

SERVICE MANUAL

Series PCA Ceiling Suspended R407C/R410A

Indoor unit

[Model names]

PCA-RP71HAQ

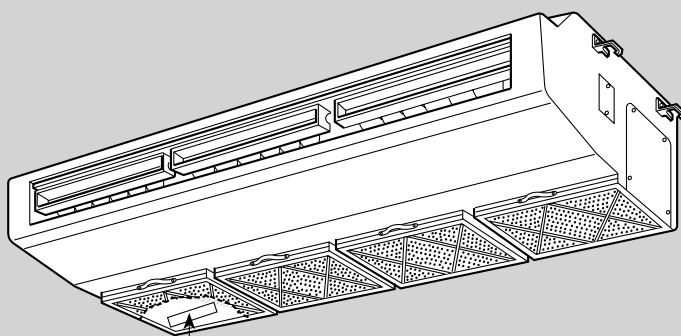
PCA-RP125HAQ

[Service Ref.]

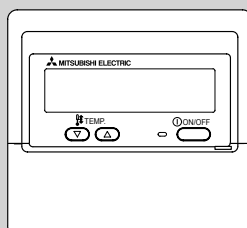
PCA-RP71HAQ
PCA-RP125HAQ

Note:

- This manual describes only service data of the indoor units.
- RoHS compliant products have <G> mark on the spec name plate.
- For servicing of RoHS compliant products, refer to the RoHS Parts List.



INDOOR UNIT

 Model name
indication

 REMOTE CONTROLLER
(Option)

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PARTS CATALOG (OCB492)

1-1. OUTDOOR UNIT'S SERVICE MANUAL

| Service Ref. | Service Manual No. |
|---|--------------------|
| PUHZ-RP71VHA4 PUHZ-RP125/140VKA PUHZ-RP125/140/250YKA | OCH451 OCB451 |
| PU(H)-P71VHAR3.UK PU(H)-P71/125/140YHAR3.UK | OC379 |
| PUHZ-P125/140VHA3R2.UK PUHZ-P125/140YHAR1.UK | OCH415 / OCB415 |
| PUHZ-P250YHA3R2 | OCH424 / OCB424 |

1-2. TECHNICAL DATA BOOK

| Series (Outdoor unit) | Manual No. |
|---------------------------------|------------|
| PUHZ-RP • HA4 PUHZ-RP • KA | OCS16 |
| PUHZ-P • VHA3 PUHZ-P • YHAR3 | OCS17 |

Note:

The phrase "Wired remote controller" in this service manual refers only to the PAR-21MAA.

If you need any information for the PAR-30MAA, please refer to the instruction book included in PAR-30MAA box.

2-1. ALWAYS OBSERVE FOR SAFETY

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

2-2. CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilising refrigerant R407C

Do not use the existing refrigerant piping.

The old refrigerant and lubricant in the existing piping contains a large amount of chlorine which may cause the lubricant deterioration of the new unit.

Use liquid refrigerant to charge the system.

If gas refrigerant is used to seal the system, the composition of the refrigerant in the cylinder will change and performance may drop.

Use “low residual oil piping”

If there is a large amount of residual oil (hydraulic oil, etc.) inside the piping and joints, deterioration of the lubricant will result.

Do not use a refrigerant other than R407C.

If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the lubricant deterioration.

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

If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result.

Use a vacuum pump with a reverse flow check valve.

The vacuum pump oil may flow back into the refrigerant cycle and cause the lubricant deterioration.

The refrigerant oil applied to flare and flange connections must be ester oil, ether oil or alkylbenzene oil in a small amount.

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

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

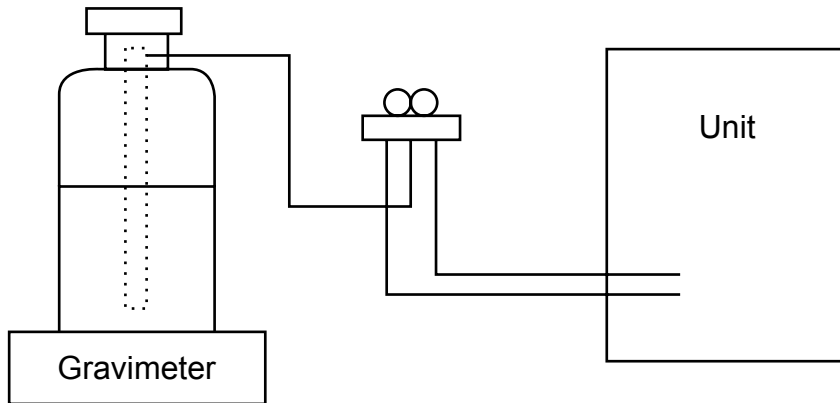
- After recovering the all refrigerant in the unit, proceed to working.
- Do not release refrigerant in the air.
- After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[2] Refrigerant recharging

(1) Refrigerant recharging process

① Direct charging from the cylinder.

- R407C cylinder are available on the market has a syphon pipe.
- Leave the syphon pipe cylinder standing and recharge it.
(By liquid refrigerant)



(2) Recharge in refrigerant leakage case

- After recovering the all refrigerant in the unit, proceed to working.
- Do not release the refrigerant in the air.
- After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[3] Service tools

Use the below service tools as exclusive tools for R407C refrigerant.

| No. | Tool name | Specifications |
|-----|--------------------------------|--|
| ① | Gauge manifold | · Only for R407C |
| | | · Use the existing fitting SPECIFICATIONS. (UNF7/16) |
| | | · Use high-tension side pressure of 3.43MPa·G or over. |
| ② | Charge hose | · Only for R407C |
| | | · Use pressure performance of 5.10MPa·G or over. |
| ③ | Electronic scale | — |
| ④ | Gas leak detector | · Use the detector for R134a or R407C. |
| ⑤ | Adaptor for reverse flow check | · Attach on vacuum pump. |
| ⑥ | Refrigerant charge base | — |
| ⑦ | Refrigerant cylinder | · For R407C · Top of cylinder (Brown) |
| | | · Cylinder with syphon |
| ⑧ | Refrigerant recovery equipment | — |

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.

- For RP71VHA3 and RP125 be sure to perform replacement operation before test run.
- Change flare nut to the one provided with this product. Use a newly flared pipe.
- Avoid using thin pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contaminants such as sulfur, oxides, dirt, shaving particles, etc, which are hazards to refrigerant cycle. In addition, use pipes with specified thickness.

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

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

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

The refrigerant oil applied to flare and flange connections must be ester oil, ether oil or alkylbenzene oil in a small amount.

If large amount of mineral oil enter, 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 |

Keep the tools with care.

If dirt, dust or moisture enter 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.

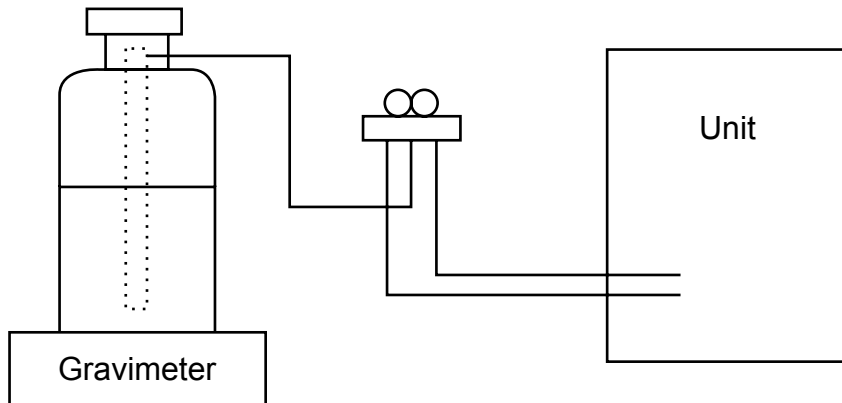
[1] Cautions for service

- (1) Perform service after collecting 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

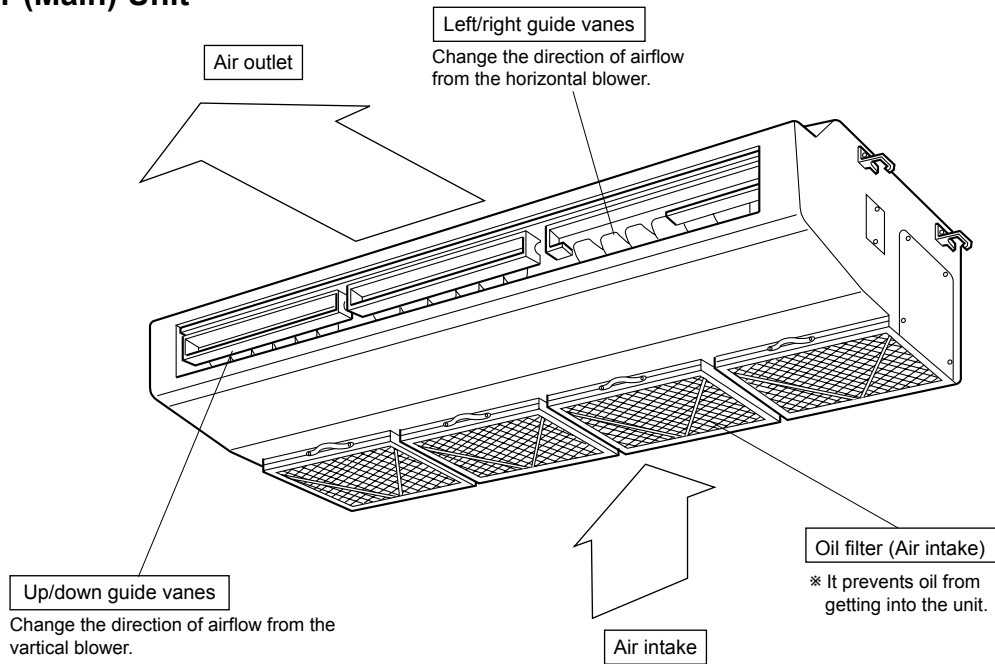
Use the below service tools as exclusive tools for R410A refrigerant.

| 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 | — |

3

PART NAMES AND FUNCTIONS

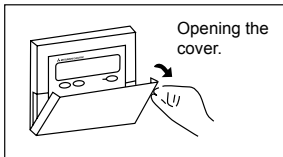
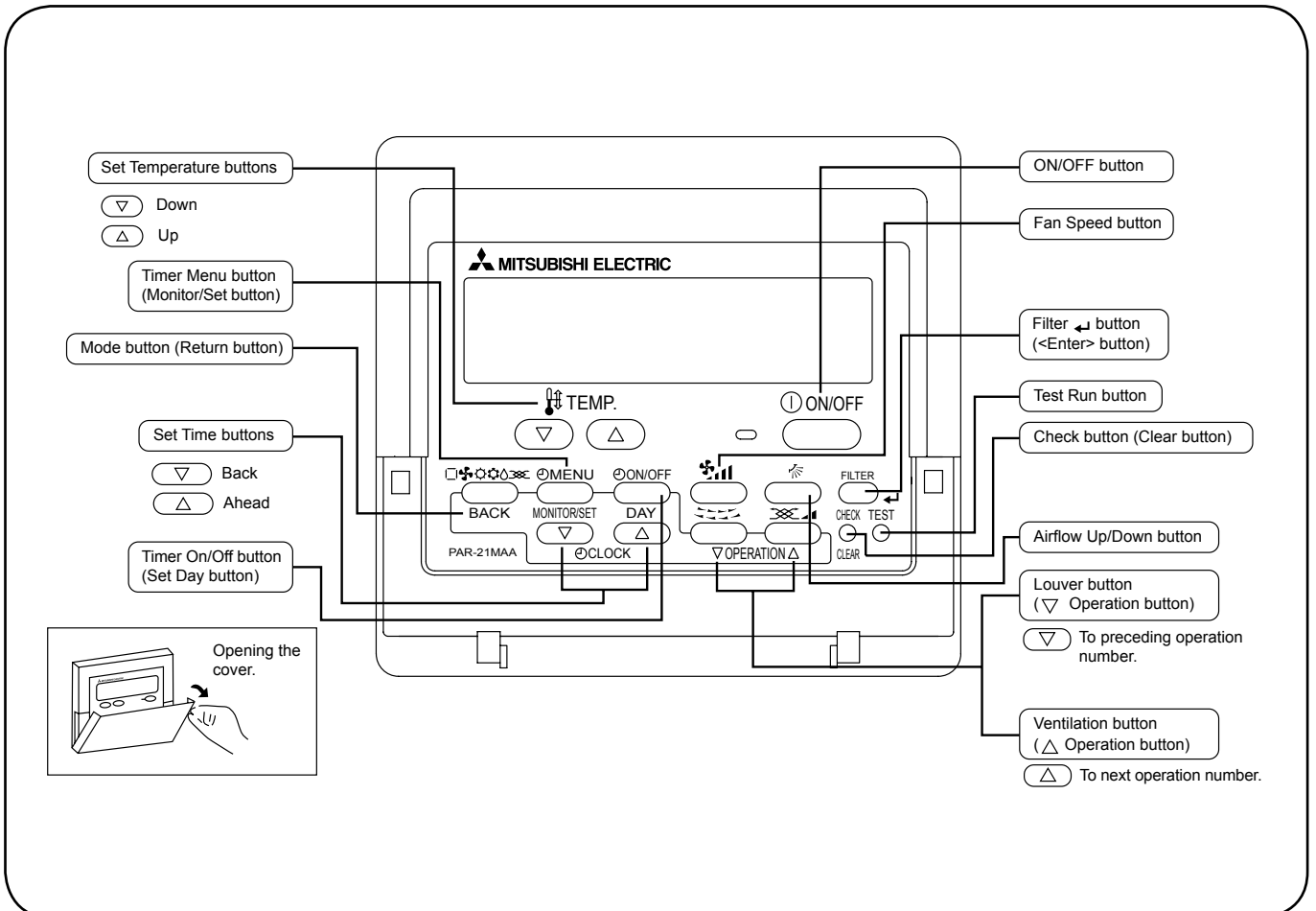
● Indoor (Main) Unit



