

2020

R410A

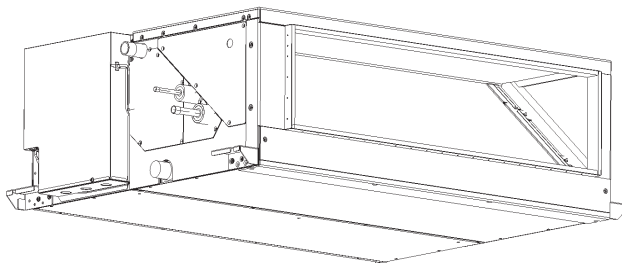
TECHNICAL & SERVICE MANUAL

Series PEFY Ceiling Concealed

Model name

<Indoor unit>

**PEFY-P40VMHS-E, PEFY-P50VMHS-E
PEFY-P63VMHS-E, PEFY-P71VMHS-E
PEFY-P80VMHS-E, PEFY-P100VMHS-E
PEFY-P125VMHS-E, PEFY-P140VMHS-E**



Indoor unit

2nd edition

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

- 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.
- In the event of a refrigerant leak, thoroughly ventilate the room.**
 - If gaseous refrigerant leaks out and comes in contact with an open flame, toxic gases will be generated.
- 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.
- Disconnect all electric power supplies before accessing of electric parts (inner of control box, fan motor, drain pump etc.)**
 - Touching electric parts result in electric shock.
- 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.

- When installing the unit in a small space, take appropriate precautions to prevent leaked refrigerant from reaching the limiting concentration.**

- Leaked refrigerant gas will displace oxygen and may cause oxygen starvation. Consult your dealer before installing the unit.

- 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.**

- Do not use a leak detection additive.**

Precautions for handling units for use with R410A

CAUTION

- Do not use the existing refrigerant piping.**

- A large amount of chlorine that may be contained in the residual refrigerant and refrigerator oil in the existing piping may cause the refrigerator oil in the new unit to deteriorate.

- Use refrigerant piping materials made of phosphorus deoxidized copper. Keep the inner and outer surfaces of the pipes clean and free of such contaminants as sulfur, oxides, dust, dirt, shaving particles, oil, and moisture.**

- Contaminants in the refrigerant piping may cause the refrigerator oil to deteriorate.

- Store the piping materials indoors, and keep both ends of the pipes sealed until immediately before brazing. (Keep elbows and other joints wrapped in plastic.)**

- Infiltration of dust, dirt, or water into the refrigerant system may cause the refrigerator oil to deteriorate or cause the compressor to malfunction.

- Use a small amount of ester oil, ether oil, or alkyl benzene to coat flares and flanges.**

- Infiltration of a large amount of mineral oil may cause the refrigerator oil to deteriorate.

- Charge the system with refrigerant in the liquid phase.**

- If gaseous refrigerant is drawn out of the cylinder first, the composition of the remaining refrigerant in the cylinder will change and become unsuitable for use.

- Only use R410A.**

- The use of other types of refrigerant that contain chloride may cause the refrigerator oil to deteriorate.

- Use a vacuum pump with a check valve.**

- If a vacuum pump that is not equipped with a check valve is used, the vacuum pump oil may flow into the refrigerant cycle and cause the refrigerator oil to deteriorate.

- Prepare tools for exclusive use with R410A. Do not use the following tools if they have been used with the conventional refrigerant: gauge manifold, charging hose, gas leak detector, check valve, refrigerant charge base, vacuum gauge, and refrigerant recovery equipment.**

- If the refrigerant or the refrigerator oil that may be left on these tools are mixed in with R410A, it may cause the refrigerator oil in the new system to deteriorate.

- Infiltration of water may cause the refrigerator oil to deteriorate.

- Leak detectors for conventional refrigerants will not detect an R410A leak because R410A is free of chlorine.

♦**Do not use a charging cylinder.**

- If a charging cylinder is used, the composition of the refrigerant in the cylinder will change and become unsuitable for use.

♦**Exercise special care when handling tools for use with R410A.**

- Infiltration of dust, dirt, or water into the refrigerant system may cause the refrigerator oil to deteriorate.

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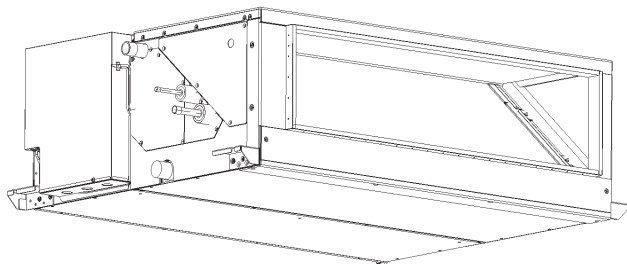
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[1] Features

Series PEFY Ceiling Concealed

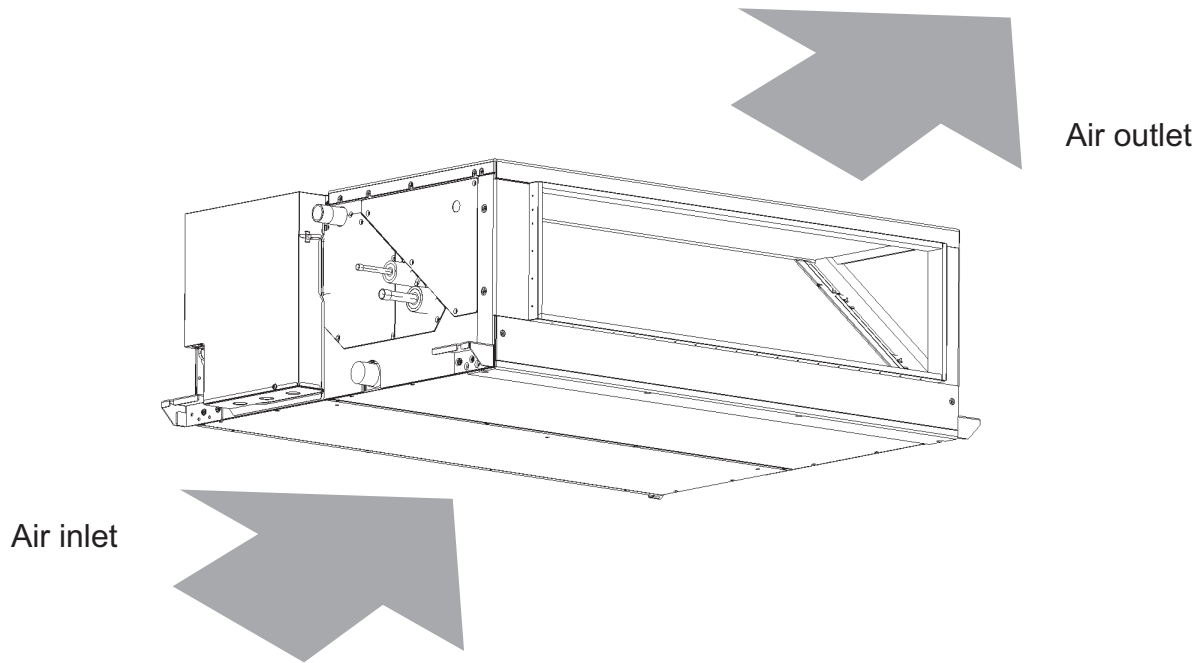


Indoor unit

Models	Cooling capacity/Heating capacity
	kW
PEFY-P40VMHS-E	4.5 / 5.0
PEFY-P50VMHS-E	5.6 / 6.3
PEFY-P63VMHS-E	7.1 / 8.0
PEFY-P71VMHS-E	8.0 / 9.0
PEFY-P80VMHS-E	9.0 / 10.0
PEFY-P100VMHS-E	11.2 / 12.5
PEFY-P125VMHS-E	14.0 / 16.0
PEFY-P140VMHS-E	16.0 / 18.0

[1] Part Names and Functions

1. Indoor (main) unit



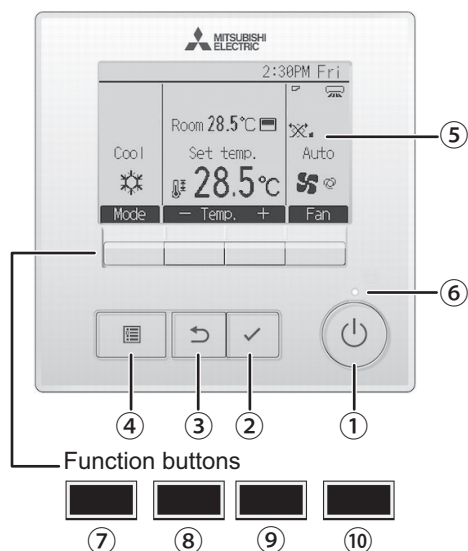
2. Remote controller

Wired remote controller function

* The functions which can be used are restricted according to the model.

