

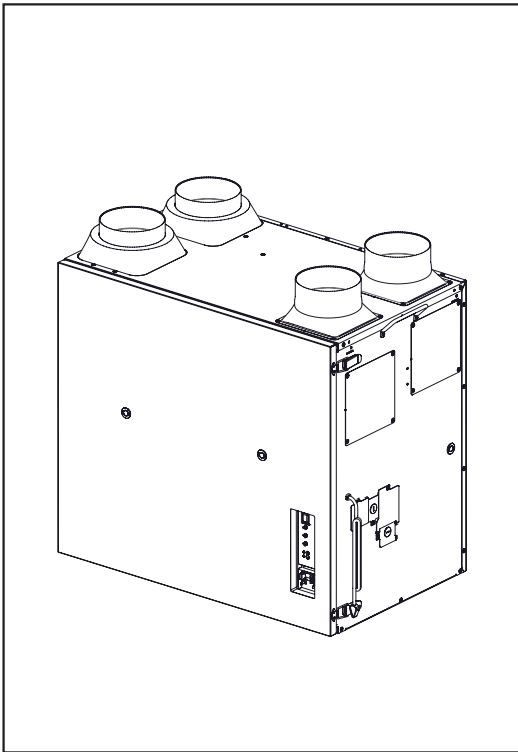
Installation and Operating Instructions

Energy Recovery Ventilator

Model No. FV-20VEC1

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READ AND SAVE THESE INSTRUCTIONS

Thank you for purchasing this Panasonic product.

Please read these instructions carefully before attempting to install, operate or service the Panasonic product. Please carefully read the "GENERAL SAFETY INFORMATION" (P.2~3) of this manual before use. Failure to comply with instructions could result in personal injury or property damage. Please explain to users how to operate and maintain the product after installation, and this booklet should be presented to users.

Please retain this booklet for future reference.



GENERAL SAFETY INFORMATION

For Your Safety





To reduce the risk of injury, loss of life, electric shock, fire, malfunction, and damage to equipment or property, always observe the following safety precautions.

Explanation of symbol word panels











The following symbol word panels are used to classify and describe the level of hazard, injury, and property damage caused when the denotation is disregarded and improper use is performed.

 WARNING	Denotes a potential hazard that could result in death or serious injury.
 CAUTION	Denotes a hazard that could result in minor injury.
NOTICE	Denotes a hazard that could result in property damage.

The following symbols are used to classify and describe the type of instructions to be observed.

	This symbol is used to alert users to a specific operating procedure that must not be performed.
	This symbol is used to alert users to a specific operating procedure that must be followed in order to operate the unit safely.
	This symbol is used to alert users not to disassemble the equipment.
	This symbol is used to alert users to make sure of grounding when using the equipment with the grounding terminal.




WARNING

-  When cutting or drilling into wall or ceiling, be careful not to damage electrical wiring and other hidden utilities.
-  Solid state controls may cause harmonic distortion which can cause motor humming noise. To reduce the risk of fire or electric shock, do not use this unit with any solid-state control device.
-  Canada only: Not to be installed in a ceiling thermally insulated to a value greater than R40.
-  Never install the unit in a high humidity space.
-  Do not install with a method which is not approved in the instructions.
-  Do not disassemble the unit. It may cause fire or electric shock.
-  Use this unit only in the manner intended by the manufacturer. If you have any questions, contact the manufacturer.
-  Installation work and electrical wiring must be performed by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.
-  Ducted exhaust air fans must always be vented to the outdoors.
-  Ceiling joist and wall studs must be rated for static load more than five times the weight of the product.

GENERAL SAFETY INFORMATION

- ! The special-purpose or dedicated parts, such as mounting fixtures, must be used if such parts are provided and appropriate.
- ! Sufficient air is needed for proper combustion and exhausting of gases through the flue (chimney) of fuel burning equipment to prevent backdrafting. Follow the heating equipment manufacturer's guideline and safety standards such as those published by the National Fire Protection Association (NFPA), and the American Society for Heating Refrigeration and Air Conditioning Engineers (ASHRAE) and the local code authorities.
- ! Install the unit in an area where air temperature is above 50 °F (10 °C) to avoid condensation in unit.
- ! Do not install product and outdoor air intake where there is exposure to harmful gas - including acid, alkali, organic solvent, coatings and corrosive elements, such as machine factory, chemical factory and research facilities, etc.

CAUTION

-  For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.
-  Do not kink the power cord.
-  Do not install the unit in the area where the air stream temperature may exceed 104 °F (40 °C).
- ! The unit must be installed in a mechanical room, basement, or other conditioned space.
- ! The OA duct and EA duct must be connected directly to the outside.
- ! Make certain the electric service supply voltage is AC 120 V, 60 Hz.
- ! Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
- ! Always disconnect the power source before working on or near the device.
- ! Protect the power cord from sharp edges, oil, grease, hot surfaces, chemicals or other objects.
- ! These fans are intended for residential use only.
- ! When discontinuing use of the product, to prevent the possibility of falling, the product should be removed and properly disposed of according to local ordinances.
- ! Disconnect power by switching off wall switch first, then main switch and unplug the power plug before working on unit when replacing the jumper cable with wall switch.
- ! The unit should be carried by two persons when lifting or transporting.

NOTICE

-  Do not install the unit where ducts are configured as shown below.



Excessive bending



Successive bending



Squeezed duct

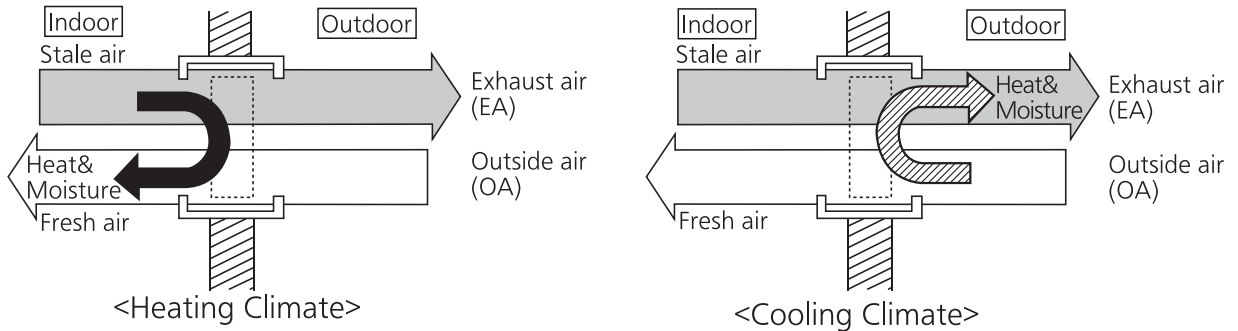


Bend close to duct adapter

DESCRIPTION

The Panasonic Energy Recovery Ventilator (ERV) uses 2 sirocco fans driven by 2 DC motors. The motor is designed to have an extended service life with reduced energy consumption. The ERV also incorporates a thermal-cutoff for safety.

The exhaust air (EA) and outdoor air (OA) ducts include electric dampers to prevent backdrafting. Energy Recovery Introduction: Compared to an HRV (Heat Recovery Ventilator), the ERV can also transfer humidity and recover energy from that humidity. The ERV can exchange energy between the stale EA and the "fresh" OA, transferring heat energy and moisture between the two airstreams. This tempering and treatment of the required ventilation air helps maintain a fresh environment even when the heating or cooling system is not operating.



