Energy Recovery Products

Information Guide

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General Information

Energy Recovery Products

Product Overview

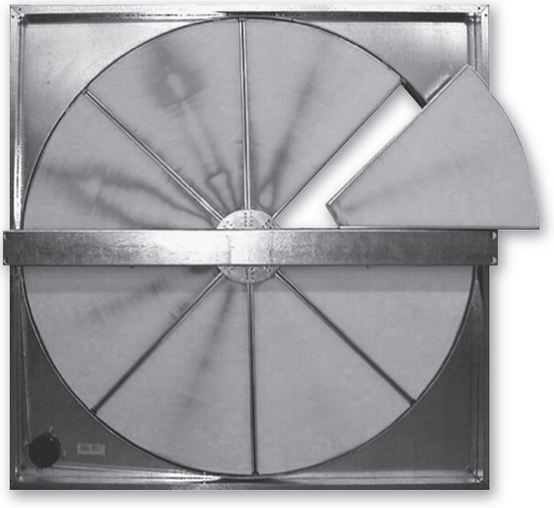
Energy Recovery Ventilators (ERV) are used to recover exhaust air energy and reintroduce it into the conditioned space. The recovery wheel provides sensible and latent energy exchange between the entering and exhaust air streams of a building. This allows a substantial amount of the energy which is normally 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.

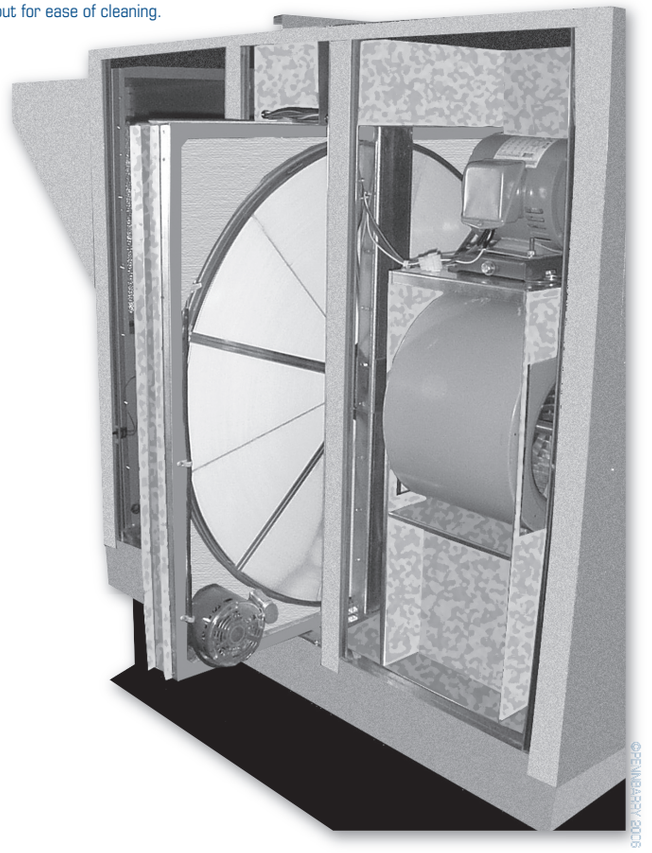
Exhaust Air Transfer Ratio (EATR)

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.

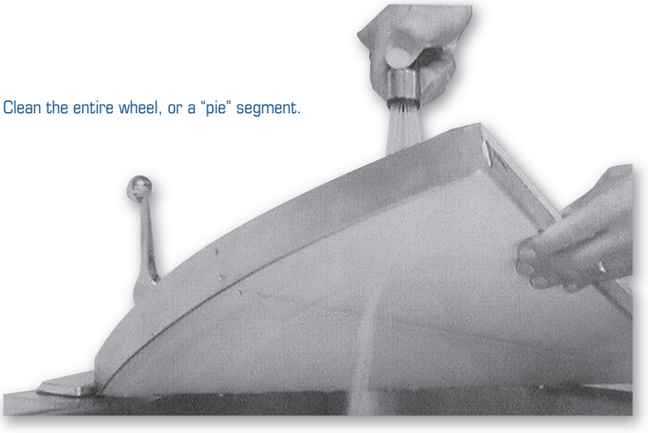
Stop-Start-Jog
Function that rotates the enthalpy wheel on a preset timer to prevent contamination of the wheel during economizer operation.

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.

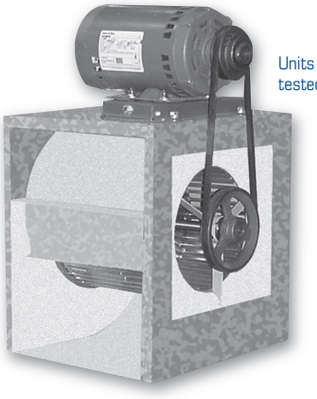
VFD
Variable Frequency Drives are provided for both the intake and exhaust blowers. This allows the system to be perfectly balanced to the building requirements.

