MITSUBISHI ELECTRIC

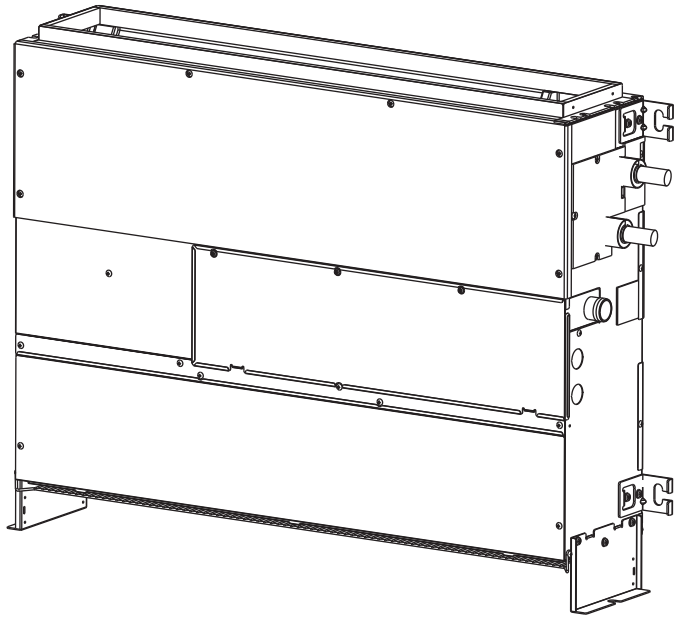
Changes for the Better

AIR CONDITIONERS

2019

TECHNICAL & SERVICE MANUAL

Models **PFFY-W20VCM-A,** **PFFY-W40VCM-A**
PFFY-W25VCM-A, **PFFY-W50VCM-A**
PFFY-W32VCM-A,



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.
- ♦**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.
- ♦**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.**

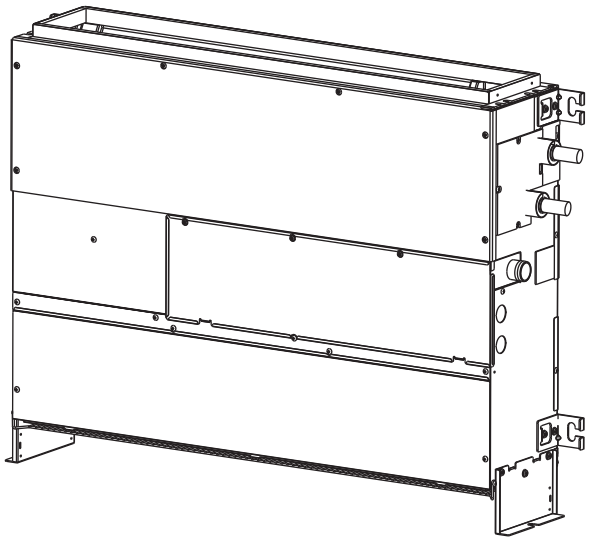
Precautions for handling units for use with water

⚠ 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.
- ♦**Install the unit so that external force is not applied to the water pipes.**

CONTENTS

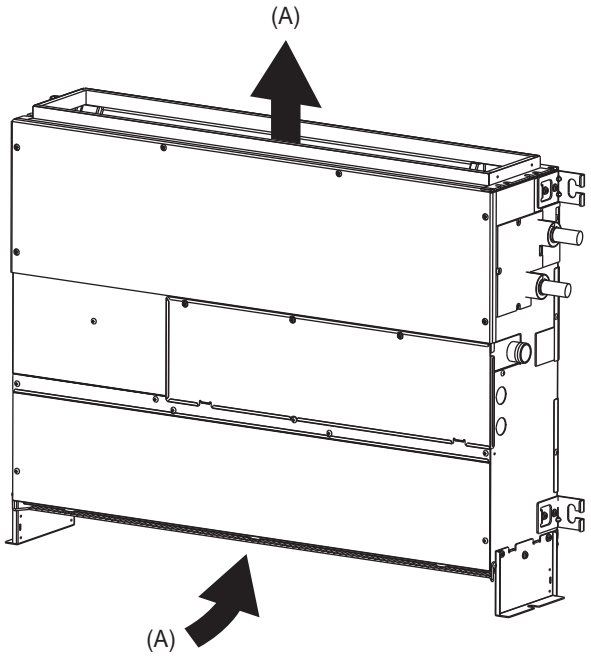
[1] Features



Model	Cooling capacity/Heating capacity
	kW
PFFY-W20VCM-A	2.2/2.5
PFFY-W25VCM-A	2.8/3.2
PFFY-W32VCM-A	3.6/4.0
PFFY-W40VCM-A	4.5/5.0
PFFY-W50VCM-A	5.6/6.3

[1] Components and Functions

1. Indoor (Main) Unit



(A) Air

[1] Specifications

1. Specfications

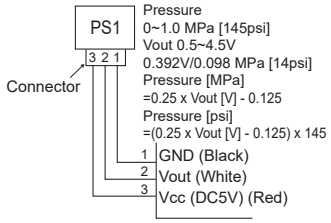
Model name			PFFY-W20VCM-A	PFFY-W25VCM-A	PFFY-W32VCM-A
Power source			~ 220-240V 50Hz/60Hz		
Cooling capacity *1		kW	2.2	2.8	3.6
Heating capacity *1			2.5	3.2	4.0
Power consumption	Cooling	kW	0.022	0.029	0.035
	Heating		0.022	0.029	0.035
Current	Cooling	A	0.25	0.33	0.38
	Heating		0.25	0.33	0.38
External finish			Galvanized steel plate		
Dimension	Height *2	mm	615 (690)		
	Width		700		
	Depth		200		
Net weight		kg	18.5	18.5	19
Heat exchanger			Cross fin (Aluminum fin and copper tube)		
Fan	Type x Quantity		Sirocco fan x 2		
	Airflow rate (Lo-Mid-Hi)	m^3/min	5.0-6.0-7.0	5.5-7.0-8.5	6.5-7.5-9.0
	External static pressure *3	Pa	0/10/40/60		
Motor	Type		DC motor		
	Output	kW	0.096		
Air filter			PP honeycomb fabric.		
Water piping diameter	Inlet	mm I.D.	20		
	Outlet	mm I.D.	20		
Drain pipe dimensions		mm	32 (1-1/4 inch)		
Noise level (Lo-Mid-Hi)		dB (A)	21-23-26	22-26-30	25-28-32

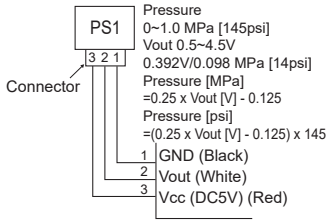
*1 <Cooling> Indoor temperature: 27°CDB/19°CWB (81°FDB/66°FWB Outdoor temperature: 35°CDB (95°FDB)
<Heating> Indoor temperature: 20°CDB (68°FDB) Outdoor temperature: 7°CDB/6°CWB (45°FDB/43°FWB)
*2 The values in ( ) show the height of unit with leg.
*3 The external static pressure is set to 10Pa at factory shipment.
*4 The noise level in operation is measured at 1.5m apart from the front side and the bottom side of the unit in anechoic room. (Noise meter A-scale value) Connect the duct of 1m in length to the air outlet.

Model name			PFFY-W40VCM-A	PFFY-W50VCM-A
Power source			~ 220-240V 50Hz/60Hz	
Cooling capacity *1		kW	4.5	5.6
Heating capacity *1			5.0	6.3
Power consumption	Cooling	kW	0.038	0.062
	Heating		0.038	0.062
Current	Cooling	A	0.38	0.52
	Heating		0.38	0.52
External finish			Galvanized steel plate	
Dimension	Height *2	mm	615 (690)	
	Width		900	
	Depth		200	
Net weight		kg	23	23
Heat exchanger			Cross fin (Aluminum fin and copper tube)	
Fan	Type x Quantity		Sirocco fan x 3	
	Airflow rate (Lo-Mid-Hi)	m^3/min	8.0-9.5-11.0	10.5-12.5-14.5
	External static pressure *3	Pa	0/10/40/60	
Motor	Type		DC motor	
	Output	kW	0.096	
Air filter			PP honeycomb fabric.	
Water piping diameter	Inlet	mm I.D.	20	
	Outlet	mm I.D.	20	
Drain pipe dimensions		mm	32 (1-1/4 inch)	
Noise level (Lo-Mid-Hi)		dB (A)	25-27-30	28-32-35

*1 <Cooling> Indoor temperature: 27°CDB/19°CWB (81°FDB/66°FWB Outdoor temperature: 35°CDB (95°FDB)
<Heating> Indoor temperature: 20°CDB (68°FDB) Outdoor temperature: 7°CDB/6°CWB (45°FDB/43°FWB)
*2 The values in ( ) show the height of unit with leg.
*3 The external static pressure is set to 10Pa at factory shipment.
*4 The noise level in operation is measured at 1.5m apart from the front side and the bottom side of the unit in anechoic room. (Noise meter A-scale value) Connect the duct of 1m in length to the air outlet.

