

Service Manual

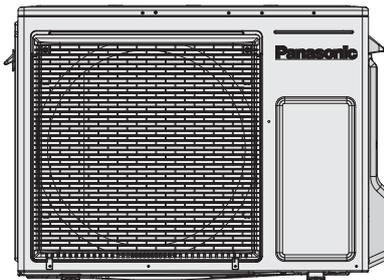
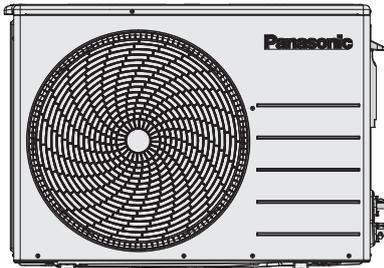
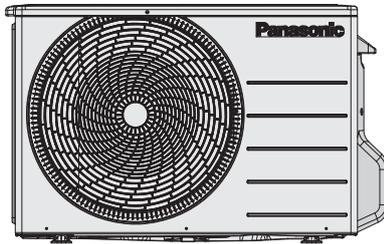
Air Conditioner



Indoor Unit
CS-PC12TKF
CS-PC18TKF
CS-PC24TKF

Outdoor Unit
CU-PC12TKF
CU-PC18TKF
CU-PC24TKF

Destination
Oman
Kuwait
Middle East



WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1. Safety Precautions

- Read the following "SAFETY PRECAUTIONS" carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below.
Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

| | |
|--|---|
|  WARNING | This indication shows the possibility of causing death or serious injury. |
|  CAUTION | This indication shows the possibility of causing injury or damage to properties only. |

- The items to be followed are classified by the symbols:

| | |
|---|--|
|  | Symbol with white background denotes item that is PROHIBITED. |
|   | Symbol with dark background denotes item that must be carried out. |

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.
- This appliance is not intended for accessibility by the general public.

|  WARNING | |
|---|---|
| 1. Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit on veranda of a high rise building, child may climb up to outdoor unit and cross over the handrail causing an accident. |  |
| 2. Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock. |  |
| 3. Do not use modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire. |  |
| 4. Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen. |  |
| 5. Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.  |  |
| 6. Do not sit or step on the unit, you may fall down accidentally.  |  |
| 7. Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing. |  |
| 8. When installing or relocating air conditioner, do not let any substance other than the specified refrigerant, eg. air etc. mix into refrigeration cycle (piping). Mixing of air etc will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc. |  |
| 9. Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc. |  |
| 10. Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire. |  |
| 11. Install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire. |  |
| 12. Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock. |  |
| 13. Install at a strong and firm location which is able to withstand the set's weight. If the strength is not enough or installation is not properly done, the set will drop and cause injury. |  |
| 14. For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in electrical work, it will cause electrical shock or fire. |  |
| 15. Do not use joint cable for indoor/outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to instruction CONNECT THE CABLE TO THE INDOOR UNIT and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will have impact on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection. |  |
| 16. Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause fire or electrical shock. |  |
| 17. This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD), with sensitivity of 30mA at 0.1 sec or less. Otherwise, it may cause electrical shock and fire in case of equipment breakdown or insulation breakdown. |  |

 **WARNING**

| | | |
|-----|--|---|
| 18. | During installation, install the refrigerant piping properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves at opened condition will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc. |  |
| 19. | During pump down operation, stop the compressor before remove the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc. |  |
| 20. | Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage. |  |
| 21. | After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire. |  |
| 22. | Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant contacts with fire. |  |
| 23. | This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case of equipment breakdown or insulation breakdown. |  |

 **CAUTION**

| | | |
|----|---|---|
| 1. | Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire. |  |
| 2. | Do not release refrigerant during piping work for installation, re-installation and during repairing a refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite. |  |
| 3. | Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc. |  |
| 4. | Do not touch the sharp aluminium fin, sharp parts may cause injury.  |  |
| 5. | Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture. |  |
| 6. | Select an installation location which is easy for maintenance. |  |
| 7. | <p>Power supply connection to the room air conditioner. Use power supply cord 3 × 1.5 mm² (1.5HP) or 3 × 2.5 mm² (2.0 ~ 2.5HP) type designation 60245 IEC 57 or heavier cord. Connect the power supply cord of the air conditioner to the mains using one of the following method. Power supply point should be in easily accessible place for power disconnection in case of emergency. In some countries, permanent connection of this air conditioner to the power supply is prohibited.</p> <p>1) Power supply connection to the receptacle using power plug. Use an approved 15/16A (1.5HP) or 16A (2.0HP) or 20A (2.5HP) power plug with earth pin for the connection to the socket.</p> <p>2) Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A (1.5 ~ 2.0HP) or 20A (2.5HP) circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap.</p> |  |
| 9. | Installation work. It may need two people to carry out the installation work. |  |

2. Specification

| Model | | Indoor | CS-PC12TKF | | CS-PC18TKF | | | |
|---------------------------------------|----------------------|--|-----------------------------------|-------------|--------------------------|-----------------------------------|------|--|
| | | Outdoor | CU-PC12TKF | | CU-PC18TKF | | | |
| Performance Test Condition | | ISO 5151 (T1) | | | ISO 5151 (T1) | | | |
| Power Supply | | Phase, Hz | Single, 50 | | | Single, 50 | | |
| | | V | 220 | 240 | 220 | 240 | | |
| Cooling | Capacity | kW | 3.52 | 3.54 | 5.28 | 5.28 | | |
| | | Btu/h | 12000 | 12100 | 18000 | 18000 | | |
| | | kJ/h | 12670 | 12740 | 19010 | 19100 | | |
| | Running Current | A | 5.7 | 5.5 | 9.8 | 10.0 | | |
| | Input Power | W | 1.21k | 1.24k | 1.99k | 2.05k | | |
| | EER | W/W | 2.91 | 2.85 | 2.65 | 2.58 | | |
| | | Btu/hW | 9.92 | 9.76 | 9.05 | 8.78 | | |
| | Power Factor | % | 96 | 94 | 92 | 85 | | |
| | Indoor Noise (H / L) | dB-A | 40 / 30 | 40 / 30 | 45 / 41 | 45 / 41 | | |
| | | Power Level dB | 53 / - | 53 / - | 58 / - | 58 / - | | |
| Outdoor Noise (H / L) | dB-A | 51 / - | 52 / - | 55 / - | 56 / - | | | |
| | Power Level dB | 66 / - | 67 / - | 70 / - | 71 / - | | | |
| Max Current (A) / Max Input Power (W) | | 8.1 / 1.75k | | | 13.2 / 2.89k | | | |
| Starting Current (A) | | 30.0 | | | 44.0 | | | |
| Compressor | Type | Hermetic Motor / Rotary | | | Hermetic Motor / Rotary | | | |
| | Motor Type | Induction (2 poles) | | | Induction (2 poles) | | | |
| | Output Power | W | 1.0k | | | 1.5k | | |
| Indoor Fan | Type | Cross-Flow Fan | | | Cross-Flow Fan | | | |
| | Material | ASG20K1 | | | ASG33 | | | |
| | Motor Type | DC Motor (8 poles) | | | DC Motor (8 poles) | | | |
| | Input Power | W | 51.0 | 58.0 | 94.8 | 94.8 | | |
| | Output Power | W | 24 | | | 40 | | |
| | Speed | QLo | rpm | 740 | | | 880 | |
| | | Lo | rpm | 810 | | | 970 | |
| Me | | rpm | 980 | | | 1040 | | |
| Hi | | rpm | 1150 | | | 1120 | | |
| SHi | rpm | 1180 | | | 1200 | | | |
| Outdoor Fan | Type | Propeller Fan | | | Propeller Fan | | | |
| | Material | PP Resin | | | PP Resin | | | |
| | Motor Type | AC / Induction (6 poles) | | | AC / Induction (4 poles) | | | |
| | Input Power | W | 56.10 | 62.81 | 86.9 | 97.9 | | |
| | Output Power | W | 33 | | | 46 | | |
| | Speed | Hi | rpm | 900 | 920 | 1010 | 1070 | |
| Moisture Removal | | L/h (Pt/h) | 2.1 (4.2) | | 2.9 (6.1) | | | |
| Indoor Airflow | QLo | m ³ /min (ft ³ /min) | 6.2 (220) | | 14.5 (513) | | | |
| | Lo | m ³ /min (ft ³ /min) | 6.8 (241) | | 16.0 (566) | | | |
| | Me | m ³ /min (ft ³ /min) | 8.3 (292) | | 17.2 (606) | | | |
| | Hi | m ³ /min (ft ³ /min) | 9.7 (342) | | 18.5 (653) | | | |
| | SHi | m ³ /min (ft ³ /min) | 10.0 (351) | | 19.8 (700) | | | |
| Outdoor Airflow | Hi | m ³ /min (ft ³ /min) | 28.6 (1010) | 29.2 (1030) | 44.3 (1560) | 46.0 (1620) | | |
| Refrigeration Cycle | Control Device | Capillary Tube | | | Capillary Tube | | | |
| | Refrigerant Oil | cm ³ | ATMOS NM65M or SUNISO 4GDID (430) | | | ATMOS NM65M or Suniso 4GDID (670) | | |
| | Refrigerant Type | g (oz) | R22, 870 (30.7) | | | R22, 980 (34.6) | | |

| Model | | Indoor | CS-PC12TKF | CS-PC18TKF | | |
|-------------------------|------------------------------|-------------|---------------------------------|----------------------------------|-----------|-----------|
| | | Outdoor | CU-PC12TKF | CU-PC18TKF | | |
| Dimension | Height (I/D / O/D) | mm (inch) | 290 (11-7/16) / 542 (21-11/32) | 302 (11-29/32) / 619 (24-3/8) | | |
| | Width (I/D / O/D) | mm (inch) | 799 (31-15/32) / 780 (30-23/32) | 1102 (43-13/32) / 824 (32-15/32) | | |
| | Depth (I/D / O/D) | mm (inch) | 197 (7-3/4) / 289 (11-13/32) | 244 (9-5/8) / 299 (11-25/32) | | |
| Weight | Net (I/D / O/D) | kg (lb) | 8 (18) / 35 (77) | 12 (26) / 36 (79) | | |
| Piping | Pipe Diameter (Liquid / Gas) | mm (inch) | 6.35 (1/4) / 12.70 (1/2) | 6.35 (1/4) / 12.70 (1/2) | | |
| | Standard length | m (ft) | 5.0 (16.4) | 5.0 (16.4) | | |
| | Length range (min – max) | m (ft) | 3 (9.8) ~ 15 (49.2) | 3 (9.8) ~ 30 (98.4) | | |
| | I/D & O/D Height different | m (ft) | 5 (16.4) | 20 (65.6) | | |
| | Additional Gas Amount | g/m (oz/ft) | 10 (0.1) | 20 (0.2) | | |
| | Length for Additional Gas | m (ft) | 7.5 (24.6) | 7.5 (24.6) | | |
| Drain Hose | Inner Diameter | mm | 16.0 | 16.0 | | |
| | Length | mm | 650 | 650 | | |
| Indoor Heat Exchanger | Fin Material | | Aluminium (Pre coated) | Aluminium (Pre coated) | | |
| | Fin Type | | Slit Fin | Slit Fin | | |
| | Row × Stage × FPI | | 2 × 15 × 17 | 2 × 17 × 17 | | |
| | Size (W × H × L) | mm | 610 × 315 × 25.4 | 836 × 357 × 25.4 | | |
| Outdoor Heat Exchanger | Fin Material | | Aluminium (Blue coated) | Aluminium (Blue coated) | | |
| | Fin Type | | Corrugate Fin | Slit Fin | | |
| | Row × Stage × FPI | | 1 × 20 × 17 | 1 × 28 × 17 | | |
| | Size (W × H × L) | mm | 22 × 508.0 × 708.4 | 12.7 × 588.0 × 865.3 | | |
| Air Filter | Material | | Polypropelene | Polypropelene | | |
| | Type | | One-touch | One-touch | | |
| Power Supply | | | Indoor | Indoor | | |
| Power Supply Cord | | A | 15 | 16 | | |
| Thermostat | | | - | - | | |
| Protection Device | | | - | - | | |
| | | | DRY BULB | WET BULB | DRY BULB | WET BULB |
| Indoor Operation Range | Maximum °C (°F) | | 32 (89.6) | 23 (73.4) | 32 (89.6) | 23 (73.4) |
| | Minimum °C (°F) | | 16 (60.8) | 11 (51.8) | 16 (60.8) | 11 (51.8) |
| Outdoor Operation Range | Maximum °C (°F) | | 55 (131) | 31 (87.8) | 55 (131) | 31 (87.8) |
| | Minimum °C (°F) | | 16 (60.8) | 11 (51.8) | 16 (60.8) | 11 (51.8) |

- Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb).
- Specifications are subjected to change without prior notice for further improvement.

