RESCUE® EcoTech® Direct Drive Blower Motor

The High Efficiency “ECM/BPM” Drop-in Replacement Blower Motor

NIDEC MOTOR CORPORATION
Agenda

• Features and Benefits
• Product Overview
• Installation Overview
• Sales Strategy Overview
High Efficiency ECM Blower Motors Are An Emerging Market Segment

Market Segment Driven By Customer Demand For Energy Savings And Indoor Air Quality!

70% Of Homeowners Say Energy Efficiency Features Influence Their Buying Decisions

Research Indicates 61% Of Households Have A Member That Suffers Allergies Due to Airborne Particles

Homeowners #1 Concerns With HAC System
Product Overview

- **A TRUE Drop-In Alternative To Conventional Direct Drive PSC Blower Motors**

- Up To 82% Efficient *(Versus 60 – 65% For a Standard PSC)* for Energy and $ Savings

- Our Patented Motor Control Means the Wiring is as Easy as a PSC

- 5 Speeds Including a Quiet, Efficient, Continuous Fan Mode For Improved Indoor Air Quality

- Constant Torque Design Provides Active Airflow Management to Help Maintain Proper Airflow as Static Pressure Increases

*EcoTech is NOT an OEM Variable Speed Motor Replacement!*
Product Specifications

- Electronically Controlled Brushless Permanent Magnet Motor
- Reversible Rotation
- No Capacitor Required
- Continuous Duty, Air Over
- 1/2 x 4 Inch Shafts
- 1075 RPM’s

- 2 Year Warranty
- Class B Insulation
- 40° C Ambient Rated
- 48 Frame (5.6" diameter)
- Electronically Protected Motor
- Ball Bearing
- 36" Leads
Horsepower Ratings

Current Single Voltage - Discrete HP Models

<table>
<thead>
<tr>
<th>Catalog No. &amp; Voltage</th>
<th>HP</th>
<th>Overall Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>5520ET 115V</td>
<td>1/4</td>
<td>9.75&quot;</td>
</tr>
<tr>
<td></td>
<td>1/3</td>
<td>9.75&quot;</td>
</tr>
<tr>
<td>5521ET 208–230V</td>
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<td>9.75&quot;</td>
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<td></td>
<td>1/3</td>
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<tr>
<td>5530ET 115V</td>
<td>1/2</td>
<td>9.75&quot;</td>
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<tr>
<td>5531ET 208–230V</td>
<td>1/2</td>
<td>9.75&quot;</td>
</tr>
<tr>
<td>5540ET 115V</td>
<td>3/4</td>
<td>10.75&quot;</td>
</tr>
<tr>
<td>5541ET 208–230V</td>
<td>3/4</td>
<td>10.75&quot;</td>
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<tr>
<td>5550ET 115V</td>
<td>1</td>
<td>11.25&quot;</td>
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<tr>
<td>5551ET 208–230V</td>
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Multi-HP Dual Voltage Models

<table>
<thead>
<tr>
<th>Catalog No. and Voltage</th>
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<tbody>
<tr>
<td>5522ET DUAL</td>
<td>1/3, 1/4, 1/6</td>
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<tr>
<td>5532ET DUAL</td>
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<tr>
<td>5542ET DUAL</td>
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<td>5552ET DUAL</td>
<td>1, 3/4, 1/2</td>
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Expect to See Multi-HP/Dual Voltage Models in October 2011!
### Suggested Wiring

#### WIRING CHART

Suggested Lead Color at Horsepower Shown

<table>
<thead>
<tr>
<th>HP</th>
<th>Speed</th>
<th>Cat. No. 5522ET</th>
<th>Cat. No. 5532ET</th>
<th>Cat. No. 5542ET</th>
<th>Cat. No. 5552ET</th>
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<tbody>
<tr>
<td>1/6</td>
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<tr>
<td></td>
<td>HEAT</td>
<td>YELLOW</td>
<td></td>
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<tr>
<td>1/4</td>
<td>COOL</td>
<td>BLUE</td>
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<td>HEAT</td>
<td>BLUE</td>
<td>PURPLE</td>
<td>YELLOW</td>
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<td>BLUE</td>
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<tr>
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<td>HEAT</td>
<td>BLUE</td>
<td>PURPLE</td>
<td>YELLOW</td>
<td></td>
</tr>
<tr>
<td>3/4</td>
<td>COOL</td>
<td>BLACK</td>
<td>BLUE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>HEAT</td>
<td>BLUE</td>
<td>PURPLE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>COOL</td>
<td>BLACK</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>HEAT</td>
<td>BLUE</td>
<td></td>
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</table>