UNPACKING

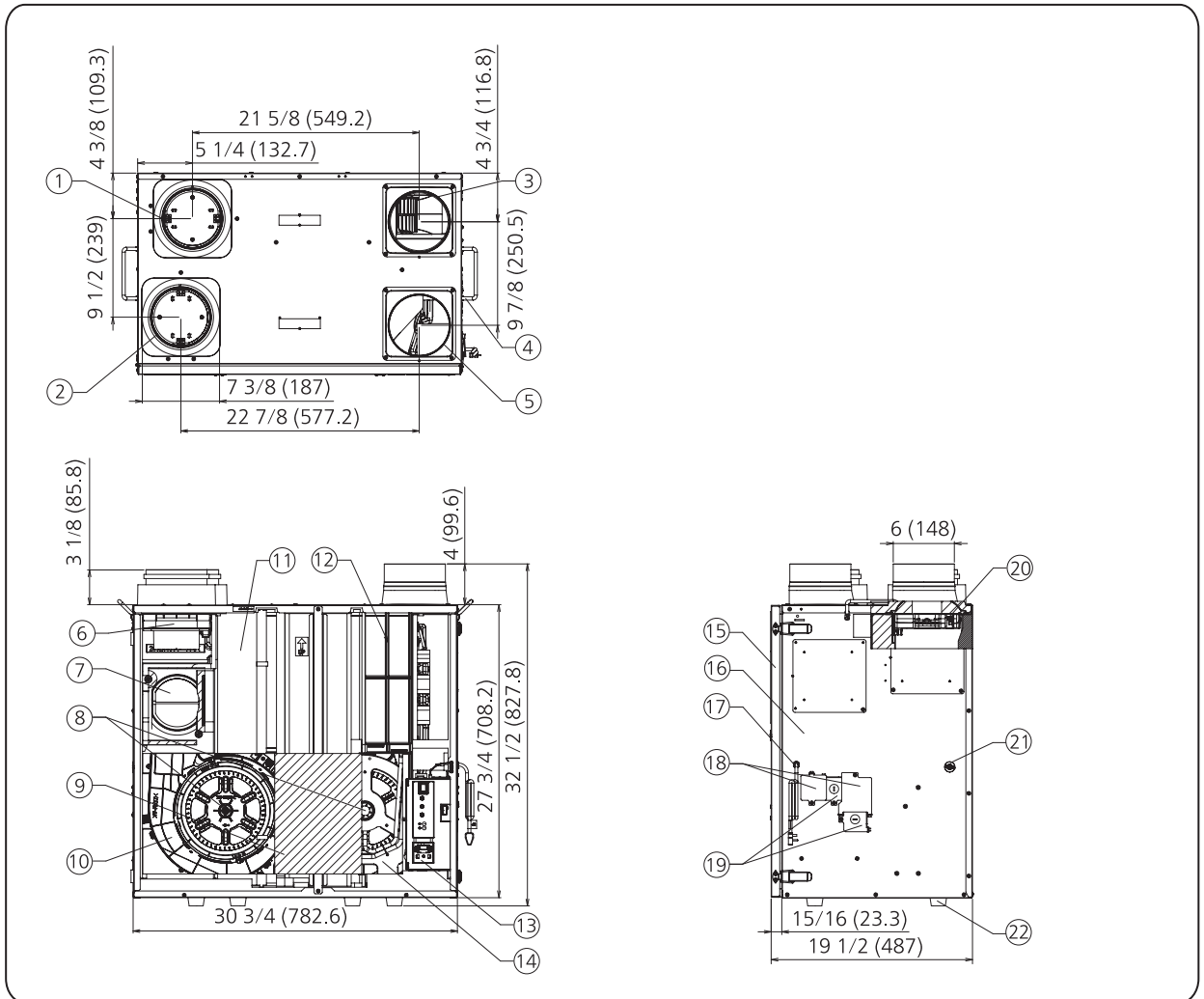
Unpack and remove unit carefully from carton.
Refer to the supplied accessories list to verify that all parts are presented.

SUPPLIED ACCESSORIES

Part name	Appearance	Quantity
Hanger I		1
Hanger II		2
Hanger III		2
Wall bracket		2
L plate		4
Screw (ST4X8)		12
Long screw (ST4.2X20)		12
Plug cover		4
Installation and operating instructions		1
Limited warranty		1

DIMENSIONS

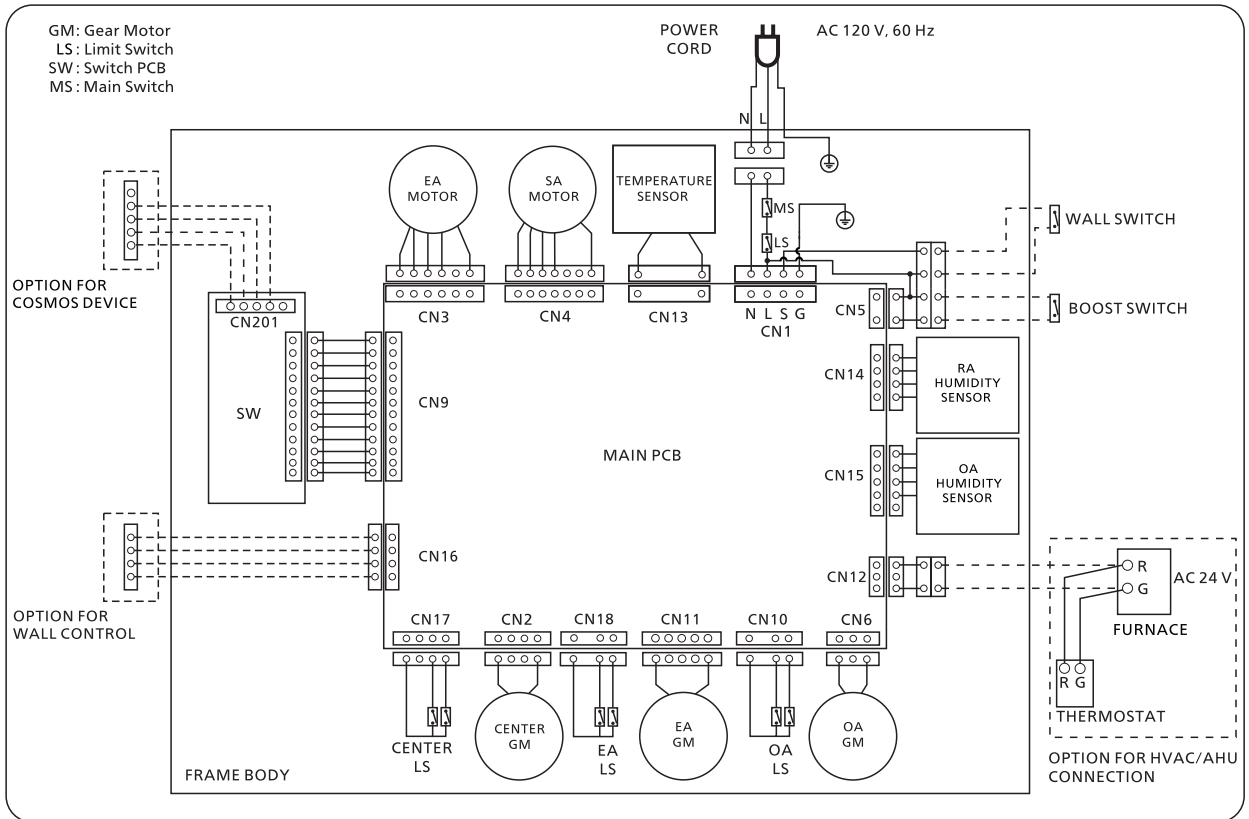
Unit: inches (mm)



EA: Exhaust air
 OA: Outside air
 SA: Supply air
 RA: Return air

No.	Part name	No.	Part name	No.	Part name
①	EA adapter	⑧	DC motor	⑮	Front door assy
②	OA adapter	⑨	Element assy	⑯	Frame body
③	SA adapter	⑩	EA fan assy	⑰	Power cord
④	Handle	⑪	OA filter	⑱	Maintenance plate
⑤	RA adapter	⑫	RA filter	⑲	Wiring cover
⑥	OA damper assy	⑬	Control panel	⑳	EA damper assy
⑦	Center damper assy	⑭	SA fan assy	㉑	Plug
				㉒	Rubber feet

WIRING DIAGRAM



OPTIONAL PARTS

Wall switch, boost switch, wall control and cosmos communication module are the optional parts. The wiring method please see page 8.

- (1) Wall switch: control the ERV; from standby to run.
- (2) Boost switch: boosts fan speed to achieve max airflow.
- (3) Wall control: refer to the instructions of FV-SW20VEC1.

Note

If connecting with the wall switch, boost switch, wall control and cosmos communication module, the operational priority is showed below:

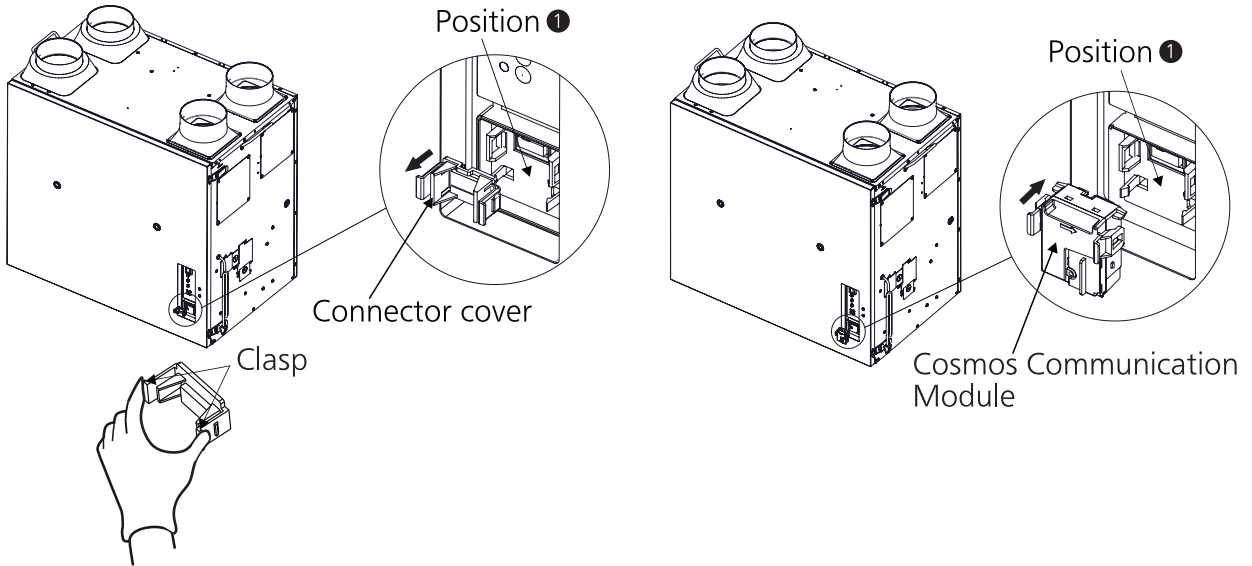
- ① Wall switch
- ② Boost switch
- ③ Wall control, cosmos communication module
- ④ Mechanical knob of product

COSMOS COMMUNICATION MODULE

Note

The Cosmos Communication Module is an option, available separately.

