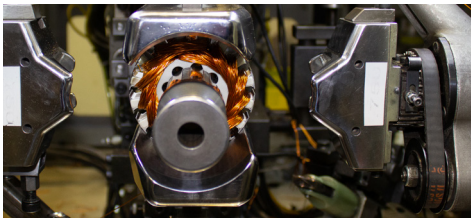
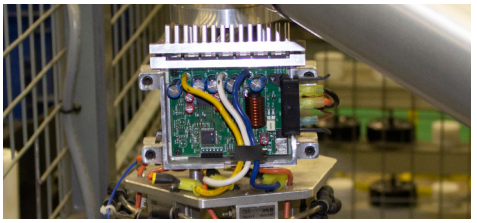
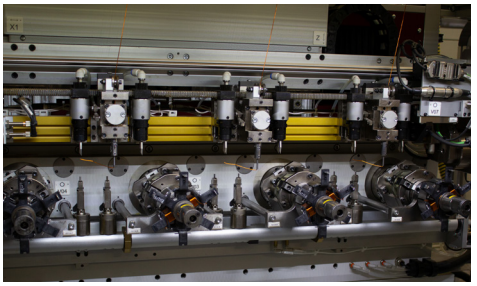
BRUSHLESS DIRECT CURRENT (BLDC) MOTORS

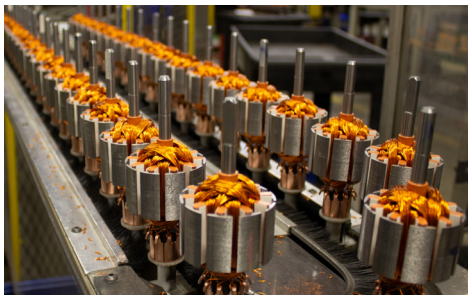
NAPA® offers a premium line of aftermarket light duty car and truck brushless blower motors, internally developed and manufactured in North America. NAPA® quality brushless blower motors offer increased service life and durability over competitive product lines.



Brushless blower motors are designed to provide precise control and a longer lifespan. This 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.







THE LATEST IN MOTOR TECHNOLOGY

WORLD CLASS MANUFACTURING

Each blower motor is 100% tested for function performance and operational noise before ever going out the door.

Our attention to detail delivers a quality BLDC blower motor featuring:

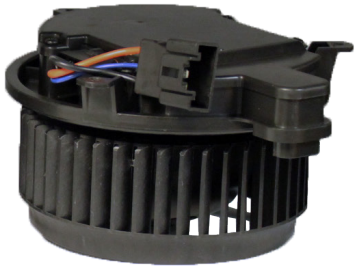
- Custom Wheel Design
- Sensorless Open-Loop Commutation
- EMI Suppression
- Soft Stall and Hard Stall Protection
- Over Current Limit Protection
- Soft Start / Stop Acceleration
- Hermetically Sealed Electronics
- Integrated Cooling

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.

MOTOR EVOLUTION

BRUSHED

PWM



BRUSHLESS

IMPORTANCE OF PROPER REPLACEMENT

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