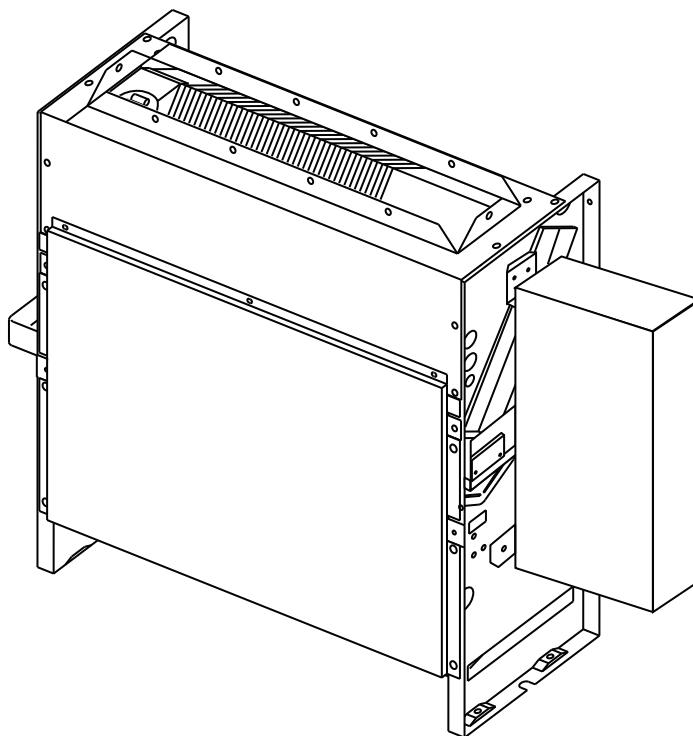


2013

TECHNICAL & SERVICE MANUAL

Models

PFFY-WP20VLRMM-E**PFFY-WP25VLRMM-E****PFFY-WP32VLRMM-E****PFFY-WP40VLRMM-E****PFFY-WP50VLRMM-E****CITY MULTI**

Safety Precautions

Read before installation and performing electrical work

- Thoroughly read the following safety precautions prior to installation.
- Observe these safety precautions for your safety.
- This equipment may have adverse effects on the equipment on the same power supply system.
- Contact the local power authority before connecting to the system.

Symbol explanations

-  **WARNING**
This symbol indicates that failure to follow the instructions exactly as stated poses the risk of serious injury or death.
-  **CAUTION**
This symbol indicates that failure to follow the instructions exactly as stated poses the risk of serious injury or damage to the unit.
-  Indicates an action that must be avoided.
-  Indicates important instructions.
-  Indicates a parts that requires grounding.
-  Indicates that caution must be taken with rotating parts. (This symbol is on the main unit label.) <Color: Yellow>
-  Indicates that the parts that are marked with this symbol pose a risk of electric shock. (This symbol is on the main unit label.) <Color: Yellow>

 **WARNING**
Carefully read the labels affixed to the main unit.

 **WARNING**

Do not use refrigerant other than the type indicated in the manuals provided with the unit and on the nameplate.

Doing so may cause the unit or pipes to burst, or result in explosion or fire during use, during repair, or at the time of disposal of the unit.
It may also be in violation of applicable laws.
MITSUBISHI ELECTRIC CORPORATION cannot be held responsible for malfunctions or accidents resulting from the use of the wrong type of refrigerant.

Ask your dealer or a qualified technician to install the unit.

Improper installation by the user may result in water leakage, electric shock, or fire.

Properly install the unit on a surface that can withstand its weight.

Unit installed on an unstable surface may fall and cause injury.

Only use specified cables. Securely connect each cable so that the terminals do not carry the weight of the cable.

Improperly connected cables may produce heat and start a fire.

Take appropriate safety measures against wind gusts and earthquakes to prevent the unit from toppling over.

Improper installation may cause the unit to topple over and cause injury or damage to the unit.

Do not make any modifications or alterations to the unit.
Consult your dealer for repair.

Improper repair may result in water leakage, electric shock, or fire.

Only use accessories (i.e., air cleaners, humidifiers, electric heaters) recommended by Mitsubishi Electric.

Do not make any modifications or alterations to the unit.
Consult your dealer for repair.

Improper repair may result in water leakage, electric shock, or fire.

Do not touch the heat exchanger fins with bare hands.

The fins are sharp and pose a risk of cuts.

HWE12100

i

GB

WARNING

Properly install the unit according to the instructions in the Installation Manual.

Improper installation may result in water leakage, electric shock, or fire.

Have all electrical work performed by an authorized electrician according to the local regulations and the instructions in this manual. Use a dedicated circuit.

Insufficient power supply capacity or improper installation of the unit may result in malfunctions of the unit, electric shock, or fire.

Keep electrical parts away from water.

Wet electrical parts pose a risk of electric shock, smoke, or fire.

Securely attach the control box cover.

If the cover is not installed properly, dust or water may infiltrate and pose a risk of electric shock, smoke, or fire.

Only use the type of refrigerant that is indicated on the unit when installing or relocating the unit.

Infiltration of any other types of refrigerant or air into the unit may adversely affect the refrigerant cycle and may cause the pipes to burst or explode.

Consult your dealer or a qualified technician when moving or reinstalling the unit.

Improper installation may result in water leakage, electric shock, or fire.

After completing the service work, check for a refrigerant leak.

If leaked refrigerant is exposed to a heat source, such as a fan heater, stove, or electric grill, toxic gases will be generated.

Do not try to defeat the safety features of the unit.

Forced operation of the pressure switch or the temperature switch by defeating the safety features for these devices, or the use of accessories other than the ones that are recommended by Mitsubishi Electric may result in smoke, fire, or explosion.

Consult your dealer for proper disposal method.

Precautions for handling units for use with water

CAUTION

Do not use the existing water piping.

Store the piping materials indoors, and keep both ends of the pipes sealed until immediately before installation. Keep the joints wrapped in plastic bags. If dust or dirt enters the water circuit, it may damage the heat exchanger and cause water leakage.

Only use water.

Only use clean water as a refrigerant. The use of water outside the specification may damage the refrigerant circuit.