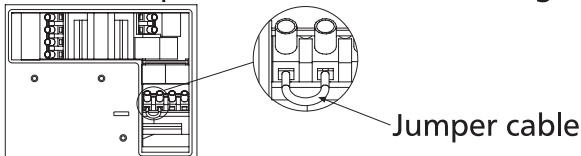
1. To remove the connector cover from position ①, squeeze the tabs on the clasp to remove.
2. Align the plug on the Cosmos Communication Module to Base PCB board and press in until you hear the click sound.



WIRING METHOD

Note

- (1) Wire for HVAC/AHU, wall switch, boost switch, wall control are not supplied.
- (2) A jumper wire (in place of a wall switch) has been installed at the factory. This means the product will run once energized.



- (3) If the product is not intended to be run continuously, it is recommended that a wall switch to control the standby/on function be installed.
- (4) If the unit is not connected by a wall switch and turn off the main switch suddenly, the electronically operated supply air damper will not close. This can increase the risk of uncontrolled supply air entering the product.

⚠ CAUTION

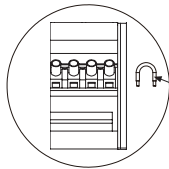
- ⚠ The wall switch and boost switch circuit capacity must exceed 120 V~3 A.
The AHU/HVAC and wall control wire capacity must exceed 5 V.

WIRING METHOD

1. Open the knock-out hole and remove maintenance plate and wiring cover. (Fig.1)
2. Thread wall switch cord, boost switch cord, HVAC/AHU signal cord (optional) and wall control cord (optional) through conduits respectively and install the conduits into knock-out holes. (Fig.1)

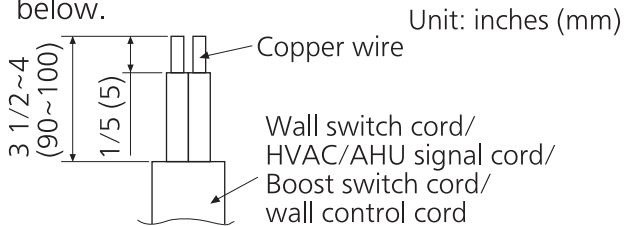
Note

- (1) The HVAC/AHU signal cord and wall switch cord is optional, please connect it when you want to control the HVAC/AHU or wall switch.
- (2) If connecting with the HVAC/AHU, the HVAC/AHU will turn on when ERV turns on.
- (3) If connecting with the wall control, please see the detail information of wall control manual. (The model No. of wall control is FV-SW20VEC1.)
- (4) If connecting with the wall switch, please remove the jumper cable first.

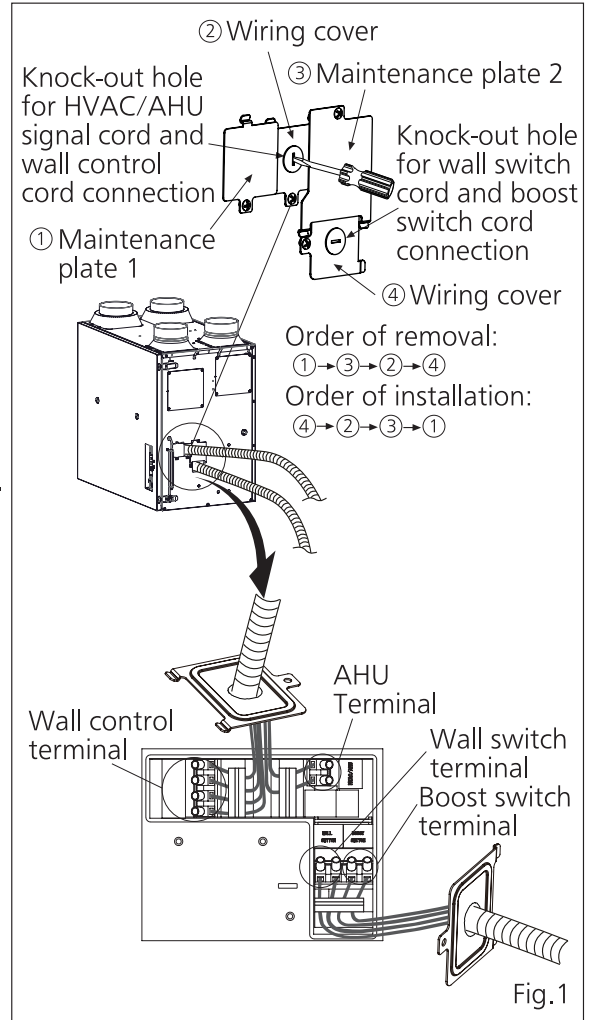


Jumper cable

3. Strip insulation cover for each wire as shown below.



4. Insert wires into the corresponding terminals deeply through the ribs. (Fig.1)
Make sure the terminal screw securely fastens the copper wire and the copper wire is not exposed.
5. Re-install the wiring cover and maintenance plate.



CABINET MOUNT

Based on different installation conditions, the ducting direction of the SA adapter and RA adapter can be changed. (Fig. 2)

- (1) Remove the 4 screws from each plate.
- (2) Remove the 4 screws from SA adapter and RA adapter separately.
- (3) Install the plates on the top of product and install SA adapter and RA adapter to the side of product. Tighten them with screws which are removed in step (1) and step (2).
- (4) Connect ducts to SA adapter and RA adapter separately.

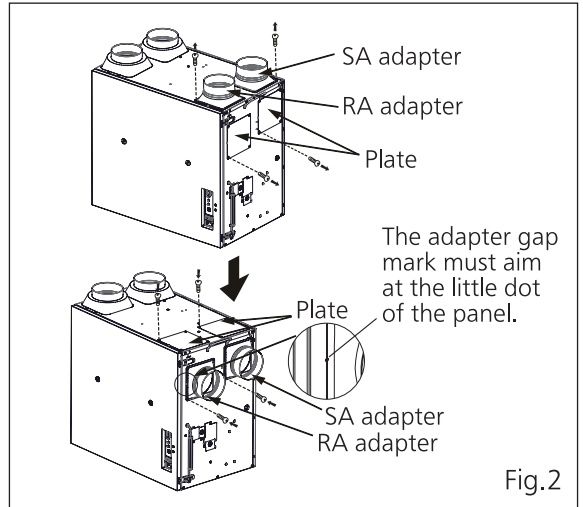


Fig.2

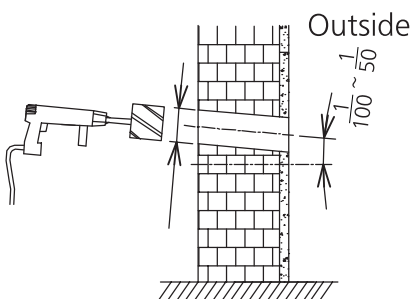
INSTALLATION I (FLOOR STANDING MOUNT)

Unit: inches (mm)

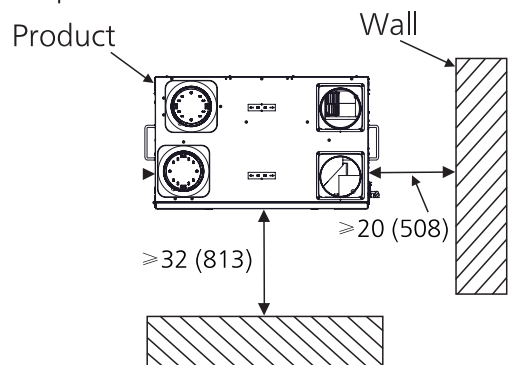
- ① Make holes on the wall at the corresponding horizontal positions of the outside air adapter and exhaust air adapter: the corresponding side of holes is $6 \frac{11}{16}$ (170)~ $6 \frac{7}{8}$ (175).

Note

Make sure the holes are to outside with a downward sloping Angle of $1/100 \sim 1/50$, which is to avoid water or dewdrop inside the duct entering. Make sure the corresponding hole of outside air should be at least 6 feet above the ground.



- ② Confirm that the distance between the left side, right side, back of the product and the wall meets the following recommended requirements:



Note

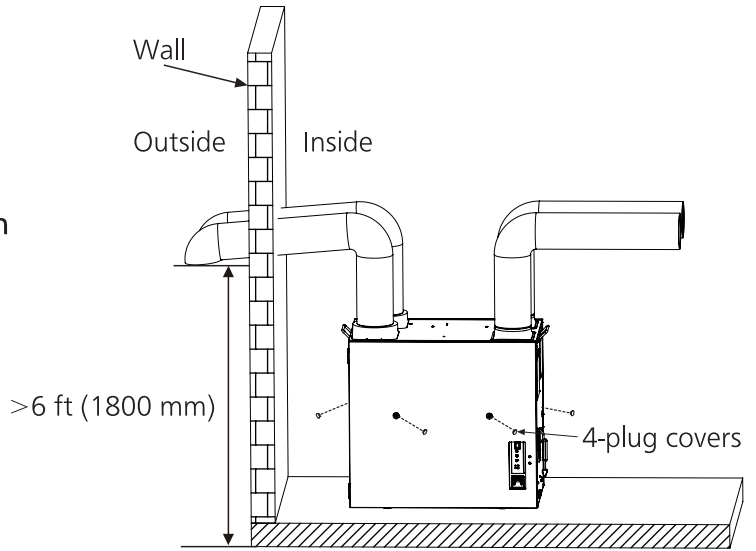
Please keep enough space around the product for maintenance after installation.