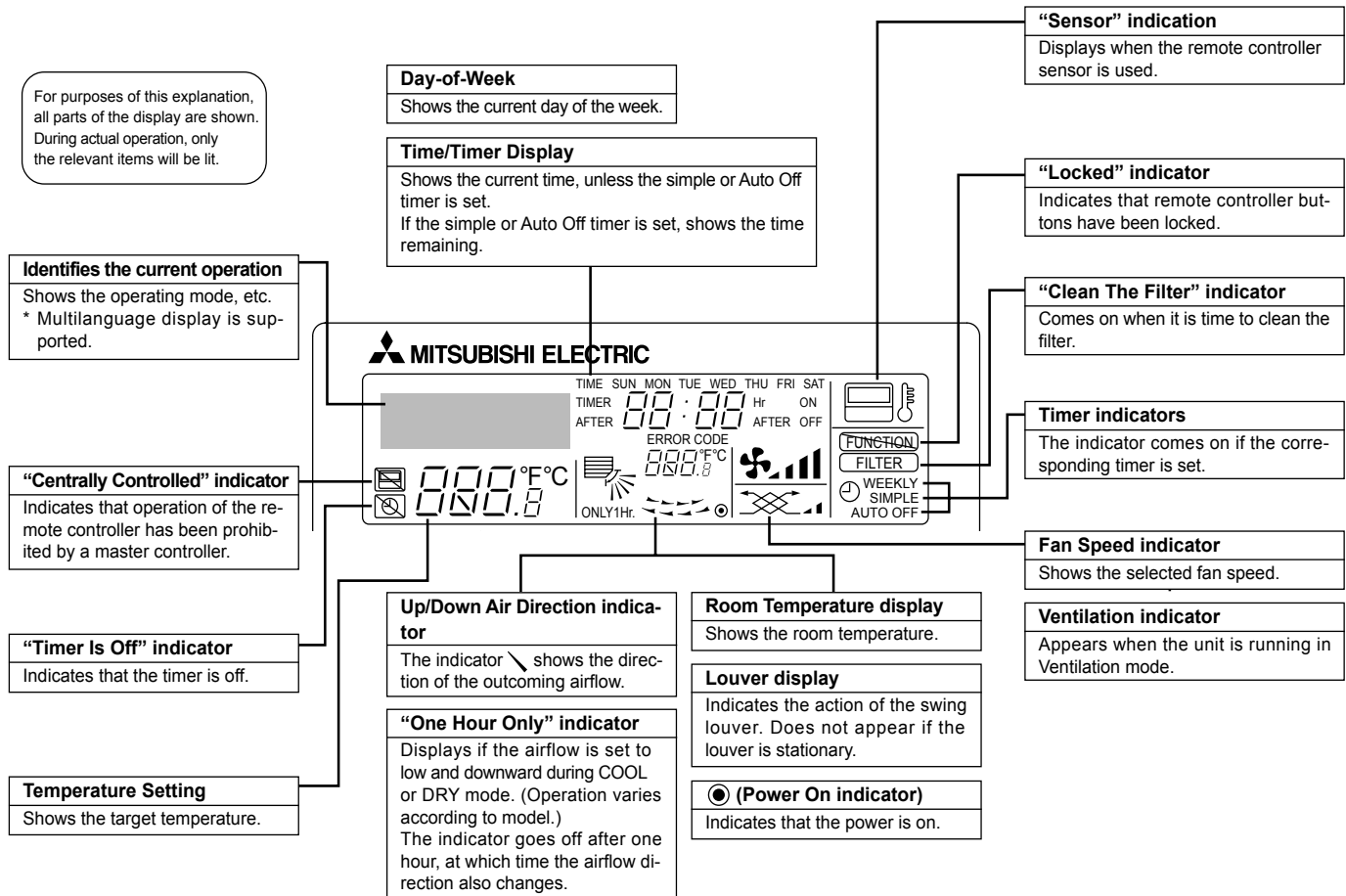
● Remote controller (Option)

Once the controls are set, the same operation mode can be repeated by simply pressing the ON/OFF button.

● Operation buttons



● Display



Caution

- Only the Power on indicator lights when the unit is stopped and power supplied to the unit.
- If you press a button for a feature that is not installed at the indoor unit, the remote controller will display the “Not Available” message.
If you are using the remote controller to drive multiple indoor units, this message will appear only if the feature is not present at every unit connected.
- When power is turned ON for the first time, it is normal that “PLEASE WAIT” is displayed on the room temperature indication (For max. 2 minutes). Please wait until this “PLEASE WAIT” indication disappears then start the operation.

4

SPECIFICATIONS

| Service Ref. | | | PCA-RP71HAQ | | |
|--------------|-------------------------------------|--------------------------|------------------------------|--------------------------|--|
| INDOOR UNIT | Mode | | Cooling | Heating | |
| | Power supply(phase, cycle, voltage) | | Single phase, 50Hz, 230V | | |
| | Input | kW | 0.09 | 0.09 | |
| | Running current | A | 0.43 | 0.43 | |
| | Starting current | A | 0.86 | 0.86 | |
| | External finish | | Stainless steel | | |
| | Heat exchanger | | Plate fin coil | | |
| | Fan | Fan(drive) × No. | | Sirocco fan (direct) × 2 | |
| | | Fan motor output | kW | 0.04 | |
| | | Airflow(Low-High) | m ³ /min(CFM) | 17-19(600-670) | |
| | | External static pressure | Pa(mmAq) | 0(direct blow) | |
| | Operation control & Thermostat | | Remote controller & built-in | | |
| | Noise level(Low-High) | | 34-38 | | |
| | Unit drain pipe I.D. | | 26(1) | | |
| | Dimensions | W | mm(in.) | 1,136(44-3/4) | |
| D | | mm(in.) | 650(25-5/8) | | |
| H | | mm(in.) | 280(11) | | |
| Weight | | kg(lbs) | 41(90) | | |

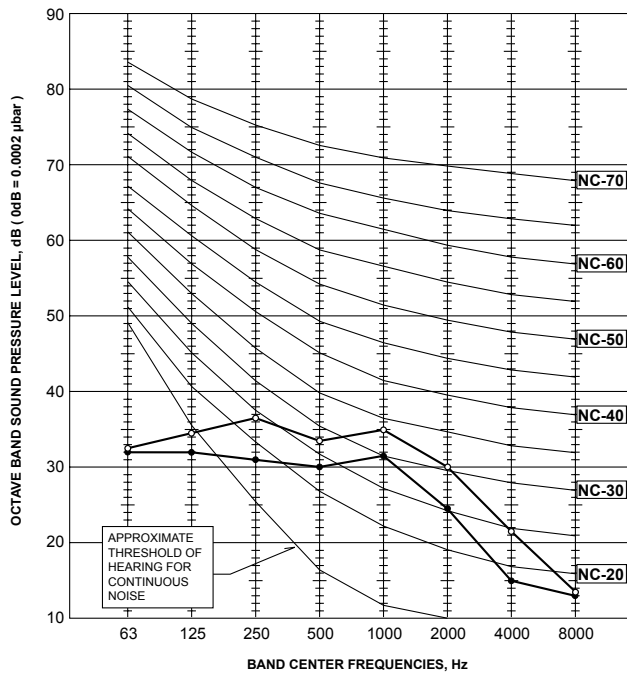
| Service Ref. | | | PCA-RP125HAQ | | |
|--------------|-------------------------------------|--------------------------|------------------------------|--------------------------|--|
| INDOOR UNIT | Mode | | Cooling | Heating | |
| | Power supply(phase, cycle, voltage) | | Single phase, 50Hz, 230V | | |
| | Input | kW | 0.26 | 0.26 | |
| | Running current | A | 1.19 | 1.19 | |
| | Starting current | A | 2.38 | 2.38 | |
| | External finish | | Stainless steel | | |
| | Heat exchanger | | Plate fin coil | | |
| | Fan | Fan(drive) × No. | | Sirocco fan (direct) × 4 | |
| | | Fan motor output | kW | 0.08 + 0.08 | |
| | | Airflow(Low-High) | m ³ /min(CFM) | 30-38(1,060-1,350) | |
| | | External static pressure | Pa(mmAq) | 0(direct blow) | |
| | Operation control & Thermostat | | Remote controller & built-in | | |
| | Noise level(Low-High) | | 44-50 | | |
| | Unit drain pipe I.D. | | 26(1) | | |
| | Dimensions | W | mm(in.) | 1,520(59-7/8) | |
| D | | mm(in.) | 650(25-5/8) | | |
| H | | mm(in.) | 280(11) | | |
| Weight | | kg(lbs) | 56(124) | | |

5

NOISE CRITERION CURVES

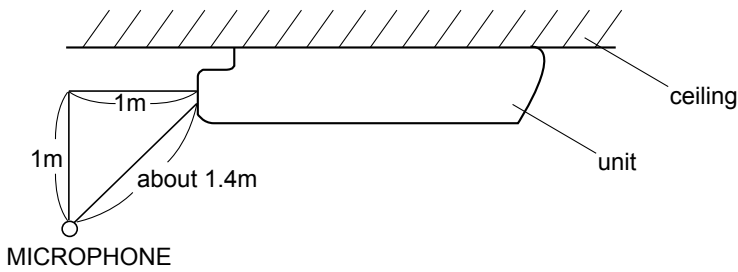
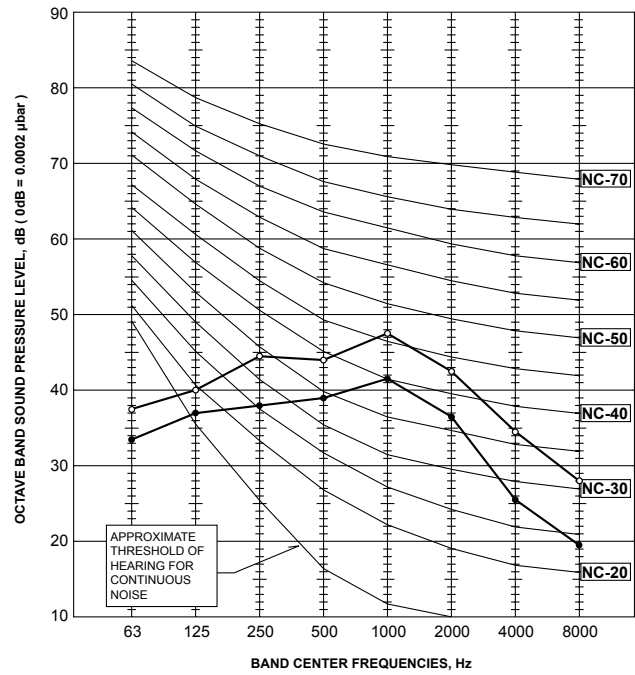
PCA-RP71HAQ

| NOTCH | SPL(dB) | LINE |
|-------|---------|------|
| High | 38 | ○—○ |
| Low | 34 | ●—● |