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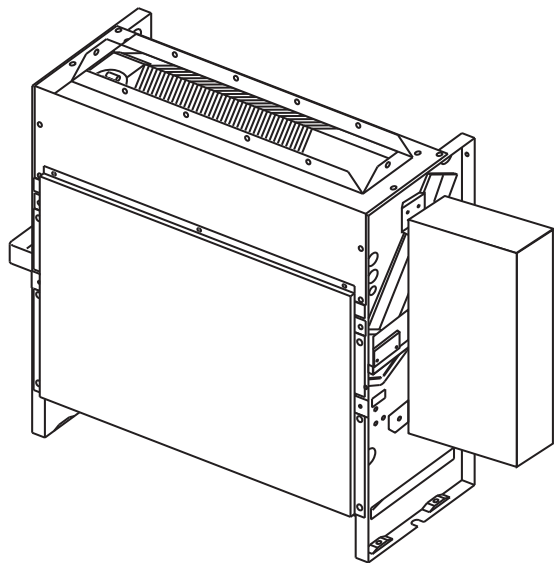
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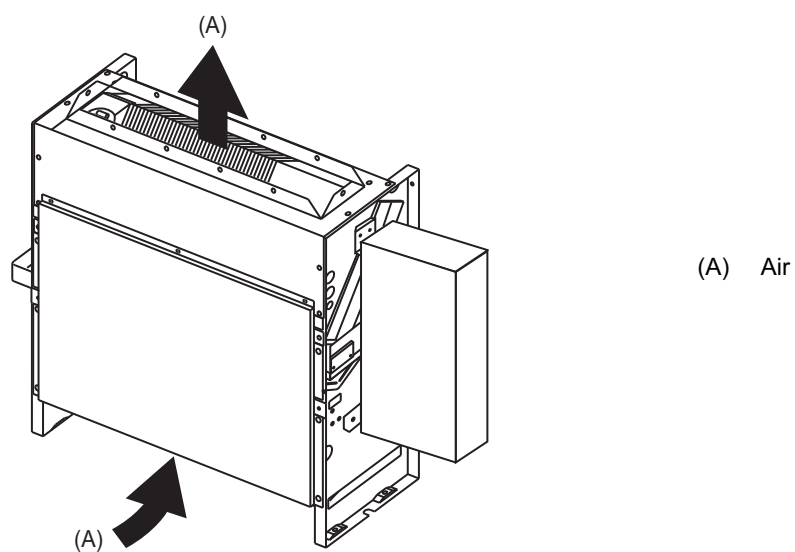
[1] Features



Model	Cooling capacity/Heating capacity
	kW
PFFY-WP20VLRMM-E	2.2/2.5
PFFY-WP25VLRMM-E	2.8/3.2
PFFY-WP32VLRMM-E	3.6/4.0
PFFY-WP40VLRMM-E	4.5/5.0
PFFY-WP50VLRMM-E	5.6/6.3

[1] Components and Functions

1. Indoor (Main) Unit



[1] Specifications**1. Specifications**

Model			PFFY- WP20VLRMM-E	PFFY- WP25VLRMM-E	PFFY- WP32VLRMM-E
Power supply	Voltage	V	220-240		
	Frequency	Hz	50/60		
Cooling capacity *1		kW	2.2	2.8	3.6
Heating capacity *1		kW	2.5	3.2	4.0
Power consumption *2	Cooling	kW	0.04	0.04	0.05
	Heating	kW	0.04	0.04	0.05
Current consump- tion*2	Cooling	A	0.35	0.35	0.47
	Heating	A	0.35	0.35	0.47
External finish (Munsel No.)			Galvanized steel plate		
Dimensions	Height	mm	639		
	Width	mm	886	1006	
	Depth	mm	220		
Net weight		kg	22	25	
Heat exchanger			Cross fin (Aluminium fin and cupper tube)		
Fan	Type		Sirocco fan x 1	Sirocco fan x 2	
	Airflow rate (Low-Mid-High)	m³/min	4.5-5.0-6.0	6.0-7.0-8.0	7.5-9.0-10.5
	External static pressure		Pa	20-40-60	
Motor	Output	kW	0.096		
Air filter			PP Honeycomb fabric		
Diameter of water pipe	Inlet	in	Rc3/4 screw		
	Outlet	in	Rc3/4 screw		
Drain pipe dimensions		mm [in.]	Accesory hose ø27 [1-3/32] (top end : ø20 [13/16])		
Operating noise (Low-Mid-High)	20Pa	dB (A)	31-33-38	31-33-38	31-35-38
	40Pa		32-37-39	32-37-39	34-37-40
	60Pa		36-38-42	36-38-42	36-40-42

*1 Cooling/Heating capacity indicates the maximum value at operation under the following condition,
 <Cooling> Indoor temperature: 27°CDB/19°CWB (81°FDB/66°F WB Outdoor temperature: 35°CDB (95°FDB)
 <Heating> Indoor temperature: 20°CDB (68°FDB) Outdoor temperature: 7°CDB/6°CWB (45°FDB/43°F WB)

*2 The external static pressure is set to 20Pa at factory shipment.

Model			PFFY-WP40VLRMM-E	PFFY-WP50VLRMM-E
Power supply	Voltage	V	220-240	
	Frequency	Hz	50/60	
Cooling capacity *1		kW	4.5	5.6
Heating capacity *1		kW	5.0	6.3
Power consumption *2	Cooling	kW	0.05	0.07
	Heating	kW	0.05	0.07
Current consumption *2	Cooling	A	0.47	0.65
	Heating	A	0.47	0.65
External finish (Munsel No.)			Galvanized steel plate	
Dimensions	Height	mm	639	
	Width	mm	1246	
	Depth	mm	220	
Net weight		kg	29	
Heat exchanger			Cross fin (Aluminium fin and copper tube)	
Fan	Type		Sirocco fan x 2	
	Airflow rate (Low-Mid-High)	m ³ /min	8.0-10.0-11.5	10.5-13.0-15.0
	External static pressure	Pa	20-40-60	
Motor	Output	kW	0.096	
Air filter			PP Honeycomb fabric	
Diameter of water pipe	Inlet	in	Rc3/4 screw	
	Outlet	in	Rc3/4 screw	
Drain pipe dimensions		mm [in.]	Accessory hose ø27 [1-3/32] (top end : 20 [13/16])	
Operating noise (Low-Mid-High)	20Pa	dB (A)	34-37-40	37-42-45
	40Pa		37-39-43	38-44-47
	60Pa		37-41-44	39-45-48

*1 Cooling/Heating capacity indicates the maximum value at operation under the following condition,
 <Cooling> Indoor temperature: 27°CDB/19°CWB (81°FDB/66°F WB Outdoor temperature: 35°CDB (95°FDB)
 <Heating> Indoor temperature: 20°CDB (68°FDB) Outdoor temperature: 7°CDB/6°CWB (45°FDB/43°F WB)

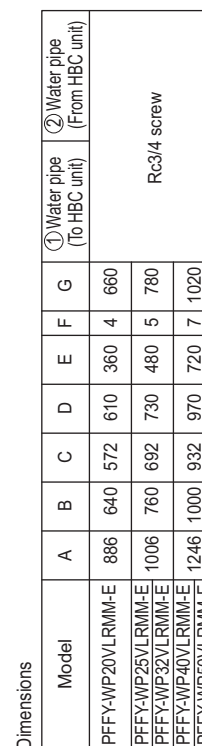
*2 The external static pressure is set to 20Pa at factory shipment.

