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Inspections Division
Approved with Conditions
Date: 06/29/17

Panasonic

INSTALLATION INSTRUCTIONS

Spot Energy Recovery Ventilator (ERV)

Model No. FV-04VE1

Contents

General Safety Information 2-3
Description 4
Unpacking 4
Supplied Accessories 4
Dimensions 5
Wiring Diagram 6
Wiring Connections 6
Operation 7
Recommended Zones Map 8
Installation I (Joist Mounting - I) 9-12
Installation II (Wooden Header) 13
Installation III (Wall Installation) 13-17
Maintenance (Cleaning) 17-19
Specifications Back cover
Product Service Back cover

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. 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.

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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 serious injury or death.
⚠ CAUTION	Denotes a hazard that could result in minor injury.

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.

⚠ WARNING

- ⃠ When cutting or drilling into wall or ceiling, do not 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.
- ⃠ Not to be installed in a ceiling thermally insulated to a value greater than R40. (This is required for installation in Canada only.)
- ⃠ Never install in the area where the temperature falls below-13 °F(-25 °C).
- ⃠ Never install the unit in a high humidity space, such as a bathroom, kitchen or laundry room.
- ⃠ Do not disassemble the unit for reconstruction. It may cause fire or electric shock.
- ⃠ Do not install with a method which is not approved in the instructions.
- ⃠ Do not install the unit where ducts are configured as shown in Fig. A.

Fig. A

- ❗ 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 done by qualified person (s) in accordance with all applicable codes and standards, including fire-rated construction.
- ❗ Ducted fans must always be vented to the outdoors.

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Inspections Division
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Date: 06/29/17

GENERAL SAFETY INFORMATION CONTINUED

- Ceiling joist must be subjected to static load more than five times the weight of the product.
- The special-purpose or dedicated parts, such as mounting fixtures, must be used if such parts are provided.
- This product must be properly grounded.
- 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.
- Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the circuit breaker panel cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.
- Install the unit in a ceiling where air temperature is above 50 °F(10 °C) to avoid condensation in unit.

⚠ CAUTION

- For general ventilating use only. Do not use to exhaust hazardous or explosive materials and vapors.
- Do not install in cooking area or connect directly to any appliance. (Fig. B)
- Do not kink the power cord.
- Do not install this ERV where air temperature may exceed 104 °F (40 °C).
- The unit must be used in a space provided with heated and cooled air, such as a living room, dining room, bedroom, etc.
- The ducts must be connected directly to the outside.
- Make certain that the electric service supply voltage is 120V, 60 Hz.
- Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupation Safety and Health Act (OSHA).
- Always disconnect the power source before working on or near the fan, motor, fixture or junction box.
- Protect the power cord from sharp edges, oil, grease, hot surfaces, chemicals or other objects.
- This unit is recommended for areas where temperature is above 20 °F (-7 °C). Other areas where temperature fall below 20 °F (-7 °C), this unit runs on exhaust only.
- These fans are intended for residential use only.
- A statement to the effect that when the product is to no longer be used, it must not be left in place but removed, to prevent it from possibly falling.

Fig. B

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Date: 06/29/17

DESCRIPTION

The Panasonic Spot Energy Recovery Ventilator uses two sirocco fans driven by a capacitor motor. The motor is designed to have an extended service life with reduced energy consumption. It also incorporates a thermal-cutoff for safety. The grille covering the main body is a spring-loaded, quick-release type. The exhaust air (EA) duct includes barometric damper to prevent backdrafting. And the outdoor air (OA) duct includes electric damper to prevent backdrafting and control the supply air flow.

Energy Recovery Introduction:Compared to an HRV (Heat Recovery Ventilator), the ERV (Energy Recovery Ventilator) 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 and moisture into the incoming cold air in a heating climate and pre-cooling and reducing the humidity of the incoming hot air in a cooling climate. This tempering and treatment of the required ventilation air helps maintain a fresh environment even when the heating or cooling system is not operating.