#### Wire Leads

<table>
<thead>
<tr>
<th>Wire Leads</th>
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<tbody>
<tr>
<td>BLACK</td>
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<td>PURPLE</td>
</tr>
<tr>
<td>YELLOW</td>
</tr>
<tr>
<td>RED</td>
</tr>
<tr>
<td>WHITE</td>
</tr>
</tbody>
</table>

**Always Confirm Airflow**
Easy Installation

- Patented Design Senses Current in High Voltage Speed Taps
- Connects to Existing PSC Control Board
- No Capacitor Needed for RESCUE EcoTech

Drop In PSC Replacement!
Easy Installation – Continuous Fan Mode

- The RESCUE EcoTech Motor Allows a Low Speed Continuous Fan Mode, Even on Existing Boards Without a Continuous Fan Pin
  - Connect the RED (Low Speed) Wire Directly to Line Voltage Using the Supplied Y-Harness
- When More Than One Speed Tap is Energized, the ECM Selects the Highest of Those Taps.
  - **Example:** (RED and BLACK Wires Energized During Cool Cycle, the Motor Operates at the BLACK Wire Speed)
- The Motor Circulates Air Continuously, Switching Smoothly to a Cool or Heat Speed When Called Upon by the Thermostat
Continuous Fan Mode – New Fan Relay

- In order to maintain thermostat control in systems without a continuous fan pin, we need to use the G output of our Thermostat and a relay (purchased separately).
- Caution: Simply disconnecting the G wire from the control board may cause cooling issues on some systems since G is typically energized on Cool and Fan calls.
  - On these systems, you may need to jump the Yellow Wire to the G terminal on the control board.
Dehumidification Wiring

- Also works well with an advanced humidity controlling thermostat for dehumidification.
- Reduce Fan Speed in cool mode to dehumidify.
- Additional Relay required.
Easy Installation – Rotation

- Exclusive 3 Wire Reversing Connector Further Simplifies Installation
- Simply Plug Into CCW or CW (From Lead End) Side of the Connector
- Ground Pin in the Middle
- Flip Plug Over to Match Common Wire to Rotation Pin
Easy Installation – Set the Voltage

Dual Voltage Models Only!

1. Ships Setup and Ready to Use For 208 - 230V
2. Remove Door Flap IF Converting to 115V
3. Fully Insert the Included 115V Jumper Plug. It is Now Set For 115V
Easy Installation – Mounting

- The RESCUE EcoTech Motor Fits Most Belly Mounts
- Replace Flex (Torsion) and Hub Ring Mounts Using Catalog Number 44 or 17 Flex Mount Kits

Rheem/Ruud Brackets? Use Kit 24
**Rescue EcoTech Selection Example**

Example Scenario:
- OEM Motor has 10.0 Amp draw with 40 MFD capacitor (115V) and labeled as 3/4 HP
- Since that 40MFD capacitor is larger than the typical 20MFD, the 3/4HP is not the suggested motor.
- For the Rescue EcoTech upgrade, the 1HP rated 5550ET motor is the best premium choice!

<table>
<thead>
<tr>
<th>PSC Motor Nameplate Amps</th>
<th>PSC Motor Nameplate Hp</th>
<th>Typical Capacitor MFD*</th>
<th>Rescue EcoTech To Use</th>
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<tbody>
<tr>
<td><strong>115V Replacements</strong></td>
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<td></td>
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<tr>
<td>2.5-5.5</td>
<td>1/4-1/3</td>
<td>5-7.5</td>
<td>5520ET</td>
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<tr>
<td>5.6-8.4</td>
<td>1/3-1/2</td>
<td>7.5-10</td>
<td>5530ET</td>
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<td>8.5-10.5</td>
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<td>10-15</td>
<td>5540ET</td>
</tr>
<tr>
<td>10.6+</td>
<td>3/4-1</td>
<td>15-20</td>
<td>5550ET</td>
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<tr>
<td><strong>208-230V Replacements</strong></td>
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<td>1.5-2.7</td>
<td>1/4-1/3</td>
<td>5-7.5</td>
<td>5521ET</td>
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<td>2.8-3.6</td>
<td>1/3-1/2</td>
<td>7.5-10</td>
<td>5531ET</td>
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<td>5.1+</td>
<td>3/4-1</td>
<td>20-25</td>
<td>5551ET</td>
</tr>
</tbody>
</table>

Pay Attention to Larger Than Normal Capacitors! They are Telling YOU Something!
Is there anything we can do about all this dust?