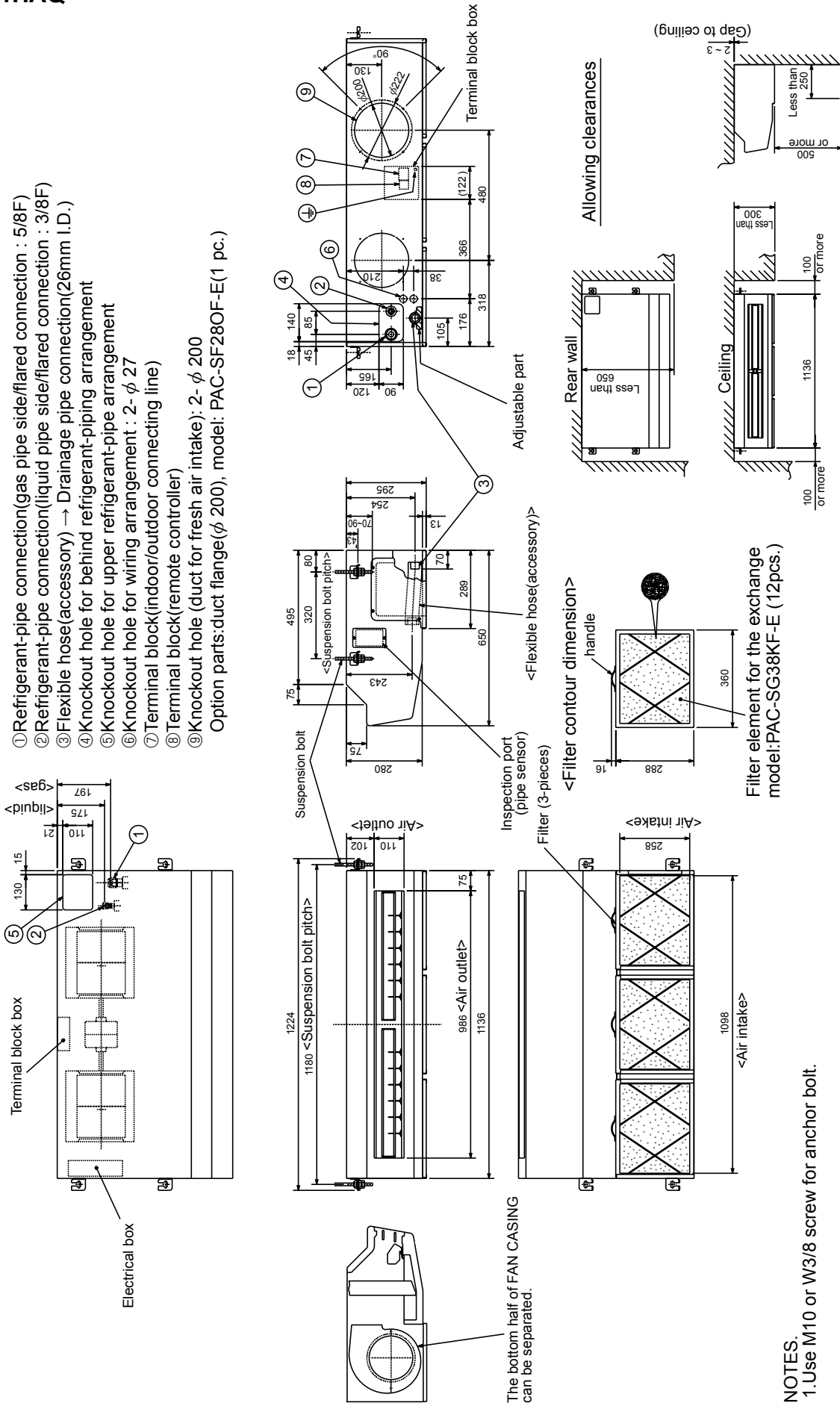
PCA-RP125HAQ

| NOTCH | SPL(dB) | LINE |
|-------|---------|------|
| High | 50 | ○—○ |
| Low | 44 | ●—● |



PCA-RP71HAQ

Unit : mm

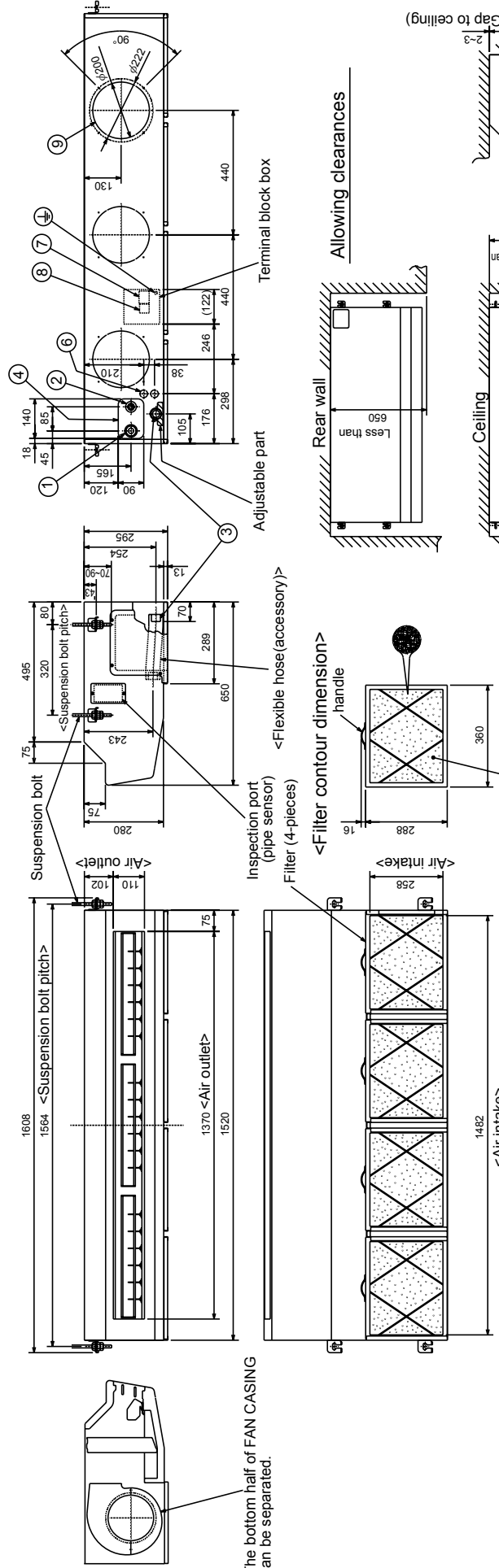
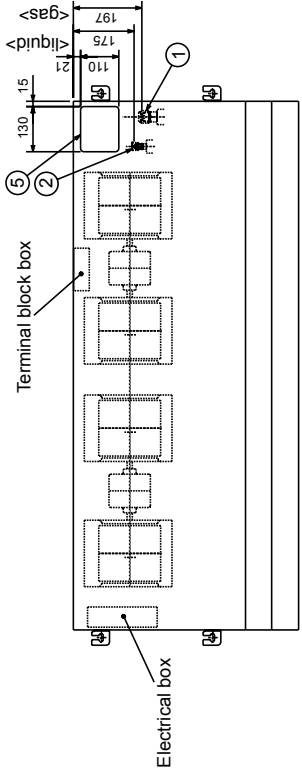


NOTES.
 1. Use M10 or W3/8 screw for anchor bolt.

PCA-RP125HAQ

Unit : mm

- ① Refrigerant-pipe connection(gas pipe side/flared connection : 5/8F, 3/4F)
 - ② Refrigerant-pipe connection(liquid pipe side/flared connection : 3/8F)
 - ③ Flexible hose(accessory) → Drainage pipe connection(26mm I.D.)
 - ④ Knockout hole for behind refrigerant-pipe arrangement
 - ⑤ Knockout hole for upper refrigerant-pipe arrangement
 - ⑥ Knockout hole for wiring arrangement : 2-φ 27
 - ⑦ Terminal block(indoor/outdoor connecting line)
 - ⑧ Terminal block(remote controller)
 - ⑨ Knockout hole (duct for fresh air intake) : 2-φ 200
- Option parts: duct flange(φ 200), model: PAC-SF28OF-E(1 pc.)



- NOTES.
1. Use M10 or W3/8 screw for anchor bolt.
 2. Use the current nuts meeting the pipe size of the outdoor unit.

| | |
|---------------------|-----------|
| Available pipe size | RP125 |
| ② LIQUID SIDE | φ 9.52 ○ |
| ① GAS SIDE | φ 15.88 ○ |
| | φ 19.05 ○ |

○ : Initial flare nut size

PCA-RP71HAQ PCA-RP125HAQ

[LEGEND]

| SYMBOL | NAME | SYMBOL | NAME |
|--------|--|----------|---|
| P. B | INDOOR POWER BOARD | MF1, MF2 | FAN MOTOR |
| I. B | INDOOR CONTROLLER BOARD | C1, C2 | CAPACITOR (FAN MOTOR) |
| | FUSE (T6.3AL250V) | H2 | DEW PREVENTION HEATER |
| | CN2L CONNECTOR (LOSSNAY) | TB2 | TERMINAL BLOCK (INDOOR UNIT POWER (OPTION PARTS)) |
| | CN32 CONNECTOR (REMOTE SWITCH) | TB4 | TERMINAL BLOCK (INDOOR/OUTDOOR CONNECTING LINE) |
| | CN41 CONNECTOR (HA TERMINAL-A) | | |
| | CN51 CONNECTOR (CENTRALLY CONTROLL) | TB5, TB6 | TERMINAL BLOCK (REMOTE CONTROLLER TRANSMISSION LINE) |
| | LED1 POWER SUPPLY (I. B) | | |
| | LED2 POWER SUPPLY (R. B) | | |
| | LED3 TRANSMISSION (INDOOR-OUTDOOR) | TH1 | ROOM TEMP.THERMISTOR (0°C/15kΩ, 25°C/5.4kΩ DETECT) |
| | X1 RELAY (DEW PREVENTION HEATER) | TH2 | PIPE TEMP.THERMISTOR/LIQUID (0°C/15kΩ, 25°C/5.4kΩ DETECT) |
| | X4 RELAY (FAN MOTOR) | TH5 | COND./EVA.TEMP.THERMISTOR (0°C/15kΩ, 25°C/5.4kΩ DETECT) |
| | X5 RELAY (FAN MOTOR) | | |
| | X6 RELAY (FAN MOTOR) | R. B | WIRED REMOTE CONTROLLER BOARD |
| | SW1 SWITCH (MODEL SELECTION) *See Table 1. | | |
| | SW2 SWITCH (CAPACITY CODE) *See Table 2. | | |
| | SWE SWITCH (EMERGENCY OPERATION) | | |

| Check code | Symptom |
|------------|--|
| P1 | Abnormality of room temperature thermistor (TH1) |
| P2 | Abnormality of pipe temperature thermistor/Liquid (TH2) |
| P6 | Freezing/overheating protection is working. |
| P8 | Abnormality of pipe temperature |
| P9 | Abnormality of pipe temperature thermistor/Cond.Eva. (TH5) |
| E0 - E5 | Abnormality of the signal transmission between remote controller and indoor unit |
| E6 - EF | Abnormality of the signal transmission between indoor unit and outdoor unit |
| Fb | Abnormality of indoor controller board |
| U* , F* | Abnormality in outdoor unit. Refer to outdoor unit wiring diagram. |
| --- | No trouble generated in the past. |
| FFFF | No corresponding unit |