2. Electrical component specifications

Component	Sym-bol	PFFY-W20VCM-A	PFFY-W25VCM-A	PFFY-W32VCM-A
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-D8114-1		
Pressure sensor (inner water)	PS1			
Pressure sensor (outlet water)	PS2			
Flow control valve	FCV	12V DC Stepping motor (0~770 pulse)		
Power supply terminal block	TB2	(L, N, ⏚) 330V 30A		
Transmission terminal block	TB5 TB15	(1, 2), (M1, M2, S) 250V 20A		

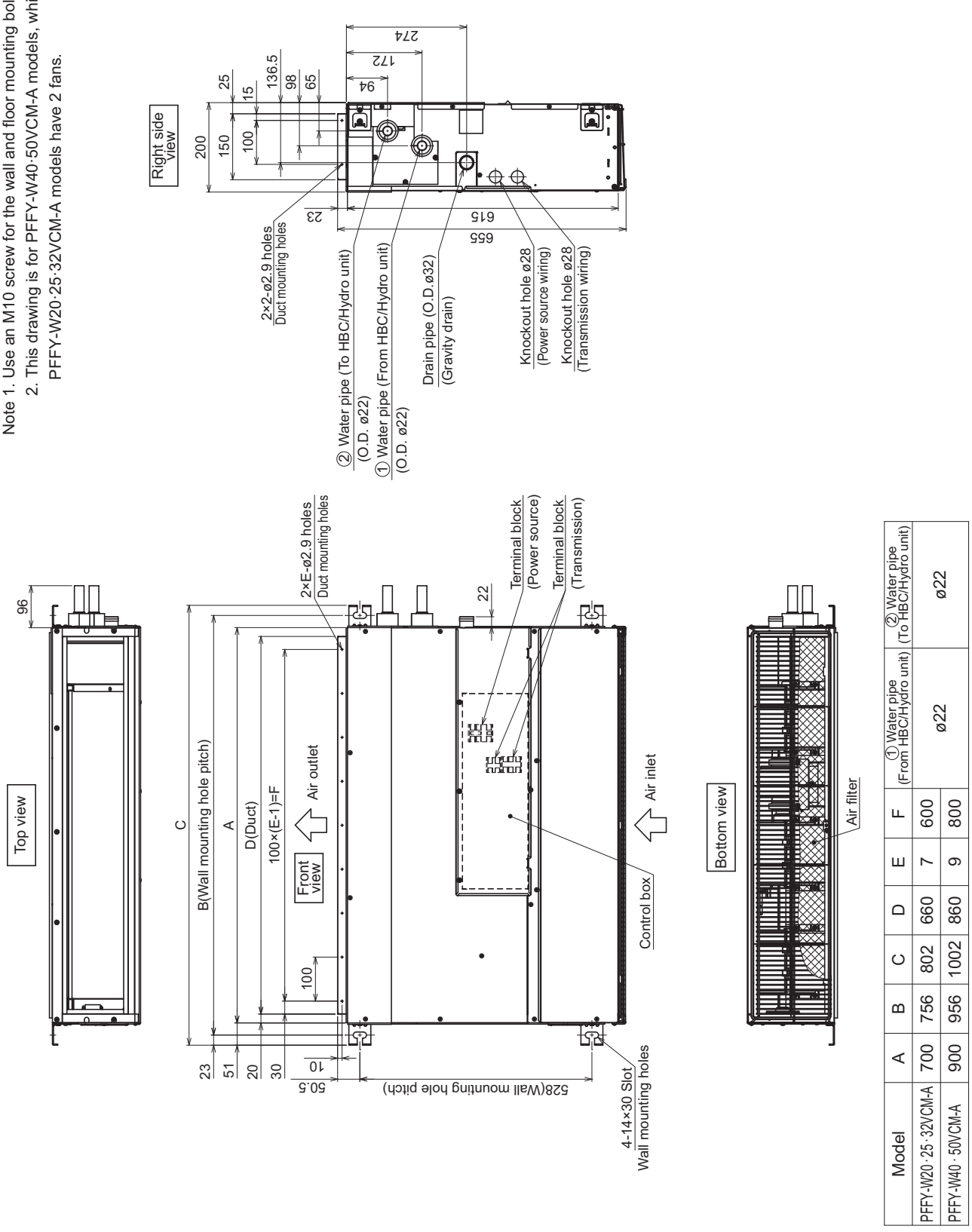
Component	Sym-bol	PFFY-W40VCM-A	PFFY-W50VCM-A
Room temperature thermistor	TH21	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ	
Water inlet pipe thermistor	TH22	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ	
Water outlet pipe thermistor	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-D896-1	
Pressure sensor (inner water)	PS1		
Pressure sensor (outlet water)	PS2		
Flow control valve	FCV	12V DC Stepping motor (0~770 pulse)	
Power supply terminal block	TB2	(L, N, ⏚) 330V 30A	
Transmission terminal block	TB5 TB15	(1, 2), (M1, M2, S) 250V 20A	

[1] Outlines and Dimensions

1. PFFY-W20, 25, 32, 40, 50VCM-A Bottom suction · wall mounting

Unit: mm

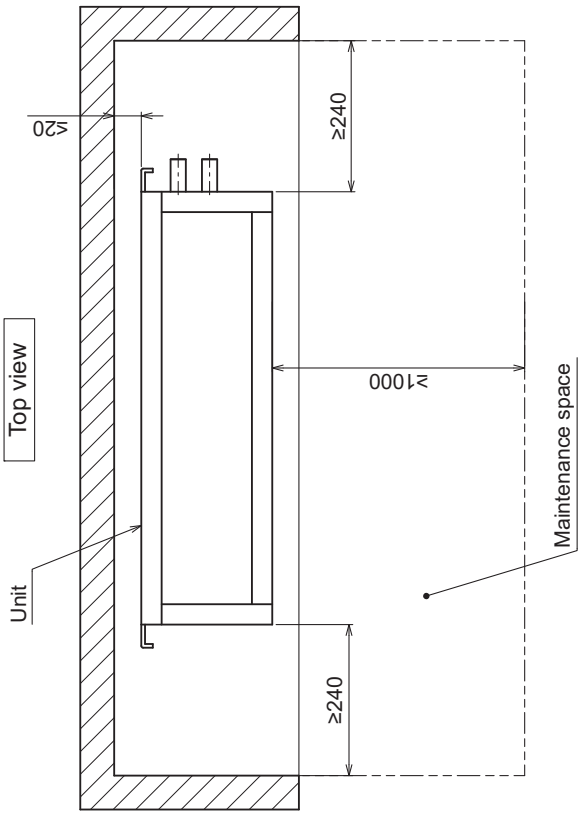
Note 1. Use an M10 screw for the wall and floor mounting bolt (field supply).
2. This drawing is for PFFY-W40·50VCM-A models, which have 3 fans.
PFFY-W20·25·32VCM-A models have 2 fans.

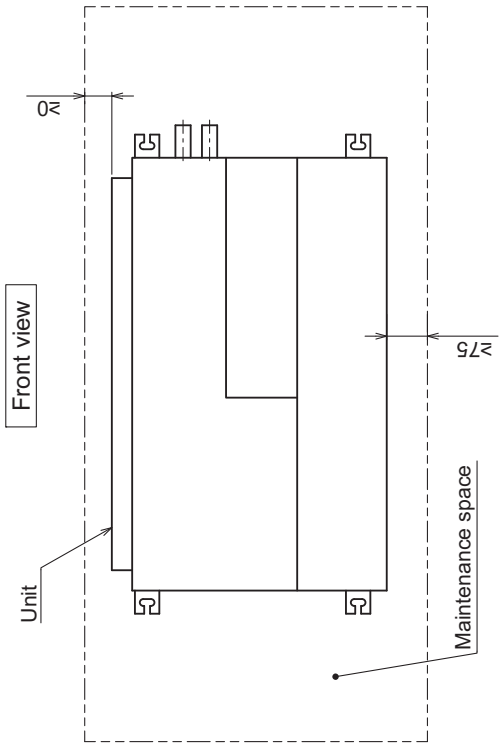


Model	A	B	C	D	E	F	① Water pipe (From HBC/Hydro unit)	② Water pipe (To HBC/Hydro unit)
PFFY-W20 · 25 · 32VCM-A	700	756	802	660	7	600	ø22	ø22
PFFY-W40 · 50VCM-A	900	956	1002	860	9	800		

Unit: mm

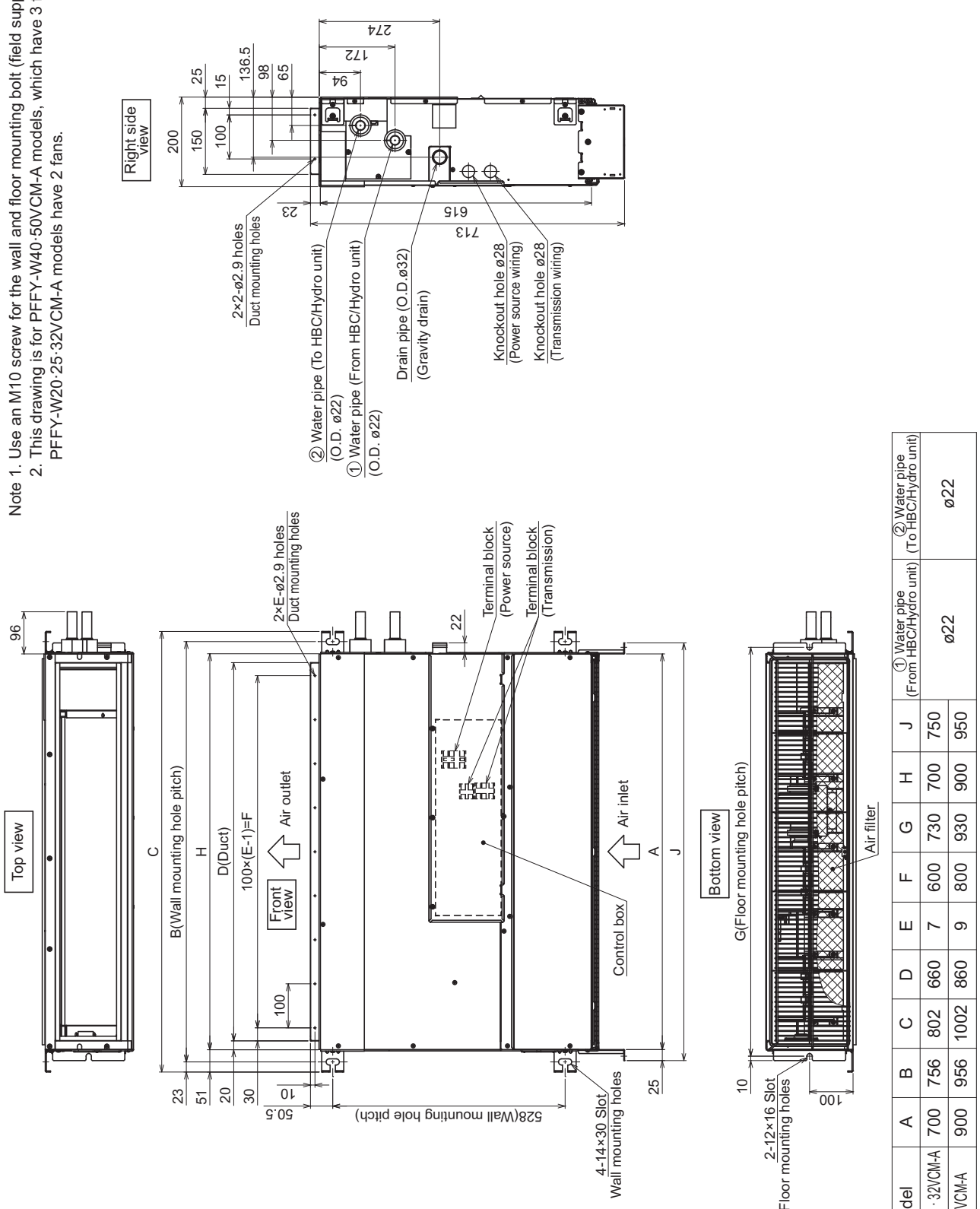
[Maintenance access space]
Secure enough access space to allow for the maintenance, inspection, and replacement of the motor, fan, heat exchanger, drain pan and control box.