<Heating Climate>

<Cooling Climate>

UNPACKING

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

SUPPLIED ACCESSORIES

FV-04VE1

Part name	Appearance	Quantity
Grille		1
Suspension bracket Ⅰ		1
Suspension bracket Ⅱ		1
Suspension bracket Ⅲ		1
Screw Ⅰ (ST4.2X12)		1
Screw Ⅱ (ST4.2X10)		1
Long screw (ST4.2X30)		8
Switch Label		1

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DIMENSIONS

FV-04VE1

Unit: inches(mm)

No.	Part name	No.	Part name
1	Grille	8	Junction box cover
2	Adaptor	9	Junction box
3	OA Filter	10	Damper box
4	EA Damper	11	Adaptor insulation
5	Suspension bracket I, II, III	12	Fan body
6	Bracket cover	13	RA Filter
7	OA Damper	14	Recovery core

*1 (For 16 inches O.C. joists and 19 inches O.C. joists use suspension bracket I, II & III. Please install the wooden header accordingly in the case of the 24 inches O.C. joists.)

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Approved with Conditions
Date: 06/29/17

WIRING DIAGRAM

WIRING CONNECTIONS

Fig. C

- Optional setting (20 CFM exhaust):
  If you need to change to 20/10 CFM exhaust, move the connector to the 20 CFM exhaust side of the receptacle.
  Note: selected only at installation (Fig. C)

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Date: 06/29/17

OPERATION

<Main Switch>
- Power on/off for unit.
- Turn off the main switch when the unlt is not in use.

IMPORTANT: Unless you turn off the main switch, the unit will be in standby mode which means it is energized and will consume some electricity.
When turning on or off the main switch, push it completely to the on/off position.

<Operation Mode>

- Normal operation (Supply and exhaust)
- Defrost operation
- Exhaust operation (Exhaust only)

- Defrost operation
  When the outside temperature is between 32°F (0°C) and 20°F (-7°C), OA damper controls defrost operation. Defrost operation means the damper will open for 60 min. for supply and exhaust and close for 30 min. for exhaust only.

- Exhaust operation
  When the outside temperature is under 20°F (-7°C), OA damper controls exhaust operation. Exhaust operation means the damper will open for 10 min. to check outside temperature and close for 60 min. for exhaust only.

Introduction of OA Damper's movement

* The high speed is automatically changed to low speed during exhaust operation.
Another speed and optional setting (high and low) are not changed speed during exhaust operation.

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Approved with Conditions
Date: 06/29/17

RECOMMENDED ZONES MAP

Recommended zones map

As shown on page 7, this unit has an automatic frost prevention mode, which disables the energy recovery function and allows the unit to work as a normal ventilation fan. (Fresh air will not come into the house during frost prevention mode.) The following map outlines the recommended use zones of the United States and Canada for the Panasonic Spot Energy Recovery Ventilator.

Operation Season

Zone A: Unit can perform optimally throughout the year.

Zone B: Unit can perform optimally between March through November.

Zone C: Unit can perform optimally between April through November.

Zone D: Panasonic does not recommend this unit due to extremely cold year-round weather.

Note:

This map is based on average temperature readings over 10 years from 60 major cities in North America. Actual performance may vary depending on annual temperature differences and varying altitudes.

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Approved with Conditions
Date: 06/29/17

INSTALLATION I (JOIST MOUNTING-I)

IMPORTANT:
Remove the tape as shown below:

1. Insert suspension bracket I, II, III and adjust the width to fit inside of the joists. (Fig.1)

Unit: inches

A O.C. joists	B	Insert suspension bracket
16	14 1/2	Refer to Fig. 1
19.2	15.7	
24	22 1/2	Installation II

2. Fix screws tentatively to suspension bracket I & II, so that bracket can be adjustable.
3. Install the suspension bracket and fix the adaptor frame by using long screws (ST4.2X30) (According to Fig.2-1, Fig.2-2 & Fig.2-3 to install the product.) During installation the distance C (bottom flange) should be kept the same as the drywall thickness.

CAUTION

If the bottom flange is not the same level as the drywall, the performance of the unit will be affected.