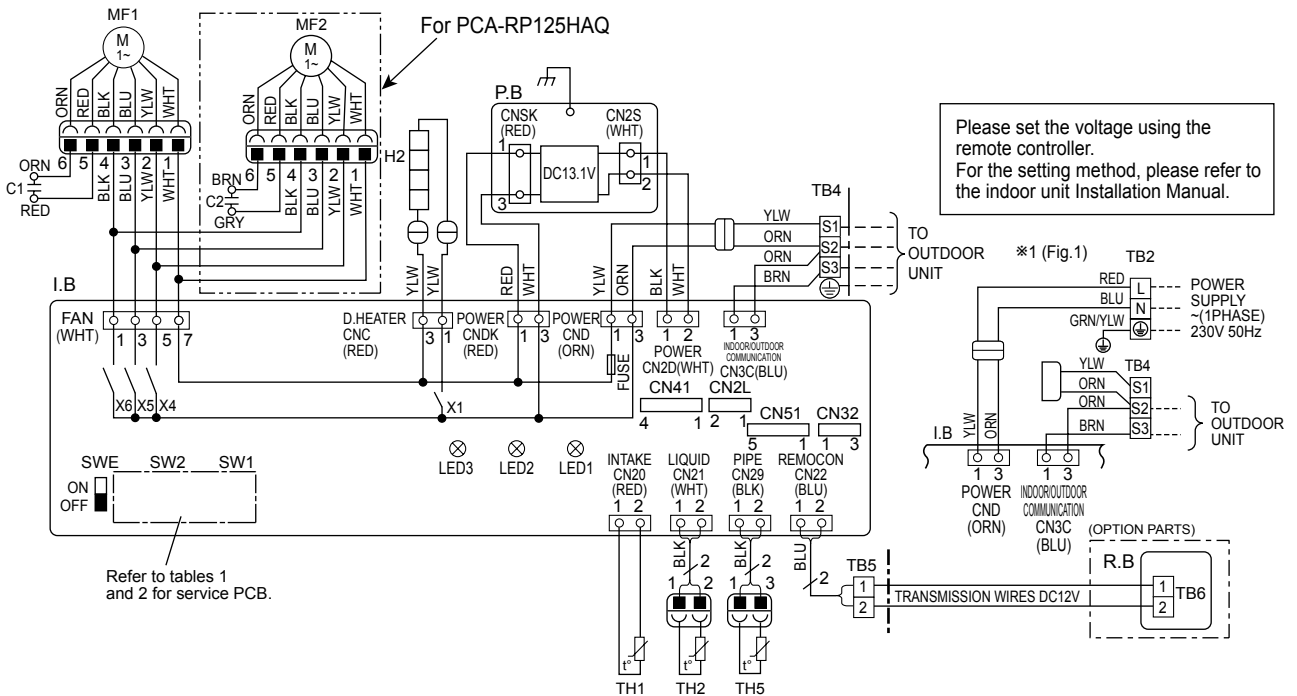


Table 1

| SW1 | | | | |
|---------------|-----|----|-----|----|
| Service board | | | | |
| 1 | 2 | 3 | 4 | 5 |
| ON | OFF | ON | OFF | ON |

Table 2

| SW2 | | | | | |
|--------------|---------------|-----|--------|---------------|----|
| MODELS | Service board | | MODELS | Service board | |
| PCA-RP71HAQ | 1 | 2 | 3 | 4 | 5 |
| | ON | OFF | ON | OFF | ON |
| PCA-RP125HAQ | 1 | 2 | 3 | 4 | 5 |
| | ON | OFF | ON | OFF | ON |

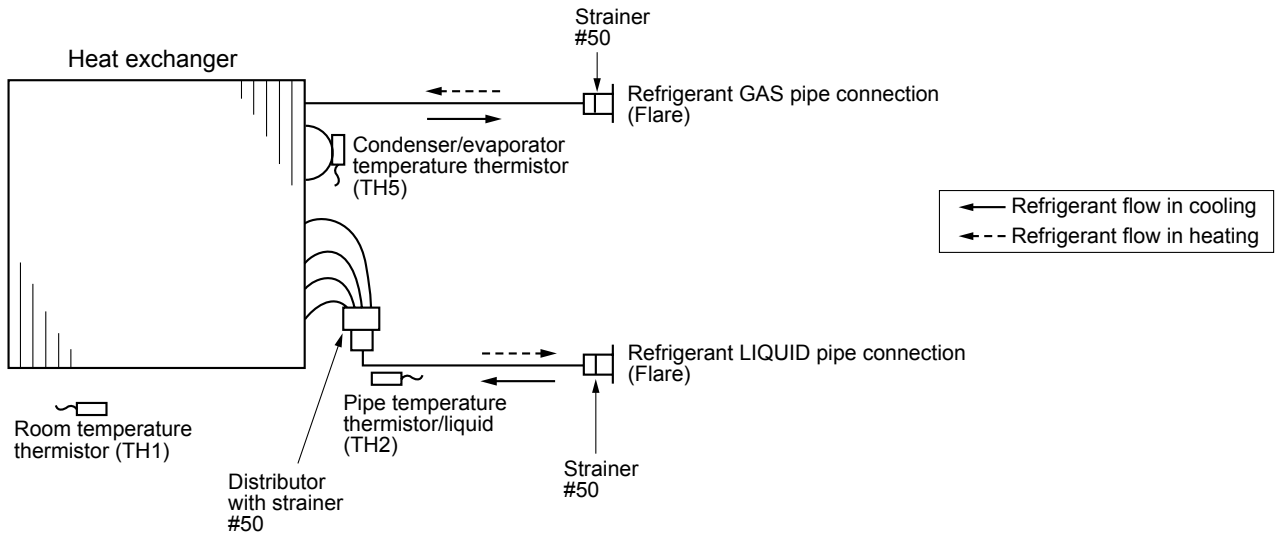
The black square (■) indicates a switch position.

NOTES:

- Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
 - Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal numbers (S1,S2,S3).
 - Symbols used in wiring diagram above are, : Connector, : Terminal (block).
- *1 When work to supply power separately to Indoor and Outdoor unit was applied, refer to Fig.1.
 *2 For power supply system of this unit, refer to the caution label located near this diagram.

PCA-RP71HAQ

PCA-RP125HAQ



9-1. TROUBLESHOOTING

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

Present and past error codes are logged and displayed on the wired remote controller or controller board of outdoor unit. Actions to be taken for service and the trouble recurrence at field are summarized in the table below. Check the contents below before investigating details.

Note : Refer to the manual of outdoor unit for malfunction-diagnosis method by remote controller.

| Unit conditions at service | Error code | Actions to be taken for service (summary) |
|---------------------------------|---------------|---|
| The trouble is reoccurring. | Displayed | Judge what is wrong and take a corrective action according to "SELF-DIAGNOSIS ACTION TABLE" (9-2). |
| | Not displayed | Conduct troubleshooting and ascertain the cause of the trouble according to "TROUBLESHOOTING BY INFERIOR PHENOMENA" (9-3). |
| The trouble is not reoccurring. | Logged | <ul 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 and etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, and wiring related. ② Reset error code logs and restart the unit after finishing service. ③ There is no abnormality in electrical components, controller boards, and remote controller. |
| | Not logged | <ul style="list-style-type: none"> ① Recheck the abnormal symptom. ② Identify the cause of the trouble and take a corrective action according to "TROUBLESHOOTING BY INFERIOR PHENOMENA" (9-3). ③ Continue to operate unit for the time being if the cause is not ascertained. ④ There is no abnormality in electrical components, controller boards, remote controller etc. |



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

9-2. SELF-DIAGNOSIS ACTION TABLE

| Error Code | Abnormal point and detection method | Cause | Countermeasure | | | | | | | | | | |
|------------|--|--|---|-----|------------|------|-----------|------|----------|------|----------|------|----------|
| P1 | <p>Room temperature thermistor (TH1)</p> <p>① The unit is in 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally.)</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.</p> <table border="1"> <tr><td>0°C</td><td>15.0kΩ</td></tr> <tr><td>10°C</td><td>9.6kΩ</td></tr> <tr><td>20°C</td><td>6.3kΩ</td></tr> <tr><td>30°C</td><td>4.3kΩ</td></tr> <tr><td>40°C</td><td>3.0kΩ</td></tr> </table> <p>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 9-6. 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> | 0°C | 15.0kΩ | 10°C | 9.6kΩ | 20°C | 6.3kΩ | 30°C | 4.3kΩ | 40°C | 3.0kΩ |
| 0°C | 15.0kΩ | | | | | | | | | | | | |
| 10°C | 9.6kΩ | | | | | | | | | | | | |
| 20°C | 6.3kΩ | | | | | | | | | | | | |
| 30°C | 4.3kΩ | | | | | | | | | | | | |
| 40°C | 3.0kΩ | | | | | | | | | | | | |
| P2 | <p>Pipe temperature thermistor/Liquid (TH2)</p> <p>① The unit is in 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally.)</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 9-6. Turn the power on 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 extremely 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 | <p>Drain sensor (DS)</p> <p>① Suspensive abnormality, if short/open of thermistor is detected for 30 seconds continuously. Compressor and indoor fan will be turned off</p> <p>② Short/open is detected for 30 seconds continuously during suspensive abnormality. (The unit returns to normal operation, if it has normally reset.)</p> <p>③ Detect the following condition.</p> <ul style="list-style-type: none"> • During cooling and drying operation. • In case that pipe <liquid> temperature - room temperature <-10deg (Except defrosting) • When pipe <liquid> temperature or room temperature is short/open temperature. • During drain pump operation. | <p>① Defective thermistor characteristics</p> <p>② Contact failure of connector (CN31) on the indoor controller board (Insert failure)</p> <p>③ Breaking of wire or contact failure of drain sensor wiring</p> <p>④ Defective indoor controller board</p> | <p>①–③ Check resistance value of thermistor.</p> <table border="1"> <tr><td>0°C</td><td>.....6.0kΩ</td></tr> <tr><td>10°C</td><td>....3.9kΩ</td></tr> <tr><td>20°C</td><td>...2.6kΩ</td></tr> <tr><td>30°C</td><td>...1.8kΩ</td></tr> <tr><td>40°C</td><td>...1.3kΩ</td></tr> </table> <p>② Check contact failure of connector (CN31) on the indoor controller board. Refer to 9-6. Turn the power on again and check restart after inserting connector again.</p> <p>④ Replace indoor controller board if drain pump operates with the line of drain sensor connector CN31-① and ② is short-circuited, and abnormality reappears.</p> <p>Turn the power off, and on again to operate after check.</p> | 0°C |6.0kΩ | 10°C |3.9kΩ | 20°C | ...2.6kΩ | 30°C | ...1.8kΩ | 40°C | ...1.3kΩ |
| 0°C |6.0kΩ | | | | | | | | | | | | |
| 10°C |3.9kΩ | | | | | | | | | | | | |
| 20°C | ...2.6kΩ | | | | | | | | | | | | |
| 30°C | ...1.8kΩ | | | | | | | | | | | | |
| 40°C | ...1.3kΩ | | | | | | | | | | | | |
| P5 | <p>Malfunction of drain pump (DP)</p> <p>① Suspensive abnormality, if thermistor of drain sensor is let heat itself and temperature rises slightly. Compressor and indoor fan will be turned off.</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 Attached drop of water at the drain sensor</p> <ul style="list-style-type: none"> • Drops of drain trickles from lead wire • Clogged filter is causing wave of drain. <p>④ Defective indoor controller board</p> | <p>① Check if drain pump operates.</p> <p>② Check drain function.</p> <p>③ Check the setting of lead wire of drain sensor and check clogs of the filter.</p> <p>④ Replace indoor controller board if drain pump operates with the line of drain sensor connector CN31-① and ② is short-circuited and abnormality reappears. Refer to 9-6.</p> <p>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 operating</p> <p>① Freezing protection (Cooling mode) The unit is in 6-minute resume prevention mode if pipe <liquid or condenser/ evaporator> temperature stays under -15°C for 3 minutes, 3 minutes after the compressor started. Abnormal if it stays under -15°C for 3 minutes again within 16 minutes after 6-minute resume prevention mode.</p> <p>② Overheating protection (Heating mode) The units is in 6 minute resume prevention mode if pipe <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 30 minutes after 6 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 out of the tolerance range ④ Defective indoor fan motor • Fan motor is defective. • Indoor controller board is defective.</p> <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 out of the tolerance range ④ Defective indoor fan motor • Fan motor is defective. • Indoor controller board is defective. 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 clogs of the filter. ② Remove blockage.</p> <p>④ Refer to 9-6.</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 blockage.</p> <p>④ Refer to 9-6.</p> <p>⑤ Check outdoor fan motor. ⑥~⑧ Check operating condition of refrigerant circuit.</p> |
| P8 | <p>Pipe temperature <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 : $-3\text{ }^{\circ}\text{C} \geq (\text{TH}-\text{TH1})$ 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.</p> <p>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 : $3\text{ }^{\circ}\text{C} \leq (\text{TH5}-\text{TH1})$</p> | <p>① Slight temperature difference between indoor room temperature and pipe <liquid or condenser / evaporator> temperature thermistor • Shortage of refrigerant • Disconnected holder of pipe <liquid or condenser / evaporator> thermistor • Defective refrigerant circuit</p> <p>② Converse connection of extension pipe (on plural units connection)</p> <p>③ Converse wiring of indoor/ outdoor unit connecting wire (on plural units connection)</p> <p>④ Defective detection of indoor room temperature and pipe <condenser / evaporator> temperature thermistor</p> <p>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 as follows.</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>Pipe temperature thermistor / Condenser-Evaporator (TH5)</p> <p>① The unit is in 3-minute resume protection mode if short/open of thermistor is detected. Abnormal if the unit does not get back to normal within 3 minutes. (The unit returns to normal operation, if it has been reset normally.)</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 9-7. 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 with outdoor controller circuit board. If pipe <condenser / evaporator> temperature is extremely low (in cooling mode) or high (in heating mode), refrigerant circuit may have defect.</p> <p>⑤ Operate in test run mode and check pipe <condenser / evaporator> temperature with outdoor control circuit board. If there is extreme difference with actual pipe <condenser / evaporator> temperature, replace indoor controller board. There is no abnormality if none of above comes within the unit. Turn the power off and on again to operate.</p> <p>(In case of checking pipe temperature with outdoor controller circuit board, be sure to connect A-control service tool (PAC-SK52ST).)</p> |
| E0 or E4 | <p>Remote controller transmission error(E0)/signal receiving error(E4)</p> <p>① Abnormal if main or sub remote controller cannot receive any transmission normally from indoor unit of refrigerant address "0" for 3 minutes. (Error code : E0)</p> <p>② Abnormal if sub remote controller could not receive any signal for 2 minutes. (Error code: E0)</p> <p>① Abnormal if indoor controller board can not receive any data normally from remote controller board or from other indoor controller board for 3 minutes. (Error code: E4)</p> <p>② Indoor controller board cannot receive any signal from remote controller for 2 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 Miswiring 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 addresses "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. • Total wiring length: max. 500 m (Do not use cable × 3 or more.) • The number of connecting indoor units: max. 16 units • The number of connecting remote controller: max. 2 units</p> <p>When it is not the above-mentioned problem of ①-③</p> <p>④ Diagnose remote controllers. 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. b) When "RC NG" is displayed, Replace remote controller. c) When "RC E3" or "ERC 00-66" is displayed, noise may be causing abnormality. * 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 6 seconds and could not transmit. (Error code: E3)</p> <p>② Remote controller receives transmitted data at the same time and compares the received and transmitted data. Abnormal if these data are judged to be different 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 and compares the received and transmitted data. Abnormal if these data are judged to be different 30 continuous times. (Error code: E5)</p> | <p>① 2 remote controllers are set as "main." (In case of 2 remote controllers)</p> <p>② Remote controller is connected with 2 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. 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. b) When "RC NG" is displayed, replace remote controller. 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 | <p>Indoor/outdoor unit communication error (Signal receiving error)</p> <p>① Abnormal if indoor controller board cannot receive any signal normally for 6 minutes after turning the power on.</p> <p>② Abnormal if indoor controller board cannot receive any signal normally for 3 minutes.</p> <p>③ Consider the unit abnormal under the following condition: When 2 or more indoor units are connected to an outdoor unit, indoor controller board cannot receive a signal for 3 minutes from outdoor controller circuit board, a signal which allows outdoor controller circuit board to transmit signals.</p> | <p>① Contact failure, short circuit or, miswiring (converse wiring) of indoor/outdoor unit connecting wire</p> <p>② Defective transmitting receiving circuit of indoor controller board</p> <p>③ Defective transmitting receiving circuit of indoor controller board</p> <p>④ Noise has entered into indoor/outdoor unit connecting wire.</p> | <p>* Check LED display on the outdoor control circuit board. (Connect A-control service tool, PAC-SK52ST.) Refer to outdoor unit service manual.</p> <p>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.</p> <p>②-④ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board or outdoor controller circuit board.</p> <p>* Other indoor controller board may have defect in case of twin triple indoor unit system.</p> |
| E7 | <p>Indoor/outdoor unit communication error (Transmitting error)</p> <p>Abnormal if "1" receiving is detected 30 times continuously though indoor controller board has transmitted "0".</p> | <p>① Defective transmitting receiving circuit of indoor controller board</p> <p>② Noise has entered into power supply.</p> <p>③ Noise has entered into outdoor control wire.</p> | <p>①-③ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board.</p> |
| Fb | <p>Indoor controller board</p> <p>Abnormal if data cannot be read normally from the nonvolatile memory of the indoor controller board.</p> | <p>① Defective indoor controller board</p> | <p>① Replace indoor controller board.</p> |
| E1 or E2 | <p>Remote controller control board</p> <p>① Abnormal if data cannot be read normally from the nonvolatile memory of the remote controller control board. (Error code: E1)</p> <p>② Abnormal if the clock function of remote controller cannot be operated normally. (Error code: E2)</p> | <p>① Defective remote controller</p> | <p>① Replace remote controller.</p> |
| PA | <p>Forced compressor stop (due to water leakage abnormality)</p> <p>① When the intake temperature subtracted with liquid pipe temperature is less than -10°C, drain sensor is detected whether it is soaked in the water or not at the interval of 90 seconds. (Drain pump will start operating when the drain sensor is detected to be soaked in the water.)</p> <p>② The unit has a water leakage abnormality when the following conditions, a and b, are satisfied while the above-mentioned detection is performed.</p> <p>a) The drain sensor is detected to be soaked in the water 10 times in a row.</p> <p>b) The intake temperature subtracted with liquid pipe temperature is detected to be less than -10°C for a total of 30 minutes. (When the drain sensor is detected to be NOT soaked in the water, the detection record of a and b will be cleared.)</p> <p>③ The drain sensor detection is performed in operations other than cooling. (When the unit stops operating, during heating or fan operation, when the unit stops because of some abnormality)</p> <p>*Once the water leakage abnormality is detected, abnormality state will not be released until the main power is reset.</p> | <p>① Drain pump trouble</p> <p>② Drain defective</p> <ul style="list-style-type: none"> · Drain pump clogging · Drain pipe clogging <p>③ Open circuit of drain sensor side heater</p> <p>④ Contact failure of drain sensor connector</p> <p>⑤ Dew condensation on drain sensor</p> <ul style="list-style-type: none"> · Drain water descends along lead wire. · Drain water waving due to filter clogging. <p>⑥ Extension piping connection difference at twin, triple, quadruple system.</p> <p>⑦ Mis-wiring of indoor/ outdoor connecting at twin, triple, quadruple system.</p> <p>⑧ Room temperature thermistor / liquid pipe temperature thermistor detection is defective.</p> | <p>① Check the drain pump.</p> <p>② Please confirm whether water can be drained.</p> <p>③ Confirm the resistance of the drain sensor.</p> <p>④ Check the connector contact failure.</p> <p>⑤ Check the drain sensor leadwire mounted. Check the filter clogging</p> <p>⑥ Check the piping connection.</p> <p>⑦ Check the indoor/ outdoor connecting wires.</p> <p>⑧ Check the room temperature display of remote controller. Check the indoor liquid pipe temperature display of outdoor controller board.</p> |

