MotorPro® Training
RESCUE® Select
“The OEM ECM Replacement Blower Motor”
ECM Motors

- The designation ECM is usually reserved for smaller variable speed motors that operate from a single-phase power source and have the electronic controller mounted in or on the motor.

- Electronically commutated motors can have other features that also may be used in addition to ECM in their name.
  
  - A permanent magnet rotor
  - Some are made to run directly from a DC power source.
  - Others are made to run from an AC power source, but they rectify the AC to DC in their controllers before it is pulsed or commutated.
ECM Motors

- Power is pulsed on and off electronically with semi-conductor devices, sometimes called electronic switches or transistors.

- The pulsed signals power three or more circuits or coil groups within the motor.

- By varying the timing and duration of pulses, the electronic controller can accomplish speed control and maintain high torque at start and over a broad speed range.
Nidec’s Advanced ECM Design

Electronic Control Module
- Sensorless, Sine Wave Control
- Thermal/Power Limit Software Protection
- Smooth Starting

Brushless Permanent Magnet Motor
- 3 Phase Chain Winding Design
- 12 Slot 10 Pole Motor Configuration
- Ferrite Magnet Rotor
- Ball Bearing
There are three main ECM motor types
  • Constant Torque
  • Constant CFM
  • Constant Speed

• **Constant CFM** motors react to system static pressure changes by adjusting motor RPM up or down to maintain system design airflow performance

• **Constant Torque** motors react to system static pressure changes by adjusting motor RPM up or down to maintain a pre-programmed torque setting for each speed tap

• **Constant Speed** motors do not react to system static pressure changes, continue to run at the pre-programmed RPM, and are not commonly found in indoor blower applications
# ECM Technologies

<table>
<thead>
<tr>
<th>SelecTech® &amp; X13®*</th>
<th>16x4w &amp; ECM 2.3</th>
<th>PerfectSpeed® &amp; ECM 3.0</th>
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<tbody>
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Note: SelecTech and PerfectSpeed are trademarks of Nidec Motor Corporation

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- **RESCUE® Select** replaces U.S. MOTORS® SelecTech® and the Regal™ X13 motors.

- It does **NOT** replace the U.S. MOTORS 16x4w and PerfectSpeed® or the Regal™ ECM 2.3 and ECM 3.0

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How to Identify an X13®*

• The X13®* motor is a different body
• It is typically referred to as a “one piece” because controls are internal
• Has a unique connector with 5 programmable speed/torque taps
• The X13®* trademark is typically found on motor nameplate
• **Primary Applications**
  • Air Handlers #1
  • Heat Pumps #2
  • Furnaces #3
  • Primarily 208-230V
  • 115V volume increasing

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The ECM Aftermarket Motor That Replaces OEM Constant Torque Blower Motors!

- Replaces Selectech® and X13® constant torque ECM motors
- Do not have to purchase the OEM ECM motor from the OEM
- Programmed at the point of sale to meet the performance of the OEM ECM motor
- Replace X13 motors from any brand of equipment

- 2 year warranty from time of programming
  - 6000V surge protection!
  - Almost double the protection of most OEM ECM motors
  - Fully potted electric module for superior moisture protection
  - Warranty can be tracked by serial number on motor and is stored in web tool database

- Wires to the OEM equipment using the OEM equipment’s existing connections
  - No modifications needed to install!
  - Can be mounted using existing OEM belly band mounting system
  - Kits available for mounting adaptation for flex and rigid mounting systems

A Drop In Replacement for the X13®
6 “unprogrammed” motor ratings may be used to replace hundreds of OEM motors
- HP ranges from 1/3 HP to 1 HP
- 115 & 208-230 Volt
- Profiles (1500+ ratings)
  - New ratings continually being added to the programming database
  - Loading ratings from all equipment manufactures
  - Email notification sent to us if an OEM part number is not in database

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Construction: OEM vs. RESCUE® Select

• RESCUE® Select is a 2 piece motor
The RESCUE® Select motor is slightly longer than some of the other OEM motors that it replaces.

<table>
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<tr>
<th>RESCUE® Select</th>
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<tr>
<td>Horsepower</td>
<td>Length</td>
</tr>
<tr>
<td>1/3</td>
<td>6.25</td>
</tr>
<tr>
<td>1/2</td>
<td>6.25</td>
</tr>
<tr>
<td>3/4</td>
<td>6.75</td>
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<tr>
<td>1</td>
<td>7.25</td>
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• The RESCUE Select motor is slightly longer than some of the other OEM motors that it replaces.

• Since the belly band is able to be positioned directly next to the RESCUE Select motor’s module, the difference in length for mounting purposes is only ½”.

• This additional length should not create any issues with the RESCUE Select motor being able to fit in the blower equipment.
Mounting

• Most OEM ECM motors use a belly band mounting system
  • The RESCUE® Select motor can use the original belly band mounting system
• Belly band kits are available
• Use Kits 17, 23, 24, 29, 39 & 44
You should now:

• Understand the difference between the various ECM motor technologies.
• See the key features and benefits of the RESCUE® Select motor.
• Recognize which EC motors the RESCUE Select motor replaces.

Thank You!