2. Electrical component specifications

Component	Sym- bol	PFFY-WP20VLRMM-E	PFFY-WP25VLRMM-E	PFFY-WP32VLRMM-E
Room temperature thermistor	TH21	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ		
Water inlet pipe thermistor	TH22	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ		
Water outlet pipe thermistor	TH23	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ		
Fuse	FUSE	250V 6.3A		
Fan motor		8-pole, Output 96W SIC-70CW-D896-3	8-pole, Output 96W SIC-70CW-D8114-4	
Power supply terminal block	TB2	(L, N, ⊕) 330V 30A		
Transmission terminal block	TB5 TB15	(1, 2), (M1, M2, S) 250V 20A		

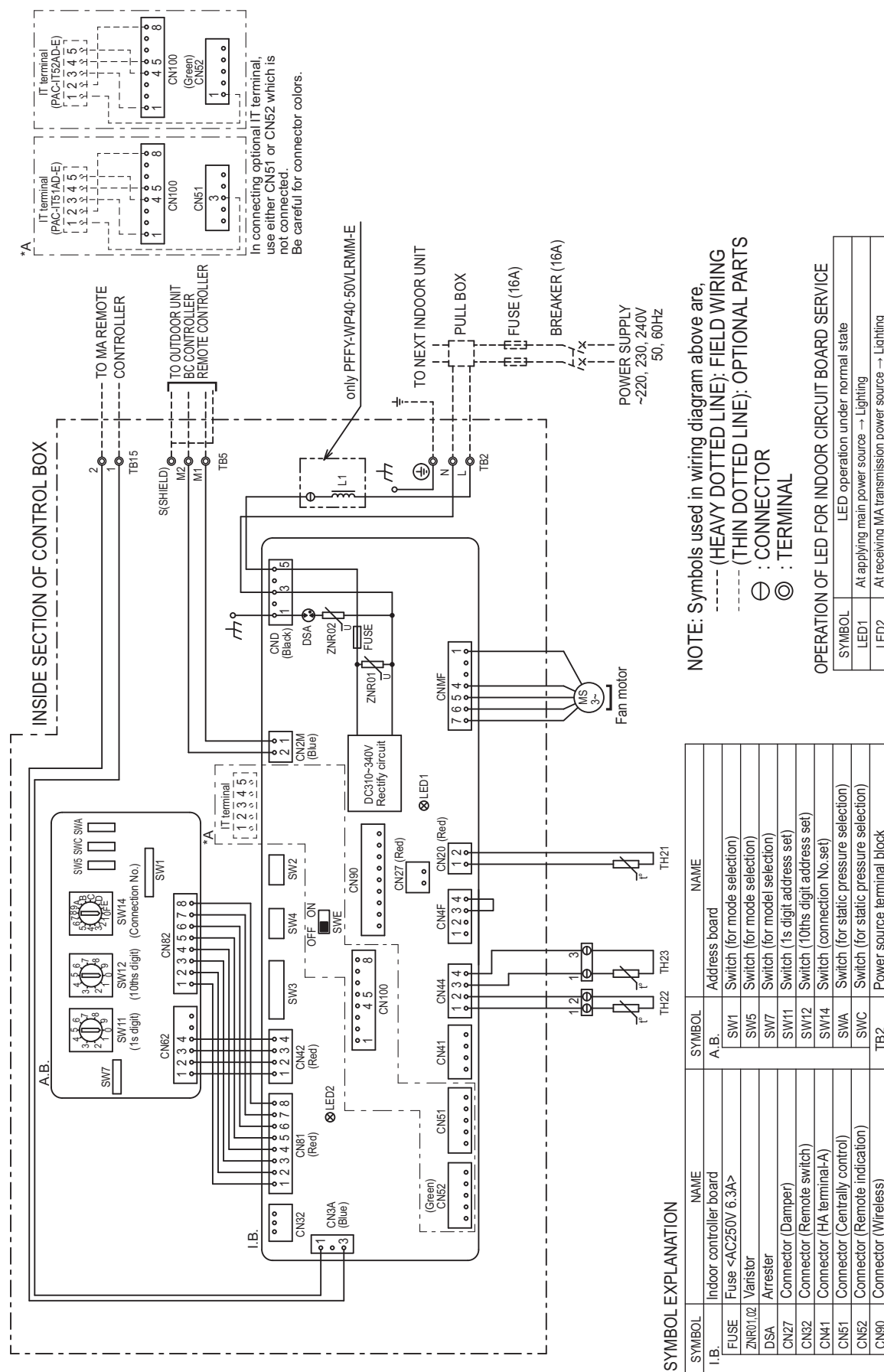
Component	Sym- bol	PFFY-WP40VLRMM-E	PFFY-WP50VLRMM-E
Room temperature thermistor	TH21	Resistance 0°C/15k Ω , 10°C/9.6k Ω , 20°C/6.3k Ω , 25°C/5.4k Ω , 30°C/4.3k Ω , 40°C/3.0k Ω	
Water inlet pipe thermistor	TH22	Resistance 0°C/15k Ω , 10°C/9.6k Ω , 20°C/6.3k Ω , 25°C/5.4k Ω , 30°C/4.3k Ω , 40°C/3.0k Ω	
Water outlet pipe thermistor	TH23	Resistance 0°C/15k Ω , 10°C/9.6k Ω , 20°C/6.3k Ω , 25°C/5.4k Ω , 30°C/4.3k Ω , 40°C/3.0k Ω	
Fuse	FUSE	250V 6.3A	
Fan motor		8-pole, Output 96W SIC-70CW-D8114-4	
Power supply terminal block	TB2	(L, N, $\oplus$) 330V 30A	
Transmission terminal block	TB5 TB15	(1, 2), (M1, M2, S) 250V 20A	

1. PFFY-WP20, 25, 32, 40, 50VLRMM-E



[1] Wiring Diagram

1. PFFY-WP20,25,32,40,50VLRMM-E



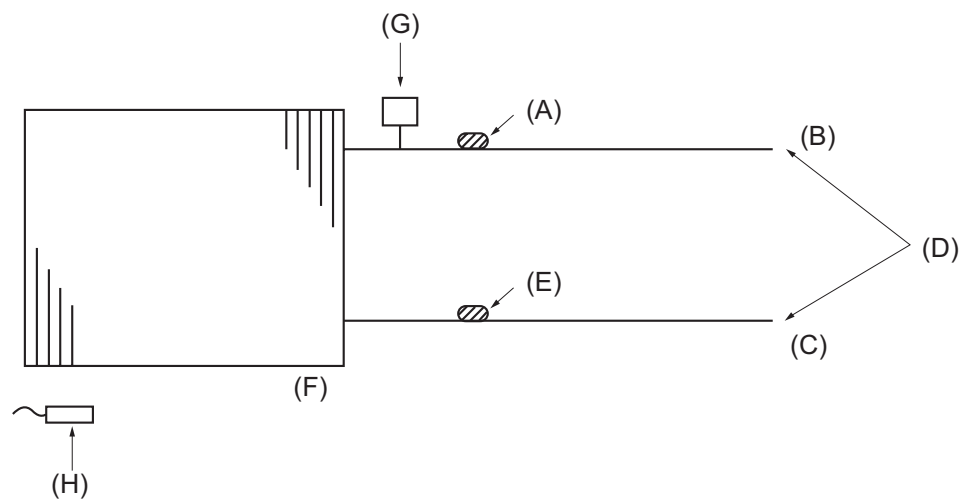
NOTE: Symbols used in wiring diagram above are,
 ----- (HEAVY DOTTED LINE): FIELD WIRING
 - - - - - (THIN DOTTED LINE): OPTIONAL PARTS
 ⊖ : CONNECTOR
 ⊗ : TERMINAL

