



ERVD-F Series Energy Recovery Ventilator Technical MANUAL

ENGLISH

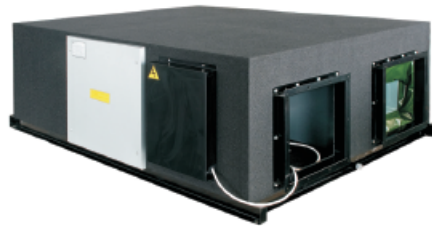
- ✓ Read this Manual before the operation and keep it for reference.
- ✓ Read all safety precautions on the manual, improper use can cause serious injury.

Specification and performance data listed herein are subject to change without notice

Energy Recovery Ventilator



| | |
|-------------------|-------------------|
| ERVD015A3N-FCN030 | ERVD020A3N-FCN040 |
| ERVD030A3N-FCN050 | ERVD040A3N-FCN060 |
| ERVD050A3N-FCN080 | ERVD060A3N-FCN100 |
| ERVD080A3N-FCN130 | ERVD090A3N-FCN150 |



ERVD120A3N-FCN200

Thank you for choosing OMEGA ERV Products. Please read this USER MANUAL carefully prior to using and keep it for further reference.

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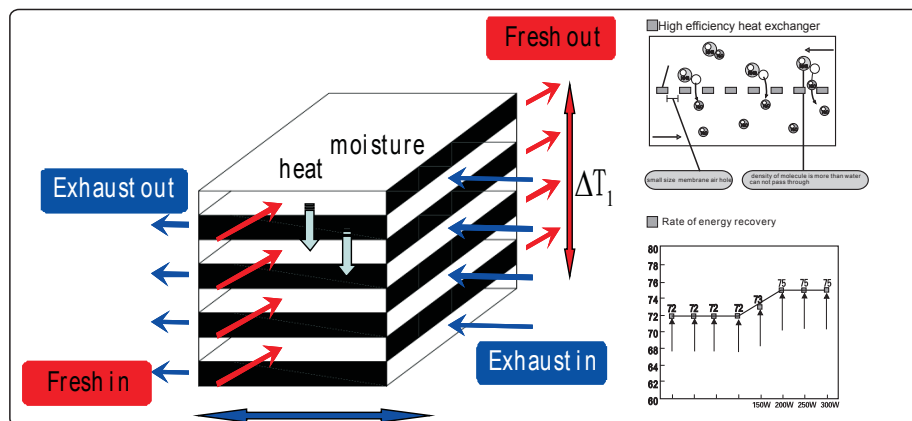
PRODUCT OVERVIEW

ERV is energy-saving equipment used for the recovery of exhaust air energy from air-conditioner. Such device does not require the master air conditioner to provide cold and heat source but exchanges heat by means of directly recovery of the air in air-conditioner room. Therefore, it is the standard configuration of energy-saving and environmental-friendly, healthy buildings, and an ideal partner of air-conditioning. It is mainly composed of shell body, heat exchanger core and filters and other components. Such device works by following the principle that through the material with heat transfer and heat transmission performance in heat exchanger core, using exhaust air to pre-cool and dry the fresh air in summer and pre-heat and humidify fresh air in winter, so that the new fresh air load can be significantly reduced and thereby energy consumption and operating costs of heating and cooling system can be economized, and peak electricity consumption will also be reduced. Such device is widely used in high-rise buildings, hotels, office buildings, hospitals, shopping malls, and banks, residential buildings and other places.

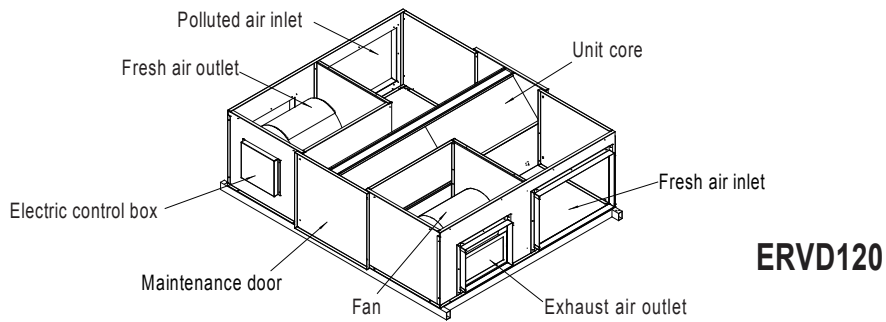
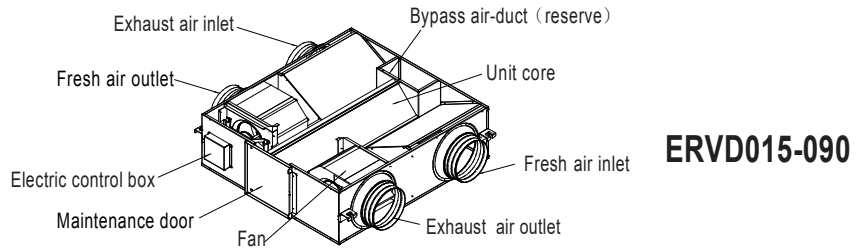
Product Features