| | | | | | |
|---------------------------------------|----------------------|--|-----------------------------------|-------------|-----|
| Model | | Indoor | CS-PC24TKF | | |
| | | Outdoor | CU-PC24TKF | | |
| Performance Test Condition | | | ISO 5151 (T1) | | |
| Power Supply | | Phase, Hz | Single, 50 | | |
| | | V | 220 | 240 | |
| Cooling | Capacity | kW | 7.03 | 7.03 | |
| | | Btu/h | 24000 | 24000 | |
| | | kJ/h | 25310 | 25310 | |
| | Running Current | A | 12.4 | 12.3 | |
| | Input Power | W | 2.57k | 2.70k | |
| | EER | W/W | 2.74 | 2.60 | |
| | | Btu/hW | 9.34 | 8.89 | |
| | Power Factor | % | 94 | 91 | |
| | Indoor Noise (H / L) | dB-A | 48 / 42 | 49 / 42 | |
| | | Power Level dB | 61 / - | 62 / - | |
| Outdoor Noise (H / L) | dB-A | 57 / - | 58 / - | | |
| | Power Level dB | 72 / - | 73 / - | | |
| Max Current (A) / Max Input Power (W) | | 16.8 / 3.64k | | | |
| Starting Current (A) | | 59.0 | | | |
| Compressor | Type | Hermetic Motor / Rotary | | | |
| | Motor Type | Induction (2 poles) | | | |
| | Output Power | W | 2.0k | | |
| Indoor Fan | Type | Cross-Flow Fan | | | |
| | Material | ASG33 | | | |
| | Motor Type | DC Motor (8 poles) | | | |
| | Input Power | W | 94.8 | 94.8 | |
| | Output Power | W | 40 | | |
| | Speed | QLo | rpm | 910 | |
| | | Lo | rpm | 1000 | |
| | | Me | rpm | 1100 | |
| | | Hi | rpm | 1220 | |
| | | SHi | rpm | 1300 | |
| Outdoor Fan | Type | Propeller Fan | | | |
| | Material | PP Resin | | | |
| | Motor Type | AC / Induction (6 poles) | | | |
| | Input Power | W | 157.3 | 173.8 | |
| | Output Power | W | 88 | | |
| | Speed | Lo | rpm | 440 | 500 |
| | | Hi | rpm | 860 | 890 |
| Moisture Removal | L/h (Pt/h) | 4.0 (8.5) | | | |
| Indoor Airflow | QLo | m ³ /min (ft ³ /min) | 15.7 (556) | | |
| | Lo | m ³ /min (ft ³ /min) | 17.3 (611) | | |
| | Me | m ³ /min (ft ³ /min) | 19.0 (672) | | |
| | Hi | m ³ /min (ft ³ /min) | 21.1 (745) | | |
| | SHi | m ³ /min (ft ³ /min) | 22.5 (794) | | |
| Outdoor Airflow | Lo | m ³ /min (ft ³ /min) | 26.6 (941) | 30.3 (1073) | |
| | Hi | m ³ /min (ft ³ /min) | 52.0 (1840) | 54.0 (1910) | |
| Refrigeration Cycle | Control Device | Capillary Tube | | | |
| | Refrigerant Oil | cm ³ | ATMOS NM56M or Suniso 4GDID (700) | | |
| | Refrigerant Type | g (oz) | R22, 1.28k (45.2) | | |

| | | | | |
|-------------------------|------------------------------|-------------|----------------------------------|-----------|
| Model | | Indoor | CS-PC24TKF | |
| | | Outdoor | CU-PC24TKF | |
| Dimension | Height (I/D / O/D) | mm (inch) | 302 (11-29/32) / 695 (27-3/8) | |
| | Width (I/D / O/D) | mm (inch) | 1102 (43-13/32) / 875 (34-15/32) | |
| | Depth (I/D / O/D) | mm (inch) | 244 (9-5/8) / 320 (12-5/8) | |
| Weight | Net (I/D / O/D) | kg (lb) | 12 (26) / 54 (119) | |
| Piping | Pipe Diameter (Liquid / Gas) | mm (inch) | 6.35 (1/4) / 15.88 (5/8) | |
| | Standard length | m (ft) | 5.0 (16.4) | |
| | Length range (min – max) | m (ft) | 3 (9.8) ~ 30 (98.4) | |
| | I/D & O/D Height different | m (ft) | 20 (65.6) | |
| | Additional Gas Amount | g/m (oz/ft) | 30 (0.3) | |
| | Length for Additional Gas | m (ft) | 7.5 (24.6) | |
| Drain Hose | Inner Diameter | mm | 16.0 | |
| | Length | mm | 650 | |
| Indoor Heat Exchanger | Fin Material | | Aluminium (Pre coated) | |
| | Fin Type | | Slit Fin | |
| | Row × Stage × FPI | | 2 × 17 × 17 | |
| | Size (W × H × L) | mm | 836 × 357 × 25.4 | |
| Outdoor Heat Exchanger | Fin Material | | Aluminium (Blue coated) | |
| | Fin Type | | Slit Fin | |
| | Row × Stage × FPI | | 2 × 31 × 17 | |
| | Size (W × H × L) | mm | 25.4 × 651 × 866.6:846.6 | |
| Air Filter | Material | | Polypropelene | |
| | Type | | One-touch | |
| Power Supply | | | Indoor | |
| Power Supply Cord | | A | 20 | |
| Thermostat | | | - | |
| Protection Device | | | Mechanical | |
| | | | DRY BULB | WET BULB |
| Indoor Operation Range | Maximum °C (°F) | | 32 (89.6) | 23 (73.4) |
| | Minimum °C (°F) | | 16 (60.8) | 11 (51.8) |
| Outdoor Operation Range | Maximum °C (°F) | | 55 (131) | 31 (87.8) |
| | Minimum °C (°F) | | 16 (60.8) | 11 (51.8) |

- Cooling capacities are based on indoor temperature of 27°C Dry Bulb (80.6°F Dry Bulb), 19.0°C Wet Bulb (66.2°F Wet Bulb) and outdoor air temperature of 35°C Dry Bulb (95°F Dry Bulb), 24°C Wet Bulb (75.2°F Wet Bulb).
- Specifications are subjected to change without prior notice for further improvement.

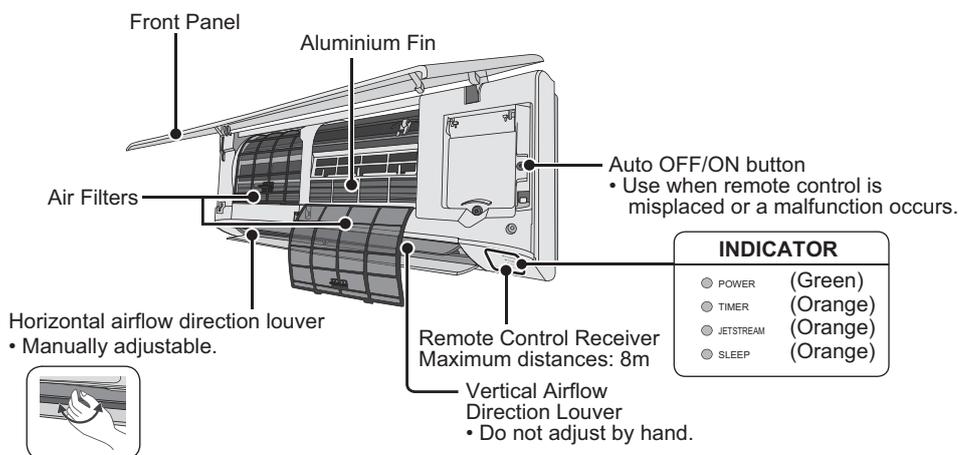
3. Features

- Long Installation Piping
 - CS/CU-PC12TK long piping up to 15 meters.
 - CS/CU-PC18TK, PC24TK long piping up to 30 meters.
- Easy to use remote control
- Quality Improvement
 - Random auto restart after power failure for safety restart operation
 - Gas leakage protection
 - Prevent compressor reverse cycle
 - Overload protector to protect compressor
 - Noise prevention during soft dry operation
 - Blue coated condenser for high resistance to corrosion
- Operation Improvement
 - Quiet mode to reduce the indoor unit operating sound
 - Jetstream mode to reach the desired room temperature quickly
 - 24-hour timer setting

