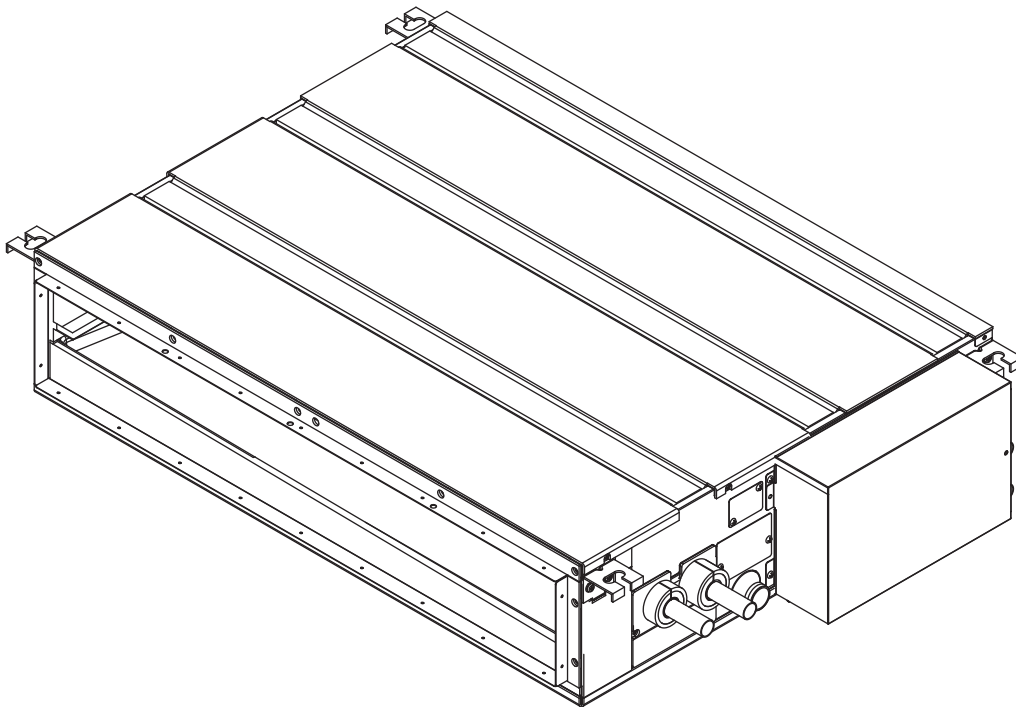


TECHNICAL & SERVICE MANUAL

Models

PEFY-W10VMS-A,
PEFY-W15VMS-A,
PEFY-W20VMS-A,
PEFY-W25VMS-A,

PEFY-W32VMS-A
PEFY-W40VMS-A
PEFY-W50VMS-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.

 **WARNING**

- | |
|---|
| 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. |

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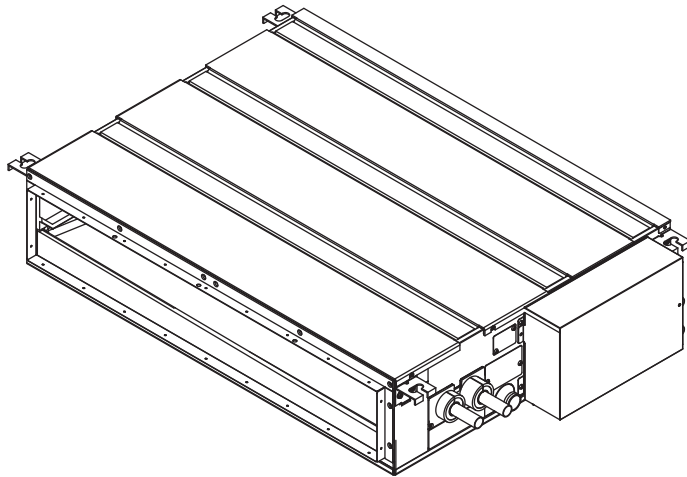
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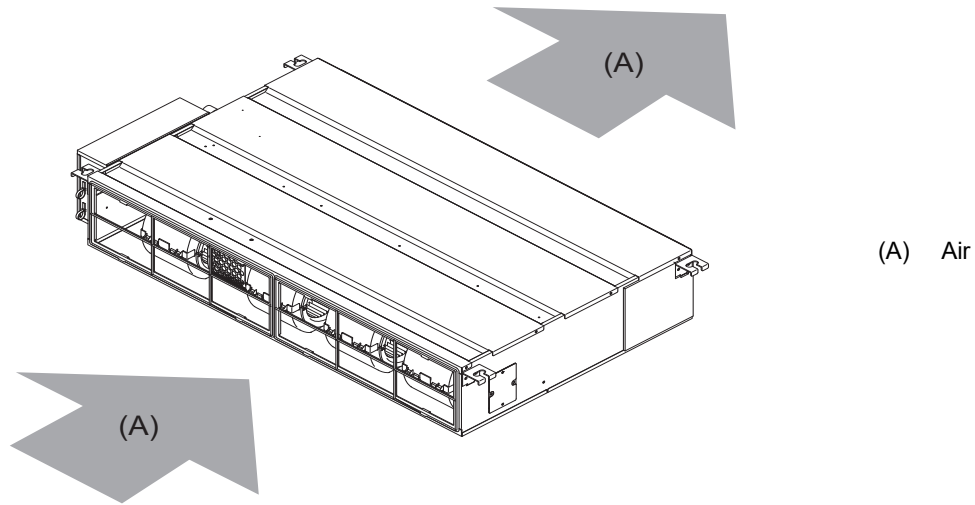
[1] Features



Model	Cooling capacity/Heating capacity
	kW
PEFY-W10VMS-A	1.2/1.4
PEFY-W15VMS-A	1.7/1.9
PEFY-W20VMS-A	2.2/2.5
PEFY-W25VMS-A	2.8/3.2
PEFY-W32VMS-A	3.6/4.0
PEFY-W40VMS-A	4.5/5.0
PEFY-W50VMS-A	5.6/6.3

[1] Components and Functions

1. Indoor (Main) Unit



[1] Specifications**1. Specifications**

Model			PEFY-W10VMS-A	PEFY-W15VMS-A	PEFY-W20VMS-A	PEFY-W25VMS-A
Power supply	Voltage	V	220-240			
	Frequency	Hz	50/60			
Cooling capacity * ¹		kW	1.2	1.7	2.2	2.8
Heating capacity * ¹		kW	1.4	1.9	2.5	3.2
Power consumption * ²	Cooling	kW	0.02	0.025	0.03	0.035
	Heating	kW	0.02	0.025	0.03	0.035
Current consumption (220V) * ²	Cooling	A	0.16	0.24	0.26	0.30
	Heating	A	0.16	0.24	0.26	0.30
External finish (Munsel No.)			Galvanized			
Dimensions	Height	mm	200			
	Width	mm	790			
	Depth	mm	700			
Net weight		kg	19			
Heat exchanger			Cross fin (Aluminium fin and copper tube)			
Fan	Type		Sirocco fan x 2			
	Airflow rate (Low-Mid-High)	m ³ /min	4.0-4.5-5.0	5.0-5.5-7.0	5.5-6.5-7.5	5.5-6.5-8.5
	External static pressure	Pa	5/15/35/50	5/15/35/50	5/15/35/50	5/15/35/50
Motor	Output	kW	0.096			
Air filter			PP Honeycomb fabric (washable)			
Diameter of water pipe	Inlet	mm I.D.	20			
	Outlet	mm I.D.	20			
Drain pipe dimensions		mm [in.]	O.D. 32 [1-1/4]			
Operating noise (Low-Mid-High)	5Pa	dB (A)	20-21-22	22-24-25	22-24-25	22-24-26
	15Pa		20-22-23	22-24-25	23-24-26	23-24-28
	35Pa		23-24-25	23-24-27	23-26-28	24-25-31
	50Pa		23-24-26	23-24-29	23-28-30	24-27-33

*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 external static pressure is set to 15Pa at factory shipment.