9-3. 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 power board. ⑤ Defective indoor controller board. <p>(For the separate indoor/outdoor unit power supply system)</p> <ul style="list-style-type: none"> ① Power supply of 220~240V AC is not supplied to indoor unit. ② The connectors of the optional replacement kit are not used. ③ Defective indoor controller board. ④ Defective indoor power 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. • When AC 220~240V is detected. Check the wiring connection. —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 voltage output from CN2S on indoor power board (DC13.1V). Refer to 9-6-1. <ul style="list-style-type: none"> • When no voltage is output. Check the wiring connection. • When output voltage is between DC12.5V and DC13.7V. —Check ⑤ (below). ⑤ Check the wiring connection between indoor controller board and indoor power board. Check the fuse on indoor controller board. If no problems are found, indoor controller board is defective. |
| | <ul style="list-style-type: none"> • When LED1 on indoor controller board is lit. ① Mis-setting of refrigerant address for outdoor unit (There is no unit corresponding to refrigerant address "0".) | <ul style="list-style-type: none"> ① Reconfirm the setting of refrigerant address for outdoor unit Set the refrigerant address to "0". (For grouping control system under which 2 or more outdoor units are connected, set one of the units to "0".) Set refrigerant address using SW1 (3-6) on outdoor controller circuit board. |

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

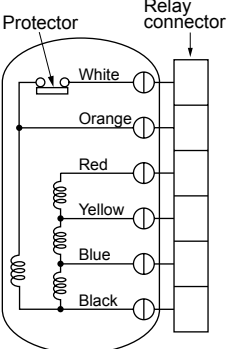
| Phenomena | Cause | Countermeasure |
|---|--|--|
| (2)LED2 on indoor controller board is blinking. | <ul style="list-style-type: none"> When LED1 on indoor controller board is also blinking. Connection failure of indoor/outdoor unit connecting wire | Check indoor/outdoor unit connecting wire for connection failure. |
| | <ul style="list-style-type: none"> 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 | <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. |
| (3)Upward/downward vane performance failure | <ul style="list-style-type: none"> ① The vane is not downward during defrosting and heat preparation and when the thermostat is OFF in HEAT mode. (Working of COOL protection function) ② Vane motor does not rotate. <ul style="list-style-type: none"> Defective vane motor Breaking of wire or connection failure of connector Up/down vane setting is "No vanes". ③ Upward/downward vane does not work. <ul style="list-style-type: none"> The vane is set to fixed position. | <ul style="list-style-type: none"> ① Normal operation (The vane is set to horizontal regardless of remote control.) ② Check ② (left). <ul style="list-style-type: none"> Check the vane motor. (Refer to "How to check the parts".) Check for breaking of wire or connection failure of connector. Check "Up/down vane setting". (Unit function selection by remote controller). ③ Normal operation (Each connector on vane motor side is disconnected.) |
| (4)Receiver for wireless remote controller | <ul style="list-style-type: none"> ① Weak batteries of wireless remote controller. ② Contact failure of connector (CNB) on wireless remote controller board. (Insert failure) ③ Contact failure of connector (CN90) on indoor controller board. (Insert failure) ④ Contact failure of connector between wireless remote controller board and indoor controller board. | <ul style="list-style-type: none"> ① Replace batteries of wireless remote controller. ②~④ Check contact failure of each connector. If no problems are found of connector, replace indoor controller board. When the same trouble occurs even if indoor controller board is replaced, replace wireless remote controller board. |

9-4. WHEN WIRED REMOTE CONTROLLER OR INDOOR UNIT MICROPROCESSOR FAILS

- When the wired remote control or the indoor unit microprocessor has failed, but all other components work properly, if you set the switch (SWE) on the indoor controller board ON, the indoor unit will begin emergency operation.
When emergency operation is activated, the indoor unit operates as follows:
 - Indoor fan is running at high speed.
- When you activate emergency operation of the cooling or heating, you have to set the switch (SWE) on the indoor controller board and activate emergency operation of the outdoor unit.
For details on how to activate emergency operation of the outdoor unit, refer to the outdoor unit wiring diagram.
- Before you activate emergency operation, check the following points:
 - Emergency operation cannot be activated when:
 - the outdoor unit malfunctions.
 - the indoor fan malfunctions.
 - when it has detected the malfunction of drain pump during self-diagnosing. (Error code : P5)
 - Emergency operation becomes continuous only by switching the power source on/off.
ON/OFF on the remote control or temperature control etc. does not function.
 - Avoid operating for a long time when the outdoor unit begins defrosting while emergency operation of the heating is activated because it will start to blow cold air.
 - Emergency cooling should be limited to 10 hours maximum (The indoor unit heat exchanger may freeze).
 - After emergency operation has been deactivated set the switches etc. to their original positions.
 - Movement of the vanes does not work in emergency operation, therefore you have to slowly set them manually to the appropriate position.