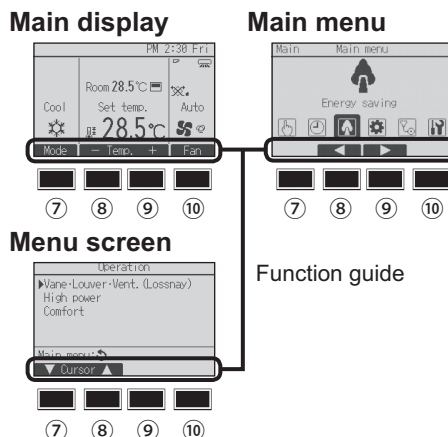
○ : Supported ✕ : Unsupported

	Function	PAR-40MAA	
		Slim	City multi
Body	Product size H × W × D (mm)	120 × 120 × 14.5	
	LCD	Full Dot LCD	
	Backlight	○	
Energy-saving	Energy-saving operation schedule	○	✕
	Automatic return to the preset temperature	○	
Restriction	Setting the temperature range restriction	○	
Function	Operation lock function	○	
	Weekly timer	○	
	On / Off timer	○	
	High Power	○	✕
	Manual vane angle	○	



The functions of the function buttons change depending on the screen. Refer to the button function guide that appears at the bottom of the LCD for the functions they serve on a given screen.

When the system is centrally controlled, the button function guide that corresponds to the locked button will not appear.



① ON/OFF button

Press to turn ON/OFF the indoor unit.

② SELECT button

Press to save the setting.

③ RETURN button

Press to return to the previous screen.

④ MENU button

Press to bring up the Main menu.

⑤ Backlit LCD

Operation settings will appear.
When the backlight is off, pressing any button turns the backlight on and it will stay lit for a certain period of time depending on the screen.

When the backlight is off, pressing any button turns the backlight on and does not perform its function. (except for the ON/OFF button)

⑥ ON/OFF lamp

This lamp lights up in green while the unit is in operation. It blinks while the remote controller is starting up or when there is an error.

⑦ Function button F1

Main display: Press to change the operation mode.
Menu screen: The button function varies with the screen.

⑧ Function button F2

Main display: Press to decrease temperature.
Main menu: Press to move the cursor left.
Menu screen: The button function varies with the screen.

⑨ Function button F3

Main display: Press to increase temperature.
Main menu: Press to move the cursor right.
Menu screen: The button function varies with the screen.

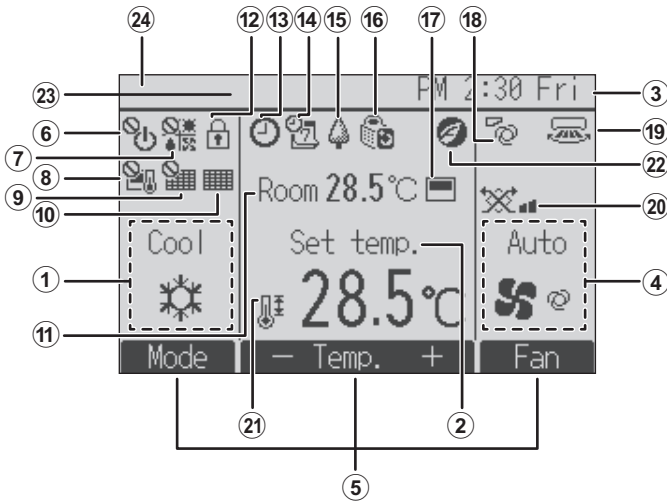
⑩ Function button F4

Main display: Press to change the fan speed.
Menu screen: The button function varies with the screen.

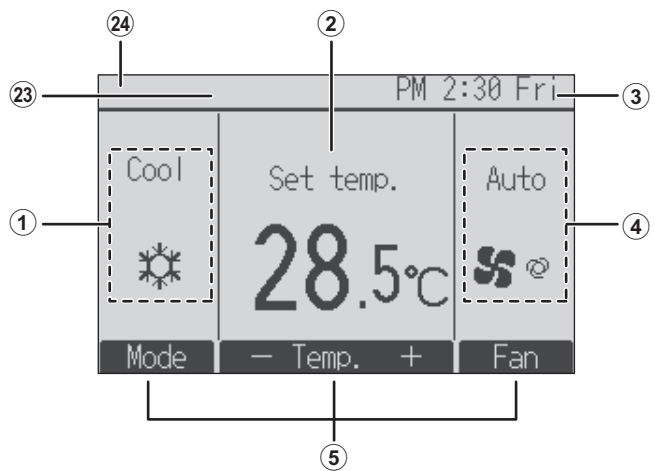
The main display can be displayed in two different modes: "Full" and "Basic".
The initial setting is "Full". To switch to the "Basic" mode, change the setting on the Main display setting.

<Full mode>

* All icons are displayed for explanation.



<Basic mode>



- ① Operation mode**

- ② Preset temperature**

- ③ Clock**
See the Installation Manual.

- ④ Fan speed**

- ⑤ Button function guide**
Functions of the corresponding buttons appear here.

- ⑥**
Appears when the ON/OFF operation is centrally controlled.

- ⑦**
Appears when the operation mode is centrally controlled.

- ⑧**
Appears when the preset temperature is centrally controlled.

- ⑨**
Appears when the filter reset function is centrally controlled.

- ⑩**
Indicates when filter needs maintenance.

- ⑪ Room temperature**
See the Installation Manual.

- ⑫**
Appears when the buttons are locked.

- ⑬**
Appears when the On/Off timer, Night setback, or Auto-off timer function is enabled.
 appears when the timer is disabled by the centralized control system.

- ⑭**
Appears when the Weekly timer is enabled.

- ⑮**
Appears while the units are operated in the energy-save mode. (Will not appear on some models of indoor units)

- ⑯**
Appears while the outdoor units are operated in the silent mode.

- ⑰**
Appears when the built-in thermistor on the remote controller is activated to monitor the room temperature (⑰).
 appears when the thermistor on the indoor unit is activated to monitor the room temperature.

- ⑱**
Indicates the vane setting.

- ⑲**
Indicates the louver setting.

- ⑳**
Indicates the ventilation setting.

- ㉑**
Appears when the preset temperature range is restricted.

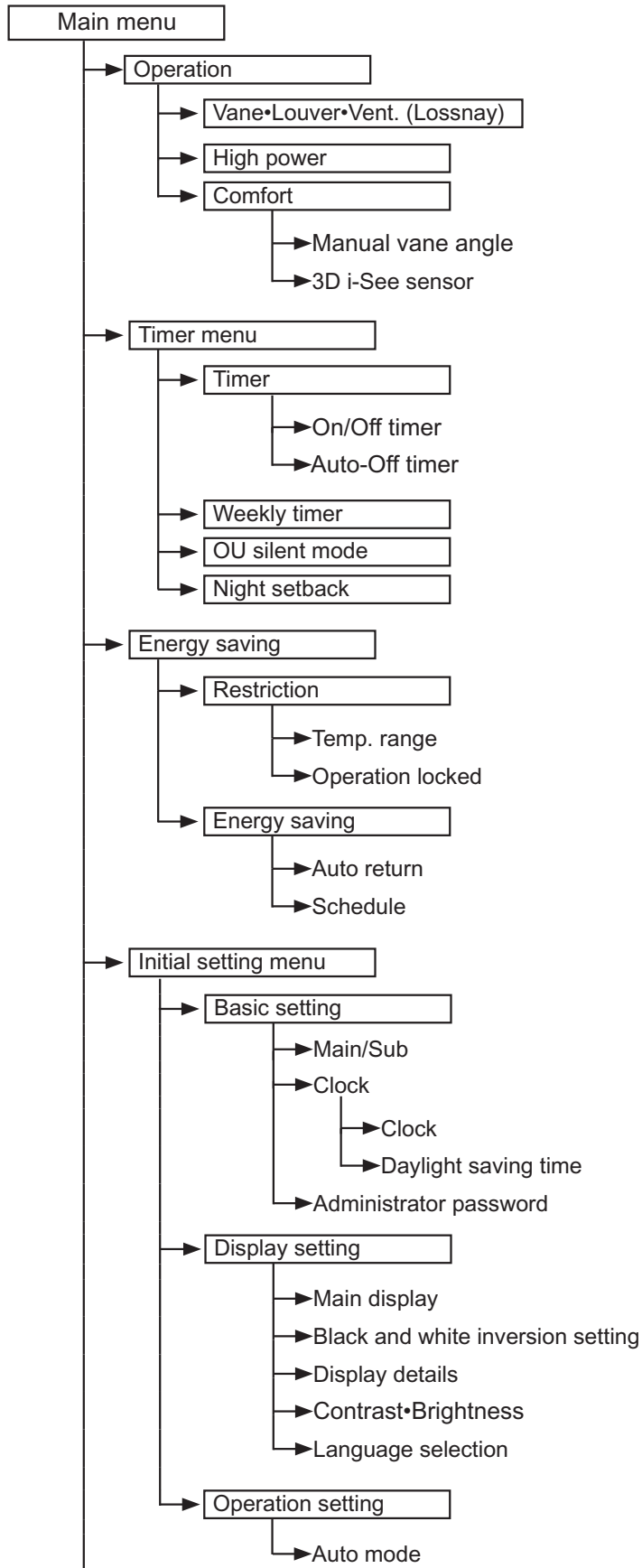
- ㉒**
Appears when an energy-saving operation is performed using a "3D i-See sensor" function.