Model			PEFY-W32VMS-A	PEFY-W40VMS-A	PEFY-W50VMS-A
Power supply	Voltage	V	220-240		
	Frequency	Hz	50/60		
Cooling capacity *1		kW	3.6	4.5	5.6
Heating capacity *1		kW	4.0	5.0	6.3
Power consumption *2	Cooling	kW	0.04	0.045	0.07
	Heating	kW	0.04	0.045	0.07
Current consumption (220V) *2	Cooling	A	0.37	0.39	0.55
	Heating	A	0.37	0.39	0.55
External finish (Munsel No.)			Galvanized		
Dimensions	Height	mm	200		
	Width	mm	790	990	
	Depth	mm	700		
Net weight		kg	19.5	23.5	
Heat exchanger			Cross fin (Aluminium fin and copper tube)		
Fan	Type		Sirocco fan x 2	Sirocco fan x 3	
	Airflow rate (Low-Mid-High)	m ³ /min	5.5-6.5-9.0	8.0-9.5-11.0	9.5-12.0-14.5
	External static pressure	Pa	5/15/35/50	5/15/35/50	5/15/35/50
Motor	Output	kW	0.096		
Air filter			PP Honeycomb fabric (washable)		
Diameter of water pipe	Inlet	mm I.D.	20		
	Outlet	mm I.D.	20		
Drain pipe dimensions		mm [in.]	O.D. 32 [1-1/4]		
Operating noise (Low-Mid-High)	5Pa	dB (A)	23-25-30	24-25-27	24-28-32
	15Pa		24-25-31	24-25-28	25-29-33
	35Pa		24-28-32	24-27-32	26-31-35
	50Pa		24-26-33	25-28-32	27-32-37

*1 <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 15Pa at factory shipment.

2. Electrical component specifications

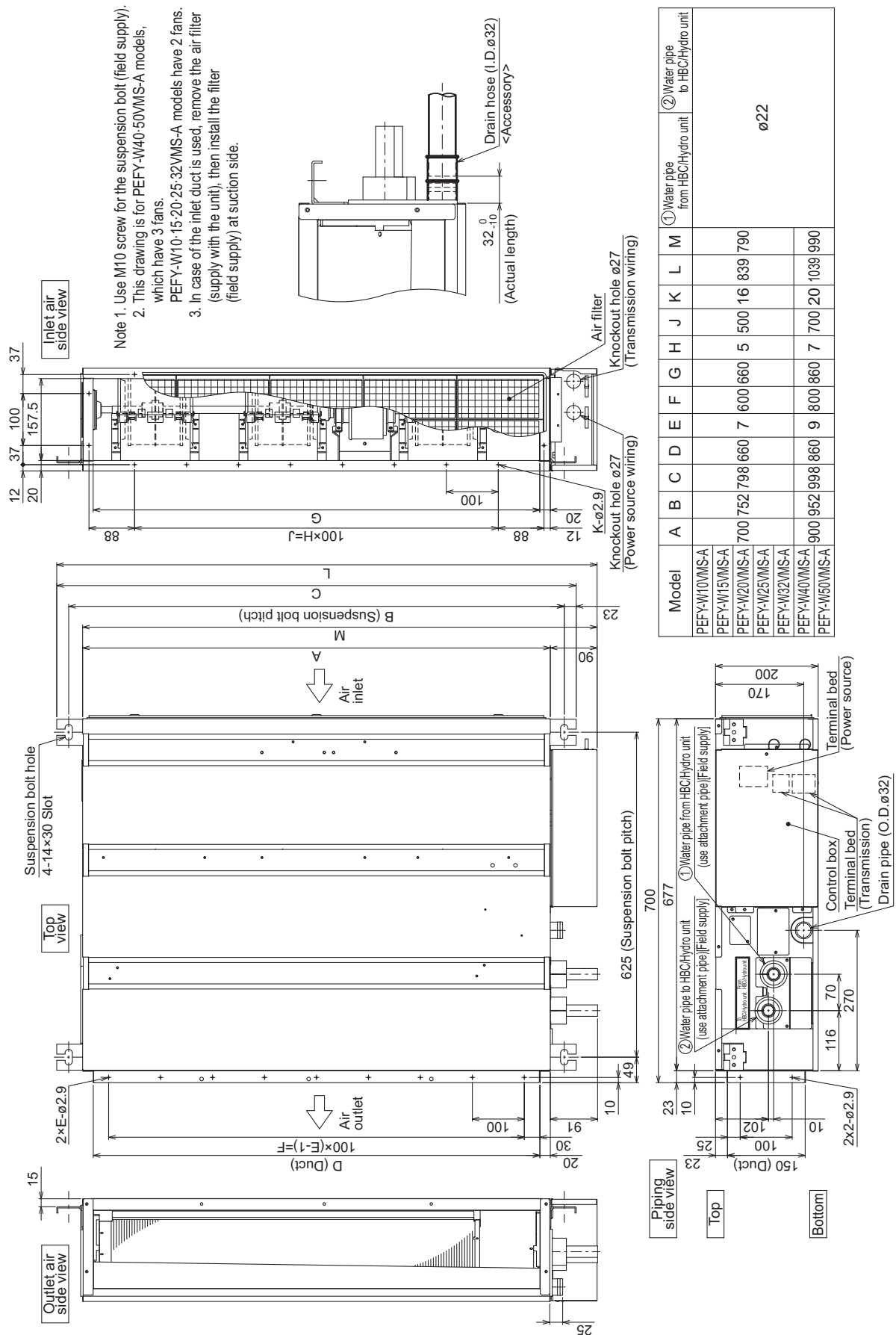
Component	Symbol	PEFY-W10VMS-A	PEFY-W15VMS-A	PEFY-W20VMS-A	PEFY-W25VMS-A
Room temperature thermistor	TH21	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ			
Water inlet pipe thermistor	TH22	Resistance 0°C/15kΩ, 10°C/9.6kΩ, 20°C/6.3kΩ, 25°C/5.4kΩ, 30°C/4.3kΩ, 40°C/3.0kΩ			
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	<p>Pressure 0~1.0 MPa [145psi] Vout 0.5~4.5V 0.392V/0.098 MPa [14psi] Pressure [MPa] =0.25 x Vout [V] - 0.125 Pressure [psi] =(0.25 x Vout [V] - 0.125) x 145</p> <p>1 GND (Black) 2 Vout (White) 3 Vcc (DC5V) (Red)</p>			
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			
Drain float switch	DS	Open/short detection Initial contact resistance 500 mΩ or less			

Component	Symbol	PEFY-W32VMS-A	PEFY-W40VMS-A	PEFY-W50VMS-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	8-pole, Output 96W SIC-70CW-D896-2	
Pressure sensor (inner water)	PS1	<p>Pressure 0~1.0 MPa [145psi] Vout 0.5~4.5V 0.392V/0.098 MPa [14psi] Pressure [MPa] =0.25 x Vout [V] - 0.125 Pressure [psi] =(0.25 x Vout [V] - 0.125) x 145</p> <p>1 GND (Black) 2 Vout (White) 3 Vcc (DC5V) (Red)</p>		
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		
Drain float switch	DS	Open/short detection Initial contact resistance 500 mΩ or less		

[1] Outlines and Dimensions

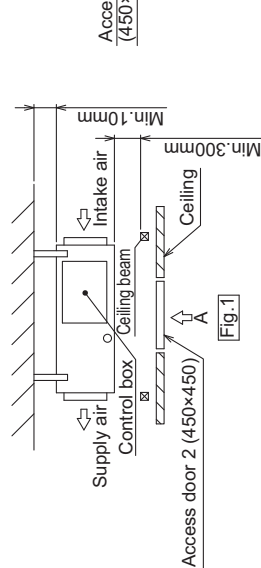
1. PEFY-W10, 15, 20, 25, 32, 40, 50VMS-A

Unit: mm

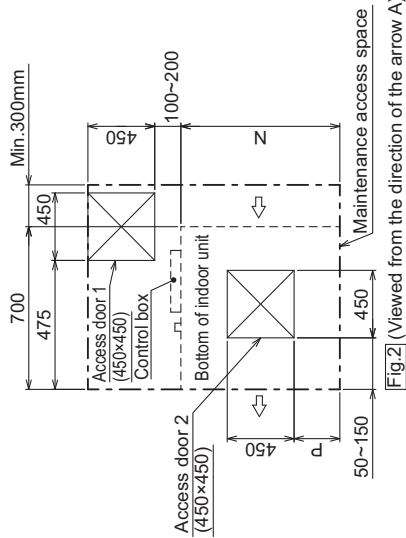


[Maintenance access space]
 Secure enough access space to allow for the maintenance, inspection, and replacement of the motor, fan, heat exchanger, and control box in one of the following ways.
 Select an installation site for the indoor unit so that its maintenance access space will not be obstructed by beams or other objects.

