# Energy Recovery Products

Information Guide

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# General Information

Energy Recovery Products

## Product Overview

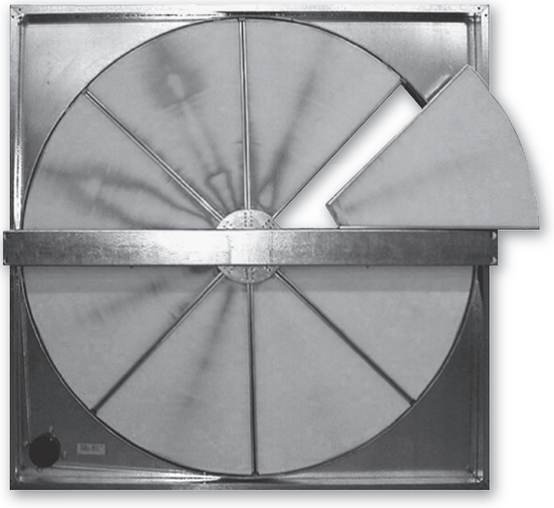
Energy Recovery Ventilators (ERV) are used to recover exhaust air energy and reintroduce it into the conditioned space. The recovery wheel provides sensible and latent energy exchange between the entering and exhaust air streams of a building. This allows a substantial amount of the energy which is normally lost in the exhaust air stream to be returned into the entering air. Ideal applications are areas that have cold or hot temperatures with high occupancy loads or high ventilation requirements. Areas that have high humidity or very low humidity (recover exhaust air humidity from buildings that have humidifiers) are good applications. ERV's also reduce the design loads due to outside air, which can mean downsizing the air conditioning equipment. Application software is available to calculate the load reductions and provide the energy and dollar savings for all areas of the United States and Canada.

The ERV enthalpy wheel contains parallel layers of a polymeric material that are impregnated with silica gel (desiccant). The wheel is located in the entering (intake) air and exhaust air streams of the ventilation equipment. As the wheel rotates through each air stream, the wheel surface captures sensible and latent energy. In the heating mode, the wheel rotates to provide a constant transfer of heat from the exhaust air stream to the colder intake air stream. During the cooling season, the process is reversed. For applications that do not need to recover energy during mild outside weather conditions, an option is provided to stop the wheel from rotating, thereby providing cooling with energy recovery.

## Enthalpy Wheel

The heart of the Unitary Energy Recovery Ventilator is the Energy Recovery Wheel (defined by ARI as a rotary heat exchanger). The wheel has a patented design of parallel layers of wrapped polymeric material that is impregnated with a silica gel (desiccant). This unique design makes it the only truly cleanable wheel on the market today. All wheels are slide out cassettes, and all wheels have pie segments that are removable for cleaning.

Segmented Enthalpy Wheel



## Key Terminology

**Effectiveness**

The measured energy recovery effectiveness not adjusted to account for that portion of the psychrometric change in the leaving supply air (Station 2) that is the result of leakage of entering exhaust air (Station 3) rather than exchange of heat or moisture between the air streams.

**Net Effectiveness**

The measured recovery effectiveness adjusted to account for that portion of the psychometric change in the leaving supply air (Station 2) that is the result of leakage of the entering exhaust air (Station 3) rather than exchange of heat or moisture between the air streams.

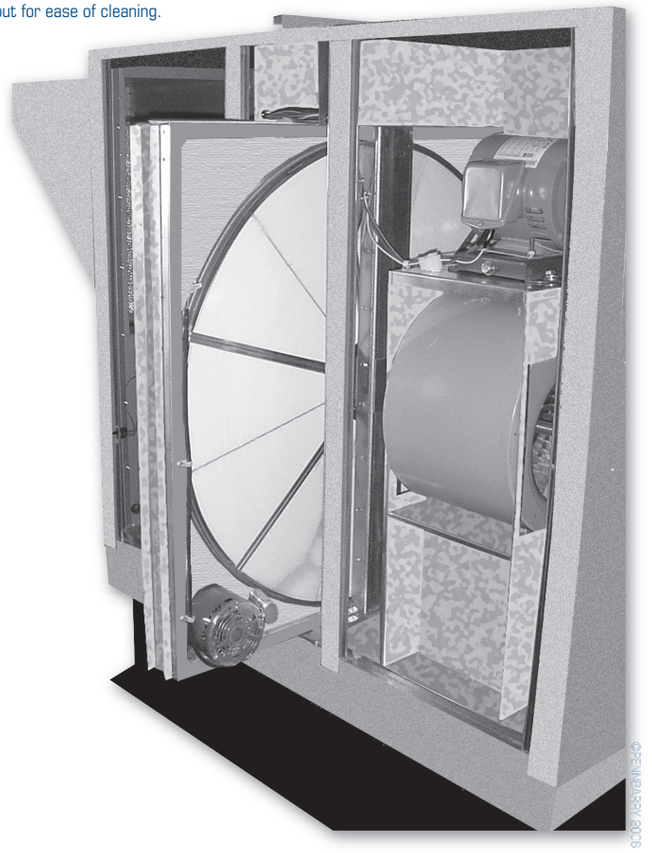
**Exhaust Air Transfer Ratio (EATR)**

The tracer gas concentration difference between the leaving supply air (Station 2) and entering supply (outdoor) air stream (Station 1) divided by the tracer gas concentration in the entering exhaust (return) air (Station 3) at the 100% rated air-flow, expressed as a percentage.