- **Energy-saving**
Effective recovery of energy loss due to ventilation, save air conditioning operating cost.
- **Mute design, clean and fresh**
Unit has super silent design, free from maintenance and operation, thin and easy to install; and it is configured with filters to ensure the clean and fresh air and extend the service life of machine core.
- **Complete specification, for your choice at will**
This device is provided with serial design and complete function products, and thus can be widely applied into the independent space and realize energy-saving operation with full-fresh air.
- **Intelligent control, complete functions**
LCD intelligent controller is designed with refined and attractive appearance, simplified structure, and one-button for multi-functional operation, and other features. The equipment running state on different time phase can be pre-set.
- **Novel structure, superior quality**
Through meticulous design, this unit is characterized by novel structure, elaborate craftsmanship, high-quality, and extremely attractive appearance.

Principle of GAE-type Total Heat Exchanger



Sketch Diagram



Selection Guide

| Room type | No Smoking | | | | | A Light Smoking | | Heavy of Smoking |
|---|--------------|---------|--------------------------|---------|---------------|-----------------|---------------|------------------|
| | General ward | Stadium | Theater Department Store | Office | Computer room | Restaurant | Superior Room | Meeting Room |
| Fresh air volume per person $Q(m^3/h)$ | 17-42 | 8-20 | 8.5-21 | 25-62 | 40-100 | 20-50 | 30-75 | 50-125 |
| Number of room exchange fresh air ACH | 1.1-2.7 | 0.5-1.3 | 1.1-2.7 | 1.6-3.9 | 2.5-6.3 | 1.3-3.1 | 1.9-4.7 | 3.1-7.8 |

Example

For a 60 square meter meeting room, net floor height is 3m, ten persons

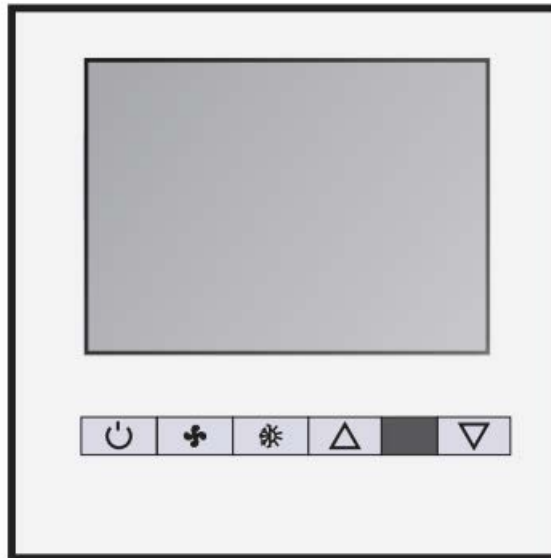
If required fresh air volume per person (Q) is 80, so $Q_1 = n \cdot q = 10 \times 80 = 800 (m^3/h)$;

If number of air exchange is 5.5 times/h, so $Q_2 = p \cdot s \cdot h = 5.5 \times 60 \times 3 = 990 (m^3/h)$;

Because $Q_2 > Q_1$, so adopt Q_2 as equipment selection basis, you can choose our model ERVD060A3N-FCN100 type total heat exchanger whose air flow volume is 1000 m^3/h .

USAGE GUIDE

Model:ERVD015A3N-FCN030~ERVD120A3N-FCN200



ON/ OFF: Press "⏻" button once to turn on the unit,press it again to turn off the unit.

ON: the unit is running.

OFF: the unit stops ,but the settings will save.

Fan motor control: Press "🌀" button to choose fan speed.

"⚙️"High, "🌀"Medium, "🌀" Low.

Mode selection:when the heat exchanger is on ,press button to select mode.

General ventilation: Press "⚙️" button until "⚙️" symbol is flashing and automatically recognized 6 seconds later.