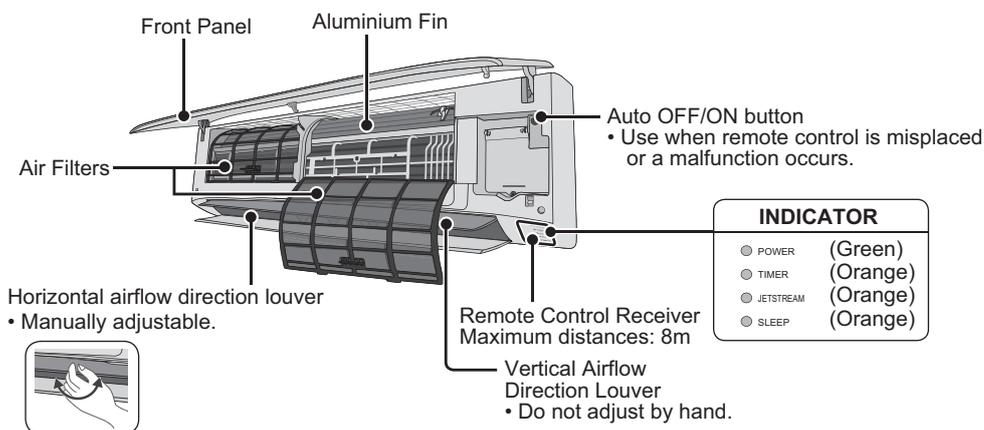
4. Location of Controls and Components

4.1 Indoor Unit

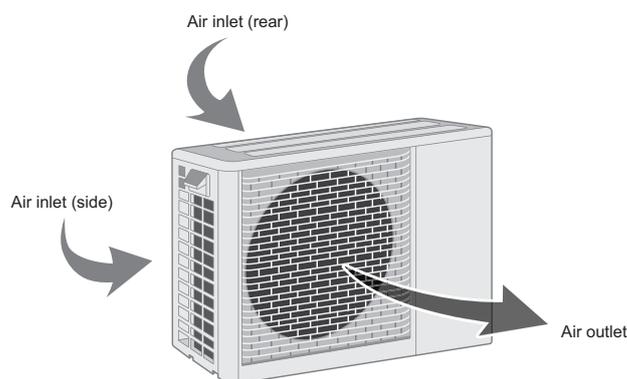
4.1.1 CS-PC12TKF



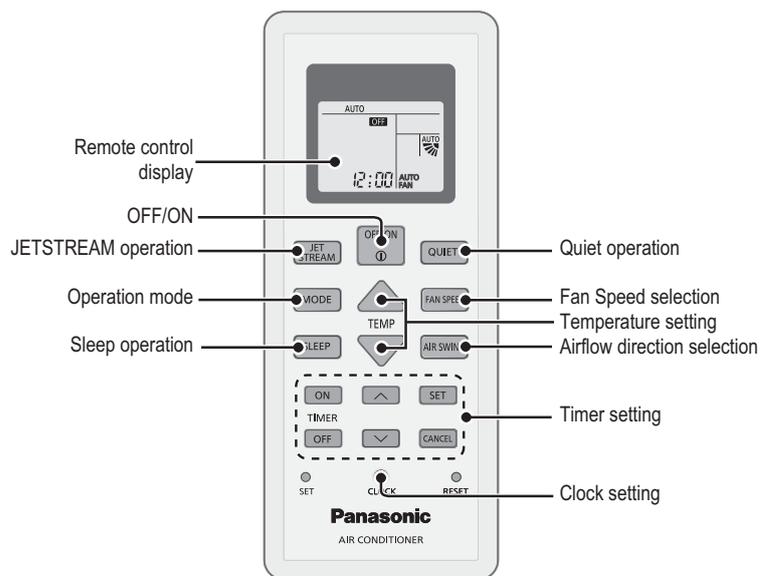
4.1.2 CS-PC18TKF CS-PC24TKF



4.2 Outdoor Unit



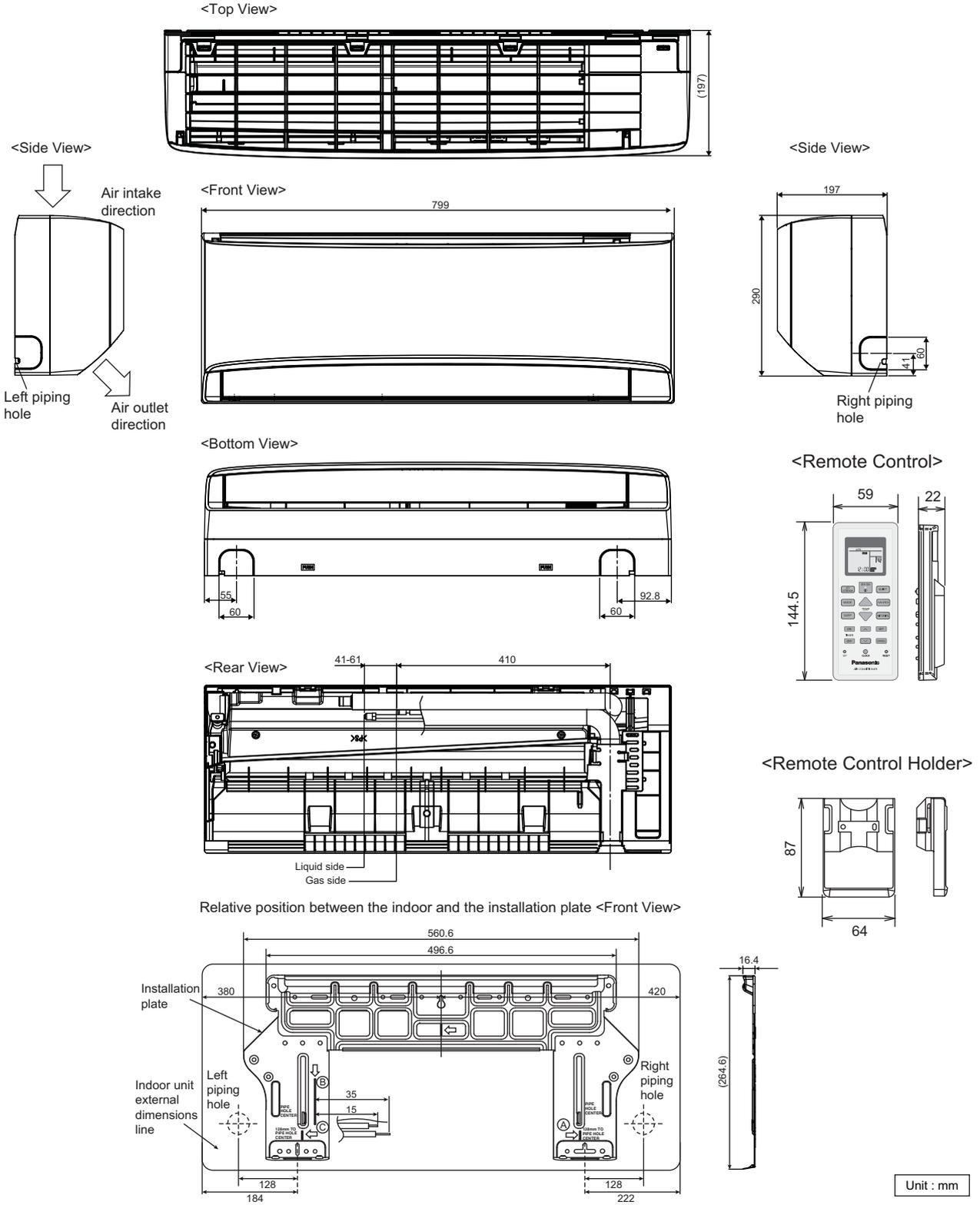
4.3 Remote Control



5. Dimensions

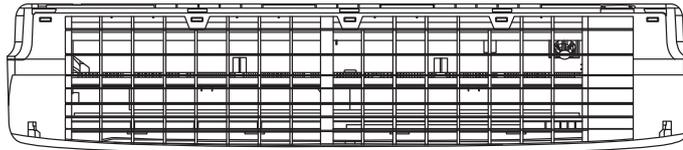
5.1 Indoor Unit

5.1.1 CS-PC12TKF

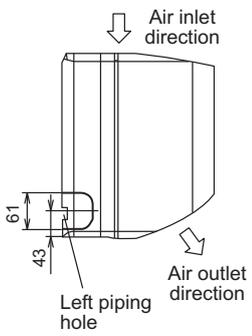


5.1.2 CS-PC18TKF CS-PC24TKF

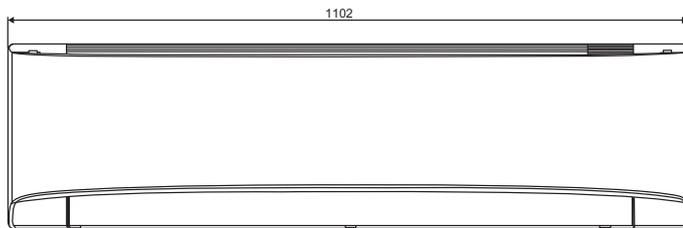
<Top View>



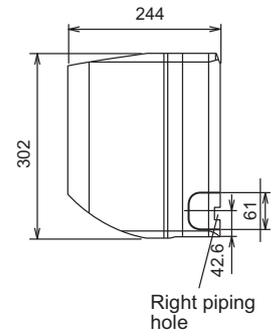
<Side View>



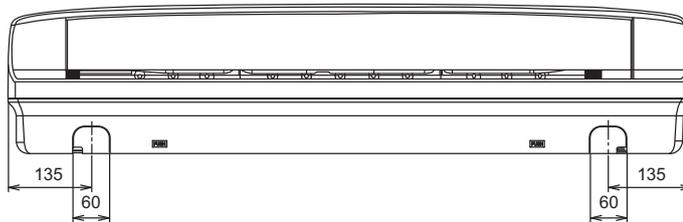
<Front View>



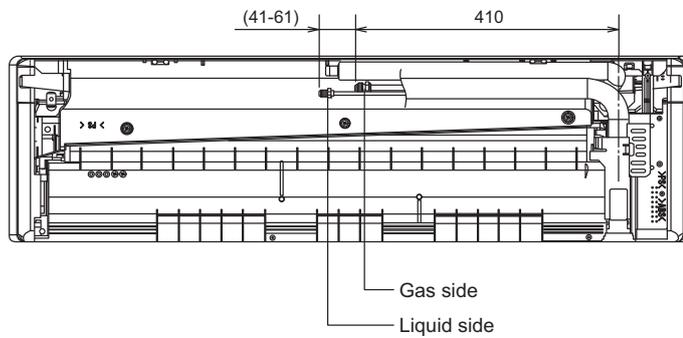
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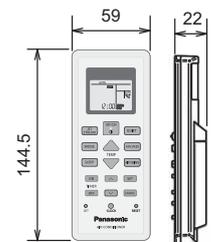
<Bottom View>



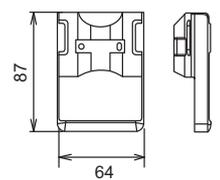
<Rear View>



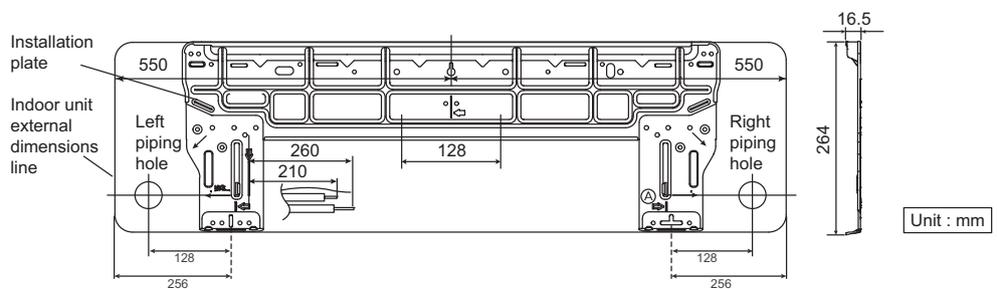
<Remote Control>



<Remote Control Holder>

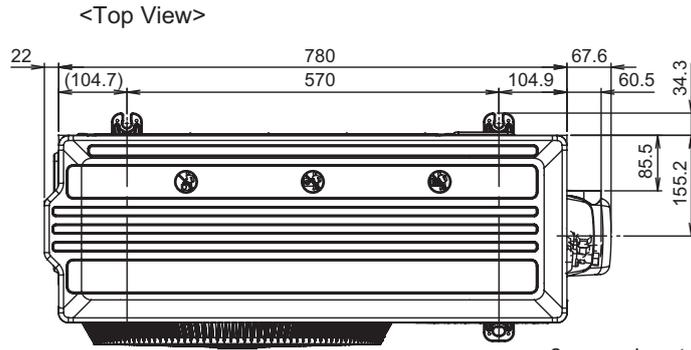
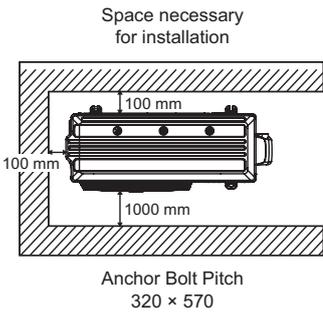


Relative position between the indoor unit and the installation plate <Front View>



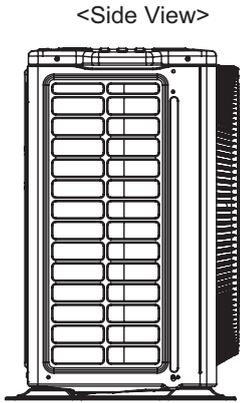
5.2 Outdoor Unit

5.2.1 CU-PC12TKF

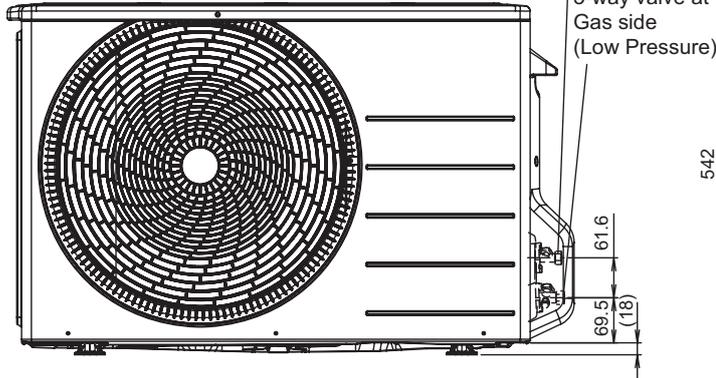


2-way valve at
Liquid side
(High Pressure)

<Side View>

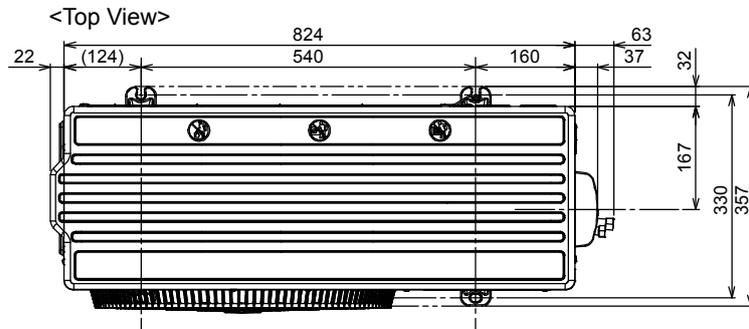
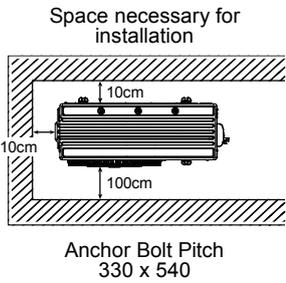


<Front View>



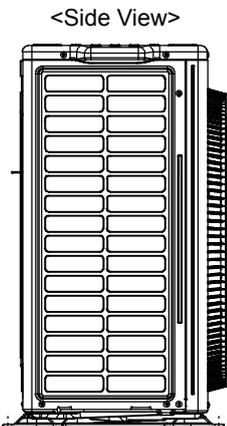
Unit: mm

5.2.2 CU-PC18TKF

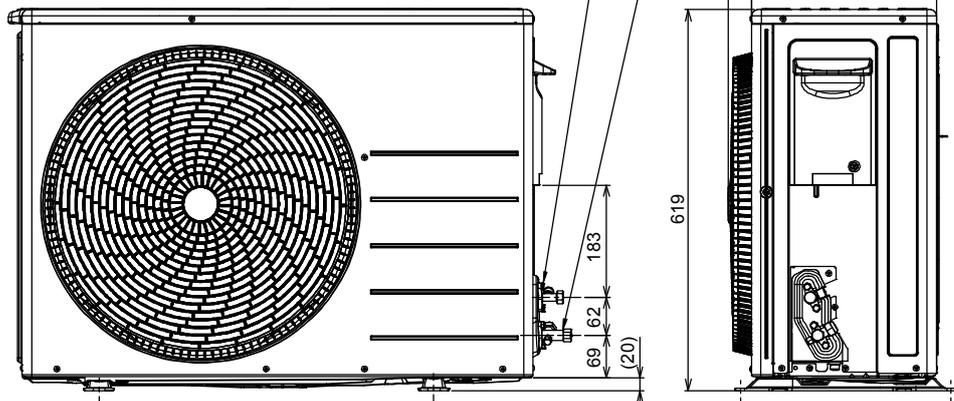


3-way valve at Gas side
(Low Pressure)