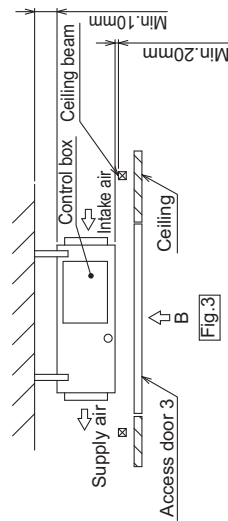
- (1) When a space of 300mm or more is available below the unit between the unit and the ceiling. (Fig. 1)
 - Create access door 1 and 2 (450×450mm each) as shown in Fig. 2.
 (Access door 2 is not required if enough space is available below the unit for a maintenance worker to work in.)
- (2) When a space of less than 300mm is available below the unit between the unit and the ceiling.
 (At least 20mm of space should be left below the unit as shown in Fig. 3.)
 - Create access door 1 diagonally below the control box and access door 3 below the unit as shown in Fig. 4.
 - or
 - Create access door 4 below the control box and the unit as shown in Fig. 5.



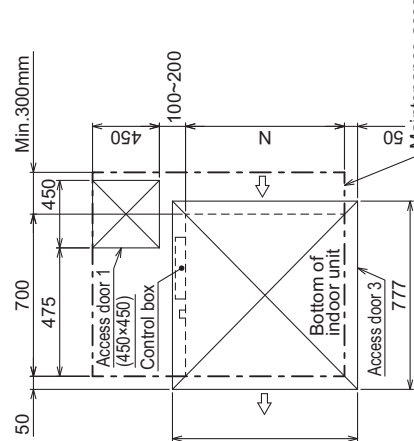
[Fig. 1]



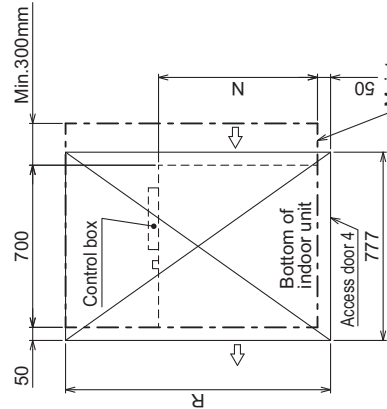
[Fig. 2] (Viewed from the direction of the arrow A)



[Fig. 3]



[Fig. 4] (Viewed from the direction of the arrow B)

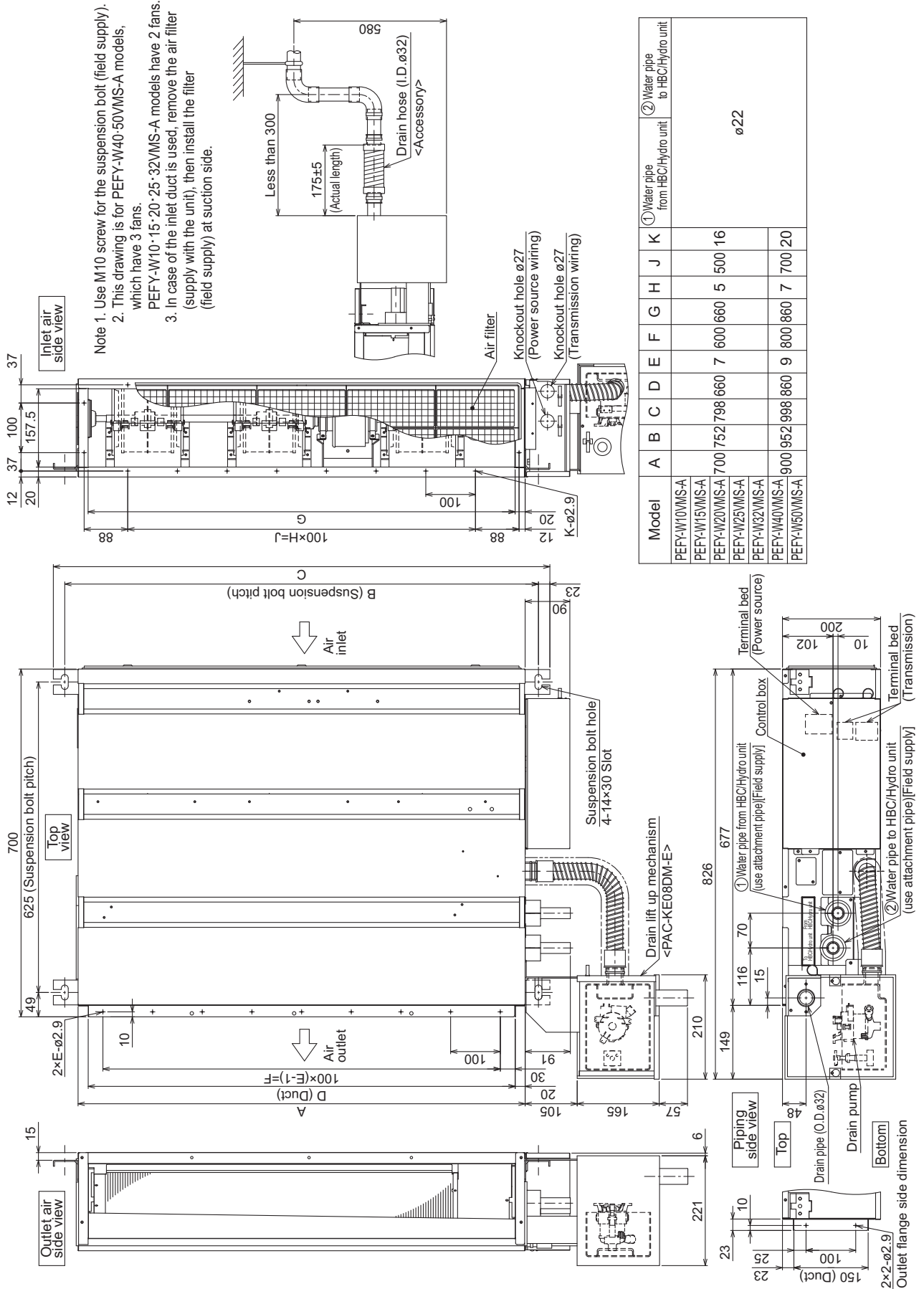


[Fig. 5] (Viewed from the direction of the arrow B)

Model	N	P	Q	R
PEFY-W10VMS-A				
PEFY-W15VMS-A				
PEFY-W20VMS-A	700	50~150	800	1300
PEFY-W25VMS-A				
PEFY-W32VMS-A				
PEFY-W40VMS-A	900	150~250	1000	1500
PEFY-W50VMS-A				

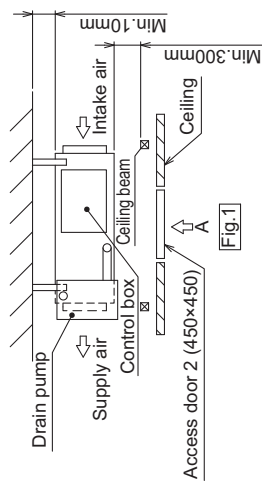
2. PEFY-W10, 15, 20, 25, 32, 40, 50VMS-A Drain lift up mechanism built-in specification

Unit: mm

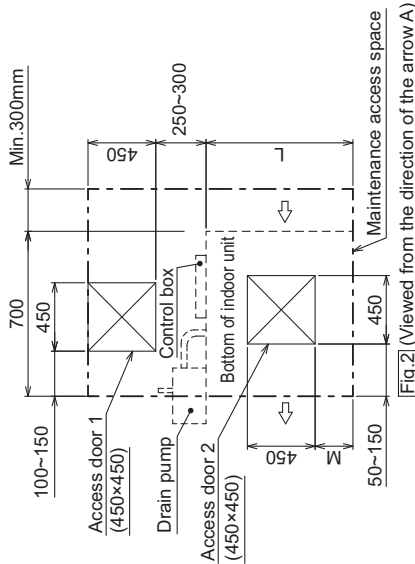


[Maintenance access space]
 Secure enough access space to allow for the maintenance, inspection, and replacement of the motor, fan, drain pump, heat exchanger, and control box in one of the following ways.
 Select an installation site for the indoor unit so that its maintenance access space will not be obstructed by beams or other objects.

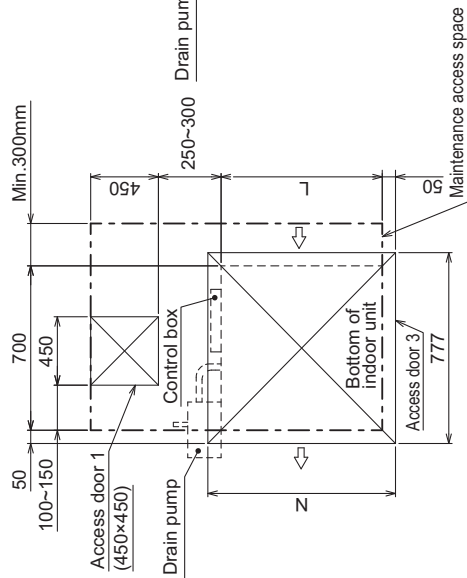
- (1) When a space of 300mm or more is available below the unit between the unit and the ceiling, (Fig.1)
- Create access door 1 and 2 (450x450mm each) as shown in Fig.2.
- (Access door 2 is not required if enough space is available below the unit for a maintenance worker to work in.)
- (2) When a space of less than 300mm is available below the unit between the unit and the ceiling.
- (At least 20mm of space should be left below the unit as shown in Fig.3.)
- Create access door 1 diagonally below the control box and access door 3 below the unit as shown in Fig.4.
- or
- Create access door 4 below the control box and the unit as shown in Fig.5.