My children are suffering from allergies!

What can I do to lower my utility bills?

How do I fix uneven temperatures throughout my home?

I know my A/C system needs replacement, but isn’t my furnace still good?
Lower Utility Bills – Energy Savings

Solution for Homeowner Seeking Energy Savings

Est. Annual Homeowner Savings – RESCUE EcoTech vs. PSC

<table>
<thead>
<tr>
<th>Cents/kWhr</th>
<th>½ hp</th>
<th>¾ hp</th>
<th>1hp</th>
<th>Cents/kWhr</th>
<th>½ hp</th>
<th>¾ hp</th>
<th>1hp</th>
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<tbody>
<tr>
<td>22¢</td>
<td>$342</td>
<td>$378</td>
<td>$504</td>
<td>22¢</td>
<td>$124</td>
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<td>20¢</td>
<td>$311</td>
<td>$344</td>
<td>$458</td>
<td>20¢</td>
<td>$113</td>
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<td>18¢</td>
<td>$280</td>
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<td>$249</td>
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<td>$367</td>
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<td>14¢</td>
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<td>$186</td>
<td>$206</td>
<td>$275</td>
<td>12¢</td>
<td>$68</td>
<td>$73</td>
<td>$97</td>
</tr>
</tbody>
</table>

Continuous Fan Operation vs. Heat/Cool Operation Only
Lower Utility Bills – How?

T 90K BTU 80% Furnace

- Full Load: High efficiency provides a 170 to 370 watts reduction = 29% Savings!
- Circulation Speed: Low 600 RPM speed provides very efficient airflow
  - Circulation speed uses less than 100 watts (1/2hp motor)
  - 75% Watt Savings over PSC typical
- Like a CFL bulb, the EcoTech motor runs on the same voltage, puts out equal power, but uses fewer watts!

Energy Consumption, Blower Motor Only

Brand L 110K BTU 80% 2-Stage Furnace

- 459 W Less!

Brand B 132K BTU 80% Furnace

- 576 W Less!

With Rescue EcoTech, it's about improved magnetics. Does this make sense to you?
Uneven Temperatures – Continuous Air Circulation

Ask the RIGHT question:

**WHERE** in your house do you have Hot or Cold Spots?

**Problem:** Caused by stagnant air once your AC or furnace stops circulating

**Solution:** Set fan to **ON** position for constant mixing of the air and more even temperatures.

Studies Show Continuous Air Flow can Reduce Temperature Differences by 3° – 6°
Allergies and Dust – Continuous Air Circulation

Ask the RIGHT question:

**WHO** in your house suffers from Asthma or Allergies?

**Problem:** Dust or Allergens not being adequately filtered.

**Solution:** Set fan to **ON** position for increased filtration especially during Spring and Fall seasons when system run time is typically low.

*This Provides You, the Contractor, an Opportunity to Sell More filters!*
Research Indicates that 61% of Households Have a Member that Suffer Allergies Due to Airborne Particles

Contractor Feedback on IAQ:
“People are Looking for Peace of Mind”
“Kids are a big driver”
“They complain that it is HOT upstairs and cold downstairs.”

This is a Great Bundling Opportunity for Advanced IAQ Equipment!
Improved Air Circulation -
Active Airflow Management

Works To Maintain Airflow
As Static Pressure Increases From:

- Dirty Filters
- Closed Vents
- Changes in Static Pressure
  Cause Variable Airflow with a PSC

Almost 250 CFM Difference!

Airflow vs. Pressure – High Speed
**Scenario:** A/C Condenser and Coil Getting Replaced with new High Efficiency Unit

- Customer wants to upgrade furnace electrically, without buying a complete system
- Rescue EcoTech gives them most of the benefits of a new furnace without the cost
Presenting the Rescue EcoTech

The Solution Driven Service Call

System Allows Tech’s to Offer a Solution Without having to Sell
Address the “Hot Buttons”

All homeowners have “hot button” issues.