<Side View>

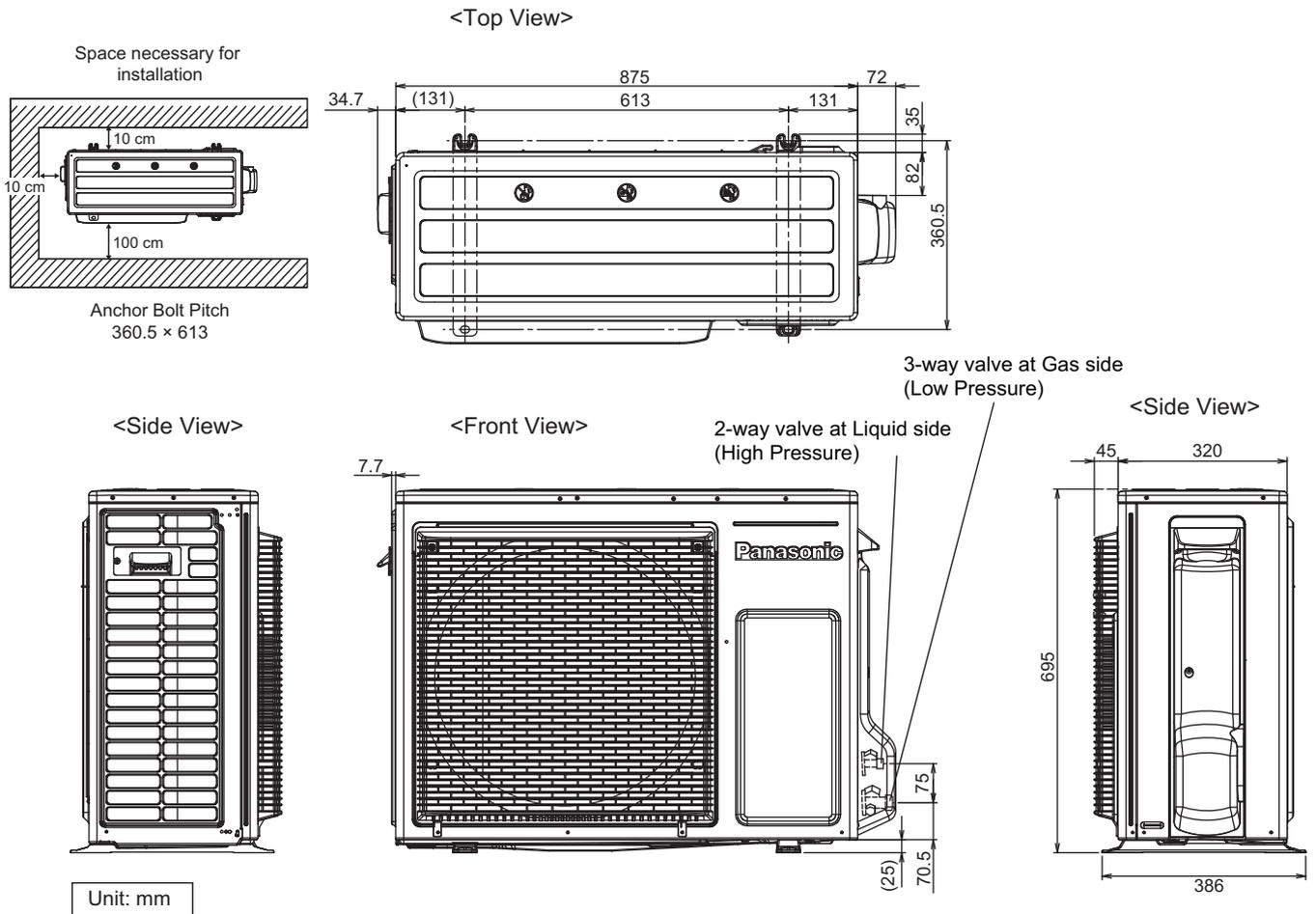


<Front View>

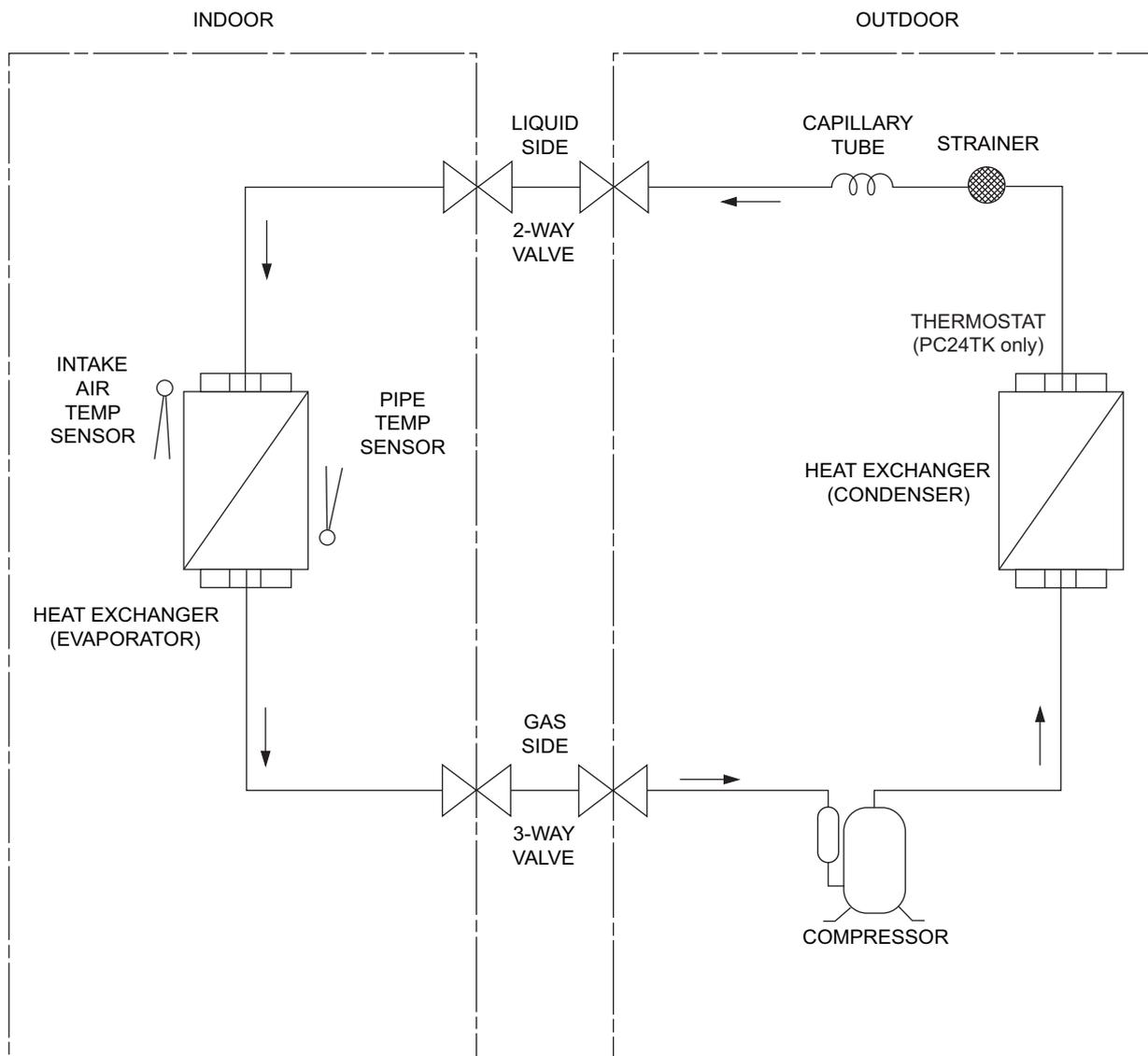


Unit : mm

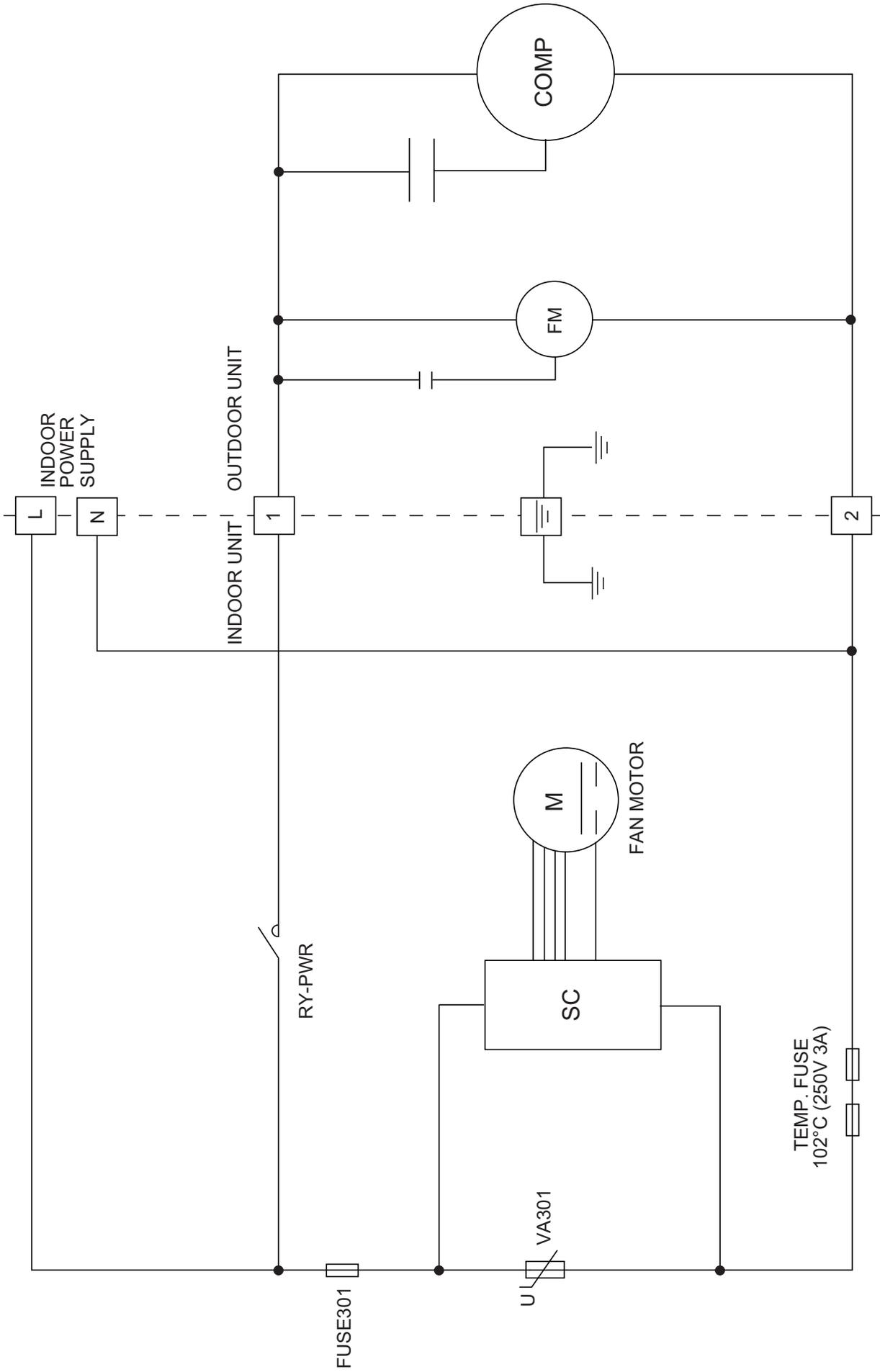
5.2.3 CU-PC24TKF



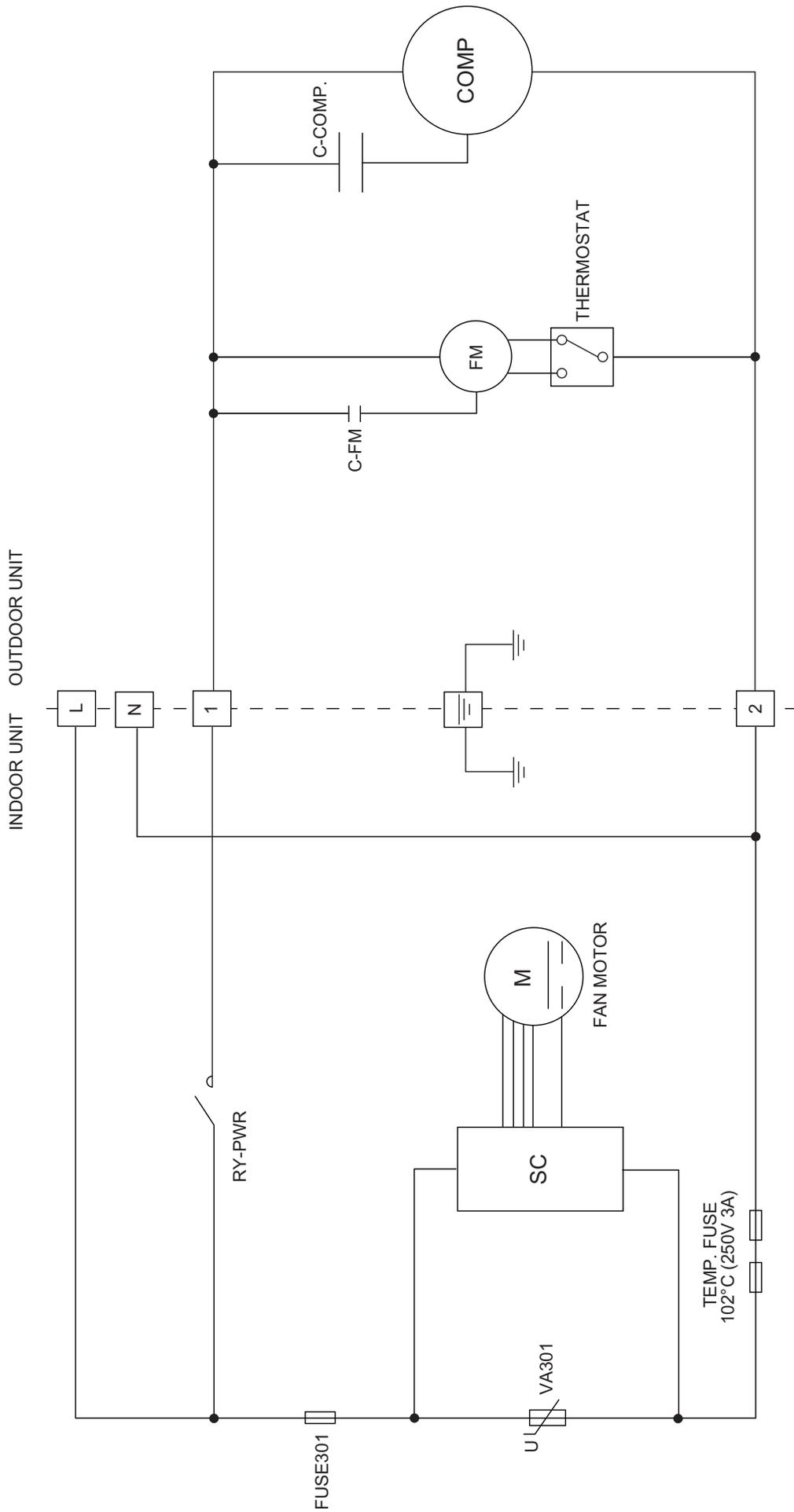
6. Refrigeration Cycle Diagram



7.2 CS-PC18TKF CU-PC18TKF

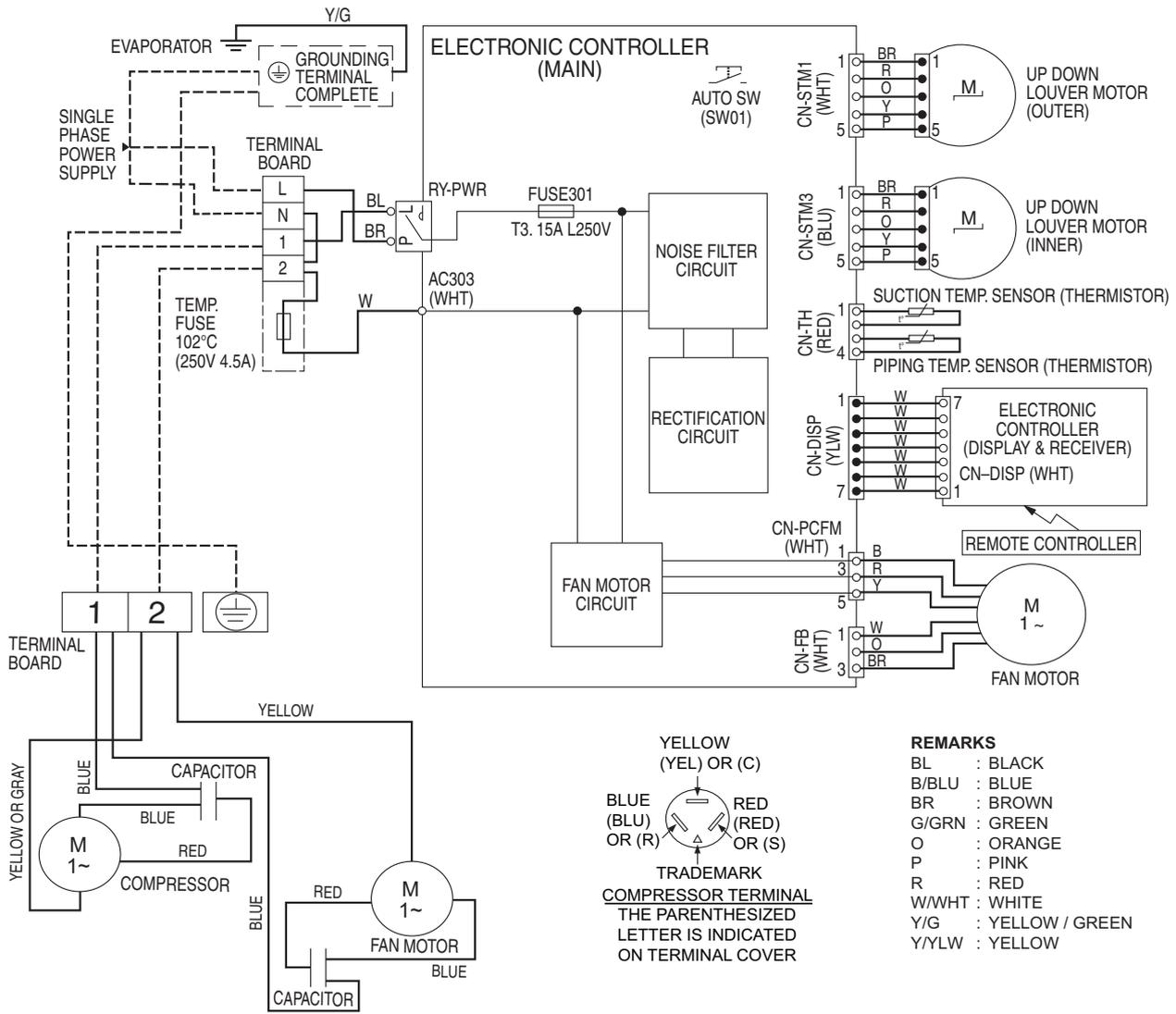


7.3 CS-PC24TKF CU-PC24TKF



8. Wiring Connection Diagram

8.1 CS-PC12TKF CU-PC12TKF



Resistance of Indoor Fan Motor Windings

| | |
|-------------|--------------|
| MODEL | CS-PC12TKF |
| CONNECTION | ACXA92-00090 |
| BLUE-YELLOW | 336 Ω |
| YELLOW-RED | 306 Ω |

Note: Resistance at 25°C of ambient temperature.

Resistance of Outdoor Fan Motor Windings

| | |
|-------------|--------------|
