Model Series: 39 • ECM Motor Fan Performance Curves

Airflow vs. External Static Pressure

Unit Size 6

Unit Size 10

Air Pressure (Pa)

Airflow (l/s)

Airflow (CFM)

Independent Laboratory Certification and Testing

Engineered Comfort is committed to providing accurate and reliable performance data on our entire range of products. As such we voluntarily certify our product performance with an independent rating/testing agency, AHRI. It’s also important to note that during the development stages Engineered Comfort enlists an independent testing facility, Energistics Laboratory, to conduct product performance analysis and sound power level data. We willingly do this even though sound certification isn’t currently required with AHRI 440. Energistics Laboratory is a state-of-the-art facility complete with all of the equipment and personnel necessary to ensure that we comply with all applicable industry standards. Below are a few photos of the Energistics facility and a couple of photos of actual Engineered Comfort installations. We trust that our project experience, coupled with our commitment to independent testing, will serve as a testament that we now offer the most comprehensive, reliable and energy efficient fan coil systems in North America!

NOTES:

• The fan curves for the ECM motor are unlike those for traditional PSC motors. The ECM motor is a pressure independent constant volume device at set point and airflow does not vary with changing static pressure conditions. The motor compensates for any changes in static pressure such as filter loading. Variations in airflow are generated by the controls which reset the fan airflow based on room demand.

• Airflow can be set to operate on a horizontal performance line at any point within the shaded area using the solid state volume controller provided.

• Engineered Comfort Fan Coil units featuring the optional ECM motor have considerably wider turndown ratios than conventional PSC motors. Hence, a reduced number of unit sizes are required in order to provide the same fan airflow range when compared with fan coils equipped with PSC motors. A reduction is the number of different fan coil sizes required on a typical project simplifies design layout and installation and reduces the inventory of field service parts.

• Fan curves shown are applicable to 120/208/240 and 277 volt, single phase ECM motors.

AHRI Standard Ratings

<table>
<thead>
<tr>
<th>Unit Size</th>
<th>Coil</th>
<th>Airflow (Dry Flow)</th>
<th>Cooling Capacity</th>
<th>Water Flow</th>
<th>Pressure Input</th>
</tr>
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<tbody>
<tr>
<td>6</td>
<td>3</td>
<td>600</td>
<td>2500</td>
<td>3.6</td>
<td>7.4</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>1100</td>
<td>3400</td>
<td>4.5</td>
<td>11.1</td>
</tr>
<tr>
<td>10</td>
<td>3</td>
<td>1100</td>
<td>3400</td>
<td>4.5</td>
<td>11.1</td>
</tr>
</tbody>
</table>

Head Pressure Pump

Horsepower Consumption

Water Flow (GPM)

System Power Consumption

NOTE: The pump’s horsepower consumption depends on the EPIC/ECM model.

Engineered Comfort Fan Coil Units Offer Unsurpassed Operating Efficiency and Energy Recovery

- Our Vertical Hi-Rise Fan Coil Units Offer Unsurpassed Operating Efficiency and Energy Recovery
- Featuring Variable Air Volume Epic Fan Technology® and ECM Motors
- Ultimate in Energy Savings, Flexibility, Design, Quiet Comfort, and Ease of Installation
Features:
- Fan (2 and 4 pipe configurations) can be located on the back, left or right side of unit
- Commercial Grade Supply Grille Constructions are available on the left, front or right side of unit
- Quick panel removal and access
- Reversible Core provides flexibility for facing
- Fan Technology® scratch resistant finish resists scratching and weathering
- Duct-ILP shown for easy maintenance
- ECM Motor with variable air volume and ECM Fan Technology®
- Soft start
- Ultra low air flow
- Factory protected Control Valves and Piping Packages
- Stainless Steel Fan Rooms with Full Bell Flangeis
- Central to Core: 1, 2, 3
- Filter Rack: 1
- UV Light (Optional)
- P-Trap
- Electrical Knockout
- Access Panel
- Thermogas, Remotely Mounted (Optional—Unit Mount)
- Turn Down Motor Ratio— up to 90%
- Capability up to 90%
- Excellent
- Improved Comfort
- De-Humidification
- Energy Recovery
- Energy Consumption
- Warm Air Return
- Interim Exhaust
- Intermittent Exhaust
- Bathroom (100 - 200 CFM)
- Ultra Plus
- Energy Recovery Module
- Modular Doors (Slab Doors, Stainless Steel available)
39HV

with "ULTRA PLUS" ENERGY RECOVERY MODULE

Top Outside Air Connection to Internal Cooling Mixing Vents

- Helps to meet the stringent LEDD® and Municipal Energy Savings Demands
- Improves Indoor Air Quality (IAQ)
- Super low sound levels
- Dedicated controllable air temperature
- MERV 6, MERV 8 & Activated carbon filters
- Activated charcoal intake filters