OPERATION OF LED FOR INDOOR CIRCUIT BOARD SERVICE

SYMBOL	LED operation under normal state
LED1	At applying main power source → Lighting
LED2	At receiving MA transmission power source → Lighting

SYMBOL	NAME	SYMBOL	NAME
I.B.	Indoor controller board	A.B.	Address board
FUSE	Fuse <AC250V 6.3A>	SW1	Switch (for mode selection)
ZNR01.02	Varistor	SW5	Switch (for mode selection)
DSA	Arrestor	SW7	Switch (for model selection)
CN27	Connector (Damper)	SW11	Switch (1s digit address set)
CN32	Connector (Remote switch)	SW12	Switch (10ths digit address set)
CN41	Connector (HA terminal-A)	SW14	Switch (connection No.set)
CN51	Connector (Centrally control)	SWA	Switch (for static pressure selection)
CN52	Connector (Remote indication)	SWC	Switch (for static pressure selection)
CN90	Connector (Wireless)	TB2	Power source terminal block
CN100	Connector (1T terminal)	TB5	Transmission terminal block
SW2	Switch (for capacity code)	TB15	Transmission terminal block
SW3	Switch (for mode selection)	TH21	Thermistor (inlet air temp.detection)
SW4	Switch (for model selection)	TH22	Thermistor (piping temp.detection/water in)
SWE	Connector (emergency operation)	TH23	Thermistor (piping temp.detection/water out)
I.1	AC reactor(Power factor improvement)		

[1] Refrigerant system diagram



- (A) Water outlet thermistor TH23
- (B) Water outlet
- (C) Water inlet
- (D) Screw connections
- (E) Water inlet thermistor TH22
- (F) Heat exchanger
- (G) Manual air purge valve
- (H) Room temperature thermistor TH21

Capacity	PFFY-WP20, 25, 32, 40, 50VLRMM-E
Water outlet	Rc3/4 screw
Water inlet	Rc3/4 screw

[1] Troubleshooting

1. Check methods

1. Component and check points

(1) Thermistor

- Room temperature thermistor (TH21)
- Water inlet thermistor (TH22)
- Water outlet thermistor (TH23)

Disconnect the connector and measure the resistance between terminals with a tester.
(Ambient temperature 10°C - 30°C)

Normal	Abnormal
4.3k Ω - 9.6k Ω	Open or short

(Refer to the thermistor characteristic graph below.)

1) Thermistor characteristic graph

Low-temperature thermistor

- Room temperature thermistor (TH21)
- Water inlet thermistor (TH22)
- Water outlet thermistor (TH23)

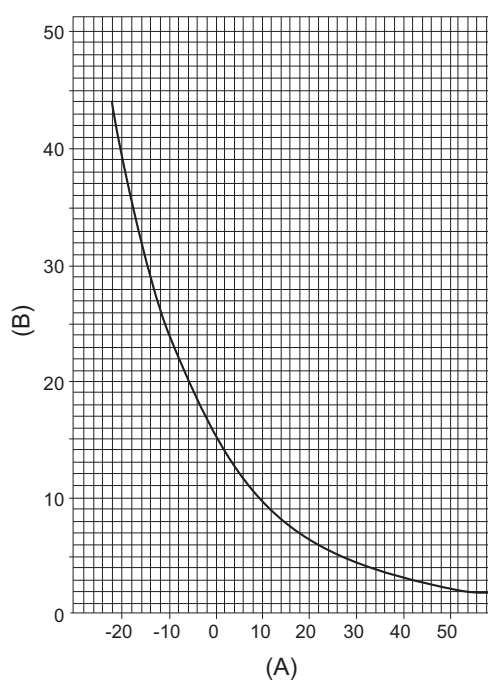
- Thermistor $R_0 = 15 \text{ k}\Omega \pm 3\%$
- Multiplier of B = $3480 \text{ k}\Omega \pm 2\%$

$$R_t = 15 \exp \left\{ 3480 \left(\frac{1}{273+t} - \frac{1}{273} \right) \right\}$$

0°C	15k Ω
10°C	9.6k Ω
20°C	6.3k Ω
25°C	5.2k Ω
30°C	4.3k Ω
40°C	3.0k Ω

(A) Temperature (°C)

(B) Resistance (k Ω)



(2) Fan motor (CNMF)

Refer to the page on "DC fan motor (fan motor/indoor control board)."

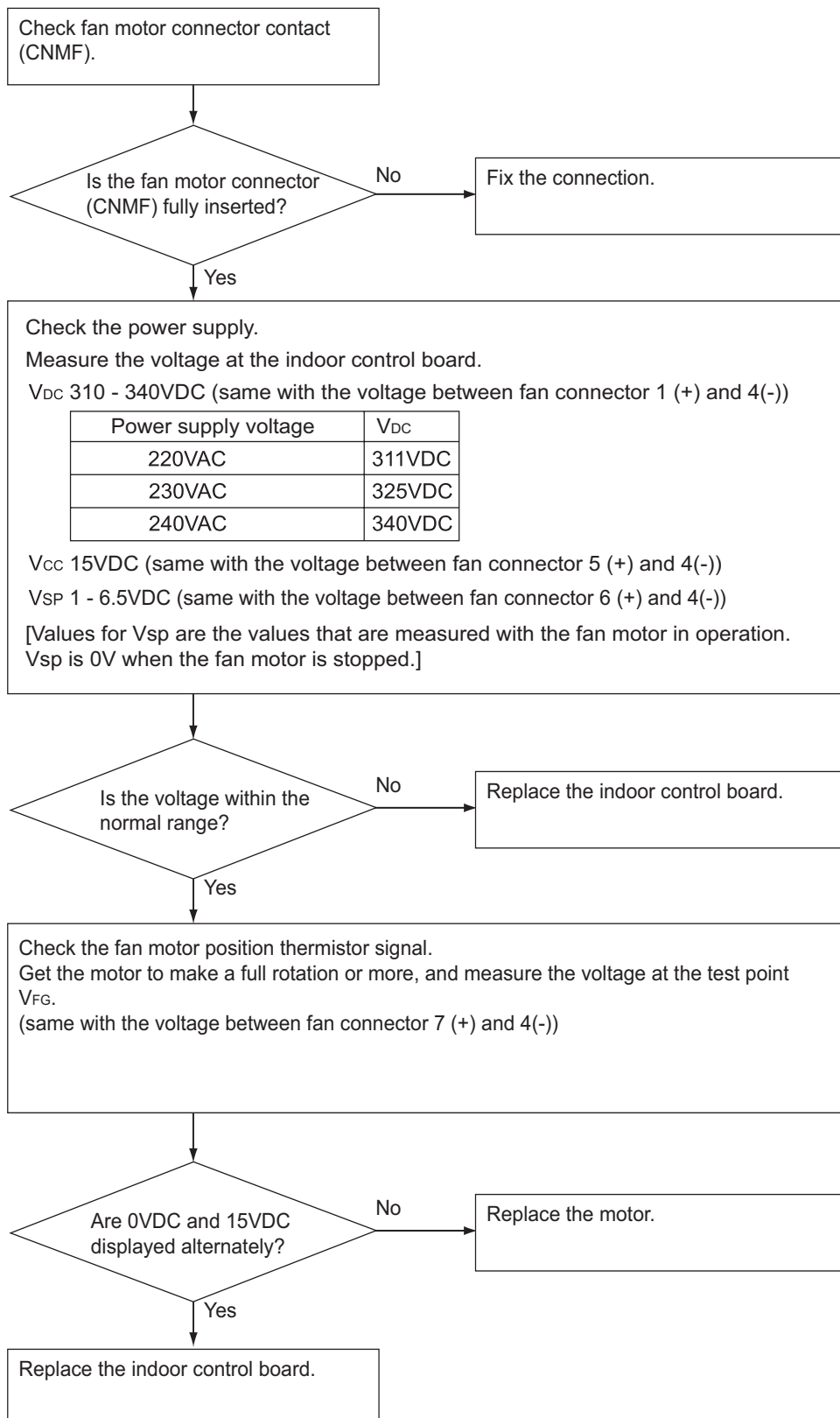
2. DC fan motor (fan motor/indoor control board)