**Outdoor Air Correction Factor (OACF)**

The entering supply (outdoor) airflow (Station 1) divided by the measured (gross) leaving supply airflow (Station 2).

All enthalpy wheels slide out for ease of cleaning.



## Optional Accessories

**Roof Mounting Frame**
A 14 or 24 inch (355 or 610 mm) roof curb is required to match supply and exhaust openings of the ERV with the rooftop ERV units. PennBarry provides a full line of roof curbs to match the specified unit.

**Low Ambient Control Kit**
Prevents frost formation on energy wheel heat transfer surfaces by terminating the intake blower operation when discharge air temperature falls below a field selectable temperature setting. Intake blower operation resumes operation after temperature rises above the adjustable temperature differential.

**Pressure Sensor**
Measurement device on the ERV to determine airflow across the Enthalpy Wheel. The control test ports are on the Intake portion of the ERV, but can easily be moved to the Exhaust portion.

**Motorized Intake Air Damper**
Damper mounts in the outdoor air intake hood. It opens when the ERV is energized and closes when de-energized.

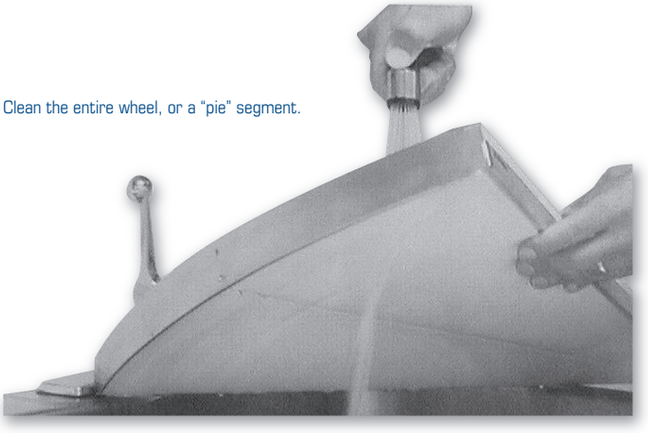
**Stop-Start-Jog**
Function that rotates the enthalpy wheel on a preset timer to prevent contamination of the wheel during economizer operation.

**Rotation Sensor**
A Control is used to provide a method of a 24 volt signal for notification should the ERV wheel not rotate during normal operation. This includes bad motors, broken belts, etc.

**Disconnect with GFI Plug**
The ERV is provided with a factory mounted disconnect switch. The option comes complete with a factory mounted GFI plug. The plug must be field wired.

**VFD**
Variable Frequency Drives are provided for both the intake and exhaust blowers. This allows the system to be perfectly balanced to the building requirements.

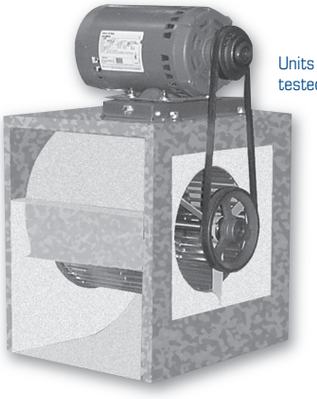
Clean the entire wheel, or a "pie" segment.



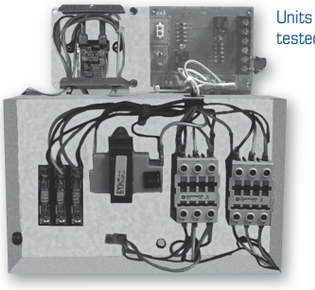


## ARI Standard 1060-2005

The Air-Conditioning and Refrigeration Institute (ARI) issued Standard 1060-2005 to certify air-to-air energy recovery ventilators. This standard deals specifically with the ratings of the Energy Recovery Wheel that is incorporated into the ERV. All of the energy recovery units have an ARI certified wheel. The data shown in the specification charts are the ARI certified data for the wheel. Actual performance may vary.



Units are supplied with fully tested blower assemblies.

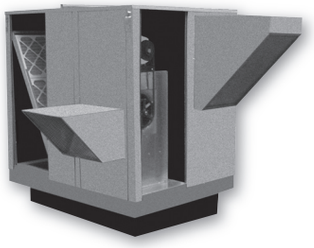


Units are supplied with fully tested control systems.

Units are supplied with filters before the enthalpy wheel.

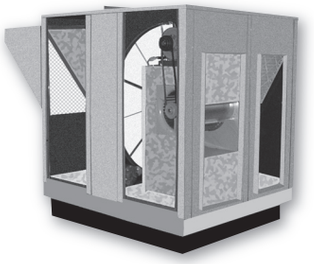
# Product Overview

Energy Recovery Products



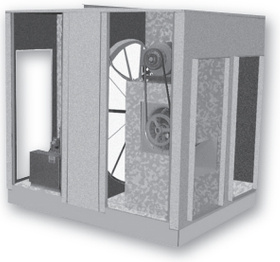
## ERV D-Series (Outdoor)

Stand-alone for downward discharge duct arrangements in rooftop applications.



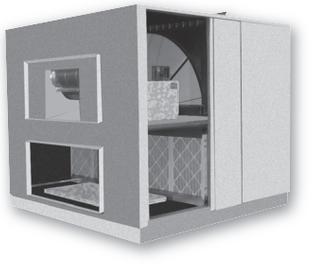
## ERV S-Series (Outdoor)

Stand-alone for outdoor, side-by-side duct arrangements.



