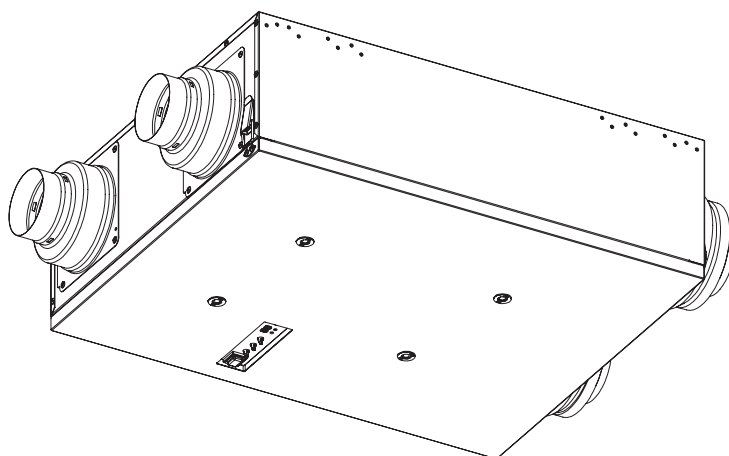


# Service Manual

Energy Recovery Ventilator

(North America Market)

FV-10VEC2H



## 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 individual 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 Part List. It is essential that these critical parts are replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission the manufacturer. We suggest to handles 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) | Weight lb.(y) |
|------------|------------------|-------------|----------------|-------|-----------------|--------------------|--------|-----------------------|---------------|
|            |                  |             |                |       |                 | Exhaust            | Supply | Fan unit              |               |
| FV-10VEC2H | Exhaust & Supply | 120         | 60             | 4"/6" | 0.1"WG          | 100                | 100    | 81                    | 50 (22.4)     |
|            |                  |             |                |       | 0.4"WG          | 100                | 100    | 90                    |               |

## <Energy Performance>

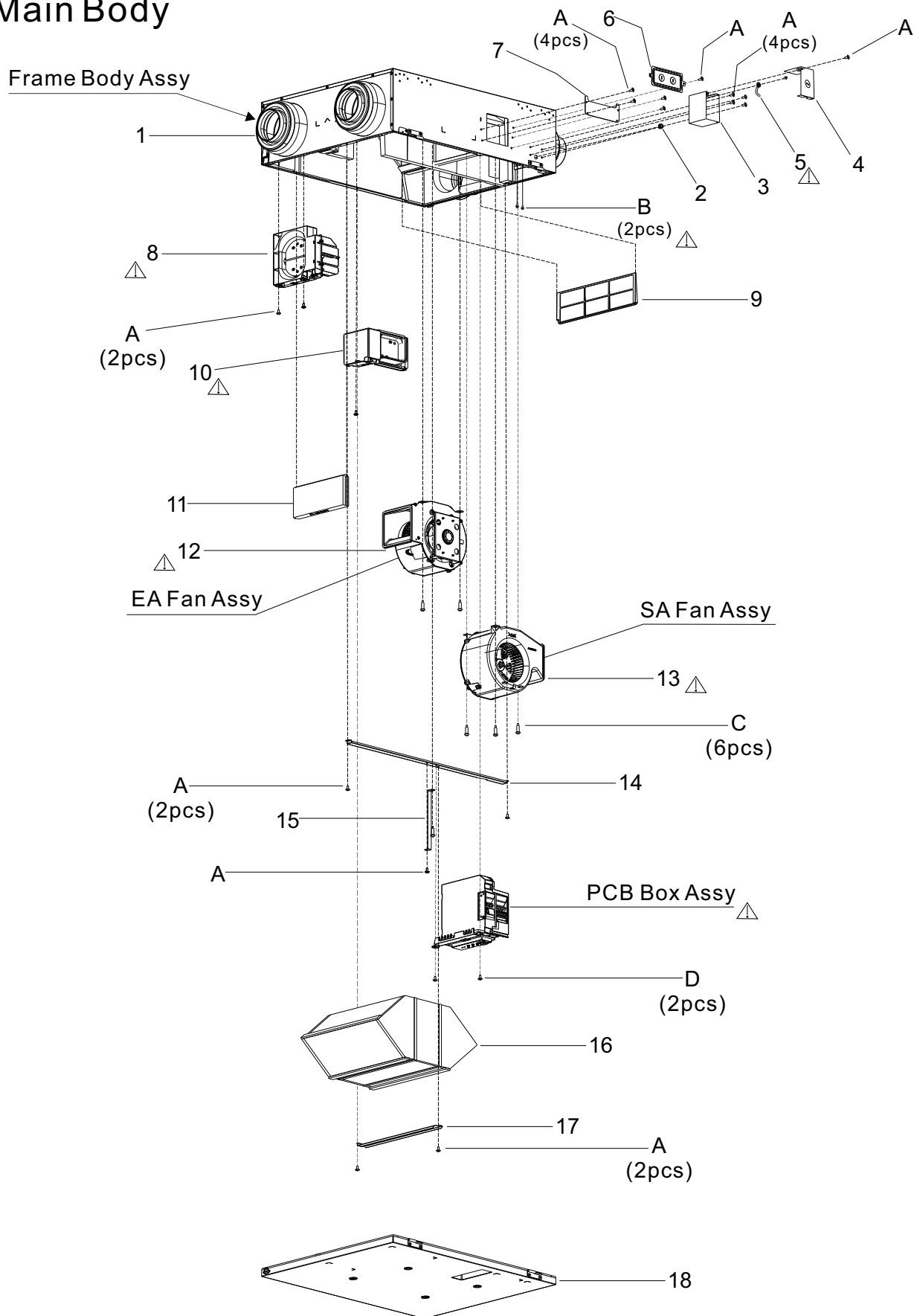
| Model No.  | Mode    | Supply temperature |     | Net air flow |     | Power consumption (W) | Sensible recovery efficiency | Apparent sensible effectiveness | Net moisture transfer |
|------------|---------|--------------------|-----|--------------|-----|-----------------------|------------------------------|---------------------------------|-----------------------|
|            |         | °F                 | °C  | L/s          | CFM |                       |                              |                                 |                       |
| FV-10VEC2H | Heating | 32                 | 0   | 25           | 53  | 29                    | 80%                          | 83%                             | 0.78                  |
|            |         | 32                 | 0   | 31           | 66  | 39                    | 77%                          | 81%                             | 0.74                  |
|            |         | 32                 | 0   | 40           | 85  | 68                    | 73%                          | 77%                             | 0.71                  |
|            |         | -13                | -25 | 27           | 57  | 77                    | 65%                          | 67%                             | 0.71                  |
|            |         | -13                | -25 | 30           | 64  | 100                   | 56%                          | 60%                             | 0.58                  |
|            | Cooling |                    |     |              |     |                       | Total recovery efficiency    |                                 |                       |
|            |         | 95                 | 35  | 23           | 49  | 32                    | 60%                          |                                 |                       |
|            |         | 95                 | 35  | 31           | 66  | 42                    | 55%                          |                                 |                       |

