

SERVICE MANUAL

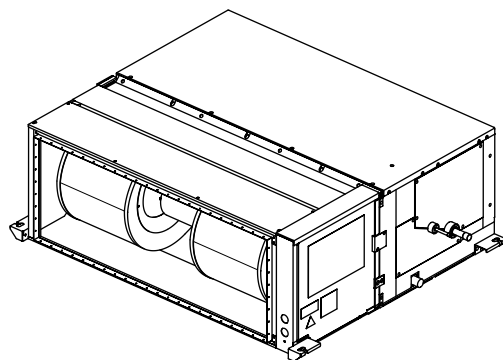
Ceiling Concealed

Model name

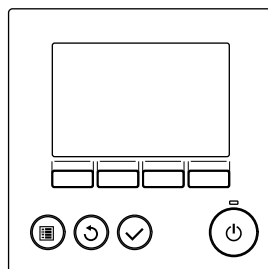
<Indoor unit>

PEA-RP200WKA

PEA-RP250WKA



INDOOR UNIT



REMOTE CONTROLLER (option)

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Note: The phrase "Wired remote controller" in this installation manual refers only to the PAR-21MAA. If you need any information for THE PAR-30MAA, please refer to either the installation manual or initial setting manual which are included in PAR-30MAA box.

1

SAFETY PRECAUTION

1-1. ALWAYS OBSERVE FOR SAFETY

Before obtaining access to terminal, all supply circuits must be disconnected.

1-2. CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilising refrigerant R410A

Use new refrigerant pipes.

In case of using the existing pipes for R22, be careful with the followings.
· Avoid using thin pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contamination such as sulfur hazardous for use, oxides, dirt, shaving particles, etc. In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil etc.

Store the piping to be used indoors during installation and both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Use ester oil, ether oil or alkylbenzene oil (small amount) as the refrigerant oil applied to flares and flange connections.

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil etc.

Charge refrigerant from liquid phase of gas cylinder.

If the refrigerant is charged from gas phase, composition change may occur in refrigerant and the efficiency will be lowered.

Do not use refrigerant other than R410A.

If other refrigerant (R22 etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil etc.

Use a vacuum pump with a reverse flow check valve.

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil etc.

Use the following tools specifically designed for use with R410A refrigerant.

The following tools are necessary to use R410A refrigerant.

Tools for R410A	
Gauge manifold	Flare tool
Charge hose	Size adjustment gauge
Gas leak detector	Vacuum pump adaptor
Torque wrench	Electronic refrigerant charging scale

Handle tools with care.

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Do not use a charging cylinder.

If a charging cylinder is used, the composition of refrigerant will change and the efficiency will be lowered.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

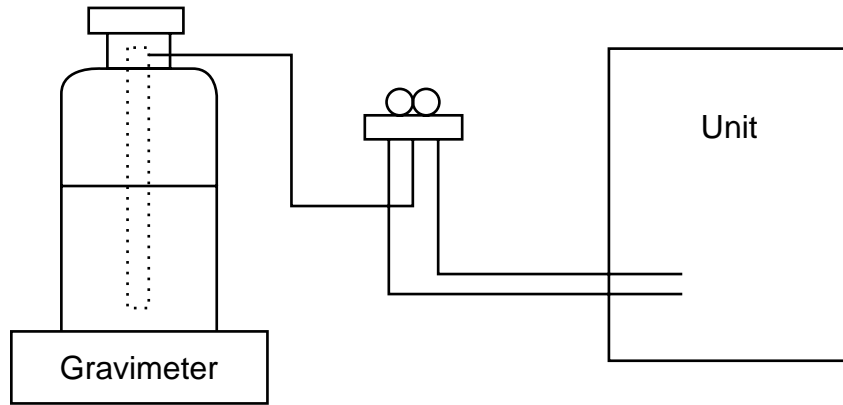
[1] Cautions for service

- (1) Perform service after recovering the refrigerant left in unit completely.
- (2) Do not release refrigerant in the air.
- (3) After completing service, charge the cycle with specified amount of refrigerant.
- (4) When performing service, install a filter drier simultaneously.
Be sure to use a filter drier for new refrigerant.

[2] Additional refrigerant charge

When charging directly from cylinder

- Check that cylinder for R410A on the market is syphon type.
- Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)



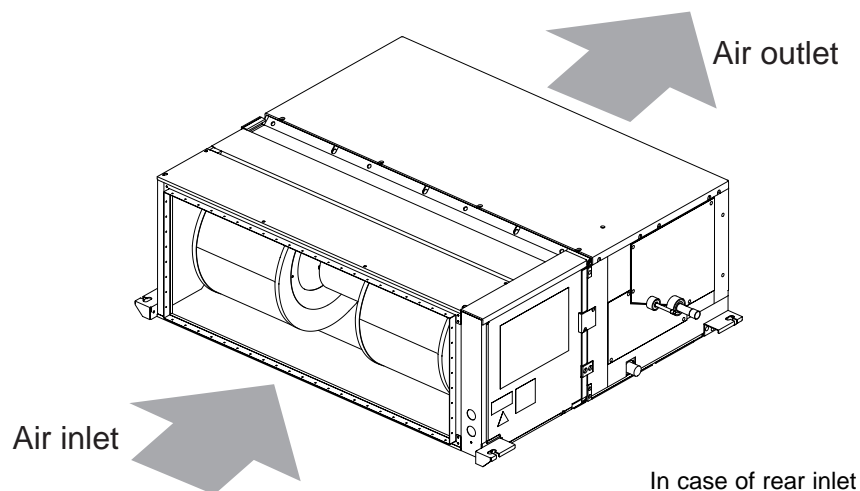
[3] Service tools

Use the below service tools as exclusive tools for R410A refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	· Only for R410A
		· Use the existing fitting specifications. (UNF1/2)
		· Use high-tension side pressure of 5.3MPa-G or over.
②	Charge hose	· Only for R410A
		· Use pressure performance of 5.09MPa-G or over.
③	Electronic scale	—
④	Gas leak detector	· Use the detector for R134a, R407C or R410A.
⑤	Adaptor for reverse flow check	· Attach on vacuum pump.
⑥	Refrigerant charge base	—
⑦	Refrigerant cylinder	· Only for R410A · Top of cylinder (Pink)
		· Cylinder with syphon
⑧	Refrigerant recovery equipment	—

2 PART NAMES AND FUNCTIONS

• Indoor Unit



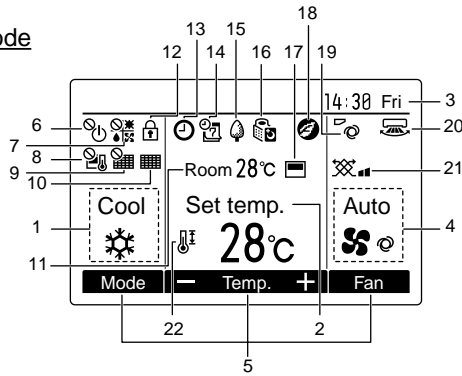
• Wired remote controller (Option) PAR-33MAA

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

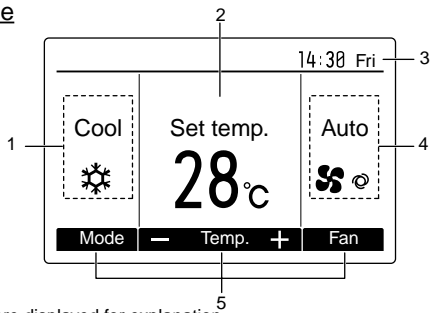
Display

The main display can be displayed in 2 different modes: "Full" and "Basic."
The initial setting is "Full."

Full mode



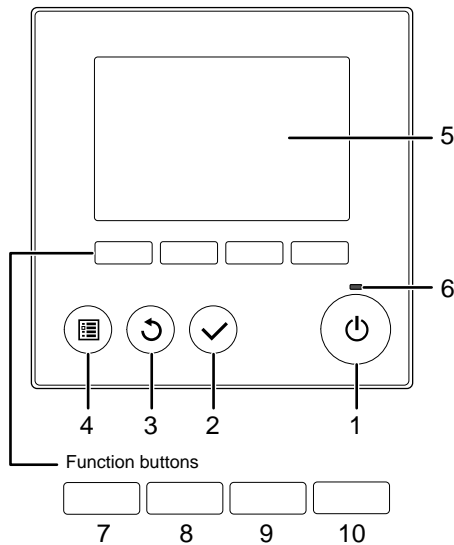
Basic mode



Note: All icons are displayed for explanation.

- 1 Operation mode**
Indoor unit operation mode appears here.
- 2 Preset temperature**
Preset temperature appears here.
- 3 Clock (See the Installation Manual.)**
Current time appears here.
- 4 Fan speed**
Fan speed setting appears here.
- 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.)**
Current room temperature appears here.
- 12**
Appears when the buttons are locked.
- 13**
Appears when the On/Off timer or Night setback function is enabled.
- 14**
Appears when the Weekly timer is enabled.
- 15**
Appears while the units are operated in the energy-save mode.
- 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.
appears when the thermistor on the indoor unit is activated to monitor the room temperature.
- 18**
Appears when the units are operated in the energy-save mode with 3D i-see Sensor.
- 19**
Indicates the vane setting.
- 20**
Indicates the louver setting.
- 21**
Indicates the ventilation setting.
- 22**
Appears when the preset temperature range is restricted.

Controller interface

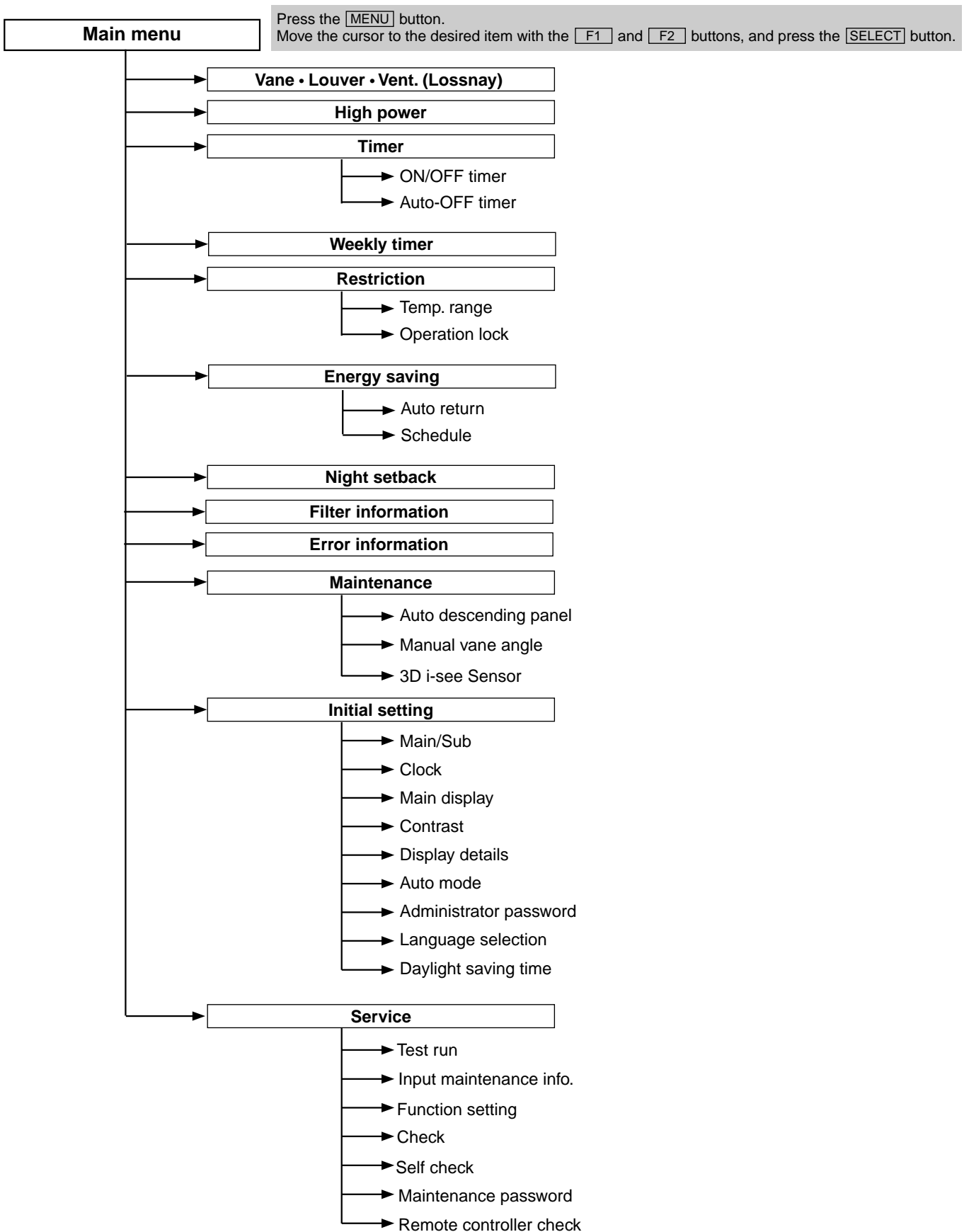


- When the backlight is off, pressing any button turns the backlight on and does not perform its function. (except for the ON/OFF button)
- Most settings (except ON/OFF, mode, fan speed, temperature) can be made from the Menu screen.

- 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.
 - 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.
- 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.
- Main display**

Main menu
- Function guide
- 7 Function button F1**
Main display: Press to change the operation mode.
Main menu: Press to move the cursor down.
 - 8 Function button F2**
Main display: Press to decrease temperature.
Main menu: Press to move the cursor up.
 - 9 Function button F3**
Main display: Press to increase temperature.
Main menu: Press to go to the previous page.
 - 10 Function button F4**
Main display: Press to change the fan speed.
Main menu: Press to go to the next page.

Menu structure



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



Setting and display items		Setting details
Vane • Louver • Vent. (Lossnay)		<p>Use to set the vane angle.</p> <ul style="list-style-type: none"> • Select a desired vane setting from 5 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.
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.
	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.
Filter information		<p>Use to check the filter status.</p> <ul style="list-style-type: none"> • The filter sign can be reset.
Error information		<p>Use to check error information when an error occurs.</p> <ul style="list-style-type: none"> • Check 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.)
Weekly timer*		<p>Use to set the weekly operation ON/OFF times.</p> <ul style="list-style-type: none"> • Up to 8 operation patterns can be set for each day. (Not valid when the ON/OFF timer is enabled.)
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.)
	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 4 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.
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.
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.
	Operation lock	<p>Use to lock selected functions.</p> <ul style="list-style-type: none"> • The locked functions cannot be operated.
Initial setting	Main/Sub	<p>When connecting 2 remote controllers, one of them needs to be designated as a sub controller.</p>
	Clock	<p>Use to set the current time.</p>
	Main display	<p>Use to switch between "Full" and "Basic" modes for the Main display.</p> <ul style="list-style-type: none"> • The initial setting is "Full."
	Contrast	<p>Use to adjust screen contrast.</p>
	Daylight saving time	<p>Sets the daylight saving time.</p>
Initial setting	Display details	<p>Make the settings for the remote controller related items as necessary. Clock: The initial settings are "Yes" and "24h" format. Temperature: Set either Celsius (°C) or Fahrenheit (°F). Room temp. : Set Show or Hide. Auto mode: Set the Auto mode display or Only Auto display.</p>
	Auto mode	<p>Whether or not to use the AUTO mode can be selected by using the button. This setting is valid only when indoor units with the AUTO mode function are connected.</p>
	Administrator password	<p>The administrator password is required to make the settings for the following items.</p> <ul style="list-style-type: none"> • Timer setting • Energy-save setting • Weekly timer setting • Restriction setting • Outdoor unit silent mode setting • Night set back
	Language selection	<p>Use to select the desired language.</p>
Service	Test run	<p>Select "Test run" from the Service menu to bring up the Test run menu.</p> <ul style="list-style-type: none"> • Test run • Drain pump test run
	Input maintenance	<p>Select "Input maintenance Info." from the Service menu to bring up the Maintenance information screen. The following settings can be made from the Maintenance Information screen.</p> <ul style="list-style-type: none"> • Model name input • Serial No. input • Dealer information input
	Function setting	<p>Make the settings for the indoor unit functions via the remote controller as necessary.</p>
	LOSSNAY setting (City Multi only)	<p>This setting is required only when the operation of City Multi units is interlocked with LOSSNAY units.</p>
	Check	<p>Error history: Display the error history and execute "delete error history". Refrigerant leak check: Refrigerant leaks can be judged. Smooth maintenance: The indoor and outdoor maintenance data can be displayed. Request code: Details of the operation data including each thermistor temperature and error history can be checked.</p>
	Self check	<p>Error history of each unit can be checked via the remote controller.</p>
	Maintenance password	<p>Use to change the maintenance password.</p>
Remote controller check	<p>When the remote controller does not work properly, use the remote controller checking function to troubleshoot the problem.</p>	

* Clock setting is required.