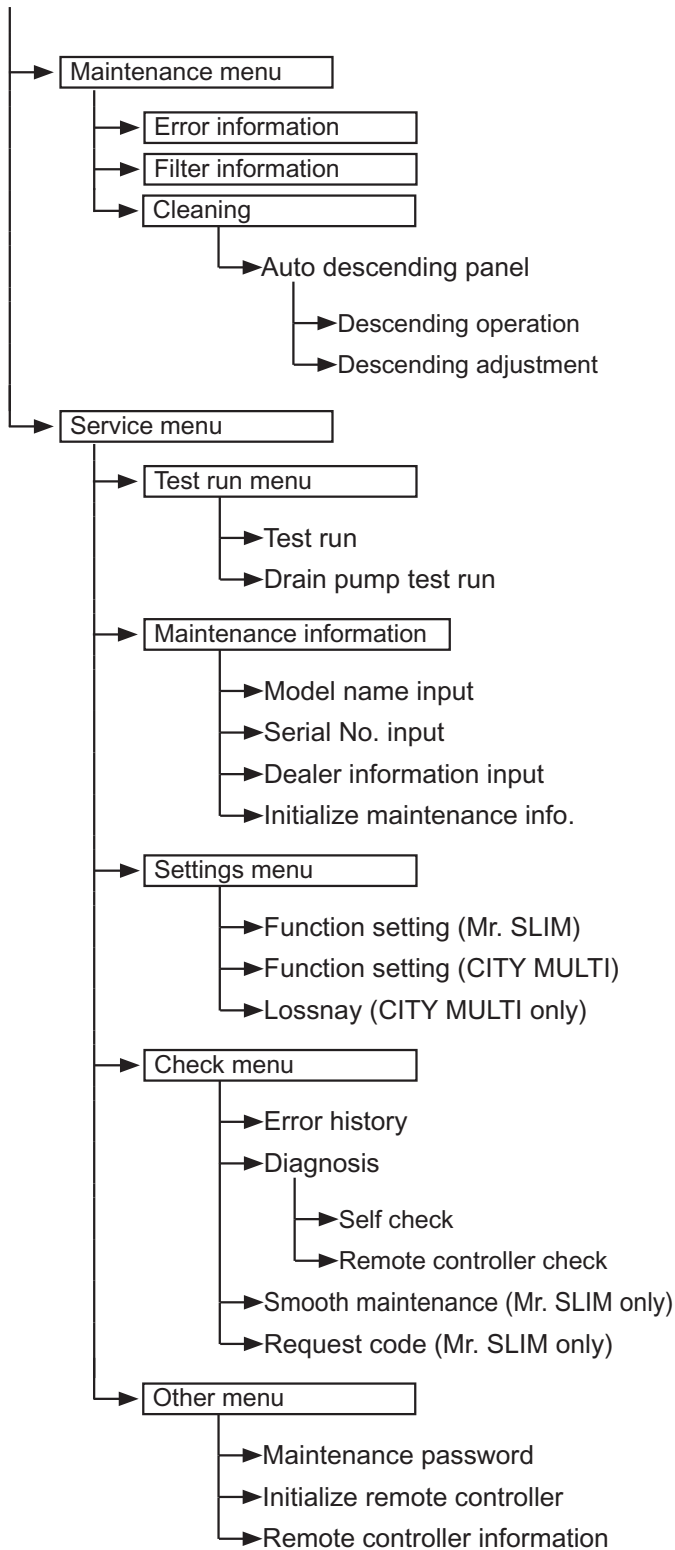
- ㉓ Centrally controlled**
Appears for a certain period of time when a centrally-controlled item is operated.

- ㉔ Error display**
An error code appears during the error.
* When an error code is displayed on the main display, an error is occurring but the indoor unit can keep its operation. Check the error code, and consult your dealer.

Most settings (except ON/OFF, mode, fan speed, temperature) can be made from the Main menu.

Menu structure





Not all functions are available on all models of indoor units.

Main menu list

Main menu	Setting items		Setting details
Operation	Vane•Louver•Vent. (Lossnay)		<p>Use to set the vane angle.</p> <ul style="list-style-type: none"> • Select a desired vane setting from five different settings. <p>Use to turn ON/OFF the louver.</p> <ul style="list-style-type: none"> • Select a desired setting from “ON” and “OFF.” <p>Use to set the amount of ventilation.</p> <ul style="list-style-type: none"> • Select a desired setting from “Off,” “Low,” and “High.”
	High power		<p>Use to reach the comfortable room temperature quickly.</p> <ul style="list-style-type: none"> • Units can be operated in the High-power mode for up to 30 minutes.
	Comfort	Manual vane angle	<p>Use to fix each vane angle.</p>
Timer	Timer	On/Off timer	<p>Use to set the operation On/Off times.</p> <ul style="list-style-type: none"> • Time can be set in 5-minute increments. * Clock setting is required.
		Auto-Off timer	<p>Use to set the Auto-Off time.</p> <ul style="list-style-type: none"> • Time can be set to a value from 30 to 240 in 10-minute increments.
	Weekly timer		<p>Use to set the weekly operation On/Off times.</p> <ul style="list-style-type: none"> • Up to eight operation patterns can be set for each day. • Two types of weekly schedules can be set. * Clock setting is required. * Not valid when the On/Off timer is enabled. * 1°C increments
	OU silent mode		<p>Use to set the time periods in which priority is given to quiet operation of outdoor units over temperature control. Set the Start/Stop times for each day of the week.</p> <ul style="list-style-type: none"> • Select the desired silent level from “Normal,” “Middle,” and “Quiet.” * Clock setting is required.
	Night setback		<p>Use to make Night setback settings.</p> <ul style="list-style-type: none"> • Select “Yes” to enable the setting, and “No” to disable the setting. The temperature range and the start/stop times can be set. * Clock setting is required. * 1°C increments
Energy saving	Restriction	Temp. range	<p>Use to restrict the preset temperature range.</p> <ul style="list-style-type: none"> • Different temperature ranges can be set for different operation modes. * 1°C increments
		Operation locked	<p>Use to lock selected functions.</p> <ul style="list-style-type: none"> • The locked functions cannot be operated.
	Energy saving	Auto return	<p>Use to get the units to operate at the preset temperature after performing energy-save operation for a specified time period.</p> <ul style="list-style-type: none"> • Time can be set to a value from 30 and 120 in 10-minute increments. * This function will not be valid when the preset temperature ranges are restricted. * 1°C increments
		Schedule	<p>Set the start/stop times to operate the units in the energy-save mode for each day of the week, and set the energy-saving rate.</p> <ul style="list-style-type: none"> • Up to four energy-save operation patterns can be set for each day. • Time can be set in 5-minute increments. • Energy-saving rate can be set to a value from 0% and 50 to 90% in 10% increments. * Clock setting is required.

Main menu	Setting items	Setting details	
Initial setting	Basic setting	Clock	Use to set the current time.
		Daylight saving time	Sets the daylight saving time.
	Display setting	Main display	Use to switch between "Full" and "Basic" modes for the Status display and the Main display. • The default setting is "Full."
		Black and white inversion setting	Use to invert the colors of the display, turning white background to black and black characters to white.
		Contrast·Brightness	Use to adjust screen contrast and brightness.
		Language selection	Use to select the desired language.
Service	Initialize remote controller	Use to initialize the remote controller to the factory shipment status.	
	Remote controller information	Use to display the remote controller model name, software version, and serial number.	
Maintenance	Error information	Use to check error information when an error occurs. • Error code, error source, refrigerant address, unit model, manufacturing number, contact information (dealer's phone number) can be displayed. * The unit model, manufacturing number, and contact information need to be registered in advance to be displayed.	
	Filter information	Use to check the filter status. • The filter sign can be reset.	

[1] Specification**1. Specification**

Model			PEFY-P40VMHS-E	PEFY-P50VMHS-E	PEFY-P63VMHS-E	PEFY-P71VMHS-E
Power source			~ 220-240V 50Hz/60Hz			
Cooling capacity *1	kW		4.5	5.6	7.1	8.0
Heating capacity *1	kW		5.0	6.3	8.0	9.0
Power consumption	Cooling	kW	0.055		0.090	0.075
	Heating	kW	0.055		0.090	0.075
Current	Cooling	A	0.41		0.64	0.54
	Heating	A	0.41		0.64	0.54
External finish			Galvanizing			
Dimension	Height	mm	380			
	Width	mm	745		1030	
	Depth	mm	900			
Net weight	kg		35			45
Heat exchanger			Cross fin (Aluminum plate fin and copper tube)			
Fan	Type		Sirocco fan x 1			Sirocco fan x 2
	Airflow rate (Lo-Mid-Hi)	m ³ /min	10.0-12.0-14.0		13.5-16.0-19.0	15.5-18.0-22.0
	External static pressure *2	Pa	50/100/150/200			
Motor	Type		DC motor			
	Output	kW	0.121			0.244
Air filter (option)			Synthetic fiber unwoven cloth filter (long life)			
Refrigerant pipe dimension	Gas (Brazed)	mm	ø 12.7		ø 15.88	
	Liquid (Brazed)	mm	ø 6.35		ø 9.52	
Drain pipe dimension			32 (1-1/4 inch)			
Noise level (Lo-Mid-Hi)	dB(A)		20-23-27		24-27-32	24-26-30

Model			PEFY-P80VMHS-E	PEFY-P100VMHS-E	PEFY-P125VMHS-E	PEFY-P140VMHS-E
Power source			~ 220-240V 50Hz/60Hz			
Cooling capacity *1	kW		9.0	11.2	14.0	16.0
Heating capacity *1	kW		10.0	12.5	16.0	18.0
Power consumption	Cooling	kW	0.090	0.160		0.190
	Heating	kW	0.090	0.160		0.190
Current	Cooling	A	0.63	1.05		1.24
	Heating	A	0.63	1.05		1.24
External finish			Galvanizing			
Dimension	Height	mm	380			
	Width	mm	1030	1195		
	Depth	mm	900			
Net weight	kg		45	51		53
Heat exchanger			Cross fin (Aluminum plate fin and copper tube)			
Fan	Type		Sirocco fan x 2			
	Airflow rate (Lo-Mid-Hi)	m ³ /min	18.0-21.5-25.0	26.5-32.0-38.0		28.0-34.0-40.0
	External static pressure *2	Pa	50/100/150/200			
Motor	Type		DC motor			
	Output	kW	0.244	0.375		
Air filter (option)			Synthetic fiber unwoven cloth filter (long life)			
Refrigerant pipe dimension	Gas (Brazed)	mm	ø 15.88			
	Liquid (Brazed)	mm	ø 9.52			
Drain pipe dimension			32 (1-1/4 inch)			
Noise level (Lo-Mid-Hi)	dB(A)		25-27-30	27-31-34		27-32-36

Note: *1 Cooling/Heating capacity indicates the maximum value at operation under the following condition.