INSTALLATION I (FLOOR STANDING MOUNT)

③ Install plug covers into plugs on the frame.

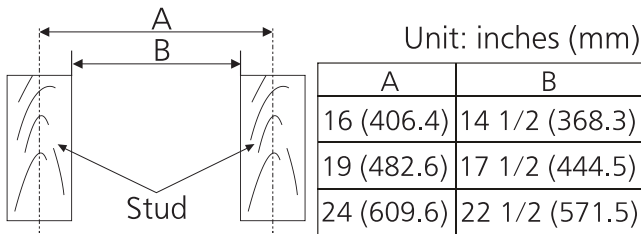
Note

Make sure to put the product on the flat floor.



INSTALLATION II (WALL MOUNT)

This method can be used in stud as below.

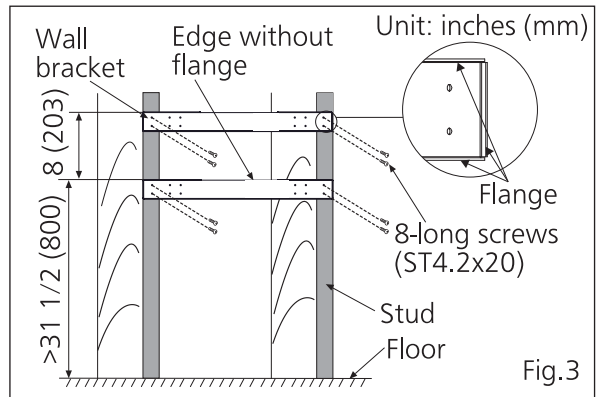
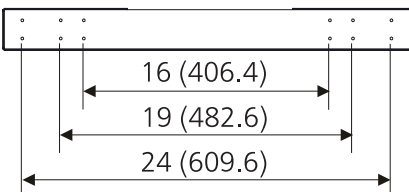


1. Mount wall bracket on stud with long screws (ST4.2x20). (Fig.3)

Note

- (1) Attach with flanged edge facing outward and edge without flange facing upward when mounting wall bracket. (Fig.3)
- (2) Choose the mounting hole on wall bracket according to the distance between studs.

Unit: inches (mm)



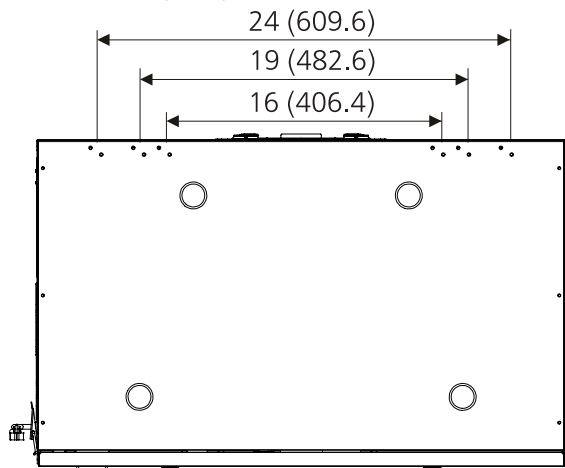
INSTALLATION II (WALL MOUNT)

2. Attach hanger I on the back of frame body with screws (ST4X8) and mount L plate on the two side of frame body with screws (ST4X8). (Fig.4)

Note

- (1) When attaching hanger I, please attach with the claw facing downward to frame body that the side with power cord facing upward.
- (2) Choose the mounting hole according to the distance between studs.

Unit: inches (mm)



3. Hang ERV on to wall bracket.



Make sure the OA/EA adapter is upward. (Fig.5)

4. Attach L plate on to stud with long screws (ST4.2X20). (Fig.6)

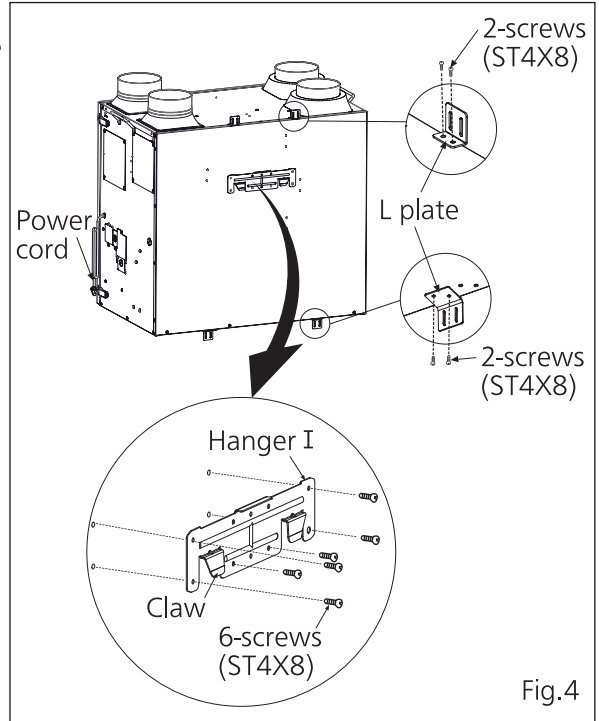


Fig.4

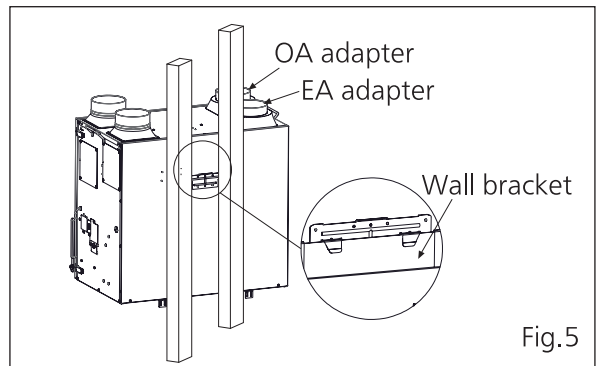


Fig.5

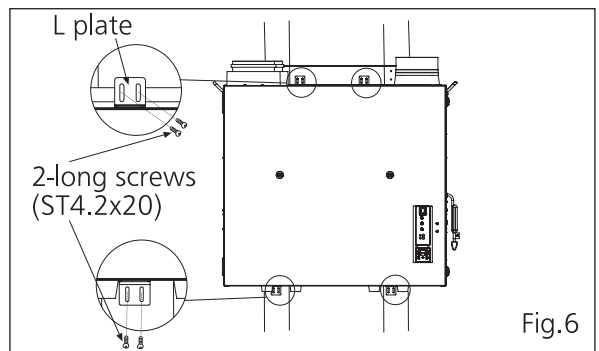
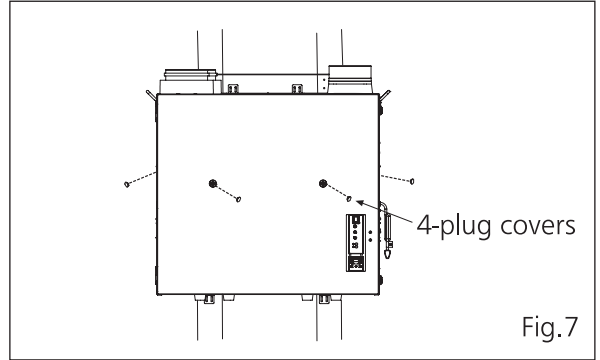


Fig.6

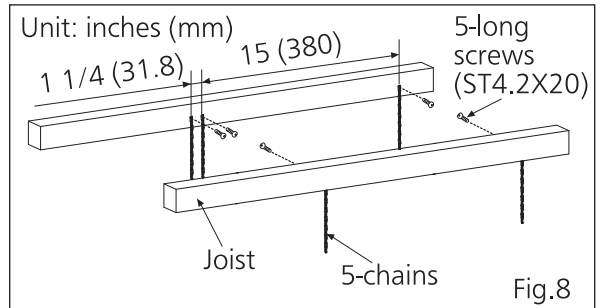
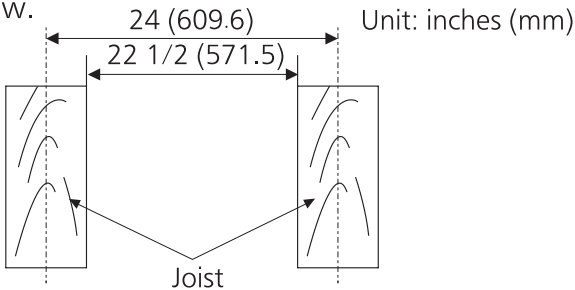
INSTALLATION II (WALL MOUNT)

5. Install plug covers into plugs on frame cover. (Fig.7)



INSTALLATION III (CHAIN MOUNT)

This method should be used in 24" joist as below.



