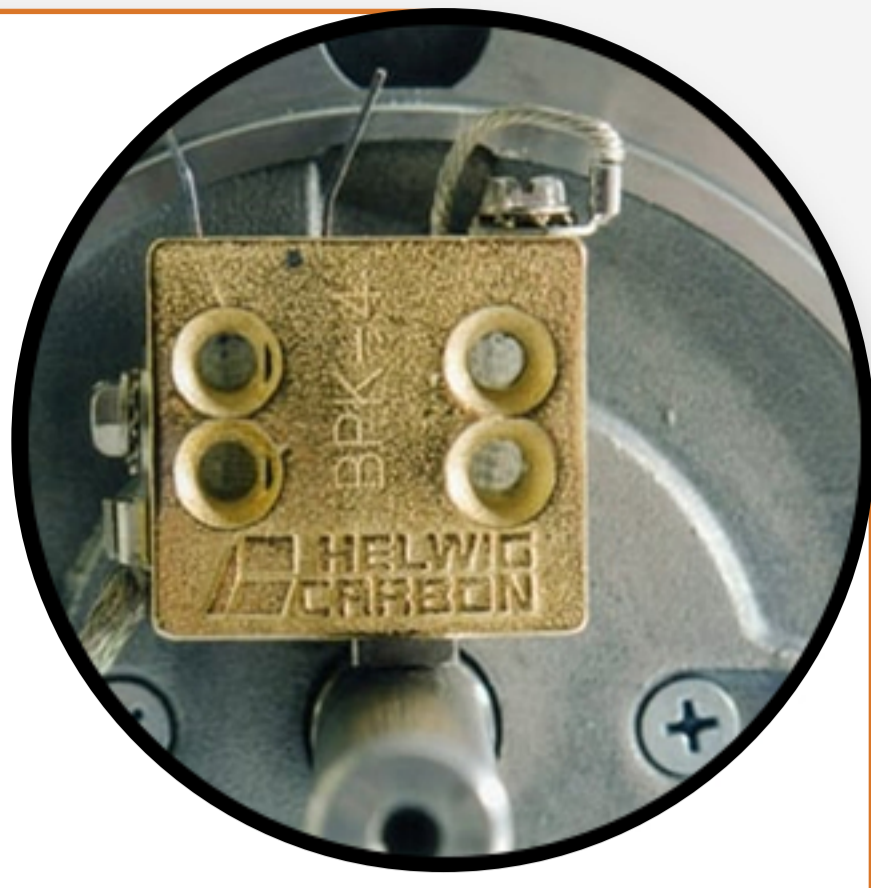


EVERYTHING YOU NEED TO KNOW ABOUT SHAFT GROUNDING DEVICES

What Is a Shaft Grounding Device?