Unit: inches(mm)

There is the scale on the frame to adjust the C distance which is the same as drywall thickness

Fig.1

Fig.2-1

Fig.2-2

Fig.2-3

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Inspections Division
Approved with Conditions
Date: 06/29/17

INSTALLATION I (JOIST MOUNTING-I) CONTINUED

4. Fix Screw I & II on suspension bracket I and II firmly.

5. Remove Junction box cover. Read the caution label.
   Green wire should be connected to ground wire.
   Black wire should be connected to hot lead wire.
   White wire should be connected to neutral wire.
   Other 3 wires are control lead wires. (Fig.3-1)

CAUTION

DO NOT connect these control lead wires to power supply. Otherwise the PCB will be damaged, then ERV will stop.

Fig. 3-1

6. Remove the caution label before connection. Secure conduit or stress relief to junction box knock-out hole. (Fig.3-2)

7. Refer to wiring diagram (Page 6).
   Use wire nuts to connect the house power wires to the ERV wires. (Fig.3-3)

Fig. 3-2

CAUTION

Mount junction box cover carefully so that the lead wires are not pinched.

Fig. 3-3

Optional air flow setting:
- Factory setting 40/20 CFM exhaust.
- Remove connector and change to 20 CFM receptacle when selecting 20/10 CFM exhaust. (Page 6)

8. Install insulated ducts and secure them to adaptor with UL181A certified pressure sensitive tape or mastics or clamps. (Fig.4-1)

9. Properly insulate the area around the fan body to minimize building heat loss and gain.
   Loose fill or batt insulation can be placed directly over the fan body in the attic. Our cool-running motors do not create enough heat to require special clearance.

Fig.4-1

CAUTION

Insulated duct should be used and sealed to adaptor to avoid the water dripping due to condensation.

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Inspections Division
Approved with Conditions
Date: 06/29/17

INSTALLATION I (JOIST MOUNTING-I) CONTINUED

10.Install outdoor hood and connect with insulated ducts.

(1) Panasonic recommends the use of the optional Wall Cap (Model: FV-WC04VE1) which is easy to install with one wall penetration and keeps the airstreams separate to minimize short-circuiting. (Fig.4-2~5)

For more details,please check the INSTALLATION INSTRUCTIONS of Wall Cap.

Fig.4-2

Fig.4-3 Fig.4-4

Fig.4-5

(2)If separate hoods are used, locate them at least 3' (920 mm) apart. (Fig.4-6)

CAUTION

The intake air side duct must be connected to the outside and at least 6' (2m) away from the exhaust of appliances such as furnace, dryer, fuel burning appliances, etc.

Fig.4-6

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Inspections Division
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INSTALLATION I (JOIST MOUNTING-I) CONTINUED

11. Finish ceiling work. Ceiling hole should be aligned with the edge of the ERV housing under the flange. (Fig.5)
    In attic installation, caulk the body to drywall.

Fig.5

12. Turn the grille to the appropriate direction to fit the triangular supply air side. Insert mounting springs into slots as shown and mount grille to fan body. During installation of the grille, keep the recovery core to the left and keep the RA filter in front from your position. (Fig.6-1)

    Note: If grille has a gap from the ceiling, adjust the grille position to fit the supply air enclosure on the grille with the one on the fan body and push grille. (Fig.6-2)

Fig.6-1

Fig.6-2

Note:
If the grille is mounted in the opposite direction, the grille can not be fitted to the ceiling, so then reverse the grille position and try to mount again.

[Optional]
Attach the provided switch labels (in accessories) on the wall switch (not included) as shown in the diagram for clearer indication.

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Approved with Conditions
Date: 06/29/17

INSTALLATION II (WOODEN HEADER)

1. Install header between joists by using nails or screws. (Fig.7)
   Insert Suspension bracket I,II,III and adjust the width to fit inside of the joist and header. (Fig.1)
   Insert the fan body between joists and header. Make sure the fan body is horizontal and vertical to the joists. (Fig.7)

Fig.7

CAUTION

If the bottom flange is not the same level as the drywall, the performance of the unit will be affected.