9-5. HOW TO CHECK THE PARTS

PCA-RP71HAQ PCA-RP125HAQ

| Parts name | Check points | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-----------|---------------|-------------|---------------|----------|-----------|-------------|--------|-------|---------------|------------|-------|-------|-------------|-------|-------|------------|-------|-------|--|--|--|
| Room temperature thermistor (TH1) | Disconnect the connector then measure the resistance with a tester. (At the ambient temperature 10°C~30°C) | | | | | | | | | | | | | | | | | | | | | | |
| Pipe temperature thermistor (TH2) | | | | | | | | | | | | | | | | | | | | | | | |
| Condenser/Evaporator temperature thermistor (TH5) | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>Normal</th> <th>Abnormal</th> </tr> </thead> <tbody> <tr> <td>4.3kΩ~9.6kΩ</td> <td>Open or short</td> </tr> </tbody> </table> (Refer to <Thermistor Characteristic graph> for a detail.) | Normal | Abnormal | 4.3kΩ~9.6kΩ | Open or short | | | | | | | | | | | | | | | | | | |
| Normal | Abnormal | | | | | | | | | | | | | | | | | | | | | | |
| 4.3kΩ~9.6kΩ | Open or short | | | | | | | | | | | | | | | | | | | | | | |
| Fan motor(MF) | Measure the resistance between the terminals with a tester. (Winding temperature 20°C) | | | | | | | | | | | | | | | | | | | | | | |
|  | <table border="1"> <thead> <tr> <th rowspan="2">Connector</th> <th colspan="2">Normal</th> <th rowspan="2">Abnormal</th> </tr> <tr> <th>PCA-RP71</th> <th>PCA-RP125</th> </tr> </thead> <tbody> <tr> <td>White-Black</td> <td>140.5Ω</td> <td>75.6Ω</td> <td rowspan="5">Open or short</td> </tr> <tr> <td>Black-Blue</td> <td>15.4Ω</td> <td>36.7Ω</td> </tr> <tr> <td>Blue-Yellow</td> <td>28.5Ω</td> <td>23.6Ω</td> </tr> <tr> <td>Yellow-Red</td> <td>80.4Ω</td> <td>47.8Ω</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Protector OPEN : 135±5°C CLOSE : 95±15°C</p> | Connector | Normal | | Abnormal | PCA-RP71 | PCA-RP125 | White-Black | 140.5Ω | 75.6Ω | Open or short | Black-Blue | 15.4Ω | 36.7Ω | Blue-Yellow | 28.5Ω | 23.6Ω | Yellow-Red | 80.4Ω | 47.8Ω | | | |
| Connector | Normal | | Abnormal | | | | | | | | | | | | | | | | | | | | |
| | PCA-RP71 | PCA-RP125 | | | | | | | | | | | | | | | | | | | | | |
| White-Black | 140.5Ω | 75.6Ω | Open or short | | | | | | | | | | | | | | | | | | | | |
| Black-Blue | 15.4Ω | 36.7Ω | | | | | | | | | | | | | | | | | | | | | |
| Blue-Yellow | 28.5Ω | 23.6Ω | | | | | | | | | | | | | | | | | | | | | |
| Yellow-Red | 80.4Ω | 47.8Ω | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | |

<Thermistor Characteristic graph>

Thermistor for lower temperature

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

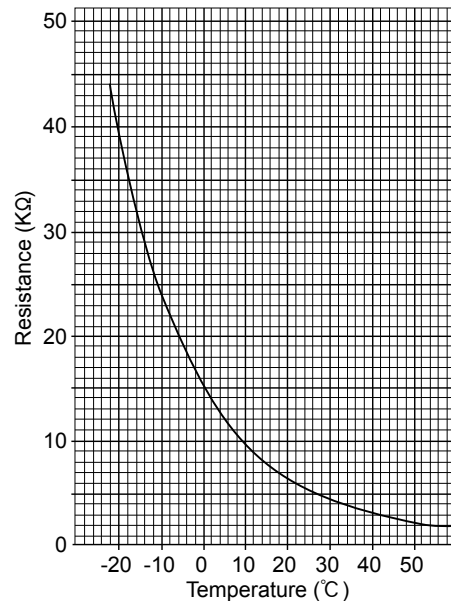
Thermistor $R_0=15k\Omega \pm 3\%$

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 | 5.4kΩ |
| 30°C | 4.3kΩ |
| 40°C | 3.0kΩ |

< Thermistor for lower temperature >

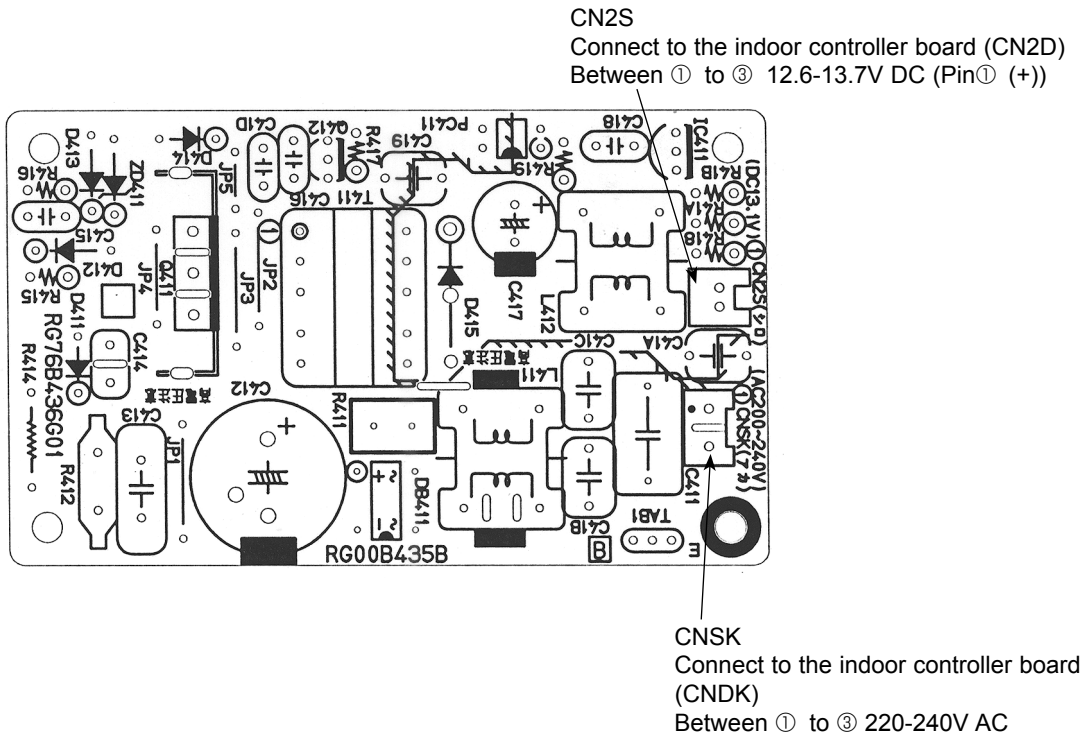


9-6. TEST POINT DIAGRAM

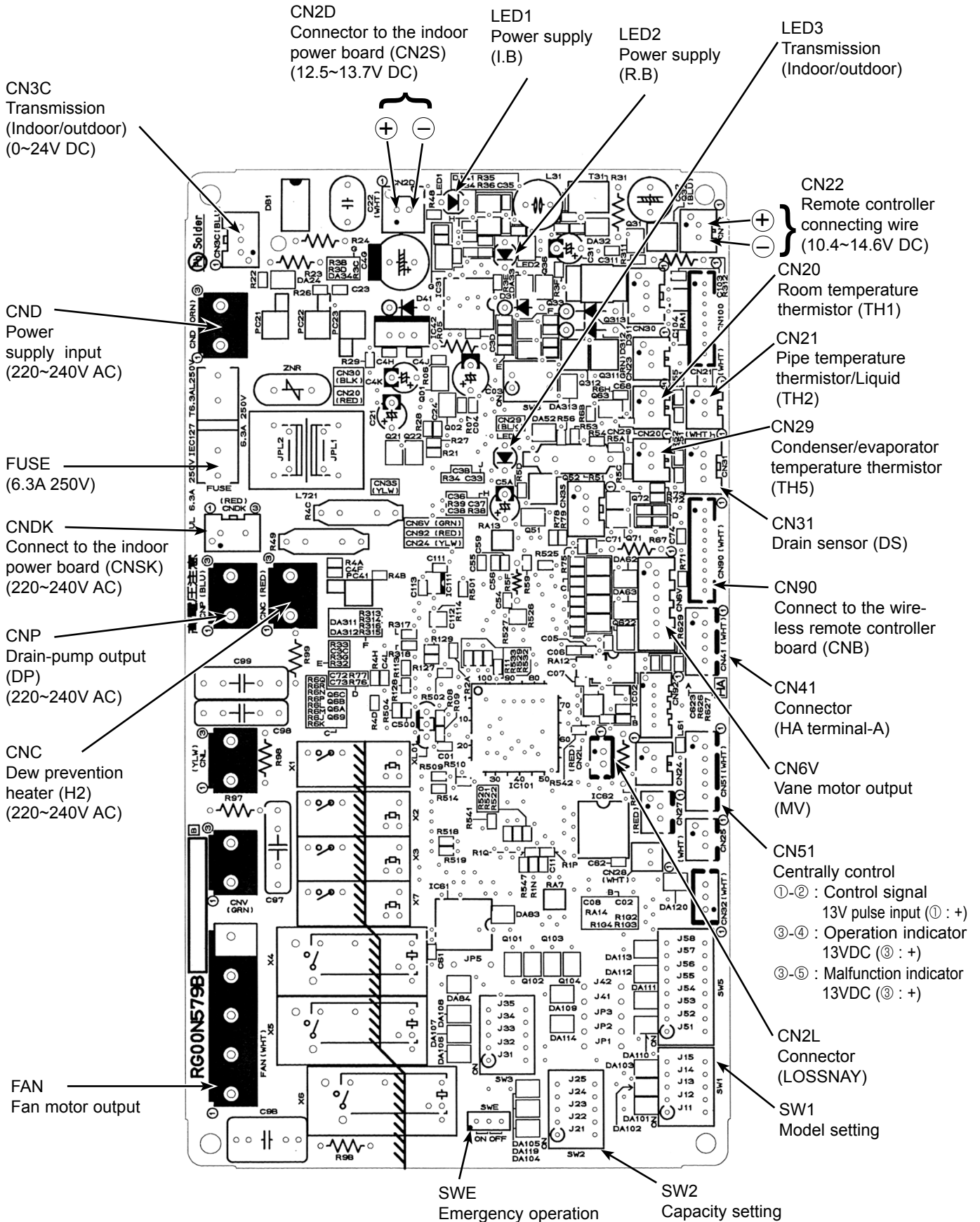
9-6-1. Power board

PCA-RP71HAQ

PCA-RP125HAQ



9-6-2. Indoor controller board
PCA-RP71HAQ PCA-RP125HAQ



9-7. FUNCTIONS OF DIP SWITCH AND JUMPER WIRE

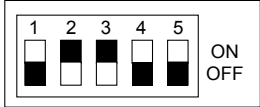
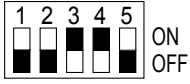
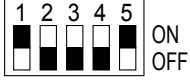
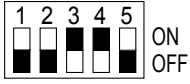
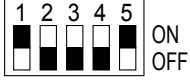
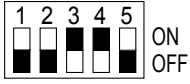
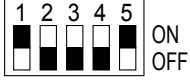
Each function is controlled by the dip switch and the jumper wire on control P.C. board.

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.

The black square (■) indicates a switch position.

(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>PCA-RP71HAQ</td> <td>  </td> </tr> <tr> <td>PCA-RP125HAQ</td> <td>  </td> </tr> </tbody> </table> | MODELS | Service board | PCA-RP71HAQ |  | PCA-RP125HAQ |  | | | | | | | | | | | | |
| MODELS | Service board | | | | | | | | | | | | | | | | | | | |
| PCA-RP71HAQ |  | | | | | | | | | | | | | | | | | | | |
| PCA-RP125HAQ |  | | | | | | | | | | | | | | | | | | | |
| J41 J42 | Pair number setting with wireless remote controller | <table border="1"> <thead> <tr> <th rowspan="2">Wireless remote controller setting</th> <th colspan="2">Control PCB setting</th> </tr> <tr> <th>J41</th> <th>J42</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>○</td> <td>○</td> </tr> <tr> <td>1</td> <td>×</td> <td>○</td> </tr> <tr> <td>2</td> <td>○</td> <td>×</td> </tr> <tr> <td>3 ~ 9</td> <td>×</td> <td>×</td> </tr> </tbody> </table> | Wireless remote controller setting | Control PCB setting | | J41 | J42 | 0 | ○ | ○ | 1 | × | ○ | 2 | ○ | × | 3 ~ 9 | × | × | <p><Initial setting> Wireless remote controller: 0 Control PCB: ○ (for both J41 and J42) Four pair number settings are supported. The pair number settings of the wireless remote controller and indoor control PCB (J41/J42) are given in the table on the left. ('×' in the table indicates the jumper line is disconnected.)</p> |
| Wireless remote controller setting | Control PCB setting | | | | | | | | | | | | | | | | | | | |
| | J41 | J42 | | | | | | | | | | | | | | | | | | |
| 0 | ○ | ○ | | | | | | | | | | | | | | | | | | |
| 1 | × | ○ | | | | | | | | | | | | | | | | | | |
| 2 | ○ | × | | | | | | | | | | | | | | | | | | |
| 3 ~ 9 | × | × | | | | | | | | | | | | | | | | | | |
| 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>For product</td> <td>×</td> </tr> <tr> <td>Service parts</td> <td>○</td> </tr> </tbody> </table> | Indoor controller board type | JP3 | For product | × | Service parts | ○ | | | | | | | | | | | | |
| Indoor controller board type | JP3 | | | | | | | | | | | | | | | | | | | |
| For product | × | | | | | | | | | | | | | | | | | | | |
| Service parts | ○ | | | | | | | | | | | | | | | | | | | |

10-1. ROTATION FUNCTION (AND BACK-UP FUNCTION, 2ND STAGE CUT-IN FUNCTION)

10-1-1. Operation

(1) Rotation function (and Back-up function)