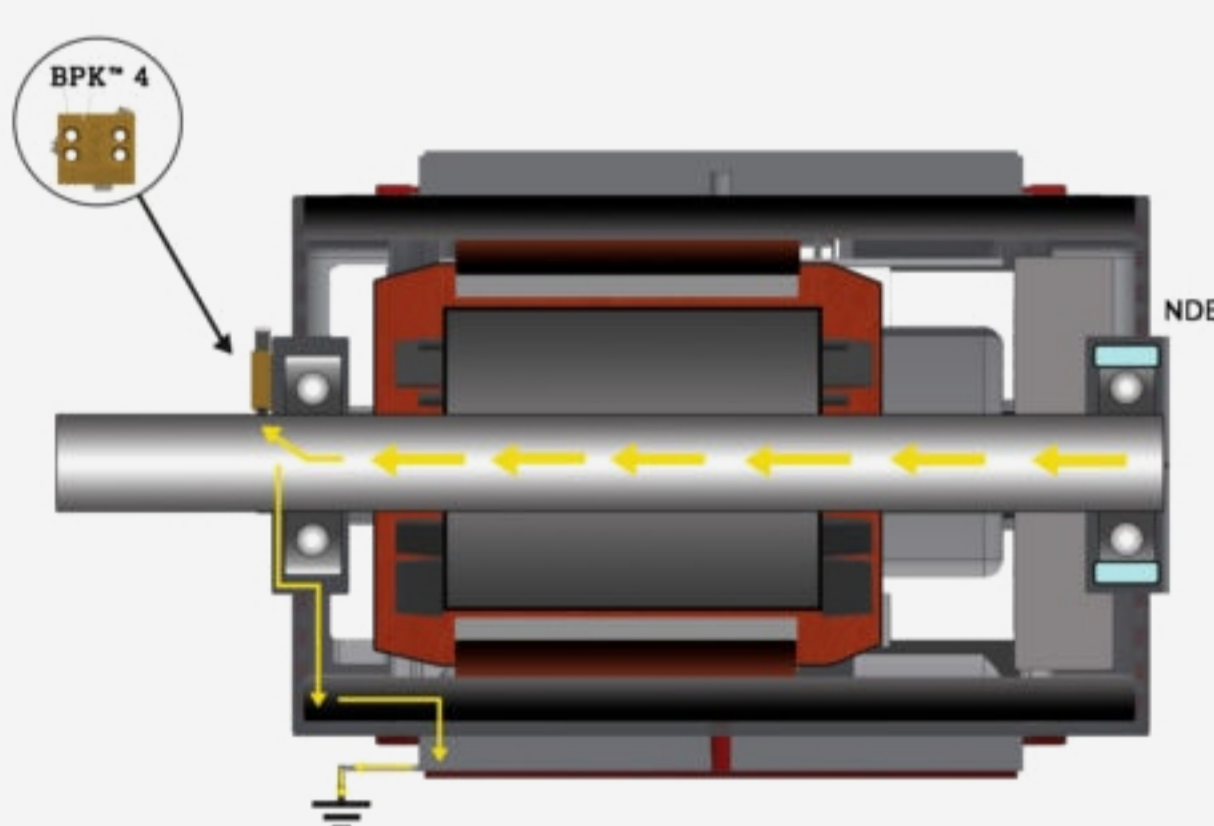
A shaft grounding device prevents damage to bearings by protecting them from circulating current and minimizing voltage that accumulates on the motor shaft, where it then finds its way through the bearings and into other sensitive motor components. This excess shaft voltage is introduced into the circuit by electrical induction, electromagnetic leakage, or high-frequency circulating currents caused by Variable Frequency Drives (VFD).



Regardless of where the shaft voltage comes from, it can be easily and automatically reduced to a minimum with a high-quality shaft grounding device that redirects the current to the ground. Even though the motor shaft is designed to withstand high amounts of stress, there are more sensitive components with weaker resistances that need to be protected.

What is the Purpose of a Shaft Grounding Device?

By reducing these extraneous currents, shaft grounding devices prevent unnecessary wear and early bearing failure. Unprotected, motor bearings typically provide the lowest path of resistance for circulating currents that have built up on the motor shaft. It's important to redirect these currents to a more ideal path away from the motor entirely, sparing bearings and internal motor components from these unnecessary and damaging electrical currents.



As engine and motor designs increasingly rely on computers and integrated circuits, it's not just a matter of preventing mechanical wear. Advanced circuitry must be protected from increased and fluctuating electrical residues to maintain the proper functioning of any motor that relies on sensitive electronics to operate. As such, both electrical and mechanical engineers have good reason to rely on shaft grounding devices for both the protection of motor components and the overall functioning of the motor.

How Do Shaft Grounding Devices Prevent Bearing Failure?

It's the overall reduction of a motor's unharnessed electrical currents that prevents premature motor bearing failure. Shaft grounding devices accomplish this in a number of ways:

- 01 Redirecting circulating electrical current from the shaft into the ground.
- 02 Restricting current flow that would otherwise pass from the motor shaft to surrounding components, most commonly motor bearings, which offer the path of least resistance.
- 03 Leading electricity away from the motor bearings in a controlled way.

If motor bearings are wearing out abnormally fast, one of the most likely culprits is the lack of a proper ground pathway for shaft voltage. This can be confirmed by inspecting the bearings which will show signs of the following damage:

Fluting

Pitting

Scarring

Discoloration

Shaft Grounding Devices from Emerson

Emerson Bearing engineers our grounding devices with various options and according to a range of sizes, providing all commercial- and industrial-scale manufacturers of motor systems with the most suitable grounding solutions for their unique applications.

There are four main shaft grounding device products engineered by Emerson available to consumer and industrial markets:

- 01 **BPK-IM2 (option dimensions suitable for small motors)**
- 02 **BPK-4 (with standard-sized option dimensions)**
- 03 **BPK-5 (sealed option dimensions)**
- 04 **BPK-AM (option dimensions designed for large motors)**