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

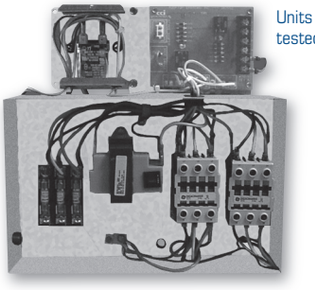


ARI Standard 1060-2005

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.

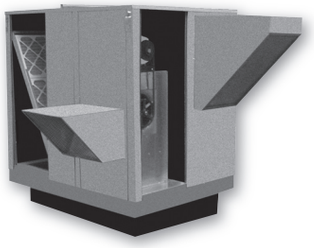


Units are supplied with fully tested control systems.

Units are supplied with filters before the enthalpy wheel.

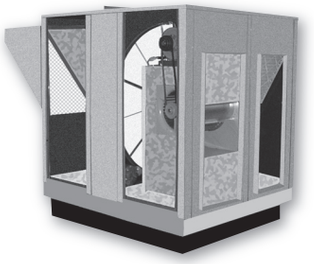
Product Overview

Energy Recovery Products



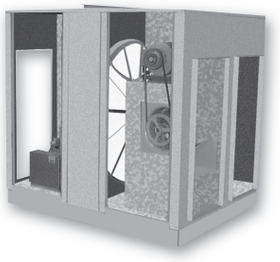
ERV D-Series (Outdoor)

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



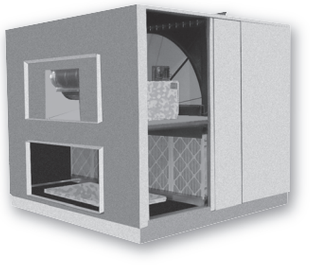
ERV S-Series (Outdoor)

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



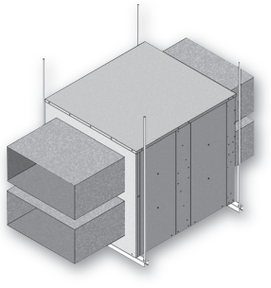
ERV M-Series (Indoor)

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



ERV O-Series (Outdoor)

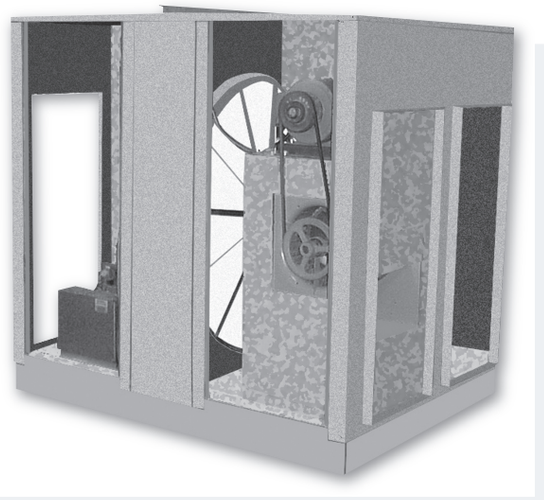
Stand-alone for outdoor, over-and-under duct arrangements.



ERV N-Series (Indoor)

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

ERV M-Series Product Description



"M" Series energy recovery ventilators are designed for use inside a building for applications that require "side-by-side" duct. Typically these units are installed in a mechanical room or mounted above a ceiling. Both the outside air intake and the exhaust air have duct systems to an outside source. The return air and supply air also are ducted. Field provided balancing dampers should be utilized to help control the air volumes.

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 a mechanical room application or plenum application.
- 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 a 2" pleated filter for both the intake air and 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

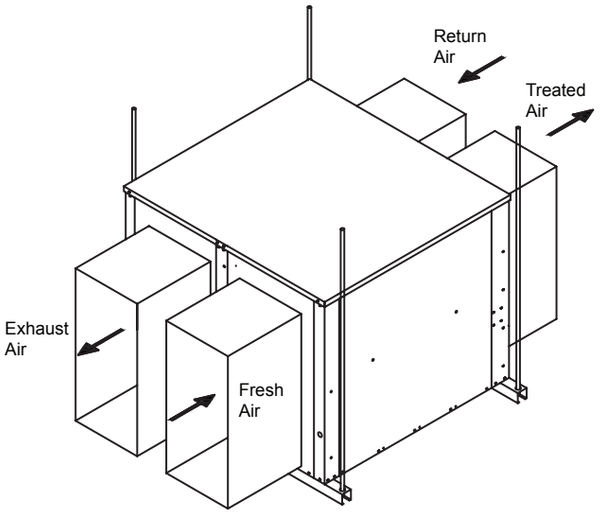
- Low Ambient Control Kit
- Pressure Sensor
- Motorized Intake Air Damper
- Stop-Start-Jog
- Rotation Sensor
- Disconnect with GFI Plug
- VFD