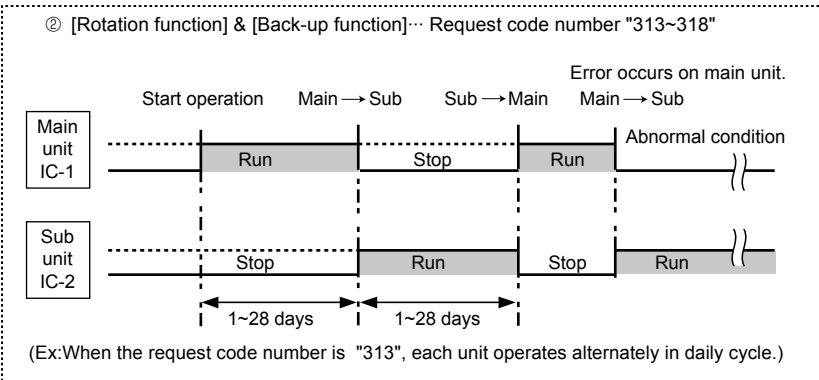
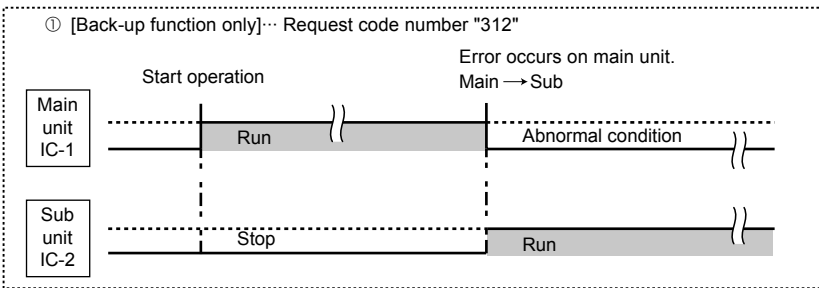
• Outline of functions

- Main and sub unit operate alternately according to the interval of rotation setting.
- ※ Main and sub unit should be set by refrigerant address. (Outdoor Dip switch setting)
- Refrigerant address "00" → Main unit
- Refrigerant address "01" → Sub unit
- When error occurs to one unit, another unit will start operation. (Back-up function)

• System constraint

- This function is available only by the grouping control system (INDOOR UNIT : OUTDOOR UNIT=1:1) of 2 refrigerant groups. (Refer to Fig. 1)
- Main indoor unit should be connected for wired remote controller and the transmission line (TB5) for main and sub unit should also be connected. (Refer to Fig. 1)
- (This function cannot be set by wireless remote controller.)
- Set refrigerant address of each unit. (Dip switch on the outdoor unit...Refrigerant address 00/01)

Operation pattern



Note:

- When the unit is restarted to operate after turning off the power or OFF operation, the unit which was operating will start operation.
- To operate the main unit, refer to the 10-1-2. and set the request code No. which is not the same as the current one, and set again the former request code No.

(2) 2nd stage cut-in function

Outline of functions

- Number of operating units is determined according to the room temperature and set point.
- When room temperature becomes higher than set point, standby unit starts. (2 units operation)
- When room temperature falls below set point -4°C, standby unit stops. (1 unit operation)

System constraint

- This function is available only in rotation operation and back-up function in cooling mode.

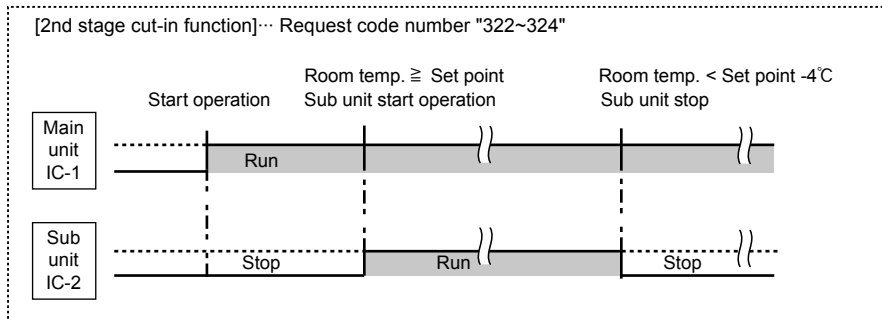
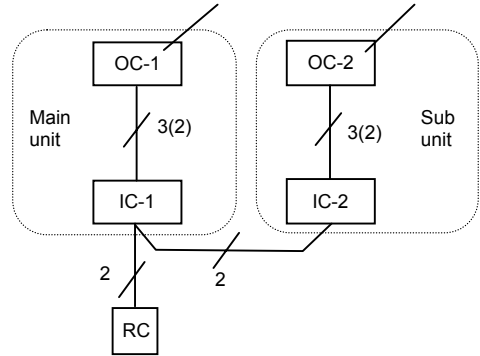


Fig. 1 Refrigerant address "00" Refrigerant address "01"



OC : Outdoor unit
 IC : Indoor unit
 RC : Wired remote controller

10-1-2. How to set rotation function (Back-up function, 2nd stage cut-in function)

You can set these functions by wired remote controller. (Maintenance monitor)

NOTICE

Both main and sub unit should be set in same setting.

Every time replacing indoor controller board for servicing, the function should be set again.

(1) Request Code List

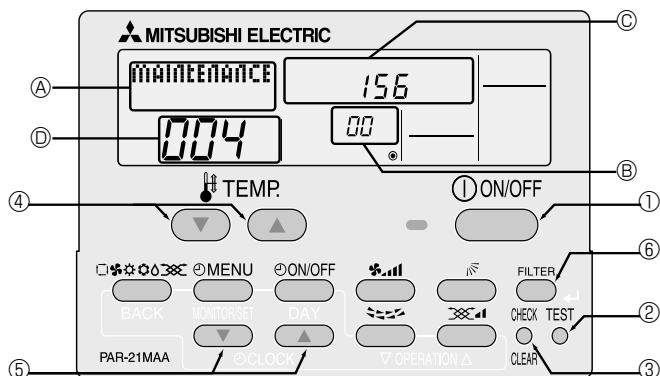
Rotation setting

| Setting No. (Request code) | Setting contents | Initial setting |
|-------------------------------|---|-----------------|
| No.1 (310) | Monitoring the request code of current setting. | |
| No.2 (311) | Rotation and Back-up OFF (Normal group control operation) | ☉ |
| No.3 (312) | Back-up function only | |
| No.4 (313) | Rotation ON (Alternating interval = 1day) and back up function | |
| No.5 (314) | Rotation ON (Alternating interval = 3day) and back up function | |
| No.6 (315) | Rotation ON (Alternating interval = 5day) and back up function | |
| No.7 (316) | Rotation ON (Alternating interval = 7day) and back up function | |
| No.8 (317) | Rotation ON (Alternating interval = 14day) and back up function | |
| No.9 (318) | Rotation ON (Alternating interval = 28day) and back up function | |

2nd stage cut-in setting

| Setting No. (Request code) | Setting contents | Initial setting |
|-------------------------------|--|-----------------|
| No.1 (320) | Monitoring the request code of current setting. | |
| No.2 (321) | Cut-in function OFF | ☉ |
| No.3 (322) | Cut-in Function ON(Set point = Set temp.+ 4°C(7.2°F)) | |
| No.4 (323) | Cut-in Function ON(Set point = Set temp.+ 6°C(10.8°F)) | |
| No.5 (324) | Cut-in Function ON(Set point = Set temp.+ 8°C(14.4°F)) | |

(2) Setting method of each function by wired remote controller



B: Refrigerant address
 C: Data display area
 D: Request code display area

1. Stop operation(①).
2. Press the **TEST** button (②) for 3 seconds so that [Maintenance mode] appears on the screen (A).
 After a while, [00] appears in the refrigerant address number display area.(at B)
3. Press the **CHECK** button (③) for 3 seconds to switch to [Maintenance monitor].
 Note) It is not possible to switch to [Maintenance monitor] during data request in maintenance mode (i.e., while "----" is blinking) since no buttons are operative.

[----] appears on the screen (D) when [Maintenance monitor] is activated.
 (The display (D) now allows you to set a request code No.)

4. Press the [TEMP (▽ and △)] buttons (④) to select the desired refrigerant address.



5. Press the [CLOCK (▽ and △)] buttons (⑤) to set the desired request code No.("311~318", "321~324")
6. Press the **FILTER** button (⑥) to perform function setting.
 If above setting operations are done correctly, "Request code number will appear in data display area.(C)
 [Example: When the "311" of "Request code number" is set, [311] appears on the screen.(C)]

[Reference]

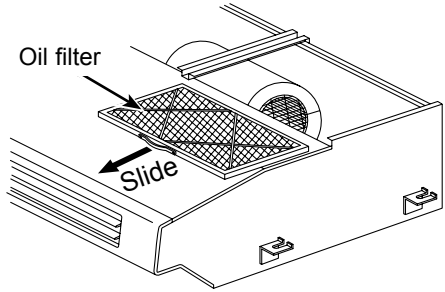
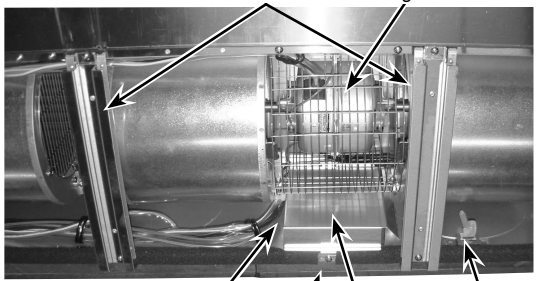
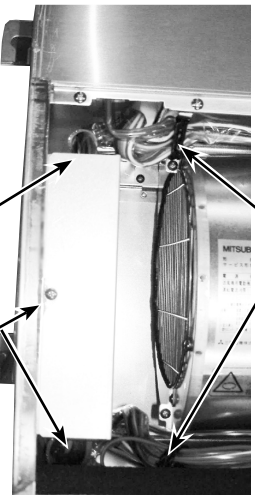
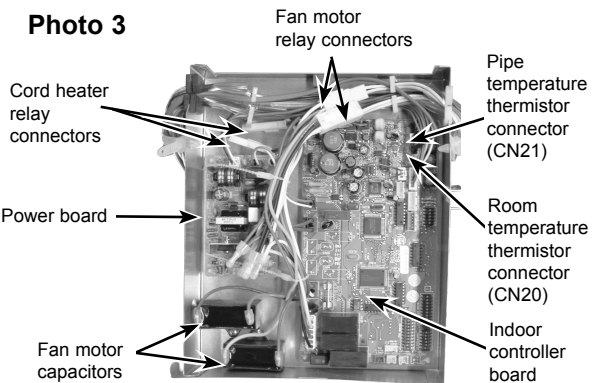
You can check current "request code number" setting by setting the "request code number"("310" or "320") and pressing the **FILTER** button.(⑥)

[Example: When the current setting is "Setting No.2(Request code 311)", [311] appears on the screen.(C)]

7. To return to normal mode, press the **ON/OFF** button (①).

PCA-RP71HAQ

PCA-RP125HAQ

| OPERATING PROCEDURE | PHOTOS & ILLUSTRATIONS |
|--|--|
| <p>1. Removing the oil filter</p> <p>(1) Slide the oil filter towards you to remove. (See Figure 1)</p> | <p>Figure 1</p>  |
| <p>2. Removing the terminal block box cover</p> <p>(1) Remove the oil filter. (See Figure 1)</p> <p>(2) Remove a screw for terminal block box cover, and remove the terminal block box cover. (See Photo 1)</p> | <p>Photo 1</p>  |
| <p>3. Removing the control box</p> <p>(1) Remove the oil filter. (See Figure 1)</p> <p>(2) Loosen the screw for control box cover to remove the control box cover. (See Photo 2)</p> <p>(3) Remove the lead wire from the 2 clips.</p> <p>(4) Remove the 2 white cord heater relay connectors (1P × 2) and 2 fan motor relay connectors (6P × 2) in the control box.</p> <p>(5) Remove the 2 screws for control box to slide the control box downward.</p> <p>Electrical parts in the control box</p> <ul style="list-style-type: none"> • Fan motor capacitor • Indoor controller board • Power board | <p>Photo 2</p>  <p>Photo 3</p>  |

OPERATING PROCEDURE

4. Removing the fan motor

- (1) Remove the oil filter. (See Figure 1)
- (2) Remove the control box cover. (See Photo 2)
- (3) Remove the room temperature thermistor connector (CN20) on the indoor controller board. (See Photo 3)
- (4) Remove a filter rail that is the nearest to the control box. (See Photo 4)
- (5) Remove the fan guard. (See Photo 5)
- (6) Remove the room temperature thermistor together with the holder at the right side of the casing.