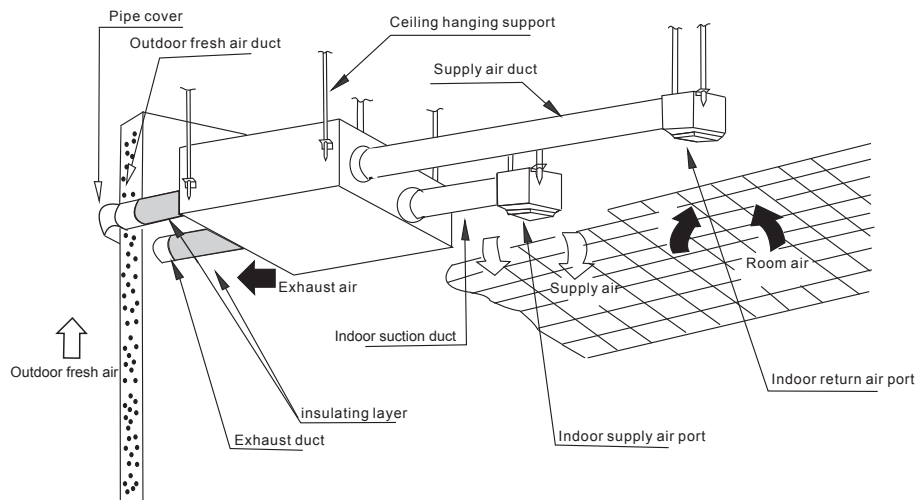
Heat recovery: Press "⚙️" button until "⚙️" symbol is flashing and automatically recognized 6 seconds later.

INSTALLATION INSTRUCTIONS

Safety Precautions

- Do not install the unit at the place where have heat resource or fire.
- Do not install the unit at the place where may have flammable gas leakage
- Do not install the unit at the lampblack place such as kitchen.
- Do not install the unit at the humid place such as bathroom.
- Do not install the unit at the place where may have acids, alkalis, organic solvents coatings and other harmful gas or other corrosive gas
- Please install the access door at the air filter and core of heat exchanger side.
- The place must be solid and firm enough to bear the unit weight .
- Suggest installing leakage circuit breaker .
- Please install the unit at the inside of insulation .
- Inlet should be installed at the place where exhaust air will not short circuit.
- Keep a clear distance between indoor suction port and indoor supply air port.
- Fresh air suction duct and exhaust air duct should keep warm to prevent condensation
- Air inlet should install anti-bird net or similar device.
- Do not attempt to install by yourself.Ensure that instalation must be done by an authorized professional.
- When using metal duct through metal plate or metal mesh of the wooden buildings , it is necessary to do a insulation layer between the duct and wall .

Sketch Installation



Two outdoor air ducts should keep warm to prevent condensation

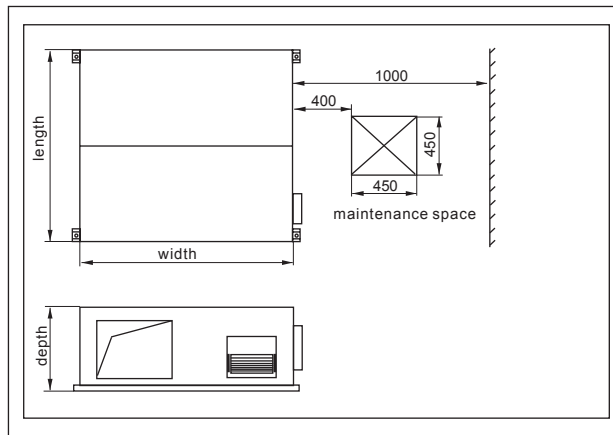
Installation Check

- First check whether the unit is complete and non-destructive before installation, and then open the panel, turn the fan by hand, check whether has the metal friction sound, if has, adjust the wheel to make sure it does not touch the unit.

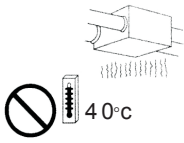
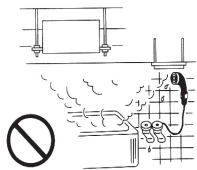
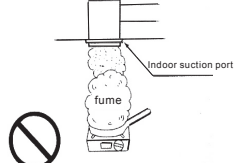
Please keep enough space for maintenance.

Unit should be installed smoothly, and shall not bear the weight of condensate pipe and air-duct, connect the air duct and the air vent with soft connecting pipe.