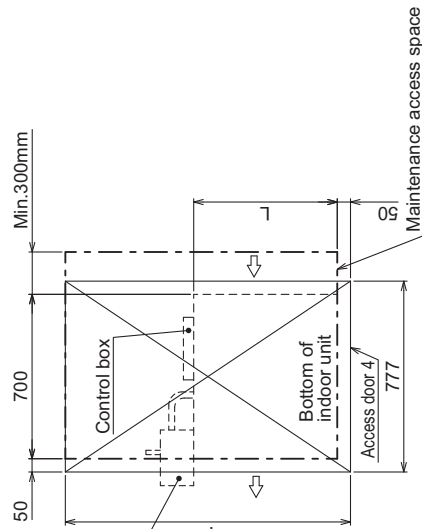
[Fig.1]



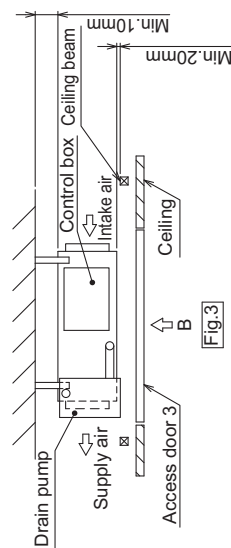
[Fig.2] (Viewed from the direction of the arrow A)



[Fig.4] (Viewed from the direction of the arrow B)



[Fig.5] (Viewed from the direction of the arrow B)

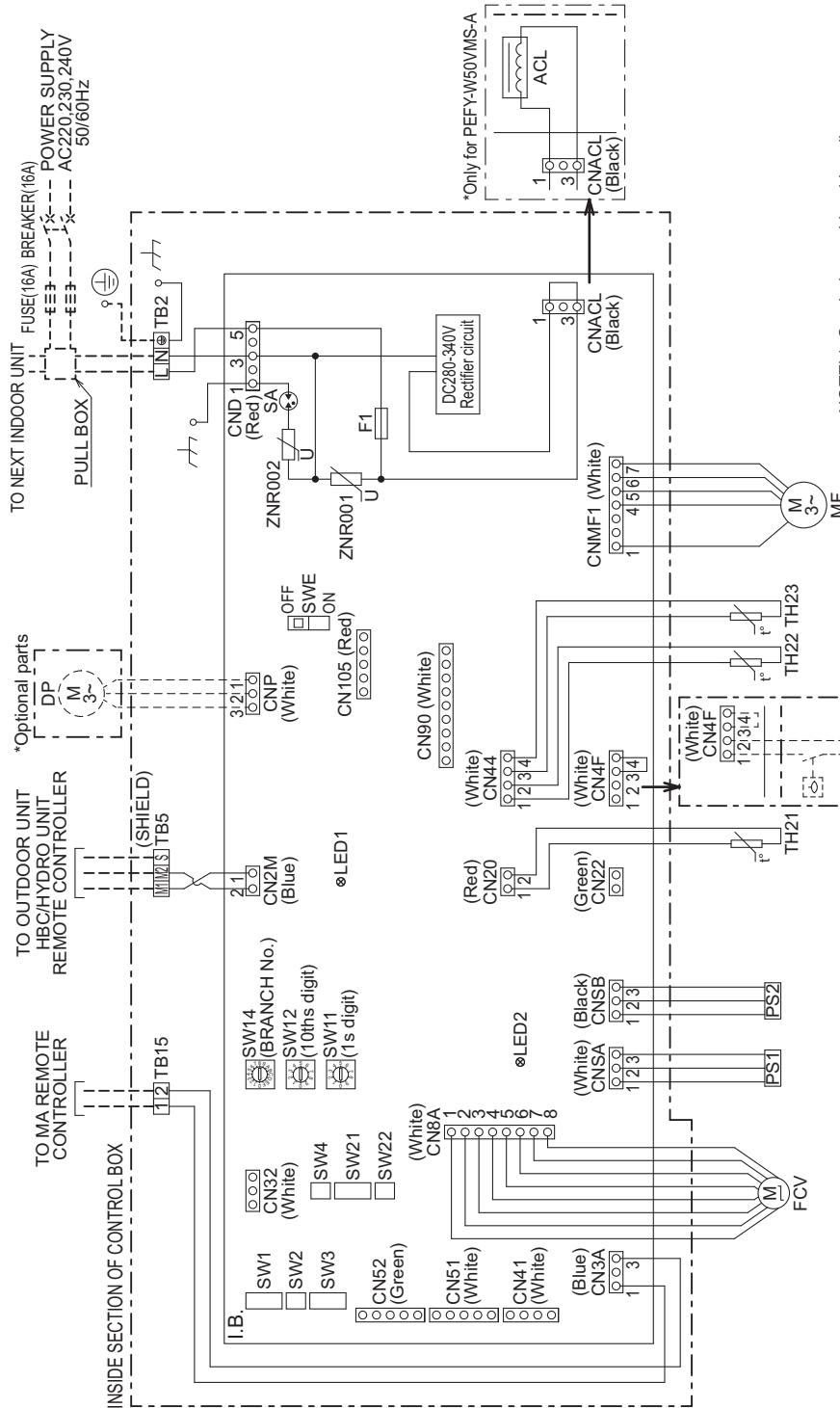


[Fig.3]

Model	L	M	N	P
PEFY-W10VMS-A				
PEFY-W15VMS-A				
PEFY-W20VMS-A	700	50~150	800	1300
PEFY-W25VMS-A				
PEFY-W32VMS-A				
PEFY-W40VMS-A	900	150~250	1000	1500
PEFY-W50VMS-A				

[1] Wiring Diagram

1. PEFY-W10, 15, 20, 25, 32, 40, 50VMS-A



NOTE) 1. Symbols used in wiring diagram are

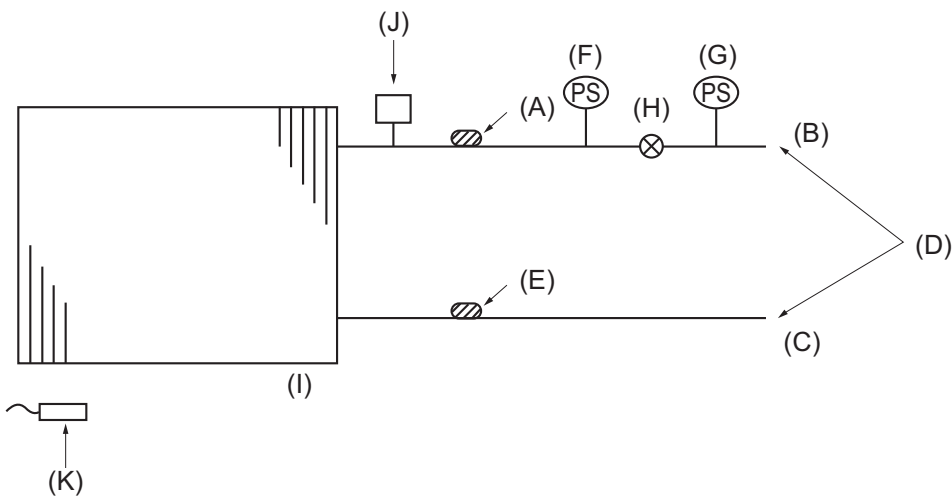
- ○ ○ ○ : Connector, □ : Terminal,
 - (Heavy dotted line): Field wiring,
 - - - (Thin dotted line): Optional parts.
2. Have all electric work done by a licensed electrician according to the local regulations.
3. Earth leakage circuit breaker should be set up on the wiring of the power supply.
4. To perform a drainage test for the drain pump turn on the SWE on the control board while the indoor unit is being powered.

*Be sure to turn off the SWE after completing a drainage test or test run.

