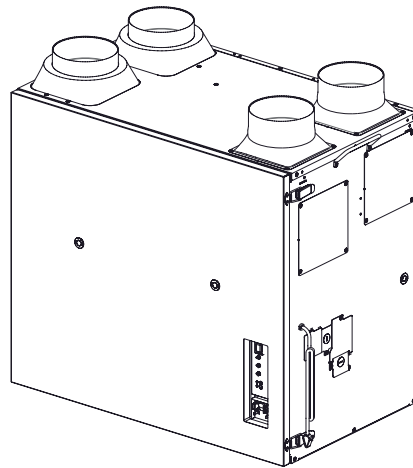


Service Manual

Energy Recovery Ventilator
(North America Market)

FV-20VEC1



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacture. We suggest to handle such parts after the static electricity prevention. It is forbidden to touch the PCB parts by bare hands during the repairing process.

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1. 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>

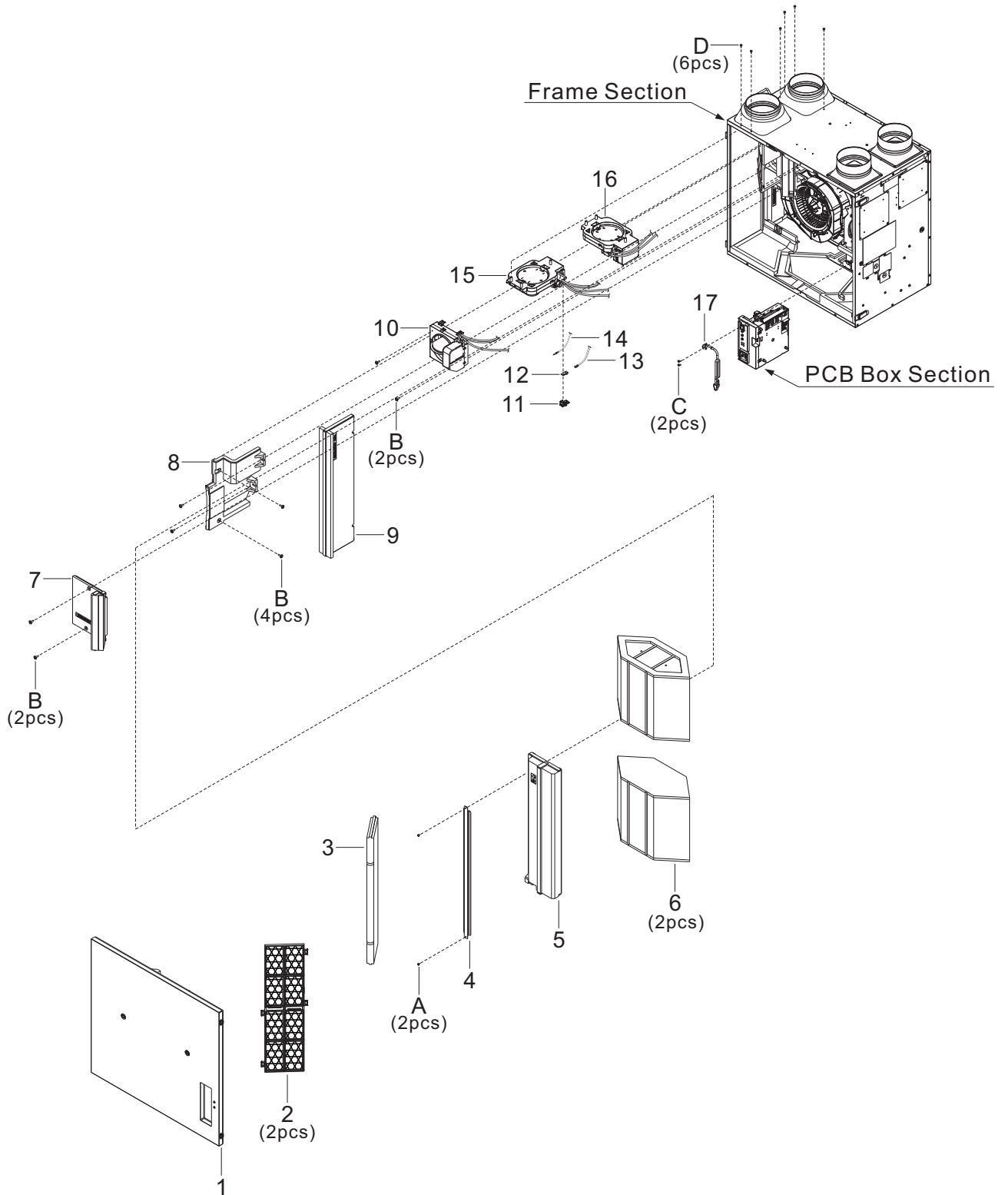
Model No.	Mode	Supply temperature		Net air flow		Power consumption (W)	Sensible recovery efficiency
		°F	°C	L/s	CFM		
FV-20VEC1	Heating	32	0	32	67	22	83%
		32	0	59	124	46	77%
		32	0	80	170	92	73%
		-13	-25	31	66	46	67%
		-13	-25	51	107	104	61%
	Cooling	Total recovery efficiency					
		95	35	34	71	25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