ERV M-Series - Dimensional Data

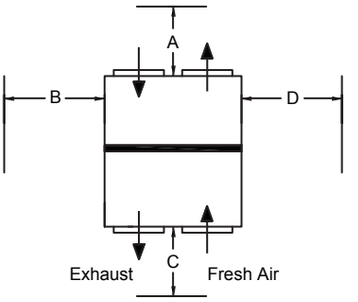
Energy Recovery Products

Dimensional Data

ERV M-Series Unit Labels

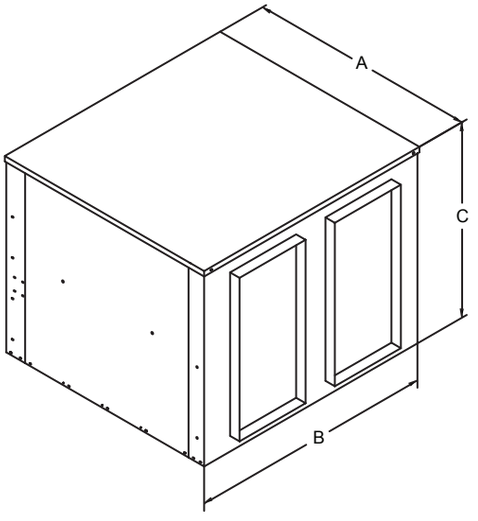


ERV M-Series Clearances

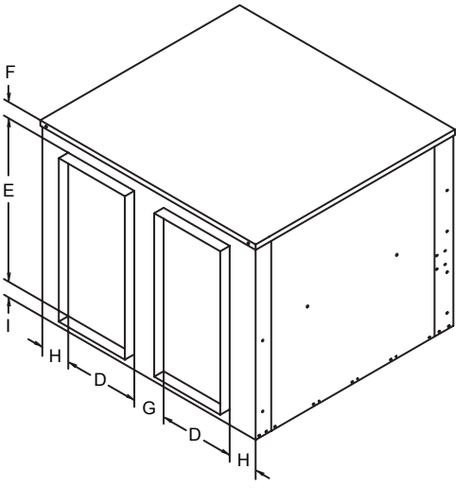


Size	A	B	C	D
M11	12	36	36	36
M20	12	36	36	36
M28	12	36	36	48
M36	12	36	36	48
M46	12	36	36	60
M62	12	36	36	60

ERV M-Series Unit



ERV M-Series Unit



ERV M-Series Dimensions

Size	Min CFM	Max CFM	A	B	C	D	E	F	G	H	I
M11	300	1100	44.75	32.13	33.50	11.00	27.00	4.00	4.25	2.88	2.50
M20	1200	2000	54.38	37.25	37.50	12.00	30.00	5.87	5.13	4.06	1.63
M28	1200	2800	52.25	42.62	43.56	14.00	32.00	8.69	5.25	4.25	2.88
M36	2000	3600	60.00	46.69	57.37	16.50	39.50	12.00	5.50	4.05	5.88
M46	3000	4600	60.00	52.69	57.37	16.50	39.50	12.00	8.69	5.50	5.88
M62	4600	6200	72.00	70.88	63.63	19.50	39.50	17.53	14.50	8.70	6.60

Dimensions are labeled in inches.

Dimensional & Electrical Data

ERV M-Series Filter Sizes

Size	Return Filter				Intake Filter			
	Qty	Width	Height	Type	Qty	Width	Height	Type
M11	1	14	20	2" PLT	1	14	20	2" PLT
M20	2	16	16		2	16	16	
M28	2	20	10		2	20	10	
M36	3	16	20		3	16	20	
M46	2	24	24		2	24	24	
M62	5	14	20		5	14	20	

PLT is Pleated Filter.