SYMBOL EXPLANATION

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
ACL	AC reactor(Power factor improvement)	I.B.	Indoor controller board	SW1	Indoor controller board
DP	Drain Pump	SA	Arrestor	SW2	Switch (for mode selection)
FS	Float switch	F1	Fuse AC250V 6.3A	SW3	Switch (for capacity code)
MF	Fan Motor	ZNR001	Varistor	SW4	Switch (for mode selection)
FCV	Flow control valve	ZNR002	Varistor	SW11	Switch (for model selection)
PS1	Pressure sensor (inner water)	CN2	Connector (Optional Thermistor)	SW12	Switch (1s digit address set)
PS2	Pressure sensor (outlet water)	CN32	Connector (Remote switch)	SW14	Switch (10ths digit address set)
TB5	Power source terminal block	CN41	Connector (HA terminal-A)	SW21	Switch (for static pressure selection)
TB15	Transmission terminal block	CN51	Connector (Centrally control)	SW22	Switch (Wireless pair No.)
TH21	Thermistor (inlet air temp. detection)	CN52	Connector (Remote indication)	SWE	Connector (emergency operation)
TH22	Thermistor (piping temp. detection/inlet water)	CN90	Connector (Wireless)	LED1	LED (Power supply)
TH23	Thermistor (piping temp. detection/outlet water)	CN105	Connector (IT terminal)	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	PEFY-W10, 15, 20, 25, 32, 40, 50VMS-A
Water outlet	20 mm I.D.
Water inlet	20 mm I.D.

[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 pipe thermistor (TH22)
- Water outlet pipe thermistor (TH23)
- Drain sensor (DS)

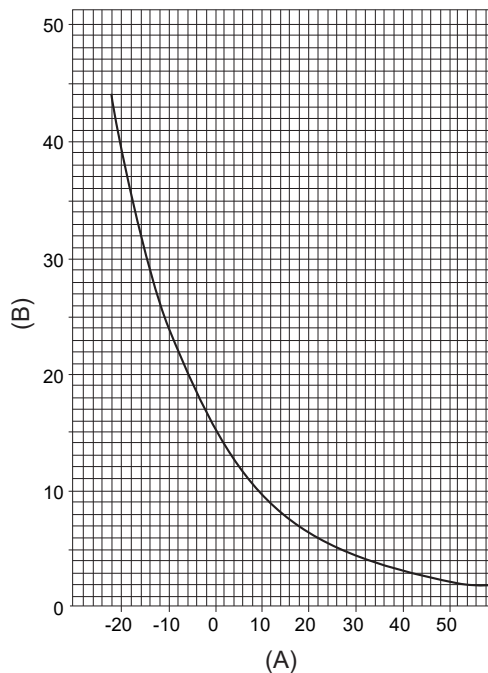
- Thermistor $R_0 = 15\text{ k}\Omega \pm 3\%$
- Multiplier of B = $3480\text{ k}\Omega \pm 2\%$

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

- 0°C 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.

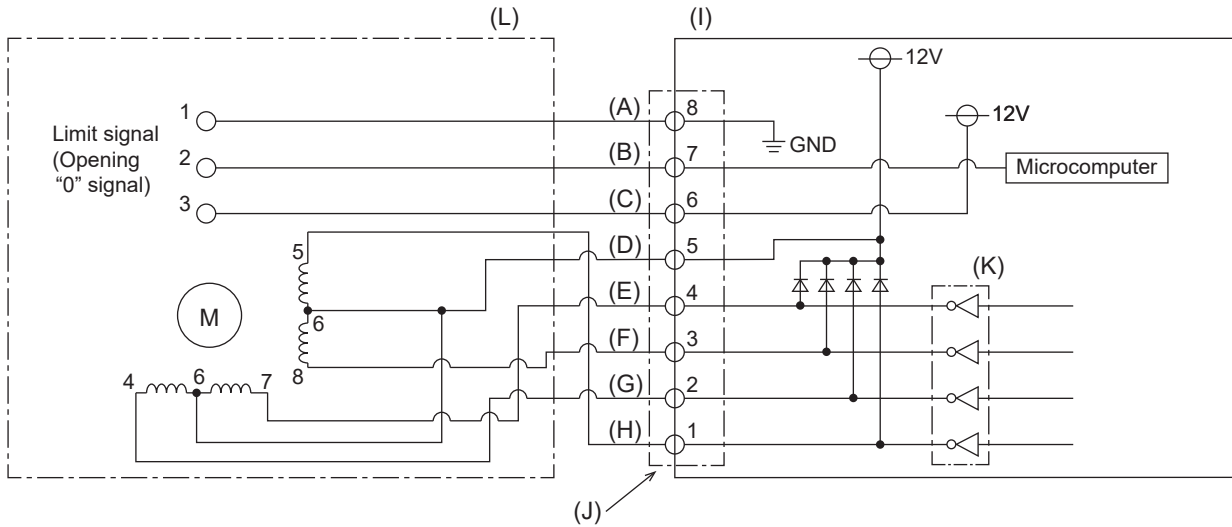
	Normal				Abnormal
	1-5 Purple-Brown	2-5 Orange-Brown	3-5 Blue-Brown	4-5 Green-Brown	
55Ω / PHASE					Open or short

- (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

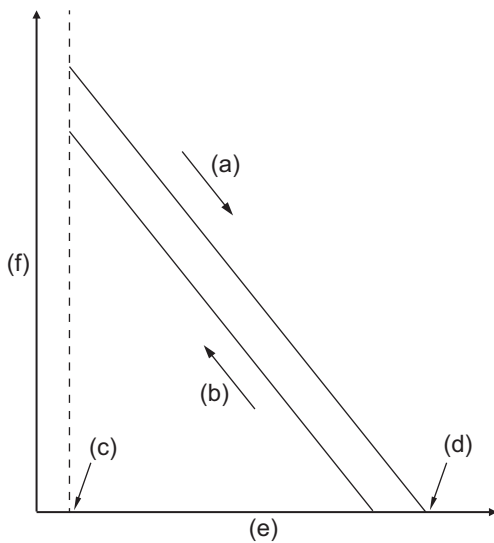
Output (phase) number	Output status			
	1	2	3	4
4	ON	ON	OFF	OFF
5	OFF	ON	ON	OFF
7	OFF	OFF	ON	ON
8	ON	OFF	OFF	ON

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



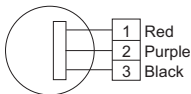
- (a) Close
- (b) Open
- (c) Fully open valve (85 pulses)
- (d) Fully close valve (770 pulses)
- (e) No. of pulses
- (f) Valve opening degree

(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.

(5) Drain-up mechanism



1. Check if the drain float switch works properly.
2. Check if the drain pump works and drains water properly in cooling operation.
3. If no water drains, confirm that the check code 2502 will not be displayed 10 minutes after the operation starts.

Note: The drain pump for this model is driven by the internal DC motor of controller board, so it is not possible to measure the resistance between the terminals.

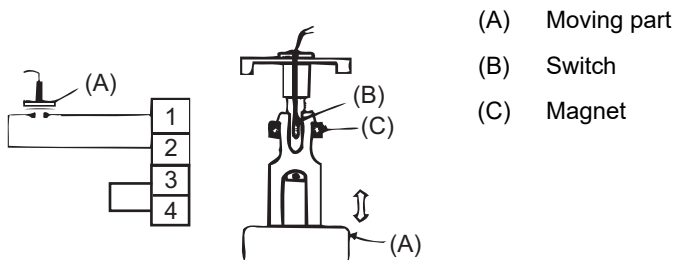
Normal

Red-Black: Input 13V DC → The fan starts to rotate.

Purple-Black: Abnormal (check code 2502) if it outputs 0-13 V square wave (5 pulses/rotation), and the number of rotation is not normal.

(6) Drain float switch (CN4F)

Disconnect the connector, and measure the resistance between terminals with a tester.