5. Removing the fan motor and the sirocco fan

- (1) Remove the oil filter. (See Figure 1)
- (2) Remove the control box cover. (See Photo 2.)
- (3) Remove the fan motor relay connectors (6P) in the control box. (See Photo 3)
- (4) Remove the 3 filter rails. (See Photo 1, 4)
- (5) Remove the fan guard. (See Photo 5)
- (6) Remove the lower casing. (See Photo 6)
- (7) Remove the green earth wire from the motor support. (See Photo 7)
- (8) Remove the 2 screws (M5 × 12) for motor support, and remove the left and right motor supports.
- (9) Remove the fan motor together with the sirocco fan.
- (10) Remove the 2 set screws (M6) to separate the fan motor from the sirocco fan.

PHOTOS & ILLUSTRATIONS

Photo 4

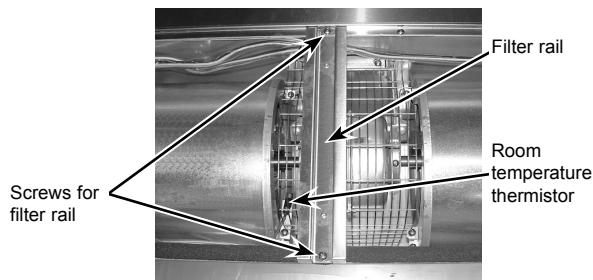


Photo 5

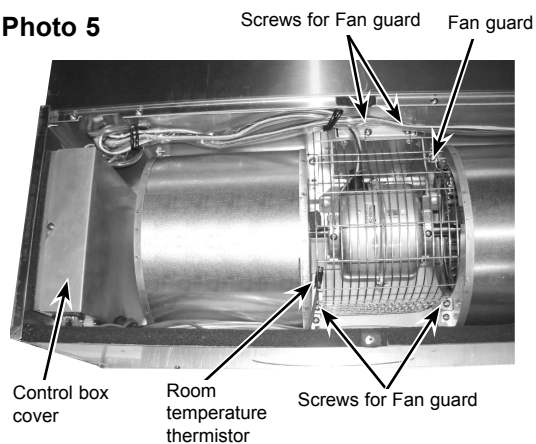


Photo 6

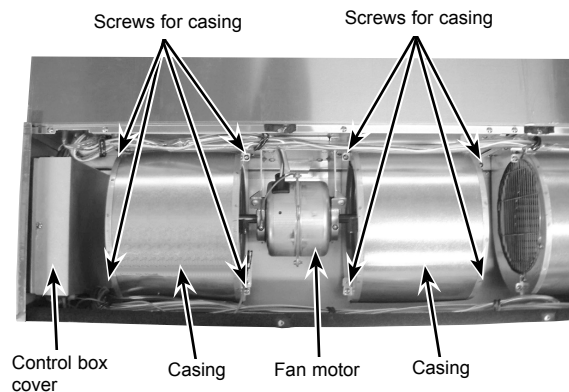
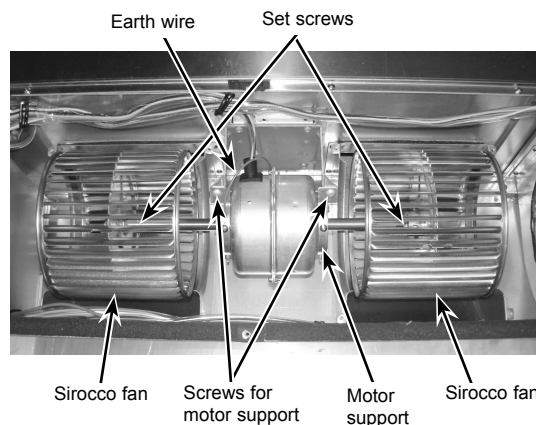


Photo 7



OPERATING PROCEDURE

6. Removing the pipe temperature thermistor

- (1) Remove the oil filter. (See Figure 1)
- (2) Remove the fan guard. (See Photo 1)
- (3) Remove the terminal block box cover.
- (4) Remove the white relay connector (2P) in the terminal block box. (See Photo 8)
- (5) Remove the service panel. (See Photo 9)
- (6) Remove the pipe temperature thermistor from the holder. (See Photo 10)

Caution for installation

When installing the pipe temperature thermistor, slack off its lead wire as shown in the photo. Otherwise, water trickled down the lead wire may splash on the connector and this could cause a short circuit of the connector.

PHOTOS

Photo 8

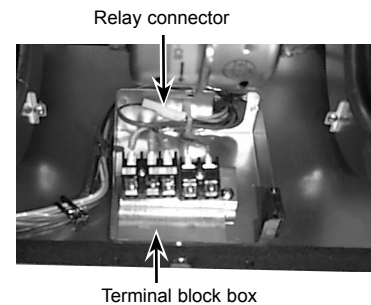


Photo 9

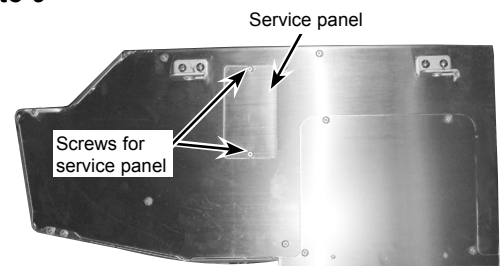
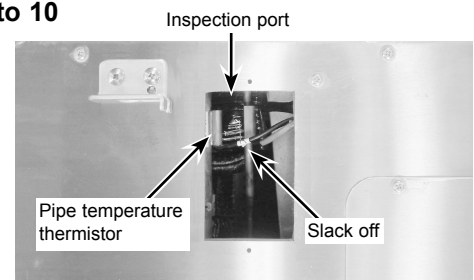


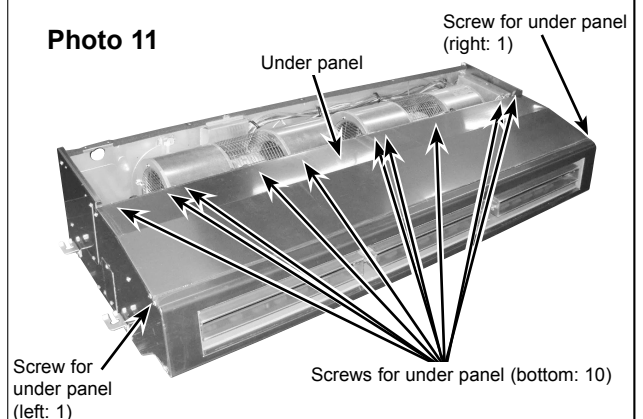
Photo 10



7. Removing the under panel

- (1) Remove the oil filter. (See Figure 1)
- (2) Remove the 3 filter rails. (See Photo 1, 4)
- (3) Remove the 12 screws (left: 1, right: 1, bottom: 10) for under panel, and remove the under panel. (See Photo 11)

Photo 11

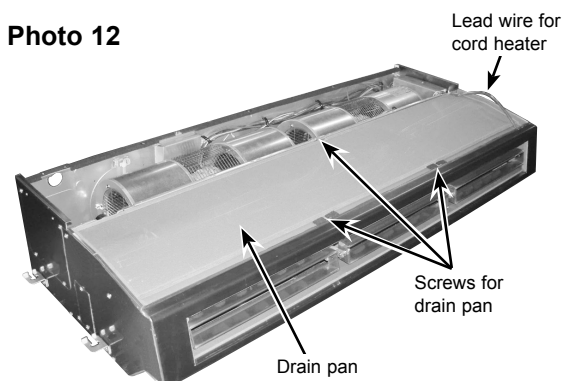


8. Removing the drain pan

- (1) Remove the oil filter. (See Figure 1)
- (2) Remove the 3 filter rails. (See Photo 1, 4)
- (3) Remove the under panel. (See Photo 11)
- (4) Pull the blue lead wire for cord heater towards you to slack off. (See Photo 12)
- (5) Remove the 3 screws at the center of the drain pan, and remove the drain pan.

(Note) Remove the drain pan carefully since the drain could remain in it.

Photo 12



OPERATING PROCEDURE

9. Removing the guide vane

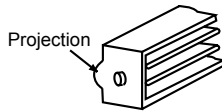
- (1) Remove the oil filter. (See Figure 1)
- (2) Remove the 3 filter rails. (See Photo 1, 4)
- (3) Remove the under panel. (See Photo 11)
- (4) Remove the drain pan. (See Photo 12)
- (5) Remove the 3 screws (4 × 10) for guide vane, and remove the guide vane. (See Photo 13)

10. Removing the vane

- (1) Slide the vane to the center of the unit, and pull it towards you to remove. (See Photo 14)

Caution for installation

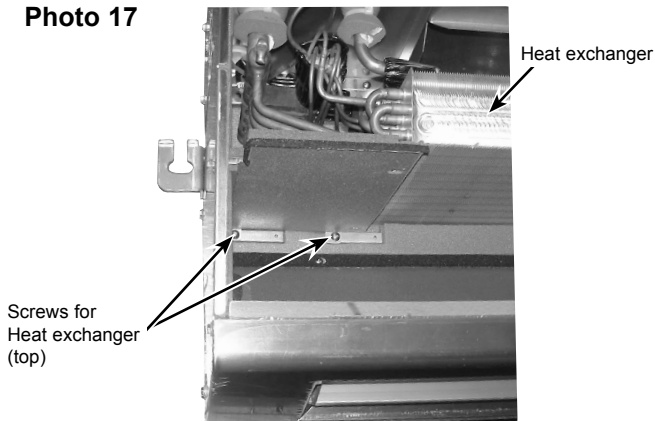
When installing the vane, check that its projection is on the left-rear side.



11. Removing the heat exchanger

- (1) Remove the oil filter. (See Figure 1)
- (2) Remove the 3 filter rails. (See Photo 1, 4)
- (3) Remove the under panel. (See Photo 11)
- (4) Remove the drain pan. (See Photo 12)
- (5) Remove the 2 screws (4 × 10) for pipe cover, and remove the pipe cover. (See Photo 15)
- (6) Remove the 3 screws (4 × 10, left: 2, right: 1) for heat exchanger. (See Photo 15, 16)
- (7) Remove the 2 screws (4 × 10) for heat exchanger at the top of the unit, and remove the heat exchanger. (See Photo 17)

Photo 17



PHOTOS

Photo 13

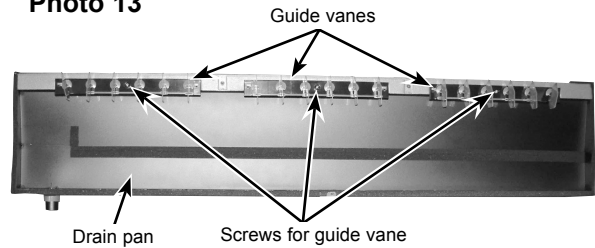


Photo 14

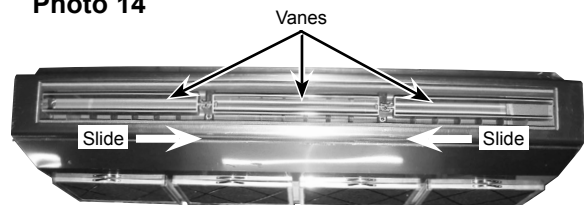


Photo 15

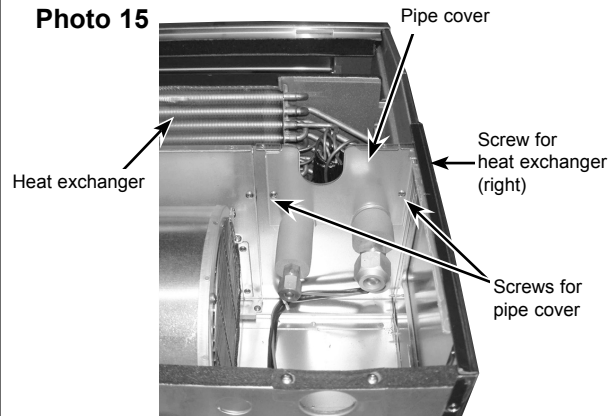
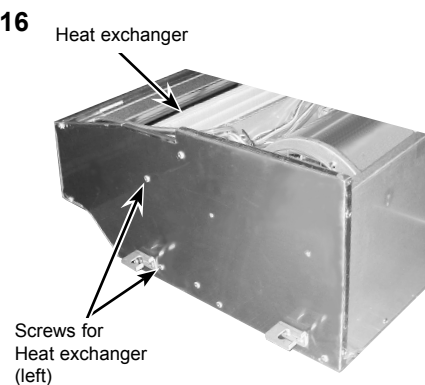


Photo 16



 **MITSUBISHI ELECTRIC CORPORATION**

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