2. PFFY-W20, 25, 32, 40, 50VCM-A Bottom suction · floor mounting

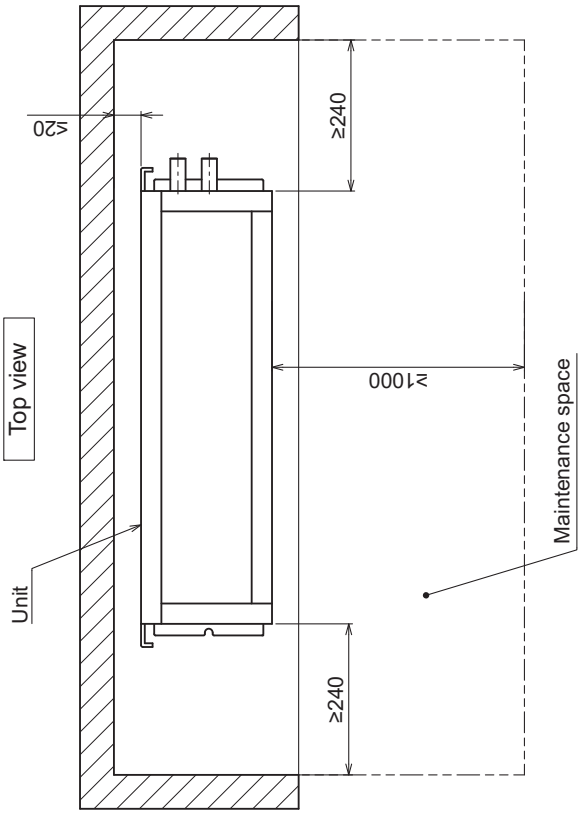
Unit: mm

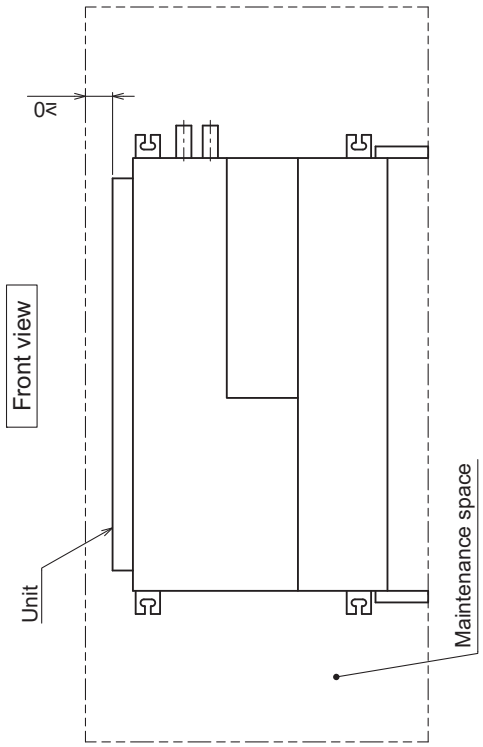


Model	A	B	C	D	E	F	G	H	J	① Water pipe (From HBC/Hydro unit)	② Water pipe (To HBC/Hydro unit)
PFFY-W20 · 25 · 32VCM-A	700	756	802	660	7	600	730	700	750	ø22	ø22
PFFY-W40 · 50VCM-A	900	956	1002	860	9	800	930	900	950		

Unit: mm

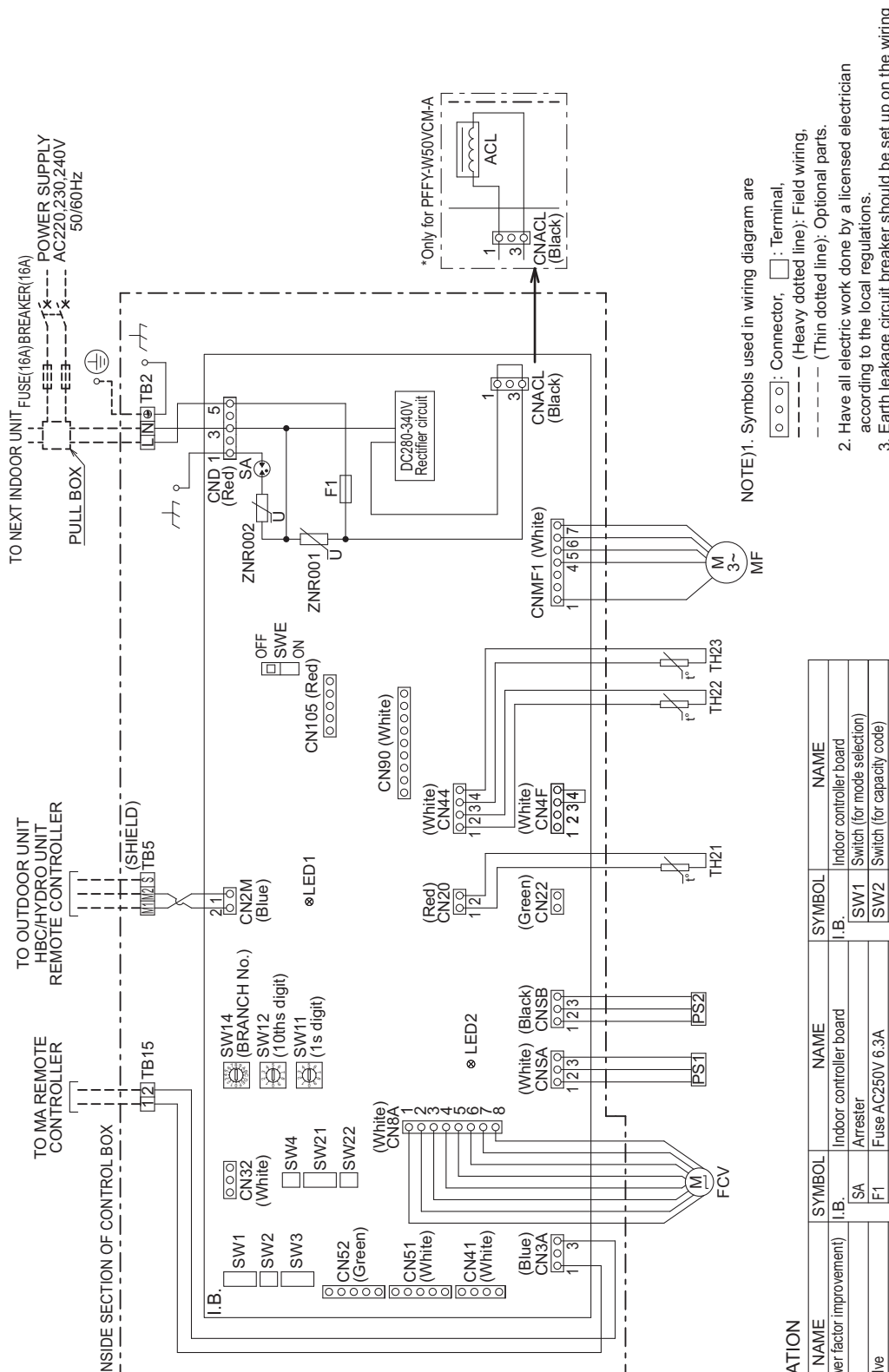
[Maintenance access space]
Secure enough access space to allow for the maintenance, inspection, and replacement of the motor, fan, heat exchanger, drain pan and control box.





[1] Wiring Diagram

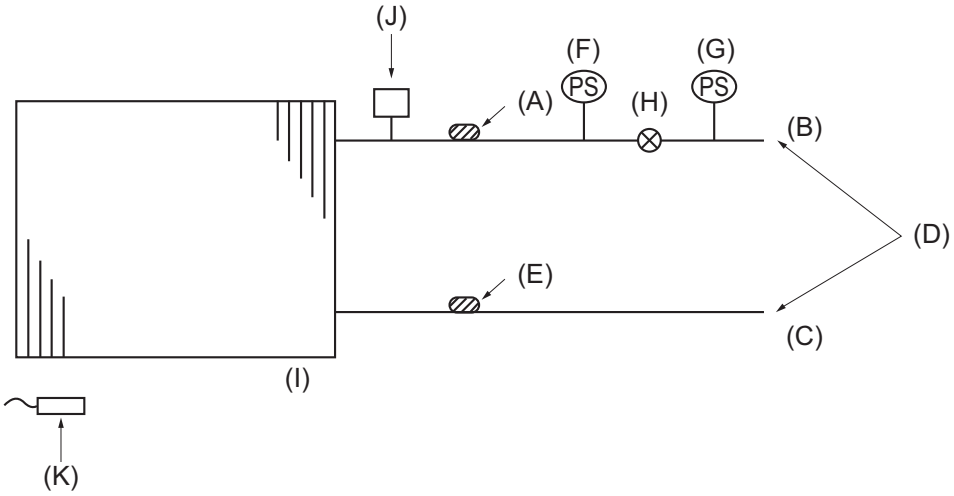
1. PFFY-W20,25,32,40,50VCM-A



SYMBOL EXPLANATION

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
ACL	AC reactor(Power factor improvement)	I.B.	Indoor controller board	I.B.	Indoor controller board
MF	Fan Motor	SA	Arrester	SW1	Switch (for mode selection)
FCV	Flow control valve	F1	Fuse AC250V 6.3A	SW2	Switch (for capacity code)
PS1	Pressure sensor (inner water)	ZNR001	Varistor	SW3	Switch (for mode selection)
PS2	Pressure sensor (outlet water)	ZNR002	Varistor	SW4	Switch (for model selection)
TB2	Power source terminal block	CN22	Connector (Optional Thermistor)	SW11	Switch (1s digit address set)
TB5	Transmission terminal block	CN32	Connector (Remote switch)	SW12	Switch (10ths digit address set)
TB15	Transmission terminal block	CN41	Connector (HA terminal-A)	SW14	Switch (BRANCH No.)
TH21	Thermistor (inlet air temp. detection)	CN51	Connector (Centrally control)	SW21	Switch (for static pressure selection)
TH22	Thermistor (piping temp.detection/inlet water)	CN52	Connector (Remote indication)	SW22	Switch (Wireless pair No.)
TH23	Thermistor (piping temp.detection/outlet water)	CN90	Connector (Wireless)	SWE	Connector (emergency operation)
		CN105	Connector (IT terminal)	LED1	LED(Power supply)
				LED2	LED(Remote controller supply)