Cooling: Indoor 27°CDB/19°CWB, Outdoor 35°CDB (WR2: Inlet water 30°C)

Heating: Indoor 20°CDB, Outdoor 7°CDB/6°CWB (WR2: Inlet water 20°C)

*2 The external static pressure is set to 50Pa at factory shipment.

2. Electrical parts specifications

Model Parts name	Symbol	PEFY- P40VMHS-E	PEFY- P50VMHS-E	PEFY- P63VMHS-E	PEFY- P71VMHS-E	PEFY- P80VMHS-E	PEFY- P100VMHS-E	PEFY- P125VMHS-E	PEFY- P140VMHS-E
Room temperature thermistor	TH21	Resistance 0°C/15 kΩ, 10°C/9.6 kΩ, 20°C/6.3 kΩ, 25°C/5.4 kΩ, 30°C/4.3 kΩ, 40°C/3.0 kΩ							
Liquid pipe thermistor	TH22	Resistance 0°C/15 kΩ, 10°C/9.6 kΩ, 20°C/6.3 kΩ, 25°C/5.4 kΩ, 30°C/4.3 kΩ, 40°C/3.0 kΩ							
Gas pipe thermistor	TH23	Resistance 0°C/15 kΩ, 10°C/9.6 kΩ, 20°C/6.3 kΩ, 25°C/5.4 kΩ, 30°C/4.3 kΩ, 40°C/3.0 kΩ							
Fuse (Indoor controller board)	FUSE	250 V 6.3 A							
Fan motor (with Inner-thermostat)	MF1, 2	8-pole, output 121 W SIC-70CW-D8121-3			8-pole, output 244 W SIC-101CW-D8244-3		10-pole, output 375 W KMUC4E1MW or KMUC4E3MW		
Linear expansion valve	LEV	12 VDC Stepping motor 0~1800 pulse			12 VDC Stepping motor 0~1800 pulse				12 VDC Stepping motor 0~1800 pulse
Power supply terminal bed	TB2	(L, N, ⊕) 250 V 20 A							
Transmission terminal bed	TB5 TB15	(M1, M2, S) 250 V 20 A (1, 2) 250 V 15 A							

[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 in one of the following ways.
 Select an installation site for the indoor unit so that it's maintenance access space will not be obstructed by beam or other objects.

Create access door 1 (450x450mm) for the maintenance from the unit side when the thermistor, LEV and control box is exchanged. (Fig. 2, 4)

- (1) When a space of 300mm or more is available below the unit between the unit and the ceiling.
 Create access door 2 (600x600mm) for the maintenance from the bottom when the motor, fan, heat exchanger and drain pan is cleaned (exchanged). (Fig. 2)
- (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 3 for the maintenance from the bottom when the motor, fan, heat exchanger and drain pan is cleaned (exchanged). (Fig. 4)

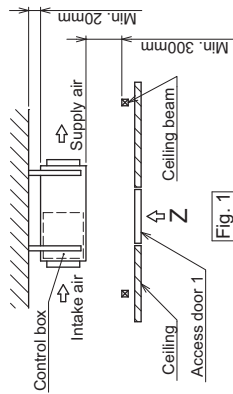


Fig. 1

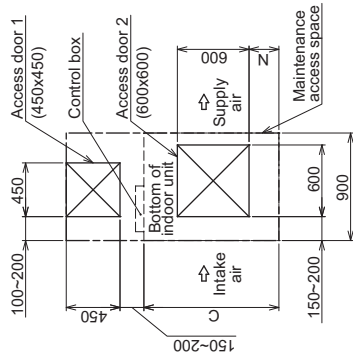


Fig. 2 (Viewed from the direction of the arrow Z)

Model	C	M	N
PEFY-P40-50VMHS-E	680	780	0-50
PEFY-P63VMHS-E	965	1065	100-150
PEFY-P71-80VMHS-E	1130	1230	200-250

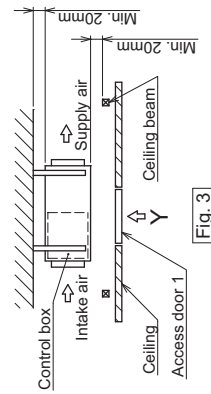


Fig. 3

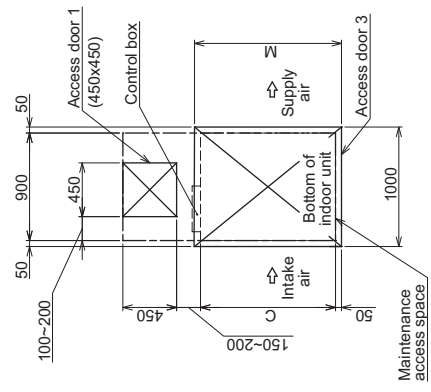
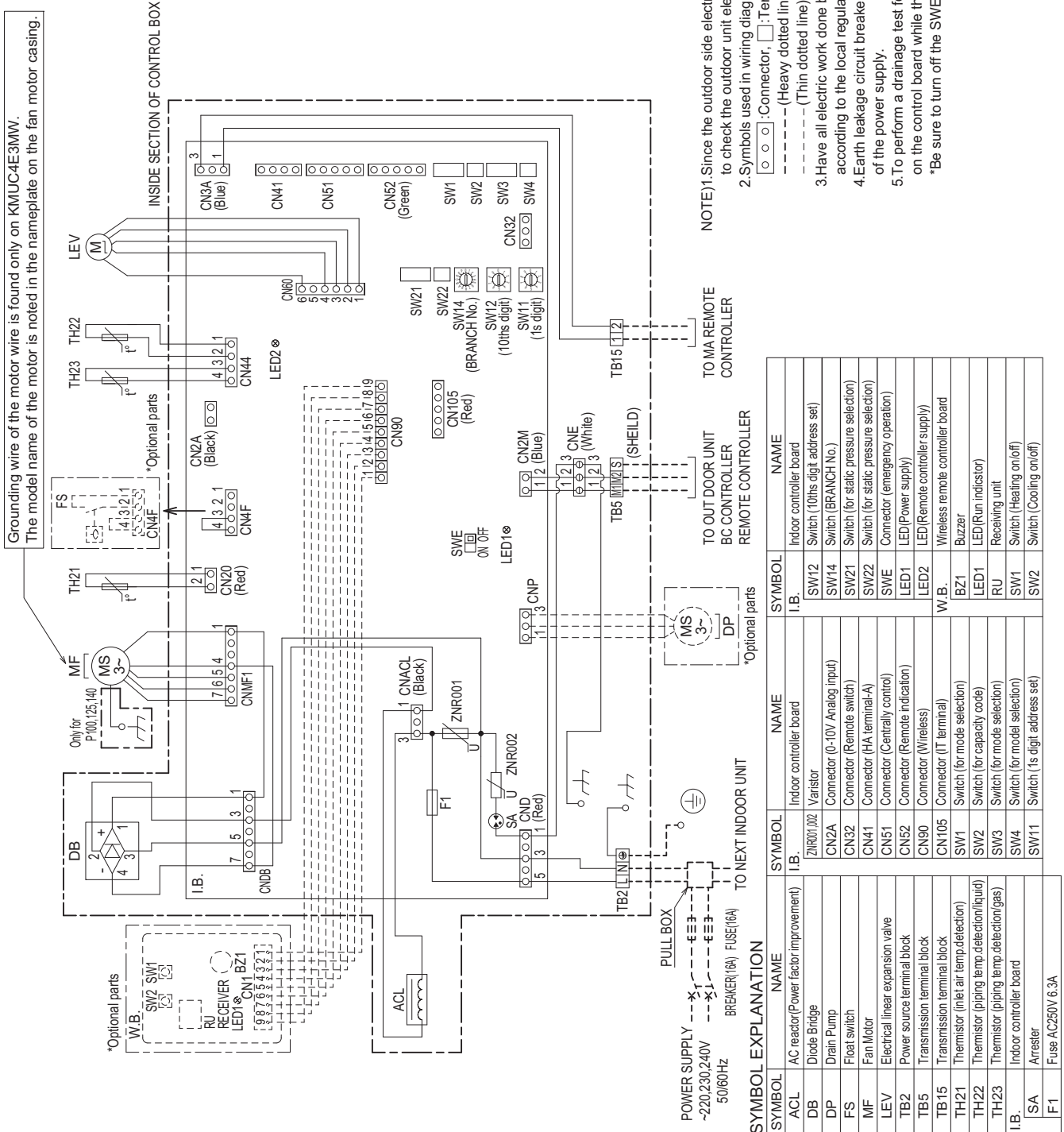
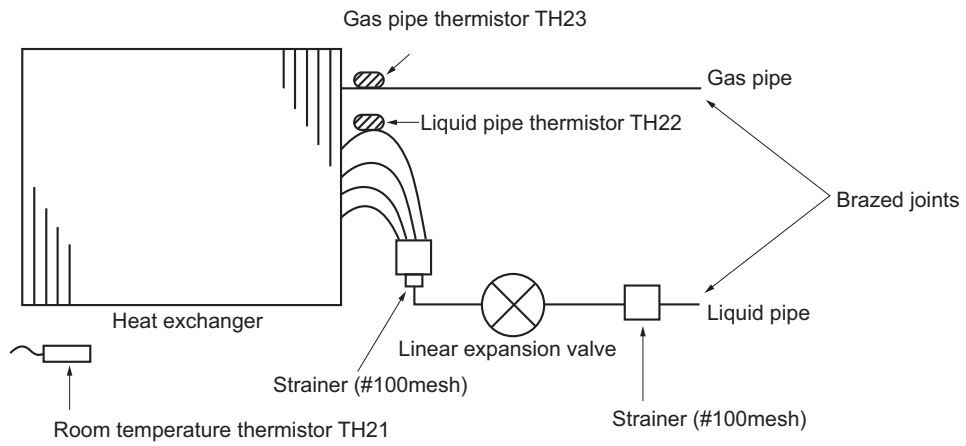