- Allergies and/or Asthma
- Personal Comfort
- Equipment Life - Investment
- Noise
- Environment
- Dollar Savings

Clearly Addressing “Buttons” Makes RESCUE EcoTech Easy For Homeowners
Run your service call like a Doctor runs an office call

The Doctors Office

1. Receptionist asks questions to help ensure a proper diagnosis
2. Nurse asks questions and takes basic reading to help ensure a proper diagnosis
3. Doctor asks questions and run tests to ensure a proper diagnosis
4. Determines what is causing the symptoms
5. Explains to the patient what is causing the symptoms
6. Explains how to fix the problem
7. Writes a prescription or course of action
Run your service call like a Doctor runs an office call

The HVAC Service Call

1. Office staff asks initial question to help ensure proper diagnosis
2. Technician asks questions and does a basic overview of the system
3. Technician reviews problem looking for a root cause, asks more questions, and runs additional tests or takes additional measurements to ensure proper diagnosis
4. Determines exactly what is causing the symptoms
5. Explains to the customer what is causing the problem
6. Explains how to fix the problem
7. Writes a course of action
Two Most Important Questions

Ask the **Right** Questions!

- **What** areas of the house are too hot in the summer and / or too cold in the winter?
- **Who** in your home suffers from Allergies or Asthma?
  - **When** are they the worst? Spring and Fall? That is when you system runs the least amount of time.

You are Not Filtering the Air if the Fan isn’t Running!
Review Findings with your Customer

Did you find the Hot Buttons?

- Hot and Cold Spots – Circulation Mode
- Allergies and/or Asthma – Circulation Mode
  - IAQ Equipment – Filters and Humidifiers?
- Utility Bills – EcoTech Helps at Full Load and Circulation Mode
Tools For the Contractor – Presenting the Rescue EcoTech

1. Be Sure to Quote the Customer on a PSC Replacement to Establish the Baseline First

2. Present the RESCUE EcoTech as an Upgrade Option Based on Their “Hot Button.”

3. Use the Homeowner Brochure to Help Show Them the Benefits and That This is a Quality US Motors Product.

4. Use the Savings Calculator to Show Them the Savings and/or Payback Period for Their Situation.

   Example: $300 Upgrade Cost. $0.12/kWhr, 3/4HP Blower in Continuous Fan Mode to Relieve Allergies. $206 Annual Energy Savings. Payback Period is **Only 18 Months**!

5. Higher Comfort and Savings for them, Larger Invoice and Profit Billings for You!
Example:

- **Value:** Homeowner Comfort Benefits and $ Savings.
- The 1/2HP EcoTech is Presented as a $270 Upgrade to the Homeowner.
- This is a 1.45 Year Payback Based on $0.12/kWh in Continuous Fan Mode for Them.
- You, the Contractor, Make an **EXTRA** $64 on the Installation!
- This a “Win-Win” for You and Your Satisfied Customer!

### Motor Replacement Example

<table>
<thead>
<tr>
<th></th>
<th>PSC</th>
<th>EcoTech</th>
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<tbody>
<tr>
<td><strong>Total Billing:</strong></td>
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<td>$670</td>
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<tr>
<td><strong>Motor</strong></td>
<td>$62</td>
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<td><strong>Capacitor</strong></td>
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<td>-</td>
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<td><strong>Mounting Kit</strong></td>
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<td><strong>Profit Over Cost</strong></td>
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<td>$385</td>
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<td><strong>Extra Profit</strong></td>
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</table>
Support Tools For the Contractor

- RESCUE EcoTech® Website featuring technical information, FAQs and other sales tools
- Contractor Sales Tools
- Homeowner Brochures
- Savings Calculator
- Introduction Support With PR, Wholesaler & Contractor Training
Rescue EcoTech Quiz

• Is this a replacement for OEM variable speed motors?
  No. The RESCUE EcoTech motor is specifically designed to connect to standard PSC controls only

• What types of systems will work with the RESCUE EcoTech motor?
  Most residential furnace and air handler systems that utilize a PSC 6-pole (1075 RPM) direct-drive blower motor.

• Is Rescue EcoTech a variable speed motor?
  Yes, with one important difference, the patented motor control allows use of the high voltage speed taps directly from a PSC furnace or air handler control board, providing 5 discrete speeds.
Think Opportunity...We Did

RESCUE EcoTech Adds To The Toolbox Of Solutions For Contractors And Homeowners

Designed In The RESCUE Motor Tradition To Save Time And Make Money For Contractors

A Smart Way To Meet Homeowner’s Energy Saving And Indoor Comfort Needs

Rescue EcoTech Motors: Responsible Use Of Energy Through Technology