ERV M-Series Electrical Data

		300-1100 CFM				1200-2000 CFM			1200-2800 CFM			2000-3600 CFM			3000-4600 CFM			4600-6200 CFM		
Phase		1	3	1	3	3			3			3			3			3		
Line Voltage 60 hz		208/230v	208/230v	460v	460v	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 M-Series - Performance Data

Energy Recovery Products

Airflow Performance

Low Speed | Med. Speed | High Speed

M11

Supply Blower RPM (1.5HP, 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	1075	1280	1390	1535	1635
500	n/a	1065	1275	1355	1505	1615	1670
700	1060	1270	1370	1525	1610	1660	1790
900	1310	1455	1520	1605	1655	1820	1960
1100	1445	1515	1625	1725	1815	1955	2035

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

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
300	n/a	1075	1180	1290	1445	1565	1645
500	n/a	1170	1285	1375	1470	1605	1725
700	1065	1280	1370	1465	1600	1680	1800
900	1255	1360	1460	1590	1675	1755	1865
1100	1445	1455	1585	1670	1750	1860	1935

M20

Supply Blower RPM (2HP, 2" Pleated Filters)

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
1200	n/a	1225	1315	1405	1440	1695	1725
1400	1220	1275	1400	1480	1620	1730	1790
1600	1225	1345	1475	1615	1715	1775	1890
1800	1335	1465	1610	1710	1765	1880	1930
2000	1380	1585	1680	1755	1815	1920	n/a

Exhaust Blower RPM (2HP, 2" Pleated Filters)

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
1200	1045	1170	1380	1475	1635	1720	1805
1400	1115	1330	1470	1570	1725	1745	1850
1600	1320	1460	1565	1680	1790	1840	1940
1800	1415	1560	1725	1780	1885	1930	2045
2000	1490	1660	1770	1875	1920	1985	n/a

M28

Supply Blower RPM (3HP, 2" Pleated Filters)

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
1200	n/a	n/a	985	1115	1255	1390	1445
1600	n/a	975	1090	1190	1320	1320	1525
2000	960	1085	1185	1315	1410	1410	1550
2400	1080	1240	1310	1405	1485	1485	1650
2800	1230	1395	1505	1535	1595	1595	1775

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

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
1200	n/a	n/a	1050	1210	1315	1375	1465
1600	n/a	1020	1200	1285	1365	1465	1545
2000	1010	1190	1320	1355	1540	1580	1660
2400	1155	1315	1425	1545	1660	1735	1785
2800	1290	1450	1600	1725	1755	1825	1880

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

Airflow Performance

Low Speed | Med. Speed | High Speed

M36

Supply Blower RPM (3HP, 2" Pleated Filters)

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
2000	820	930	1015	1095	1160	1245	1315
2400	920	1010	1090	1155	1240	1305	1405
2800	1000	1085	1150	1235	1295	1410	1500
3200	1130	1200	1260	1395	1430	1495	1565
3600	1190	1385	1420	1455	1510	n/a	n/a

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

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
2000	780	890	970	1065	1130	1235	1275
2400	885	965	1060	1125	1230	1270	1340
2800	945	1055	1120	1225	1265	1355	1405
3200	1050	1135	1255	1325	1350	1415	1460
3600	1125	1250	1305	1340	1415	n/a	n/a

M46

Supply Blower RPM (5HP, 2" Pleated Filters)

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
3000	925	1035	1110	1140	1235	1315	1350
3400	1030	1120	1185	1225	1310	1345	1385
3800	1100	1150	1240	1335	1385	1420	1455
4200	1165	1245	1375	1435	1460	1505	1550
4600	1230	1315	1335	1470	1525	1585	1655

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

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
3000	985	1085	1155	1280	1325	1370	1440
3400	1060	1150	1270	1320	1365	1430	1480
3800	1145	1265	1335	1400	1450	1475	1505
4200	1240	1330	1375	1460	1470	1515	1560
4600	1305	1400	1420	1485	1525	1550	1650

M62

Supply Blower RPM (5HP, 2" Pleated Filters)

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
4600	820	910	990	1020	1135	1165	1225
5000	885	965	1040	1100	1160	1225	1280
5400	910	1000	1095	1155	1215	1275	n/a
5800	960	1060	1145	1205	1265	1290	n/a
6200	1020	1110	1195	1255	1275	n/a	n/a

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

CFM	External Static Pressure (in water)						
	0	0.25	0.5	0.75	1	1.25	1.5
4600	875	935	1000	1025	1140	1175	1190
5000	910	975	1040	1130	1190	1200	1280
5400	945	1015	1095	1150	1230	1275	n/a
5800	990	1060	1125	1175	1265	n/a	n/a
6200	1010	1110	1195	1200	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 M-Series - Specification

Energy Recovery Products

Specification & Configuration

ERV M-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 - M36 - 02X - L - 21 - MDR0000

Configuration

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

2. **Model & Size**
   M11 - M-Series, Unit Size 11
   M20 - M-Series, Unit Size 20
   M28 - M-Series, Unit Size 28
   M36 - M-Series, Unit Size 36
   M46 - M-Series, Unit Size 46
   M62 - M-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