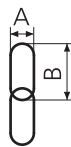
1. Attach chain on joist with long screws (ST4.2X20). (Fig.8)

Note

- (1) The chains are not supplied.
Chain rating must be 121 lbs. (55 kg) or more.
- (2) The length of each chain should be 20 inches ~ 24 inches (500 mm ~ 600 mm) and the dimension A and B are recommended as shown below.

Unit: inches (mm)

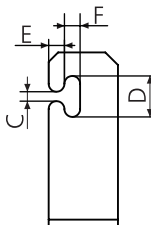
A	B
1/4 (6)	3/4 (20)



(3) The dimension of hanger as shown below:

Unit: inches (mm)

C	D	E	F
1/8 (3)	1/2 (13)	3/16 (5)	3/16 (5)

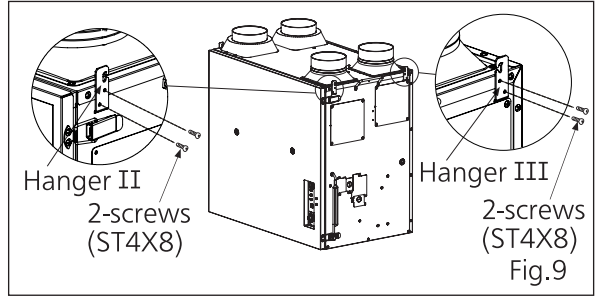


INSTALLATION III (CHAIN MOUNT)

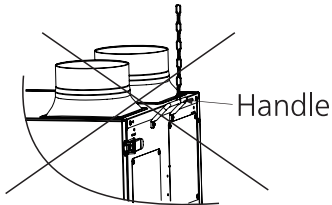
2. Attach hanger II and hanger III on frame body with screws (ST4X8). (Fig.9)

Note

Insert the hook of the hanger into the square hole of frame before fixing it.



3. Hang the ERV on to chains. (Fig.10)
Do not attach chains to handles.



Note

Make sure ERV is horizontal after installation.

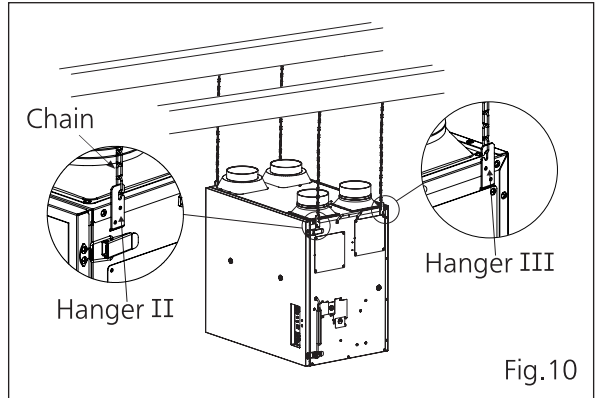


Fig.10

4. Install plug covers into plugs on the frame. (Fig.11)

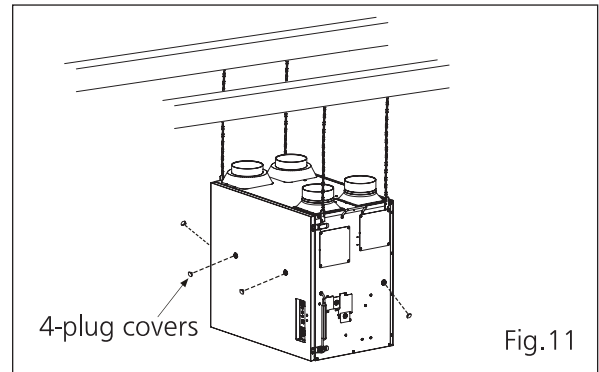


Fig.11

DUCTWORK

1. Install ducts according to one of the three methods shown below.

Method I - Simplified ducted installation (Return method)

This method draws return air from the return air duct of the air furnace and supplies an equal amount of outside air farther downstream into the return duct. (Fig.12 & Fig.13)

Note

- (1)The ERV air flows must be balanced.
- (2)It is mandatory that HVAC/AHU controls be connected.
- (3)Check local codes and authority having jurisdiction for acceptance.

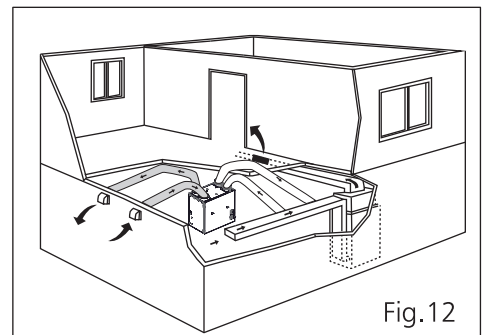


Fig.12

DUCTWORK

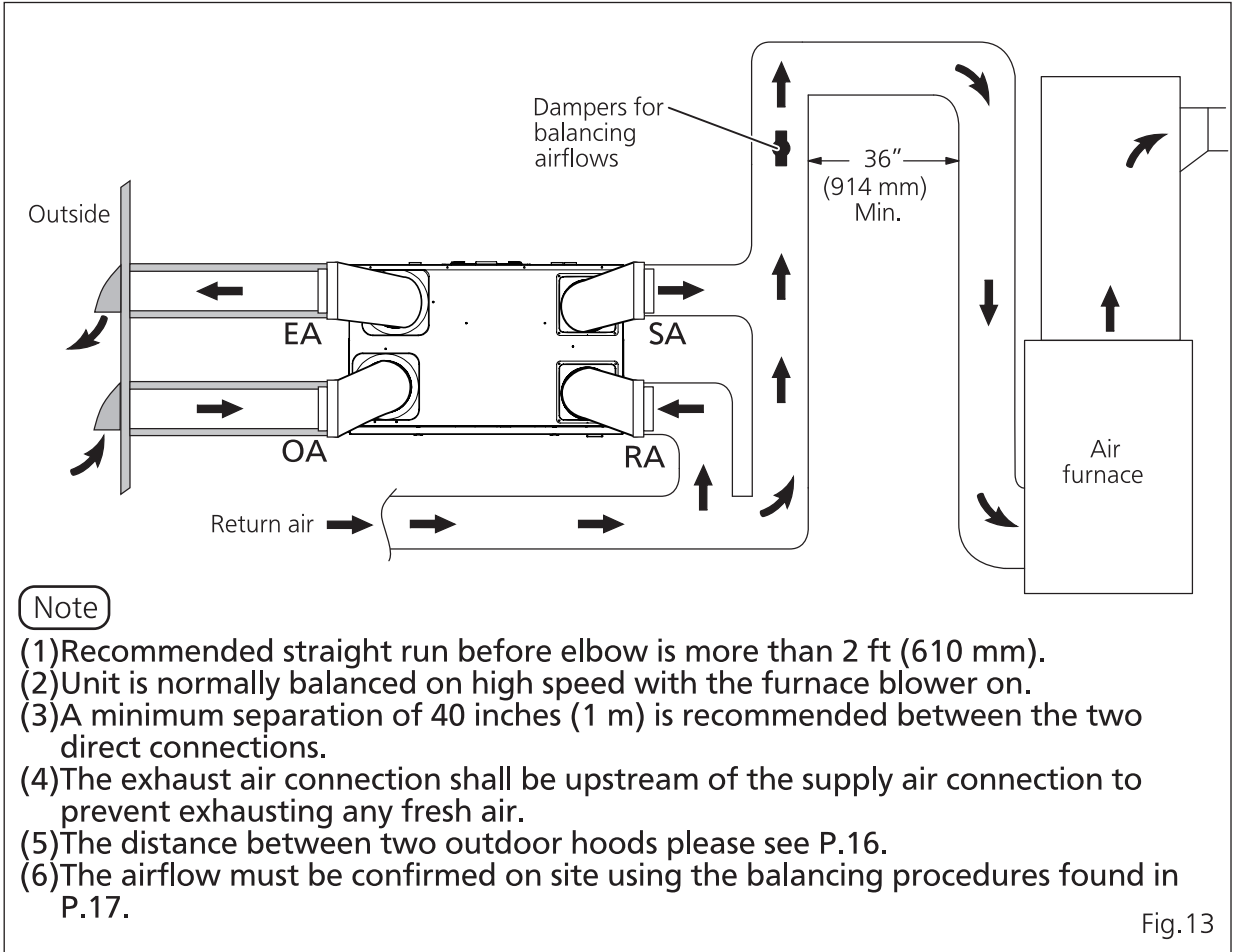


Fig.13

Method II - Partially dedicated ducted installation

This method draws return air from specific points in the house and supplies an equal amount of outside air into the return air duct of the air furnace. (Fig.14 & Fig.15)

Return air ducts of ERV should be installed in areas of the home where the poorest indoor air quality exists (bathroom and kitchen).

The air furnace blower should be running when the ERV is operating to evenly distribute the outside air throughout the house.

Note

- (1) The ERV air flows must be balanced.
- (2) It is mandatory that HVAC/AHU controls be connected.
- (3) Check local codes and authority having jurisdiction for acceptance.