| MODEL | CU-PC12TKF |
| CONNECTION | ACXA95-00440 |
| BLUE-YELLOW | 227 Ω |
| YELLOW-RED | 163 Ω |

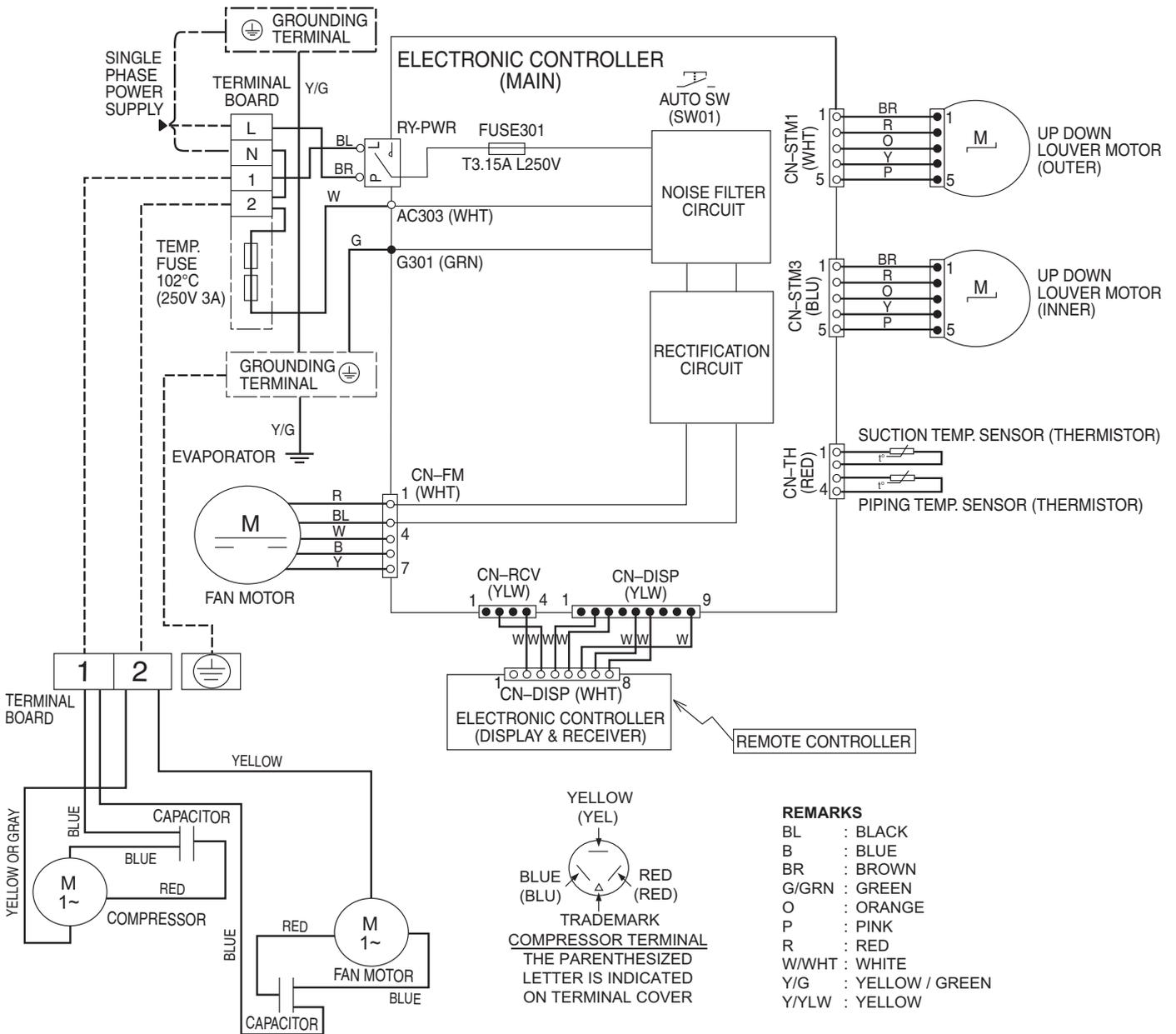
Note: Resistance at 20°C of ambient temperature.

Resistance of Compressor Windings

| | |
|------------|--------------|
| MODEL | CU-PC12TKF |
| CONNECTION | 2KS210D5AA06 |
| C-R | 2.279 Ω |
| C-S | 3.526 Ω |

Note: Resistance at 20°C of ambient temperature.

8.2 CS-PC18TKF CU-PC18TKF



Resistance of Outdoor Fan Motor Windings

| MODEL | CU-PC18TKF |
|-------------|--------------|
| CONNECTION | ACXA92-00120 |
| BLUE-YELLOW | 137 Ω |
| YELLOW-RED | 65 Ω |

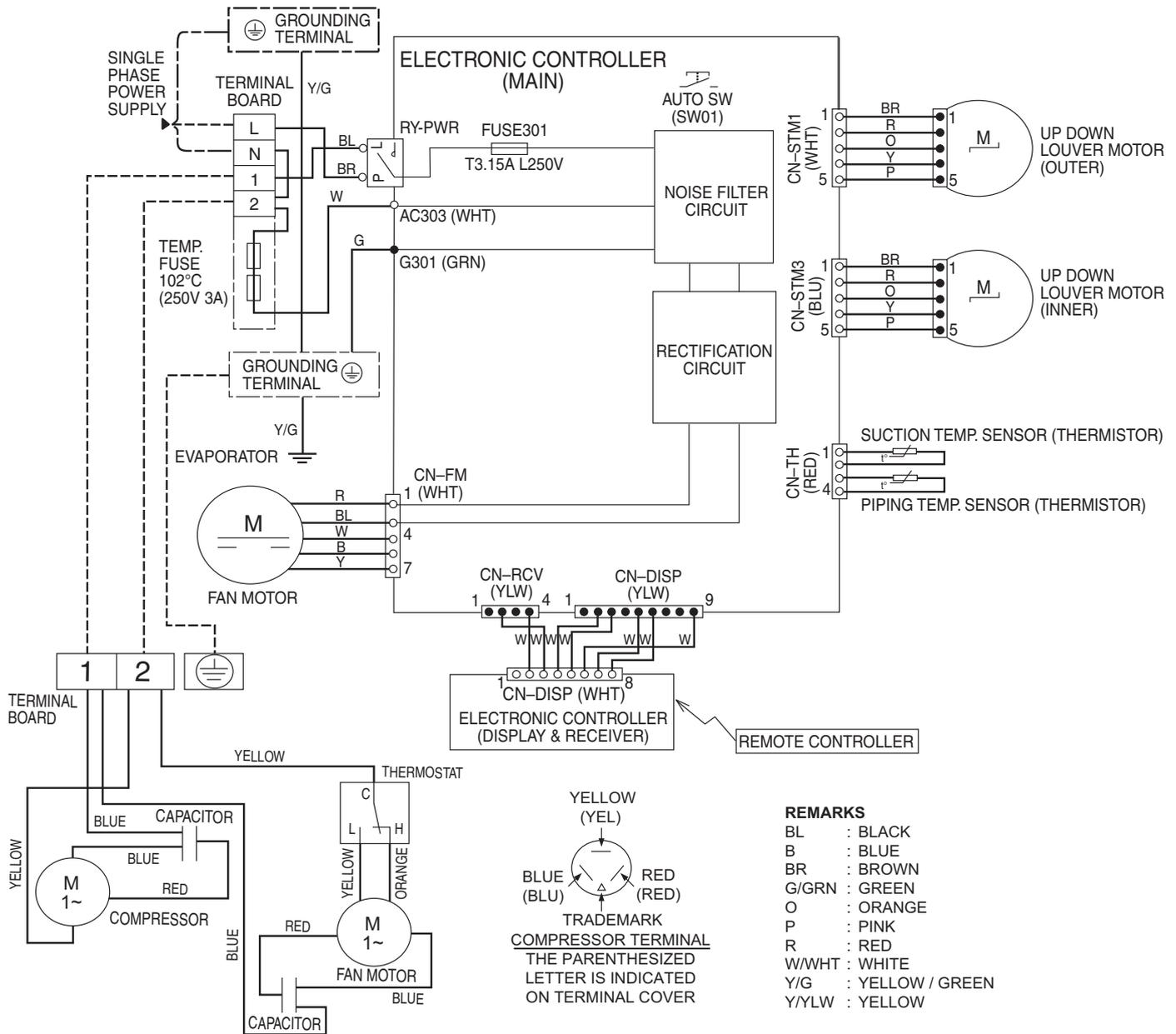
Note: Resistance at 20°C of ambient temperature.

