

Globe Motors manufactures Brushless DC (BLDC) motors with power outputs to 0.45 hp (335 watts). BLDC motors are continuing to gain in popularity because of the numerous performance advantages when compared to typical brush type DC motors.

The main difference between the two concepts is the means of commutating the motor coils. In order for any DC motor to operate, the current to the motor coils must be continually switched relative to the field magnets. In a brush type unit, this is accomplished with carbon brushes contacting a slotted commutator cylinder which has each motor coil connected to a corresponding bar of the commutator. The switching continues as the motor rotates. With this arrangement, there are physical limitations to speed and life because of brush wear.

In a BLDC motor, the position of the rotor is sensed and continually fed back to the commutation electronics to provide for appropriate switching. This rotor position sensing can be accomplished in many ways, but Globe has standardized on Hall Effect devices which generally provide optimum size and the best environmental capabilities versus cost. Since there are no carbon brushes to wear out, a BLDC motor can provide significantly greater life being now only limited by bearing wear.

BLDC motors also offer additional advantages as by-products of the inherent construction:

1. Higher efficiencies
2. High torque to inertia ratios
3. Greater speed capabilities
4. Lower audible noise
5. Better thermal efficiencies
6. Lower EMI characteristics

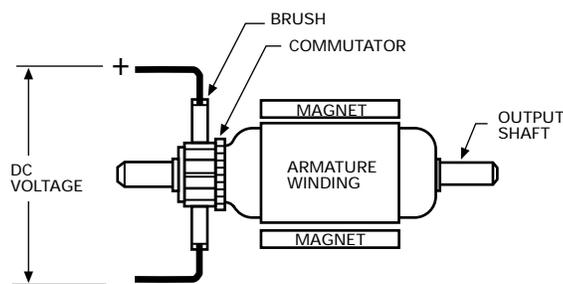
In a BLDC system, the coil windings are typically stationary, while the field magnets are part of the inner rotating member. This allows the heat generated in the windings to be transferred directly to the motor housing and any adjacent heat sinks, thus providing cooler operation. The temperature rise per watt (TPR) is typically less than a brush type motor of comparable size.

Since the field magnets are on the inner rotor, the inertia is less than brush type motors, thus providing faster acceleration rates for the BLDC unit.

Brushless DC motors can operate in a wide variety of environmental conditions while still providing the linear speed torque characteristics found in brush motors.

For assistance in matching a BLDC motor with a controller, contact a Globe Motors Application Engineer. For your convenience, the appropriate wiring schematics are illustrated on the individual motor data sheets on the following pages.

BRUSH DC MOTOR



BRUSHLESS DC MOTOR