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

2. Parts Identification

FV-20VEC1

Main Body Section



2. Parts Identification

FV-20VEC1

Main Labels

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 (Fig. 1).
- Electric shock may result. Disconnect power by switching off main switch first, then main switch and unplug the power plug before working on unit when replacing the jumper cable with wall switch.
- The installation direction should refer to Fig. 2 (adapter segment) when wall mounting.
- Periodic maintenance must be performed every 2 or 3 months. Clogged filters may cause condensation on the unit due to air filter reduction.
- Please wear gloves to avoid pinching fingers during maintenance.
- Please pay attention to dust, condensation water or parts that may drip down when the cover is opened.

MAINTENANCE PROCEDURE

- Open the frame cover by unlatching the latches (Fig. 3).
- Clean DA filter and RA filter with vacuum cleaner (Fig. 4).
- Install and close frame cover by locking the latches (Fig. 5).
- Contact power, press filter reset button with sound of "Pi" then filter indicator and buzzer sound will be off (Fig. 6).

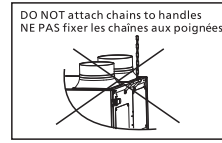
ATTENTION

- Risque de choc électrique. Avant de travailler sur l'appareil lorsque l'unité est en mode par défaut, coupez l'alimentation avec l'interrupteur principal d'abord, puis débranchez la fiche d'alimentation (Fig. 1).
- Risque de choc électrique. Avant de travailler sur l'appareil pour remplacer la connexion temporaire par un interrupteur mural, coupez l'alimentation avec l'interrupteur mural d'abord, puis l'interrupteur principal et débranchez la fiche d'alimentation.
- Le sens d'installation doit se rapporter à la Fig. 2 (adaptateur orienté vers le haut) lors de la fixation murale.
- Une maintenance périodique doit être réalisée tous les 2 à 3 mois, car des filtres obstrués peuvent entraîner de la condensation dans l'appareil à cause de la réduction du flux d'air.
- Portez des gants afin d'éviter de vous pincer les doigts durant la maintenance.
- Faites attention à la poussière, à la condensation ou aux pièces qui peuvent tomber lors de l'ouverture du couvercle.

PROCÉDURE DE MAINTENANCE

- Ouvrez le couvercle en déverrouillant les verrous (Fig. 3).
- Nettoyez les filtres AA et AR avec un aspirateur (Fig. 4).
- Réinstallez le couvercle puis verrouillez les verrous (Fig. 5).
- Rebranchez l'appareil, appuyez sur le bouton de réinitialisation du filtre, un bip "Pi" se fait entendre, le signal du filtre et le buzzer sont désactivés (Fig. 6).