- (A) Moving part
- (B) Switch
- (C) Magnet

Position of the moving part	Normal	Abnormal
Up	Short	(any position but short)
Down	Open	(any position but open)

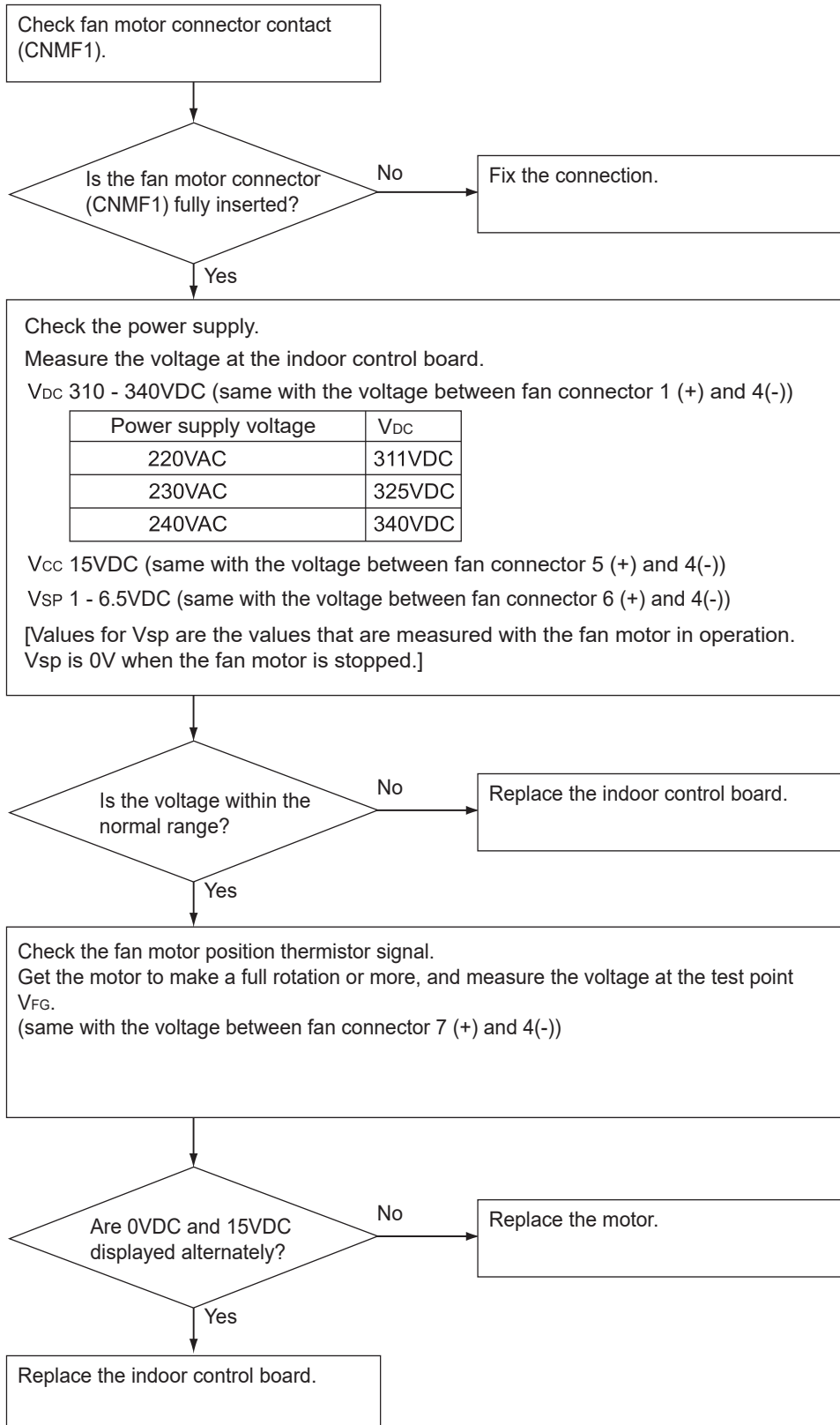
2. DC fan motor (fan motor/indoor control board)

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.

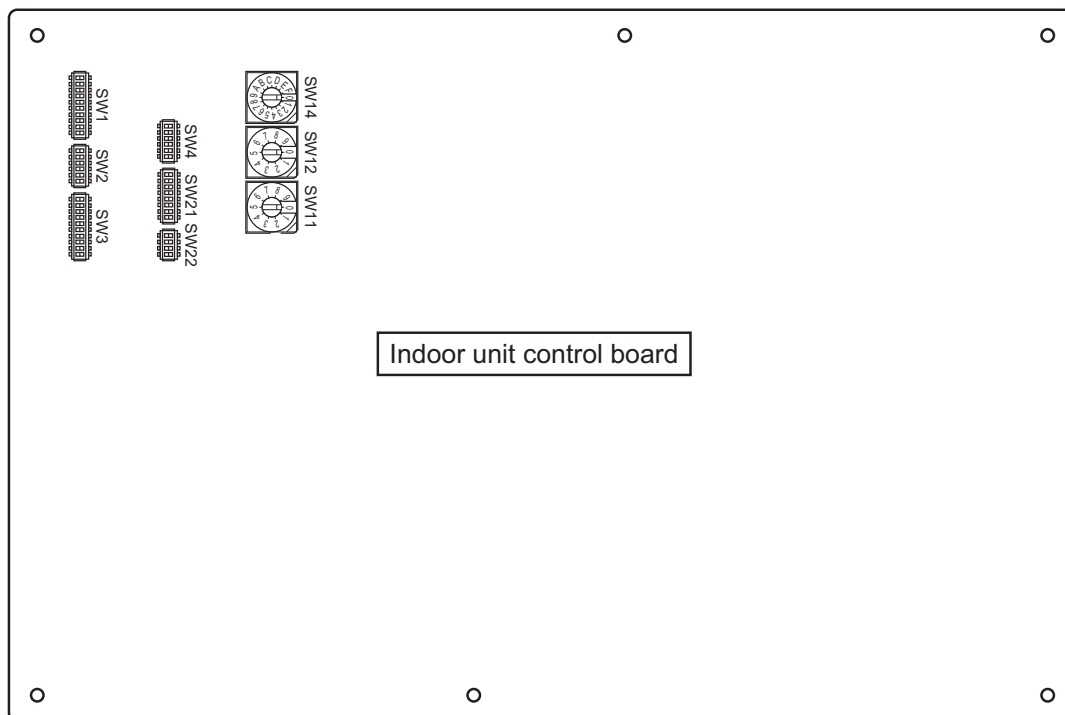
2. Troubleshooting

- Symptom: Indoor unit fan does not run.



3. Address switch setting

Make sure that power source is turning off.



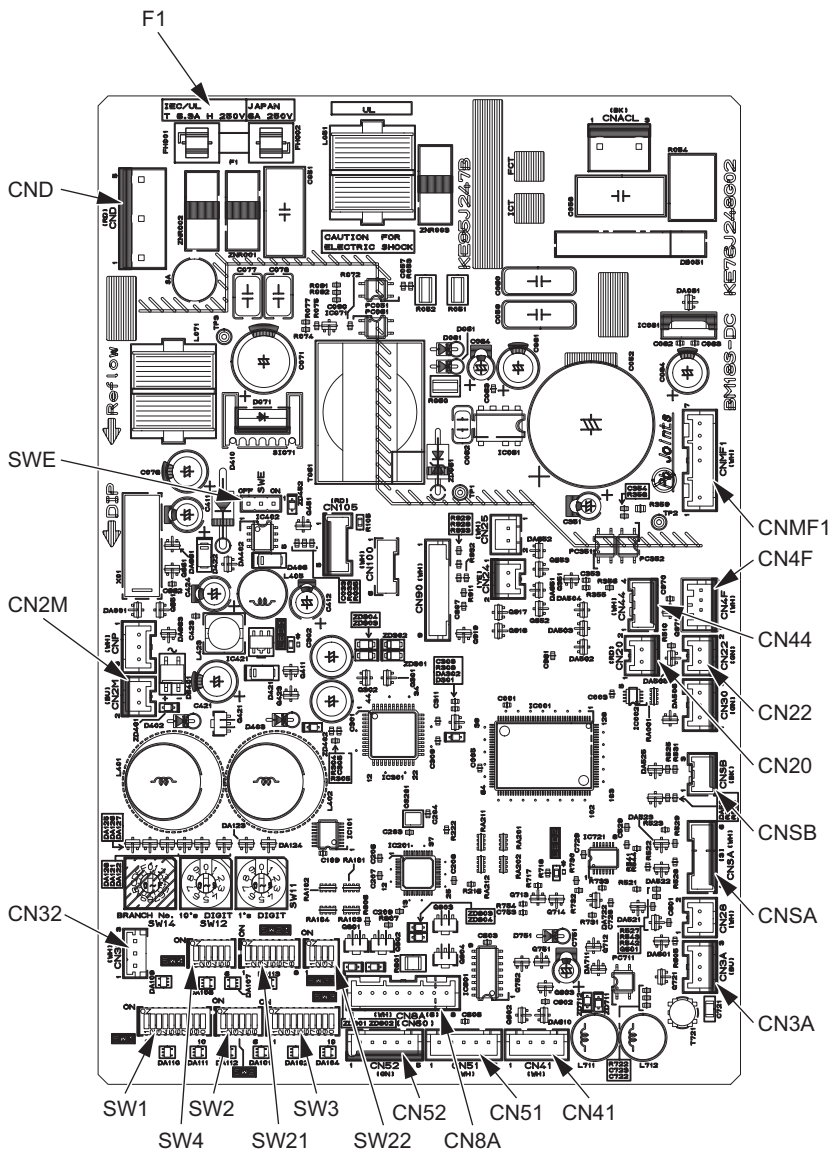
- 1) In case using network remote controller, address is set by rotary switches. (SW11,SW12)

*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



- 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
- CN4F JAMA standard HA terminal A
- CN44 Thermistor (water inlet/outlet temperature)
- CN4F Float switch
- 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)

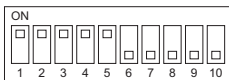
V_{FG} Voltage on 3 of PC352 and the (-) side of C081
(Same with the voltage between 7 (+) and 4 (-) of CNMF)

V_{CC} Voltage between the C084 pins 15 VDC
(Same with the voltage between 5 (+) and 4 (-) of CNMF)

V_{sp} 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
PEFY-W10VMS-A							
PEFY-W15VMS-A							
PEFY-W20VMS-A							
PEFY-W25VMS-A							
PEFY-W32VMS-A							
PEFY-W40VMS-A							
PEFY-W50VMS-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

As the factory setting is for use under an external static pressure of 15 Pa, no switch operation is needed when using under the standard condition.