Power supply should be equipped with independent breaker as well as current leakage protective device. Make sure Reliable grounding and the power supply is 220V/50Hz or 380V/50Hz.

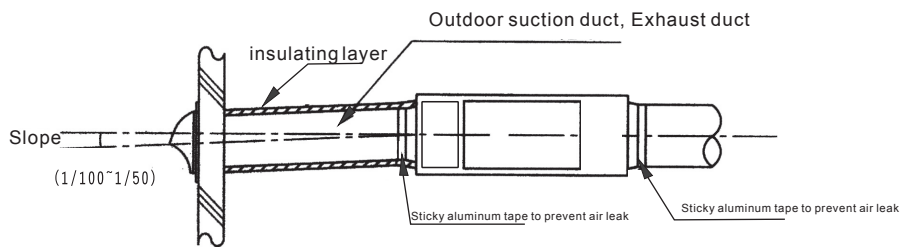


- Location in the following places may cause malfunction of the machine.

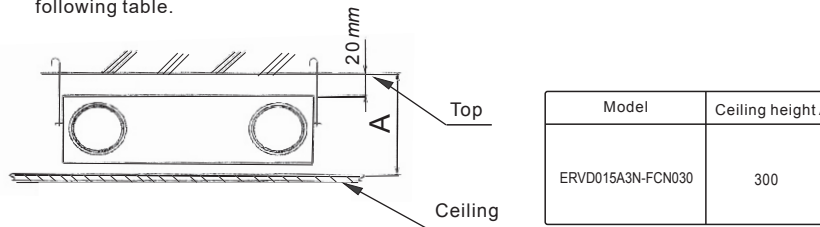
| | | |
|---|--|--|
| <p>Where direct sunshine or overheat.</p> <p>Do not install heat exchanger at the place where temperature is over 40°C, because air filter and core of heat exchanger will deform or damage the motor in the high temperature.</p>  | <p>Humid areas</p> <p>Do not install at the place where much moisture (such as bathroom), or may cause electric shock</p>  | <p>Areas with excessive fumes (such as kitchen)</p> <p>Air filter and core of heat exchange attached the oil can not use.</p>  |
| <p>Ensure access door is easy to install the filter and maintenance the core of heat exchanger and unit.</p> | | <p>Do not install the unit at the place where may have acids, alkalis, organic solvents coatings and other harmful gas or other corrosive gas.</p> |

Installation of Drain Pipe

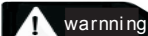
- Avoid pipe over bending/repeated bending and reducing the diameter of connecting pipe
- When installing , outdoor pipes should slope downward to prevent water immersion.
- Insulating layer should be made to prevent condensation in outdoor pipe (if necessary, including the indoor pipe) .
- The connection part of the pipeline should use aluminum tape to prevent gas leakage.
- Installation location of indoor supply air and inlet air should keep a distance as much possible.



- When installing the heat exchanger, the ceiling space must have allowances not less than indicated in following table.



WIRING



Please cut off the power supply before access to the appliance.

Precautions

Please install a breaker which can turn off the whole system power supply.

Please install a switch to switch power supply.

Make sure the grounding impedance is less than 100Ω. when using leakage circuit breaker, because you can use the earth resistance, so the grounding impedance can exceed 500Ω.

Make sure the reliable grounding.

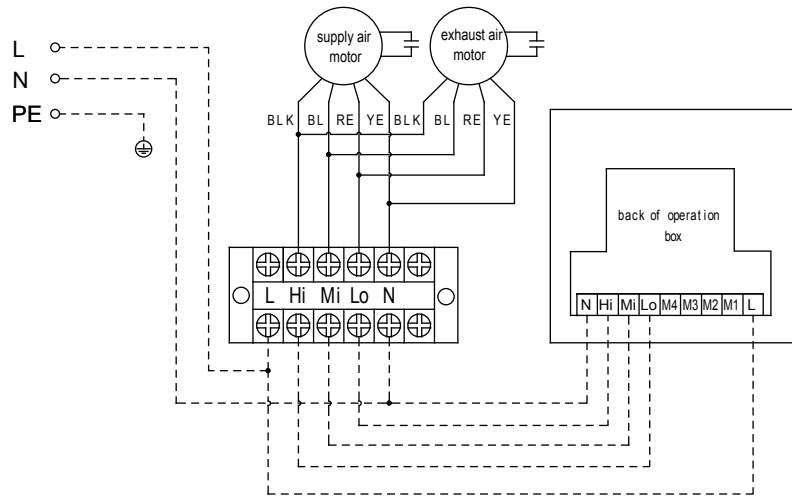
Do not connect earth wire with a gas pipe, water pipe, lightning rod or a telephone earth wire.