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

## 2. Parts Identification

FV-10VEC2H

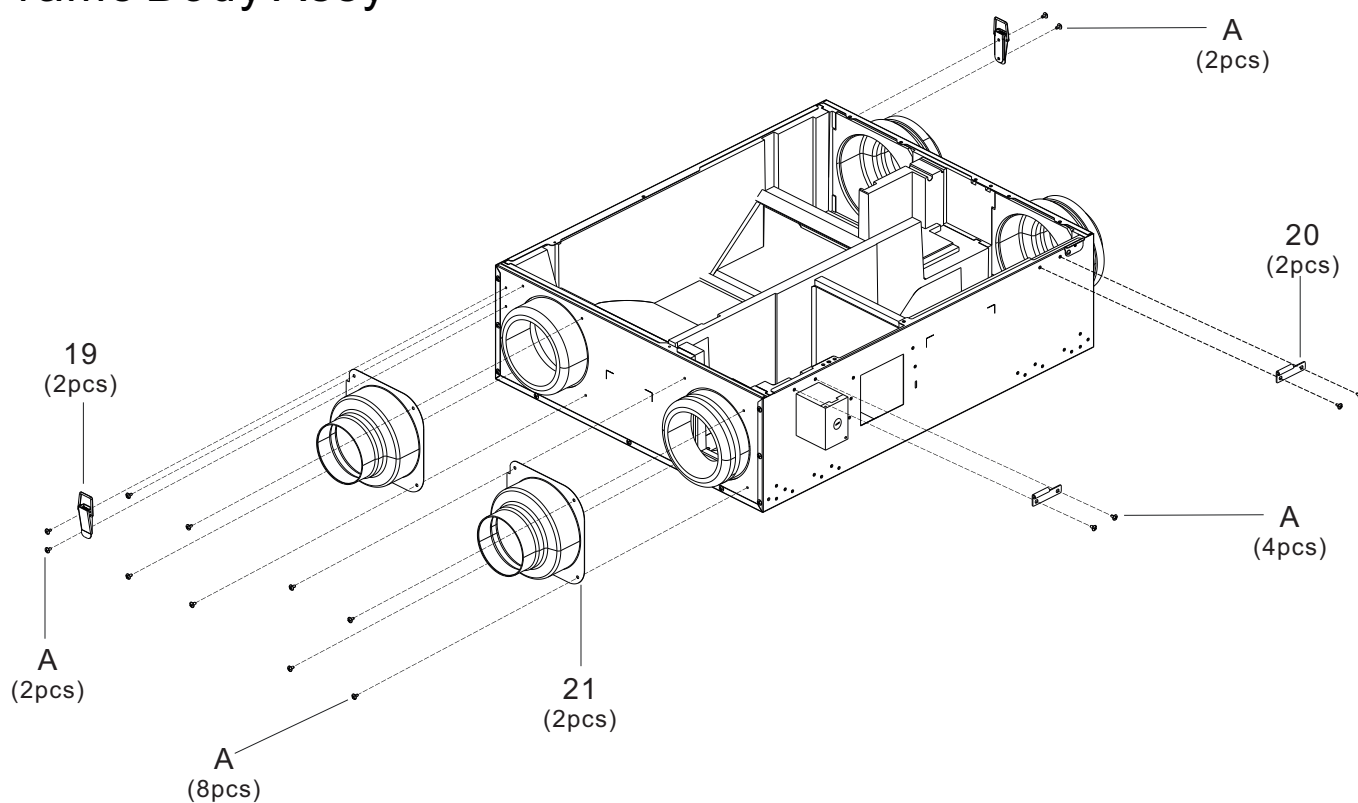
### Main Body



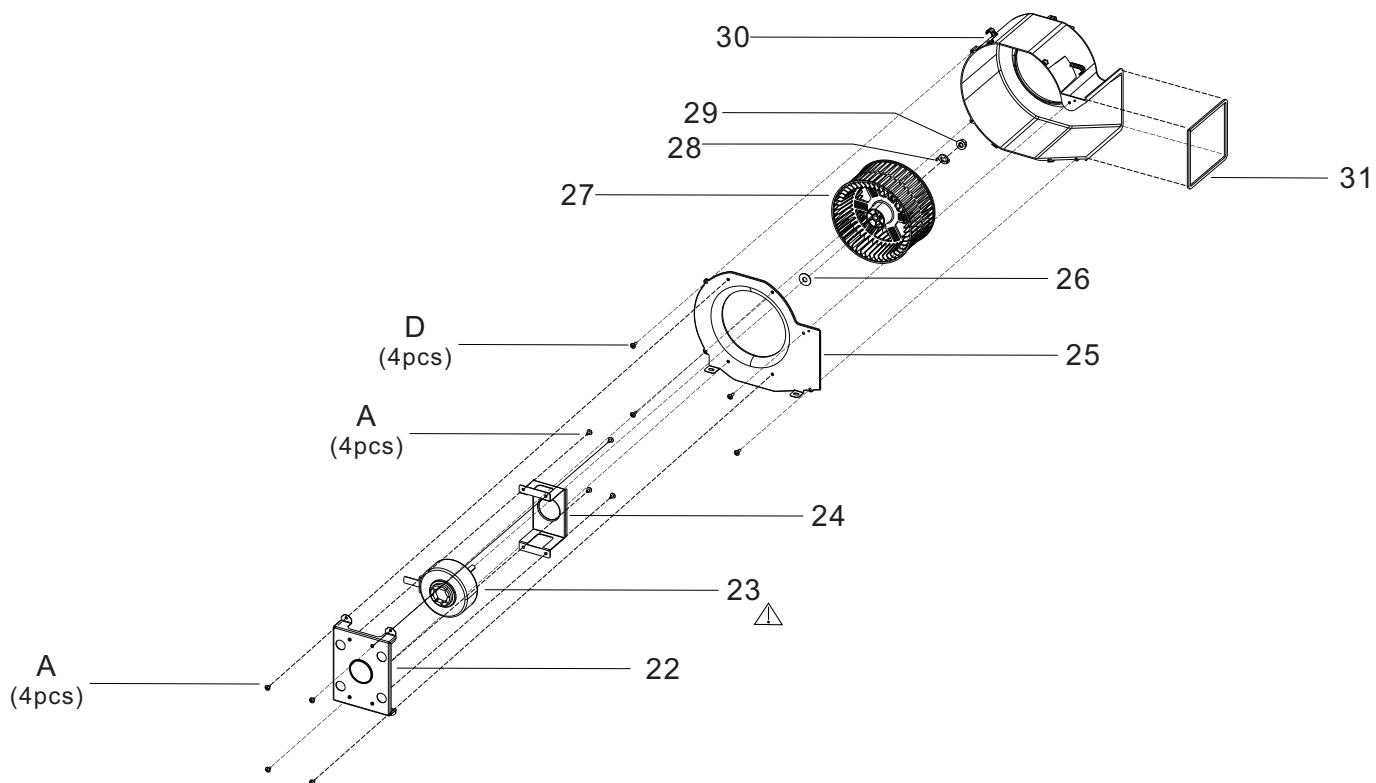
## 2. Parts Identification

FV-10VEC2H

### Frame Body Assy



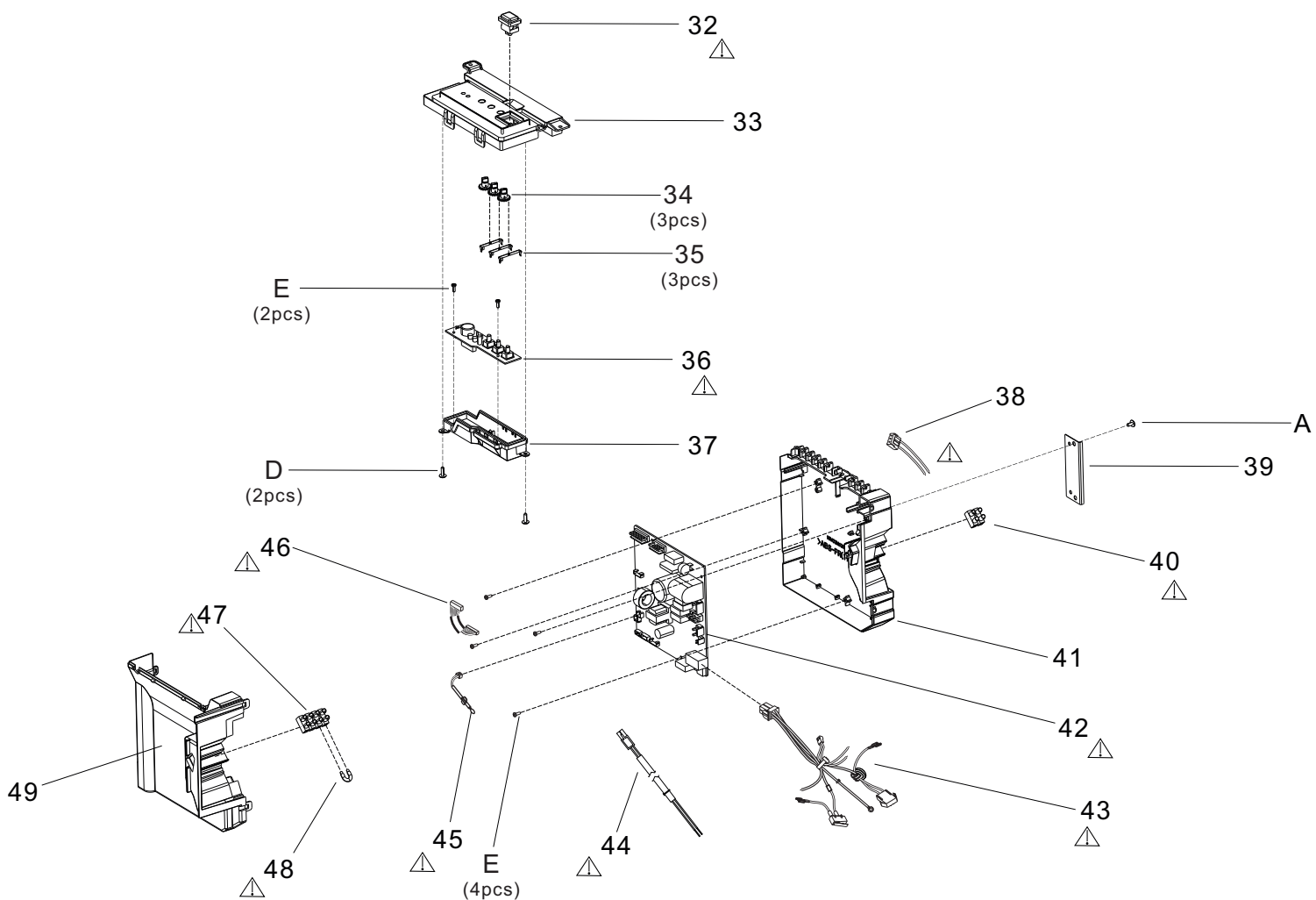
### SA Fan Assy / EA Fan Assy



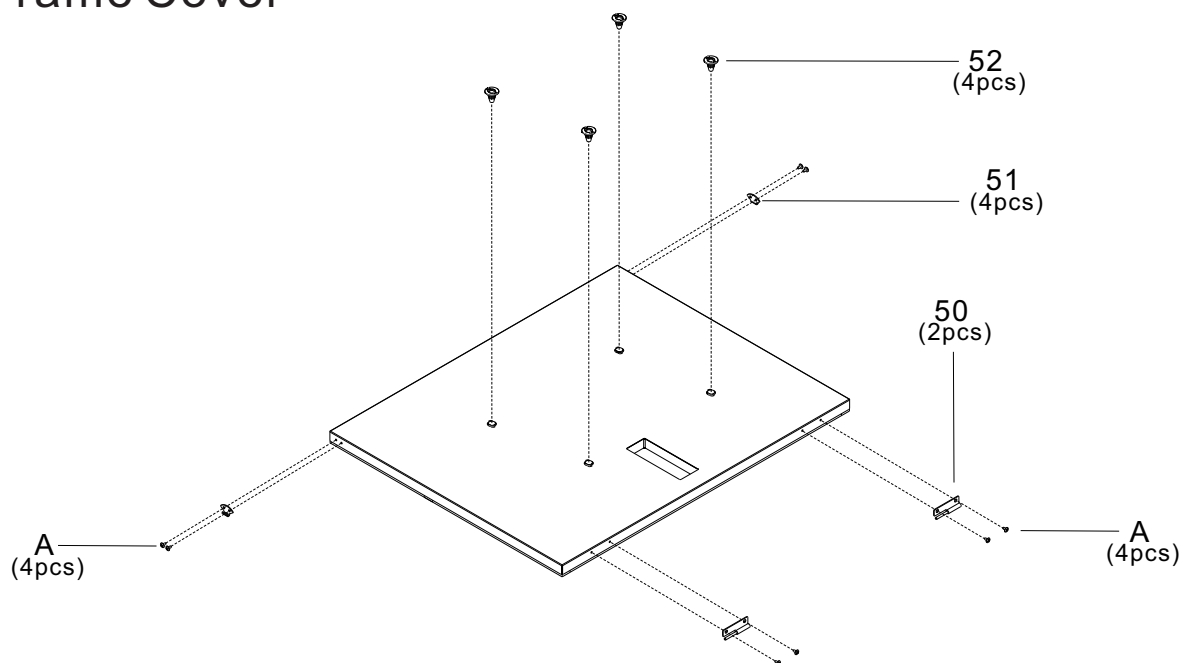
## 2. Parts Identification

FV-10VEC2H

### PCB Box Assy



### Frame Cover



## 2. Parts Identification

FV-10VEC2H

### Packing Accessories

#### CAUTION

- Electric shock may result. Disconnect power by switching off main switch first, then unplug before working on unit when it is in default mode. (Fig.1)
- Electric shock may result. Disconnect power by switching off wall switch first, then main switch and unplug before working on unit when replacing the jumper cable with wall switch.