Volume (CFM) Unité (CFM)	Press (Pa)	Staté (Pa)
40	25	29
60	38	38
100	40	40
120	50	50
140	60	60
160	75	75
180	85	85
200	100	100



TXD RXD 0V 5V

WALL SWITCH
INTERRUPTEUR MURAL

BOOST SWITCH
BOOST MURAL

HVAC / AHU
CVCA / AHU

18

22

19

23

20

21

24

Panasonic
Energy Recovery Ventilator
Ventilateur récupérateur d'énergie

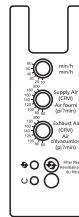
Model No. FV-20VEC1
120 V - 60 Hz 2.30 A

Serial No. []

© Panasonic Corporation of North America
Made in China/Fabrique en Chine

- FOR RESIDENTIAL INSTALLATION ONLY. POUR L'INSTALLATION À DOMICILE UNIQUEMENT.
- Electronically Protected. Protection électronique.
- Use Copper Conductors Only. Utilisez uniquement des conducteurs en cuivre.
- Not for Outdoor Use. N'utilisez pas à l'extérieur.
- Leave on unless outdoor air quality is very poor. Laissez en marche à moins que l'air extérieur ne soit de piètre qualité.

Mode	Supply temperature (°F)	Net air flow (L/s)	Power consumption (W)	Sensible recovery efficiency (%)
Heating	32	0	32	83%
	32	0	50	77%
	32	0	80	75%
	13	25	31	67%
	13	25	51	61%
	13	25	107	61%
Cooling	95	35	34	71%
	95	35	64	61%

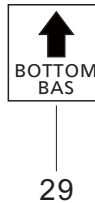


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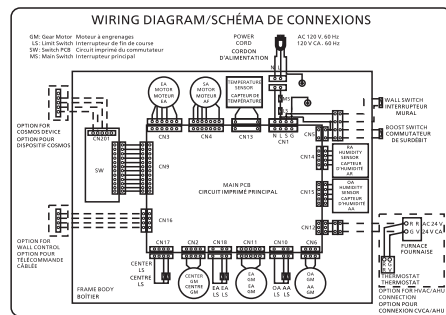


WARNING ELECTRICAL CORDS CAN BE HAZARDOUS

- Misuse Can Result in Fire or Death.
- Cord Shall be Secured Out of the Way.
- Avoid Overheating, Incoiled Cord and Do Not Cover It With Any Material.
- Do not Walk on Cord.

AVERTISSEMENT LES CORDONS ELECTRIQUES PEUVENT ETRE DANGEREUX

- Une mauvaise utilisation peut causer un incendie ou la mort.
- Le cordon doit être bien fixé à l'abri du passage.
- Évitez le surchauffe. Déroulez le cordon et ne le couvrez pas avec d'autres matériaux.
- Ne marchez pas sur le cordon.