- gas pipe: gas leakage will cause a fire.
- water pipe: If the material of water pipe is PE, it will not play a ground role.
- lightning rod or a telephone earth wire: the ground potential will be high when lightning.

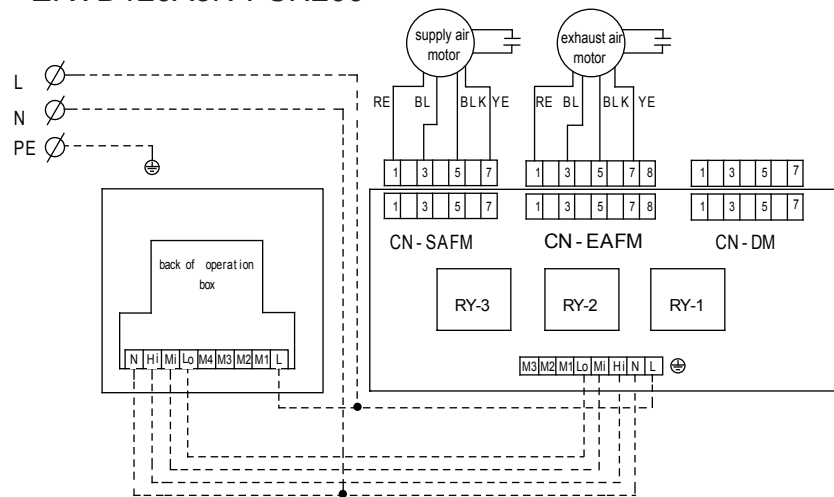
Unit Wiring Diagram

Single Phase: AC 220V~50Hz

ERVD015A3N-FCN030~ERVD090A3N-FCN150



ERVD120A3N-FCN200

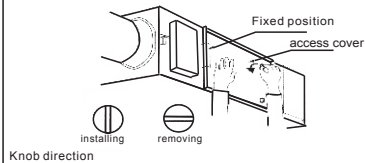


MAINTENANCE AND SERVICE

- Turn off the operation switch/special circuit breaker before maintenance and service.
- If the total heat exchanger is used for a long time, the performance of ventilation will decrease due to dirty or blocked filter. Clean the filter periodically as the accumulation of dust or debris on the heat exchange core. Pay special attention in April to May if there are a lot of willow catkins flying in the sky, and they are more likely to attach with the filter, which will decrease the ventilation effect, so clean the filter 2 times every month during such period.
- Do not clean the filter and core of heat exchanger with volatile oil and metal brush.
- Do not clean the core of heat exchanger with water, please remove all the dust with a vacuum cleaner or brush. Do not clean the unit with water.

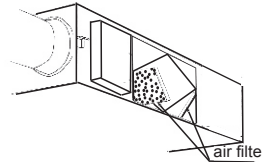
1 Remove the access cover

Rotate the second knob with 90°, remove the access cover.



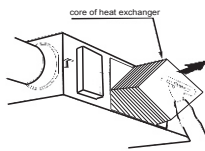
2 Remove the air filter

Move out of air filter (left, right), remove the air filter



3 Take apart the core of heat exchanger

Remove the core of heat exchanger



4 Use vacuum-cleaner

Please use the cleaner to remove the dust from the air filter.



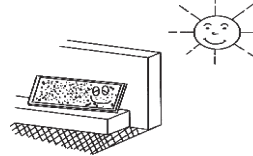
4 Clean the air filter

If the dust does not come off easily, wash them with neutral detergent dissolved in warm water below 60°C.



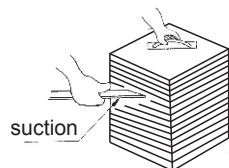
5 Dry the air filter

The air filter must be dry completely before installation.



⚠ Do not use fire to make it dry.

6 Remove the dust/dirt from the core body

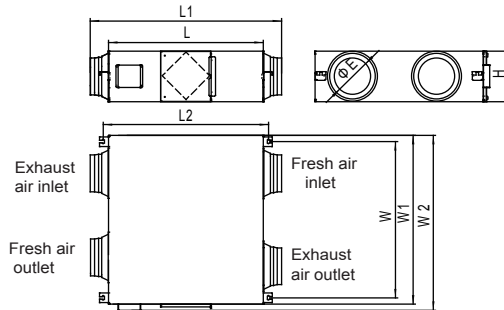


⚠ Do not clean with water!

