BPK-Probe

*Shaft Voltage Detection Device*

Operating Guide
BPK Probe™ Important Safety Information

You must understand all of the safety statements in this manual prior to operating the BPK Probe™.

**WARNING**

The WARNING designation indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

**WARNING**

The BPK Probe™ is designed to be in direct contact with rotating motor shafts. Rotating motion can be dangerous; even smooth, slowly rotating shafts can grip clothing, and mere skin contact can force an arm or hand into a dangerous position. Injuries due to contact with rotating parts can be severe.

All power sources for machines are potential sources of danger. When using electrically powered or controlled machines, the equipment as well as the electrical system itself must be properly grounded. High pressure systems, too, need careful inspection and maintenance to prevent possible failure from pulsation, vibration, or leaks. Such a failure could cause, among other things, explosions or flying objects.

While never a substitute for appropriate machine guards, personal protective equipment must always be worn around rotating motor shafts. It is important to note that protective clothing and equipment can create hazards. For example, a protective glove can become caught between rotating parts, or a respirator facepiece can hinder the wearer’s vision.

Do not use the BPK Probe™ in explosion proof or otherwise hazardous environments.

Follow all safety precautions when working with rotating equipment.

The BPK Probe™ should be used by qualified, trained personnel ONLY.
Purpose of the BPK Probe™

The BPK Probe™ measures motor shaft voltage. It also demonstrates the effectiveness of a bearing protection kit (BPK) if a BPK is installed.

Components

- 4" Extension Tube
- 12" Extension Tube
- BNC Cable
- Spare Tips
- BPK Probe™ Assembly
- Probe Preparation Tool
- Ground Wire & Clamp

BPK Probe™ Assembly Features

- Brush Tips (for sensing & grounding)
- Display
- Grounding Switch (to activate/enable the BPK brush)
- Activation Switch (to test & reset)
- Ground Clamp connector (for ground)
- BNC connector (for oscilloscope)
BPK Probe™ Instructions for Use

Step 1: Prepare the BPK Probe™

⚠️ WARNING
Follow all safety precautions when working with rotating equipment.

The BPK Probe™ comes with a variety of tips and accessories. The assembly comes with the 6” extension tube and standard tip already mounted. Different extension tubes and tips can be quickly and easily changed. In addition, the BPK Probe™ assembly has a BNC connector and cable for connecting an oscilloscope if needed.

a) Verify the motor shaft contact area is clear of debris, oils and contamination.

b) Using the rubber flap side of the Probe Preparation Tool (Figure 3), identify a contact area on the shaft for measurements.

c) Verify the contact area is clean and not in line with a key, keyway, set screw, or anything that can obstruct or damage the sensor tip brushes.

d) If required, use the Probe Preparation Tool’s cleaning stone (Figure 3) to remove rust, debris, and oil from from the contact area (Figure 4).

![Cleaning Stone and Rubber Flap](image)

**Figure 3: The Probe Preparation Tool has two ends: a cleaning stone to clean the shaft surface and a rubber flap to detect for keyways.**

![Probe Preparation Tool and Cleaning Stone](image)

**Figure 4: Use the Probe Preparation Tool’s cleaning stone to clean contact area.**

e) Select the best tube and tip for your application.
f) Attach the ground wire to the BPK Probe™ (Figure 5). Locate a clean, paint-free ground source and secure the ground clamp (Figure 6).

![Figure 5: Attach ground wire to probe.](image1)

![Figure 6: Locate a ground source and secure the ground clamp.](image2)

g) Ensure the ground or optional BNC cable cannot be entangled with rotating or stationary equipment, guards, etc.

**Step 2: Test Motor Shaft Voltage**

⚠️ **WARNING**

Follow all safety precautions when working with rotating equipment.

a) With the ground clamp safely secured, verify the rocker switch is off (LED not lit). This disables the embedded grounding brush.

b) Remove the protective sensor tip cover and keep nearby.

c) On a suitable and properly prepared surface, carefully place the sensor tip against the rotating shaft (Figure 7).

![Figure 7: Place the sensor tip against the rotating shaft.](image3)

d) Ensure both sensor tip brushes are firmly and squarely against the contact surface.

e) Press the probe tip onto the shaft until about 1/8” of the spring-loaded brushes are exposed.
f) Perform the test. With the BPK Probe™ brushes pressed against the motor shaft, press and hold the trigger switch throughout the test. As the test starts, the Helwig Carbon logo will show (Figure 8).

![Helwig Carbon logo](image1)

*Figure 8: As the test starts, the Helwig Carbon logo will show.*

g) Next, a SAMPLING SHAFT VOLTAGE message will appear (Figure 9). Continue to hold the trigger switch with the tip of the probe against the motor shaft. When complete, the screen will show a real-time test result (Figure 10).

![SAMPLING SHAFT VOLTAGE](image2)

*Figure 9: A SAMPLING SHAFT VOLTAGE message will appear.*

![Test results for unprotected motor](image3)

*Figure 10: Test results for unprotected motor.*

h) Carefully remove the probe from the motor shaft, note the results, and release the trigger. Remove the ground clamp and replace the protective tip cover. The test is complete.

i) The shaft voltage test can be repeated with and without engaging the embedded grounding brush. To enable the grounding brush, press the rocker switch on the face of the probe handle. The embedded grounding brush is enabled when the green LED on the switch is lit. Testing with the grounding switch enabled shows the effectiveness of the Helwig grounding solution (Figure 11).

![Test results with grounding switch enabled](image4)

*Figure 11: Test results with grounding switch enabled.*
Step 3: Battery Status and Replacement

a) The BPK Probe™ is powered by a 9v battery. To check battery status, press and release the probe trigger. The display will show the Helwig Carbon logo and then go to a ready screen. The battery status will appear in the upper right corner of this screen (Figure 12).

b) If the battery is too low to operate the probe, you will get a flashing LOW BATTERY message (Figure 13). The probe will not allow testing until the battery is changed.

c) To change the battery, loosen the retaining screw on the bottom of the probe handle (Figure 14). Remove the battery cover plate and slide the battery from the probe handle. Replace battery (Figure 15). Insert cover plate and tighten the retaining screw.
### BPK-Probe Accessory Part Numbers

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<th>Description</th>
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