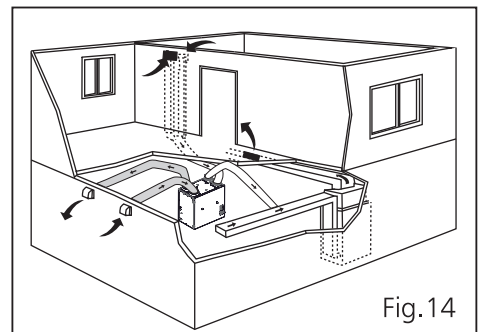


Fig.14

DUCTWORK

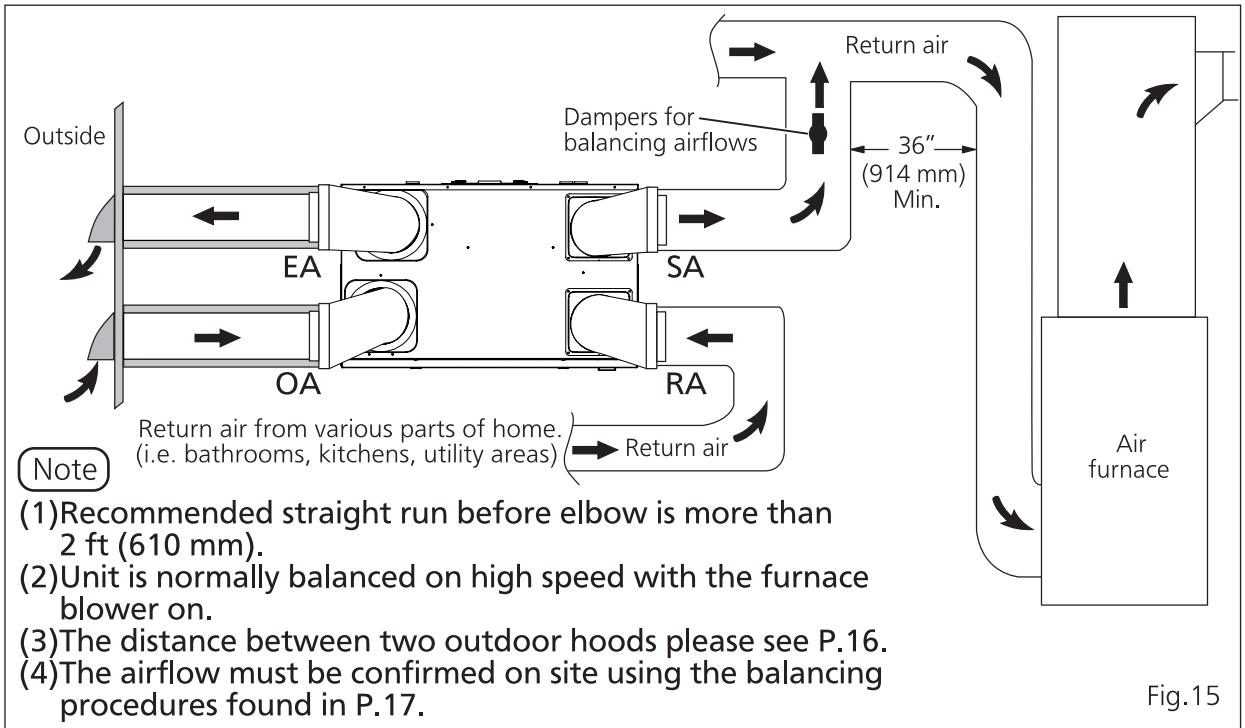


Fig.15

Method III - Fully dedicated ducted installation

This method draws return air from specific points in the house and supplies outside air to specific locations of the house. This system is not connected to an air furnace. (Fig. 16 & Fig. 17)

Return air ducts should be installed in common areas of the home. Supply air ducts should be installed to all bedrooms and living areas.

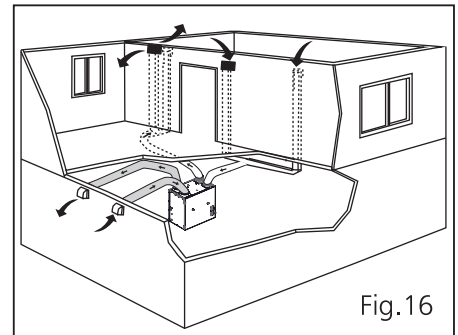


Fig.16

Note

- (1) The ERV air flows must be balanced.
- (2) Check local codes and authority having jurisdiction for acceptance.

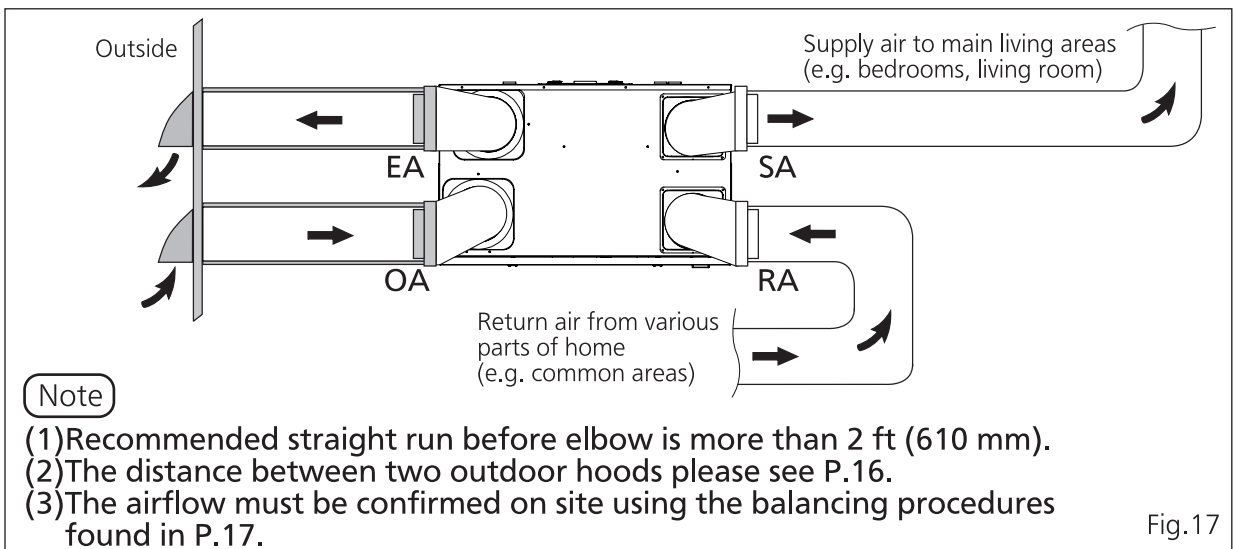


Fig.17

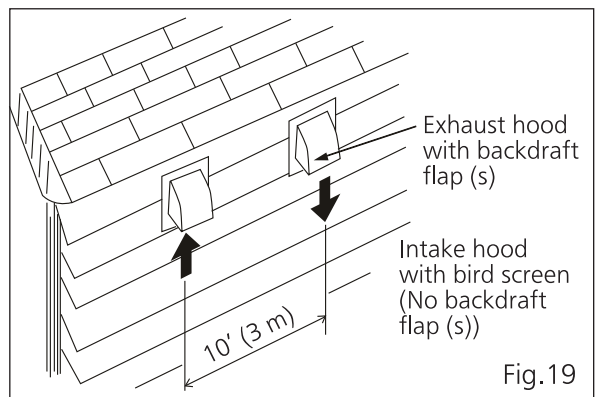
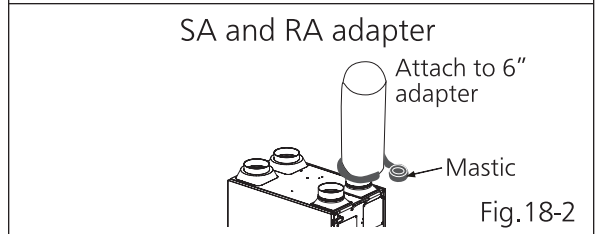
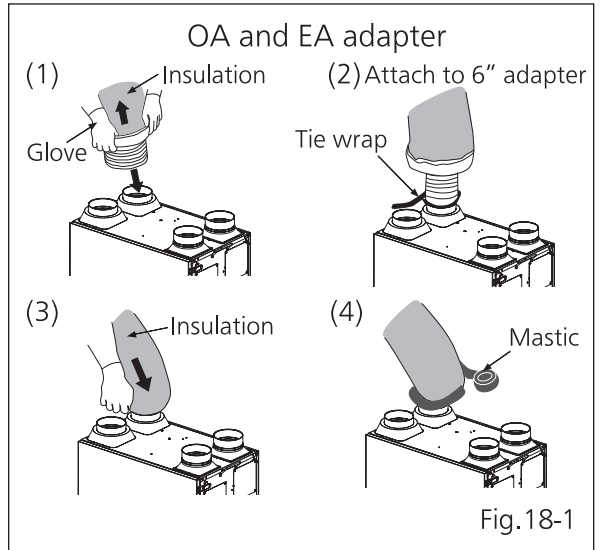
DUCTWORK

2. Install insulated ducts to OA and EA adapter.
(Fig. 18-1)

- (1) Pull back the insulation to expose the flexible duct.
- (2) Attach the flexible duct to the adapter using tie wrap. You can attach to the 6 inch according to size of flexible duct.
- (3) Pull the insulation over the adapter.
- (4) Apply UL181A certified pressure sensitive tape or mastic to insulation duct and adapter making an airtight seal.