- The installation direction should refer to Fig.2 when wall mounting.
- 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 water or parts that may drop down when the cover is opened.

#### MAINTENANCE PROCEDURE

- Open the frame cover by unlocking the latches. If not convenient for maintenance you also can turn the lock plate 90° and remove the frame cover. (Fig.3)
- Remove OA filter and RA filter to clean with vacuum cleaner. (Fig.4)
- Clean energy recovery core with vacuum cleaner. (Fig.5)
- Replace the OA and RA filters. Make sure the RA filter adapts to the convex and the direction of the arrow on the OA filter is in the same direction as the air flow displayed on the nearby label. (Fig.6)
- Reinstall and close frame cover by locking the latches then reset the lock plate. (Fig.7)
- Connect power, press filter reset button with sound of "beep" then filter indicator and buzzer sound will be off. (Fig.8)

#### ATTENTION

- Risque de choc électrique. Coupez l'alimentation avec l'interrupteur principal d'abord, puis débranchez avant de travailler sur l'appareil lorsqu'il est en mode par défaut. (Fig.1)
- Risque de choc électrique. Coupez l'alimentation avec l'interrupteur mural d'abord, puis l'interrupteur principal et débranchez avant de travailler sur l'appareil pour remplacer la connexion temporaire par un interrupteur mural.
- Le sens d'installation doit se rapporter à la Fig.2 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'unité à cause de la réduction du flux d'air.
- Veillez porter des gants pour éviter de vous pincer les doigts pendant la maintenance.
- Veillez faire attention à la poussière, à la condensation ou aux pièces qui pourraient tomber lorsque vous ouvrez le couvercle.