[1] Refrigerant system diagram



(A) Water outlet thermistor TH23
(B) Water outlet
(C) Water inlet
(D) Joint connection (connected on site)
(E) Water inlet thermistor TH22
(F) Pressure sensor (inner water) PS1
(G) Pressure sensor (outlet water) PS2
(H) Flow control valve FCV
(I) Heat exchanger
(J) Manual air purge valve
(K) Room temperature thermistor TH21

Capacity	PFFY-W20, 25, 32, 40, 50VCM-A
Water outlet	I.D. 20
Water inlet	I.D. 20

[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
4.3kΩ - 9.6kΩ	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)

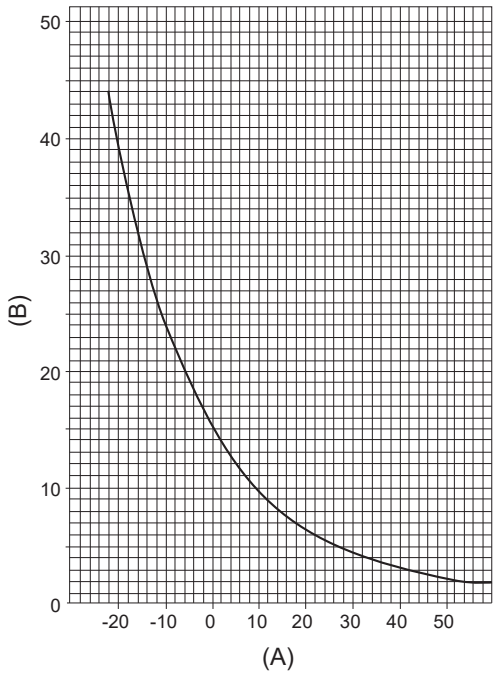
- Thermistor R_0 = 15 kΩ±3%
- Multiplier of B = 3480 kΩ±2%

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

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

(A) Temperature (°C)

(B) Resistance (kΩ)

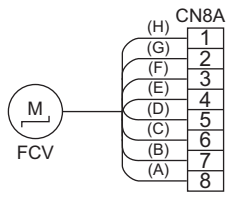


(2) Fan motor (CNMF1)

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

(3) Flow control valve

Disconnect the connector, and measure the resistance between terminals with a tester.
Refer to the next page for details.



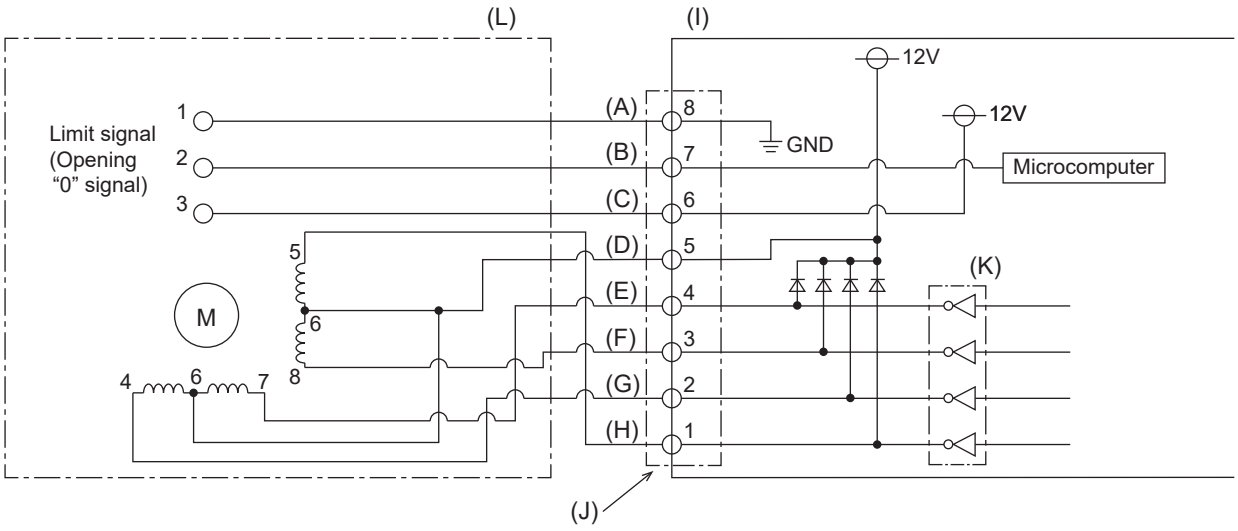
Normal				Abnormal
1-5 Purple-Brown	2-5 Orange-Brown	3-5 Blue-Brown	4-5 Green-Brown	Open or short
55Ω / PHASE				

(A) Yellow
(B) White
(C) Black
(D) Brown
(E) Green
(F) Blue
(G) Orange
(H) Purple

1) Summary of flow control valve (FCV) operation

- The FCV is operated by a stepping motor, which operates by receiving a pulse signal from the indoor control board.
- The FCV position changes in response to the pulse signal.

Indoor control board and FCV connection



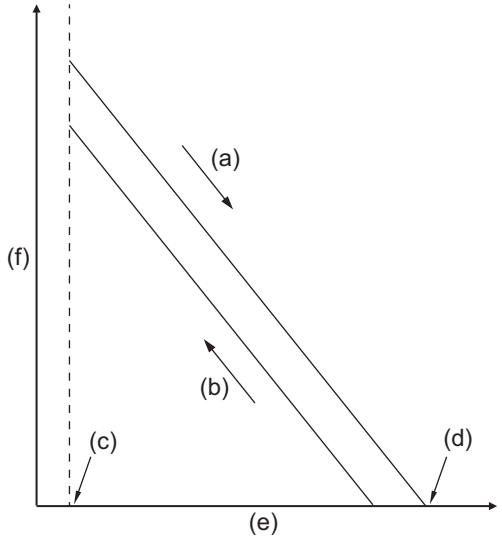
(A) Yellow
(B) White
(C) Black
(D) Brown
(E) Green
(F) Blue
(G) Orange
(H) Purple
(I) Control board
(J) Connection (CN60)
(K) Drive circuit
(L) Flow control valve

Pulse signal output and valve operation

Output (phase) number	Output status			
	1	2	3	4
4	ON	ON	OFF	OFF
5	OFF	ON	ON	OFF
7	OFF	OFF	ON	ON
8	ON	OFF	OFF	ON

The output pulse changes in the following order:
When the valve closes 1 -> 2 -> 3 -> 4 -> 1
When the valve opens 4 -> 3 -> 2 -> 1 -> 4

2) FCV operation



(a) Close
(b) Open
(c) Fully open valve (85 pulses)
(d) Fully close valve (770 pulses)
(e) No. of pulses
(f) Valve opening degree

(4) Pressure sensor

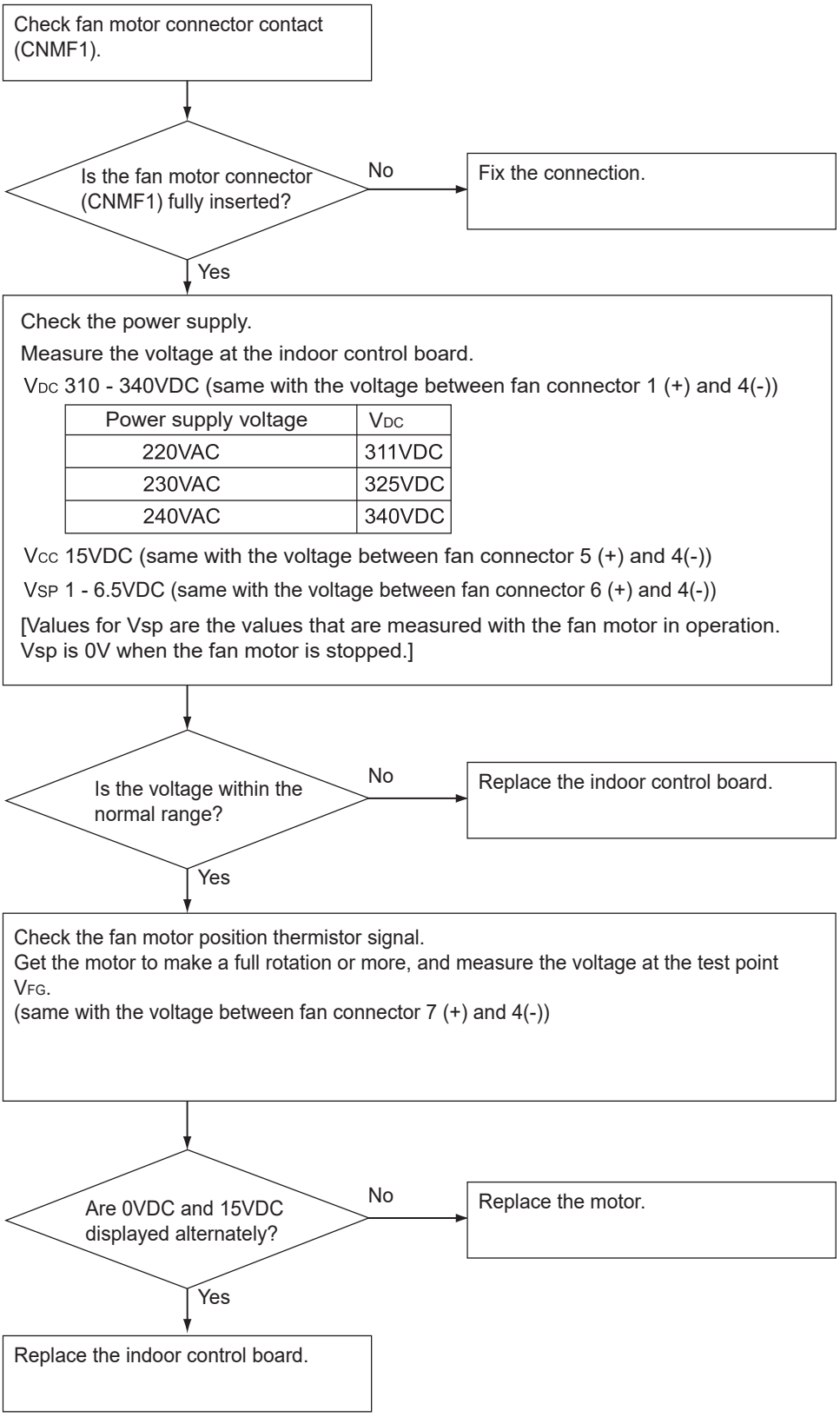
- Pressure sensor (inner water) PS1
- Pressure sensor (outlet water) PS2