Resistance of Compressor Windings

| MODEL | CU-PC18TKF |
|------------|--------------|
| CONNECTION | 2KS324D5AC06 |
| C-R | 1.453 Ω |
| C-S | 3.151 Ω |

Note: Resistance at 20°C of ambient temperature.

8.3 CS-PC24TKF CU-PC24TKF



Resistance of Outdoor Fan Motor Windings

| MODEL | CU-PC24TKF |
|---------------|------------|
| CONNECTION | CWA951689 |
| BLUE-YELLOW | 64 Ω |
| YELLOW-RED | 55 Ω |
| ORANGE-YELLOW | 90 Ω |

Note: Resistance at 20°C of ambient temperature.

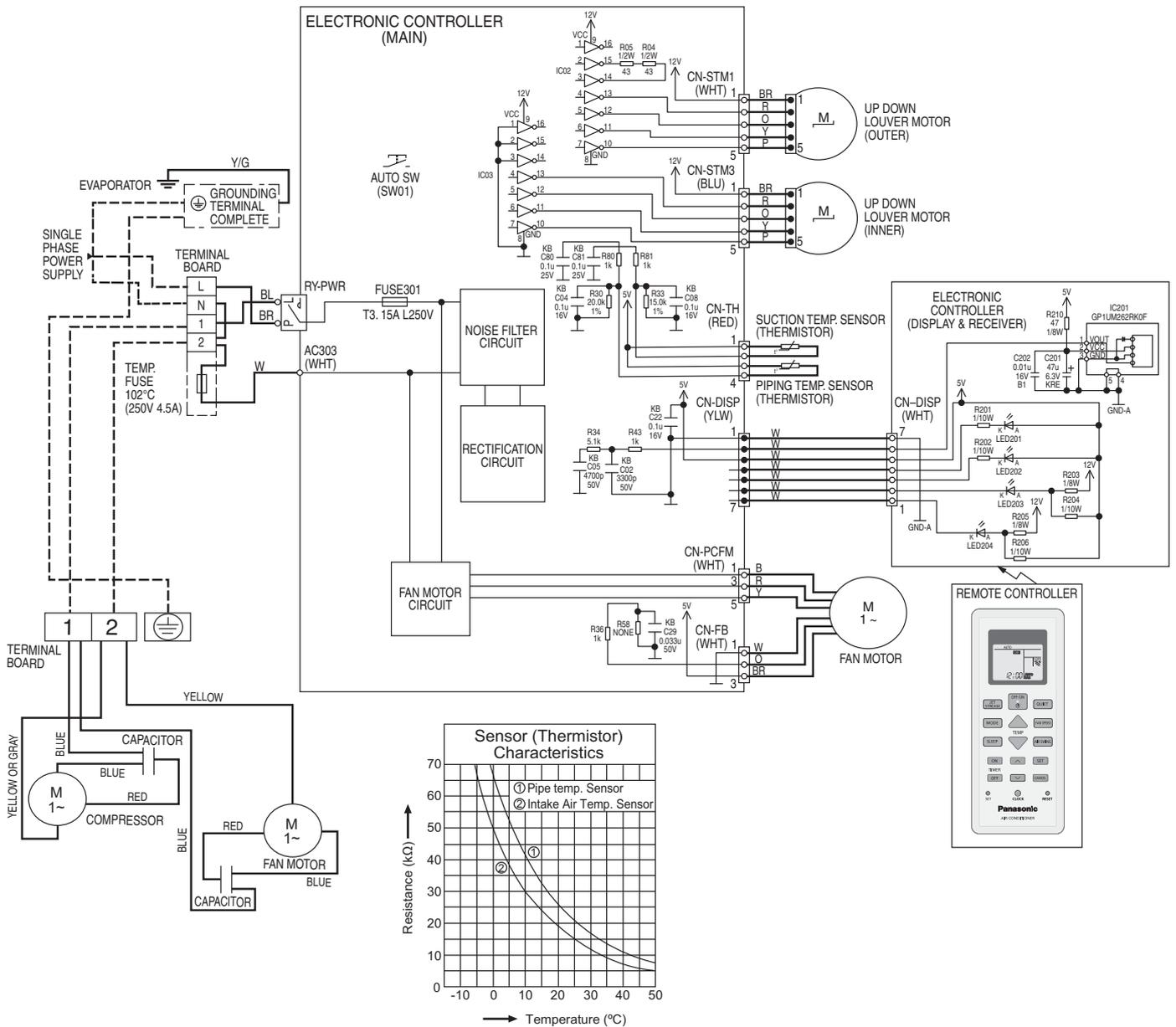
Resistance of Compressor Windings

| MODEL | CU-PC24TKF |
|------------|--------------|
| CONNECTION | 2JS438D3EA04 |
| C-R | 1.156 Ω |
| C-S | 2.997 Ω |

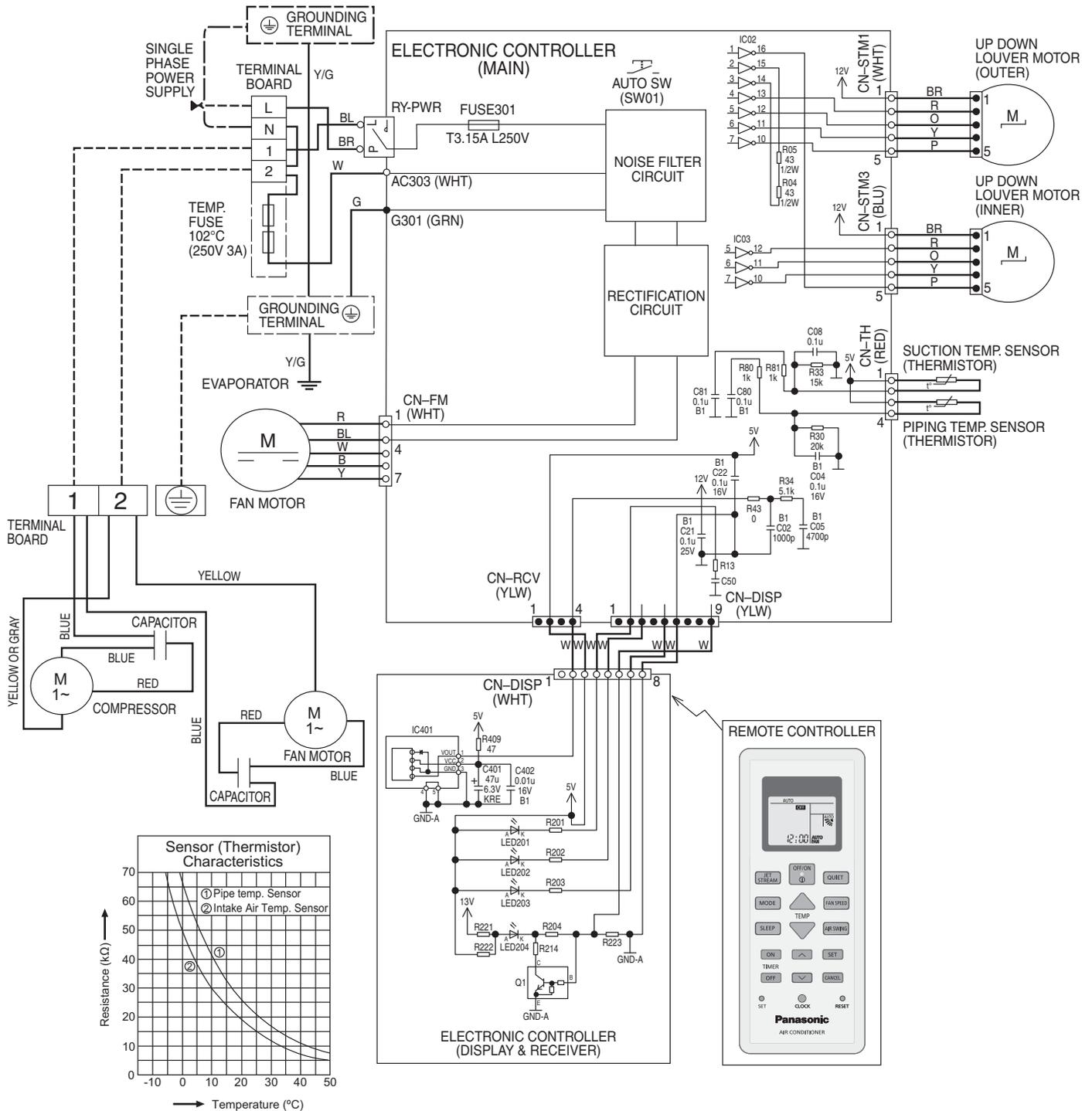
Note: Resistance at 20°C of ambient temperature.