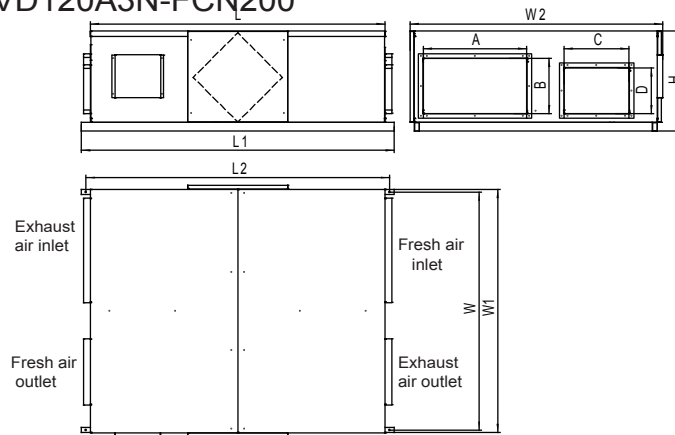
After cleaning, re-install the heat exchanger core and filter to their original state, and attach the access cover.

UNIT DIMENSIONS

ERVD015A3N-FCN030~ERVD090A3N-FCN150



ERVD120A3N-FCN200



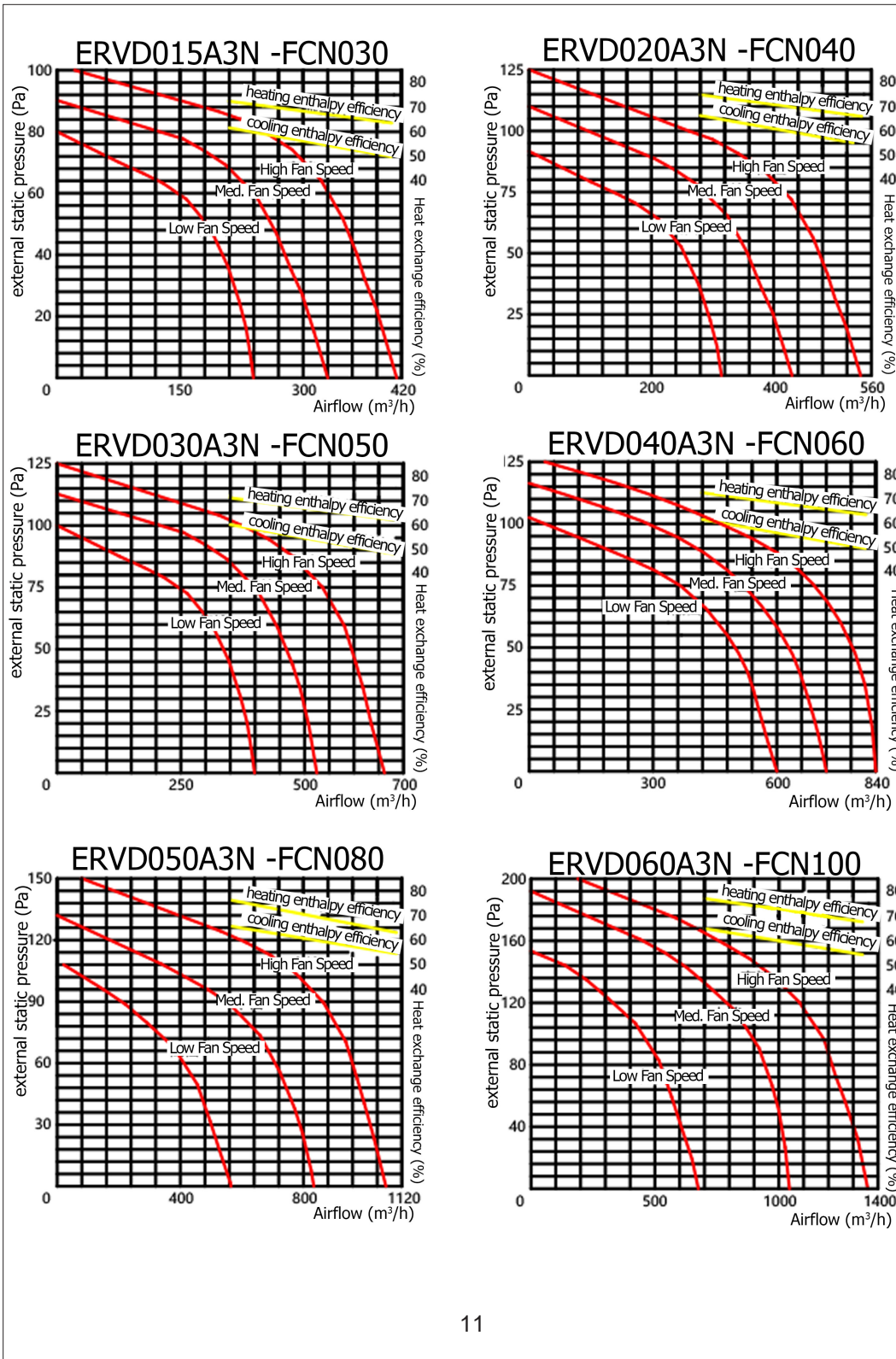
| Model | L | L1 | L2 | W | W1 | W2 | H | A | B | C | D | E |
|-------------------|------|------|------|------|------|------|-----|-----|-----|-----|-----|------|
| ERVD015A3N-FCN030 | 755 | 934 | 802 | 547 | 598 | 635 | 270 | / | / | / | / | φ144 |
| ERVD020A3N-FCN040 | 755 | 934 | 802 | 748 | 806 | 840 | 270 | / | / | / | / | φ144 |
| ERVD030A3N-FCN050 | 831 | 1026 | 887 | 839 | 906 | 940 | 270 | / | / | / | / | φ198 |
| ERVD040A3N-FCN060 | 831 | 1026 | 887 | 839 | 906 | 940 | 270 | / | / | / | / | φ198 |
| ERVD050A3N-FCN080 | 1110 | 1282 | 1166 | 818 | 885 | 918 | 388 | / | / | / | / | φ244 |
| ERVD060A3N-FCN100 | 1110 | 1282 | 1166 | 818 | 885 | 918 | 388 | / | / | / | / | φ244 |
| ERVD080A3N-FCN130 | 1110 | 1282 | 1166 | 1068 | 1135 | 1168 | 388 | / | / | / | / | φ244 |
| ERVD090A3N-FCN150 | 1110 | 1282 | 1166 | 1068 | 1135 | 1168 | 388 | / | / | / | / | φ244 |
| ERVD120A3N-FCN200 | 1502 | 1600 | 1561 | 1172 | 1202 | 1250 | 525 | 327 | 303 | 327 | 303 | / |