1) Check that the pressure sensor is connected.
2) Check the pressure sensor wiring for breakage.

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

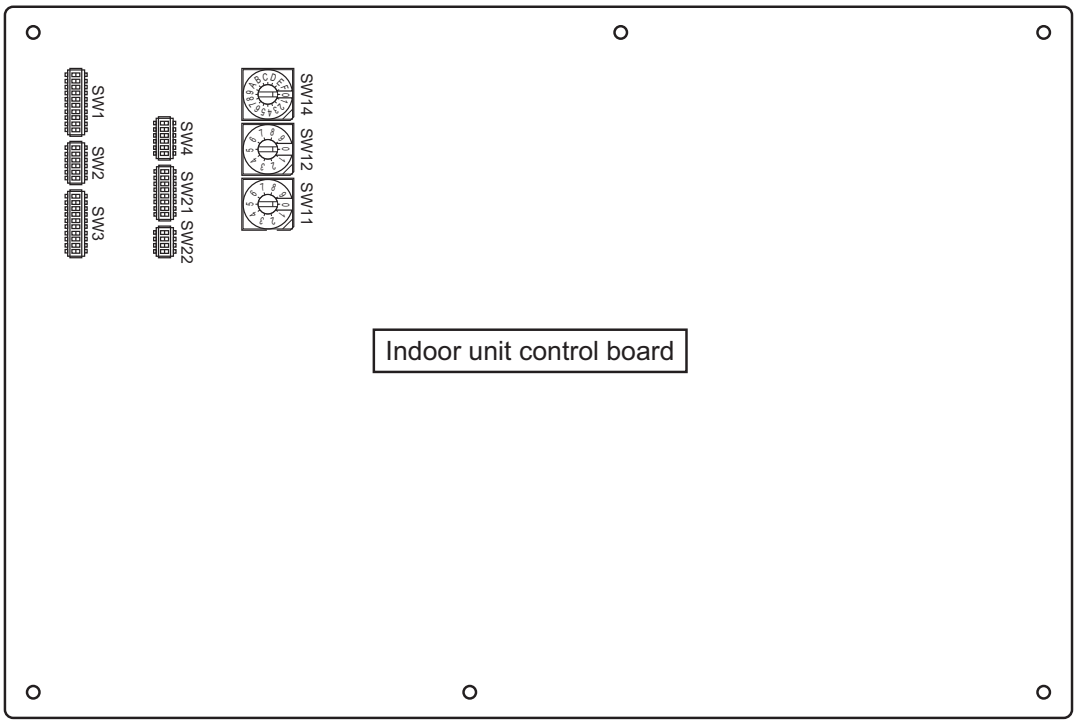
1. CAUTION
   - ♦A high voltage is applied to the connector for connection to the fan motor (CNMF1).
   - ♦Do not unplug the connector CNMF1 with the unit energized to avoid damage to the indoor control board and fan motor.

2. Troubleshooting
   - ♦Symptom: Indoor unit fan does not run.



3. Setting of address switch

Make sure that power source is turning off.



1) Incase using network remote controller, address is set by rotary switches. (SW11,SW12)

∗It is not necessary setting address in case of using unit remote controller.

Indoor unit do not run without address setting in field.

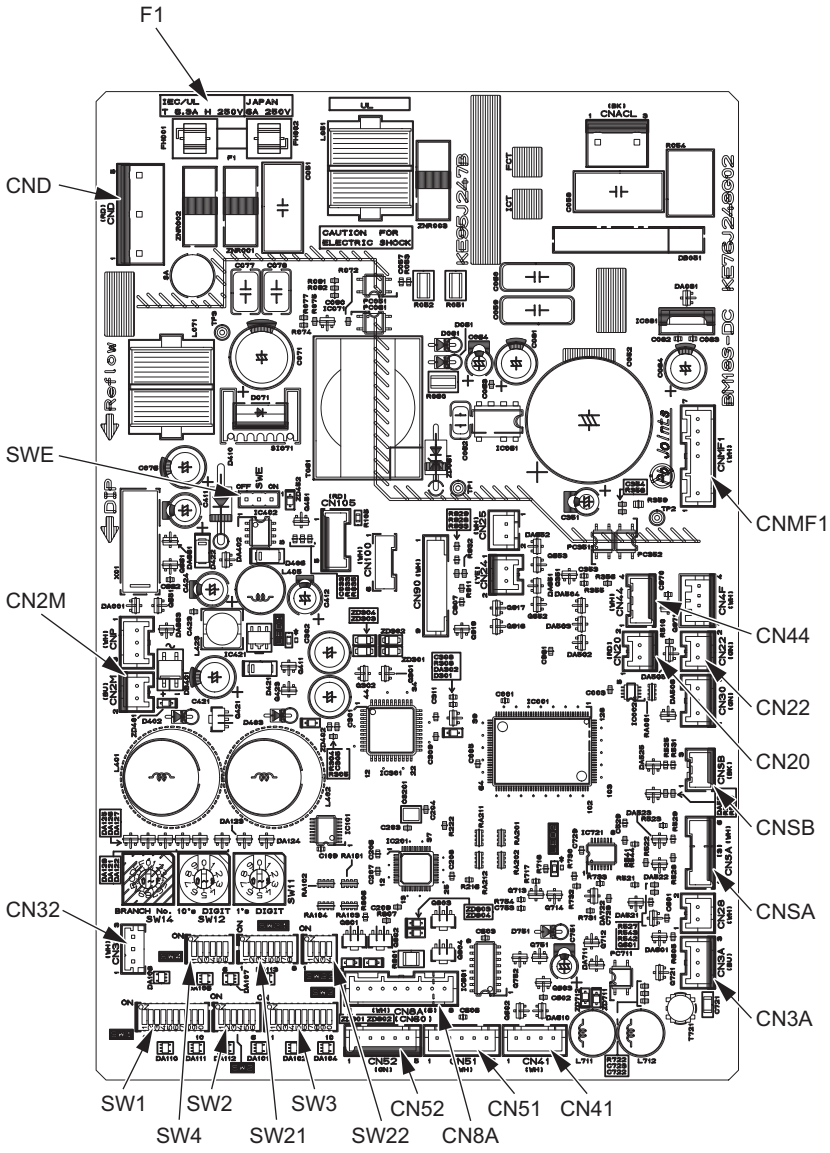
2) Indoor unit address setting rule is different by each field work.
Refer to install manual of outdoor unit, operate the address setting.

3) Setting the address is combination of SW11 (1st digit address setting) and SW12 (2nd digit address setting).

Address " 3 " setting is composed SW11 " 3 " and SW12 " 0 ".
Address " 25 " setting is composed SW11 " 5 " and SW12 " 2 ".

4. Voltage test points on the control board

1. PFFY-W20, 25, 32, 40, 50VCM-A

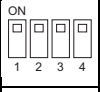
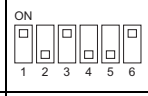
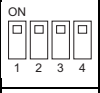
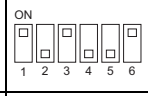
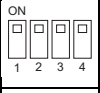
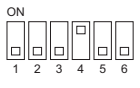
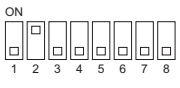
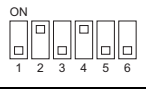
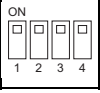


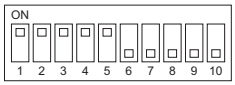
F1	Fuse (AC 250V 6.3A)
CND	Power supply voltage (220 - 240VAC)
CN2M	For M-NET transmission cable connection (24 - 30VDC)
SWE	Emergency operation
SW2	Capacity setting
SW4	Function setting
SW3	Function setting
CN32	Remote start/stop adapter
CN3A	For MA remote controller cable connection (10 - 13 VDC (Between 1 and 3.))
CN52	Remote display
CN51	Centralized control
CN41	JAMA standard HA terminal A
CN44	Thermistor (water inlet/outlet temperature)
CN20	Thermistor (Inlet air temperature)
CNMF1	Fan motor output 1 - 4: 294 - 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)
CNSA	Pressure sensor (inner water)
CNSB	Pressure sensor (outlet water)
CN8A	Flow control valve (FCV)

(*1)

V_{FG}	Voltage on 3 of PC352 and the (-) side of C081 (Same with the voltage between 7 (+) and 4 (-) of CNMF)
V_{CC}	Voltage between the C084 pins 15 VDC (Same with the voltage between 5 (+) and 4 (-) of CNMF)
Vsp	Voltage between the C351 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. Setting of Dip-switch (at delivery)

Models	SW1	SW2	SW3	SW4	SW21	SW22	SWE
PFFY-W20VCM-A							
PFFY-W25VCM-A							
PFFY-W32VCM-A							
PFFY-W40VCM-A							
PFFY-W50VCM-A							



The figure at left shows that the switches 1 through 5 are set to ON and 6 through 10 are set to OFF.