3. Attach duct (rigid galvanized duct, etc) to the SA and RA adapter using UL181A certified pressure sensitive tape or mastic. You can attach to the 6 inch according to size of duct.
(Fig. 18-2)

4. Install outdoor hood and connect with insulated ducts.
If separate hoods are used, locate them at least 10 ft (3 m) apart. (Fig. 19)



Note

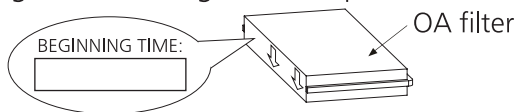
When installing hood, please refer to the local codes for detail.

CAUTION

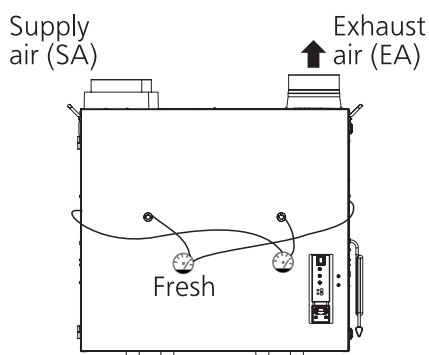
- ! The intake side duct must be connected to the outside and at least 6 ft (1.8 m) away from the exhaust of appliances such as furnace, dryer, fuel burning appliances, etc.

START-UP PROCEDURE

1. Fill in beginning time on the OA filter before starting up the unit.
The method of removing and installing OA filter please refer to P.20 (Fig.20) and P.21 (Fig.22~23).



2. Connect the power cord to outlet then turn on the main switch on ERV for start-up.
If the ERV does not run, please check the wiring connections.
3. Remove plug covers in plugs on frame and check static pressure.
Using a magnehelic gauge, measure the differential pressure of fresh air and exhaust air respectively, then adjust the dampers for balancing airflows to make the test value reach the differential pressure of setting volume as shown below.
4. Re-install the plug covers when airflow balancing has been complete.



The relation between volume and differential pressure (reference)

Volume (CFM)	Differential pressure (Pa)	
	Fresh	Stale
60	25	20
80	30	30
100	40	40
120	50	50
140	60	60
160	75	75
180	85	85
200	100	105

OPERATION

<Control panel>

- ① **Main switch:** Power on or off for ERV. Push the main switch completely to the on/off position when turning on/off.

Note

The unit will consume some electricity unless you turn off the main switch.

- ② **ASHRAE time knob:** The operation state will be changed with this knob. It is in units of 1 hour, for example: set to "10", 10 minutes (ON) → 50 minutes (OFF) → 10 minutes (ON)... cycle operation. The factory default is 60 Min/H.
- ③ **SA knob:** Set the supply air volume with this knob.
The factory default is 120 CFM.
- ④ **EA knob:** Set the exhaust air volume with this knob.
The factory default is 120 CFM.

Note

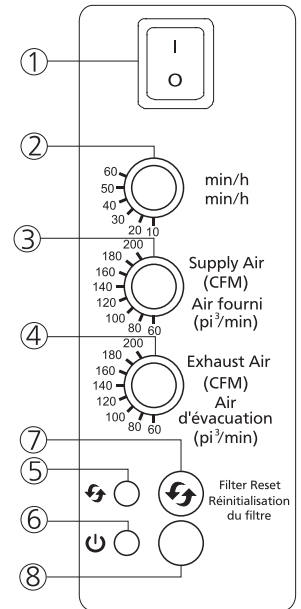
The SA air volume is limited less than "EA air volume + 20 CFM" when the outdoor temperature is -22 °F (-30 °C) ~ 14 °F (-10 °C). For example, when the EA air volume setting is 100 CFM and the SA air volume setting is 140 CFM, actually the EA air volume will be 100 CFM and the SA air volume will be 120 CFM.

OPERATION

⑤ **Filter indicator:** The indicator light will turn on when the ERV accumulated run time equals 3 months. When the indicator is on (with buzzer sound), RA and OA filter maintenance should be performed.

Note

- (1) The indicator will turn on when the product accumulated runtime reaches 90 days. The buzzer sound will occur every hour for 10 seconds.
- (2) To turn off the buzzer indicator, press filter reset button for about 10 seconds until you hear a long beep. To re-enable the buzzer 90 day maintenance timer press the filter reset button about 10 seconds again until there is the sound of two quick beeps.
- ⑥ **Running indicator:** The indicator light is on when product is running.
- ⑦ **Filter reset button:** Press the button about 3 seconds after filter maintenance to reset run timer.
- ⑧ Not in use.



The ERV will run as below:

Setting	State						
	ON		ON		ON	OFF	
MAIN SWITCH	ON		ON		ON	OFF	
JUMPER CABLE	CONNECTED	—	CONNECTED	—	—	CONNECTED	—
WALL SWITCH	—	ON	—	ON	OFF	—	ON/OFF
BOOST SWITCH	ON		OFF		ON/OFF	ON/OFF	
WALL CONTROL	ON/OFF		ON	OFF	ON/OFF	ON/OFF	
ASHRAE TIME KNOB	10~60		10~60		10~60	10~60	
SA KNOB	60, 80, 100, 120, 140, 160, 180, 200						
EA KNOB							
WALL CONTROL							
ERV ACTION	ASHRAE: 60 min/h SA: 200 CFM EA: 200 CFM	ASHRAE: 10 min/h~ 60 min/h SA: 60 CFM~200 CFM EA: 60 CFM~200 CFM	Standby	Standby	Product is power off		

For example: when main switch and wall switch are ON, suppose the customer to set as ASHRAE: 50 min/h, SA: 120 CFM, EA: 120 CFM, the boost switch will move the air speed to maximum (indefinitely); SA: 200 CFM, EA: 200 CFM; when boost switch is OFF, ERV restores previously set intermittent timer instructions; 50 min/h, SA: 120 CFM, EA: 120 CFM.

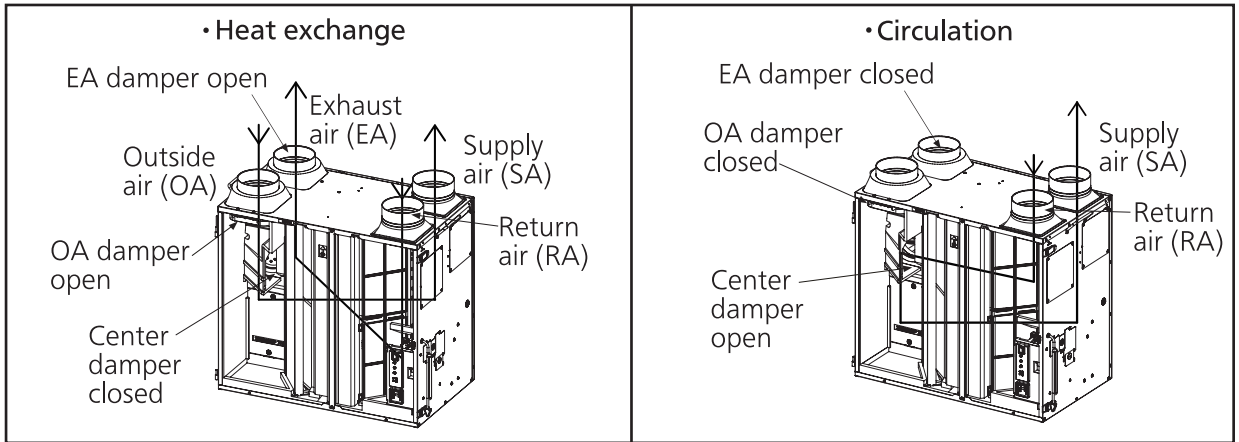
Note

Best use suggestion - the product should be operated continuously to maximize frost prevention.

OPERATION

<Operation mode>

This product is designed to operate in outdoor temperature ranges from -22 °F (-30 °C)~ 104 °F (40 °C). In cold temperature below 14 °F (-10 °C), product will automatically be operated in defrost mode, which consists of an alternating heat exchange / circulation operation. During defrost mode, the OA damper closes and the center bypass damper opens. This allows indoor air to be recirculated during the defrost cycle only.



When boost switch is on.

The product will adjust the operating time according to the outdoor temperature and enter the defrost mode.

Outdoor temp.	Operation mode and time (min)	
>14 °F (-10 °C)	60 ...	Air exchange mode
14 °F (-10 °C)~ 5 °F (-15 °C)	60 11 ...	Circulation mode
5 °F (-15 °C)~ -4 °F (-20 °C)	35 11 ...	Stop operating
-4 °F (-20 °C)~ -17 °F (-27 °C)	27 11 ...	Repetition
-17 °F (-27 °C)~ -22 °F (-30 °C)	20 11 ...	
≤-22 °F (-30 °C)	4 11 45 ...	