Fig. 4 (Viewed from the direction of the arrow Y)

[1] Wiring Diagram



[1] Refrigerant System Diagram



Item \ Capacity	PEFY-P40, 50VMHS-E	PEFY-P63, 71, 80, 100, 125, 140VMHS-E
Gas pipe	ø12.7	ø15.88
Liquid pipe	ø6.35	ø9.52

[1] Troubleshooting

1. Check methods

1. Component and check points

(1) Thermistor

- ◆Room temperature thermistor (TH21)
- ◆Liquid pipe thermistor (TH22)
- ◆Gas pipe thermistor (TH23)

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

Normal	Abnormal
4.3 kΩ - 9.6 kΩ	Open or short

(Refer to the thermistor characteristic graph below.)

1) Thermistor characteristic graph

Low-temperature thermistor

- ◆Room temperature thermistor (TH21)
- ◆Liquid pipe thermistor (TH22)
- ◆Gas pipe thermistor (TH23)
- ◆Drain sensor (DS)

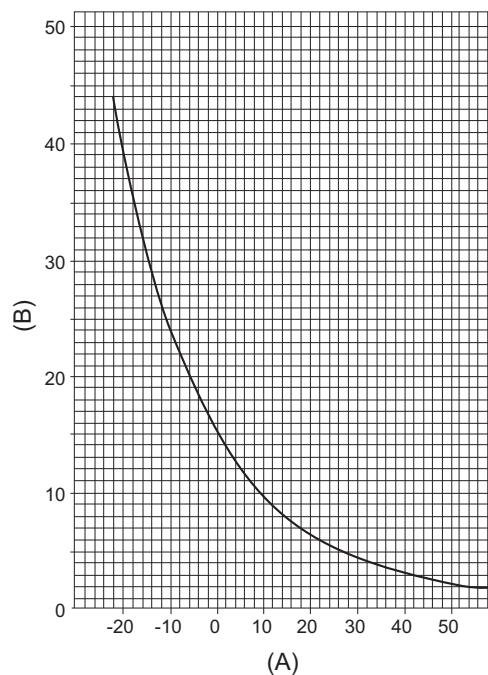
- ◆Thermistor R₀ = 15 kΩ ± 3%
- ◆Multiplier of B = 3480 kΩ ± 2%

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

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

(A) Temperature (°C)

(B) Resistance (kΩ)



(2) Fan motor (CNMF)

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

(3) Linear expansion valve

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

	Normal				Abnormal
	1-6 White-Red	2-6 Yellow-Red	3-6 Orange-Red	4-6 Blue-Red	Open or short
	(150 Ω) ±10%				

(A) Red

(E) Yellow

(C) Blue

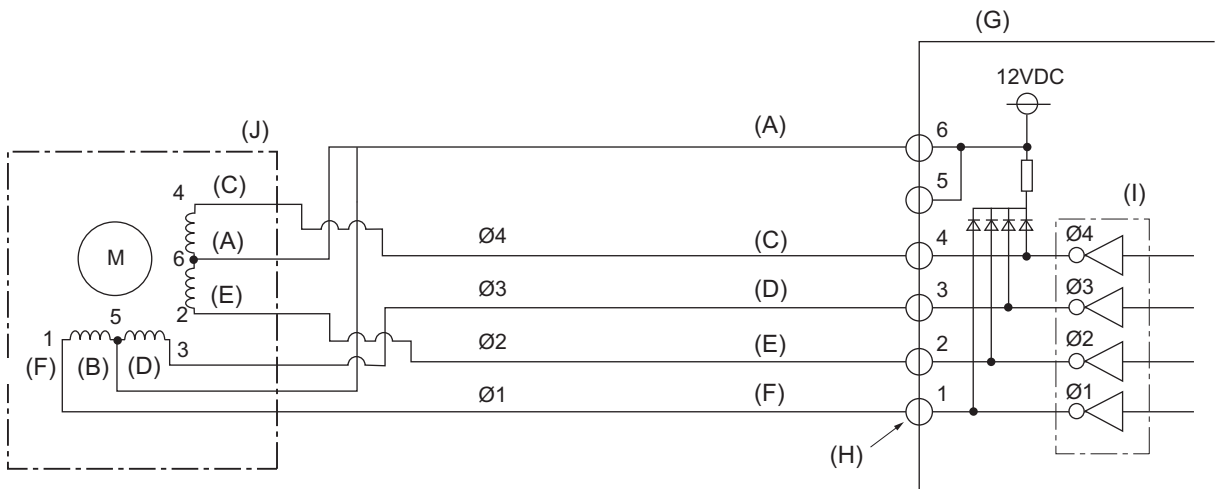
(F) White

(D) Orange

1) Summary of linear expansion valve (LEV) operation

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

Indoor control board and LEV connection



- (A) Red
- (C) Blue
- (D) Orange
- (E) Yellow
- (F) White
- (G) Control board
- (H) Connection (CN60)
- (I) Drive circuit
- (J) Linear expansion valve

Pulse signal output and valve operation

Phase number	Output pulse			
	1	2	3	4
Ø1	ON	OFF	OFF	ON
Ø2	ON	ON	OFF	OFF
Ø3	OFF	ON	ON	OFF
Ø4	OFF	OFF	ON	ON

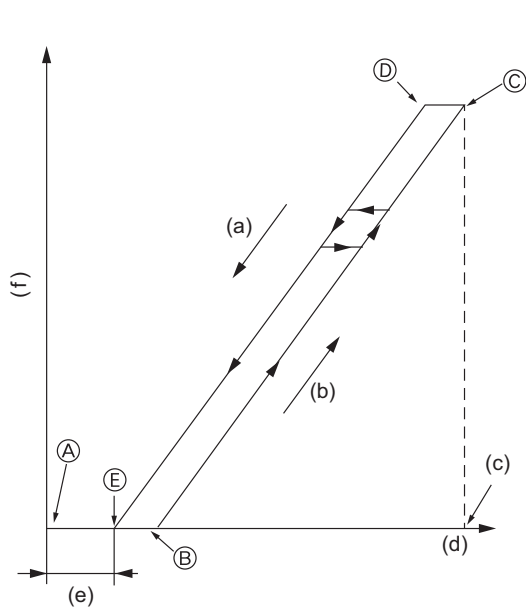
The output pulse changes in the following order:

When the valve closes 1 -> 2 -> 3 -> 4 -> 1

When the valve opens 4 -> 3 -> 2 -> 1 -> 4

- ◆When the valve position remains the same, all output signals will be OFF.
- ◆If any output signal is missing or if the signal remains ON, the motor vibrates and makes clicking noise.

2) LEV operation

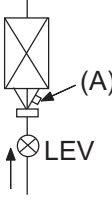


- (a) Close
- (b) Open
- (c) Fully open valve (2000 pulses)
- (d) No. of pulses
- (e) Extra tightening (41 pulses)
- (f) Valve opening degree

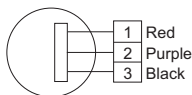
- ◆ When the power is turned on, a pulse signal of fully open pulse + 10% pulse is output (valve closure signal), to bring the valve to position A.
- ◆ When the valve is operating normally, it is free of vibration noise. If the valve locks or when it goes from point E to A in the figure, it makes louder noise than would be heard when there is an open phase.
- ◆ Check for abnormal sound/vibration by placing the metal tip of a screwdriver against the valve and the handle side against your ear.

3) Troubleshooting

Symptom	Checking Criteria	Remedy
Circuit failure on the microcomputer	<p>Disconnect the connectors on the control board, and connect LEDs to test the circuit as shown below.</p> <p>Pulse signals are output for 10 seconds when the main power is turned on. If there are LEDs that do not light up at all or remain lit after the pulses are turned off, there is a problem with the driving circuit.</p>	Replace the indoor control board if driving circuit failure is detected.
Locked LEV	The motor will idle and make small clicking noise if it is run while the LEV is locked. If this clicking noise is heard both when the valve is fully closed and while it is being opened, it indicates a problem.	Replace the LEV.
Disconnected or shorted LEV motor coils	Measure the resistance between the coils with a tester (red-white, red-orange, Red-yellow, Red-blue). The normal range of resistance is $150 \Omega \pm 10\%$	Replace the LEV.