6. 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	-	-	-
5	Remote display	Thermo-ON signal	Fan output
6	-	-	-
7	Fan speed	Low	Very low
8	Fan speed at heating Thermo-OFF	Preset for speed	Follow the setting of SW1-7
9	Auto restart after power failure	Enabled	Disabled
10	Power start/stop	Enabled	Disabled

(2) SW3

Switch position	Function	Switch setting	
		ON	OFF
1	Unit type	Cooling only	Heat pump
2	-	-	-
3	-	-	-
4	-	-	-
5	-	-	-
6	-	-	-
7	-	-	-
8	-	-	-
9	-	-	-
10	-	-	-

7. Selecting the external static pressure

Four levels of external static pressure (0 Pa/10 Pa/40 Pa/60 Pa) are available for selection.
Set the setting either by using the switches on the control board (SW21-1, SW21-2, and SW21-5) or from the function selection screen on the remote controller.

Note:

- **When the static pressure setting was set from the remote controller, the actual setting and the switch setting on the control board may not match because the latest setting from the remote controller overrides the previous setting. To check the latest static pressure setting, check it on the remote controller, not on the switch.**
- **If the static pressure setting for the duct is lower than that for the unit, the fan of the unit may repeat start/stop, and the outdoor unit may remain in a stopped state. Match the static pressure settings for the unit to that for the duct.**

To set the external static pressure with the switches on the control board

External static pressure	SW21-1	SW21-2	SW21-5
0 Pa	OFF	ON	ON
10 Pa	OFF	ON	OFF
40 Pa	OFF	OFF	OFF
60 Pa	ON	OFF	OFF

To set the external static pressure from the function selection screen on the remote controller

Follow the instructions below and the instructions detailed in the remote controller manual for how to set the switches.

1. Set the function setting No. 32 (Switch setting/Function selection) to “2”.
2. Set the function setting No. 8 and No. 10 to appropriate values, according to the external static pressure.

External static pressure setting	Function setting No.		Initial setting	Current setting
	No. 8	No. 10		
0 Pa	1	2		
10 Pa	1	1	○	
40 Pa	2	1		
60 Pa	3	1		

[Important]
Be sure to write down the settings for all functions in the “Current setting” row if any of the initial settings has been changed.

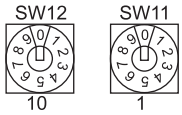
8. Setting addresses

(Be sure to operate with the main power turned OFF.)

- There are two types of rotary switch setting available: setting addresses 1 to 9 and over 10, and setting branch numbers.

1) How to set addresses
   Example: If Address is “3”, remain SW12 (for over 10) at “0”, and match SW11 (for 1 to 9) with “3”.

Factory setting



2) How to set branch numbers SW14 (Series R2 only)
   The branch number assigned to each indoor unit is the port number of the BC controller to which the indoor unit is connected.
   Leave it to “0” on the non-R2 series of units.

Factory setting

- The rotary switches are all set to “0” when shipped from the factory. These switches can be used to set unit addresses and branch numbers at will.
- The determination of indoor unit addresses varies with the system at site. Set them referring to the Data Book.

9. Setting of intermittent fan control

When the unit is used in a high temperature and humidity environment, set the function setting No. 119 to “2.”
(Default setting: “1”)

⚠ CAUTION

When the setting is enabled, the stopped fan may start operating.

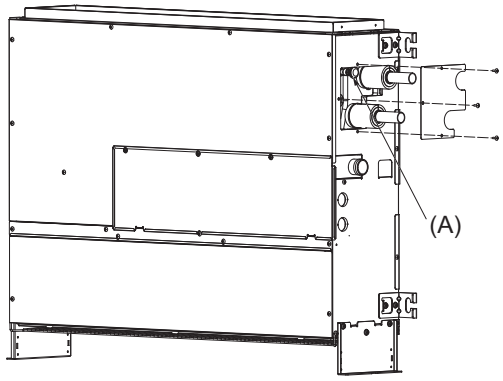
10. Function the LED of the indoor unit service board

Symbol	Silk display	LED operation under normal state
LED1	Main power source	At applying main power source (indoor unit 200V) → Lighting
LED2	Transmission power source	At receiving M-NET transmission power source → Lighting

11.Instructions for debris removal operation

Details are described in the "Instructions for debris removal operation" section in the "Troubleshooting" chapter of the Service Handbook for the HBC or hydro unit.

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

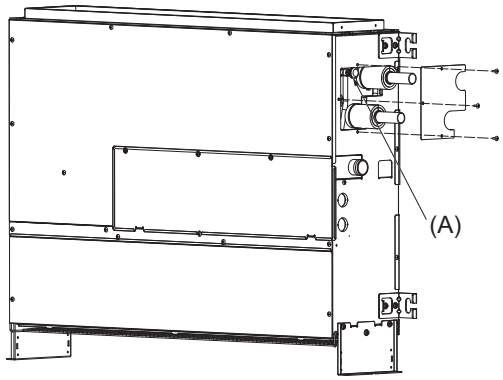


(A) Air vent valve

12.Instructions for the air vent operation

Details are described in the "Instructions for the air vent operation" section in the "Troubleshooting" chapter of the Service Handbook for the HBC or hydro unit.

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



(A) Air vent valve

[1] Disassembly Procedure

1. Control box

Be careful removing heavy parts.

1. Removing the control box cover

(1) Remove the fixing screws (three) of the control box (A), and remove the cover. (Fig.1)

*At this stage, the following servicing is possible. (Fig.2)

1) Operation and check of the switches (listed below) which are on the control board.
- ♦Dip switch SW1 . . . . . Function change
- ♦Dip switch SW2 . . . . . Capacity code setting
- ♦Dip switch SW3 . . . . . Function change
- ♦Dip switch SW4 . . . . . Model code setting
- ♦Dip switch SW21 . . . . . Static pressure setting
- ♦Dip switch SW22 . . . . . Function setting
- ♦Rotary switches SW11, 12 . . . . Address setting
- ♦Rotary switch SW14 . . . . . Branch port setting

2) Connection check of the lead wires (listed below) which are connected to the controller board.
- ♦Power supply lead wire.
- ♦Network remote controller transmission lead wire.
- ♦Fan motor lead wire.
- ♦FCV lead wire
- ♦Pressure sensor (inner water) lead wire
- ♦Pressure sensor (outlet water) lead wire
- ♦Inlet air temperature lead wire
- ♦Water inlet pipe thermistor lead wire
- ♦Water outlet pipe thermistor lead wire

3) Control board exchange
4) Condenser exchange
5) Fuse (Fuse holder) exchange
6) Relay exchange
7) Intake air sensor exchange
8) Power supply terminal bed exchange
9) Transmission terminal bed exchange x 2

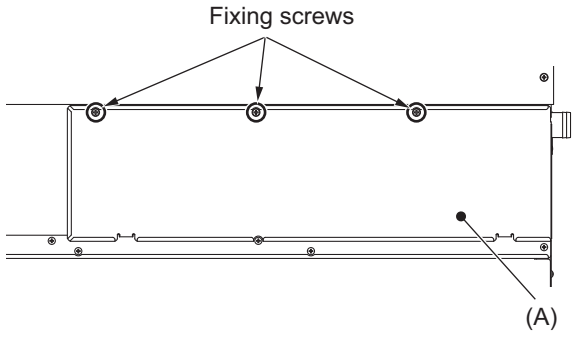


Fig.1

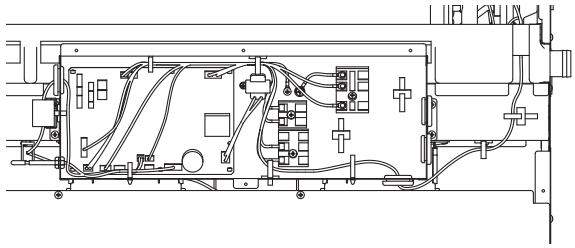


Fig.2

2. Thermistor (Intake air)

Exercise caution when removing heavy parts.

1. Remove the control box cover with procedure **[1]-1**.
2. Remove the thermistor.

(1) Pull out the thermistor holder (B) and thermistor (C) on the control box.

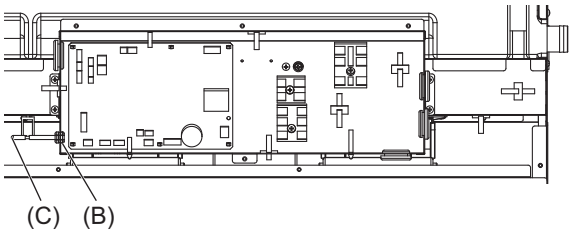


Fig.3

3. Drain pan

Be careful removing heavy parts.