3

SPECIFICATION

INDOOR UNIT	Model name		PEA-RP200WKA	
	Mode		Cooling	Heating
	Power supply		Single phase, 50Hz, 220-240V	
	Input	*1	kW	0.66
	Running Current	*1	A	3.57
	External finish		Galvanized sheets	
	Heat exchanger		Plate fin coil	
	Fan	Fan (drive) × No.		Sirocco fan × 2
		Fan motor output	kW	0.87
		Airflow (Low-Mid-High)	m ³ /min (L/S)	50-61-72 (833-1017-1200)
		External static pressure	Pa	(60-75-100-)150
	Booster heater		kW	-
	Operation control & Thermostat		Remote controller & built-in	
	Sound pressure level (Low-Mid-High)	(60Pa)	dB (A)	34-37-40
		(75Pa)		35-38-41
		(100Pa)		36-39-42
150Pa		38-41-44		
Field drain pipe O.D		mm	32	
Dimensions	W	mm	1370	
	D	mm	1120	
	H	mm	470	
Weight		kg	108	

*1 The value is measured at an external static pressure of 150 Pa.

INDOOR UNIT	Model name		PEA-RP250WKA	
	Mode		Cooling	Heating
	Power supply		Single phase, 50Hz, 220-240V	
	Input	*1	kW	0.80
	Running Current	*1	A	4.34
	External finish		Galvanized sheets	
	Heat exchanger		Plate fin coil	
	Fan	Fan (drive) × No.		Sirocco fan × 2
		Fan motor output	kW	0.87
		Airflow (Low-Mid-High)	m ³ /min (L/S)	58-71-84 (967-1183-1400)
		External static pressure	Pa	(60-75-100-)150
	Booster heater		kW	-
	Operation control & Thermostat		Remote controller & built-in	
	Sound pressure level (Low-Mid-High)	(60Pa)	dB (A)	36-39-42
		(75Pa)		37-40-43
		(100Pa)		38-41-44
150Pa		40-43-46		
Field drain pipe O.D		mm	32	
Dimensions	W	mm	1370	
	D	mm	1120	
	H	mm	470	
Weight		kg	108	

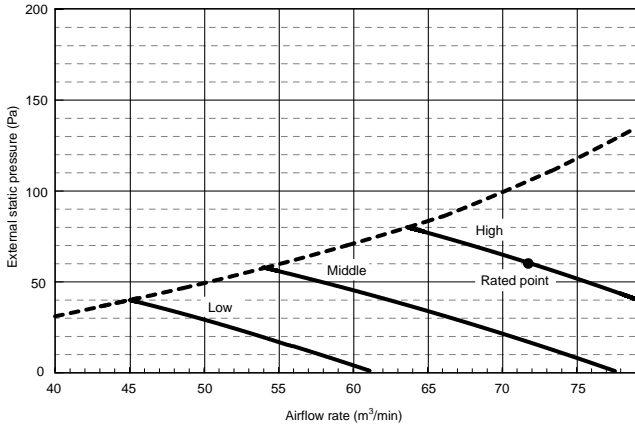
*1 The value is measured at an external static pressure of 150 Pa.

4

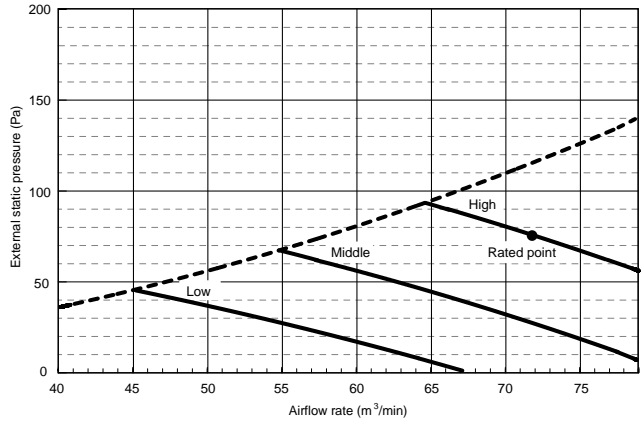
FAN PERFORMANCE AND CORRECTED AIR FLOW

PEA-RP200WKA

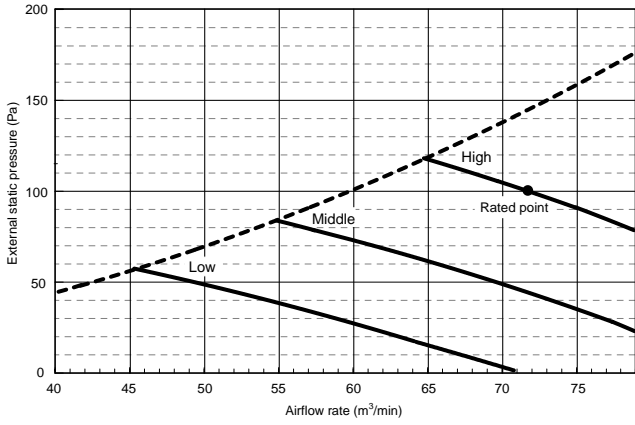
(External static pressure 60 Pa)



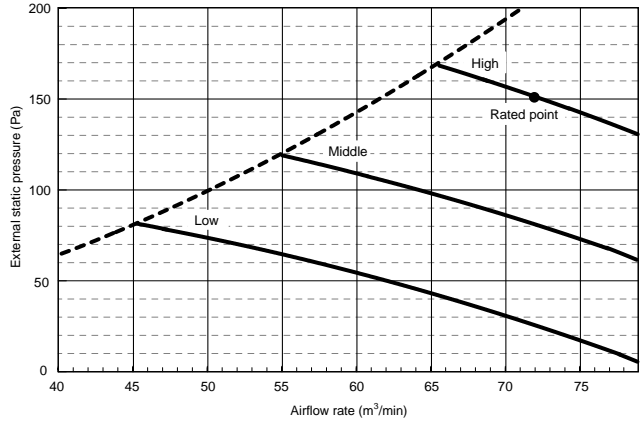
(External static pressure 75 Pa)



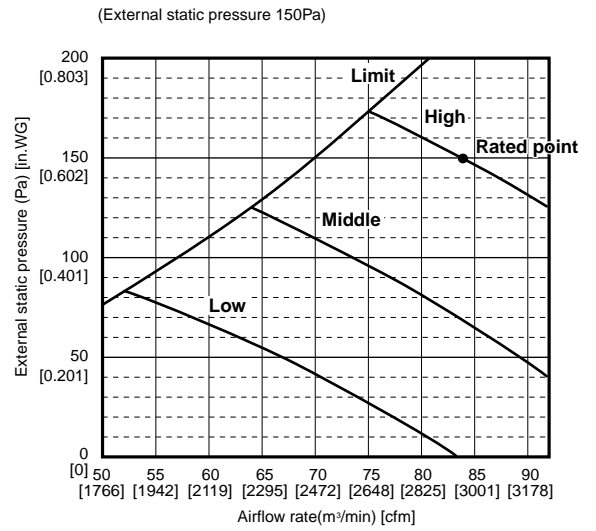
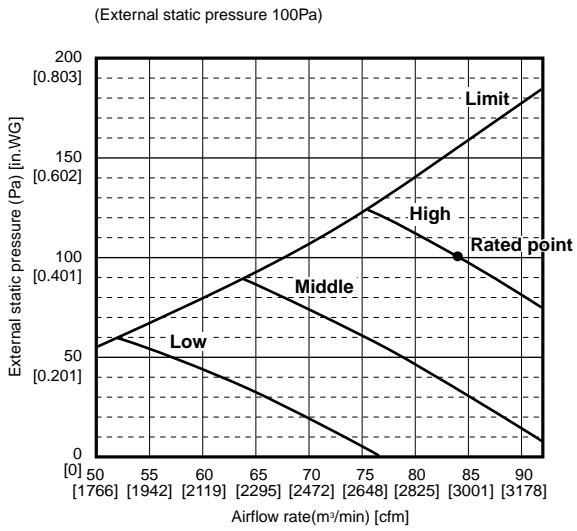
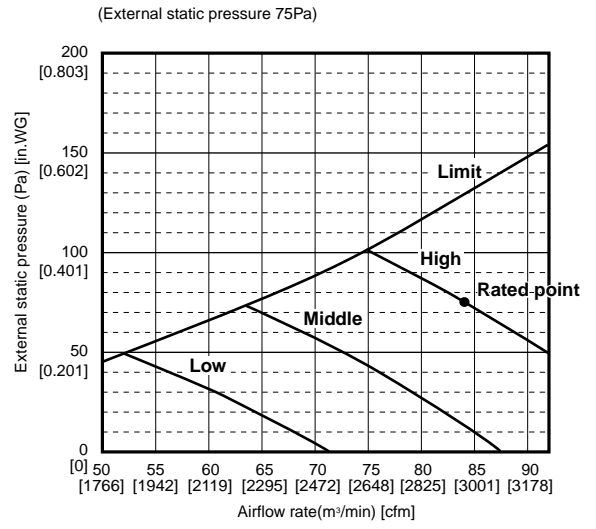
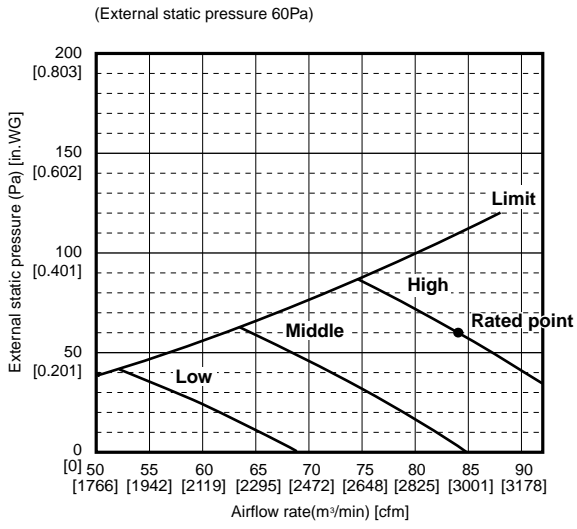
(External static pressure 100 Pa)



(External static pressure 150 Pa)



PEA-RP250WKA

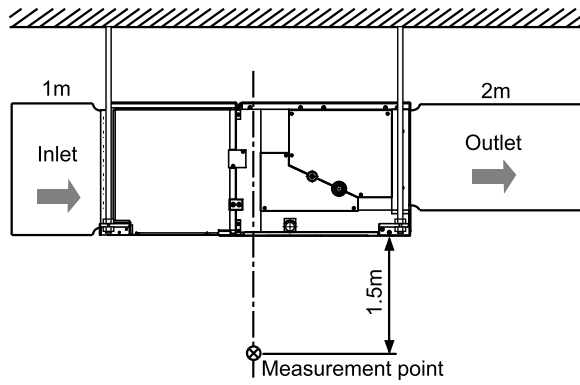


5

SOUND PRESSURE LEVELS

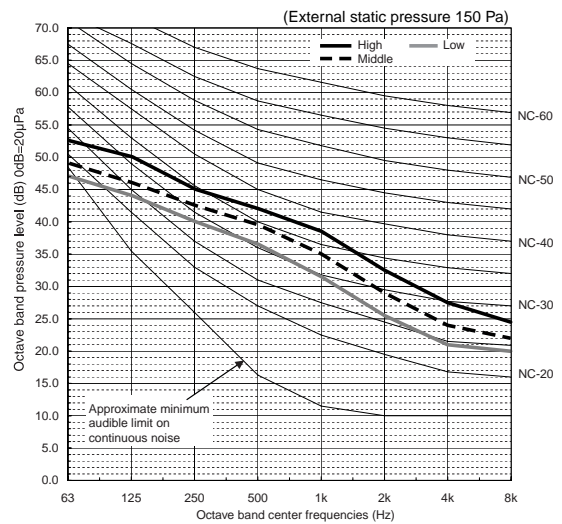
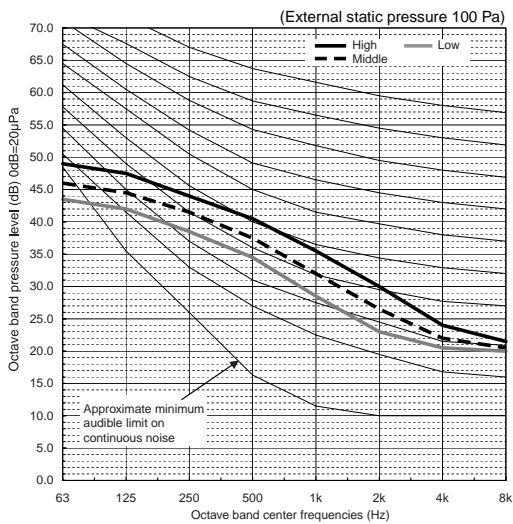
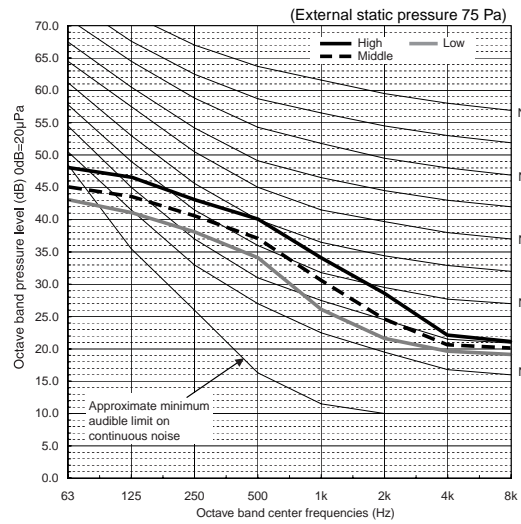
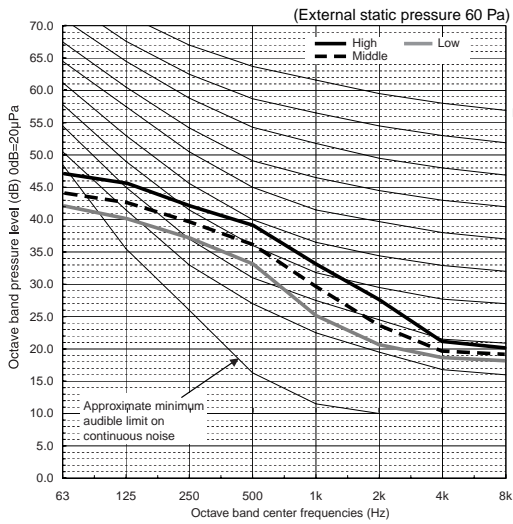
5-1. Sound pressure level