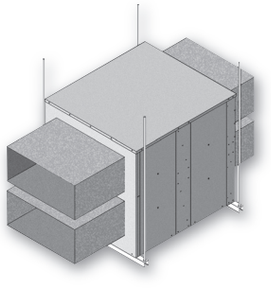
## ERV M-Series (Indoor)

Stand-alone for indoor, side-by-side applications.



## ERV O-Series (Outdoor)

Stand-alone for outdoor, over-and-under duct arrangements.

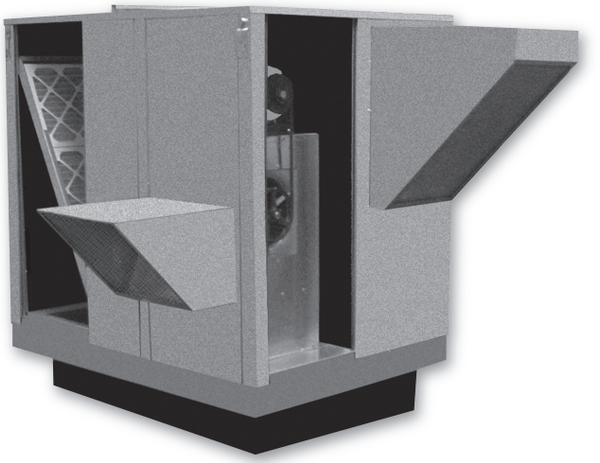


## ERV N-Series (Indoor)

Stand-alone for indoor, over-and-under applications.

## ERV D-Series Product Description

"D" Series energy recovery ventilators are utilized in applications that require a rooftop installation. These units may be installed as a stand-alone unit with a separate and distinct duct system from other air conditioning equipment. In many applications the supply (intake) air duct is connected to the return air duct of an air conditioning system (or multiple systems). By doing this the enthalpy wheel is able to provide preconditioned outside air to the air conditioning system(s).



### Application & Construction

- Dry energy transfer. Moisture in supply (intake) air stream is transferred to exhaust air stream in a vapor state, eliminating condensate plumbing in the ventilator.
- Units can be used in rooftop applications.
- Reduces cooling load at design temperatures up to 4 tons per 1000 cfm of outside air.
- Reduces heating load up to 12,000 Btuh per 400 cfm of outside air.
- Enthalpy wheel made of polymeric material with silica gel impregnated into the material.
- Centrifugal blowers (both intake and exhaust) for high static capability and low sound levels.
- Heavy gauge galvanized steel cabinets.
- Separate fused power supply.
- Insulated cabinet.
- Roof curbs have duct supports.

### Operation & Maintenance

- Internal enthalpy wheel made of polymeric material with silica gel impregnated into the material. The enthalpy wheel has a five year limited warranty.
- Internal enthalpy wheels are easily cleanable. All wheels are segmented into easily removable pie segments.
- All wheels are designed to easily slide in and out of the ERV for servicing.
- Continuous operation down to 10°F (-12°C) without defrost at indoor relative humidity up to 40%. For temperatures below 10°F (-12°C), Optional Low Ambient Control Kit is required. Kit includes temperature sensor to shutoff power to ERV before frost build up can occur on recovery wheel.

### Certification

- ARI 1060-2000 certified internal enthalpy wheel is provided.

### Filter

- Unit is supplied with an aluminum mist eliminator filter for the intake air and a 2" pleated filter for the exhaust air.

### Blower Assembly

- Blowers are housed within a sheet metal frame to insure reliable performance.
- Blower motor is mounted on an adjustable motor mount that provides an easy method of adjusting the belts.
- Blowers are equipped with adjustable sheave pulleys.
- Blower pulley and the motor pulley are aligned by a state of the art "laser" alignment system.
- All blowers are shipped with low-speed belts installed. The units are shipped with the specified belt kit for field installation.

### Control System

- Control enclosures provided with internal fuses.
- Electronic control board.
- Fully wired.
- Independently fused.
- Color coded wires.
- Provides own 24 volt circuit.
- All options are "plug-in" modules.

### Optional Accessories

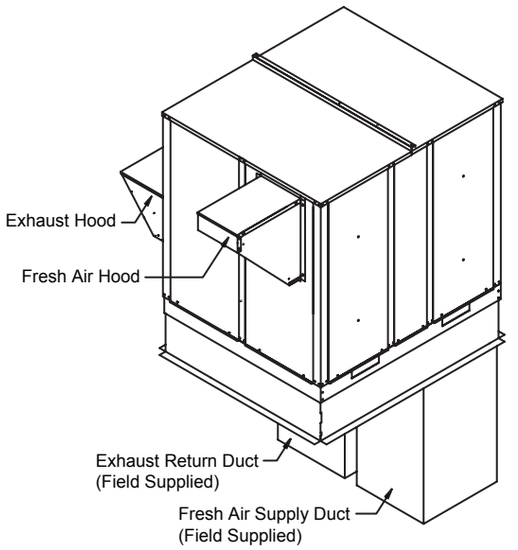
- Roof Mounting Frame
- Low Ambient Control Kit
- Pressure Sensor
- Motorized Intake Air Damper
- Stop-Start-Jog
- Rotation Sensor
- Disconnect with GFI Plug
- VFD