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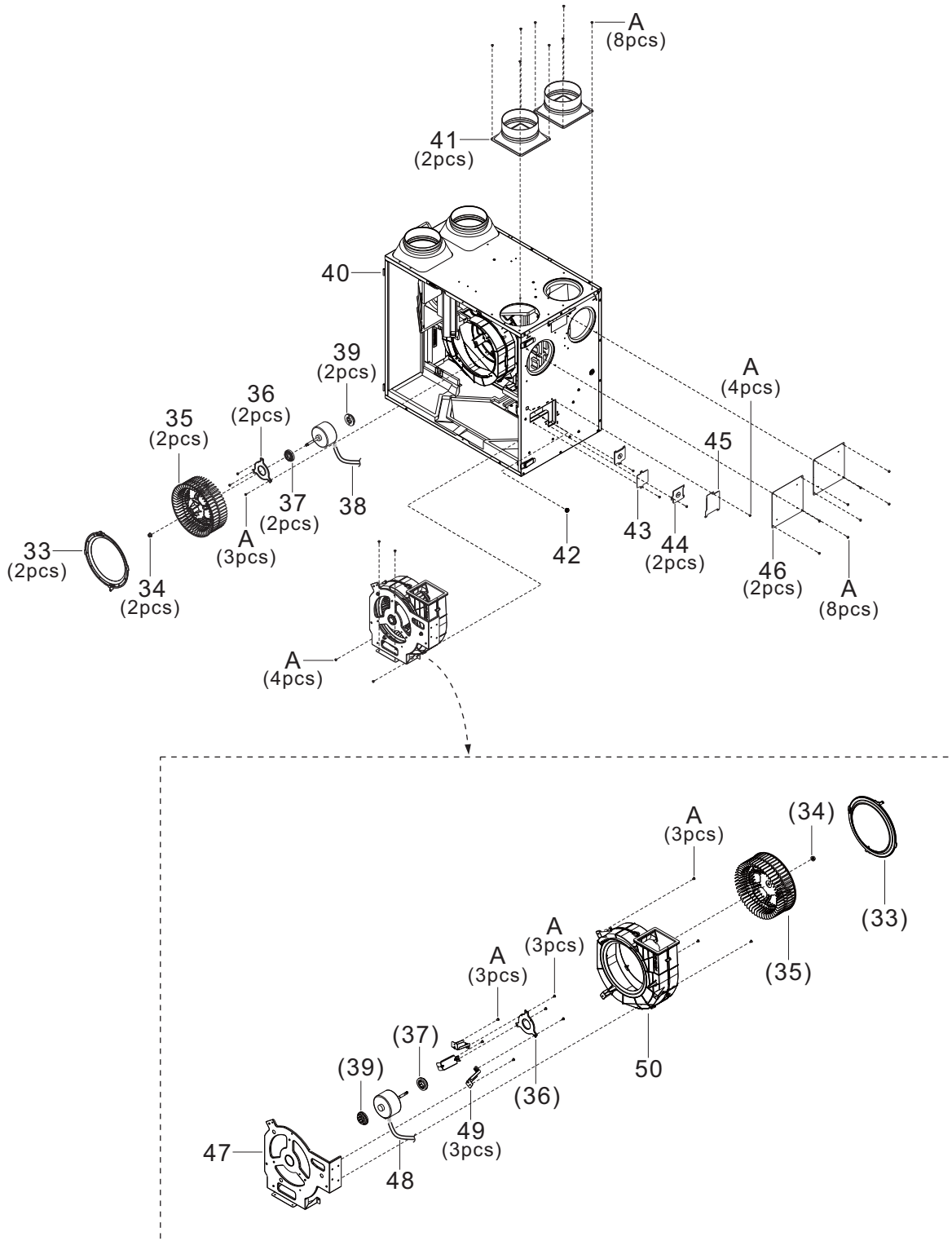
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2. Parts Identification