<p>Valve closure failure (leaky valve)</p>	<p>To check the LEV on the indoor unit, check the indoor unit liquid pipe temperature that appears on the operation monitor on the outdoor unit's multi control board while operating the indoor unit in question in the FAN mode and the other indoor units in the cooling mode.</p>  <p>(A) Thermistor (TH22)</p> <p>Normally, the LEV is fully closed while the unit is in the FAN mode. If the valve is leaky, liquid pipe thermistor reading will be lower than normal. If it is significantly lower than the inlet temperature on the remote controller, valve closure failure is suspected. If the amount of leakage is insignificant, replacement of LEV is unnecessary unless it is causing a problem.</p>	<p>Replace the LEV if the amount of leakage is great.</p>
<p>Misconnections of connectors or contact failure</p>	<p>Perform a visual check for disconnected connectors. Perform a visual check of lead wire color.</p>	<p>Disconnect the connectors on the control board and perform a continuity test.</p>

(4) Drain pump



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.

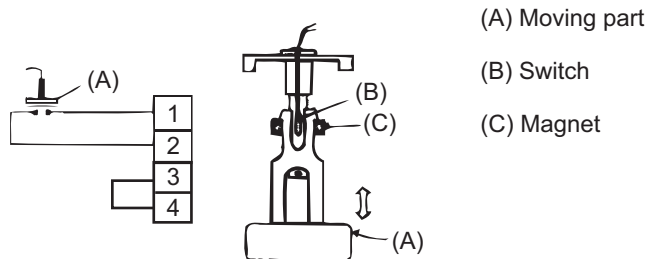
Normal

Red-Black: Input 13 VDC → 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.

(5) Drain float switch (CN4F)

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



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

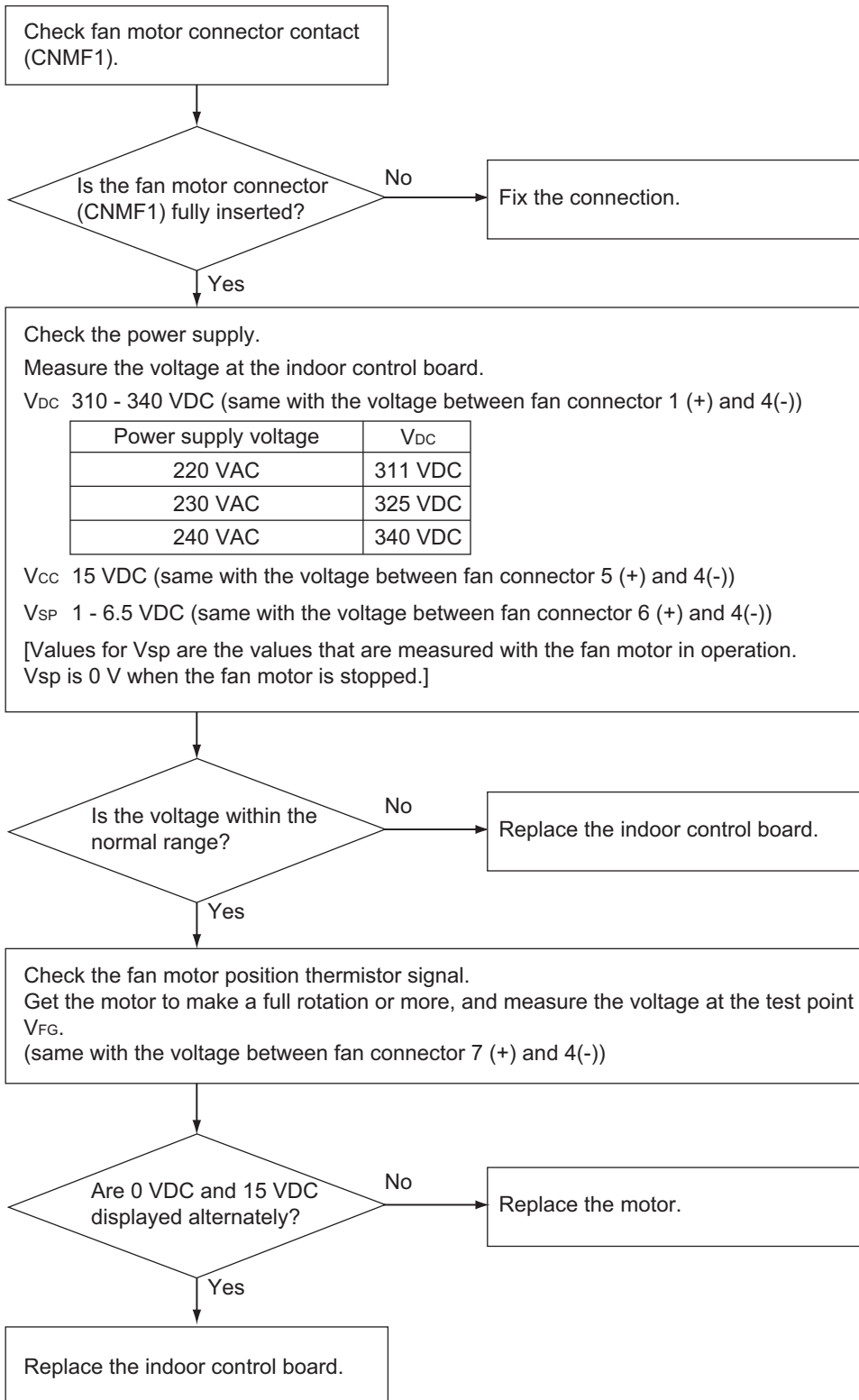
2. DC fan motor (fan motor/indoor control board)

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.

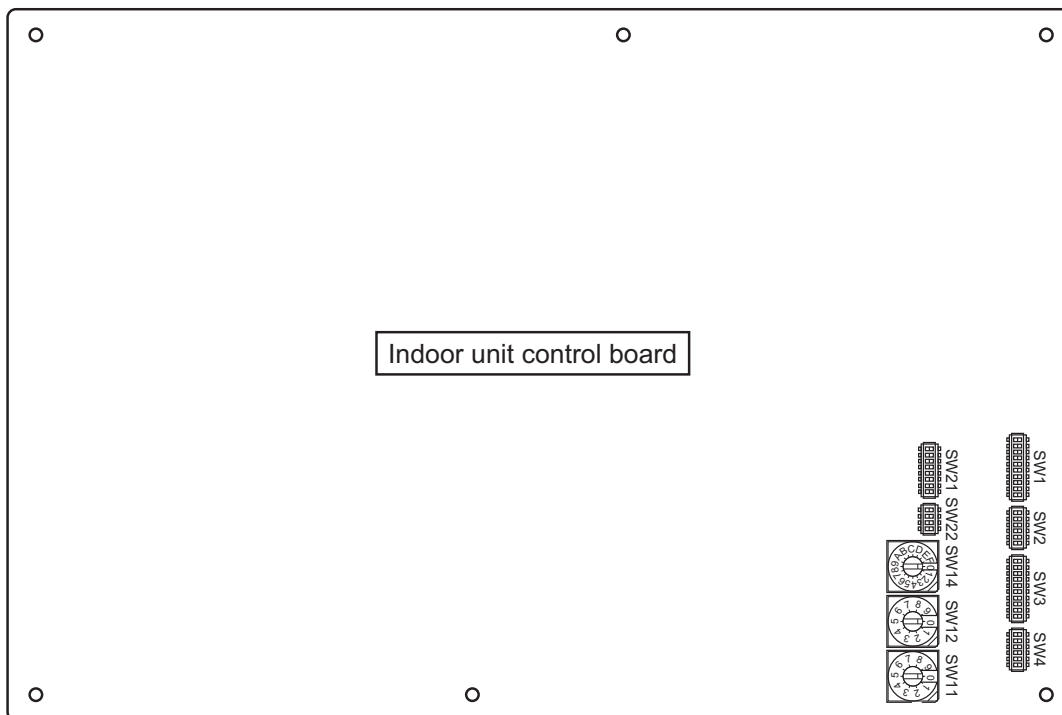
2. Troubleshooting

- ◆Symptom: Indoor unit fan does not run.



3. Setting of address switch

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.

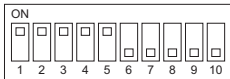
3) Setting the address is combination of SW11 (1st digit address setting) and SW12 (2nd digit address setting).

Address " 3 " setting is composed SW11 " 3 " and SW12 " 0 ".