# ERV D-Series - Dimensional Data

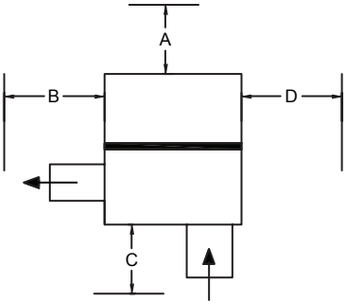
Energy Recovery Products

## Dimensional Data

### ERV D-Series Unit Labels

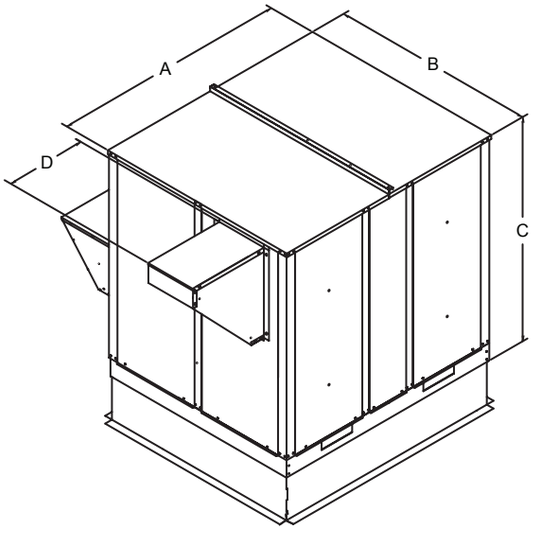



### ERV D-Series Clearances

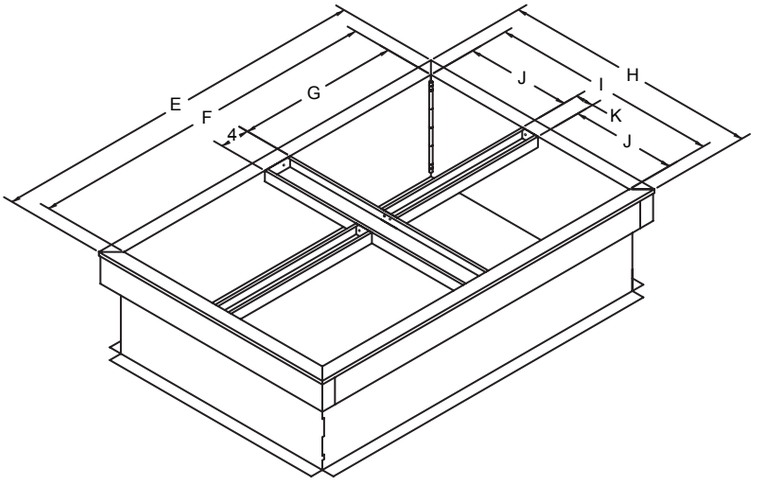



| Size | A | B | C | D |
|---|---|---|---|---|
| D11 | 36 | 60 | 48 | 36 |
| D20 | 36 | 60 | 60 | 36 |
| D28 | 36 | 60 | 60 | 48 |
| D36 | 36 | 60 | 60 | 48 |
| D46 | 36 | 60 | 72 | 60 |
| D62 | 36 | 60 | 72 | 60 |

### ERV D-Series Unit




### ERV D-Series Roof Curb Accessory




### ERV D-Series Dimensions

| Size | Min CFM | Max CFM | Duct Size (G x J) | ERV | | | | Roof Curb | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | F | G | H | I | J | K |
| D11 | 300 | 1100 | 17.00 x 11.38 | 44.75 | 32.13 | 33.50 | 14.38 | 43.00 | 39.00 | 17.50 | 30.25 | 26.25 | 11.88 | 2.50 |
| D20 | 1200 | 2000 | 21.88 x 14.00 | 54.36 | 37.25 | 37.50 | 17.50 | 52.75 | 48.75 | 22.38 | 35.50 | 31.50 | 14.50 | 2.50 |
| D28 | 1200 | 2800 | 20.25 x 17.00 | 52.25 | 42.63 | 43.56 | 25.50 | 49.50 | 45.50 | 20.75 | 41.00 | 37.00 | 17.50 | 2.00 |
| D36 | 2000 | 3600 | 23.38 x 17.38 | 60.00 | 46.69 | 57.37 | 25.50 | 55.75 | 51.75 | 23.88 | 41.81 | 37.81 | 17.91 | 2.00 |
| D46 | 3000 | 4600 | 23.38 x 20.38 | 60.00 | 52.69 | 57.37 | 28.06 | 55.75 | 51.75 | 23.88 | 47.81 | 43.81 | 20.91 | 2.00 |
| D62 | 4600 | 6200 | 29.38 x 30.00 | 72.00 | 70.88 | 63.63 | 37.75 | 67.75 | 63.75 | 29.88 | 66.00 | 62.00 | 30.50 | 2.00 |

Dimensions are labeled in inches.

## Dimensional & Electrical Data

### ERV D-Series Filter Sizes

| Size | Return Filter | | | | Intake Filter | | | |
|---|---|---|---|---|---|---|---|---|
| | Qty | Width | Height | Type | Qty | Width | Height | Type |
| **D11** | 1 | 14 | 20 | 2" PLT | 1 | 16.25 | 10.375 | 1" ME |
| **D20** | 2 | 16 | 20 | | 1 | 12.5 | 20 | |
| **D28** | 2 | 20 | 10 | | 1 | 14.75 | 32.25 | |
| **D36** | 3 | 16 | 20 | | 1 | 16.5 | 32.25 | |
| **D46** | 2 | 24 | 24 | | 1 | 20 | 36 | |
| **D62** | 5 | 14 | 20 | | 1/1 | 20/20 | 36/12.5 | |

PLT is Pleated Filter. ME is Mist Eliminator Filter.