TECHNICAL SPECIFICATIONS

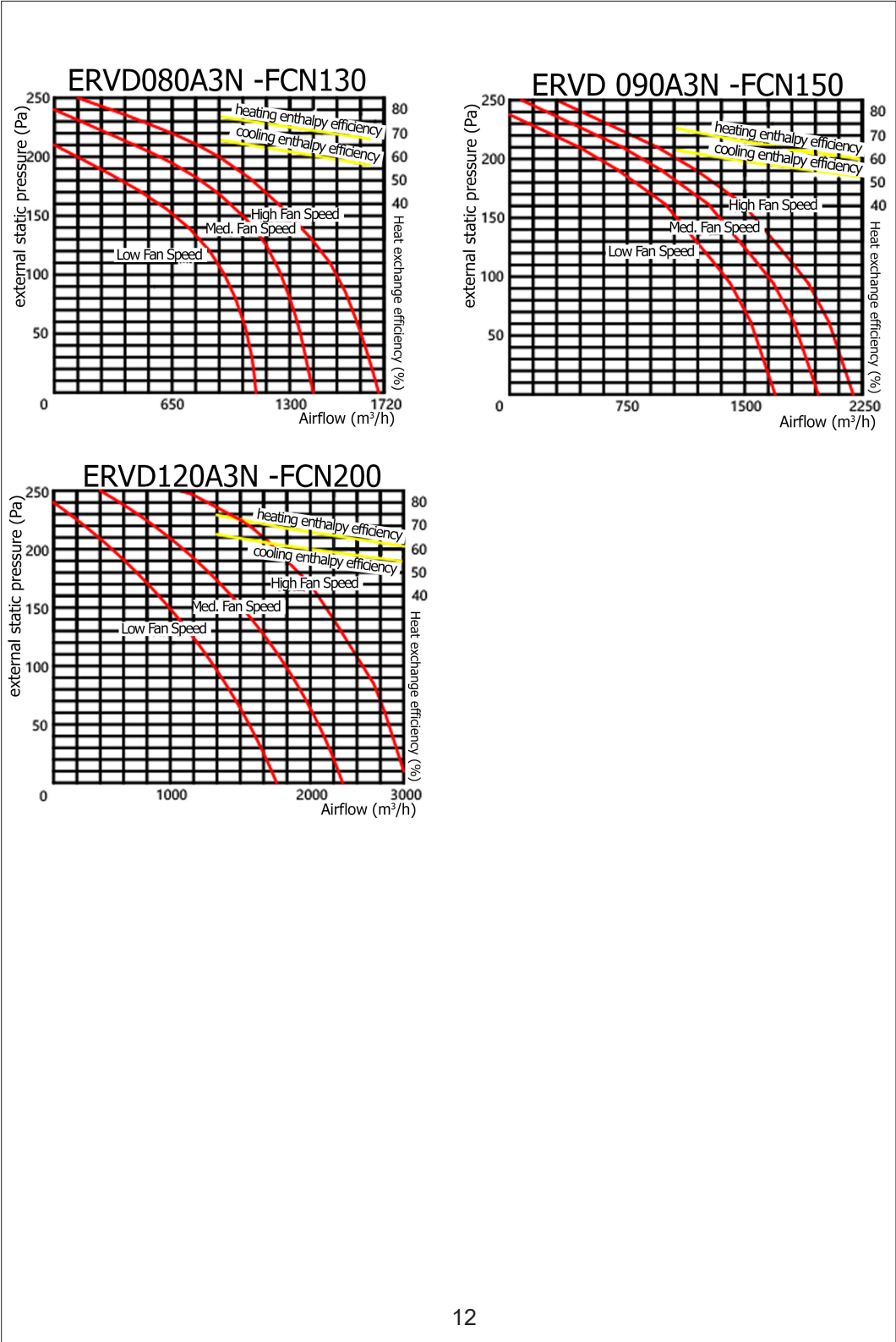
| Model | Power supply | Unit dimension (mm) | Net weight (kg) | Static pressure (Pa) | Air flow volume (m ³ /h) |
|-------------------|----------------------|---------------------|-----------------|----------------------|-------------------------------------|
| ERVD015A3N-FCN030 | 220V/50Hz 1 Phase | 934×635×270 | 25 | 75 | 300 |
| ERVD020A3N-FCN040 | | 934×840×270 | 31 | 80 | 400 |
| ERVD030A3N-FCN050 | | 1026×940×270 | 34 | 80 | 500 |
| ERVD040A3N-FCN060 | | 1026×940×270 | 36 | 90 | 600 |
| ERVD050A3N-FCN080 | | 1282×918×388 | 61 | 100 | 800 |
| ERVD060A3N-FCN100 | | 1282×918×388 | 62 | 130 | 1000 |
| ERVD080A3N-FCN130 | | 1282×1168×388 | 71 | 150 | 1300 |
| ERVD090A3N-FCN150 | | 1282×1168×388 | 73 | 160 | 1500 |
| ERVD120A3N-FCN200 | | 1600×1250×525 | 150 | 170 | 2000 |

| Model | Cooling | | Heating | | Input Power (W) | Running Current (A) | Noise Level dB(A) |
|-------------------|------------------------|---------------------|------------------------|---------------------|-----------------|---------------------|-------------------|
| | temperature efficiency | enthalpy efficiency | temperature efficiency | enthalpy efficiency | | | |
| ERVD015A3N-FCN030 | 78 | 65 | 78 | 70 | 120 | 0.6 | 39 |
| ERVD020A3N-FCN040 | 78 | 65 | 79 | 70 | 200 | 1.0 | 40 |
| ERVD030A3N-FCN050 | 79 | 66 | 79 | 71 | 220 | 1.0 | 41 |
| ERVD040A3N-FCN060 | 79 | 65 | 79 | 70 | 242 | 1.2 | 42 |
| ERVD050A3N-FCN080 | 79 | 65 | 79 | 70 | 410 | 1.5 | 43 |
| ERVD060A3N-FCN100 | 78 | 67 | 78 | 71 | 510 | 2.0 | 45 |
| ERVD080A3N-FCN130 | 78 | 67 | 78 | 70 | 610 | 4.1 | 50 |
| ERVD090A3N-FCN150 | 78 | 67 | 78 | 72 | 710 | 4.4 | 52 |
| ERVD120A3N-FCN200 | 79 | 68 | 79 | 70 | 827 | 4.5 | 60 |

FAN DATA



FAN DATA





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