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

4. Setting of dip-switch (at delivery)

Models	SW1	SW2	SW3	SW4	SW21	SW22	SWE
PEFY-P40VMHS-E	ON 	ON 	ON 	ON 	ON 	ON 	ON
PEFY-P50VMHS-E	ON 	ON 	ON 	ON 	ON 	ON 	ON
PEFY-P63VMHS-E	ON 	ON 	ON 	ON 	ON 	ON 	ON
PEFY-P71VMHS-E	ON 	ON 	ON 	ON 	ON 	ON 	ON
PEFY-P80VMHS-E	ON 	ON 	ON 	ON 	ON 	ON 	ON
PEFY-P100VMHS-E	ON 	ON 	ON 	ON 	ON 	ON 	ON
PEFY-P125VMHS-E	ON 	ON 	ON 	ON 	ON 	ON 	ON
PEFY-P140VMHS-E	ON 	ON 	ON 	ON 	ON 	ON 	ON



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

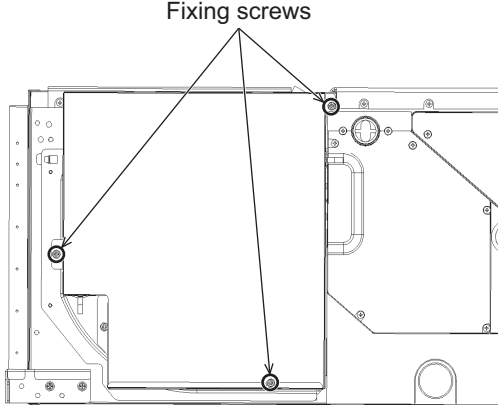
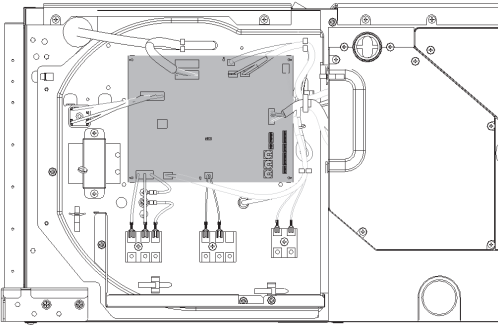
5. Function the LED of the indoor unit service board

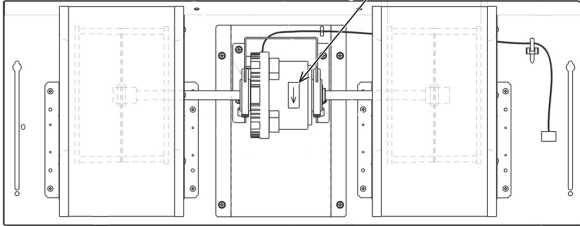
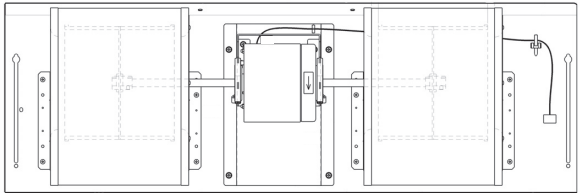
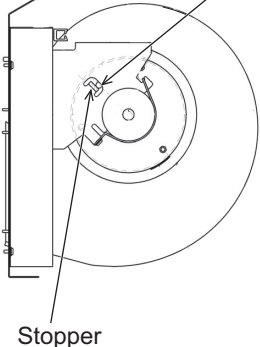
Symbol	Silk display	LED operation under normal state
LED1	Main power source	At applying main power source (indoor unit 200 V) → Lighting
LED2	Transmission power source	At receiving M-NET transmission power source → Lighting

[1] Disassembly Procedure

1. Control box

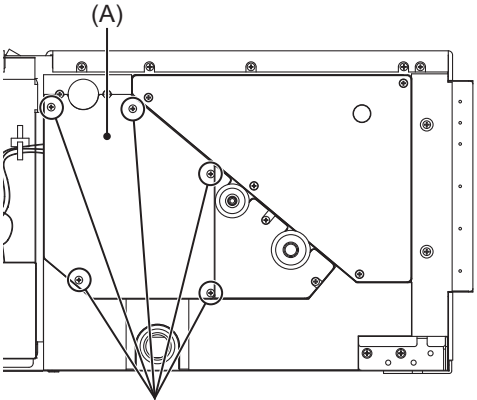
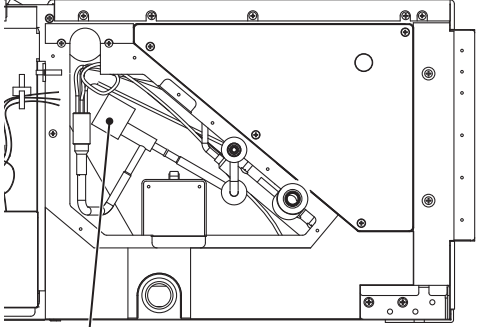
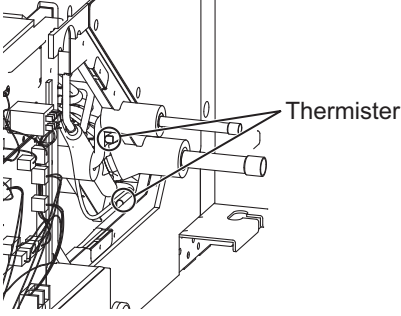
Be careful on removing heavy parts.

OPERATING PROCEDURE	FIGURES
<p>1. Removing the control box cover</p> <p>(1) Remove the fixing screws (three) of the control box (A), and remove the cover. (Fig. 1)</p> <p>*At this stage, the following servicing is possible. (Fig. 2)</p> <p>1 Operation and check of the switches (listed below) which are on the control board.</p> <ul style="list-style-type: none"> • 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 <p>2 Connection check of the lead wires (listed below) which are connected to the controller board.</p> <ul style="list-style-type: none"> • Power supply lead wire. • Network remote controller transmission lead wire. • Fan motor lead wire. • LEV lead wire • Intake air sensor lead wire • Liquid piping sensor lead wire • Gas piping sensor lead wire <ul style="list-style-type: none"> (• Drain pump lead wire) (• Drain sensor lead wire) <p>3 Control board exchange</p> <p>4 Condenser exchange</p> <p>5 Fuse (Fuse holder) exchange</p> <p>6 Relay exchange</p> <p>7 Intake air sensor exchange</p> <p>8 Power supply terminal bed exchange</p> <p>9 Transmission terminal bed exchange x 2</p> <p>(): Optional parts</p>	<p>Fig. 1</p>  <p>Fig. 2</p> 

OPERATING PROCEDURE	FIGURES
<p>6. Precautions for reinstalling the removed motor in its original position</p> <p>(1) P40-80 Fix the motor in place so that the stamp printed on the motor faces front when viewed from the air inlet. (Fig. 5)</p> <p>(2) P100-140 Fix the motor in place so that the protruding portion on the motor and the stopper of the motor leg are positioned as shown in Fig. 6.</p>	<p>Fig. 5</p>  <p>Fig. 6</p>  <p>Viewed from left</p> 

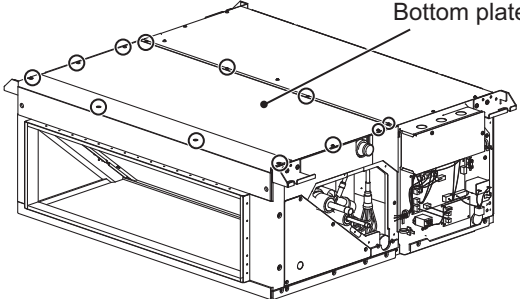
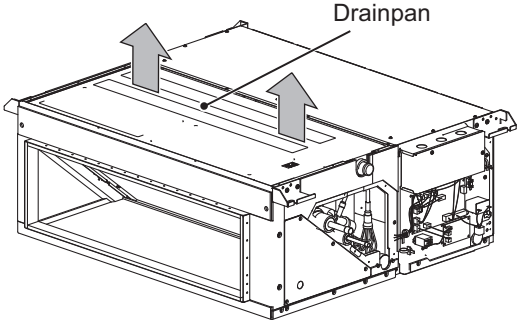
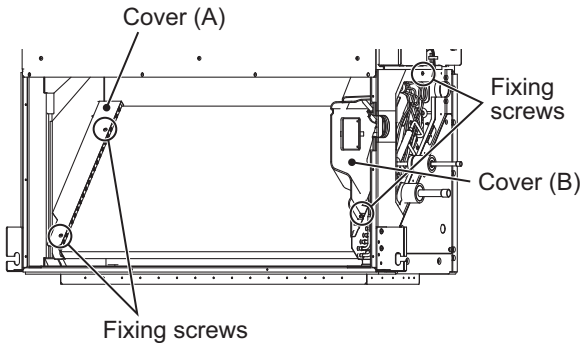
3. LEV, thermistor (Liquid/Gas piping temperature detection)

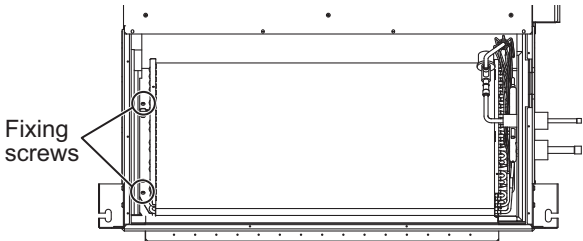
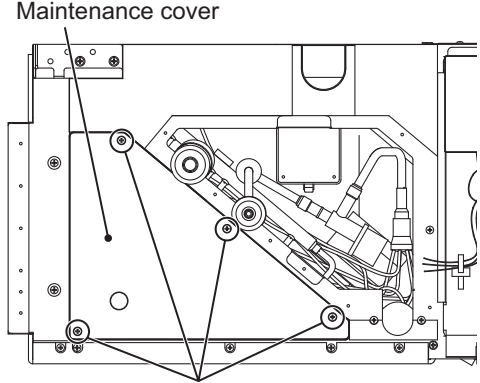
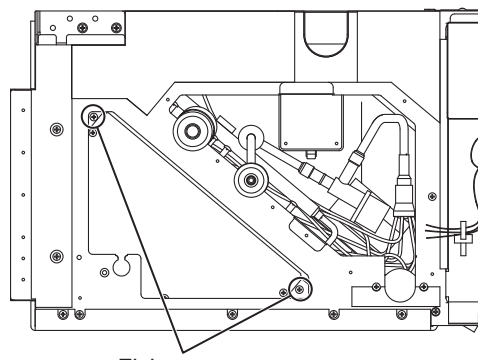
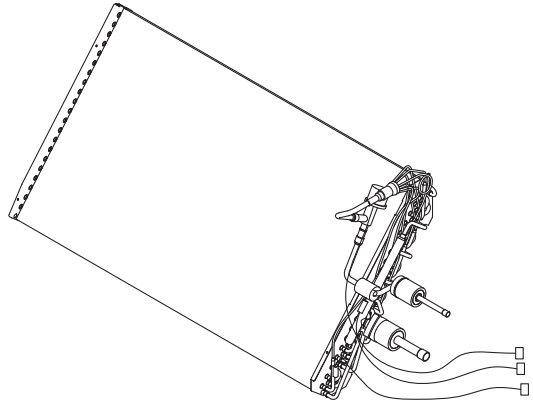
Be careful on removing heavy parts.