### ERV D-Series Electrical Data

| | | 300-1100 CFM | | | | 1200-2000 CFM | | | 1200-2800 CFM | | | 2000-3600 CFM | | | 3000-4600 CFM | | | 4600-6200 CFM | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Phase** | | 1 | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | |
| **Line Voltage 60 hz** | | 208/230v | 208/230v | 460v | 575v | 208/230v | 460v | 575v | 208/230v | 460v | 575v | 208/230v | 460v | 575v | 208/230v | 460v | 575v | 208/230v | 460v | 575v |
| **Fresh Air Blower** | **Motor (hp)** | 1.5 | | | | 2 | | | 3 | | | 3 | | | 5 | | | 5 | | |
| | **Wheel Size - DxW (in)** | 9 x 4 | | | | 9 x 9 | | | 10 x 10 | | | 12 x 9 | | | 12 x 12 | | | 15 x 15 | | |
| | **Motor Speed (rpm)** | 1725 | | | | 1725 | | | 1725 | | | 1725 | | | 1725 | | | 1725 | | |
| | **FLA** | 9.1 | 5.6 | 2.8 | 2.0 | 6.0 | 2.6 | 2.4 | 9.4 | 4.3 | 3.2 | 9.4 | 4.3 | 3.2 | 14.0 | 7.0 | 5.1 | 14.0 | 7.0 | 5.1 |
| | **Service Factor** | 1.15 | | | | 1.15 | | | 1.15 | | | 1.15 | | | 1.15 | | | 1.15 | | |
| **Exhaust Air Blower** | **Motor (hp) Stationary** | 1.5 | | | | 2 | | | 3 | | | 3 | | | 5 | | | 5 | | |
| | **Wheel Size - DxW (in)** | 9 x 4 | | | | 9 x 9 | | | 10 x 10 | | | 12 x 9 | | | 12 x 12 | | | 15 x 15 | | |
| | **Motor Speed (rpm)** | 1725 | | | | 1725 | | | 1725 | | | 1725 | | | 1725 | | | 1725 | | |
| | **FLA (Stationary)** | 9.1 | 5.6 | 2.8 | 2.0 | 6.0 | 2.6 | 2.4 | 9.4 | 4.3 | 3.2 | 9.4 | 4.3 | 3.2 | 14.0 | 7.0 | 5.1 | 14.0 | 7.0 | 5.1 |
| | **Service Factor** | 1.15 | | | | 1.15 | | | 1.15 | | | 1.15 | | | 1.15 | | | 1.15 | | |
| **Enthalpy Wheel Data** | **Depth (in)** | 3 | | | | 3 | | | 3 | | | 3 | | | 3 | | | 3 | | |
| | **Diameter (in)** | 25.3 | | | | 30.346 | | | 37.759 | | | 41.825 | | | 46.776 | | | 52.026 | | |
| | **Construction** | One-Piece | | | | One-Piece | | | Segmented | | | Segmented | | | Segmented | | | Segmented | | |
| | **Potential Volts** | 208 - 230 | | | | 208 - 230 | | | 200 / 208 - 230 | | | 200 / 208 - 230 | | | 200 / 208 - 230 | | | 200 / 208 - 230 | | |
| | **Motor Speed (rpm)** | 1050 | | | | 1050 | | | 825 | | | 1075 | | | 1075 | | | 1075 | | |
| | **Motor (hp) 1 Phase** | < .08 | | | | < .08 | | | 0.05 | | | 0.17 | | | 0.17 | | | 0.17 | | |
| | **FLA** | 0.3 | | | | 0.3 | | | 0.6 | | | 1.2 | | | 1.2 | | | 1.2 | | |
| **Total Electrical** | **MCA (Stationary)** | 20.8 | 12.9 | 6.6 | 4.8 | 13.8 | 6.2 | 5.7 | 21.8 | 10.3 | 7.8 | 22.4 | 10.9 | 8.4 | 32.7 | 17.0 | 12.7 | 32.7 | 17.0 | 12.7 |
| | **OCPD (Stationary)** | 30.0 | 15.0 | 9.0 | 7.0 | 20.0 | 9.0 | 8.0 | 30.0 | 12.0 | 10.0 | 30.0 | 15.0 | 10.0 | 40.0 | 25.0 | 15.0 | 40.0 | 25.0 | 15.0 |
| **Curb** | **Curb Height (in)** | 14 | | | | 14 | | | 14 | | | 14 | | | 14 | | | 14 | | |
| **Weights** | **Shipping Weight (lbs)** | 318 | | | | 425 | | | 470 | | | 571 | | | 920 | | | 1250 | | |
| | **Net Weight (lbs)** | 245 | | | | 345 | | | 395 | | | 475 | | | 805 | | | 1075 | | |

See pages 35 and 36 for ARI Certified Rating information.