Ceiling concealed

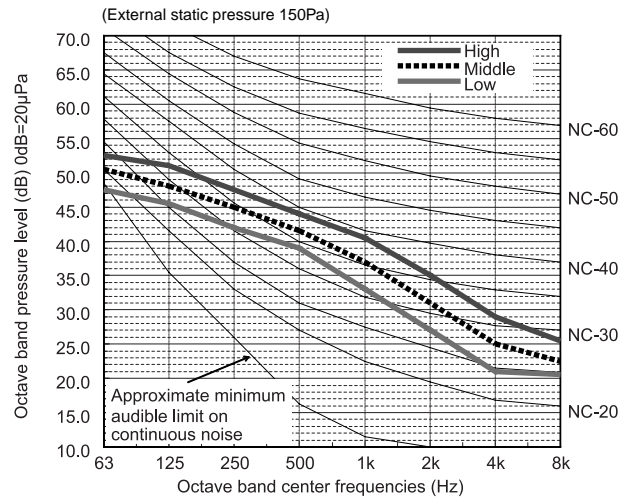
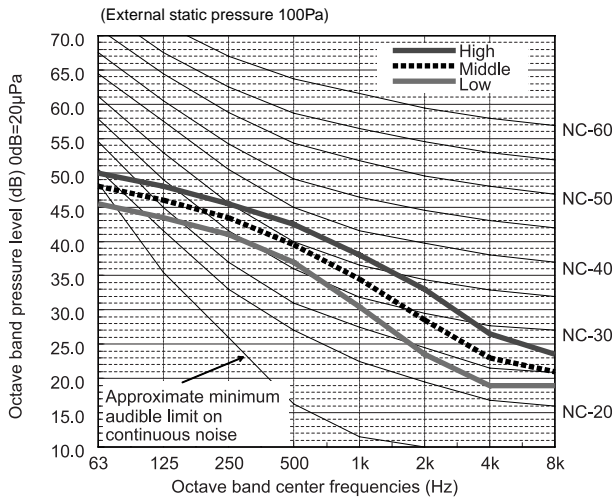
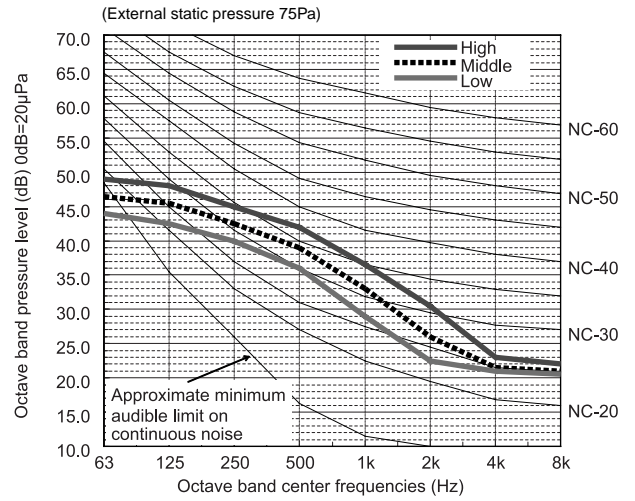
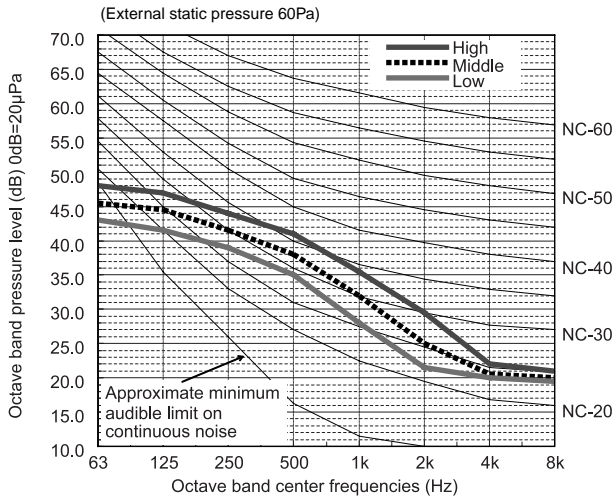


5-2. NC curves

PEA-RP200WKA



PEA-RP250WKA

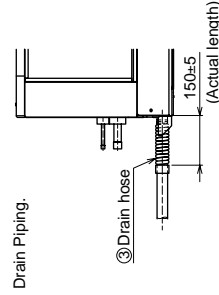
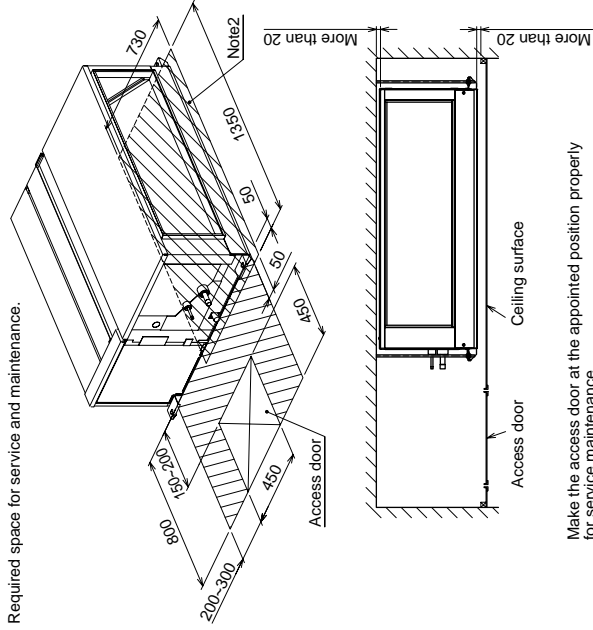


NOTE: The sound level is measured in an anechoic room where echoes are few, when compressor stops. The sound may be bigger than displayed level under actual installation condition by surrounding echoes. The sound level can be higher than the displayed level during cooling and heating operation.

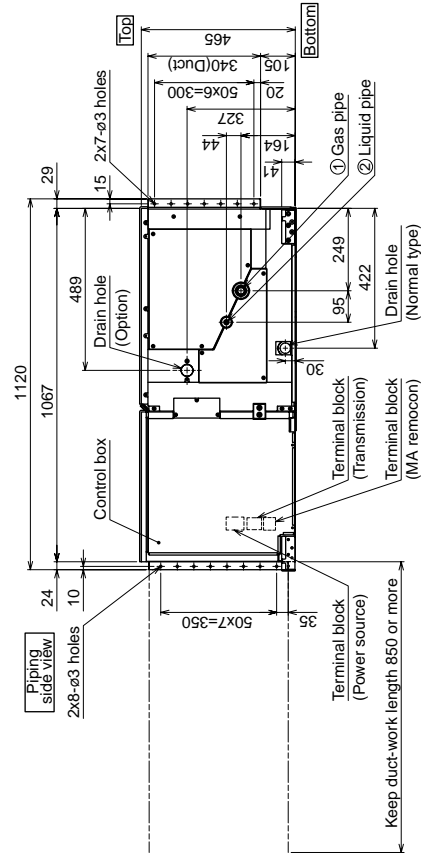
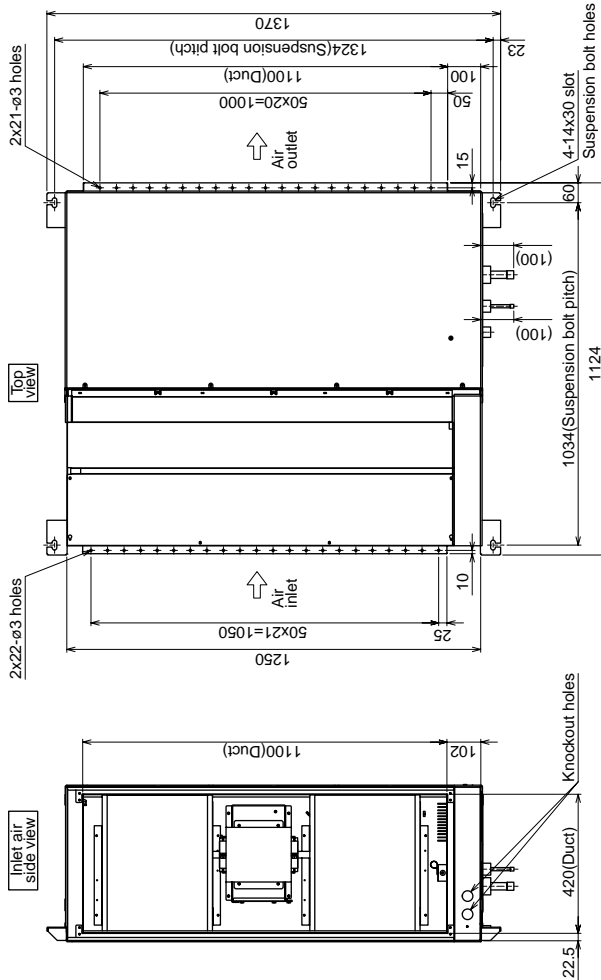
6

OUTLINES & DIMENSIONS

INDOOR UNIT



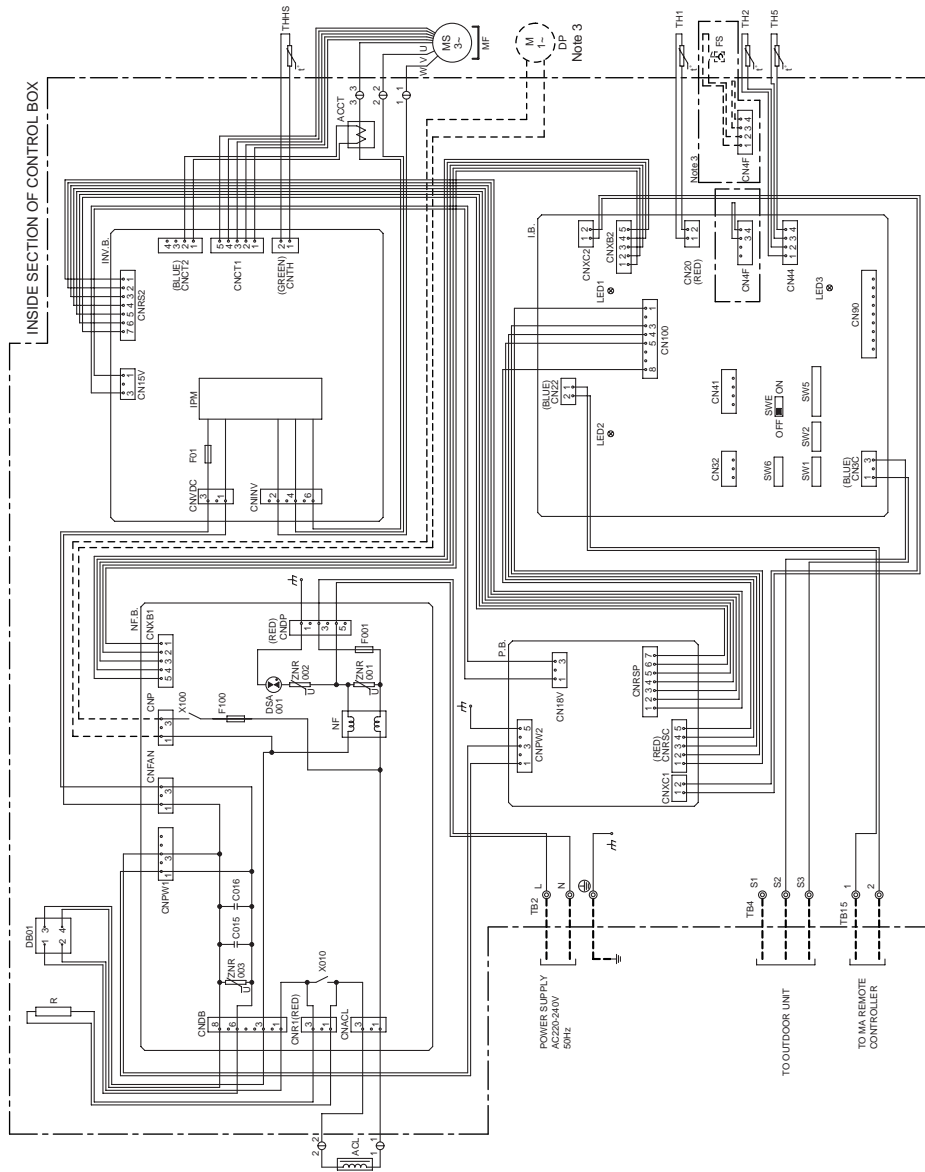
- Note 1. Use M10 screw for the suspension bolt (field supply).
 2. Keep the service space for the maintenance from the bottom when the heat exchanger is cleaned.
 3. Make sure to install the air filter (field supply) on the air intake side.
 In case field supplied air filter is used, attach it where the filter service is easily done.



MODEL	① Gas pipe	② Liquid pipe	③ Drain hose
PEA-RP200WKA	ø9.52	ø9.52	Drain hose 32mm <flexible joints>
PEA-RP250WKA	ø25.4	ø12.7	<flexible joints> <accessory>

SYMBOL	EXPLANATION	NAME
I.B.	Indoor controller board	
P.B.	Power supply board	
INV.B.	Noise filter board	
INV.B.	Inverter board	
TB2	Power source terminal block	
TB4	Transmission terminal block	
TB15	Transmission terminal block	
F001	Fuse(AC250V /10A)	
F01	Fuse(AC250V /5A)	
F100	Fuse(3.15A)	
MF	Fan motor	
ACL	AC relay (Power factor improvement)	
R	Resistor	
DB01	Diode bridge	
NF	Noise filter	
DSA001	Arrester	
ZNR001	Varistor	
-ZNR003	Aux. relay	
X010.X100		
LED1	LED (Power supply)	
LED2	LED (Remote controller supply)	
LED3	LED (transmission indoor-outdoor)	
TH1	Thermistor(inlet air temp.detection)	
TH2	Thermistor(piping temp.detection/liquid)	
TH5	Thermistor(piping temp.detection/gas)	
THHS	Thermistor(heatsink)	
THCS	Current Sensor (AC)	
CN41	Connector (HA terminal-A)	
CN80	Connector (Wireless)	
SW1 (I.B.)	Switch (for mode selection)	
SW2 (I.B.)	Switch (for capacity code)	
SW5 (I.B.)	Switch (for model selection)	
SW6 (I.B.)	Switch (for model selection)	
SWE (I.B.)	Connector (emergency operation)	
IPM	Intelligent power module	
<DP>	Drain pump	
<FS>	Float switch	

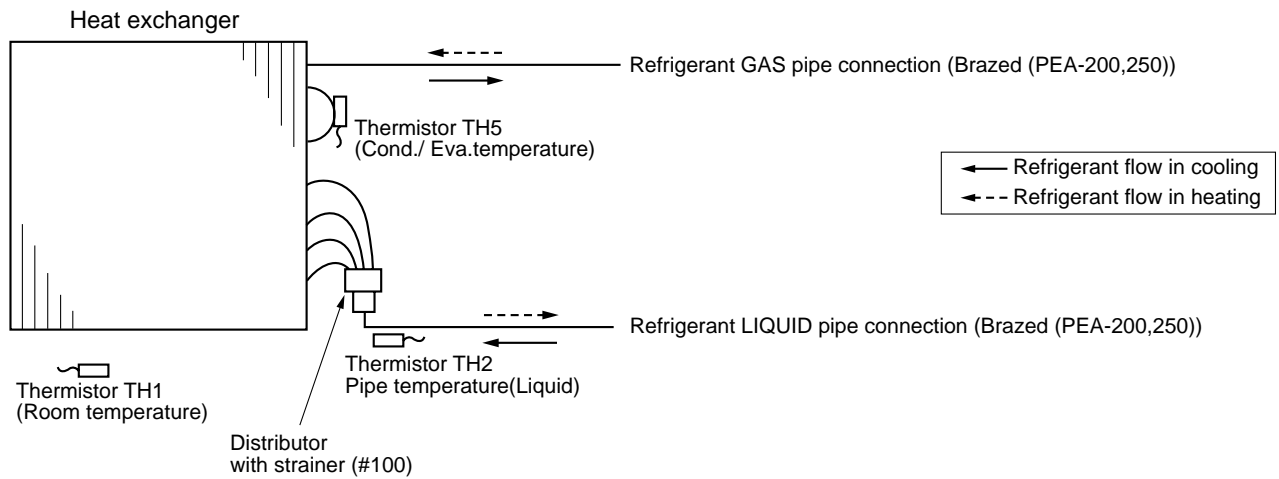
inside < > is the optional parts.



- NOTE:1.The wirings to TB2, TB4, TB15 shown in dotted line are field work.
 2.Mark ⊙ indicates terminal block (⊙) connector.
 3.The part of thin dotted line indicates the circuit for optional parts.
 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.

8

REFRIGERANT SYSTEM DIAGRAM



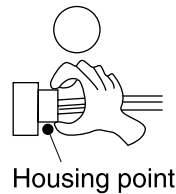
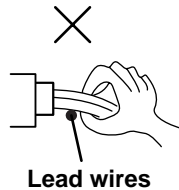
9-1. CAUTIONS ON TROUBLESHOOTING

(1) Before troubleshooting, check the followings:

- ① Check the power supply voltage.
- ② Check the indoor/outdoor connecting wire for mis-wiring.

(2) Take care the followings during servicing.

- ① Before servicing the air conditioner, be sure to turn off the remote controller first to stop the main unit, and then turn off the breaker.
- ② When removing the board in the control box, hold the edge of the board with care NOT to apply stress on the components.
- ③ When connecting or disconnecting the connectors, hold the housing of the connector. DO NOT pull the lead wires.