1. CAUTION

- A high voltage is applied to the connector for connection to the fan motor (CNMF).
- Do not unplug the connector CNMF with the unit energized to avoid damage to the indoor control board and fan motor.

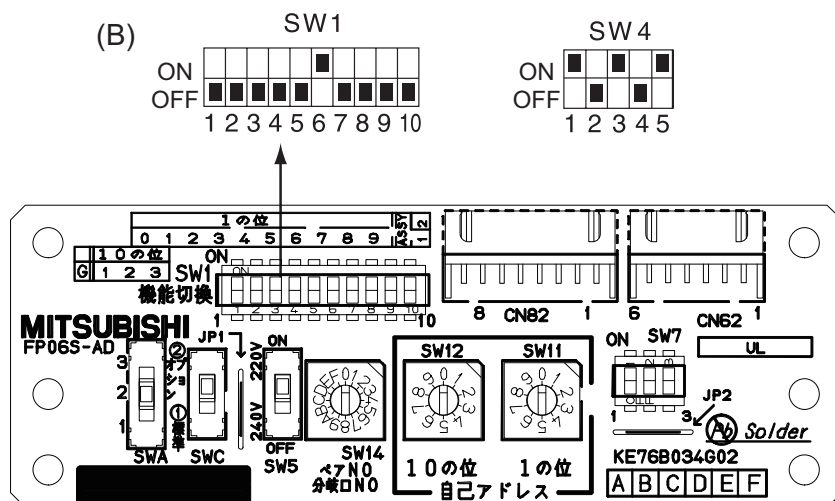
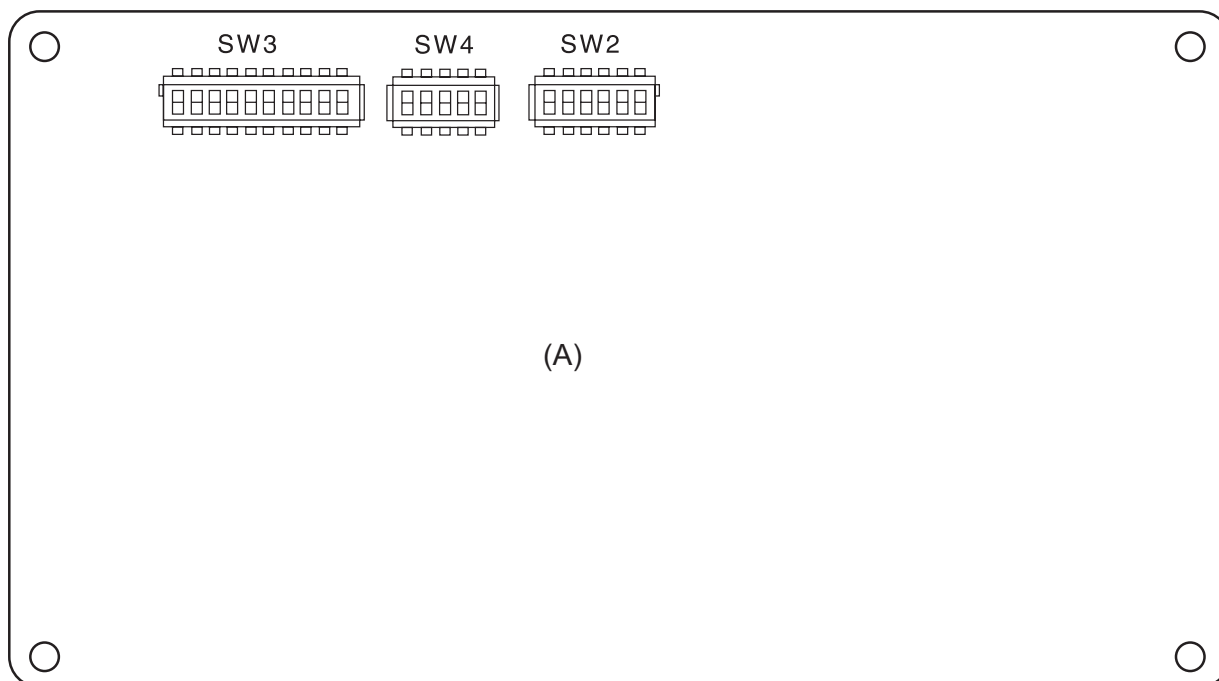
2. Troubleshooting

- Symptom: Indoor unit fan does not run.



3. Address switch setting

Make sure that power to the unit is turned off.