1. Remove the control box cover (A) with procedure **[1]-1**.
2. Remove the fixing screws on the front plate (D), (E) to remove it. (Fig. 4)

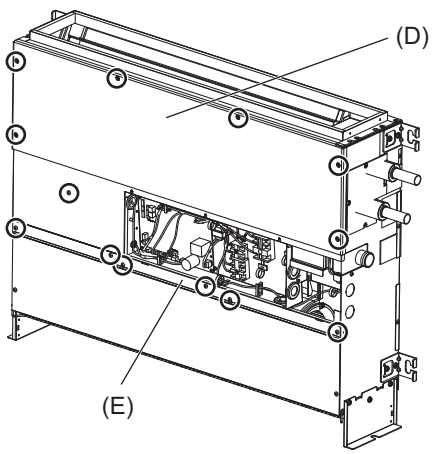


Fig.4

3. Remove the fixing screws on the control box (F), to remove it. (Fig. 5)

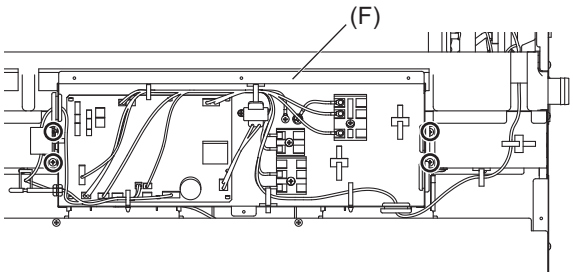


Fig.5

4. Removing the drain pan

(1) Pull out the drain pan in the direction of the arrow 1. (Fig. 6)

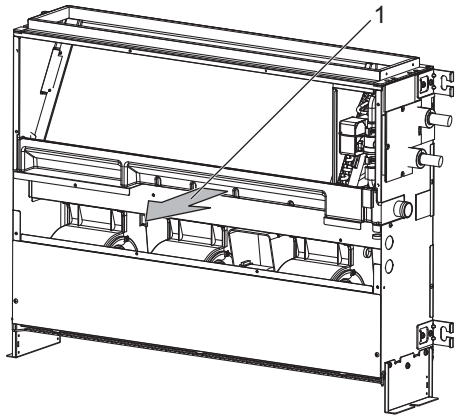


Fig.6

Note:

- **Drain the water out of the drain pan before removing it.**
- **To avoid dew condensation, use insulated screws in the places marked with circles in Fig. 7.**

(a) Insulation material

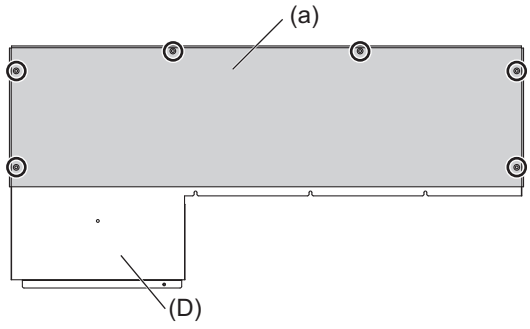


Fig.7

4. Thermistor (Water inlet / Water outlet temperature detection)

Be careful removing heavy parts.

1. Removing the liquid pipe and gas pipe thermistor

(1) Remove the front plate (E) with procedure **[1]-3**.

(2) Remove the control box (F) with procedure **[1]-3**.

(3) Pull out the drain pan with procedure **[1]-3**.

(4) Remove a fixing screw on the heat exchanger cover (G) to remove it. (Fig.8)

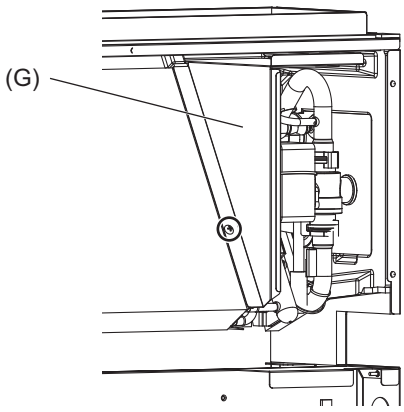


Fig.8

(5) Remove the thermistor (H) from the thermistor holder (J) on the copper tube. (Fig.9)

Thermistor size
Water inlet: ø8mm
Water outlet: ø6mm

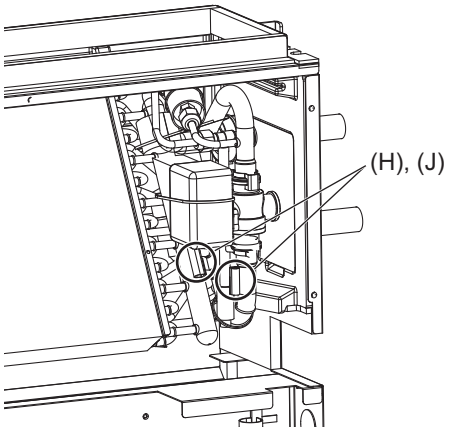


Fig.9

5. Fan and fan motor

Be careful removing heavy parts.

1. Removing the filter, control box cover, front plate and control box

(1) Push down the tab on the filter, and pull out the filter in the direction of the arrow 1 (Fig.10).

(2) Remove the control box cover (A) with procedure **[1]-1**.

(3) Remove the front plate (D), (E) with procedure **[1]-3**.

(4) Remove the fixing screws on the control box (F) with procedure **[1]-3**.

(5) Remove the front plate (K) to remove it. (Fig. 10)

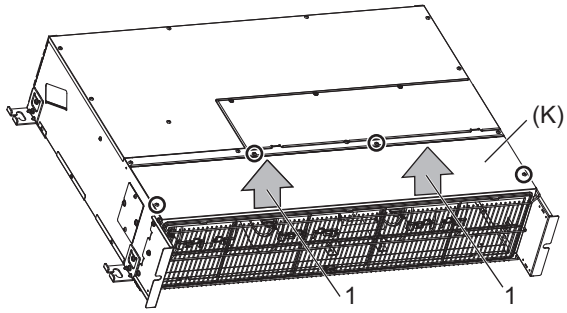


Fig.10

2. Removing the fan casing (bottom half)

(1) Squeeze the tabs on the fan casing to remove it in the direction of arrow 2. (Fig. 11)

3. Removing the motor cable

(1) Remove the motor cable threw the rubber bush.

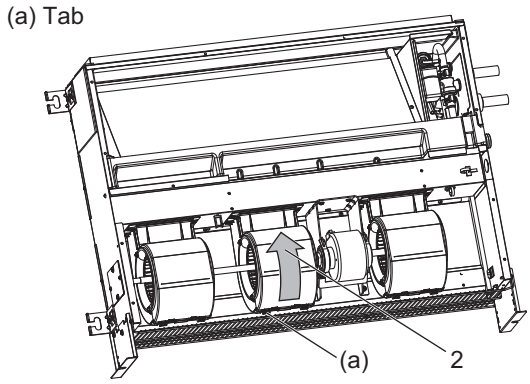


Fig.11

4. Removing the fan motor and the Sirocco fan

(1) Remove the two motor fixing screws to remove the motor and the Sirocco fan in the direction of arrow 3. (Fig. 12)

(2) Remove the four fan guard (L) screws to remove it. (Fig. 12)

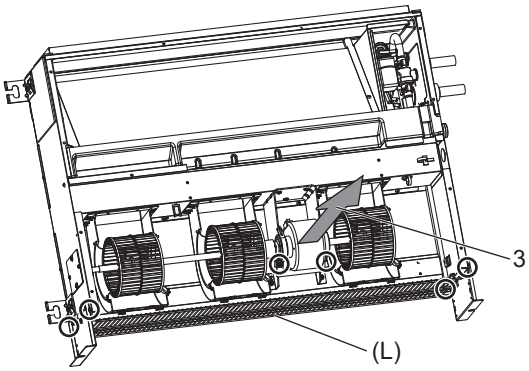


Fig.12

(3) Remove the fan case fixing screws to take the top half of the fan casing off. (Fig. 13)

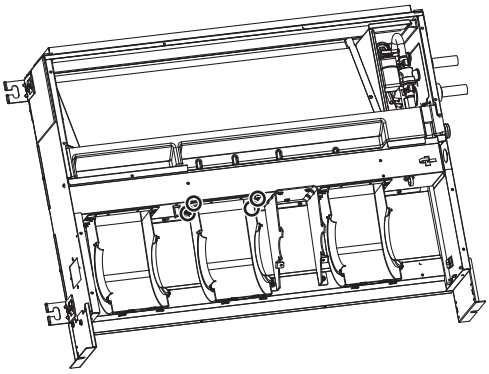


Fig.13

6. Bearing

P40, P50 models only.
Be careful removing heavy parts.

1. Removing the bearing

(1) Remove the two fixing screws on the bearing cover (M) to remove it. (Fig. 14)

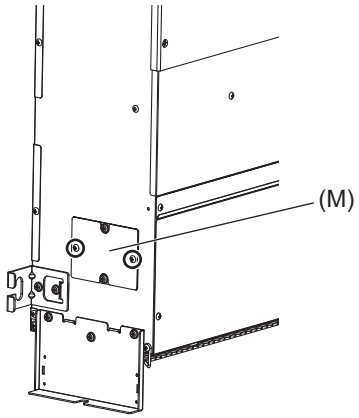


Fig.14

(2) Remove the two bearing retainer screws to remove the bearing. (Fig. 15)

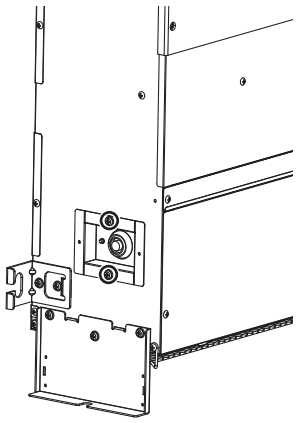


Fig.15

7. Heat exchanger (Pressure sensor and FCV)

Be careful removing heavy parts.

1. Removing the control box cover, front plate, control box and drain pan

(1) Remove the control box cover (A) with procedure **[1]-1**.

(2) Remove the front plate (D), (E) with procedure **[1]-3**.

(3) Remove the control box (F) with procedure **[1]-3**.

(4) Pull out the drain pan with procedure **[1]-3**.

2. Remove the heat exchanger cover

(1) Remove the heat exchanger cover (G) with procedure **[1]-4**.

3. Removing the cover

(1) Remove the three fixing screws on the cover (N) to remove it. (Fig.16)

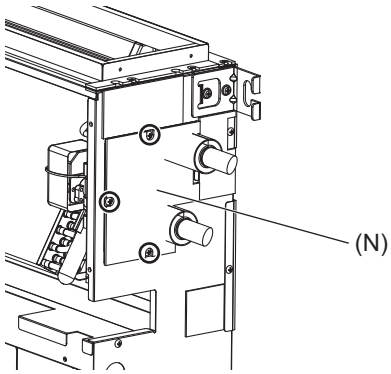


Fig.16

4. Removing the Heat exchanger

(1) Remove the fixing screws on the heat exchanger (P) to remove it (Fig.17, 18).