#### PROCÉDURE DE MAINTENANCE

- Ouvrez le couvercle en déverrouillant les verrous. Si cela n'est pas pratique pour la maintenance, vous pouvez également tourner la plaque de verrouillage à 90° et retirer le couvercle. (Fig.3)
- Enlevez les filtres AA et AR pour les nettoyer avec un aspirateur. (Fig.4)
- Nettoyez le noyau de récupération avec un aspirateur. (Fig.5)
- Remplacez les filtres AA et AR. Assurez-vous que le filtre AR s'adapte au convexe et que le sens de la flèche sur le filtre AA est dans la direction du flux d'air affiché sur l'étiquette juste à côté. (Fig.6)
- Reinstallez le couvercle puis verrouillez les verrous et fermez la plaque de verrouillage. (Fig.7)
- Branchez l'appareil, appuyez sur le bouton de réinitialisation, un bip "beep" se fait entendre, le voyant du filtre et le son sont désactivés. (Fig.8)

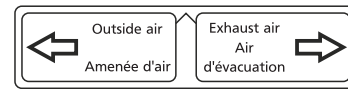
The relation between volume and differential pressure (reference)  
La relation entre le débit et la pression différentielle (référence)

Check the differential pressure with a manometer. Vérifiez la pression différentielle avec manomètre.

The numbers in this table are the values after installation. Les chiffres indiqués dans ce tableau correspondent aux valeurs après l'installation.

| Volume (CFM)<br>Débit (pi³/min) | Fresh (Pa)<br>Frais     |                       | Stale (Pa)<br>Vicié     |                       |
|---------------------------------|-------------------------|-----------------------|-------------------------|-----------------------|
|                                 | FV-10VEC2<br>FV-10VEC2H | FV-10VE2<br>FV-10VE2H | FV-10VEC2<br>FV-10VEC2H | FV-10VE2<br>FV-10VE2H |
| 50                              | 35                      | 35                    | 55                      | 70                    |
| 60                              | 45                      | 45                    | 75                      | 90                    |
| 70                              | 50                      | 50                    | 95                      | 115                   |
| 80                              | 65                      | 65                    | 120                     | 145                   |
| 90                              | 80                      | 80                    | 155                     | 195                   |
| 100                             | 90                      | 90                    | 175                     | 225                   |

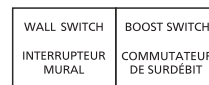
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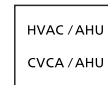
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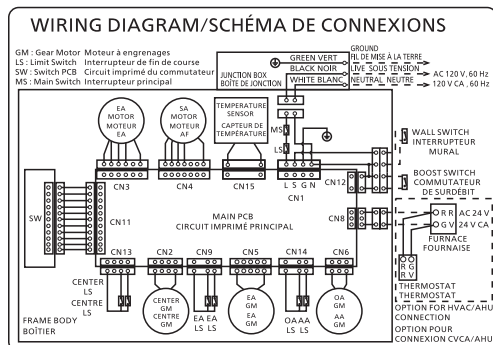
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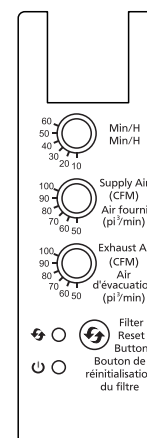
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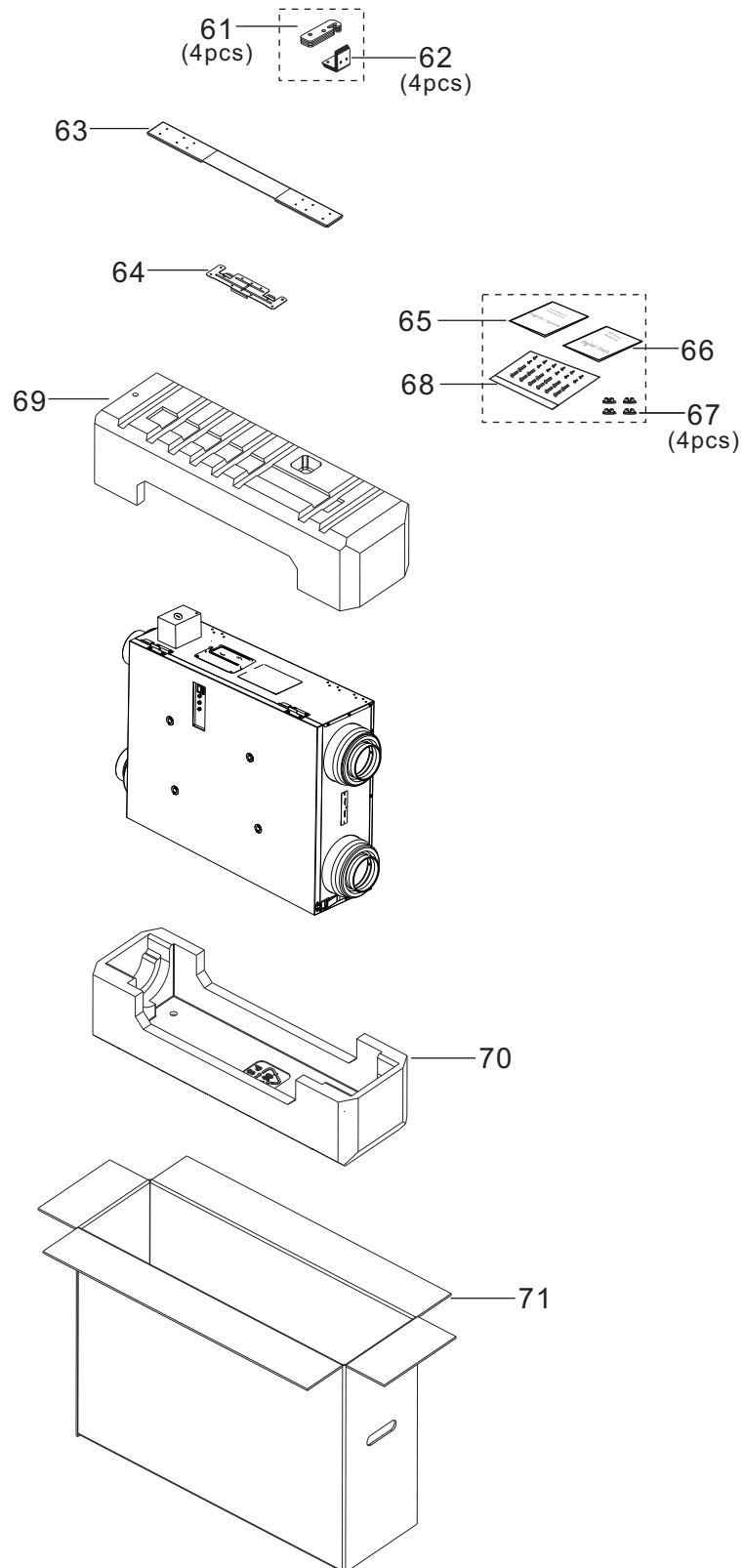