(A) Indoor unit control board

(B) Factory setting (all models)

1. When using an ME remote controller, set the address with the rotary switches (SW11, SW12).

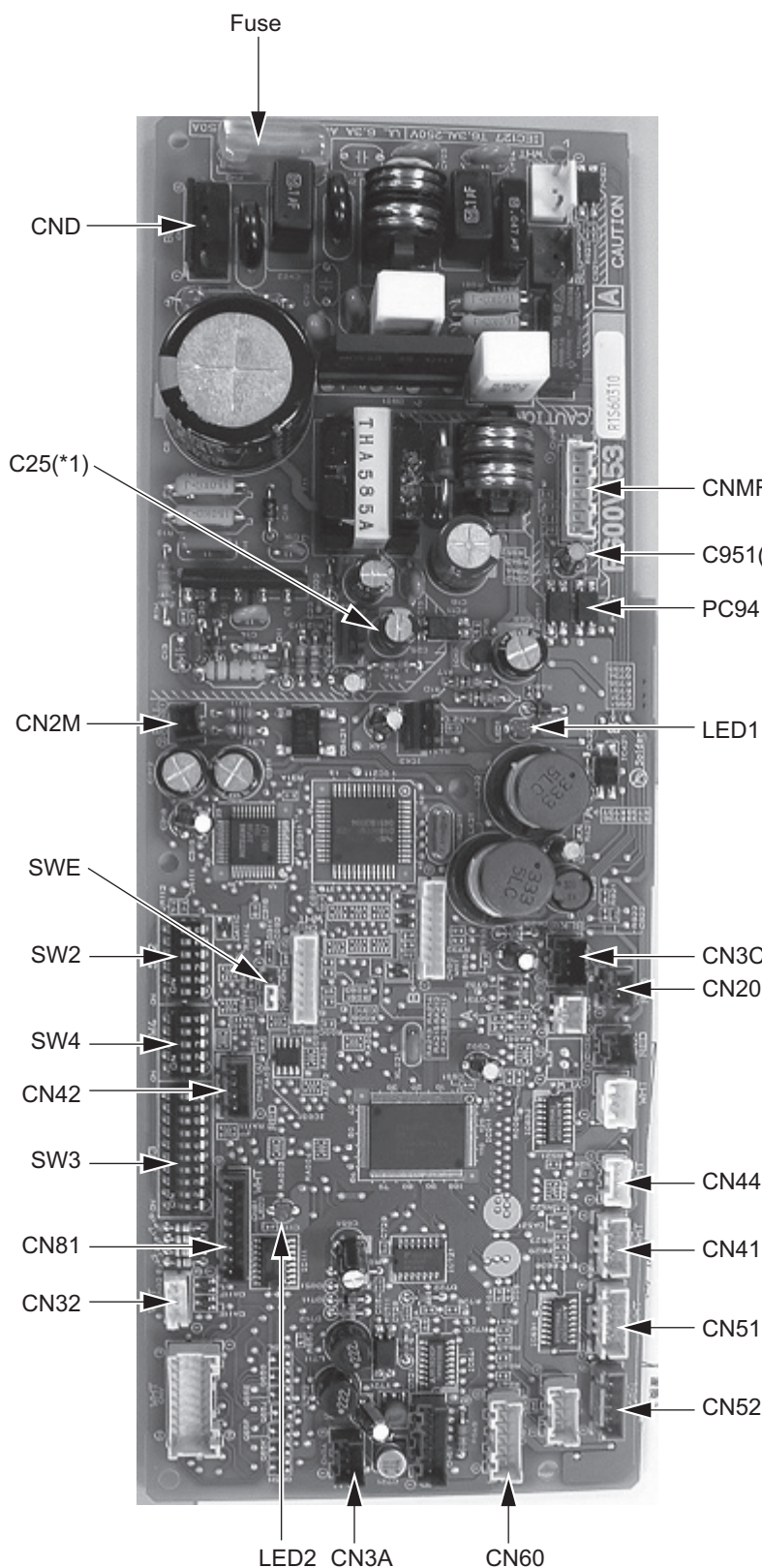
♦Address setting is not required when the unit remote controller is used.

On-site address setting is required for the indoor units to run.

2. Address settings vary in different systems.
Refer to the section on address setting in the outdoor unit installation manual.
3. Address is set with a combination of SW12 (10's digit) and SW11 (1's digit).
To set the address to "3," set SW12 to "0" and SW11 to "3."
To set the address to "25," set SW12 to "2" and SW11 to "5."

4. Voltage test points on the control board

1. PFFY-P20, 25, 32, 40, 50, 63VLRMM-E



Fuse	Fuse(AC 250V 6.3A)
CND	Power supply voltage (220 - 240VAC)
CN2M	For M-NET transmission cable connection (24 - 30VDC)
SWE	Emergency operation
SW2	Capacity setting
SW4	Function setting
CN42	For address board connection
SW3	Function setting
CN81	For address board connection
CN32	Remote start/stop adapter
CN3A	For MA remote controller cable connection (10 - 13 VDC (Between 1 and 3.))
CN52	Remote display
CN51	Centralized control
CN41	JAMA standard HA terminal A
CN44	Thermistor (water inlet/water outlet temperature)
CN20	Thermistor (Inlet temperature)
CN3C	Indoor-outdoor transmission (0 - 24VDC)
CNMF	Fan motor output 1 - 4: 310 - 340 VDC 5 - 4: 15 VDC 6 - 4: 0 - 6.5 VDC 7 - 4: Stop 0 or 15 VDC Run 7.5 VDC (0 - 15 pulse)

(*1)

V_{FG}	Voltage on the (-) side of PC941 and C25 (Same with the voltage between 7 (+) and 4 (-) of CNMF)
V_{CC}	Voltage between the C25 pins 15 VDC (Same with the voltage between 5 (+) and 4 (-) of CNMF)
V_{sp}	Voltage between the C951 pins 0VDC (with the fan stopped) 1 - 6.5VDC (with the fan in operation) (Same with the voltage between 6 (+) and 4 (-) of CNMF)

5. Dipswitch setting (Factory setting)

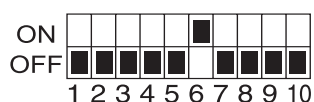
1. Function setting

(1) SW1

Switch position	Function	Switch setting	
		ON	OFF
1	Active Thermistor (Intake air thermistor)	Built-in thermistor on the remote controller	Indoor unit
2	Filter clogging detection	Available	Unavailable
3	Filter life	2500 hr	100 hr
4	Outdoor air intake	Enabled	Disabled
5	Remote display	Thermo-ON signal	Fan output
6	Humidifier operation	During heating mode	During heating operation
7	Fan speed	Low	Very low
8	Fan speed at heating Thermo-OFF	Preset fan speed	Follows the setting of SW1-7
9	Auto restart after power failure	Enabled	Disabled
10	Power start/stop	Enabled	Disabled

1) Address board

Factory setting



(2) SW3

Switch position	Function	Switch setting	
		ON	OFF
1	Unit type	Cooling only	Heat pump
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	Heating 4-deg up	Disabled	Enabled

1) Indoor control board

Dipswitch settings must be made while the unit is stopped.

Factory setting



2. Capacity code setting

(1) SW2

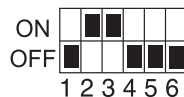
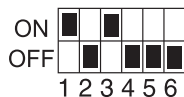
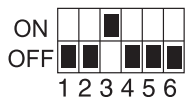
1) Indoor control board

Dipswitch settings must be made while the unit is stopped.

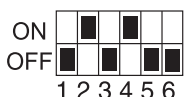
Factory setting

The switches are set to correspond to the unit capacity.