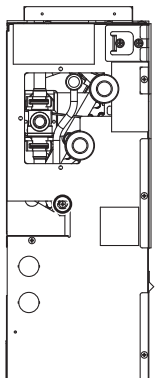


Fig.17

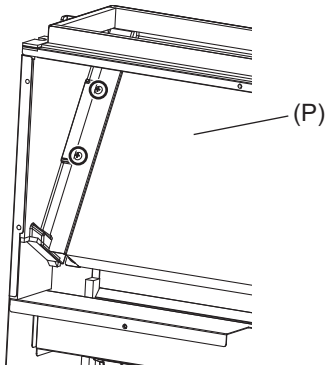


Fig.18

∗Removed heat exchanger is as shown Fig. 19

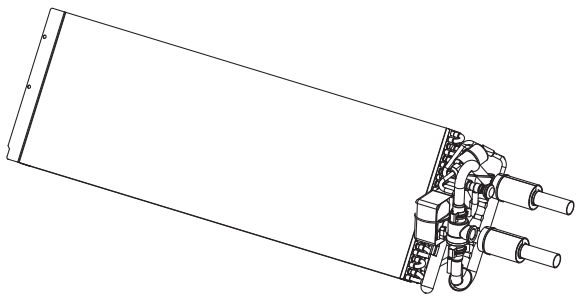


Fig.19

Note:

- In order to attach and fix the heat exchanger, insert the hook (a) on the heat exchanger (Fig. 20) to (b) (Fig. 21).

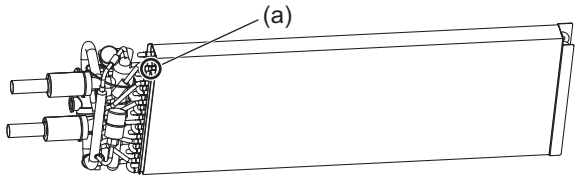


Fig.20

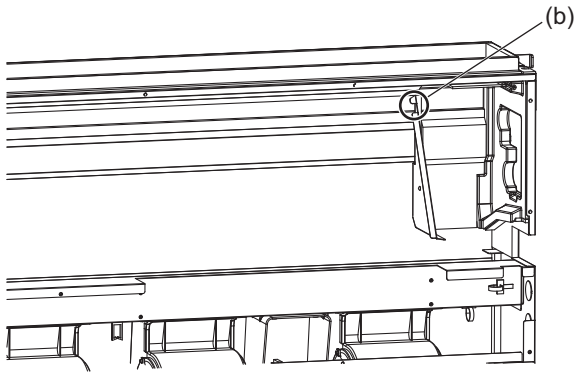


Fig.21

5. Removing the pressure sensor

(1) Debraze the brazed portion of the pressure sensors in the (Fig.22, 23) and then replace the pressure sensors with service parts.
((c) and (d) in the figures)

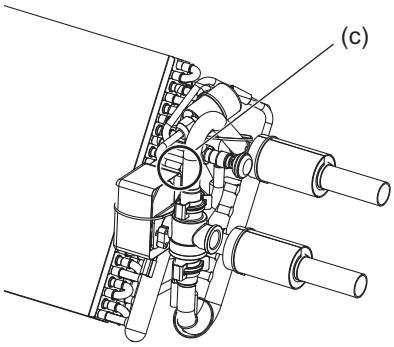


Fig.22

Note:

- Before brazing, remove the FCV according to the procedures explained in the next section.

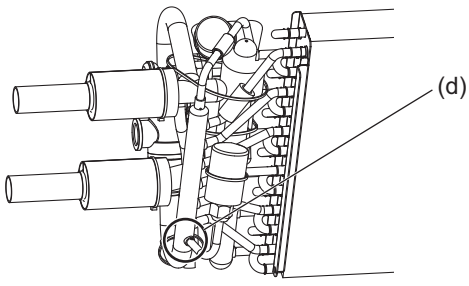


Fig.23

6. Removing the FCV

(1) Remove the cover (Q) of the FCV (R). (Fig. 24)

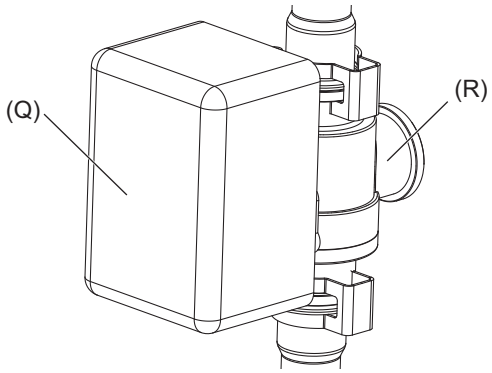


Fig.24

(2) Remove the clips (S) on the inlet/outlet of the FCV. (Fig. 25)

(3) Remove the inlet/outlet piping connecting the FCV. (Fig. 25)

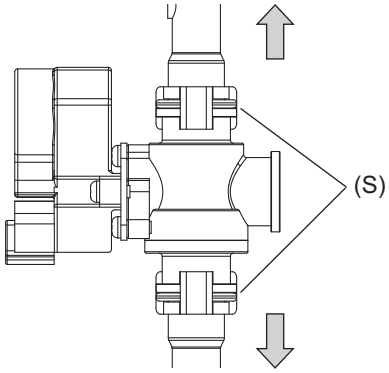


Fig.25

(4) Remove the nipple (T) (and O-ring (U)) from the FCV. (Fig.26)

(5) After removing the nipple (and O-ring), check the O-ring on the sleeve for damage. If O-ring is damaged, replace the O-ring with a new one.

(6) Check the nipple grooves for dirt.
If dirty, wipe them clean.

(7) Check the inner surface of the FCV and the inlet/outlet piping for dirt.
If dirty, wipe them clean.

(8) Before attaching the O-ring to the nipple, apply a light coating of the grease that is listed in the service parts list evenly to the entire O-ring.

(9) Before inserting the nipple (with the O-ring) into the FCV and the inlet/outlet piping, apply a light coating of the specified grease evenly to their entire inner surface.

(10) After installing the FCV, re-attach the cover.

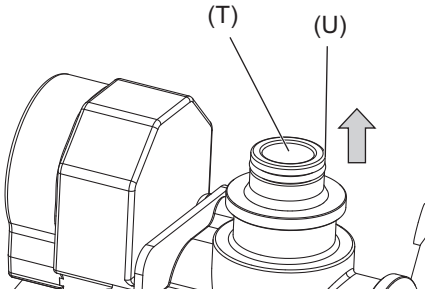
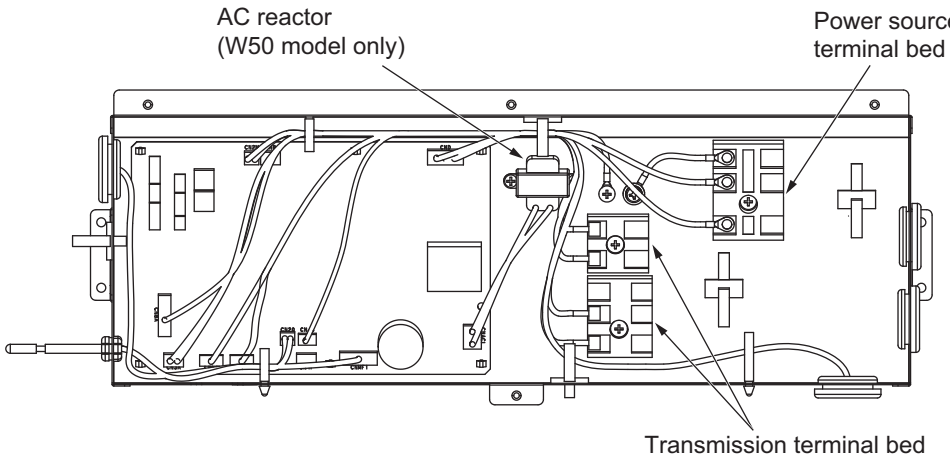


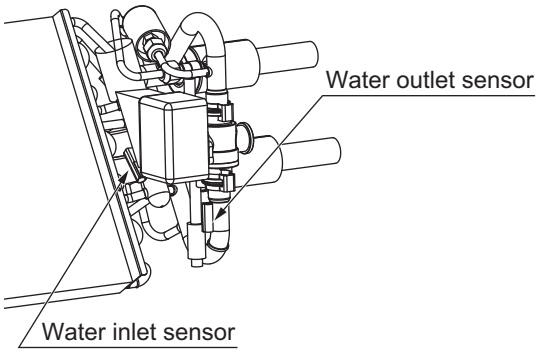
Fig.26

8. Control box inside layout

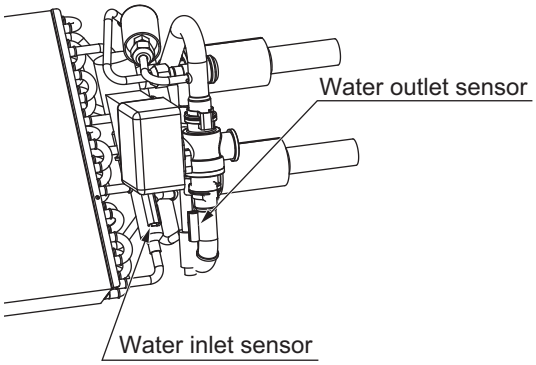


9. Sensor position

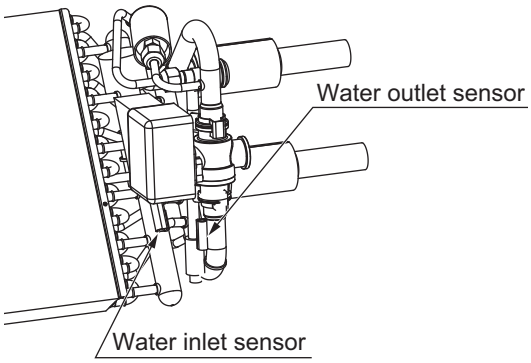
PFFY-W20, 25VCM-A



PFFY-W32VCM-A



PFFY-W40, 50VCM-A



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HWE18170

New publication effective May 2019
Specifications subject to change without notice