FV-20VEC1

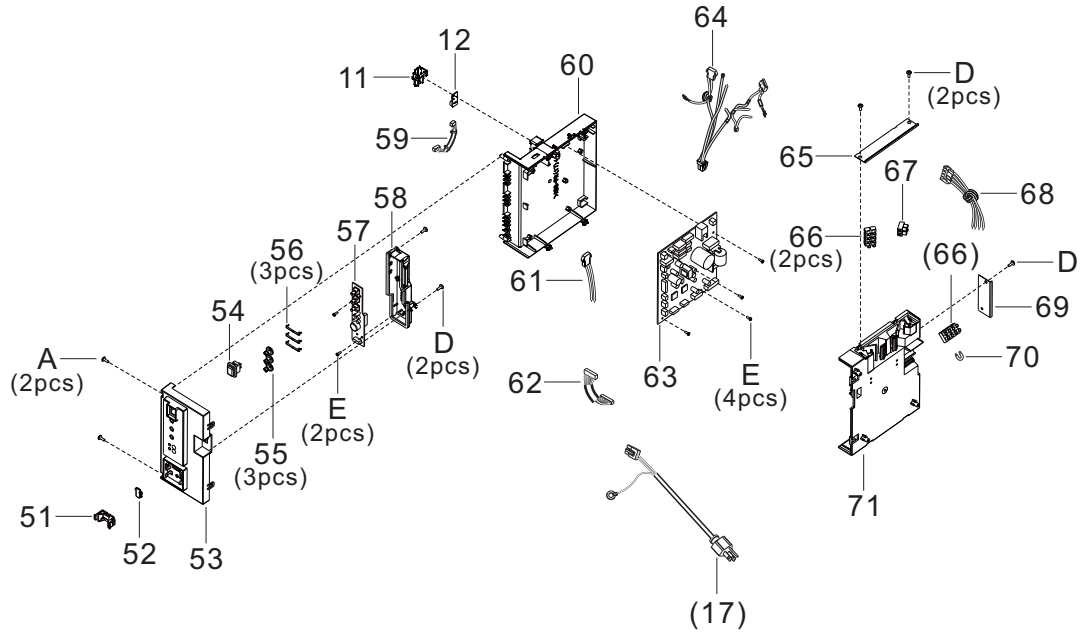
Frame Section



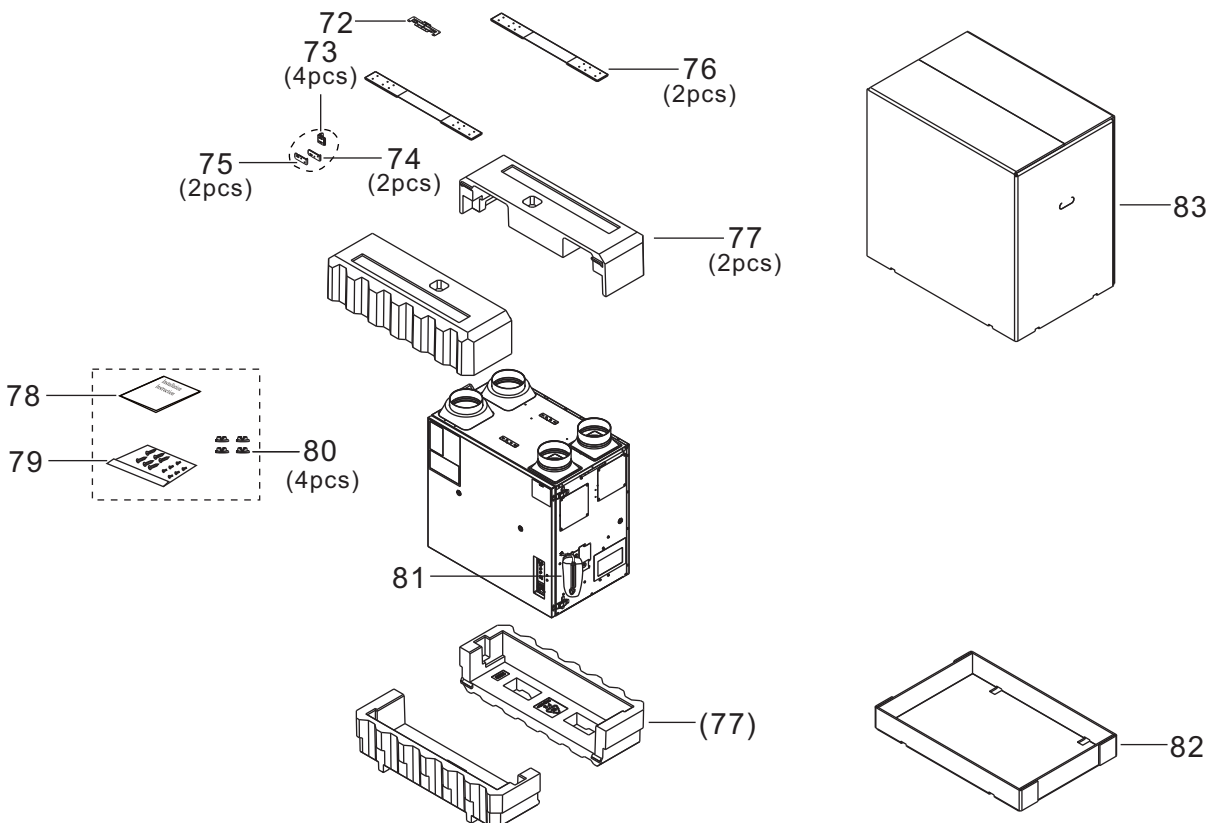
2. Parts Identification

FV-20VEC1

PCB Box Section

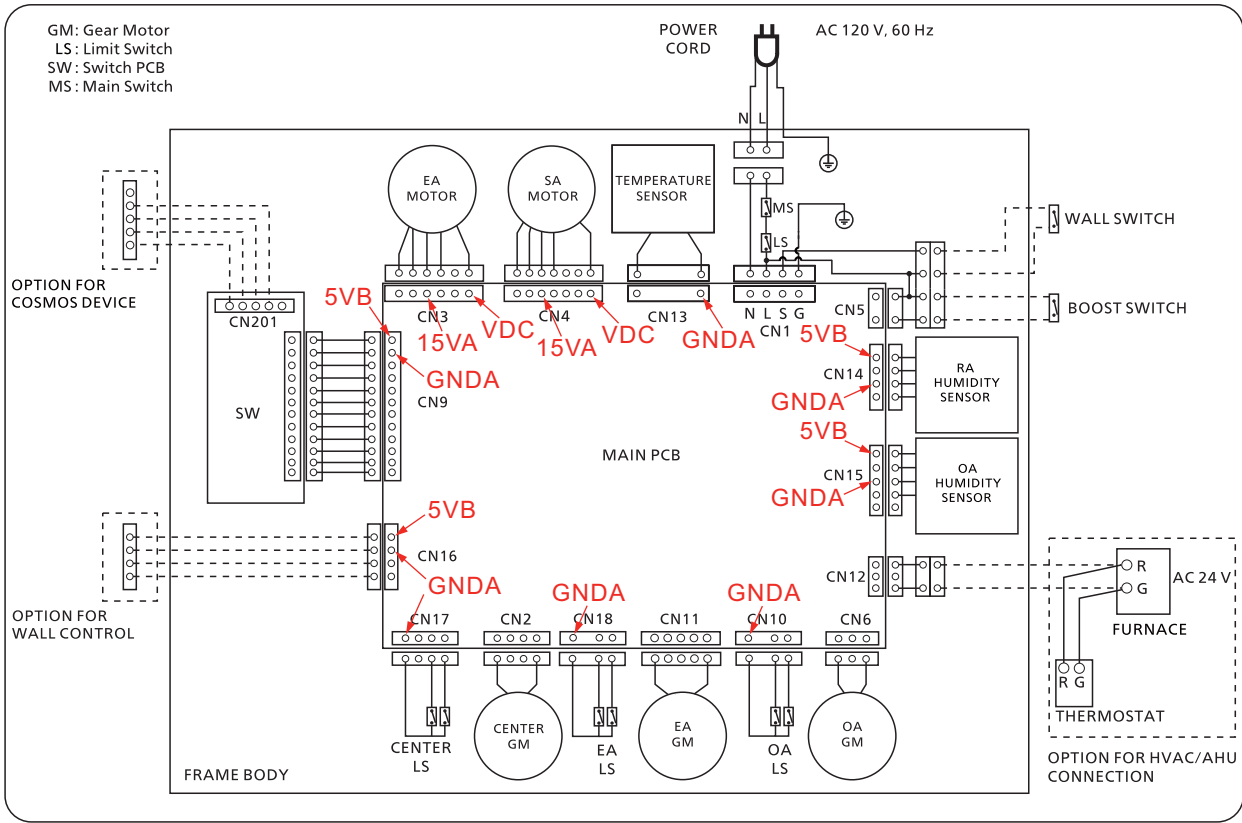


Packing Section



3. Wiring diagram

FV-20VEC1



4. Parts List

FFV-20VEC1

Main Body Section

No.	Part No.	Part Name	Q'ty	Remark
1	FFV1600177S	Front Cover Assy	1	
2	FFV1610099S	RA Filter Assy	1	
3	FFV1610100S	OA Filter	1	Merv 13 Filter
(3)	FFV1610109S	OA Filter	1	Merv 8 Filter
(3)	FFV1610110S	OA Filter	1	HEPA Filter
4	FFV3402227S	Element Support	1	
5	FFV3402228S	Element Cover Pad	1	
6	FFV3402229S	Element Assy	2	
7	FFV3740059S	Maintenance Pad	1	
8	FFV1610101S	EA Case Pad	1	
9	FFV3740060S	Middle Pad	1	
10	FFV4710450S	Center Damper	1	⚠
11	FFV5500042S	Sensor Cap	1	
12	FFV0010275S	Humidity Sensor	1	⚠
13	FFV1610102S	OA Humidity Sensor Wire	1	⚠
14	FFV5820043S	Temperature Sensor	1	⚠
15	FFV1610103S	OA Damper	1	⚠
16	FFV1610104S	EA Damper	1	⚠
17	FFV4620135S	Power Cord	1	⚠
A	FFV7000074S	Truss Tap Screw	2	
B	FFV7030013S	Screw	8	
C	FFV7030008S	Pan Screw	2	⚠
D	FFV7000089S	Truss Tap Screw	6	