Control System Solutions
- Staged ECM 3-Speed (Maxwell)
- EPIC/ECM (and Austin) 4-Speed (Ultra)
- Fully Modulating
  - Modulating water flow valve package
  - Pressure independent fan operation
  - ECM/EPIC Fan Technology® (Ultra)
  - Ultra low airflow
  - Soft start
  - Turn down motor ratio
  - Energy recovery module

NOMINAL SENSIBLE EFFICIENCY @ 32°F (0°C) 74% @ 5°F (-15°C) 57%

<table>
<thead>
<tr>
<th>Size (19&quot; x 19&quot; x 8.5&quot; high)</th>
<th>220 CFM</th>
<th>260 CFM</th>
<th>330 CFM</th>
<th>470 CFM</th>
<th>97 Watts L</th>
</tr>
</thead>
<tbody>
<tr>
<td>150 -1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150 -2</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>150 -3</td>
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</tr>
<tr>
<td>200</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Not Shown:
- Thermostat, Remotely Mounted (Optional—Unit Mounted)
- EPIC/ECM
- P-Trap
- Special Plenum and Hush Balancing Damper
- DDC Controller (Optional)
- Interconnection Piping and Installation - by other

ULETRAP PLUS" energy recovery module has helped us to take energy savings even further while helping to meet the rising energy demands. This unit allows for the controlled demand of air which is more energy efficient but also improves indoor air quality. It is efficiently treated and connected to the top outside air BTR connection/internal exhaust for balanced flow rates. It has been designed to work in conjunction with the Energy Comfort vertical counter flow heat exchanger and is fully modulating in airflow and is not affected by wind or stack effect.

**UltraPlus Energy Recovery Module**

Our matching "ULTRA PLUS" energy recovery module has helped us to take energy savings even further while helping to meet the rising energy demands. This unit allows for the controlled demand of air which is more energy efficient but also improves indoor air quality. It is efficiently treated and connected to the top outside air BTR connection/internal exhaust for balanced flow rates. It has been designed to work in conjunction with the Energy Comfort vertical counter flow heat exchanger and is fully modulating in airflow and is not affected by wind or stack effect.

- Up to 80% savings available when incorporated with our "Ultra Plus" Energy Recovery Module.
- EBV run continuously at ultra low speed consuming 30 watts at speed
- Energy recovery unit is remotely mounted; interconnecting piping and installation - by other
- "Energy Recovery" reconditioning for high end units
- EBV units are not affected by wind or stack effect

**Features & Benefits**

- High Energy Savings
- Improved Comfort
- EBV run continuously at ultra low speed consuming 30 watts at speed
- Energy recovery unit is remotely mounted; interconnecting piping and installation - by other
- "Energy Recovery" reconditioning for high end units
- EBV units are not affected by wind or stack effect

**Installing ECM/EPIC Technology®**

- EBV run continuously at ultra low speed consuming 30 watts at speed
- Energy recovery unit is remotely mounted; interconnecting piping and installation - by other
- "Energy Recovery" reconditioning for high end units
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**Energy Consumption Comparison Chart**

<table>
<thead>
<tr>
<th></th>
<th>EBV ECM vs. 3-Speed ECM</th>
<th>EPIC ECM vs. 3-Speed ECM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy Consumption (BTU/h)</td>
<td>EBV ECM</td>
<td>EPIC ECM</td>
</tr>
<tr>
<td>Basement</td>
<td>400</td>
<td>400</td>
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<tr>
<td>Living</td>
<td>400</td>
<td>400</td>
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<tr>
<td>Bedroom</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Energy Savings</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Benefits**

- High Energy Savings
- Improved Comfort
- EBV run continuously at ultra low speed consuming 30 watts at speed
- Energy recovery unit is remotely mounted; interconnecting piping and installation - by other
- "Energy Recovery" reconditioning for high end units
- EBV units are not affected by wind or stack effect

**Coming Soon** - Our “integral” energy recovery module option, contact factory
**39HV with “ULTRA PLUS” ENERGY RECOVERY MODULE**

- Top Outside Air Connection to Internal Condensate Misting Fan
- Staged ECM with MWF - Fully Modulating Water Flow
- Matching “External” Energy Recovery Module
- Improved Chiller Efficiency
- Improved Air Quality (IAQ)
- Reduced System Pump Energy
- Reduced Sound/Noise
- Full Fan Modulation
- Increased Lifespan
- Energy Savings
- More Efficient System Design
- Anti-Mold and Fungus/Bacteria Protection
- Three Filter Options with a Unique Quick Release Hanging System
- Comes in a Rugged Compact Enclosure
- Utilizes a Nailor®/Engineered Comfort Ducting System

**Energy Consumption Comparison Chart**

- EPIC ECM vs. 3-Speed PSC Motor
- EPIC ECM vs. 2-Speed ECM Motor
- EPIC ECM vs. Variable Speed ECM
- EPIC ECM vs. Standard ECM

**Features & Benefits**

- **Wild ECM Technology®**
  - Our “Integral” energy recovery module has helped us to take energy savings even further while helping to meet the more stringent requirements of the new energy codes.
  - This technology provides a cost-effective solution which also affords energy savings, typically up to 90% or better, depending on the design and application.
  - Our matching “Ultra Plus” energy recovery module has helped us to take energy savings even further while helping to meet the more stringent requirements of the new energy codes.
  - Our Wild ECM technology is specifically designed to work with the Nailor®/Engineered Comfort Ducting System.