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## 2. Parts Identification

FV-10VEC2H

### Packing Case



### 3. Wiring diagram

FV-10VEC2H



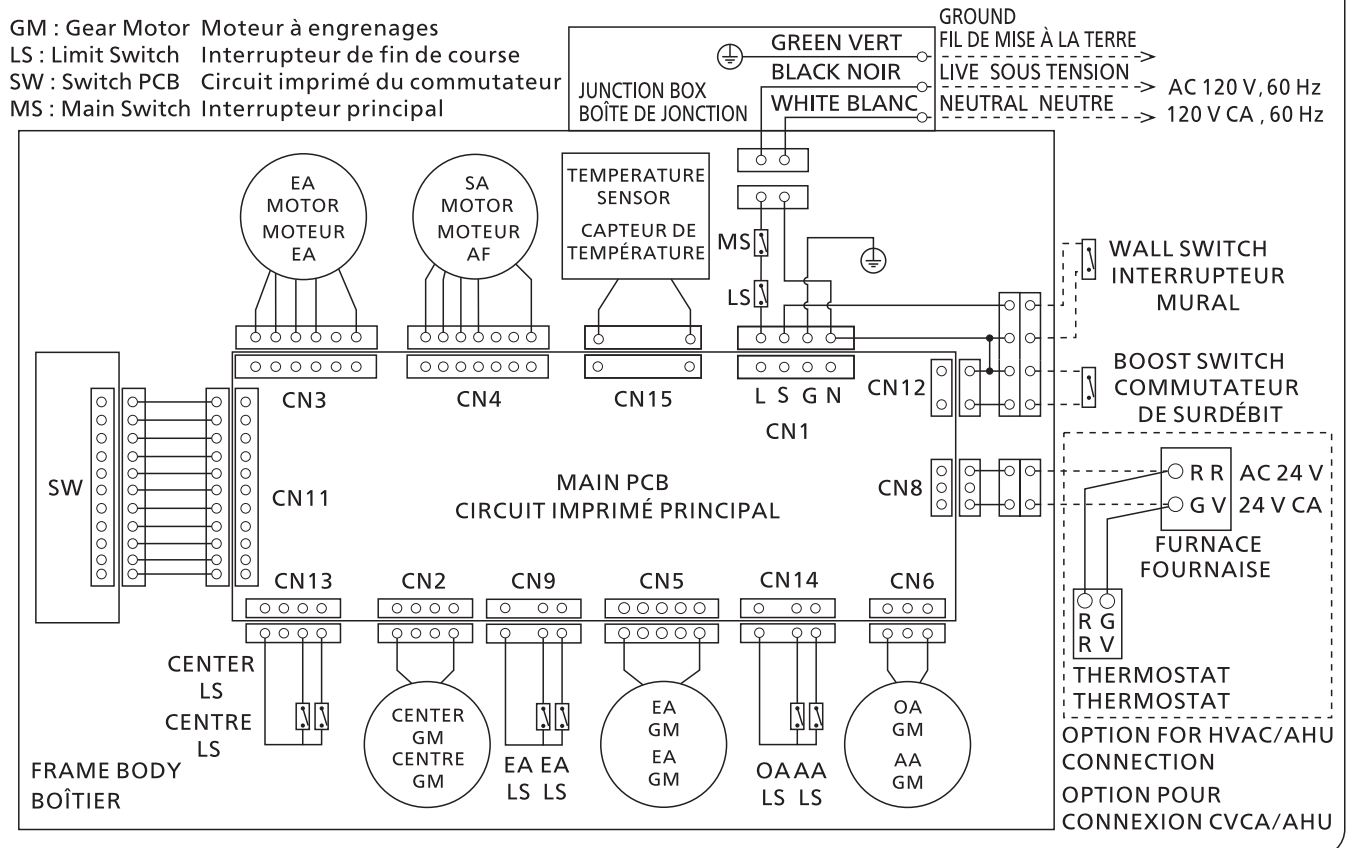
## WIRING DIAGRAM/SCHÉMA DE CONNEXIONS

GM : Gear Motor Moteur à engrenages

LS : Limit Switch Interrupteur de fin de course

SW : Switch PCB Circuit imprimé du commutateur

MS : Main Switch Interrupteur principal



## 4. Troubleshooting

FV-10VEC2H

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.The ERV doesn't work.                                 | Off                       | Off                    | <ul style="list-style-type: none"> <li>■ Check the power cord is connected.</li> <li>■ Check the frame cover is closed.</li> <li>■ Check the main switch in product body is on.</li> <li>■ Check if the spring on the inside of frame cover is damaged or deformed.</li> </ul>                                                                                                                                       |
|                                                         | On                        | Off                    | <ul style="list-style-type: none"> <li>■ ERV running interval according to the ASHRAE time setting.</li> <li>■ When outdoor temperature is low (<math>\leq -22^{\circ}\text{F}</math> (<math>-30^{\circ}\text{C}</math>), ERV stops operating automatically.</li> <li>■ Damper may be frozen shut, please wait for maximum 24 hours for defrosting.</li> </ul>                                                       |
| 2.The HVAC/AHU doesn't work when ERV works.             | On                        | Off                    | <ul style="list-style-type: none"> <li>■ Please disconnect the power and contact the dealer to check the HVAC/AHU wiring connect.</li> </ul>                                                                                                                                                                                                                                                                         |
| 3.Buzzer sound (10 sec in a hour) and ERV works.        | On                        | On                     | <ul style="list-style-type: none"> <li>■ 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 3 sec to cancel it.</li> </ul>                                                                                                                                                                                                 |
| 4.Buzzer sound (30 sec in a hour) and ERV doesn't work. | Blink* (0.5 s)            | Off                    | <ul style="list-style-type: none"> <li>■ SA motor error, please disconnect the power and contact the dealer for repair.</li> </ul>                                                                                                                                                                                                                                                                                   |
|                                                         | Blink* (2 s)              | Off                    | <ul style="list-style-type: none"> <li>■ EA motor error, please disconnect the power and contact the dealer for repair.</li> </ul>                                                                                                                                                                                                                                                                                   |
|                                                         | Off                       | Blink* (0.5 s)         | <ul style="list-style-type: none"> <li>■ OA damper error, please disconnect the power and contact the dealer for repair.</li> </ul>                                                                                                                                                                                                                                                                                  |
|                                                         | Off                       | Blink* (2 s)           | <ul style="list-style-type: none"> <li>■ EA damper error, please disconnect the power and contact the dealer for repair.</li> </ul>                                                                                                                                                                                                                                                                                  |