9. Electronic Circuit Diagram

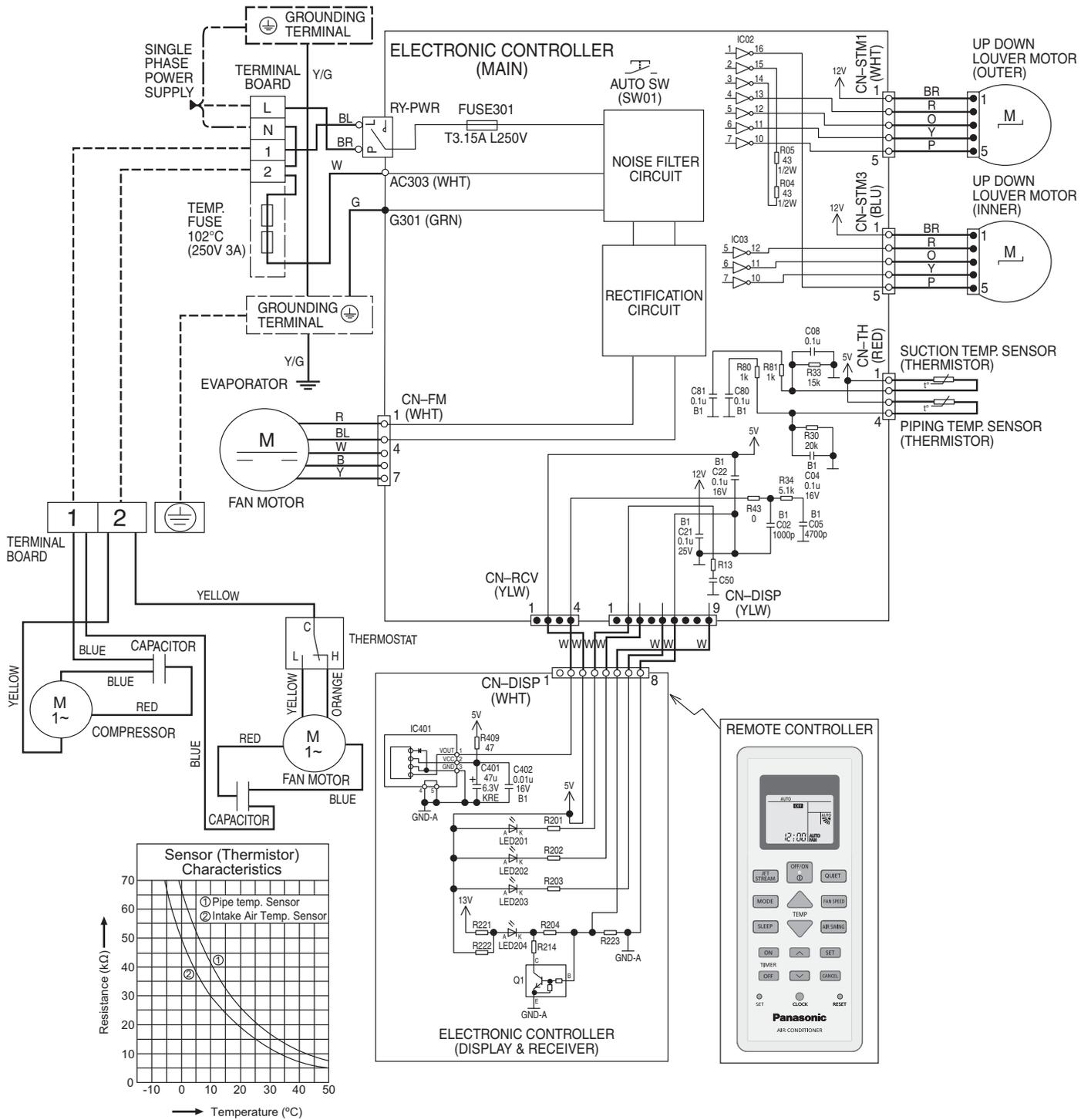
9.1 CS-PC12TKF CU-PC12TKF



9.2 CS-PC18TKF CU-PC18TKF



9.3 CS-PC24TKF CU-PC24TKF

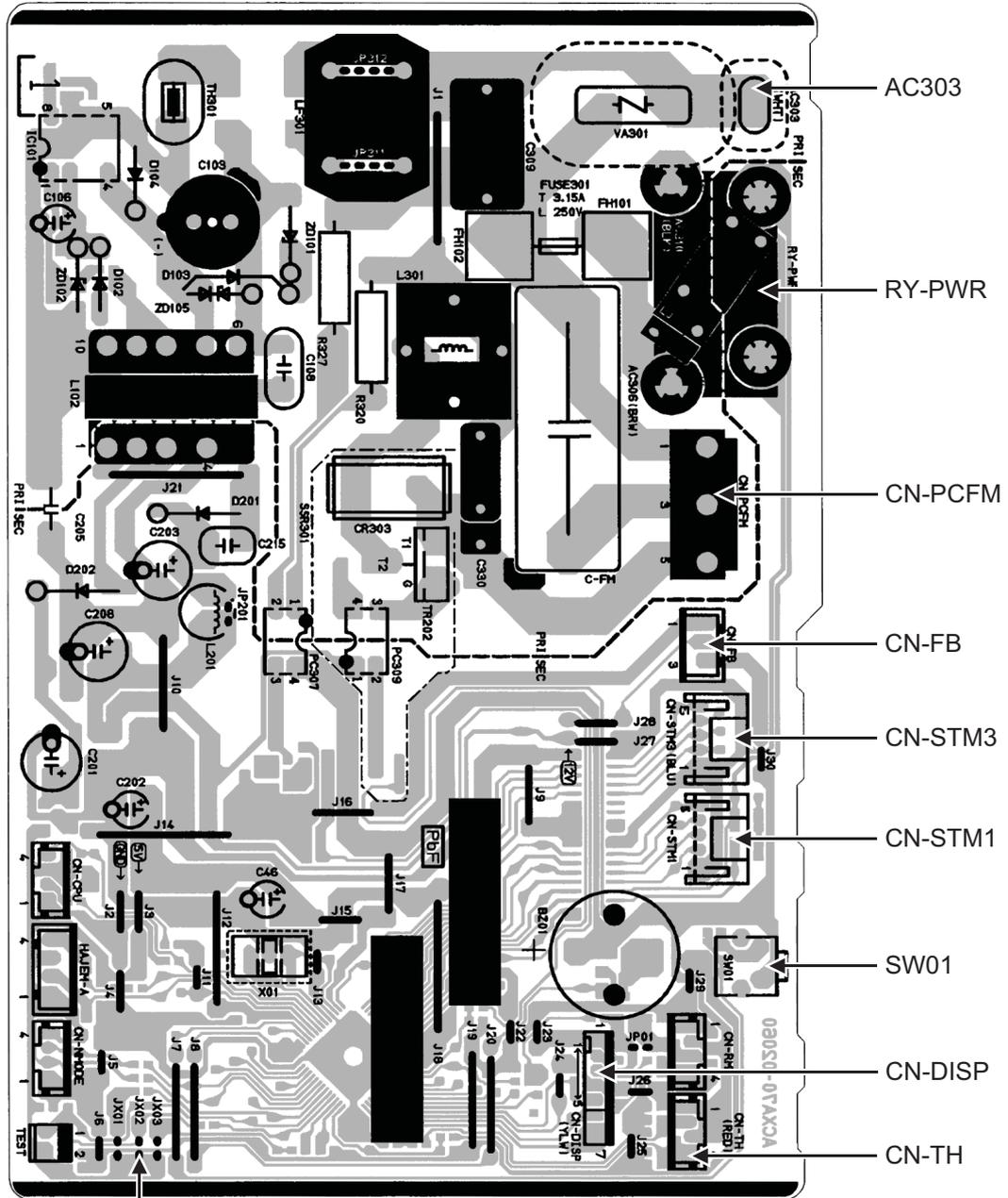


10. Printed Circuit Board

10.1 Indoor Unit

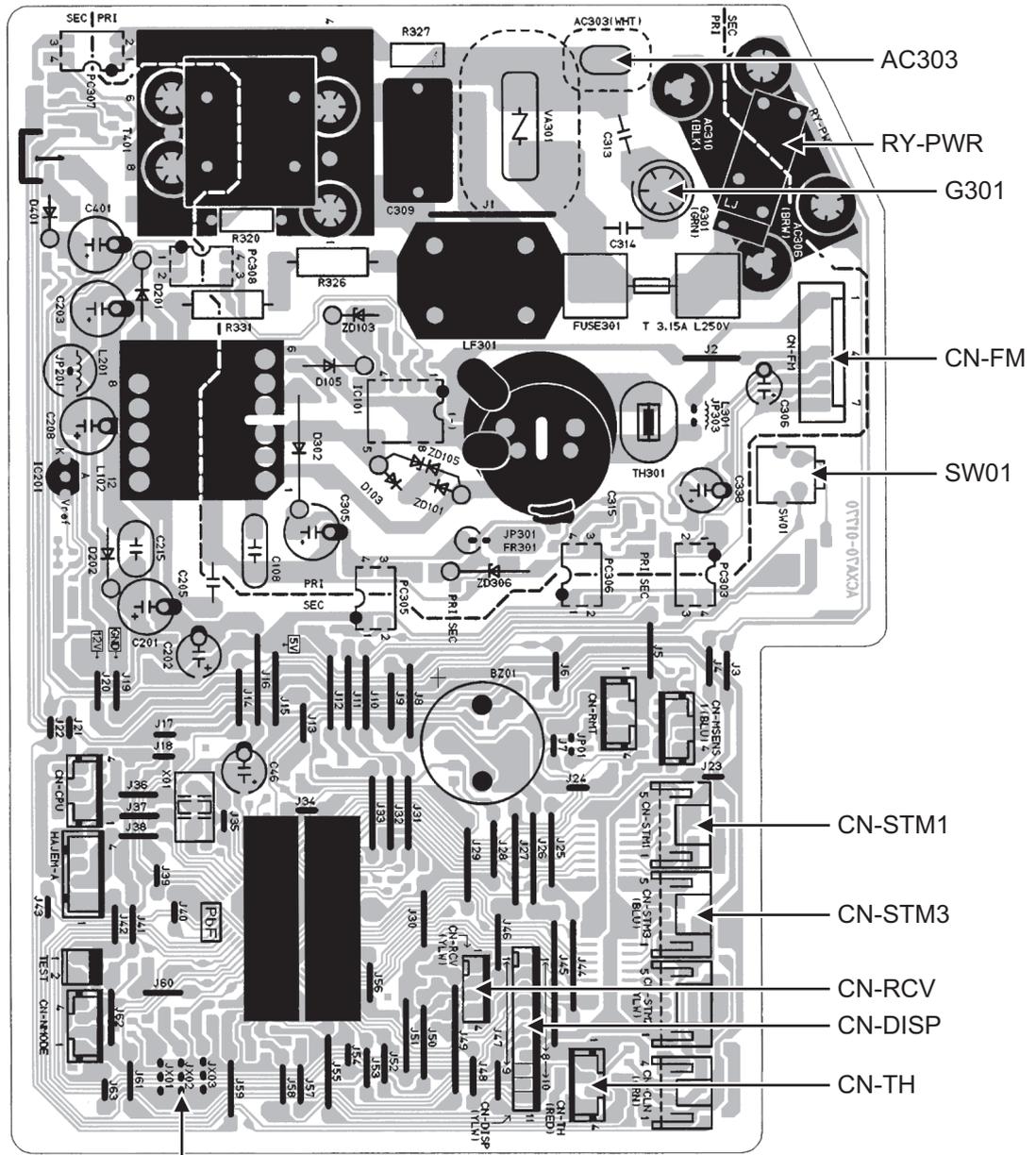
10.1.1 Main Printed Circuit Board

10.1.1.1 CS-PC12TKF



JX02 (Random Auto Restart Enable/Disable)

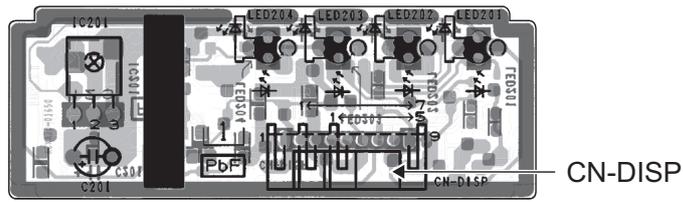
10.1.1.2 CS-PC18TKF CS-PC24TKF



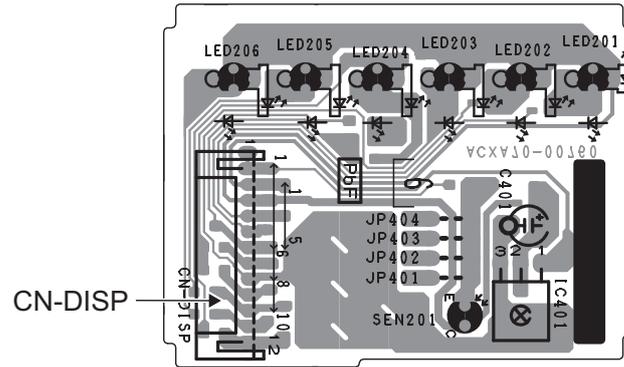
JX02 (Random Auto Restart Enable/Disable)

10.1.2 Indicator and Receiver Printed Circuit Board

10.1.2.1 CS-PC12TKF



10.1.2.2 CS-PC18TKF CS-PC24TKF



11. Installation Instruction

11.1 Select the Best Location

11.1.1 Indoor Unit

- Do not install the unit in excessive oil fume area such as kitchen, workshop and etc.
- There should not be any heat source or steam near the unit.
- There should not be any obstacles blocking the air circulation.
- A place where air circulation in the room is good.
- A place where drainage can be easily done.
- A place where noise prevention is taken into consideration.
- Do not install the unit near the door way.
- Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.
- Installation height for indoor unit must be at least 2.5 m.

11.1.2 Outdoor Unit

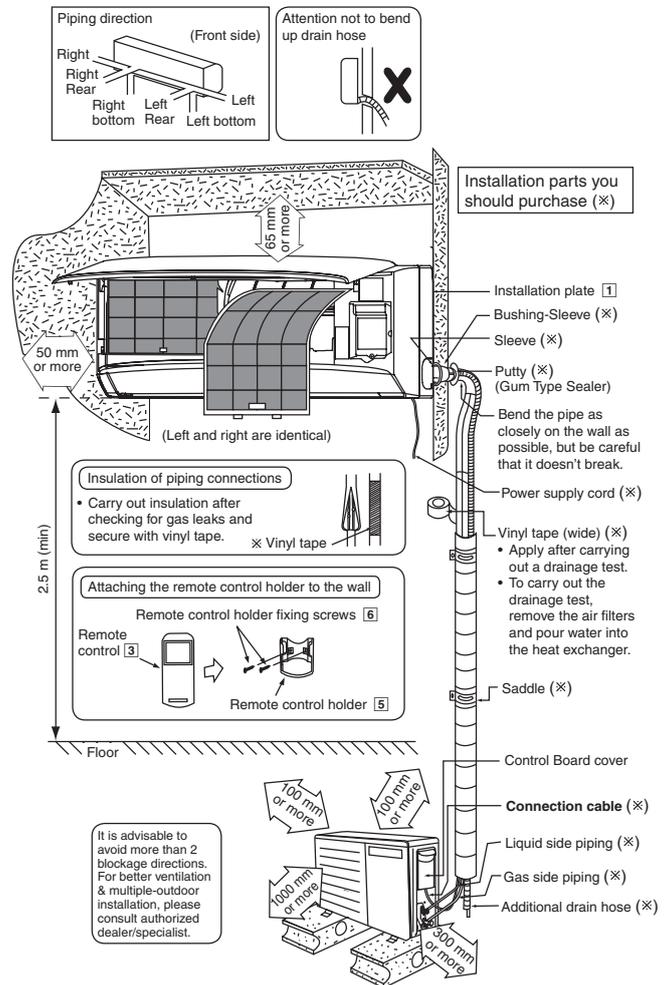
- If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.
- There should not be any animal or plant which could be affected by hot air discharged.
- Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.
- Do not place any obstacles which may cause a short circuit of the discharged air.
- If piping length is over the [piping length for additional gas], additional refrigerant should be added as shown in the table.

| Model | Horse Power (HP) | Piping size | | Std. Length (m) | Max Elevation (m) | Min. Piping Length (m) | Max. Piping Length (m) | Additional Refrigerant (g/m) | Piping Length for add. gas (m) |
|---------|------------------|-----------------|----------------|-----------------|-------------------|------------------------|------------------------|------------------------------|--------------------------------|
| | | Gas | Liquid | | | | | | |
| PC12*** | 1.5HP | 12.7 mm (1/2") | 6.35 mm (1/4") | 5 | 5 | 3 | 15 | 10 | 7.5 |
| PC18*** | 2.0HP | 15.88 mm (5/8") | | | 20 | 3 | 30 | 20 | 7.5 |
| PC24*** | 2.5HP | | | | 20 | 3 | 30 | 30 | 7.5 |

Example: For PC12***

If the unit is installed at 10 m distance, the quantity of additional refrigerant should be 25 g (10-7.5) m x 10 g/m = 25 g.

