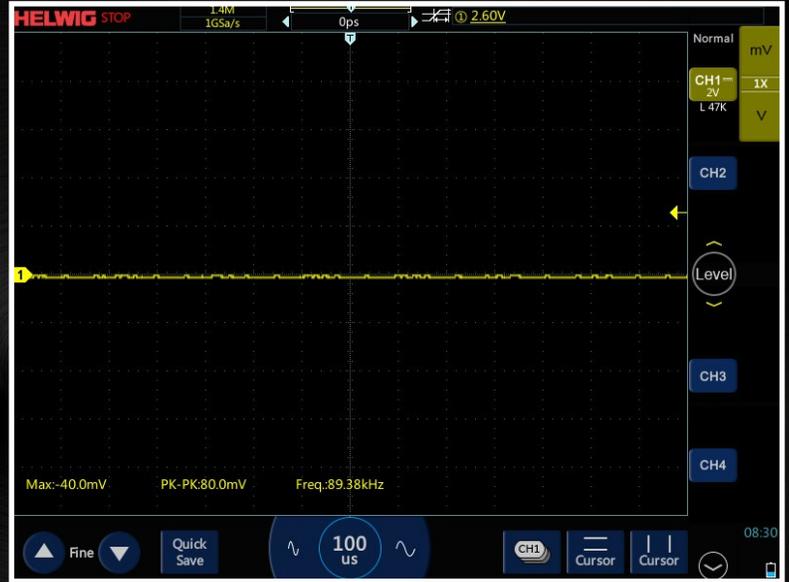
Bearing Protection Kits™ mitigate shaft voltage and other electrical noise. The following oscilloscope screenshots compare induced shaft voltage with our BPK-4 vs. a carbon-fiber ring.



UNPROTECTED MOTOR SHAFT (13.5V)



CARBON-FIBER RING (2.76V)



HELWIG BPK-4 (80.0mV)

Silver graphite is more than **5X lower** in resistance than carbon-fiber, which significantly reduces the risk of induced shaft currents flowing through the bearings.

THESE RESULTS WERE MEASURED THROUGH OUR PATENTED **BPK-PROBE™ AND CONCLUDE THAT A HELWIG BPK IS MORE EFFECTIVE THAN A CARBON-FIBER RING**

Oscilloscope screenshots were taken in a controlled testing environment, using a Patented BPK-Probe™. The test was conducted on a 10HP Nidec motor with the following specifications: 460VAC, 1765 RPM, and driven by an Emerson VFD at 52Hz



ABOUT HELWIG CARBON

Helwig Carbon Products, Inc. is the premier, family-owned, American manufacturer of carbon brushes, brush holders, spring assemblies, bearing protection kits, metal graphite brushes, and mechanical carbons. Since 1928, we have forged innovations that have since become industry standards and requirements. We pride ourselves on manufacturing all of our products to the highest standard and performance because we know your application depends on it!



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