|                                                         | Off                       | Blink* (4 s)           | <ul style="list-style-type: none"> <li>■ Center damper error, please disconnect the power and contact the dealer for repair.</li> </ul>                                                                                                                                                                                                                                                                              |
|                                                         | Blink* (0.5 s)            | On                     | <ul style="list-style-type: none"> <li>■ Temperature sensor error, please disconnect the power and contact the dealer for repair.</li> </ul>                                                                                                                                                                                                                                                                         |
|                                                         | On                        | Blink* (0.5 s)         | <ul style="list-style-type: none"> <li>■ PCB board error, please disconnect the power and contact the dealer for repair.</li> </ul>                                                                                                                                                                                                                                                                                  |
| 5.ERV doesn't work base on the setting air volume.      | On                        | Off                    | <ul style="list-style-type: none"> <li>■ 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.</li> <li>■ When outdoor temperature is less than <math>14^{\circ}\text{F}</math> (<math>-10^{\circ}\text{C}</math>), the product will restrict air volume automatically to protect energy recovery core.</li> </ul> |

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

## 4. Parts List

— FV-10VEC2H —

### Main Body

| No. | Part No.    | Part Name          | Q'ty | Remark                                                                                |
|-----|-------------|--------------------|------|---------------------------------------------------------------------------------------|
| 1   | FFVVC2H966  | Frame Body Assy    | 1    |                                                                                       |
| 2   | FFV07SR6R1  | Cord Bushing       | 1    |                                                                                       |
| 3   | FFVC2RH904  | Junction Box       | 1    |                                                                                       |
| 4   | FFV2800023S | Junction Cover     | 1    |                                                                                       |
| 5   | FFV3450010S | Ground Wire        | 1    |    |
| 6   | FFV6710047M | Wiring Cover       | 1    |                                                                                       |
| 7   | FFV3740038M | Maintenance Plate  | 1    |                                                                                       |
| 8   | FFV10VC2M50 | OA Damper Assy     | 1    |    |
| 9   | FFV6730102S | RA Filter          | 1    |                                                                                       |
| 10  | FFV10VC2M70 | Center Damper Assy | 1    |    |
| 11  | FFV4300152M | OA Filter M8       | 1    | Merv 8                                                                                |
| 12  | FFV10VC2M12 | EA Fan Assy        | 1    |    |
| 13  | FFV10VC2M11 | SA Fan Assy        | 1    |    |
| 14  | FFV10VC2M98 | Frame Bracket      | 1    |                                                                                       |
| 15  | FFV1600154M | Frame Bracket Hook | 1    |                                                                                       |
| 16  | FFV3402190M | Element Assy       | 1    |                                                                                       |
| 17  | FFV3402191M | Element Holder     | 1    |                                                                                       |
| 18  | FFV10VC2M9  | Frame Cover Assy   | 1    |                                                                                       |
| A   | FFV7000074S | Truss Tap Screw    | 18   |                                                                                       |
| B   | FFV7030008S | Pan Screw          | 3    |  |
| C   | FFV7000224S | PS Screw           | 6    |                                                                                       |
| D   | FFV7000089S | Truss Tap Screw    | 2    |                                                                                       |