**Virtual Environment**

- **FAN COIL WITH EPIC/ECM FAN TECHNOLOGY® AND FULLY MODULATING WATER FLOW VALVE PACKAGE**
  - 3 and 4 pipe systems are available.
  - **HEATING**
    - **Maximum Airflow**
    - **Max**
    - **Room Temperature Increase**
    - **Set Point**
  - **VENTILATION**
    - **Maximum Airflow**
    - **Max**
    - **Room Temperature Increase**
    - **Set Point**

**NOMINAL SENSIBLE EFFICIENCY @ 32°F (0°C)**

- 74%
- 57%

**NOMINAL HEAT LOAD @ 32°F (0°C)**

- 97 Watts L

**NOMINAL ELECTRICAL 1.5/2.1 AMPS**

- Excellent
- Good

**NOMINAL NOISE LEVEL (47” ON CENTER)**

- 2012 Fan Coil

**VACUUM CONNECTIONS**

- 1.5” (1” Port)
- 3/4” (1/2” Port)
- 1” (3/4” Port)

**NOTES**

- 1. Based upon typical fan operation, 5 Row Coil (3/2) and 120 V motors.
- 2. PSC and 3-Speed ECM units selected at medium/high speed. EPIC units selected mid-range for optimum VAV performance and maximum energy savings.
- 3. Further savings available when incorporated with our “Integral” energy recovery module.
- 4. 3-Speed PSC motor taps are Low (L), Medium (M), and High (H); EPIC/ECM motor is 
  selected mid-range for optimum VAV performance and maximum energy savings.
- 5. Live power consumption measured by Watt meter on In-Phase, 240V, 50 Hz, 2000 W circuit.

**FAN ENERGY SAVINGS**

- 80% Plus

**ECONOMICALLY ENGINEERED CONVENIENCE**

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**FOOTNOTE**

- 1. Further savings available when incorporated with our “Integral” energy recovery module.
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- 3. Live power consumption measured by Watt meter on In-Phase, 240V, 50 Hz, 2000 W circuit.
- 4. Live power consumption measured by Watt meter on In-Phase, 240V, 50 Hz, 2000 W circuit.
- 5. Further savings available when incorporated with our “Integral” energy recovery module.

**Typical Operating Cost Comparison**

- **Energy Recovery Module**
  - Remote Mount
  - Good
  - Excellent
  - Best

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**FUNCTIONAL DESCRIPTION**

- **Door:** The cover for the condenser unit, typically located at the top left or right side of the unit.
- **Commercial Grade Supply Duct:**
  - Available in stainless steel, aluminum or galvanized steel.
  - Insulated or non-insulated.

**PRODUCT SPECIFICATIONS**

- **NOMINAL SENSIBLE EFFICIENCY @ 32°F (0°C)**
  - 74%
  - 57%

**NOMINAL HEAT LOAD @ 32°F (0°C)**

- 97 Watts L

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**NOMINAL NOISE LEVEL (47” ON CENTER)**

- 2012 Fan Coil
Model Series: 39 • ECM Motor Fan Performance Curves
Airflow vs. External Static Pressure

Unit Size 6

Airflow (l/s) vs. Discharge Static Pressure (Pa)

Unit Size 10

Airflow (CFM) vs. Discharge Static Pressure (Pa)

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### AHRI Standard Ratings

<table>
<thead>
<tr>
<th>Unit</th>
<th>Coil</th>
<th>Airflow (Dry Flow)</th>
<th>Cooling Capacity (BTUH)</th>
<th>Water Flow Rate (GPM)</th>
<th>Water Pressure Drop (ft. w.g.)</th>
<th>Horsepower Consumption</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3</td>
<td>300</td>
<td>650</td>
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<tr>
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<td>3000</td>
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<td>2000</td>
<td>7.5</td>
<td>11.1</td>
<td>22</td>
<td></td>
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</tbody>
</table>

Note: Based on 80°F DB and 67°F WB, 45°F EW, 10°F temperature rise, maximum fan speed. Motor type is EPIC/ECM and motor voltage is 115/1/60. All units are dry coil configurations. Our EPIC/ECM Fans are tested and certified to AHRRI Standard Ratings as compared to standard ECM Motors. All of these models were tested at 0.7” external static pressure.
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<th>Unit Size</th>
<th>Coil Size</th>
<th>Airflow (Dry Flow)</th>
<th>Cooling Capacity</th>
<th>Water Flow</th>
<th>Pressure Head</th>
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