9-2. TROUBLESHOOTING

<Check code displayed by self-diagnosis and actions to be taken for service (summary)>

Present and past check codes are logged, and they can be displayed on the wired remote controller or controller board of outdoor unit. Actions to be taken for service, which depends on whether or not the trouble is reoccurring in the field, are summarized in the table below. Check the contents below before investigating details.

Unit conditions at service	Check code	Actions to be taken for service (summary)
The trouble is reoccurring.	Displayed	Judge what is wrong and take a corrective action according to "9-3. SELF-DIAGNOSIS ACTION TABLE".
	Not displayed	Conduct troubleshooting and ascertain the cause of the trouble according to "9-4. TROUBLESHOOTING BY INFERIOR PHENOMENA".
The trouble is not reoccurring.	Logged	<ol style="list-style-type: none"> ① Consider the temporary defects such as the work of protection devices in the refrigerant circuit including compressor, poor connection of wiring, noise, etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, matters related to wiring, etc. ② Reset check code logs and restart the unit after finishing service. ③ There is no abnormality in electrical component, controller board, remote controller, etc.
	Not logged	<ol style="list-style-type: none"> ① Re-check the abnormal symptom. ② Conduct troubleshooting and ascertain the cause of the trouble according to "9-4. TROUBLESHOOTING BY INFERIOR PHENOMENA". ③ Continue to operate unit for the time being if the cause is not ascertained. ④ There is no abnormality concerning of parts such as electrical component, controller board, remote controller, etc.

- If the unit cannot be operated properly after the test run has been performed, refer to the following table to remove the cause.

Symptom		Cause
Wired remote controller	LED 1, 2 (PCB in outdoor unit)	
PLEASE WAIT	For about 2 minutes after power-on	After LED 1, 2 are lighted, LED 2 is turned off, then only LED 1 is lighted. (Correct operation)
PLEASE WAIT → Error code	After about 2 minutes has expired after power-on	Only LED 1 is lighted. → LED 1, 2 blink.
Display messages do not appear even when operation switch is turned ON (operation lamp does not light up).		Only LED 1 is lighted. → LED 1 blinks twice, LED 2 blinks once.

On the wireless remote controller with condition above, following phenomena take place.

- No signals from the remote controller are accepted.
- Operation lamp is blinking.
- The buzzer makes a short piping sound.







Note:

Operation is not possible for about 30 seconds after cancellation of function selection. (Correct operation)

For description of each LED (LED1, 2, 3) provided on the indoor controller board, refer to the following table.

LED1 (power for microcomputer)	Indicates whether control power is supplied. Make sure that this LED is always lit.
LED2 (power for remote controller)	Indicates whether power is supplied to the remote controller. This LED lights only in the case of the indoor unit which is connected to the outdoor unit refrigerant address "0".
LED3 (communication between indoor and outdoor units)	Indicates state of communication between the indoor and outdoor units. Make sure that this LED is always blinking.

Wireless remote controller

- (1) Turn on the power to the unit at least 12 hours before the test run.
- (2) Press the TEST RUN button  twice continuously.
(Start this operation from the status of remote controller display turned off.)
 and current operation mode are displayed.
- (3) Press the MODE button  to activate COOL mode, then check whether cool air is blown out from the unit.
- (4) Press the MODE button  to activate HEAT mode, then check whether warm air is blown out from the unit.
- (5) Press the FAN button  and check whether fan speed changes.
- (6) Press the VANE button  and check whether the auto vane operates properly.
- (7) Press the ON/OFF button to stop the test run.

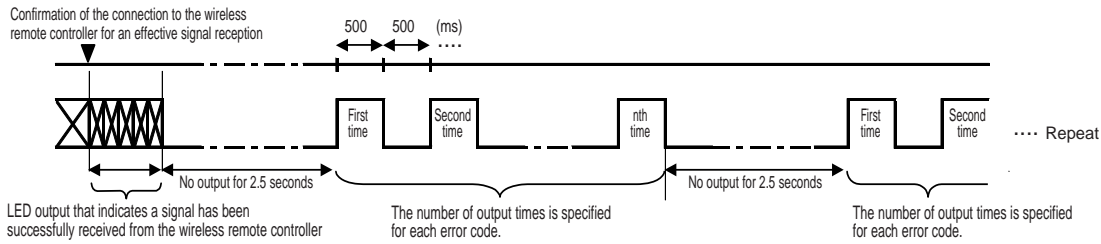
Note:

- Point the remote controller towards the indoor unit receiver while following steps (2) to (7).
- It is not possible to run the in FAN, DRY or AUTO mode.

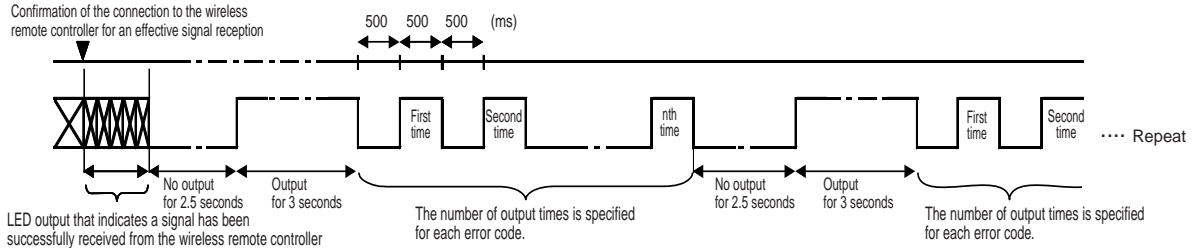
Digital error display on wireless remote controller

When air conditioner detects an error, the operation lamp on the indoor unit infrared adaptor will blink to indicate that the unit has come to an abnormal stop. There are two error output patterns A and B as shown below.

[Output pattern A]



[Output pattern B]



[Output pattern A] Errors detected by indoor unit

Wireless remote controller Beeper sounds/OPERATION INDICATOR lamp flashes (Number of times)	Wired remote controller Check code	Symptom	Remark
1	P1	Intake sensor error	
2	P2, P9	Pipe (Liquid or 2-phase pipe) sensor error	
3	E6, E7	Indoor/outdoor unit communication error	
4	P4	Drain sensor error	
5	P5	Drain pump error	
6	P6	Freezing/Overheating safeguard operation	
7	EE	Communication error between indoor and outdoor units	
8	P8	Pipe temperature error	
9	E4	Remote controller signal receiving error	
10	-	-	
11	Pb	Fan controller error	
12	Fb	Indoor unit control system error (memory error, etc.)	
No sound	--	No corresponding	

[Output pattern B] Errors detected by unit other than indoor unit (outdoor unit, etc.)

Wireless remote controller Beeper sounds/OPERATION INDICATOR lamp flashes (Number of times)	Symptom	Remark
1	Indoor/outdoor unit communication error (Transmitting error) (Outdoor unit)	For details, check the LED display of the outdoor controller board.
2	Compressor overcurrent interruption	
3	Open/short of outdoor unit thermistors	
4	Compressor overcurrent interruption (When compressor locked)	
5	Abnormal high discharging temperature/49C worked/ insufficient refrigerant	
6	Abnormal high pressure (63H worked)/ Overheating safeguard operation	
7	Abnormal temperature of heat sink	
8	Outdoor unit fan protection stop	
9	Compressor overcurrent interruption/Abnormal of power module	
10	Abnormality of super heat due to low discharge temperature	
11	Abnormality such as overvoltage or voltage shortage and abnormal synchronous signal to main circuit/Current sensor error or serial communication error (Indoor unit)	
12	-	
13	-	
14	Other errors (Refer to the technical manual for the outdoor unit.)	

*1 If the beeper does not sound again after the initial two beeps to confirm the self-check start signal was received and the OPERATION INDICATOR lamp does not come on, there are no error records.

*2 If the beeper sounds three times continuously "beep, beep, beep (0.4 + 0.4 + 0.4 sec.)" after the initial two beeps to confirm the self-check start signal was received, the specified refrigerant address is incorrect.

- On wireless remote controller
The continuous buzzer sounds from receiving section of indoor unit.
Blink of operation lamp
- On wired remote controller
Check code displayed on the LCD.



• If the unit cannot be operated properly after the above test run has been performed, refer to the following table to remove the cause.

Symptom		Cause
Wired remote controller	LED 1, 2 (PCB in outdoor unit)	
PLEASE WAIT	For about 2 minutes following power-on	After LED 1, 2 are lighted, LED 2 is turned off, then only LED 1 is lighted. (Correct operation)
PLEASE WAIT → Error code	After about 2 minutes has expired following power-on	Only LED 1 is lighted. → LED 1, 2 blink.
Display messages do not appear even when operation switch is turned ON (operation lamp does not light up).		Only LED 1 is lighted. → LED 1, 2 blinks twice, LED 2 blinks once.

On the wireless remote controller with conditions above, following phenomena takes place.

- No signals from the remote controller are accepted.
- OPE lamp is blinking.
- The buzzer makes a short ping sound.

Note:

Operation is not possible for about 30 seconds after cancellation of function selection. (Correct operation)

For description of each LED (LED1, 2, 3) provided on the indoor controller board, refer to the following table.

LED 1 (power for microcomputer)	Indicates whether control power is supplied. Make sure that this LED is always lit.
LED 2 (power for remote controller)	Indicates whether power is supplied to the remote controller. This LED lights only in the case of the indoor unit which is connected to the outdoor unit refrigerant address "0".
LED 3 (communication between indoor and outdoor units)	Indicates state of communication between the indoor and outdoor units. Make sure that this LED is always blinking.

AUTO RESTART FUNCTION

Indoor controller board

This model is equipped with the AUTO RESTART FUNCTION.

When the indoor unit is controlled with the remote controller, the operation mode, set temperature, and the fan speed are memorized by the indoor controller board.

The auto restart function sets to work the moment the power has restored after power failure, then, the unit will restart automatically.

Set the AUTO RESTART FUNCTION using the wireless remote controller. (Mode no.1).

9-3. SELF-DIAGNOSIS ACTION TABLE

Note: Refer to the manual of outdoor unit for the details of display such as F, U, and other E.

Error Code	Abnormal point and detection method	Cause	Countermeasure
P1	<p>Room temperature thermistor (TH1)</p> <p>① The unit is in three-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after three minutes. (The unit returns to normal operation, if it has normally reset.)</p> <p>② Constantly detected during cooling, drying and heating operation Short: 90°C or more Open: -40°C or less</p>	<p>① Defective thermistor characteristics</p> <p>② Contact failure of connector (CN20) on the indoor controller board (Insert failure)</p> <p>③ Breaking of wire or contact failure of thermistor wiring</p> <p>④ Defective indoor controller board</p>	<p>①-③ Check resistance value of thermistor. 0°C15.0kΩ 10°C9.6kΩ 20°C6.3kΩ 30°C4.3kΩ 40°C3.0kΩ If you put force on (draw or bend) the lead wire with measuring resistance value of thermistor breaking of wire or contact failure can be detected.</p> <p>② Check contact failure of connector (CN20) on the indoor controller board. Refer to 9-5-3. Turn the power on again and check restart after inserting connector again.</p> <p>④ Check room temperature display on remote controller. Replace indoor controller board if there is abnormal difference with actual room temperature.</p> <p>Turn the power off, and on again to operate after check.</p>
P2	<p>Pipe temperature thermistor/Liquid (TH2)</p> <p>① The unit is in three-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after three minutes. (The unit returns to normal operation, if it has normally reset.)</p> <p>② Constantly detected during cooling, drying, and heating (except defrosting) operation. Short: 90°C or more Open: -40°C or less</p>	<p>① Defective thermistor characteristics</p> <p>② Contact failure of connector (CN44) on the indoor controller board (Insert failure)</p> <p>③ Breaking of wire or contact failure of thermistor wiring</p> <p>④ Defective refrigerant circuit is causing thermistor temperature of 90°C or more or -40°C or less.</p> <p>⑤ Defective indoor controller board</p>	<p>①-③ Check resistance value of thermistor. For characteristics, refer to (P1) above.</p> <p>② Check contact failure of connector (CN44) on the indoor controller board. Refer to 9-5-3. Turn the power on again and check restart after inserting connector again.</p> <p>④ Check pipe <liquid> temperature with remote controller in test run mode. If pipe <liquid> temperature is extremely low (in cooling mode) or high (in heating mode), refrigerant circuit may have defective.</p> <p>⑤ Check pipe <liquid> temperature with remote controller in test run mode. If there is extreme difference with actual pipe <liquid> temperature, replace indoor controller board.</p> <p>Turn the power off, and on again to operate after check.</p>
P4 (5701)	<p>Contact failure of drain float switch (CN4F)</p> <p>① Extract when the connector of drain float switch is disconnected. (③ and ④ of connector CN4F is not short-circuited.)</p> <p>② Constantly detected during operation.</p>	<p>① Contact failure of connector (Insert failure)</p> <p>② Defective indoor controller board</p>	<p>① Check contact failure of float switch connector. Turn the power on again and check after inserting connector again.</p> <p>② Operate with connector (CN4F) short-circuited. Replace indoor controller board if abnormality reappears.</p>
P5	<p>Drain overflow protection operation</p> <p>① Suspensive abnormality, if drain float switch is detected to be underwater for 1 minute and 30 seconds continuously with drain pump on. Turn off compressor and indoor fan.</p> <p>② Drain pump is abnormal if the condition above is detected during suspensive abnormality.</p> <p>③ Constantly detected during drain pump operation.</p>	<p>① Malfunction of drain pump</p> <p>② Defective drain Clogged drain pump Clogged drain pipe</p> <p>③ Defective drain float switch Catch of drain float switch or malfunction of moving parts cause drain float switch to be detected under water (Switch On)</p> <p>④ Defective indoor-controller board</p>	<p>① Check if drain-up machine works.</p> <p>② Check drain function.</p> <p>③ Remove drain float switch connector CN4F and check if it is short (Switch On) with the moving part of float switch UP, or OPEN with the moving part of float switch down. Replace float switch if it is short with the moving part of float switch down.</p> <p>④ Replace indoor controller board if it is short-circuited between ③-④ of the drain float switch connector CN4F and abnormality reappears.</p> <p>It is not abnormal if there is no problem about the above-mentioned ①-④ Turn the power off, and on again to operate after check.</p>

Error Code	Abnormal point and detection method	Cause	Countermeasure
P6	<p>Freezing/overheating protection is working</p> <p>① Freezing protection (Cooling mode) The unit is in six-minute resume prevention mode if pipe <liquid or condenser/evaporator> temperature stays under -15°C for three minutes after the compressor started. Abnormal if it stays under -15°C for three minutes again within 16 minutes after six-minute resume prevention mode.</p> <p>② Overheating protection (Heating mode) The units is in six-minute resume prevention mode if pipe <Liquid or condenser/evaporator> temperature is detected as over 70°C after the compressor started. Abnormal if the temperature of over 70°C is detected again within 10 minutes after six-minute resume prevention mode.</p>	<p>(Cooling or drying mode)</p> <p>① Clogged filter (reduced airflow) ② Short cycle of air path ③ Low-load (low temperature) operation beyond the tolerance range</p> <p>④ Defective indoor fan motor</p> <ul style="list-style-type: none"> • Fan motor is defective. • Indoor controller board is defective. <p>⑤ Defective outdoor fan control ⑥ Overcharge of refrigerant ⑦ Defective refrigerant circuit (clogs)</p> <p>(Heating mode)</p> <p>① Clogged filter (reduced airflow) ② Short cycle of air path ③ Over-load (high temperature) operation beyond the tolerance range</p> <p>④ Defective indoor fan motor</p> <ul style="list-style-type: none"> • Fan motor is defective. • Indoor controller board is defective. <p>⑤ Defective outdoor fan control ⑥ Overcharge of refrigerant ⑦ Defective refrigerant circuit (clogs) ⑧ Bypass circuit of outdoor unit is defective.</p>	<p>(Cooling or drying mode)</p> <p>① Check clogging of the filter. ② Remove shields.</p> <p>④ Refer to 9-8. DC Fan motor (FAN MOTOR/ INDOOR CONTROLLER BOARD)</p> <p>⑤ Check outdoor fan motor. ⑥⑦ Check operating condition of refrigerant circuit.</p> <p>(Heating mode)</p> <p>① Check clogs of the filter. ② Remove shields.</p> <p>④ Refer to 9-8. DC Fan motor (FAN MOTOR/ INDOOR CONTROLLER BOARD)</p> <p>⑤ Check outdoor fan motor. ⑥~⑧ Check operating condition of refrigerant circuit.</p>
P8	<p>Pipe temperature</p> <p><Cooling mode> Detected as abnormal when the pipe temperature is not in the cooling range 3 minutes after compressor start and 6 minutes after the liquid or condenser/evaporator pipe is out of cooling range. Note 1) It takes at least 9 minutes. to detect. Note 2) Abnormality P8 is not detected in drying mode. Cooling range : -3 deg \geq (TH-TH1) TH: Lower temperature between: liquid pipe temperature (TH2) and condenser/evaporator temperature (TH5) TH1: Intake temperature</p> <p><Heating mode> When 10 seconds have passed after the compressor starts operation and the hot adjustment mode has finished, the unit is detected as abnormal when condenser/evaporator pipe temperature is not in heating range within 20 minutes. Note 3) It takes at least 27 minutes to detect abnormality. Note 4) It excludes the period of defrosting (Detection restarts when defrosting mode is over) Heating range : 3 deg \leq (TH5-TH1)</p>	<p>① Slight temperature difference between indoor room temperature and pipe <liquid or condenser/evaporator> temperature thermistor</p> <ul style="list-style-type: none"> • Shortage of refrigerant • Disconnected holder of pipe <liquid or condenser/evaporator> thermistor • Defective refrigerant circuit <p>② Converse connection of extension pipe (on plural units connection) ③ Converse wiring of indoor/outdoor unit connecting wire (on plural units connection) ④ Defective detection of indoor room temperature and pipe <condenser/evaporator> temperature thermistor ⑤ Stop valve is not opened completely.</p>	<p>①~④ Check pipe <liquid or condenser/evaporator> temperature with room temperature display on remote controller and outdoor controller circuit board. Pipe <liquid or condenser/evaporator> temperature display is indicated by setting SW2 of outdoor controller circuit board.</p> <p>(Conduct temperature check with outdoor controller circuit board after connecting 'A-Control Service Tool(PAC-SK52ST)')</p> <p>②③ Check converse connection of extension pipe or converse wiring of indoor/outdoor unit connecting wire.</p>