MAINTENANCE

⚠ CAUTION

- ⚠ Electric shock may result. Disconnect power by switching off main switch first, then unplug the power plug before working on unit when it is in default mode.
- ⚠ Electric shock may result. Disconnect power by switching off wall switch first, then main switch and unplug the power plug before working on unit when replacing the jumper cable with wall switch.
- ⚠ Routine maintenance must be performed every 2 or 3 months, clogged filters may cause condensation on the unit due to air flow reduction.
- ⚠ Please wear gloves to avoid pinching fingers during maintenance.
- ⚠ Please pay attention to dust, condensation, debris or parts that may drop down when the frame cover is opened.
- ⊘ Never use petrol, benzene, thinner or any other such chemicals to clean the ERV.
- ⊘ Do not allow water to enter ERV.
- ⊘ Do not immerse resin parts in water over 140 °F (60 °C).
- ⊘ Do not clean the OA filter with water.

1. Open the frame cover by unlocking the latches. (Fig.20)

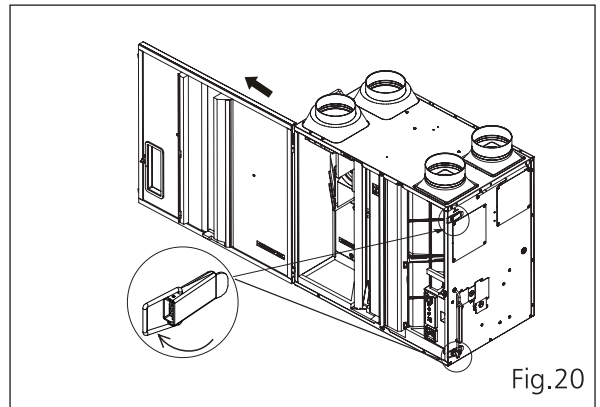


Fig.20

2. Remove OA filter and RA filter to clean with vacuum cleaner. (Fig.21)

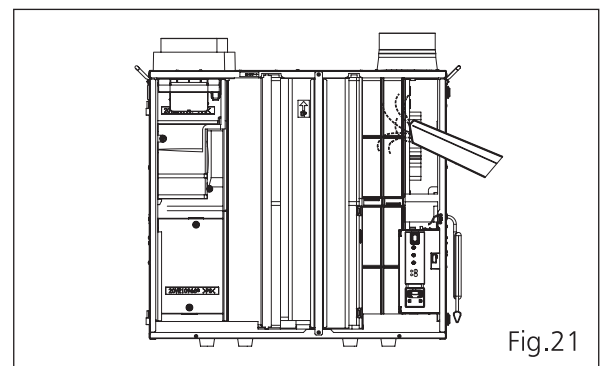


Fig.21

The replaceable OA filter should be inspected or changed every 90 days.
** The OA filter may need to be replaced more frequently depending on outside air conditions.**
The washable return air filter should be inspected and cleaned every 90 days.

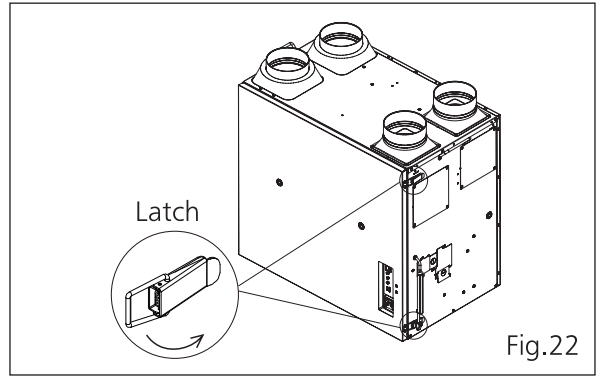
Note

Please replace OA filter by Panasonic Model FV-FL0820VE1, FV-FL1320VE1 or FV-FLHP20VE1.

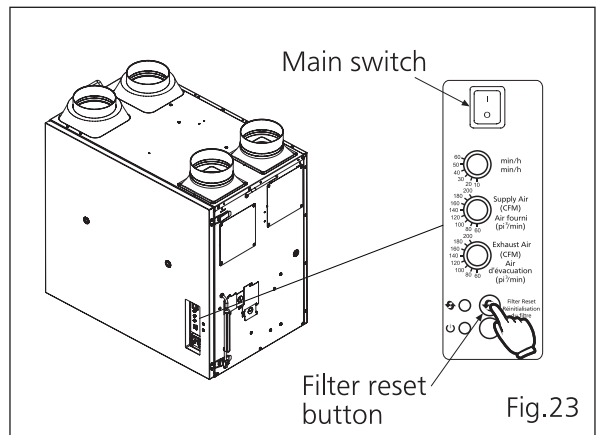
3. Clean OA filter and RA filter with vacuum cleaner. (Fig.21)

MAINTENANCE

4.Reinstall and close frame cover by locking the latches. (Fig.22)



5.After re-connecting power, press the filter reset button about 3 seconds to reset run timer. (Fig.23)



TROUBLESHOOTING

If a problem is encountered, please investigate it by going through the following items. If the problem still persists, please disconnect the power and contact the dealer for repair.

Problem	Display		Action
	Running indicator (Green)	Filter indicator (Red)	
1. Buzzer sound (30 sec in an hour) and ERV doesn't work.	On	Blink* (2 s)	■ Wall control connection error, please disconnect the power or contact the dealer for repair.
	On	Blink* (0.25 s)	■ PCB board error, please disconnect the power or contact the dealer for repair.
	Blink* (0.25 s)	Off	■ SA motor error, please disconnect the power.
	Blink* (1 s)	Off	■ EA motor error, please disconnect the power.
	Off	Blink* (0.25 s)	■ OA damper error, please disconnect the power or contact the dealer for repair.
	Off	Blink* (1 s)	■ EA damper error, please disconnect the power or contact the dealer for repair.
	Off	Blink* (2 s)	■ Center damper error, please disconnect the power or contact the dealer for repair.
	Blink* (0.25 s)	On	■ Temperature sensor error, please disconnect the power or contact the dealer for repair.
	Blink* (1 s)	Blink* (2 s)	■ Humidity sensor error, please disconnect the power or contact the dealer for repair.
2. Buzzer sound (10 sec in an hour) and ERV works.	On	Blink* (1 s)	■ Wifi communication error, please check the Wifi (COSMOS) wiring connect or disconnect the power.

TROUBLESHOOTING

Problem	Display		Action
	Running indicator (Green)	Filter indicator (Red)	
3.The ERV doesn't work	Off	Off	<ul style="list-style-type: none"> ■ Check the power cord is connected. ■ Check the frame cover is closed. ■ Check the main switch in product body is on. ■ Check if the spring on the inside of frame cover is damaged or deformed.
	On	Off	<ul style="list-style-type: none"> ■ ERV running interval according to the ASHRAE time setting. ■ When outdoor temperature is low $\leq -22\text{ }^{\circ}\text{F}$ ($-30\text{ }^{\circ}\text{C}$), ERV stops operating automatically. ■ Damper may be frozen shut, please wait for maximum 24 hours for defrosting.
4.The HVAC/AHU doesn't work when ERV works.	On	Off	<ul style="list-style-type: none"> ■ Please disconnect the power and contact the dealer to check the HVAC/AHU wiring connect.
5.Buzzer sound (10 sec in an hour) and ERV works.	On	On	<ul style="list-style-type: none"> ■ The RA filter and OA filter need to be maintained. If you do not want the buzzer notification, please long press the filter reset button for 10 sec to cancel it.
6.ERV doesn't work base on the setting air volume.	On	Off	<ul style="list-style-type: none"> ■ When product runs in circulation mode for defrosting, the air volume will be more than setting and sound will be slightly louder than normal operation. ■ When outdoor temperature is less than $14\text{ }^{\circ}\text{F}$ ($-10\text{ }^{\circ}\text{C}$), the product will restrict air volume automatically to protect energy recovery core.

*The time under "Blink" means the frequency of blink.

SPECIFICATIONS

<Ventilation Performance>

Model No.	Air direction	Voltage (V)	Frequency (Hz)	Duct	Static pressure	Net air flow (CFM)		Power consumption (W)	Net weight lb.(kg)
						Exhaust	Supply	Product	
FV-20VEC1	Exhaust & Supply	120	60	6"	0.4"WG	200	200	129	96.8 (44)

<Energy Performance>

Model No.	Mode	Supply temperature		Net air flow		Power consumption (W)	Sensible recovery efficiency
		°F	°C	L/s	CFM		
FV-20VEC1	Heating	32	0	32	67	22	83%
		32	0	59	124	46	77%
		32	0	80	170	92	73%
		-13	-25	31	66	46	67%
		-13	-25	51	107	104	61%
	Cooling	Total recovery efficiency					
		95	35	34	71	25	70%
	95	35	64	135	56	61%	

The testing of the ventilation performance and the energy performance in accordance with CSA-C439 standard.

PRODUCT SERVICE

Warning Concerning Removal of Covers.

The unit should be serviced by qualified technicians only.

Your product is designed and manufactured to ensure a minimum of maintenance.

Should your unit require service or parts, call Panasonic Call Center at 1-866-292-7299 (USA) or 1-800-669-5165 (Canada).

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