2. Follow step 2 to 4 of installation I (Page 9~10) to install the fan body.

3. Follow step 5 to 12 of installation I (Page 10~12) to complete the installation work.

CAUTION

DO NOT connect these control lead wires to power supply. Otherwise the PCB will be damaged, then ERV will stop.

Fig.8

INSTALLATION III (WALL INSTALLATION)

IMPORTANT:
When the product is installed in the wall, the adaptor must face downward. (Fig.9)

1. The space for installation should be set up as below. Fur out the studs as needed to provide a minimum stud bay depth of 8 1/2 inches to allow for one inch of rigid insulation and the ERV body.

A O.C. studs	B
16	14 1/2
19.2	15.7

Unit: inches

Fig.9

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Inspections Division
Approved with Conditions
Date: 06/29/17

INSTALLATION Ⅲ (WALL INSTALLATION) CONTINUED

2. Insert suspension bracket Ⅰ, Ⅱ, Ⅲ and adjust the width to fit inside of the studs. (Fig.1)

3. Fix screws tentatively to suspension bracket Ⅰ & Ⅱ, so that bracket can be adjustable.

4. Install the suspension bracket and fix the adaptor frame by using long screws (ST4.2X30). (Fig.10-1~3) During installation the distance C (bottom flange) should be kept the same as the interior wall thickness.

CAUTION

If the bottom flange is not the same level as the inner face of the interior wall, the performance of the unit will be affected.

There is the scale on the frame to adjust the C distance which is the same as interior wall thickness.

5. Follow step 4 to 9 of installation Ⅰ (Page 10) to complete the installation work.

6. Install outdoor hood and connect with insulated ducts.
(1)Panasonic recommends the use of two optional parts, one is Wall Cap (Model: FV-WC04VE1) which is easy to install with one wall penetration and keeps the airstreams to separate to minimize short-circuiting. Another is Elbow (Model: FV-EB04VE1) which is easy to connect the wall cap. (Fig.11-1~5) For more details, please check the INSTALLATION INSTRUCTIONS of Wall Cap and the INSTALLATION INSTRUCTIONS of Elbow.

Fig.10-1

Fig.10-2

Fig.10-3

Fig.11-1

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Inspections Division
Approved with Conditions
Date: 06/29/17

INSTALLATION Ⅲ (WALL INSTALLATION) CONTINUED

Fig.11-2 Fig.11-3

Fig.11-4

Fig.11-5

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Inspections Division
Approved with Conditions
Date: 06/29/17

INSTALLATION Ⅲ (WALL INSTALLATION) CONTINUED

(2)If separate hoods are used, locate them at least 3' (920 mm) apart. (Fig.11-6)

CAUTION

The intake air side duct must be connected to the outside and at least 6' (2m) away from the exhaust of appliances such as furnace, dryer, fuel burning appliances, etc.

Fig.11-6

7. Finish the interior wall work. Edge of interior drywall or other wall covering must be behind the flange on the ERV housing. (Fig.12)

Fig.12

8. Turn the grille to the appropriate direction to fit the triangular supply air side. Insert mounting springs into slots as shown and mount grille to fan body. During installation of the grille, keep the recovery core to the left and keep the RA filter to the right of your position. (Fig.13-1)
   Note: If grille has a gap from the interior wall, adjust the grille position to fit the supply air enclosure on the grille with the one on the fan body and push grille. (Fig. 13-2)

Fig.13-1

Note:
If the grille is mounted in the opposite direction,the grille can not be fitted to the interior wall, so then reverse the grille position and try to mount again.

Fig.13-2

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Inspections Division
Approved with Conditions
Date: 06/29/17

INSTALLATION Ⅲ (WALL INSTALLATION) CONTINUED

[Optional]
Attach the provided switch labels (in accessories) on the wall switch (not included) as shown in the diagram for clearer indication.

MAINTENANCE (CLEANING)

WARNING

Disconnect power source by switching off at service panel before working on unit.

CAUTION

Routine maintenance must be done every 2 or 3 months.

Clogged filters may cause the condensation on the unit due to air flow reduction.

CAUTION

Never use petrol, benzene, thinner or any other such chemicals for cleaning the ERV.