PFFY-WP20VLRMM-E PFFY-WP25VLRMM-E PFFY-WP32VLRMM-E



PFFY-WP40VLRMM-E PFFY-WP50VLRMM-E



3. Model setting

(1) SW4

1) Indoor control board

Dipswitch settings must be made while the unit is stopped.

Factory setting



Note:

Changes made to the dipswitches SW1, SW2, and SW3 will become effective when the unit comes to a stop (remote controller off). There is no need to power cycle the unit.

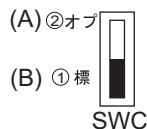
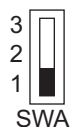
4. External static pressure

(1) SWA, SWC

1) Address board

SWA, SWC		20Pa	40Pa	60Pa	Address board
External static pressure	1 - 3 1 - 2	 	 	 	<At delivery>  

Factory setting



(A) Option

(B) Standard

Note:

Changes that are made to the dipswitches SWA and SWC immediately become effective regardless of the unit's operation status (RUN/STOP) or the remote controller status (ON/OFF).

5. 1's and 10's digits

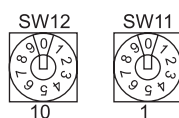
(1) SW11, SW12 (Rotary switch)

The use of a network remote controller (PAR-F27MEA) requires address setting.

1) Address board

Address settings must be made while the unit is stopped.

Factory setting



6. Connection No. setting

(1) SW14 (Rotary switch)

This switch is used when the unit connected to an R2 series of outdoor unit.

1) Address board

Factory setting



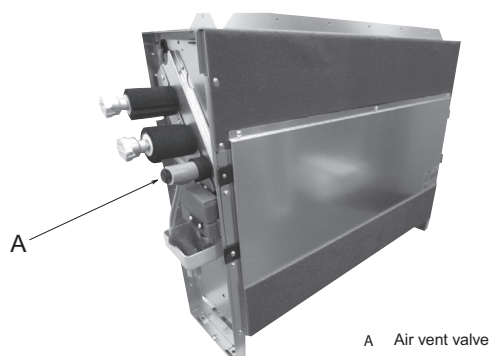
Note:

Changes to the dipswitches SW11, SW12 and SW14 must be made while the unit is stopped and the remote controller is OFF.

6. Instructions for debris removal operation

Details are described in section [9] "Instructions for debris removal operation" under chapter IX Troubleshooting in the Service Handbook for the HBC.

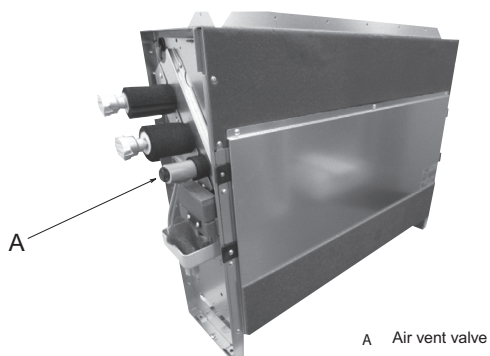
Refer to the figure below for the position of the air vent valve on the indoor unit.



7. Instructions for the air vent operation

Details are described in section [9] "Instructions for debris removal operation" under chapter IX Troubleshooting in the Service Handbook for the HBC.

Refer to the figure below for the position of the air vent valve on the indoor unit.

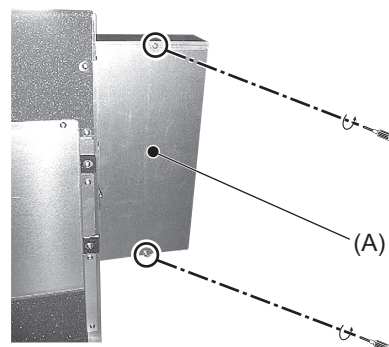


[1] Disassembly Procedure

1. Control box

Exercise caution when removing heavy parts.

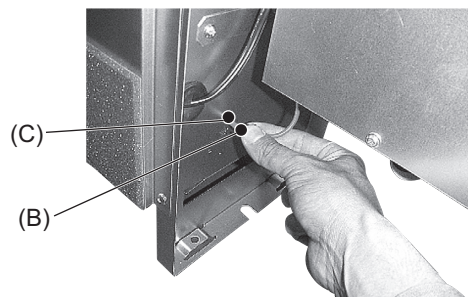
1. Removing the control box cover
 - (1) Remove the fixing screws (two) on the cover (A) to remove it.



2. Thermistor (Intake air)

Exercise caution when removing heavy parts.

1. Removing the thermistor
 - (1) Pull out the thermistor holder (B) and thermistor (C) under the control box.

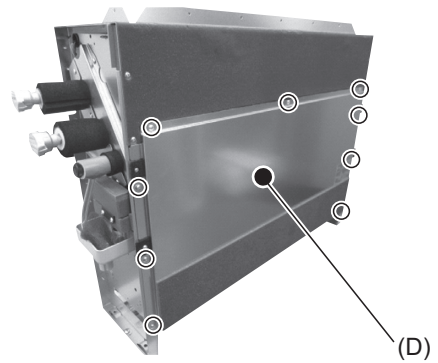


3. Drainpan

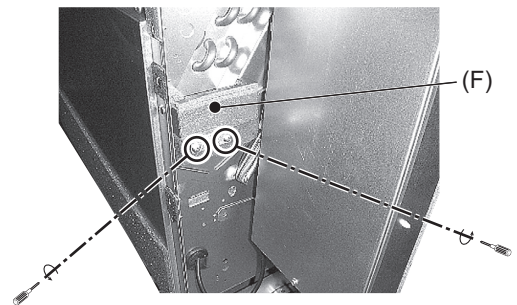
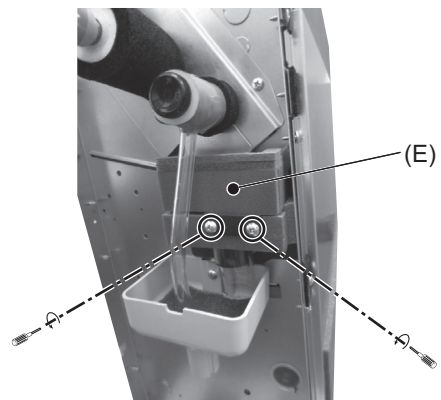
Exercise caution when removing heavy parts.

1. Removing the casing ass'y

- (1) Remove the fixing screws(nine) of the plate(D) and remove the plate.