Error Code	Abnormal point and detection method	Cause	Countermeasure
P9	<p>Abnormality of pipe temperature thermistor/Condenser-Evaporator (TH5)</p> <p>① The unit is in three-minute resume protection mode if short/open of thermistor is detected. Abnormal if the unit does not get back to normal within three minutes. (The unit returns to normal operation, if it has normally reset.)</p> <p>② Constantly detected during cooling, drying, and heating operation (except defrosting) Short: 90°C or more Open: -40°C or less</p>	<p>① Defective thermistor characteristics</p> <p>② Contact failure of connector (CN44) on the indoor controller board (Insert failure)</p> <p>③ Breaking of wire or contact failure of thermistor wiring</p> <p>④ Temperature of thermistor is 90°C or more or -40°C or less caused by defective refrigerant circuit.</p> <p>⑤ Defective indoor controller board</p>	<p>①-③ Check resistance value of thermistor. For characteristics, refer to (P1) above.</p> <p>② Check contact failure of connector (CN44) on the indoor controller board. Refer to 9-5-3. Turn the power on and check restart after inserting connector again.</p> <p>④ Operate in test run mode and check pipe <condenser/evaporator> temperature. If pipe <condenser/evaporator> temperature is extremely low (in cooling mode) or high (in heating mode), refrigerant circuit may have defect.</p> <p>⑤ When no problems are found in ①-④ above, replace the indoor controller board.</p>
E0 or E4	<p>Remote controller transmission error(E0)/signal receiving error(E4)</p> <p>① Abnormal if main or sub remote controller can not receive normally any transmission from indoor unit of refrigerant address "0" for three minutes. (Error code : E0)</p> <p>② Abnormal if sub remote controller could not receive for any signal for two minutes. (Error code: E0)</p> <p>① Abnormal if indoor controller board can not receive normally any data from remote controller board or from other indoor controller board for three minutes. (Error code: E4)</p> <p>② Indoor controller board cannot receive any signal from remote controller for two minutes. (Error code: E4)</p>	<p>① Contact failure at transmission wire of remote controller</p> <p>② All remote controllers are set as "sub" remote controller. In this case, E0 is displayed on remote controller, and E4 is displayed at LED (LED1, LED2) on the outdoor controller circuit board.</p> <p>③ Mis-wiring of remote controller</p> <p>④ Defective transmitting receiving circuit of remote controller</p> <p>⑤ Defective transmitting receiving circuit of indoor controller board of refrigerant address "0"</p> <p>⑥ Noise has entered into the transmission wire of remote controller.</p>	<p>① Check disconnection or looseness of indoor unit or transmission wire of remote controller.</p> <p>② Set one of the remote controllers "main". If there is no problem with the action above.</p> <p>③ Check wiring of remote controller.</p> <ul style="list-style-type: none"> • Total wiring length: max.500m (Do not use cable X 3 or more) • The number of connecting indoor units: max.16units • The number of connecting remote controller: max.2units <p>When it is not the above-mentioned problem of ①-③</p> <p>④ Diagnose remote controllers.</p> <p>a) When "RC OK" is displayed, Remote controllers have no problem. Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board.</p> <p>b) When "RC NG" is displayed, Replace remote controller.</p> <p>c) When "RC E3" is displayed,</p> <p>d) When "ERC 00-06" is displayed, [c),d)→Noise may be causing abnormality.]</p> <p>* If the unit is not normal after replacing indoor controller board in group control, indoor controller board of address "0" may be abnormal.</p>
E3 or E5	<p>Remote controller transmission error(E3)/signal receiving error(E5)</p> <p>① Abnormal if remote controller could not find blank of transmission path for six seconds and could not transmit. (Error code: E3)</p> <p>② Remote controller receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Error code: E3)</p> <p>① Abnormal if indoor controller board could not find blank of transmission path. (Error code: E5)</p> <p>② Indoor controller board receives transmitted data at the same time, compares the data, and when detecting it, judges different data to be abnormal 30 continuous times. (Error code: E5)</p>	<p>① Two remote controller are set as "main." (In case of 2 remote controllers)</p> <p>② Remote controller is connected with two indoor units or more.</p> <p>③ Repetition of refrigerant address</p> <p>④ Defective transmitting receiving circuit of remote controller</p> <p>⑤ Defective transmitting receiving circuit of indoor controller board</p> <p>⑥ Noise has entered into transmission wire of remote controller.</p>	<p>① Set a remote controller to main, and the other to sub.</p> <p>② Remote controller is connected with only one indoor unit.</p> <p>③ The address changes to a separate setting.</p> <p>④-⑥ Diagnose remote controller.</p> <p>a) When "RC OK" is displayed, remote controllers have no problem. Turn the power off, and on again to check. When becoming abnormal again, replace indoor controller board.</p> <p>b)When "RC NG" is displayed, replace remote controller.</p> <p>c)When "RC E3" or "ERC 00-66" is displayed, noise may be causing abnormality.</p>

Error Code	Abnormal point and detection method	Cause	Countermeasure				
E6	Indoor/outdoor unit communication error (Signal receiving error) ① Abnormal if indoor controller board cannot receive any signal normally for six minutes after turning the power on. ② Abnormal if indoor controller board cannot receive any signal normally for three minutes. ③ Consider the unit as abnormal under the following condition: When two or more indoor units are connected to an outdoor unit, indoor controller board cannot receive a signal for three minutes from outdoor controller circuit board, a signal which allows outdoor controller circuit board to transmit signals.	① Contact failure, short circuit or, mis-wiring (converse wiring) of indoor/outdoor unit connecting wire ② Defective transmitting receiving circuit of indoor controller board ③ Defective transmitting receiving circuit of indoor controller board ④ Noise has entered into indoor/outdoor unit connecting wire.	* Check LED display on the outdoor control circuit board. (Connect A-control service tool, PAC-SK52ST.) Refer to Outdoor manual. ① Check disconnection or looseness of indoor/outdoor unit connecting wire of indoor unit or outdoor unit. Check all the units in case of twin triple indoor unit system. ②-④ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board or outdoor controller circuit board. * Other indoor controller board may have defect in case of twin triple indoor unit system.				
E7	Indoor/outdoor unit communication error (Transmitting error) Abnormal if "1" receiving is detected 30 times continuously though indoor controller board has transmitted "0".	① Defective transmitting receiving circuit of indoor controller board ② Noise has entered into power supply. ③ Noise has entered into outdoor control wire.	①-③ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board.				
Fb	Indoor controller board Abnormal if data cannot be read normally from the nonvolatile memory of the indoor controller board.	① Defective indoor controller board	① Replace indoor controller board.				
E1 or E2	Remote controller control board ① Abnormal if data cannot be read normally from the nonvolatile memory of the remote controller control board. (Error code: E1) ② Abnormal if the clock function of remote controller cannot be operated normally. (Error code: E2)	① Defective remote controller	① Replace remote controller.				
PA (2500)	Water leakage This detection is performed during the operation (stop, heating, fan, or error stop mode etc.) other than cooling and dry. ① When a) and b) are found, water leakage occurs. a) Pipe <liquid> temperature - inlet temperature < -10°C for 30 minutes b) When drain float switch is detected to be soaked in the water for 15 minutes or more. * When drain float switch is detected to be NOT soaked in the water, each counting of a) and b) is cleared. <u>*When this error is detected, the error will not be reset until the main power is reset.</u>	① Mis-piping of extension pipes (When connected with multiple units) ② Mis-wiring of indoor/outdoor unit connecting wire (When connected with multiple units) ③ Detection failure of the indoor unit inlet/pipe <liquid> thermostat ④ Drain pump failure ⑤ Drainage failure · Clogged drain pump · Clogged drain pipe ⑥ Drain float switch failure · Drain float switch is detected to be soaked in the water (ON status) due to the operation failure of the moving parts. · Contact failure of drain float switch connector (Loose connector)	① Check the extension pipes for mis-piping. ② Check the Indoor/outdoor unit connecting wire for mis-wiring. ③ Check room temperature display on remote controller and indoor pipe <liquid> temperature. (Refer to the countermeasure on P2.) ④ Check if drain-up machine works. ⑤ Check drain function. ⑥ Check drain float switch. (Refer to the countermeasure on P4 and P5.)				
Ed	Serial communication cannot be established between the Indoor controller board and the INV board. Note) Refer to item 9.8. DC fan motor (fan motor/INV board) for error codes related to the inverter. (page 30)	① Faulty wiring ② INV board failure or Indoor controller board failure or Power supply board failure	① Check the following wiring connections. 1) Between Indoor controller board and Power supply board <table border="1" style="margin-left: 20px;"> <tr> <td style="padding: 2px;">Indoor controller board CN100</td> <td style="padding: 2px;">Power supply board CNRSC</td> </tr> </table> 2) Between Power supply board and INV board <table border="1" style="margin-left: 20px;"> <tr> <td style="padding: 2px;">Power supply board CNRSP</td> <td style="padding: 2px;">INV board CNRS2</td> </tr> </table> ② If the error persists after a power reset, replace the INV board, the Indoor controller board, or the Power supply board.	Indoor controller board CN100	Power supply board CNRSC	Power supply board CNRSP	INV board CNRS2
Indoor controller board CN100	Power supply board CNRSC						
Power supply board CNRSP	INV board CNRS2						

Error Code	Abnormal point and detection method	Cause	Countermeasure
Pb	Inverter-related problem is detected.	1) Power supply environment	Find out if there was a (momentary) power failure. Check whether the power voltage is 198V or above across all phases.
		2) Static pressure setting error	Check that the static pressure setting and the design static pressure are correct.
		3) Wiring fault	Check the wiring for proper connection. (Check all the wiring between the terminal block and motor.)
		4) Air passage blockage	Check that the heat sink cooling air passage is not blocked.
		5) Parts problem	<p>Check the voltage at CNVDC (between pins 1 and 3(+)) on the INV board while the inverter is stopped and if it is less than 220V, check the following items.</p> <ul style="list-style-type: none"> ① Check the wiring between TB2 and NF board, NF board and ACL, NF board and inrush current resistor, NF board and DB01, NF board and INV board, NF board and indoor controller board. ② Check the inrush current resistance. Measure the interphase resistance of the resistor (R). $22\Omega \pm 10\%$ ③ Check ACL for broken wires. Check that the resistance between pins 1 and 3 (housing side) of the CNACL connector is not infinite (∞). ④ Check the diode bridge (DB01) for problem. Refer to section 9.8.(5) "Troubleshooting the diode bridge". (page 33) ⑤ If no problems were found with items ① through ④ above, replace the NF board.
		6) INV board failure	Check the items listed in section (2)-[2]. Refer to 9-8.(2)-[2].
		7) Sensor fault	<ul style="list-style-type: none"> ① ACCT sensor Refer to 9-8.(4). ② THHS sensor Refer to 9-8.(4).
		8) Fan motor error	Check the items listed in section (2)-[4]. Refer to 9-8.(2)-[4].
		9) Indoor controller board failure	Confirm that DC12V is applied to the connector CNXB2 (between pins 4 and 5 (+)) on the Indoor controller board while the inverter is operating. If not, replace the Indoor controller board.
		10) Other cause	<p>If no problems were found with items 1) through 9),</p> <ul style="list-style-type: none"> ① Replace the NF board. ② If the problem persists after taking step ① above, replace the INV board. ③ If the problem persists after taking step ② above, replace the motor. ④ If the problem persists after taking step ③ above, replace the indoor controller board. ⑤ If the problem persists after taking step ④ above, replace the power supply board.

9-4. TROUBLESHOOTING BY INFERIOR PHENOMENA

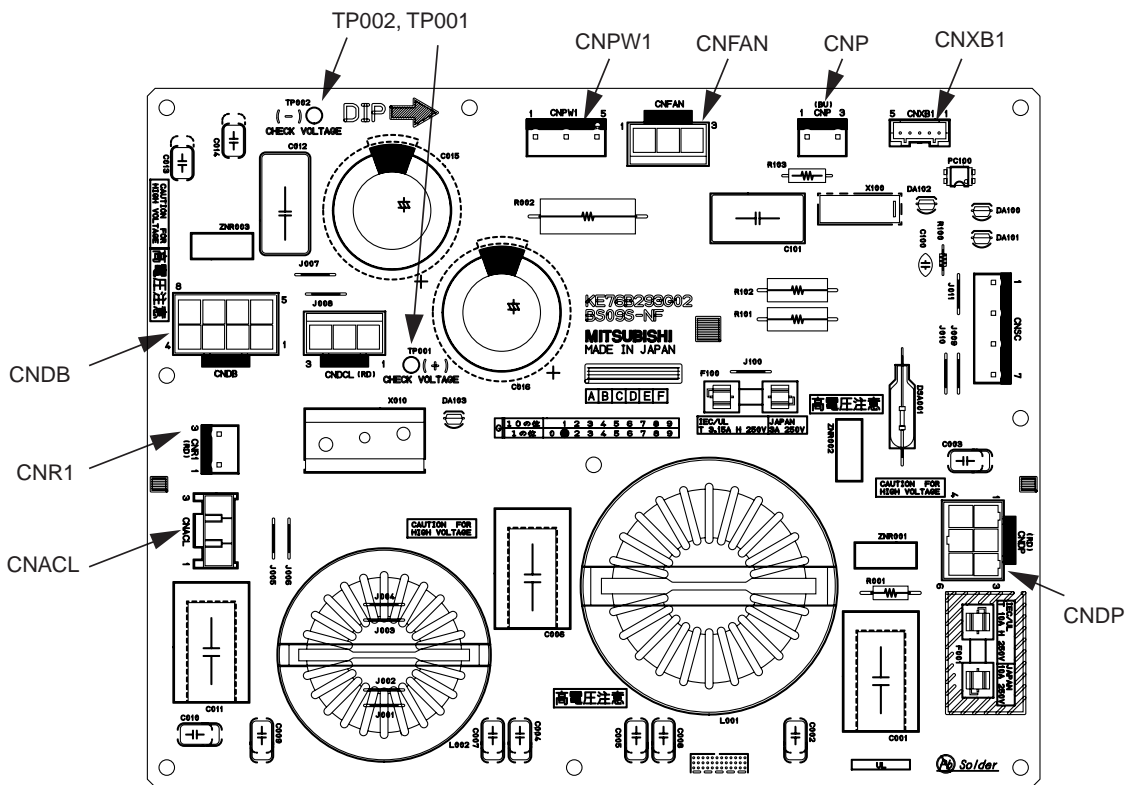
Note: Refer to the manual of outdoor unit for the detail of remote controller.