Main Labels

No.	Part No.	Part Name	Q'ty	Remark
18	FFV3740061S	Maintenance Label	1	
19	FFV0010293S	Handle Warning Label	1	
20	FFV1610105S	OA RA Adapter Label	1	
21	FFV1610106S	EA SA Adapter Label	1	
22	FFV3400174S	LCD Connector Label	1	
23	FFV5580031S	Wall Switch Label	1	
24	FFV0000189S	AHU Label	1	
25	FFV4021008S	Name Plate	1	
26	FFV5530077S	Switch Label	1	
27	FFV3402194S	Earth Label	1	
28	FFV2260002S	HVI Mark	1	
29	FFV3402230S	Element Down Label	1	
30	FFV3402231S	Element Top Label	1	
31	FFV4690029S	Power Cord Label	1	
32	FFV6730117S	Wiring Label	1	

4. Parts List

FV-20VEC1

Frame Section

No.	Part No.	Part Name	Q'ty	Remark
33	FFV4300135S	Orifice	2	
34	FFV7020022S	Nut	2	
35	FFV0400140S	Blade	2	
36	FFV3740062S	Motor Holder	2	
37	FFE08112001S	Holder Gum (A)	2	
38	FFV1610107S	EA Moter	1	⚠
39	FFE08121701S	Holder Gum(B)	2	
40	FFV1600178S	Frame Body	1	
41	FFV0000192S	Adapter Assy	2	
42	FFV0720014S	Cord Bushing	1	
43	FFV3740063S	Maintenance Plate 2	1	
44	FFV6710059S	Wiring Cover Assy	2	
45	FFV3740064S	Maintenance Plate 1	1	
46	FFV5690035S	Side Panel Assy	2	
47	FFV3740065S	Motor Base	1	
48	FFV3740066S	Motor Assy	1	⚠
49	FFV3740067S	Motor Connector	3	
50	FFV0790137S	Casing Assy	1	
A	FFV7000074S	Truss Tap Screw	36	

PCB Box Section

No.	Part No.	Part Name	Q'ty	Remark
11	FFV5500042S	Sensor Cap	1	
12	FFV0010275S	Humidity Sensor	1	⚠
51	FFV0900063S	Connector Cover	1	
52	FFV3400175S	Limit Switch Pad	1	
53	FFV5530078S	Switch PCB Cover	1	
54	FFV5580017S	Switch Assy	1	⚠
55	FFV5580010S	Switch Knob	3	
56	FFV5580011S	Switch Spring	3	
57	FFV5530079S	Switch PCB Assy	1	⚠
58	FFV5530080S	Switch PCB Base	1	
59	FFV1610108S	RA HUM Sensor Wire	1	⚠
60	FFV4700105S	PCB Box	1	
61	FFV0000164S	AHU Wire	1	⚠

4. Parts List

FV-20VEC1

PCB Box Section

No.	Part No.	Part Name	Q'ty	Remark
62	FFV5530081S	Switch PCB Wire	1	
63	FFV3740068S	Main PCB Assy	1	
64	FFV4620136S	Power Connector Wire	1	
65	FFV4620137S	Partition Plate 2	1	
66	FFV5820040S	Terminal	2	4 Pin
67	FFV5820038S	Terminal	1	2 Pin
68	FFV3400175S	LCD Wire	1	
69	FFV4690028S	Partition Plate	1	
70	FFV2800028S	Jumper Cable	1	
71	FFV4620138S	PCB Cover	1	
D	FFV7000089S	Truss Tap Screw	5	
E	FFV7000102S	Pan Tap Screw	6	










Packing Case Assy

No.	Part No.	Part Name	Q'ty	Remark
72	FFV2220077S	Hanger	1	
73	FFV3400176S	L Plate 1	4	
74	FFV0790138S	Celling Installation Plate 2	2	
75	FFV0790139S	Celling Installation Plate 1	2	
76	FFV5580032S	Wall Installation Bracket	2	
77	FFV4620139S	Packing Pad Top	2	
78	FFV2540254S	Installation Instructions	1	English&Spanish,For America Market
(78)	FFV2540255S	Installation Instructions	1	English&French,For Canada Market
79	FFV0010294S	Accessory For Screws	1	
80	FFV5580023S	Screw Cover	4	
81	FFV4650038S	Poly Cover	1	
82	FFV4620140S	Bottom Case	1	
83	FFV9001450S	Packing Case Assy	1	