OPERATING PROCEDURE	FIGURES
<p>1. Removing the LEV.</p> <ol style="list-style-type: none"> (1) Remove the control box cover with procedure [1]-1. (2) Remove the fixing screws (five) of the heat exchanger cover (A), and remove the cover (A). (Fig. 1) (3) Remove the LEV driving motor. (Fig. 2) <p>2. Removing the thermistors.</p> <ol style="list-style-type: none"> (1) Remove the thermistors from the thermistor holders which are installed on the piping. (Fig. 3) (liquid piping: large piping, gas piping: small piping) 	<p>Fig. 1</p>  <p style="text-align: center;">Fixing screws</p> <p>Fig. 2</p>  <p style="text-align: center;">LEV</p> <p>Fig. 3</p>  <p style="text-align: right;">Thermister</p>

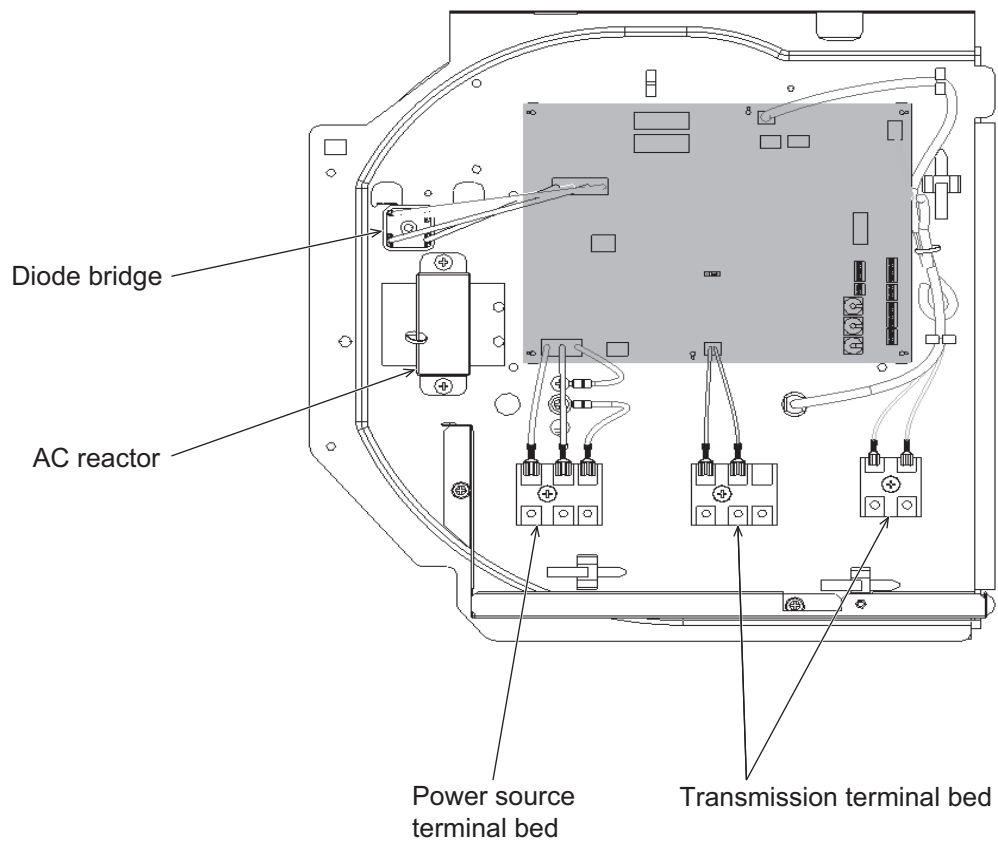
4. Heat exchanger

Be careful on removing heavy parts.

OPERATING PROCEDURE	FIGURES
<p>1. Removing the heat exchanger.</p> <p>(1) Remove the heat exchanger cover with procedure [1]-3-1.</p> <p>(2) Remove the bottom plate which is air outlet side. (fixing screws: twelve) (Fig. 1)</p> <p>(3) Remove the drainpan. (Fig. 2)</p> <p>(4) Remove the cover (A), (B). (fixing screws: two x 2) (Fig. 3)</p>	<p>Fig. 1</p>  <p>Fig. 2</p>  <p>Fig. 3</p> 

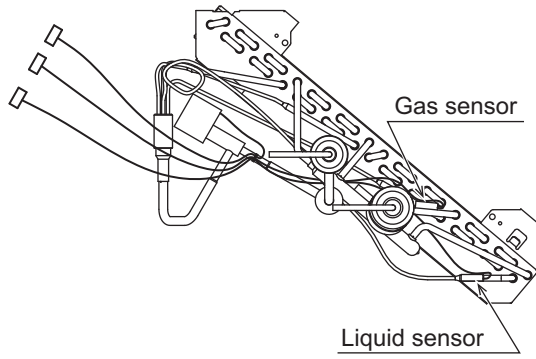
OPERATING PROCEDURE	FIGURES
<p>(5) Remove the maintenance cover. (fixing screws: four) (Fig. 5)</p> <p>(6) Remove the heat exchanger. (fixing screws: four) (Fig. 4, 6)</p> <p>*Removed heat exchanger is as shown Fig. 7.</p>	<p>Fig. 4</p>  <p>Fig. 5</p>  <p>Fig. 6</p>  <p>Fig. 7</p> 

5. Control box inside layout

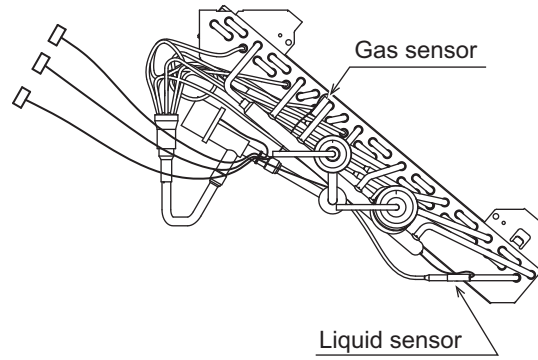


6. Sensor position

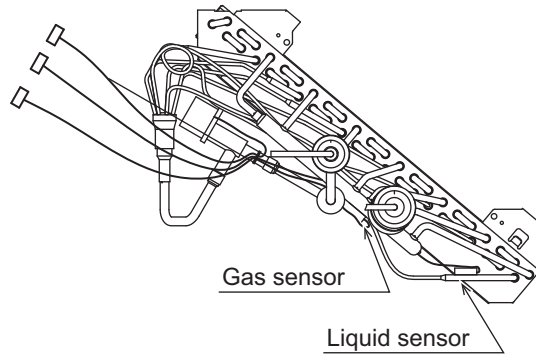
PEFY-P40, 50, 63VMHS-E



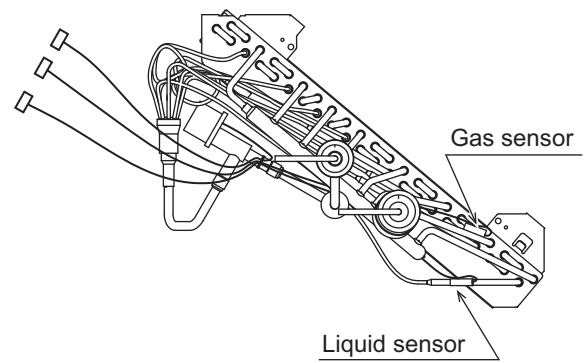
PEFY-P100VMHS-E



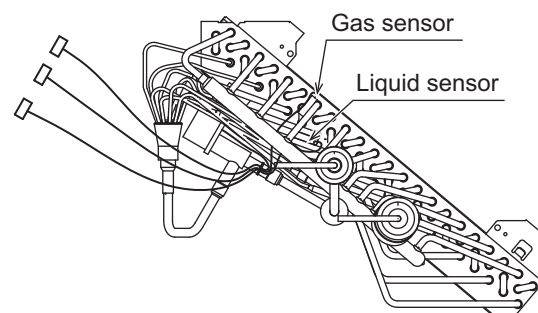
PEFY-P71, 80VMHS-E



PEFY-P125VMHS-E



PEFY-P140VMHS-E



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