Phenomena	Cause	Countermeasure
<p>(1)LED2 on indoor controller board is off.</p>	<ul style="list-style-type: none"> • When LED1 on indoor controller board is also off. ① Power supply of rated voltage is not supplied to outdoor unit. ② Defective outdoor controller circuit board ③ Power supply of 220~240V is not supplied to indoor unit. ④ Defective indoor controller board 	<ul style="list-style-type: none"> ① Check the voltage of outdoor power supply terminal block (L, N) or (L₃, N). <ul style="list-style-type: none"> • When AC 220~240V is not detected. Check the power wiring to outdoor unit and the breaker. • When AC 220~240V is detected. —Check ② (below). ② Check the voltage between outdoor terminal block S1 and S2. <ul style="list-style-type: none"> • When AC 220~240V is not detected. Check the fuse on outdoor controller circuit board. Check the wiring connection. • When AC 220~240V is detected. —Check ③ (below). ③ Check the voltage between indoor terminal block S1 and S2. <ul style="list-style-type: none"> • When AC 220~240V is not detected. Check indoor/outdoor unit connecting wire for mis-wiring. • When AC 220~240V is detected. —Check ④ (below). ④ Check the fuse on noise filter board. Check the wiring connection. If no problem are found, power supply board is defective.
<p>(2)LED2 on indoor controller board is blinking.</p>	<ul style="list-style-type: none"> • When LED1 on indoor controller board is also blinking. Connection failure of indoor/outdoor unit connecting wire • When LED1 is lit. ① Mis-wiring of remote controller wires Under twin triple indoor unit system, 2 or more indoor units are wired together. ② Refrigerant address for outdoor unit is wrong or not set. Under grouping control system, there are some units whose refrigerant address is 0. ③ Short-cut of remote controller wires ④ Defective remote controller 	<p>Check indoor/outdoor unit connecting wire for connection failure.</p> <ul style="list-style-type: none"> ① Check the connection of remote controller wires in case of twin triple indoor unit system. When 2 or more indoor units are wired in one refrigerant system, connect remote controller wires to one of those units. ② Check the setting of refrigerant address in case of grouping control system. If there are some units whose refrigerant addresses are 0 in one group, set one of the units to 0 using SW1 (3-6) on outdoor controller circuit board. ③④ Remove remote controller wires and check LED2 on indoor controller board. <ul style="list-style-type: none"> • When LED2 is blinking, check the short-cut of remote controller wires. • When LED2 is lit, connect remote controller wires again and: if LED2 is blinking, remote controller is defective; if LED2 is lit, connection failure of remote controller terminal block etc. has returned to normal.

9-5. TEST POINT DIAGRAM

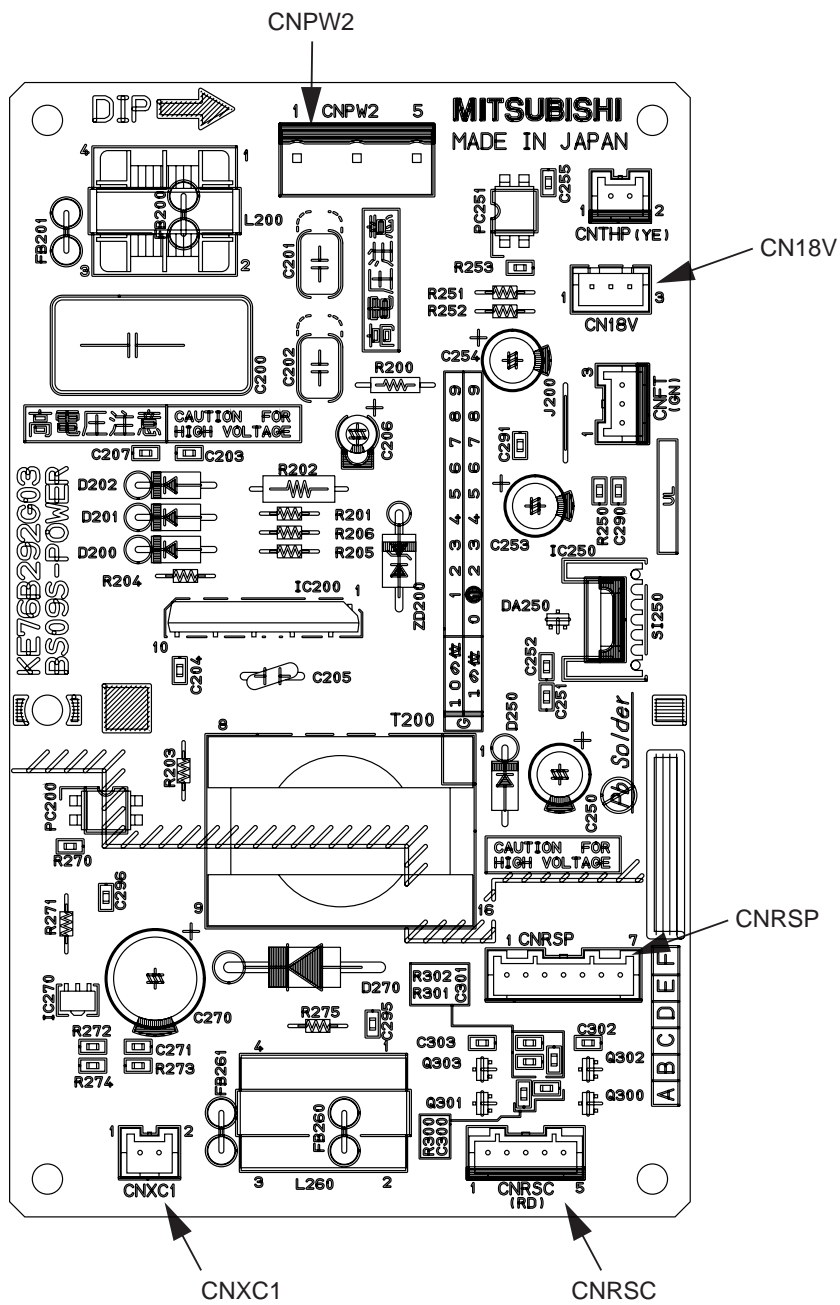
9-5-1. NF board

- CNDP Power supply voltage (220 - 240VAC)
- CNACL Connect to the AC reactor
- CNR1 Connect to the Resistor
- CNDB Connect to the Diode bridge
- CNPW1 Connect to the power supply board
- CNFAN Connect to the INV board
- CNXB1 Connect to the indoor controller board
- TP001, TP002 Measure the charged voltage of the inverter electrolytic capacitor here.
 TP001 Anode
 TP002 Cathode
- CNP Connect to the drain pump (optional parts)



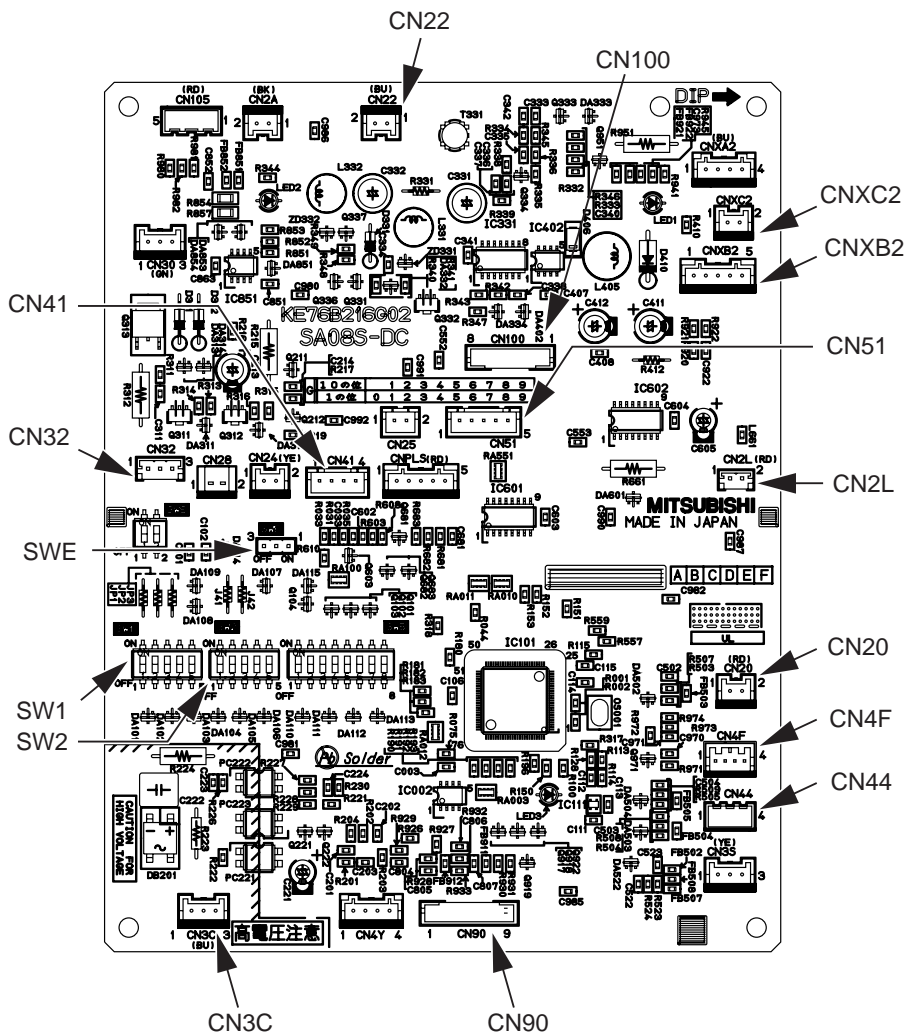
9-5-2. Power supply board

- CNPW2 Connect to the NF board
- CNCX1 Connect to the indoor controller board
- CNRSC Connect to the indoor controller board
- CNRSP Connect to the INV board
- CN18V Connect to the INV board



9-5-3. Indoor controller board

- SWE Emergency operation
- SW1 Model selection
- SW2 Capacity setting
- CN32 Remote start/stop adapter
- CN22 For MA remote controller cable connection (10 - 13 VDC (Between 1 and 3.))
- CN51 Centralized control
- CN41 JAMA standard HA terminal A
- CN44 Thermistor (liquid/condenser/evaporator temperature)
- CN4F Float thermistor
- CN20 Thermistor (Inlet temperature)
- CN3C Indoor-outdoor transmission (0 - 24VDC)
- CN90 Wireless remote controller
- CNXB2 Connect to the NF board
- CNXC2 Connect to the power supply board
- CN100 Connect to the power supply board



9-6. TROUBLE CRITERION OF MAIN PARTS

Part name	Check method and criterion				
Room temperature thermistor (TH1)	Measure the resistance with a tester. (Part temperature 10°C ~ 30°C) <table border="1" style="margin: 10px auto;"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>4.3kΩ~9.6kΩ</td> <td>Opened or short-circuited</td> </tr> </tbody> </table>	Normal	Abnormal	4.3kΩ~9.6kΩ	Opened or short-circuited
Normal		Abnormal			
4.3kΩ~9.6kΩ		Opened or short-circuited			
Pipe temperature thermistor/liquid (TH2)					
Condenser/evaporator temperature thermistor (TH5)					

9-7. Thermistor

<Thermistor Characteristic graph>

Thermistor for lower temperature

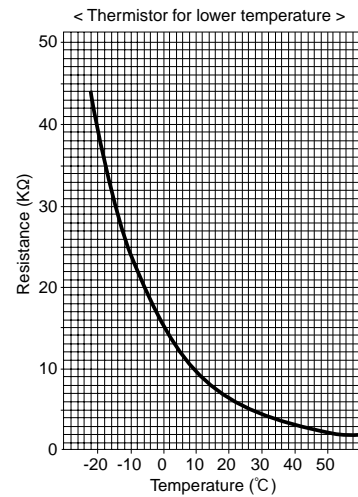
Room temperature thermistor (TH1)
 Pipe temperature thermistor (TH2)
 Condenser/evaporator temperature thermistor (TH5)

Thermistor $R_0=15k\Omega \pm 3\%$

Fixed number of $B=3480k\Omega \pm 2\%$

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

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



9-8. DC FAN MOTOR (FAN MOTOR / INV BOARD)

If the static pressure settings for the unit and the duct do not match, the fan motor may repeat start/stop.

- a. If there are problems only with the fan motor, replace the fan motor only.
(Fan motor failure will cause an overcurrent to pass through the inverter, but the inverter is protected from damage with the protection function that will stop the inverter when an overcurrent is detected.)
- b. If the inverter fails, replace the failed components on the inverter.
- c. If both the fan motor and inverter fail, replace the fan motor and all applicable parts on the inverter.

(1) Troubleshooting the inverter-related problems

	Error codes and symptoms	Check items
[1]	Inverter-related errors Pb	Check the error code display on the remote controller to see if the error is an inverter-related error.
[2]	Main power breaker is tripped.	a. Check the breaker capacity. b. Check the electric circuits other than the inverter circuits for short-circuit and ground fault. c. If no problems are found with items a and b, see (3)-[1].
[3]	The main earth leakage breaker is tripped.	a. Check the capacity and the sensitivity current of the earth leakage breaker. b. Insulation resistance failure of the electrical components other than the inverter c. If no problems are found with items a and b, see (3)-[1].
[4]	Only the fan motor is inoperative.	Check the display on the remote controller. If the fan is in operation, proceed to section (2)-[2] and (2)-[3].
[5]	The fan motor vibrates excessively or makes abnormal sounds.	See (2)-[2] and (2)-[3].
[6]	Peripheral devices pick up electrical noise.	a. Check that the power wire to the peripheral devices are not routed adjacent to the power wire to the indoor unit. b. Check that the inverter output wiring is not routed adjacent to the power wire or transmission line. c. Check that a shielded cable is used if required. Check that the shield is properly grounded. d. Insulation resistance failure of the electrical components other than the inverter e. Connect the unit to a different power supply circuit. f. If the problem appeared suddenly, there is a possibility that the inverter output line had a ground fault. See section (2)-[2] and (2)-[3]. *For problems other than the ones listed above, consult your dealer.
[7]	Accidental malfunction (due to external noise)	a. Check that the unit is properly grounded. b. Check that a shielded cable is used if required. Check that the shield is properly grounded. c. Check that the transmission line or wiring to external devices are not routed adjacent to the power wires or are placed in the same conduit with them. *For problems other than the ones listed above, consult your dealer.

1. Inside the inverter is a large capacity electrolytic capacitor, and the residual voltage that remains after the main power is turned off presents a risk of electric shock. Before checking the inverter-related parts, turn off the main power, keep it turned off for at least 10 minutes, and check that the voltage at both ends of the main capacitor (C015, C016) has dropped to a safe level.
*Measure the voltage at both ends of the electrolytic capacitor at the check point where "CHECK VOLTAGE" is written in the left top area of the NF board.
2. The IPM on the inverter becomes damaged if there are loose screws or connectors. When a problem occurs after replacing components, faulty wiring is often the cause of the problem. Check the wiring, screws, connectors, and Fasten terminals for proper connection.
3. Do not plug or unplug the inverter connectors while the main power is turned on, as this will result in damage to the circuit board.
4. Electric current sensor will break if a current is passed through the sensor without it being connected to the circuit board. Connect the current sensor to the appropriate connectors on the circuit board before operating the inverter.

