

BRUSHLESS DIRECT CURRENT (BLDC) MOTORS

A NEWER TECHNOLOGY



WHAT IS A BRUSHLESS (BLDC) MOTOR?

Brushless Direct Current (BLDC) motors are true to their name because they utilize electronic sensorless commutation instead of brushes. The most common failure of the brushed design blower motor used for decades are the brushes themselves.

BLDC motors are more efficient by design. This design has characteristics such as quieter operation, greater speed control, increased efficiency, less weight and are usually smaller than their brushed counterparts.

IMPORTANCE OF PROPER REPLACEMENT

In between the evolution of the brushed design and brushless technology, the PWM (Pulse Width

MOTOR EVOLUTION



BRUSHED



PWM



BRUSHLESS

Modulation) controlled brushed motor was developed. PWM brushed motors use a digital signal generated from the vehicle's ECM (Engine Control Module) to send a duty cycle to the PWM controller to vary the speed of the brushed motor.

Brushed motors in conjunction with an attached PWM control module can be used in some brushless applications, however, a brushed motor without PWM cannot be used as a direct replacement in brushless applications. Brushed motors cannot accept the signal from

the ECM to control the speed and will not function. Using PWM controlled brushed motors in brushless applications can result in lower performance, shorter life and higher operating noise. The increased size of PWM controlled brushed motors can create fitment issues in some applications where the O.E was the smaller brushless design.

NEWER TECHNOLOGY

Brushless blower motors are designed to provide precise control and a longer lifespan. The newer technology adds to the complexity of the motor's electronics which come with an increased cost. However, with efficiencies such as increased speed control, reliability and service life, investing in a BLDC motor can often be recovered throughout the life of the unit.

WORLD CLASS MANUFACTURING

As a basic manufacturer in blower motors, our Unimotor[®] manufacturing facility has the ability to identify known flaws and engineer/manufacture a solution. Our attention to detail delivers a quality BLDC blower motor featuring:

- Custom Unimotor[®] Wheel Design
- Sensorless Open-Loop Commutation
- EMI Suppression
- Soft Stall and Hard Stall Protection
- Over Current Limit Protection
- Soft Start / Stop Acceleration
- Hermetically Sealed Electronics
- Integrated Cooling

In-house and vehicle field testing provides a quality unit with a larger operating speed range, increased service life and higher efficiency over standard brushed and PWM controlled motors.

When it comes to your brushless motor needs, look to Four Seasons[®] – Quality, Coverage, Service