Four levels of external static pressure (5 Pa/15 Pa/35 Pa/50 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
5 Pa	OFF	ON	ON
15 Pa	OFF	ON	OFF
35 Pa	OFF	OFF	OFF
50 Pa	ON	OFF	OFF

Set the switches on the control board (SW21-1, SW21-2, and SW21-5) as shown in the table at left.

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.

Selection	Function setting No.	Initial Setting	Current setting
	No. 32		
Switch setting	1	○	
Function selection	2		

External static pressure setting	Function setting No.		Initial setting	Current setting
	No. 8	No. 10		
5 Pa	1	2	○	
15 Pa	1	1		
35 Pa	2	1		
50 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

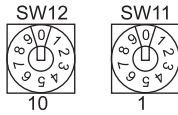
(Be sure to operate with the main power turned OFF.)

- 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 HBC 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.

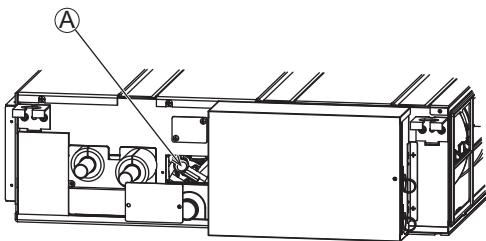
9. Function the LED of the indoor unit service board

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

10. Instructions for debris removal operation and the air vent operation

Details are described in the "Instructions for debris removal operation" section and 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.



Ⓐ Air vent valve

[1] Disassembly Procedure

1. Control box

Exercise caution when removing heavy parts.

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

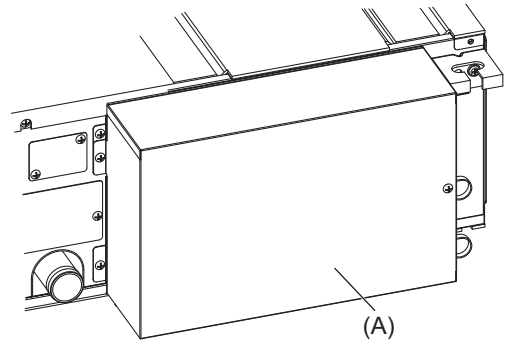


Fig.1

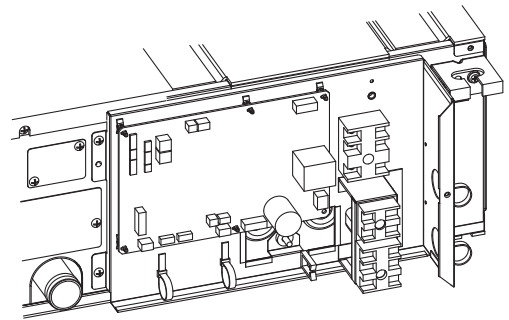


Fig.2

2. Thermistor (Intake air)

Exercise caution when removing heavy parts.

1. Remove the control box cover according to the procedure in **section 1**.
2. Remove the thermistor.
 - (1) Pull out the thermistor holder (B) and thermistor (C) on the control box.

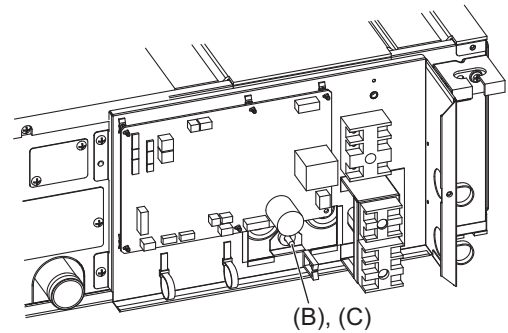


Fig.3

3. Drainpan

Exercise caution when removing heavy parts.

1. Removing the filter and the bottom plate
 - (1) Push down the tab on the filter, and pull out the filter in the direction of the arrow 1.
 - (2) Remove the fixing screws on the bottom plate (D), (E) to remove it.

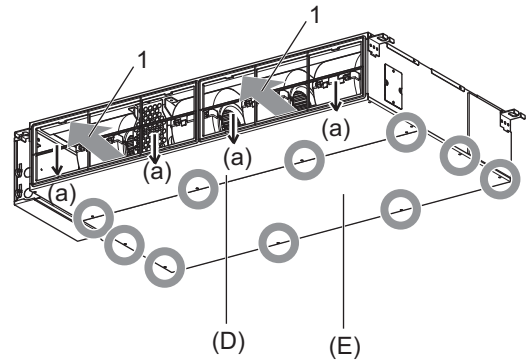


Fig.4

(a) Tab

2. Removing the drainpan
 - (1) Pull out the drain pan in the direction of the arrow.

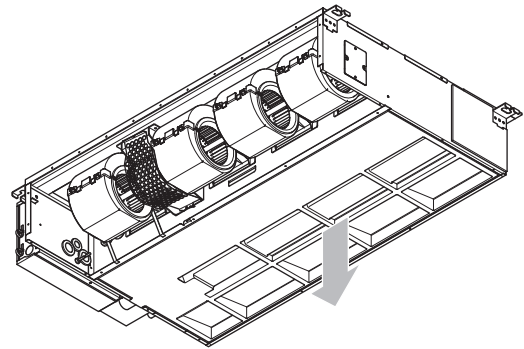


Fig.5

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 Figure 6.

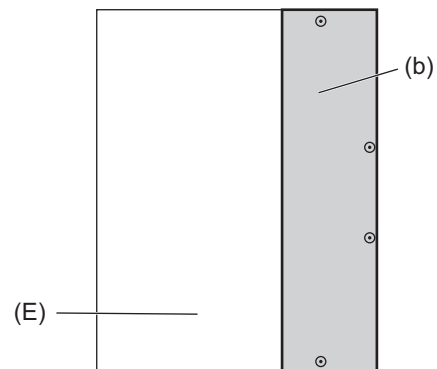


Fig.6

(b) Insulation material

4. Thermistor (Water inlet and outlet)

Exercise caution when removing heavy parts.

1. Remove the drain pan according to the procedure in **section 3**.
2. Removing the Heat exchanger cover
 - (1) Remove the four fixing screws on the heat exchanger cover (F) to remove it.

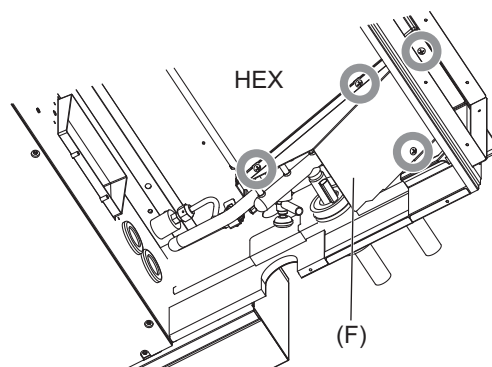


Fig.7

3. Removing the thermistor
 - (1) Remove the thermistor (G) from the thermistor holder (H) on the copper tube.

Thermistor size
Water inlet: $\varnothing 8\text{mm}$
Water outlet: $\varnothing 6\text{mm}$

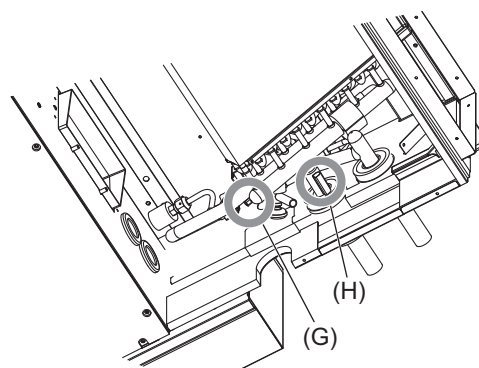


Fig.8

5. Fan and fan motor

Exercise caution when removing heavy parts.