(2) Troubleshooting the inverter output-related problems

	Check items	Symptoms	Actions to take
[1] Check the INV board error detection circuit. (unloaded)	① Turn off the breaker. *Be sure to turn off the breaker. ② Disconnect the connector CNINV from the INV board. ③ Turn on the breaker. ④ Operate the indoor units.	① Overcurrent errors	Replace the INV board.
		② Logic error	Replace the INV board.
		③ ACCT sensor circuit fault	Replace the INV board.
		④ Position detection error	If the problem described at left happens when the power is turned on for the first time, replace the INV board. *Removing the connector CNINV while the power is turned on can cause the problem described at left. Be sure to turn off the power before disconnecting the connector CNINV.
		⑤ Open-circuited IPM or disconnected ACCT sensor	Normal
[2] Check the inverter for damage. (unloaded)	① Turn off the breaker. *Be sure to turn off the breaker. ② Disconnect the connector CNINV from the INV board. ③ Turn SW2-1 on the INV board to ON. ④ Turn on the breaker. ⑤ Operate the indoor units. The units will operate for approximately 30 seconds unloaded and then stop. During the unloaded operation, a constant line voltage of approximately 20V will be output.	① An error is detected in less than 30 seconds of startup. (LED2 on the INV board lights up.)	Replace the INV board.
		② The line voltage imbalance is 5V or greater.	Replace the INV board.
		③ There is no line voltage imbalance. An error is detected after 30 seconds of startup (LED2 on the INV board lights up.), and the units will stop.	Normal *Reconnect the CNINV connector, and set the SW2 back to its original setting after checking.
[3] Check for inverter damage. (loaded)	① Turn off the breaker. ② Turn on the breaker. ③ Operate the indoor units.	① The units stop within 10 seconds of startup, and a position detection error or an overcurrent error is detected.	Check to see if the fan motor is locked. Replace the fan motor if it is locked. If the problem persists after replacing the fan motor, replace the INV board. If the fan motor is not locked, go to item [4]. If no problems were found with item [4], replace the INV board. If the problem persists after replacing the INV board, replace the fan motor.
		② An overcurrent error is detected after approximately 10 seconds of operation.	a) Replace the INV board. b) If the problem persists after replacing the INV board, replace the fan motor.
		③ Overcurrent error due to short-circuited motor.	a) If no problems were found with items [1] and [2], check for short-circuited motor wiring. b) If no problems were found with item a), replace the fan motor. c) If the problem persists after replacing the fan motor, replace the INV board.
		④ A line voltage imbalance exceeds the greater of the following after the rotation speed has been stabilized: 5% or 5V.	a) If a voltage imbalance is detected, go to item [4]. b) If no problems were found with item [4], replace the INV board. c) If the problem persists after replacing the INV board, replace the fan motor.
[4] Check the fan motor for a ground fault and check the coil for problems.	Disconnect the indoor unit fan motor wiring, and check the resistance and the wirewound resistance of the fan motor.	① Insulation resistance failure of the fan motor. Insulation resistance of below 1 MΩ is considered abnormal.	Replace the fan motor.
		② Broken fan motor wire Reference value: Normal wirewound resistance is several ohms. (Varies with the temperature.)	Replace the fan motor.

(3) Troubleshooting when the main power breaker trips

	Check items	Symptoms	Actions to take
[1]	Check the resistance between the terminals of power supply terminal block TB2 with an ohmmeter.	① 0 to several ohms, or insulation resistance failure	Check the components in the main inverter circuit. *Refer to "(4) Simple check on the main inverter circuit components". a. Diode bridge b. Inrush current limiting resistor c. AC reactor (ACL) d. Current sensor (ACCT)
[2]	Turn the power back on and check again.	① Main power breaker is tripped. ② Nothing appears on the remote controller.	
[3]	Check the indoor unit for normal operation.	① The indoor unit operates normally without tripping the main breaker.	a. Look for a possible short-circuit, and if found, repair. b. If no problems are found with item "a," there may be problems with the fan motor.
		② Main power breaker is tripped.	The fan motor may have had a ground fault. See section (2)-[1].

(4) Simple check on the main inverter circuit components

* Turn off the power supply, take the following components out of the control box, and then check the components.

Parts name	Evaluation criteria
Diode bridge	Refer to (5) Troubleshooting the diode bridge.
Inrush current limiting resistor R	Measure the resistance between terminals. : $22 \Omega \pm 10 \%$
AC reactor (ACL)	Measure the resistance between terminals. : 1Ω or less Measure the resistance between the terminal and the chassis. : ∞
Current sensor ACCT	Disconnect the CNCT2 connector, and check the resistance between the terminals. : $580 \Omega \pm 30 \Omega$
THHS sensor	Disconnect the connector CNTH, and measure the resistance between connector terminals. Check that the terminals are not short-circuited (0Ω) or open-circuited ($\infty \Omega$).

(5) Troubleshooting the diode bridge

Measure the resistance between terminals of the diode bridge with a tester, and use the measured value for troubleshooting.

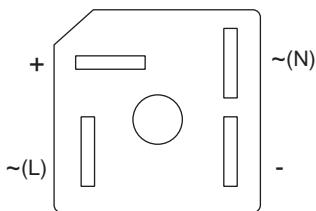
Read before taking measurements.

- Check the polarity before taking measurements. Black is positive on a regular multimeter when it is used to measure resistance.
- Check that the circuit is not completely open ($\infty \Omega$) or short-circuited (0Ω).
- These resistance measurement values are provided only as a guide, and small deviations from these values are allowed.
- If the resistance between a given terminal and other terminals all fall within a range of minus 50% and plus 100%, the resistance is normal.

Tester restrictions

- **Use a tester that has an internal voltage supply of 1.5 V or greater.**
- **Use a dry-battery-powered tester.**
(An accurate diode resistance measurement cannot be obtained with a button-battery-operated card tester because of its low applied voltage.)
- **Use a tester that can measure in small increments.**
It will allow for more accurate measurement.

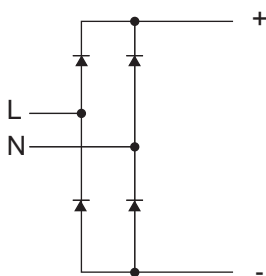
External view



<Reference values for resistance check>

	+	-	~(L)	~(N)
+	—	—	5~200 Ω	5~200 Ω
-	—	—	∞	∞
~(L)	∞	5~200 Ω	—	—
~(N)	∞	5~200 Ω	—	—

Internal circuit diagram





(6) Precautions for inverter parts replacement

- ① Check for faulty or loose wiring.

To avoid damage to the IPM, thoroughly check the wiring to the main circuit components in the diode bridge.

- ② Coat the radiation surface of the IPM and diode bridge evenly with the grease that is provided with the service parts.

Apply a thin layer of heat radiation grease to the entire surface of the back of the IPM and diode bridge, and screw the module securely into place.

Wipe off any grease that may get on the wiring terminal to avoid contact failure.

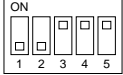

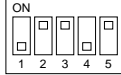

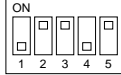

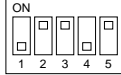
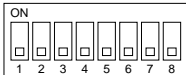

9-9. FUNCTIONS OF DIP SWITCH AND JUMPER WIRE

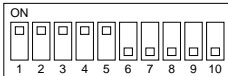
Each function is controlled by the dip switch and the jumper wire on control p.c. board.

SW1 and SW2 are equipped only for service parts.

Model setting and capacity setting are memorized in the nonvolatile memory of the control p.c. board of the unit.

(Marks in the table below) Jumper wire (○ : Short × : Open)

Jumper wire	Functions	Setting by the dip switch and jumper wire	Remarks						
SW1	Model settings	For service board 							
SW2	Capacity settings	<table border="1"> <thead> <tr> <th>MODELS</th> <th>Service board</th> </tr> </thead> <tbody> <tr> <td>PEA-200</td> <td></td> </tr> <tr> <td>PEA-250</td> <td></td> </tr> </tbody> </table>	MODELS	Service board	PEA-200		PEA-250		
MODELS	Service board								
PEA-200									
PEA-250									
SW5	Model settings								
SW6	Model settings								
JP1	Unit type setting	<table border="1"> <thead> <tr> <th>Model</th> <th>JP1</th> </tr> </thead> <tbody> <tr> <td>Without TH5</td> <td>○</td> </tr> <tr> <td>With TH5</td> <td>×</td> </tr> </tbody> </table>	Model	JP1	Without TH5	○	With TH5	×	There is no jumper (JP1) because these models have the cond./eva. temperature thermistor (TH5).
Model	JP1								
Without TH5	○								
With TH5	×								
JP3	Indoor controller board type setting	<table border="1"> <thead> <tr> <th>Indoor controller board type</th> <th>JP3</th> </tr> </thead> <tbody> <tr> <td>Factory shipment</td> <td>○</td> </tr> <tr> <td>Service parts</td> <td>○</td> </tr> </tbody> </table>	Indoor controller board type	JP3	Factory shipment	○	Service parts	○	
Indoor controller board type	JP3								
Factory shipment	○								
Service parts	○								



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

10 DISASSEMBLY PROCEDURE

Exercise caution when removing heavy parts.

1. Control box

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

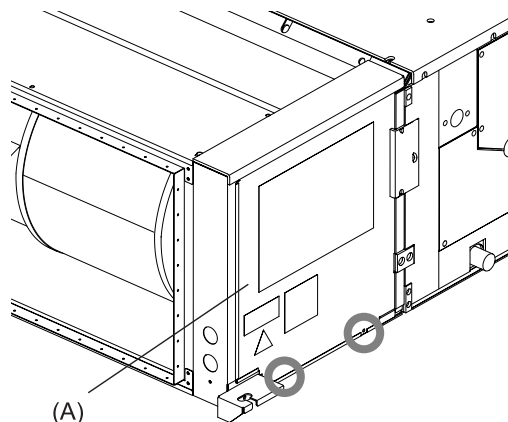


Fig. 1

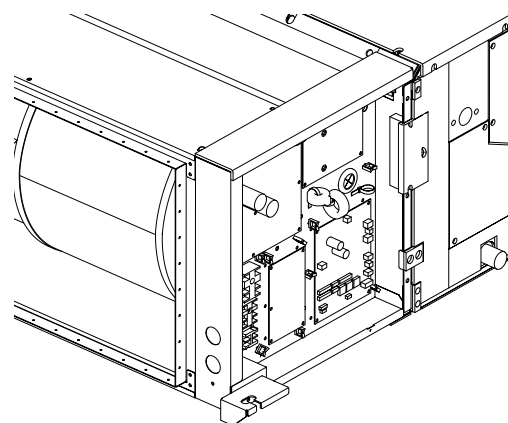


Fig. 2

2. Thermistor (Intake air)

1. Remove the control box cover according to the procedure in section 1.
2. Disconnect the connector (CN20) from the Indoor controller board.
3. Pull out the thermistor holder (B) and thermistor (C) on the control box.

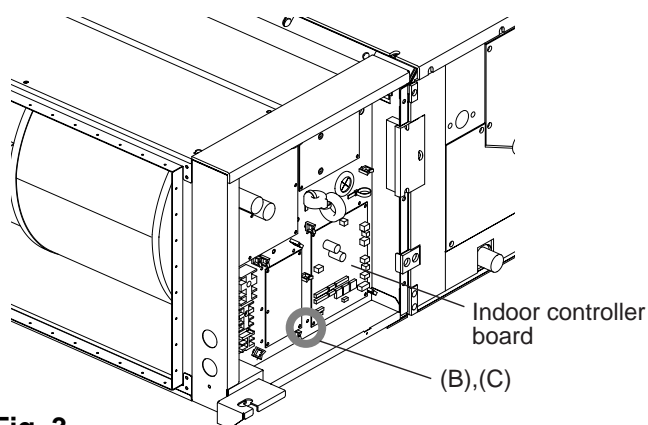


Fig. 3

Exercise caution when removing heavy parts.

3. Thermistor (Condenser/evaporator) (Liquid pipe)

1. Remove the control box cover according to the procedure in section 1.
2. Removing the maintenance cover
 - (1) Remove the ten fixing screws on the cover (D), cover (E), and cover (F) to remove the maintenance cover.

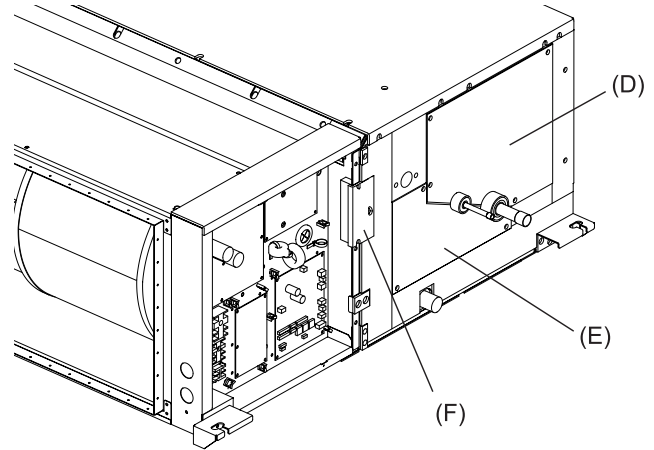


Fig. 4

3. Removing the thermistor
 - (1) Disconnect the thermistor connector (CN44) from the Indoor controller board.
 - (2) Remove the thermistor (G) from the thermistor holder (H) on the copper tube.

Thermistor size
Liquid pipe: $\varnothing 8$ mm
Condenser/evaporator: $\varnothing 6$ mm

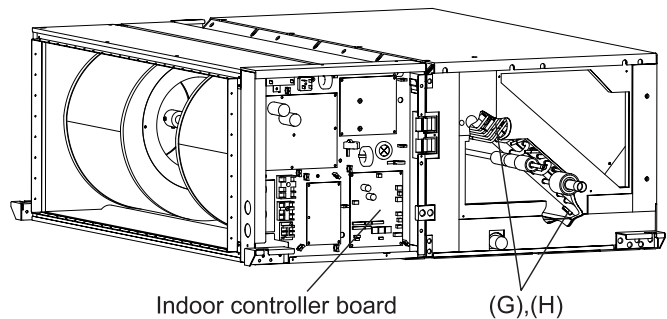


Fig. 5

Exercise caution when removing heavy parts.

4. Drain pan

1. Removing the bottom plate
(1) Remove the twelve fixing screws on the bottom plate (J) to remove it.

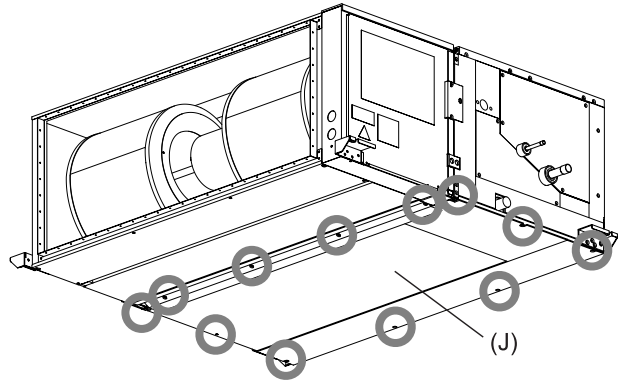


Fig. 6

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

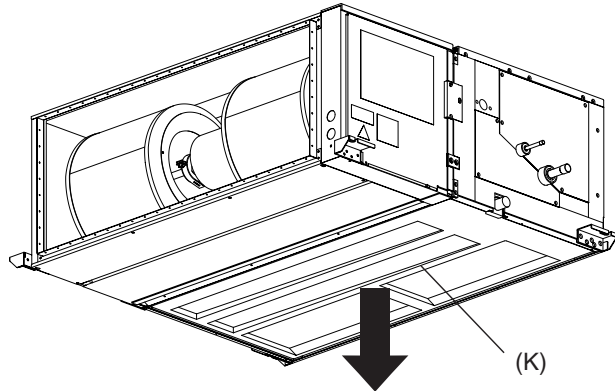


Fig. 7

Note : Drain the water out of the drain pan before removing it.

Exercise caution when removing heavy parts.

5. Heat exchanger

1. Remove the control box cover according to the procedure in section 1.
2. Remove the maintenance cover according to the procedure in section 3. 2.
3. Disconnect the thermistor connector according to the procedure in section 3. 3 (1).
4. Remove the drain pan according to the procedure in section 4.

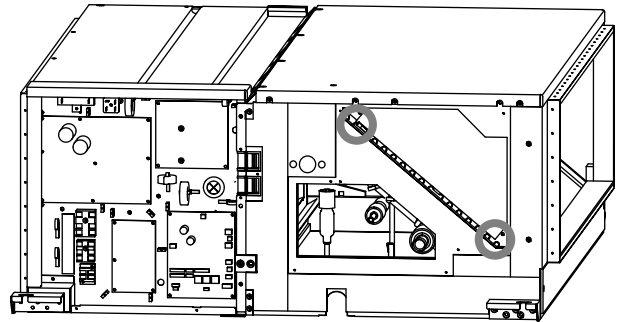


Fig. 8

5. Removing the Heat exchanger

- (1) Remove the four fixing screws on the heat exchanger (L) to remove it.