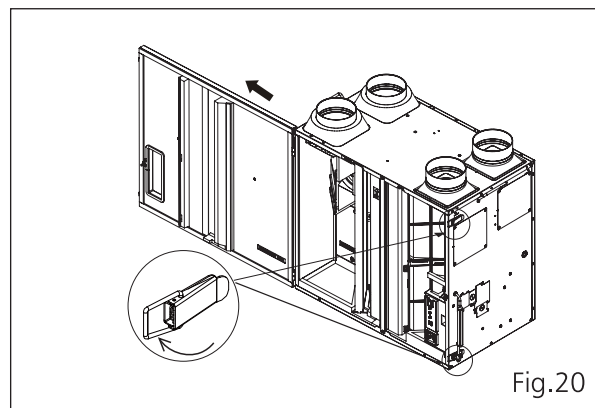
5. Maintenance And Troubleshooting

MAINTENANCE

CAUTION

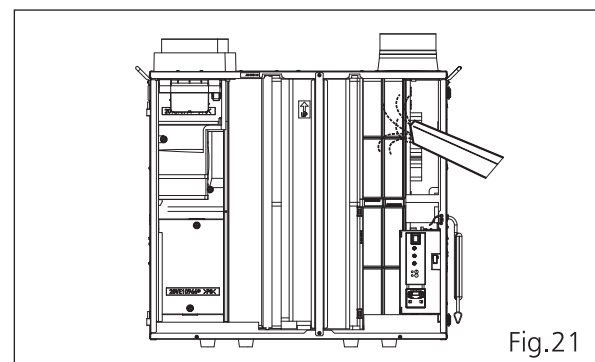
-  Electric shock may result. Disconnect power by switching off main switch first, then unplug the power plug before working on unit when it is in default mode.
-  Electric shock may result. Disconnect power by switching off wall switch first, then main switch and unplug the power plug before working 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)



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

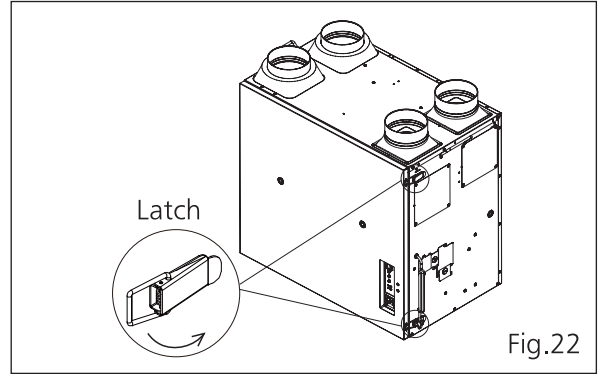


3. Clean OA filter and RA filter with vacuum cleaner. (Fig.21)

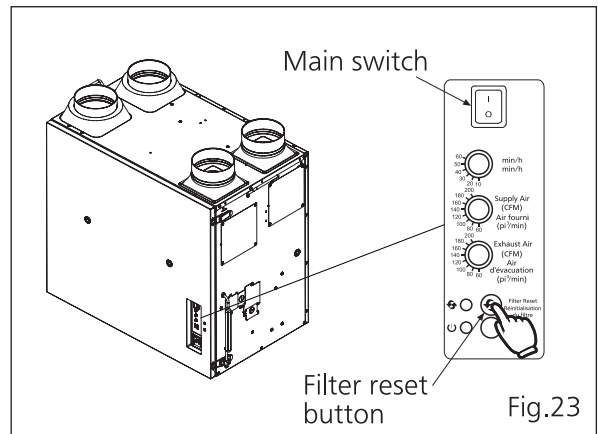
5. Maintenance And Troubleshooting

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)



5. Maintenance And Troubleshooting

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.

5. Maintenance And Troubleshooting

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 ≤ -22 °F (-30 °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 °F (-10 °C), the product will restrict air volume automatically to protect energy recovery core.

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