### Frame Body

| No. | Part No.    | Part Name       | Q'ty | Remark |
|-----|-------------|-----------------|------|--------|
| 19  | FFV3440021S | Latch           | 2    |        |
| 20  | FFV2220075M | Hinge B         | 2    |        |
| 21  | FFV0000163M | Adapter         | 2    |        |
| A   | FFV7000074S | Truss Tap Screw | 16   |        |

## 4. Parts List

FV-10VEC2H

### SA Fan Assy/EA Fan Assy

| No.  | Part No.    | Part Name          | Q'ty | Remark |
|------|-------------|--------------------|------|--------|
| 22   | FFV3730129M | Motor Base         | 1    |        |
| 23   | FFV10VE2M2  | EA Motor Set       | 1    | ⚠      |
| (23) | FFV10VE2M3  | SA Motor Set       | 1    | ⚠      |
| 24   | FFV3402189M | Motor Holder Plate | 1    |        |
| 25   | FFV10VC2M9  | Motor Holder       | 1    |        |
| 26   | FFV7010055S | Washer             | 1    |        |
| 27   | FFV10VC2M9  | Blade              | 1    |        |
| 28   | FFV10VC2R9  | Fix Plate          | 1    |        |
| 29   | FFV7020022S | Nut                | 1    |        |
| 30   | FFV4710409M | Casing             | 1    |        |
| 31   | FFV4710408M | Casing Packing     | 1    |        |
| A    | FFV7000074S | Truss Tap Screw    | 8    |        |
| D    | FFV7000089S | Truss Tap Screw    | 4    |        |

### PCB Box Assy

| No. | Part No.    | Part Name             | Q'ty | Remark |
|-----|-------------|-----------------------|------|--------|
| 32  | FFV5580017S | Switch Assy           | 1    | ⚠      |
| 33  | FFV10VC2M1  | Switch PCB Cover Assy | 1    |        |
| 34  | FFV5580010S | Switch Knob           | 3    |        |
| 35  | FFV5580011S | Switch Spring         | 3    |        |
| 36  | FFV5580018M | Switch PCB Assy       | 1    | ⚠      |
| 37  | FFV10VC2M13 | Switch PCB Box Assy   | 1    |        |
| 38  | FFV10VE1020 | AHU Wire              | 1    | ⚠      |
| 39  | FFV4690028M | Partition Plate       | 1    |        |
| 40  | FFV5820038S | Terminal              | 1    | ⚠      |
| 41  | FFVVC2M131  | PCB Box               | 1    |        |
| 42  | FFVVC2M520  | Main PCB Assy         | 1    | ⚠      |
| 43  | FFVVC2M201  | Power Connect Wire    | 1    | ⚠      |
| 44  | FFV10C2RH2  | Power Cord            | 1    | ⚠      |
| 45  | FFV5820037S | Temperature Sensor    | 1    | ⚠      |
| 46  | FFV5580020S | Switch PCB Wire       | 1    | ⚠      |
| 47  | FFV5820040S | Terminal 4 pin        | 1    | ⚠      |
| 48  | FFV2800028S | Jumper Cable          | 1    | ⚠      |
| 49  | FFVVC2M132  | PCB Cover             | 1    |        |
| A   | FFV7000074S | Truss Tap Screw       | 1    |        |
| D   | FFV7000089S | Truss Tap Screw       | 2    |        |
| E   | FFV7000102S | Pan Tap Screw         | 6    |        |

## 4. Parts List

FV-10VEC2H

### Frame Cover Assy

| No. | Part No.    | Part Name       | Q'ty | Remark |
|-----|-------------|-----------------|------|--------|
| 50  | FFV2220076M | Hinge A         | 2    |        |
| 51  | FFV3440022M | Latch Base      | 2    |        |
| 52  | FFV4620133S | Pressure Plug   | 4    |        |
| A   | FFV7000074S | Truss Tap Screw | 8    |        |

### Main Labels

| No. | Part No.    | Part Name           | Q'ty | Remark |
|-----|-------------|---------------------|------|--------|
| 53  | FFVVC2M060  | Maintenance Label   | 1    |        |
| 54  | FFVVC2M051  | EA OA Adapter Label | 1    |        |
| 55  | FFVVC2M052  | RA SA Adapter Label | 1    |        |
| 56  | FFV5580031M | Wall Switch Label   | 1    |        |
| 57  | FFV0000189M | AHU Label           | 1    |        |
| 58  | FFV2260002S | HVI Mark            | 1    |        |
| 59  | FFV10VE2H05 | Wiring Label        | 1    |        |
| 60  | FFV5580022M | Switch Label        | 1    |        |

### Packing Case Assy

| No. | Part No.    | Part Name                  | Q'ty | Remark                          |
|-----|-------------|----------------------------|------|---------------------------------|
| 61  | FFV4710410M | Ceiling Inst. Plate        | 4    |                                 |
| 62  | FFV3440023M | L Plate                    | 4    |                                 |
| 63  | FFV6710049M | Wall Install Bracket       | 1    |                                 |
| 64  | FFV2220077M | Hanger                     | 1    |                                 |
| 65  | FFVVC2M450  | Install. Instructions (ES) | 1    | English/Spanish,For USA Market. |
| 66  | FFVVC2M451  | Install. Instructions (EF) | 1    | English/French,For CA Market.   |
| 67  | FFV5580023S | Screw Cover                | 4    |                                 |
| 68  | FFV0010253M | Accessory For Screws       | 1    |                                 |
| 69  | FFV4710411M | Packing Pad Top            | 1    |                                 |
| 70  | FFV4710412M | Packing Pad Bottom         | 1    |                                 |
| 71  | FFV10VC2H42 | Packing Case Assy          | 1    |                                 |