# ERV D-Series - Performance Data

Energy Recovery Products

## Airflow Performance

Low Speed | Med. Speed | High Speed

### D11

**Supply Blower RPM (1.5HP, Mist Eliminator Filter in Intake Hood)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 300 | n/a | n/a | 1175 | 1350 | 1450 | 1605 | 1730 |
| 500 | n/a | 1170 | 1340 | 1540 | 1655 | 1725 | 1840 |
| 700 | 1295 | 1425 | 1600 | 1625 | 1795 | 1960 | 2035 |
| 900 | 1540 | 1660 | 1720 | 1790 | 2030 | 2110 | 2195 |
| 1100 | 1785 | 1915 | 2025 | 2185 | n/a | n/a | n/a |

**Exhaust Blower RPM (1.5HP, Barometric Hood, 2" Pleated Filters)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 300 | n/a | n/a | 1030 | 1225 | n/a | n/a | n/a |
| 500 | n/a | 1025 | 1180 | 1265 | 1425 | 1535 | n/a |
| 700 | 1120 | 1190 | 1340 | 1445 | 1540 | 1645 | 1720 |
| 900 | 1285 | 1525 | 1500 | 1575 | 1670 | 1785 | 1865 |
| 1100 | 1570 | 1665 | 1670 | 1775 | 1860 | 1920 | n/a |

### D20

**Supply Blower RPM (2HP, Mist Eliminator Filter in Intake Hood)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 1200 | 1055 | 1135 | 1295 | 1420 | 1540 | 1650 | 1725 |
| 1400 | 1140 | 1240 | 1340 | 1490 | 1600 | 1690 | 1795 |
| 1600 | 1200 | 1330 | 1460 | 1565 | 1645 | 1740 | 1830 |
| 1800 | 1320 | 1405 | 1525 | 1615 | 1705 | 1785 | 1885 |
| 2000 | 1415 | 1515 | 1605 | 1690 | 1775 | 1875 | 1960 |

**Exhaust Blower RPM (2HP, Barometric Hood, 2" Pleated Filters)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 1200 | 1010 | 1195 | 1350 | 1445 | 1580 | 1685 | 1735 |
| 1400 | 1125 | 1315 | 1435 | 1545 | 1620 | 1730 | 1800 |
| 1600 | 1185 | 1370 | 1500 | 1610 | 1695 | 1790 | 1965 |
| 1800 | 1305 | 1485 | 1600 | 1685 | 1781 | 1955 | 2030 |
| 2000 | 1410 | 1550 | 1670 | 1765 | 1855 | n/a | n/a |

### D28

**Supply Blower RPM (3HP, Mist Eliminator Filter in Intake Hood)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 1200 | n/a | 790 | 960 | 1110 | 1210 | 1315 | 1380 |
| 1600 | 750 | 900 | 1005 | 1145 | 1230 | 1365 | 1410 |
| 2000 | 900 | 1005 | 1105 | 1210 | 1275 | 1400 | 1450 |
| 2400 | 1005 | 1125 | 1210 | 1275 | 1365 | 1450 | 1500 |
| 2800 | 1125 | 1230 | 1315 | 1380 | 1450 | 1535 | 1600 |

**Exhaust Blower RPM (3HP, Barometric Hood, 2" Pleated Filters)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 1200 | 750 | 885 | 1015 | 1145 | 1260 | 1350 | 1485 |
| 1600 | 870 | 1015 | 1125 | 1215 | 1325 | 1410 | 1500 |
| 2000 | 1015 | 1145 | 1240 | 1345 | 1410 | 1485 | 1560 |
| 2400 | 1125 | 1250 | 1345 | 1430 | 1500 | 1575 | 1630 |
| 2800 | 1250 | 1410 | 1485 | 1520 | 1630 | 1650 | 1675 |

Performance can vary depending on ambient conditions. Drive losses included in tables. Blower RPMs are for reference only.

# Performance Data - ERV D-Series

Energy Recovery Products

## Airflow Performance

Low Speed | Med. Speed | High Speed

### D36

**Supply Blower RPM (3HP, Mist Eliminator Filter in Intake Hood)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 2000 | 725 | 825 | 900 | 1000 | 1070 | 1180 | 1250 |
| 2400 | 800 | 900 | 1000 | 1070 | 1160 | 1250 | 1275 |
| 2800 | 900 | 1000 | 1070 | 1160 | 1250 | 1275 | 1340 |
| 3200 | 1000 | 1070 | 1160 | 1250 | 1275 | 1340 | 1400 |
| 3600 | 1055 | 1180 | 1250 | 1300 | 1360 | n/a | n/a |

**Exhaust Blower RPM (3HP, Barometric Hood, 2" Pleated Filters)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 2000 | 750 | 865 | 950 | 1030 | 1100 | 1200 | 1265 |
| 2400 | 820 | 950 | 1035 | 1100 | 1200 | 1265 | 1300 |
| 2800 | 925 | 1035 | 1150 | 1200 | 1265 | 1315 | 1350 |
| 3200 | 1035 | 1160 | 1215 | 1265 | 1325 | 1350 | 1390 |
| 3600 | 1100 | 1215 | 1300 | 1350 | 1390 | n/a | n/a |

### D46

**Supply Blower RPM (5HP, Mist Eliminator Filter in Intake Hood)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 3000 | 900 | 1030 | 1100 | 1165 | 1240 | 1285 | 1350 |
| 3400 | 975 | 1085 | 1175 | 1240 | 1290 | 1350 | 1400 |
| 3800 | 1070 | 1175 | 1240 | 1290 | 1350 | 1400 | 1465 |
| 4200 | 1165 | 1240 | 1320 | 1350 | 1430 | 1465 | 1515 |
| 4600 | 1240 | 1320 | 1375 | 1430 | 1500 | 1515 | 1580 |

**Exhaust Blower RPM (5HP, Barometric Hood, 2" Pleated Filters)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 3000 | 955 | 1100 | 1160 | 1245 | 1280 | 1360 | 1425 |
| 3400 | 1055 | 1185 | 1245 | 1300 | 1375 | 1425 | 1480 |
| 3800 | 1160 | 1300 | 1360 | 1400 | 1425 | 1530 | 1585 |
| 4200 | 1245 | 1375 | 1450 | 1480 | 1500 | 1585 | 1650 |
| 4600 | 1360 | 1450 | 1500 | 1585 | 1600 | 1650 | 1700 |