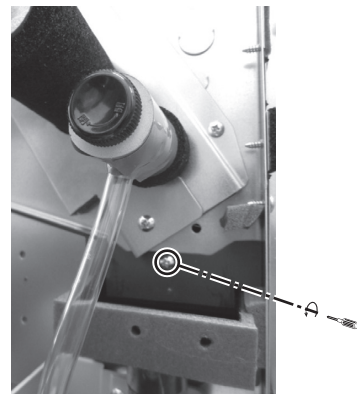


2. Remove the drainpan cover



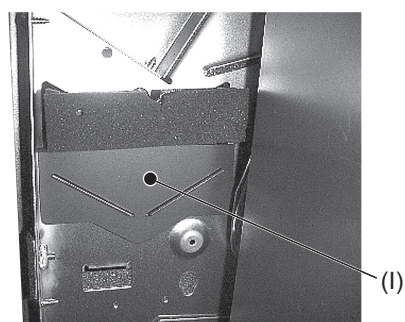
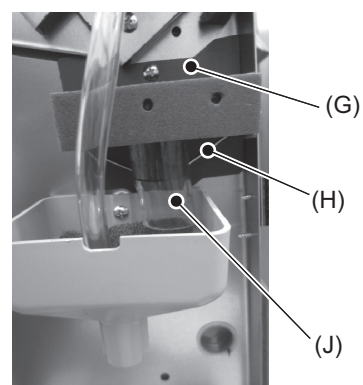
3. Remove the drainpan

- (1) Remove the fixing screw of the both side frame.

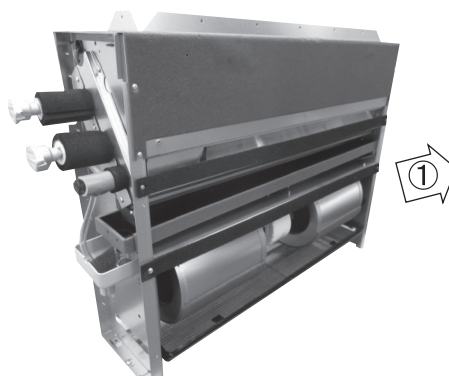




- (2) Remove the magnet plate (G),(H),(I) of the both frame,remove the tube (J).



- (3) Slide the drainpan in the direction of the arrow 1.

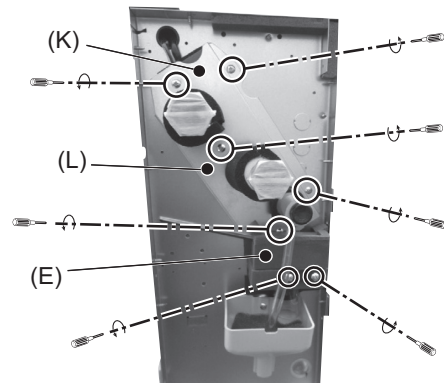


4. Thermistor (Water inlet) (Water outlet)

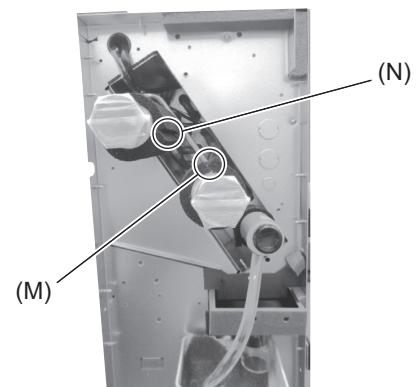
Exercise caution when removing heavy parts.

1. Removing the thermistor

- (1) Remove the fixing screws (seven), remove the cover (K) and (L) and drainpan cover (E).



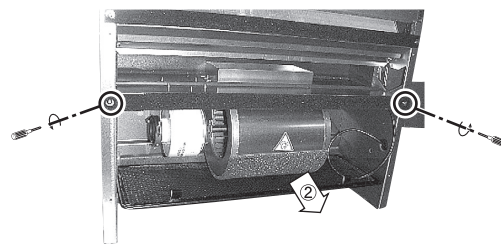
- (2) Remove the thermistor (water inlet)(M) and thermistor(water outlet)(N).



5. Fan and fan motor

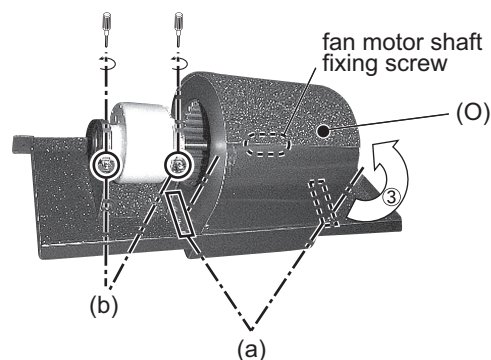
Exercise caution when removing heavy parts.

1. Remove the plate(D) with procedure 3-1.
2. Remove the drainpan with procedure 3-2,3.
3. Sliding the fan section
 - (1) Remove the fixing screws(two).
 - (2) Slide the fan section in direction of the arrow 2.



4. Removing the fan motor
 - (1) Remove the fixing screws(three)(a) on both sides of the fan casing(O) and turn the fan casing(O) in the upward direction (arrow 3).
 - (2) Remove the fan motor shaft fixing screw and remove the fan casing(O) and sirocco fan.
 - (3) Remove the fixing screws(two)(b) of the motor fixtures(two) and remove the motor.

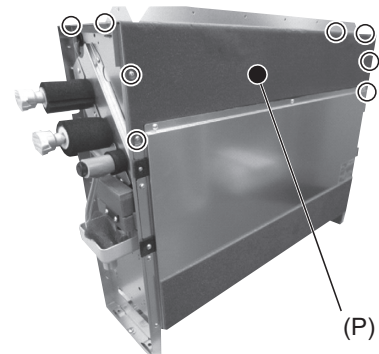
Notice: In case of the Model(PFFY-P32 - 63VLRMM-E) stick out the motor shafts on both side of the motor.



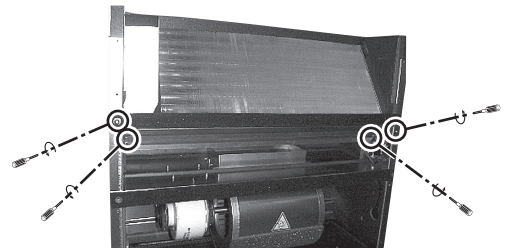
6. Heat exchanger

Exercise caution when removing heavy parts.

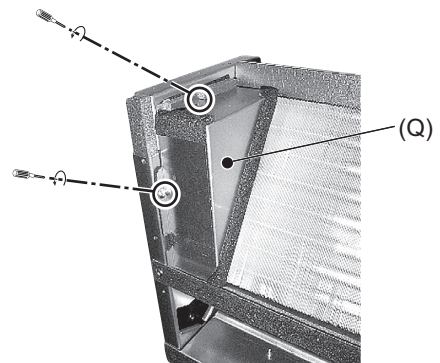
1. Remove the plate(D) with procedure 3-1.
2. Removing the air diffuser ass'y
 - (1) Remove the fixing screws(eight) of the air diffuser ass'y(P) and remove it.



3. Remove the cover1,2 with procedure 4-1.
4. Removing the Heat exchanger
 - (1) Remove the fixing screws(four) and remove the heat exchanger support.



- (2) Remove the fixing screws(two) and remove the heat exchanger cover(Q).



- (3) Remove the heat exchanger, moving from side to side.

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