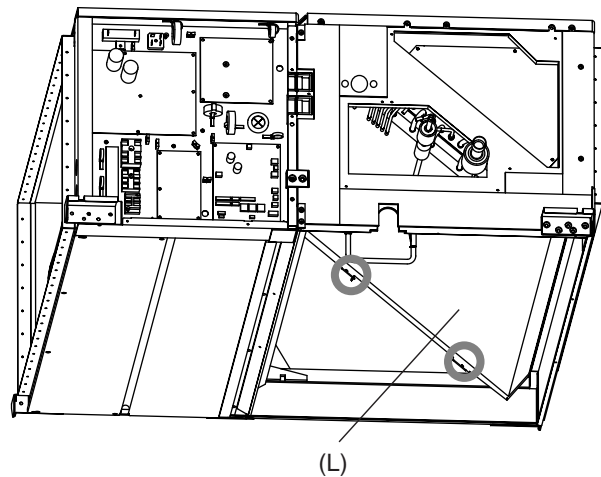


Fig. 9

Exercise caution when removing heavy parts.

6. Reactor, fan, and fan motor (top side maintenance)

1. Remove the control box cover according to the procedure in section 1.

2. Removing the fan motor and ACL cable

- (1) Disconnect the connector (CNCT1) from the INV board and connector (CNAACL) from the noise filter board. Then, disconnect the relay connector.
- (2) Remove the cable through the rubber bush.

3. Removing the top plate

- (1) Remove the ten fixing screws on the top plate (M) to remove it.

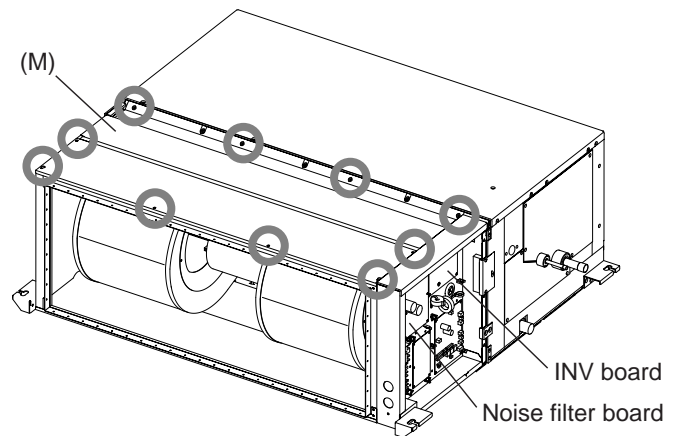


Fig. 10

4. Removing the reactor

- (1) Remove the two fixing screws on the reactor base (N) to remove it.

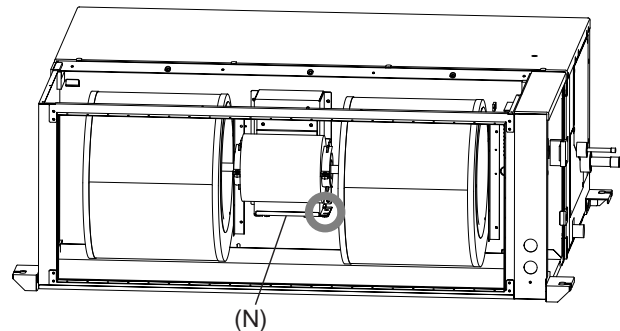


Fig. 11

5. Removing the fan case

- (1) Remove the eight fixing screws on the fan case (P) to remove it.

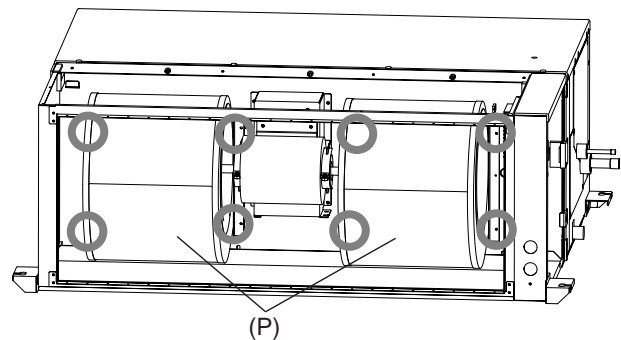


Fig. 12

6. Removing the fan and fan motor

- (1) Remove the two fixing screws and attachment on the fan motor (Q).
- (2) Pull out the fan motor in the direction of the arrow.

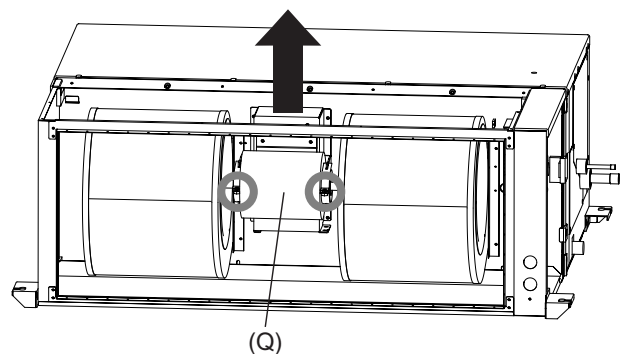


Fig. 13

Exercise caution when removing heavy parts.

7. Reactor, fan, and fan motor (bottom side maintenance)

1. Remove the control box cover according to the procedure in section 1.

2. Removing the fan motor and ACL cable

(1) Disconnect the connector (CNCT1) from the INV board and connector (CNACL) from the noise filter board. Then, disconnect the relay connector.

(2) Remove the cable through the rubber bush.

3. Removing the bottom plate

(1) Remove the ten fixing screws on the bottom plate (R) to remove it.

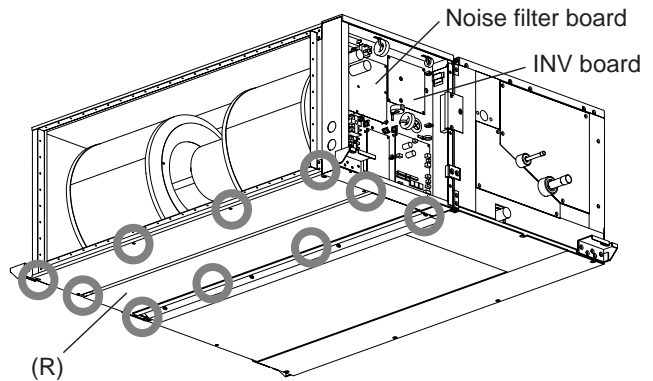


Fig. 14

4. Removing the reactor

(1) Remove the two fixing screws on the reactor base (S) to remove it.

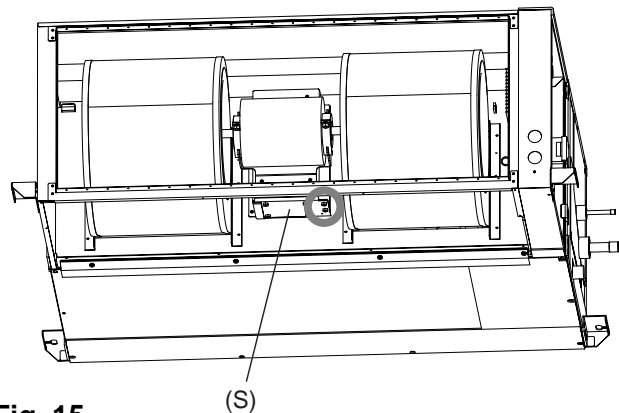


Fig. 15

5. Removing the fan case

(1) Remove the eight fixing screws on the fan case (T) to remove it.

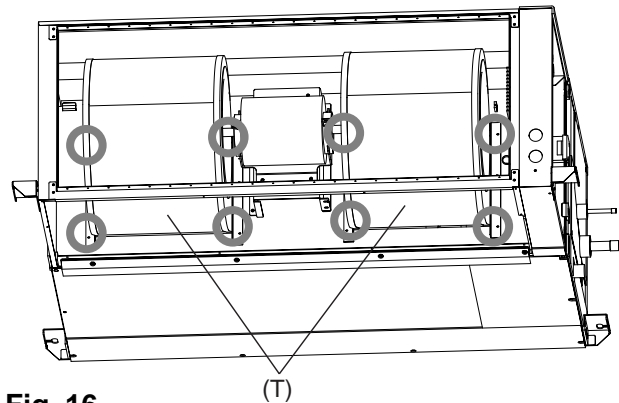


Fig. 16

6. Removing the fan and fan motor

(1) Remove the two fixing screws and attachment on the fan motor (U).

(2) Pull out the fan motor in the direction of the arrow.

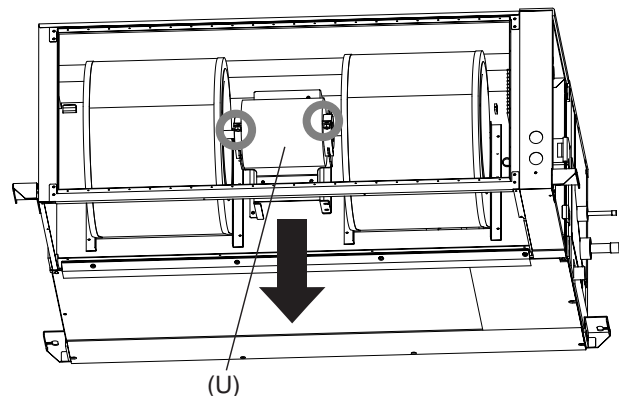


Fig. 17

Exercise caution when removing heavy parts.

8. Separating the unit

1. Removing the covers

- (1) Remove the two fixing screws on the control box cover to remove it.
- (2) Remove the three fixing screws on the lead wire cover to remove it.

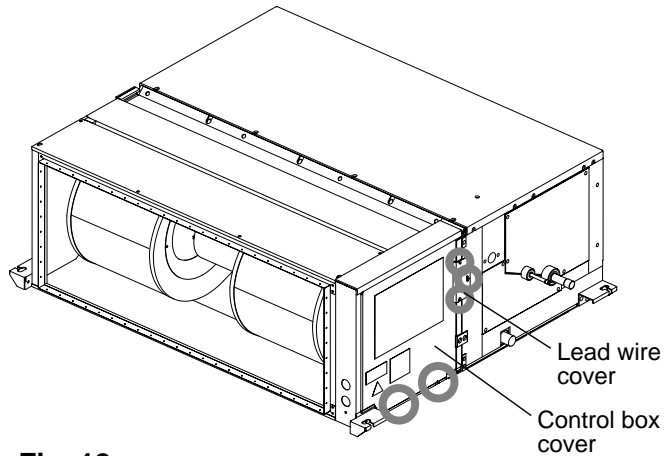


Fig. 18

2. Remove the external wires, and place the unit on a level surface

3. Disconnect the thermistor connector (CN44) from the Indoor controller board.

4. Removing the blocks

- (1) Remove the four fixing screws on the two attachment blocks to remove them.
- (2) Remove the three fixing screws on the top plate.
- (3) Separate the unit.

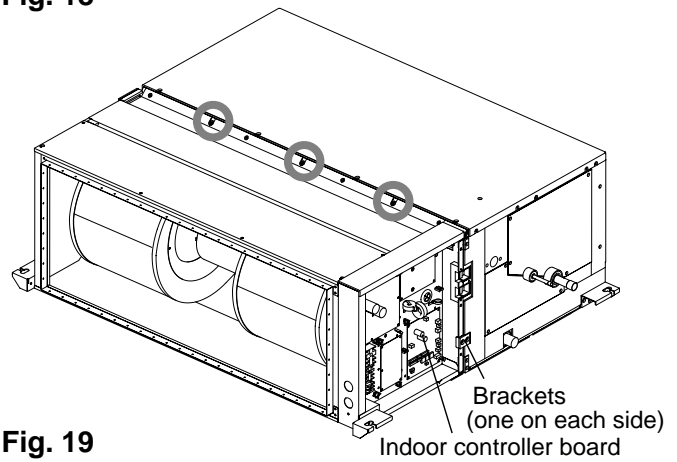
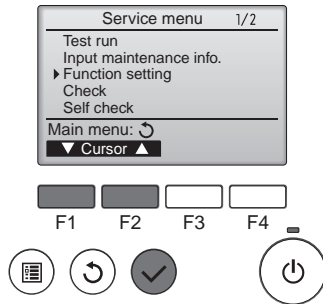


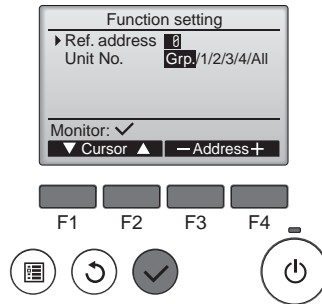
Fig. 19

Function setting on the unit (Selecting the unit functions)

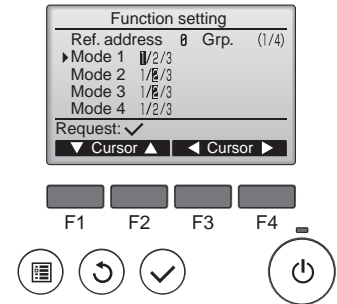
[Fig. 11.1]



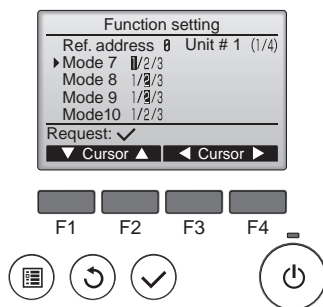
[Fig. 11.2]



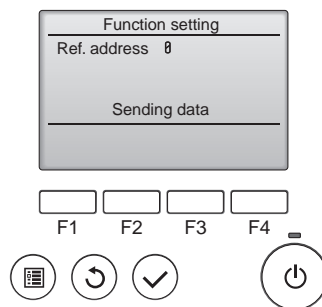
[Fig. 11.3]



[Fig. 11.4]



[Fig. 11.5]



- ① [Fig 11.1]
 - Select "Service" from the Main menu, and press the [SELECT] button.
 - Select "Function setting" with the [F1] or [F2] button, and press the [SELECT] button.
- ② [Fig 11.2]
 - Set the indoor unit refrigerant addresses and unit numbers with the [F1] through [F4] buttons, and then press the [SELECT] button to confirm the current setting.

<Checking the Indoor unit No.>
 When the [SELECT] button is pressed, the target indoor unit will start fan operation. If the unit is common or when running all units, all indoor units for the selected refrigerant address will start fan operation.
- ③ [Fig 11.3]
 - When data collection from the indoor units is completed, the current settings appears highlighted. Non-highlighted items indicate that no function settings are made. Screen appearance varies depending on the "Unit No." setting.
- ④ [Fig 11.4]
 - Use the [F1] or [F2] button to move the cursor to select the mode number, and change the setting number with the [F3] or [F4] button.
- ⑤ [Fig 11.5]
 - When the settings are completed, press the [SELECT] button to send the setting data from the remote controller to the indoor units.
 - When the transmission is successfully completed, the screen will return to the Function setting screen.

Function table 1

Select unit number 00

Mode	Settings	Mode no.	Setting no.	Initial setting	Check
Power failure automatic recovery (AUTO RESTART FUNCTION)	Not available	01	1	*2	
	Available *1		2	*2	
Indoor temperature detecting	Indoor unit operating average	02	1	○	
	Set by indoor unit's remote controller		2		
	Remote controller's internal sensor		3		
LOSSNAY connectivity	Not Supported	03	1	○	
	Supported (indoor unit is not equipped with outdoor-air intake)		2		
	Supported (indoor unit is equipped with outdoor-air intake)		3		

Function table 2

Select unit numbers 01 to 04 or all units (AL [wired remote controller]/07 [wireless remote controller])

Mode	Settings	Mode no.	Setting no.	Initial setting	Check	
Filter sign	100 Hr	07	1			
	2500 Hr		2			
	No filter sign indicator		3	○		
External static pressure	External static pressure	Setting no. of mode no. 08	Setting no. of mode no. 10	08	1	○
					2	
	60 Pa	1	2	3		
	75 Pa	2	2			
	100 Pa	3	2			
	150 Pa (before shipment)	1	1	10	1	○
					2	
					3	

*1 When the power supply returns, the air conditioner will start 3 minutes later.

*2 Power failure automatic recovery initial setting depends on the connecting outdoor unit.

Note: When the function of an indoor unit were changed by function selection after the end of installation, always indicate the contents by entering a ○ or other mark in the appropriate check filed of the tables.

Drain pump

PAC-KE05DM-F

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