### D62

**Supply Blower RPM (5HP, Mist Eliminator Filter in Intake Hood)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 4600 | 815 | 900 | 975 | 1045 | 1085 | 1125 | 1175 |
| 5000 | 880 | 940 | 1015 | 1060 | 1135 | 1175 | 1215 |
| 5400 | 915 | 975 | 1045 | 1125 | 1150 | 1195 | 1250 |
| 5800 | 975 | 1045 | 1085 | 1175 | 1250 | 1260 | n/a |
| 6200 | 1000 | 1075 | 1165 | 1200 | n/a | n/a | n/a |

**Exhaust Blower RPM (5HP, Barometric Hood, 2" Pleated Filters)**

| CFM | External Static Pressure (in water) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 | 0.25 | 0.5 | 0.75 | 1 | 1.25 | 1.5 |
| 4600 | 825 | 915 | 1000 | 1025 | 1100 | 1140 | 1170 |
| 5000 | 890 | 975 | 1025 | 1100 | 1140 | 1170 | 1240 |
| 5400 | 925 | 1000 | 1085 | 1140 | 1170 | 1240 | 1280 |
| 5800 | 975 | 1025 | 1140 | 1170 | 1240 | n/a | n/a |
| 6200 | 1025 | 1120 | 1170 | n/a | n/a | n/a | n/a |

Performance can vary depending on ambient conditions. Drive losses included in tables. Blower RPMs are for reference only.

# ERV D-Series - Specification

Energy Recovery Products

## Specification & Configuration

### ERV D-Series Written Specification

Energy recovery ventilators shall include an ARI 1060-2000 certified enthalpy wheel which contains parallel layers of polymeric material that are impregnated with silica gel. All enthalpy wheels shall consist of removable 'pie' segments mounted in a slide-out track for easy inspection and cleaning.

Fan blowers shall be of the forward curve, centrifugal type, with separate motors with adjustable sheaves for the exhaust air stream and supply air stream allowing for independent balancing. Motors and blower assemblies shall have permanently lubricated ball bearings. All blower wheels shall be balanced.

Provide aluminum mist eliminator filter for the intake air and a minimum 2" pleated filter for the exhaust air on all outdoor applications. Provide minimum 2" pleated filter for both the exhaust and intake air on all indoor applications.

Unit casing shall be constructed of heavy gage galvanized steel. All sections designed for conditioned air shall be internally insulated using 1" dual density fiberglass liner. All components shall be easily accessible through removable panels for both exhaust and supply compartments.

Energy recovery ventilators shall be ETL listed as a complete assembly. All electrical components shall be UL listed or recognized and installed in accordance with the National Electric Code. All electrical components shall be mounted in sheet metal control enclosures with fused single point electrical connections.

**Example:** 56 - D11 - 02X - M - 23 - LMSV000

### Configuration

1. **Paint Designation**
   56 - Off White

2. **Model & Size**
   D11 - D-Series, Unit Size 11
   D20 - D-Series, Unit Size 20
   D28 - D-Series, Unit Size 28
   D36 - D-Series, Unit Size 36
   D46 - D-Series, Unit Size 46
   D62 - D-Series, Unit Size 62

3. **Unit Cabinet Size**
   02X - Standard Cabinet

4. **Blower Speed**
   L - Low
   M - Medium
   H - High

5. **Voltage**
   21 - 208/230 volt, 1 Phase
   23 - 208/230 volt, 3 Phase
   33 - 460 volt, 3 Phase
   43 - 575 volt, 3 Phase

6. **Options**
   L - Low Ambient Kit
   M - Motorized Outside Air
   S - Stop-Start-Jog
   P - Pressure Sensor
   R - Wheel Rotational Sensor
   D - Disconnect with GFI
   V - Variable Frequency Drive

## ARI Certified Ratings

### D11, S11, M11, O11, N11

**ARI Certified Ratings for 300 - 1100 CFM**

| Thermal Ratings @ 0" Pressure Difference | | Sensible | Latent | Total |
|---|---|---|---|---|
| Total Effectiveness | 100% Airflow Heating | 76% | 68% | 73% |
| | 75% Airflow Heating | 81% | 73% | 78% |
| | 100% Airflow Cooling | 76% | 68% | 72% |
| | 75% Airflow Cooling | 81% | 73% | 76% |
| Net Effectiveness | 100% Airflow Heating | 76% | 68% | 73% |
| | 75% Airflow Heating | 81% | 73% | 78% |
| | 100% Airflow Cooling | 76% | 68% | 72% |
| | 75% Airflow Cooling | 81% | 73% | 76% |

| Enthalpy Wheel ARI Rating Data | |
|---|---|
| Nominal Airflow CFM | 900 @ 1.0D |
| EATR: -1.00 H2O | 9.30% |
| EATR: 0.00 H2O | 0.70% |
| EATR: +1.00 H2O | 0.00% |
| OACF: -1.00 H2O | 0.97 |
| OACF: 0.00 H2O | 1.19 |
| OACF: +1.00 H2O | 1.34 |