Do not allow water to enter motor.

Do not immerse resin parts in water over 60°C.

1. Remove the grille. (Squeeze mounting spring and pull down carefully.) (Fig.14)
2. Remove the RA filter from the grille. (Fig.15)

Fig.14

Fig.15

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Inspections Division
Approved with Conditions
Date: 06/29/17

MAINTENANCE (CLEANING) CONTINUED

3. Wash and clean grille. (Use non-abrasive neutral kitchen detergent, wipe dry with new cloth.) (Fig.16)

Fig.16

4. RA filter cleaning:
   Remove the RA filter. (Fig.16) And vacuum-clean. (Fig.17)
   After cleaning, replace the RA filter.

Fig.17

5. OA filter cleaning:
   Remove the OA filter. (Fig.18) And vacuum-clean, wash softly within warm water with non-abrasive neutral detergent and allow to air dry. (Fig.19)
   After cleaning, replace the OA filter according to filter direction on Fig.19. Make sure the OA filter has been installed securely.
   The filter can only be installed in one direction.

Fig.18

CAUTION

Be careful when removing the filter in case condensation water and/or dust has accumulated and may fall out.

Fig.19

6. Remove dust and dirt from fan body using a vacuum cleaner. (Fig.20)

Fig.20

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MAINTENANCE (CLEANING) CONTINUED

7. Recovery core cleaning:
   ① Turn the knob to the right.(Fig.21)
   ② Rise up the handles.(Fig.22)
   ③ Pull the recovery core straight down, and slowly remove. (Fig.22)

CAUTION

Be careful when removing the filter in case condensation water and/or dust has accumulated and may fall out.

④ Vacuum-clean carefully. (Fig.23)

IMPORTANT:
When cleaning the recovery core, do not push strongly by the nozzle. It may get damaged.

⑤ Replace the recovery core according to the direction mark "△" and turn the knob to lock in place.

CAUTION

Insert the recovery core completely then turn the knob to prevent the core dropping.

CAUTION

Do not wash the recovery core to prevent causing damage to the recovery core.

Make sure that the knob holds the recovery core securely.

8. Turn the grille to the appropriate direction to fit the triangular supply air side. Insert mounting springs into slots as shown and mount grille to fan body. During installation of the grille, keep the recovery core to the left and keep the RA filter in front from your position. (Fig.24)

   Note: If grille has a gap from the ceiling, adjust the grille position to fit the supply air enclosure on the grille with the one on the fan body and push grille. (Fig.25)

Note:
If the grille is mounted in the opposite direction,the grille can not be fitted to the ceiling or the wall, so then reverse the grille position and try to mount again.

Fig.21

Fig.22

Fig.23

Fig.24

Fig.25

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SPECIFICATIONS

<Ventilation Performance>

• Factory setting for 40 CFM

Model	Air Direction	V	Hz	Duct	Speed	Gross Air Deliver at 0.1"WG (cfm)		Power Consumption (W)	Noise (sone)	Weight lb.(kg)
						Exhaust	Supply	Fan Unit		
FV-04VE1	Exhaust & Supply	120	60	4"X2	High	40	30	24	0.8	20.5 (9.3)
					Low	20	20	21	<0.3	

• Optional setting for 20 CFM

Air Direction	V	Hz	Duct	Speed	Gross Air Deliver at 0.1"WG (cfm)		Power Consumption (W)	Noise (sone)
					Exhaust	Supply	Fan Unit	
Exhaust & Supply	120	60	4"X2	High	20	20	21	<0.3
				Low	10	10	17	N/A

Selected only at installation. (Refer to Page 6)

<Energy Performance>

Mode	Supply Temperature		Net Air Flow		Total Recovery Efficiency (%)	Apparent Sensible Effectiveness (%)
	°F	°C	l/S	cfm		
Heating	32	0	14	30	N/A	66
Cooling	95	35	14	29	36	N/A

1. The testing of the ventilation performance is in general accordance with HVI procedures 915 and 916.
2. The testing of the energy performance is 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 1-866-292-7292 (USA) or 1-800-669-5165 (Canada).

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