1. Removing the filter and the bottom plate

- (1) Push down the tab on the filter, and pull out the filter in the direction of the arrow 1.
- (2) Remove the fixing screws on the bottom plate (J) to remove it.

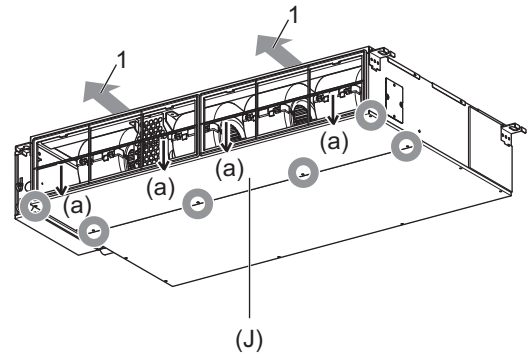


Fig.9

(a) Tab

2. Removing the punching metal

- (1) Remove the two fixing screws on the punching metal (K) to remove it.

3. Removing the fan casing (bottom half)

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

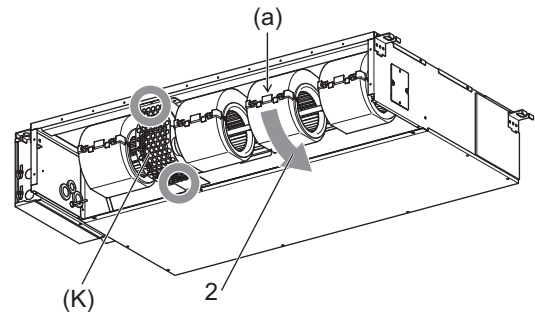


Fig.10

4. Removing the motor cable

- (1) Remove the motor cable through the rubber bush.

5. 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.

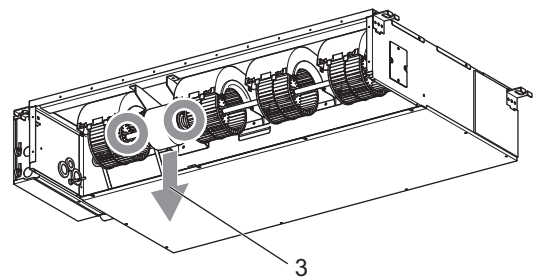


Fig.11

- (2) Remove the four fan case fixing screws to take the top half of the fan casing off.

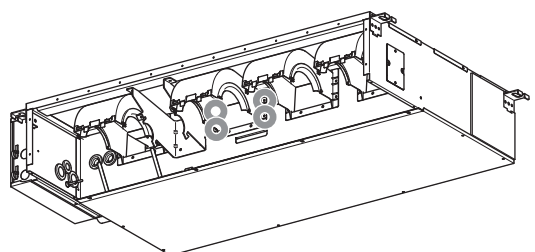


Fig.12

6. Bearing

W40, W50 models only.

Exercise caution when removing heavy parts.

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

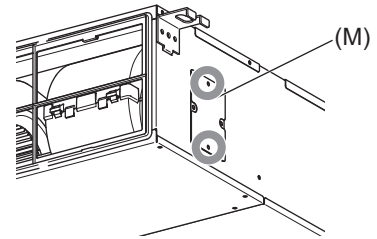


Fig.13

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

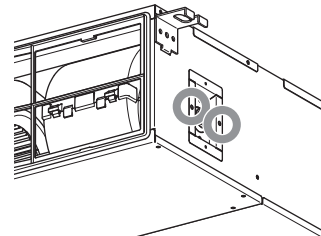


Fig.14

7. Heat exchanger (Pressure sensor and FCV)

Exercise caution when removing heavy parts.

1. Remove the drain pan according to the procedure in **section 3**.
2. Remove the heat exchanger cover according to the procedure in **section 4 2**.
3. Removing the cover
 - (1) Remove the two fixing screws on the cover (T) to remove it.

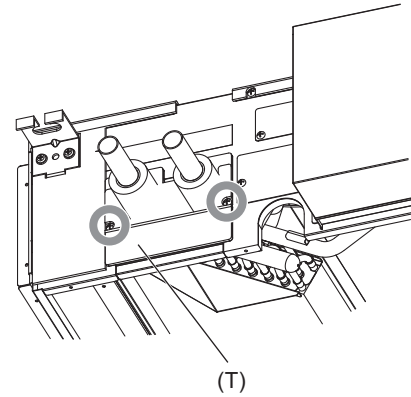


Fig.15

(T) Pipe support plate

4. Removing the Heat exchanger
 - (1) Remove the fixing screws on the heat exchanger (S) to remove it.

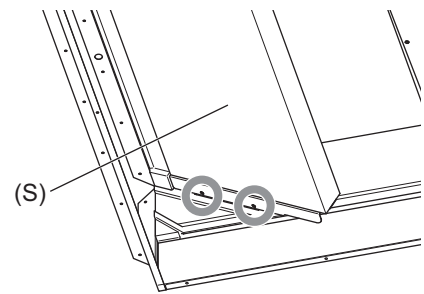


Fig.16

5. Removing the pressure sensor
 - (1) Debraze the brazed portion of the pressure sensors in the (Fig.17, 18) and then replace the pressure sensors with service parts. ((c) and (d) in the figures)

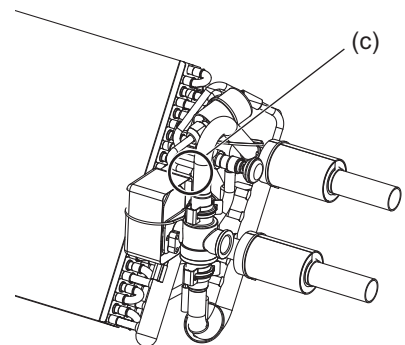


Fig.17

Note:

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

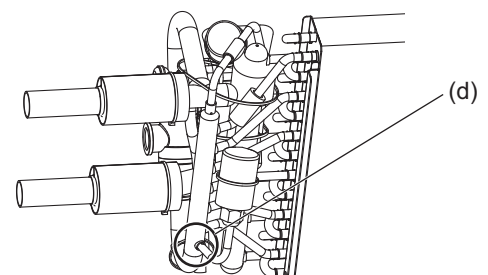


Fig.18

6. Removing the FCV

(1) Remove the cover (U) of the FCV (V). (Fig. 19)

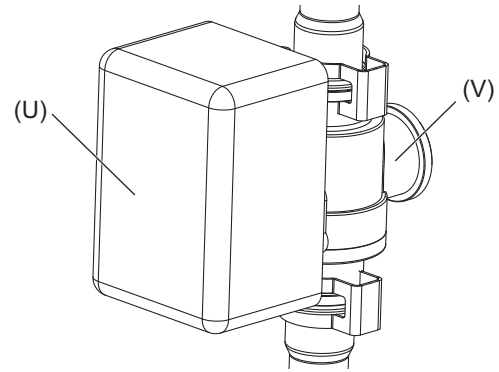


Fig.19

(2) Remove the clips (W) on the inlet/outlet of the FCV. (Fig. 20)

(3) Remove the inlet/outlet piping connecting the FCV. (Fig. 20)

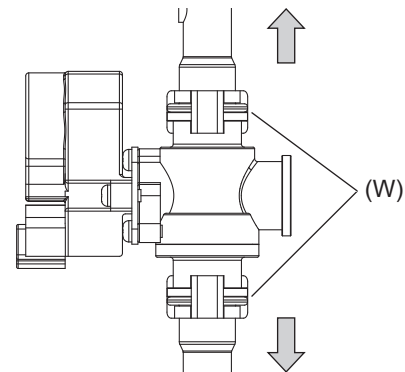


Fig.20

(4) Remove the nipple (X) (and O-ring (Y)) from the FCV. (Fig.21)

(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.

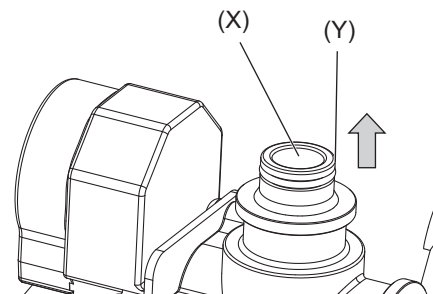


Fig.21

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