### D20, S20, M20, O20, N20

**ARI Certified Ratings for 1200 - 2000 CFM**

| Thermal Ratings @ 0" Pressure Difference | | Sensible | Latent | Total |
|---|---|---|---|---|
| Total Effectiveness | 100% Airflow Heating | 68% | 61% | 65% |
| | 75% Airflow Heating | 72% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 61% | 64% |
| | 75% Airflow Cooling | 72% | 67% | 70% |
| Net Effectiveness | 100% Airflow Heating | 68% | 61% | 65% |
| | 75% Airflow Heating | 72% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 61% | 64% |
| | 75% Airflow Cooling | 72% | 67% | 70% |

| Enthalpy Wheel ARI Rating Data | |
|---|---|
| Nominal Airflow CFM | 1600 @ 1.0D |
| EATR: -1.00 H2O | 7.80% |
| EATR: 0.00 H2O | 0.40% |
| EATR: +1.00 H2O | 0.00% |
| OACF: -1.00 H2O | 0.97 |
| OACF: 0.00 H2O | 1.16 |
| OACF: +1.00 H2O | 1.29 |

### D28, S28, M28, O28, N28

**ARI Certified Ratings for 1200 - 2800 CFM**

| Thermal Ratings @ 0" Pressure Difference | | Sensible | Latent | Total |
|---|---|---|---|---|
| Total Effectiveness | 100% Airflow Heating | 68% | 60% | 65% |
| | 75% Airflow Heating | 74% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 60% | 63% |
| | 75% Airflow Cooling | 74% | 67% | 70% |
| Net Effectiveness | 100% Airflow Heating | 68% | 60% | 65% |
| | 75% Airflow Heating | 74% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 60% | 63% |
| | 75% Airflow Cooling | 74% | 67% | 70% |

| Enthalpy Wheel ARI Rating Data | |
|---|---|
| Nominal Airflow CFM | 1600 @ 1.0D |
| EATR: -1.00 H2O | 7.80% |
| EATR: 0.00 H2O | 0.40% |
| EATR: +1.00 H2O | 0.00% |
| OACF: -1.00 H2O | 0.97 |
| OACF: 0.00 H2O | 1.16 |
| OACF: +1.00 H2O | 1.29 |

# ERV Series - Certified Ratings

Energy Recovery Products

## ARI Certified Ratings

### D36, S36, M36, 036, N36

**ARI Certified Ratings for 2000 - 3600 CFM**

| Thermal Ratings @ 0" Pressure Difference | | Sensible | Latent | Total |
|---|---|---|---|---|
| Total Effectiveness | 100% Airflow Heating | 68% | 60% | 65% |
| | 75% Airflow Heating | 74% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 60% | 63% |
| | 75% Airflow Cooling | 74% | 67% | 70% |
| Net Effectiveness | 100% Airflow Heating | 68% | 60% | 65% |
| | 75% Airflow Heating | 74% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 60% | 63% |
| | 75% Airflow Cooling | 74% | 67% | 70% |

| Enthalpy Wheel ARI Rating Data | |
|---|---|
| Nominal Airflow CFM | 3100 @ 0.9D |
| EATR: -1.00 H2O | 4.90% |
| EATR: 0.00 H2O | 1.30% |
| EATR: +1.00 H2O | 0.30% |
| OACF: -1.00 H2O | 0.99 |
| OACF: 0.00 H2O | 1.07 |
| OACF: +1.00 H2O | 1.12 |

### D46, S46, M46, 046, N46

**ARI Certified Ratings for 3000 - 4600 CFM**

| Thermal Ratings @ 0" Pressure Difference | | Sensible | Latent | Total |
|---|---|---|---|---|
| Total Effectiveness | 100% Airflow Heating | 68% | 60% | 65% |
| | 75% Airflow Heating | 73% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 60% | 63% |
| | 75% Airflow Cooling | 73% | 67% | 70% |
| Net Effectiveness | 100% Airflow Heating | 68% | 60% | 65% |
| | 75% Airflow Heating | 73% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 60% | 63% |
| | 75% Airflow Cooling | 73% | 67% | 70% |

| Enthalpy Wheel ARI Rating Data | |
|---|---|
| Nominal Airflow CFM | 3900 @ 0.95D |
| EATR: -1.00 H2O | 4.40% |
| EATR: 0.00 H2O | 1.10% |
| EATR: +1.00 H2O | 0.20% |
| OACF: -1.00 H2O | 0.99 |
| OACF: 0.00 H2O | 1.06 |
| OACF: +1.00 H2O | 1.11 |

### D62, S62, M62, 062, N62

**ARI Certified Ratings for 4600 - 6200 CFM**

| Thermal Ratings @ 0" Pressure Difference | | Sensible | Latent | Total |
|---|---|---|---|---|
| Total Effectiveness | 100% Airflow Heating | 68% | 60% | 65% |
| | 75% Airflow Heating | 73% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 60% | 63% |
| | 75% Airflow Cooling | 73% | 67% | 70% |
| Net Effectiveness | 100% Airflow Heating | 68% | 60% | 65% |
| | 75% Airflow Heating | 73% | 67% | 71% |
| | 100% Airflow Cooling | 68% | 60% | 63% |
| | 75% Airflow Cooling | 73% | 67% | 70% |

| Enthalpy Wheel ARI Rating Data | |
|---|---|
| Nominal Airflow CFM | 5500 @ 0.95D |
| EATR: -1.00 H2O | 4.00% |
| EATR: 0.00 H2O | 1.00% |
| EATR: +1.00 H2O | 0.20% |
| OACF: -1.00 H2O | 0.99 |
| OACF: 0.00 H2O | 1.06 |
| OACF: +1.00 H2O | 1.10 |