11.1.3 Indoor/Outdoor Unit Installation Diagram

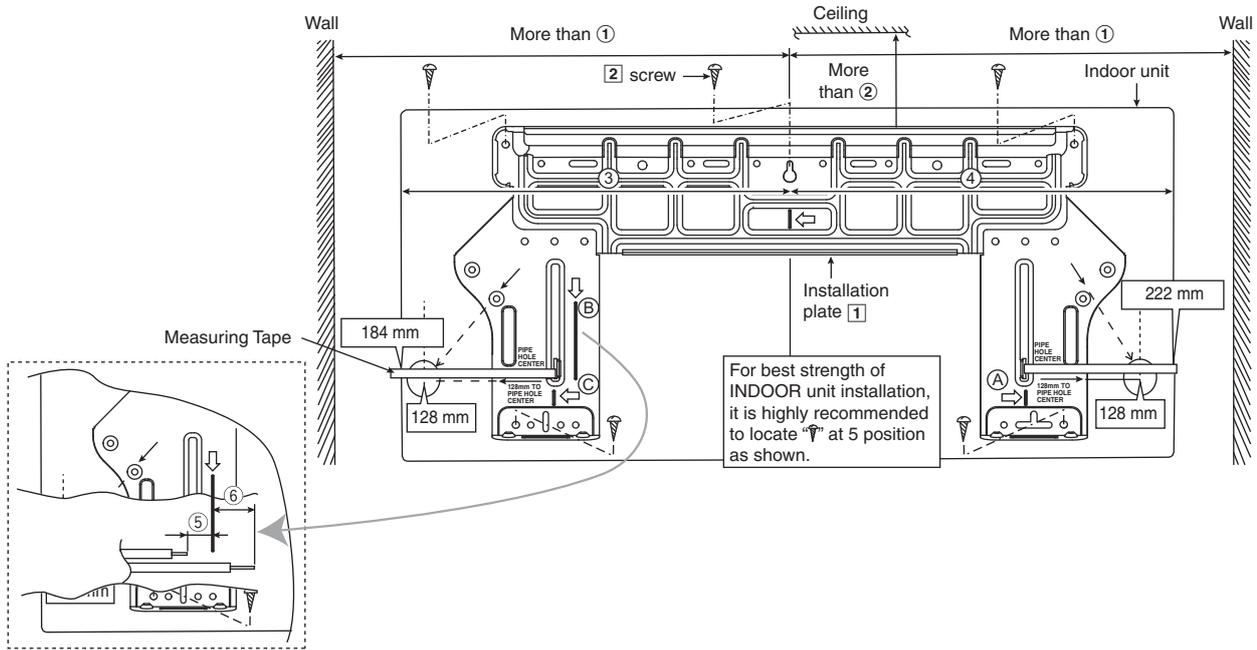


- This illustration is for explanation purposes only. The indoor unit will actually face a different way.

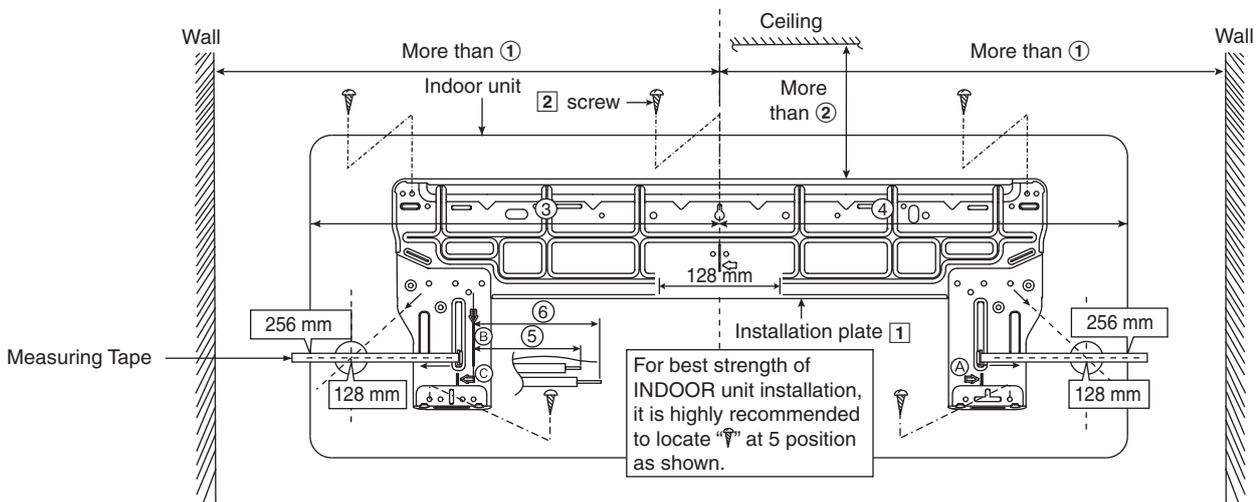
11.2 Indoor Unit

11.2.1 How to Fix Installation Plate

The mounting wall shall be strong and solid enough to prevent it from the vibration.



| Model | Dimension | | | | | |
|---------|-----------|-------|--------|--------|-------|-------|
| | ① | ② | ③ | ④ | ⑤ | ⑥ |
| PC12*** | 470 mm | 90 mm | 380 mm | 420 mm | 15 mm | 35 mm |



| Model | Dimension | | | | | |
|------------------|-----------|-------|--------|--------|--------|--------|
| | ① | ② | ③ | ④ | ⑤ | ⑥ |
| PC18***, PC24*** | 605 mm | 95 mm | 550 mm | 550 mm | 210 mm | 260 mm |

The center of installation plate should be at more than ① at right and left of the wall.

The distance from installation plate edge to ceiling should more than ②.

From installation plate center to unit's left side is ③.

From installation plate center to unit's right side is ④.

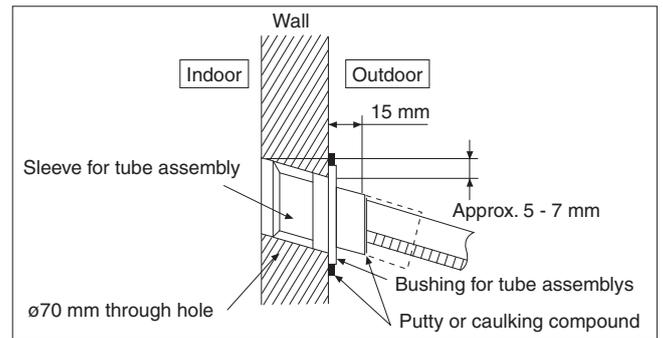
- Ⓑ : For left side piping, piping connection for liquid should be about ⑤ from this line.
 : For left side piping, piping connection for gas should be about ⑥ from this line.

- 1 Mount the installation plate on the wall with 5 screws or more (at least 5 screws).
(If mounting the unit on the concrete wall, consider using anchor bolts.)
 - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.
- 2 Drill the piping plate hole with $\varnothing 70$ mm hole-core drill.
 - Putting measuring tape at position as shown in the diagram above.
The hole center is obtained by measuring the distance namely 128 mm for left and right hole respectively. Another method is intersection point of arrow mark extension.
The meeting point of the extension arrow mark is the hole center position.
 - Drill the piping hole at either the right or the left and the hole should be slightly slanting to the outdoor side. (refer to step 11.2.2)

11.2.2 To Drill a Hole in the Wall and Install a Sleeve of Piping

- 1 Insert the piping sleeve to the hole.
- 2 Fix the bushing to the sleeve.
- 3 Cut the sleeve until it extrudes about 15 mm from the wall.

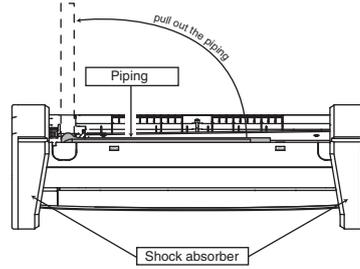
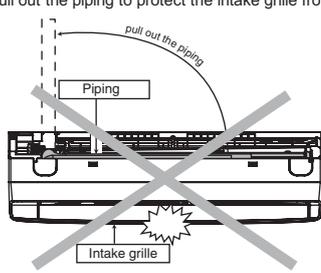
| |
|---|
|  CAUTION |
| <p>❗ When the wall is hollow, please be sure to use the sleeve for tube assembly to prevent dangers caused by mice biting the connection cable.</p> |



- 4 Finish by sealing the sleeve with putty or caulking compound at the final stage.

11.2.3 Indoor Unit Installation

- Do not turn over the unit without its shock absorber during pull out the piping. It may cause intake grille damage.
- Use shock absorber during pull out the piping to protect the intake grille from damage.



11.2.3.1 For the Right Rear Piping

- Step-1** Pull out the Indoor piping
- Step-2** Install the Indoor Unit
- Step-3** Secure the Indoor Unit
- Step-4** Insert the power supply cord and connection cable
- Insert the cables from bottom of the unit through the control board hole until terminal board area.

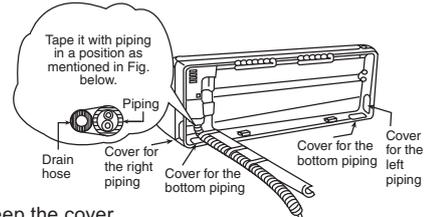
11.2.3.2 For the Right and Right Bottom Piping

- Step-1** Pull out the Indoor piping
- Step-2** Install the Indoor Unit
- Step-3** Insert the power supply cord and connection cable
- Insert the cables from bottom of the unit through the control board hole until terminal board area.
- Step-4** Secure the Indoor Unit

11.2.3.3 For the Embedded Piping

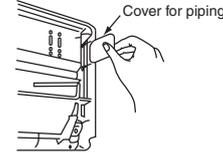
- Step-1** Replace the drain hose
- Step-2** Bend the embedded piping
- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.
- Step-3** Pull the connection cable into Indoor Unit
- The power supply cord and indoor unit and outdoor unit connection cable can be connected without removing the front grille.
- Step-4** Cut and flare the embedded piping
- When determining the dimensions of the piping, slide the unit all the way to the left on the installation plate.
 - Refer to the section "Cutting and flaring the piping".
- Step-5** Install the Indoor Unit
- Step-6** Connect the piping
- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)
- Step-7** Insulate and finish the piping
- Please refer to "Insulation of piping connection" column as mentioned in indoor/outdoor unit installation.
- Step-8** Secure the Indoor Unit

Right Rear piping



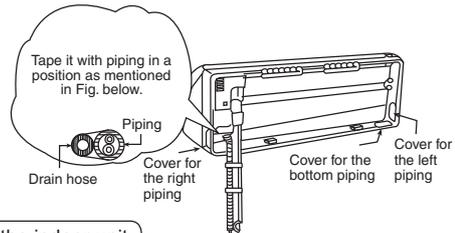
How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.



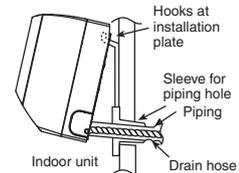
(Left, right and 2 bottom covers for piping.)

Right and Right Bottom piping



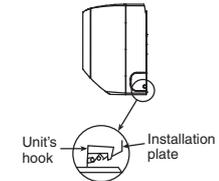
Install the indoor unit

Hook the indoor unit onto the upper portion of installation plate. (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving it in left and right.

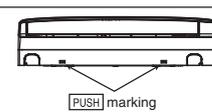
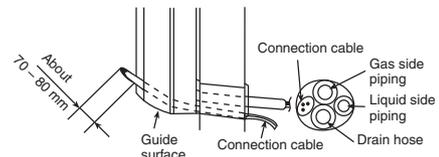


Secure the Indoor Unit

Press the lower left and right side of the unit against the installation plate until hooks engages with their slot (sound click).

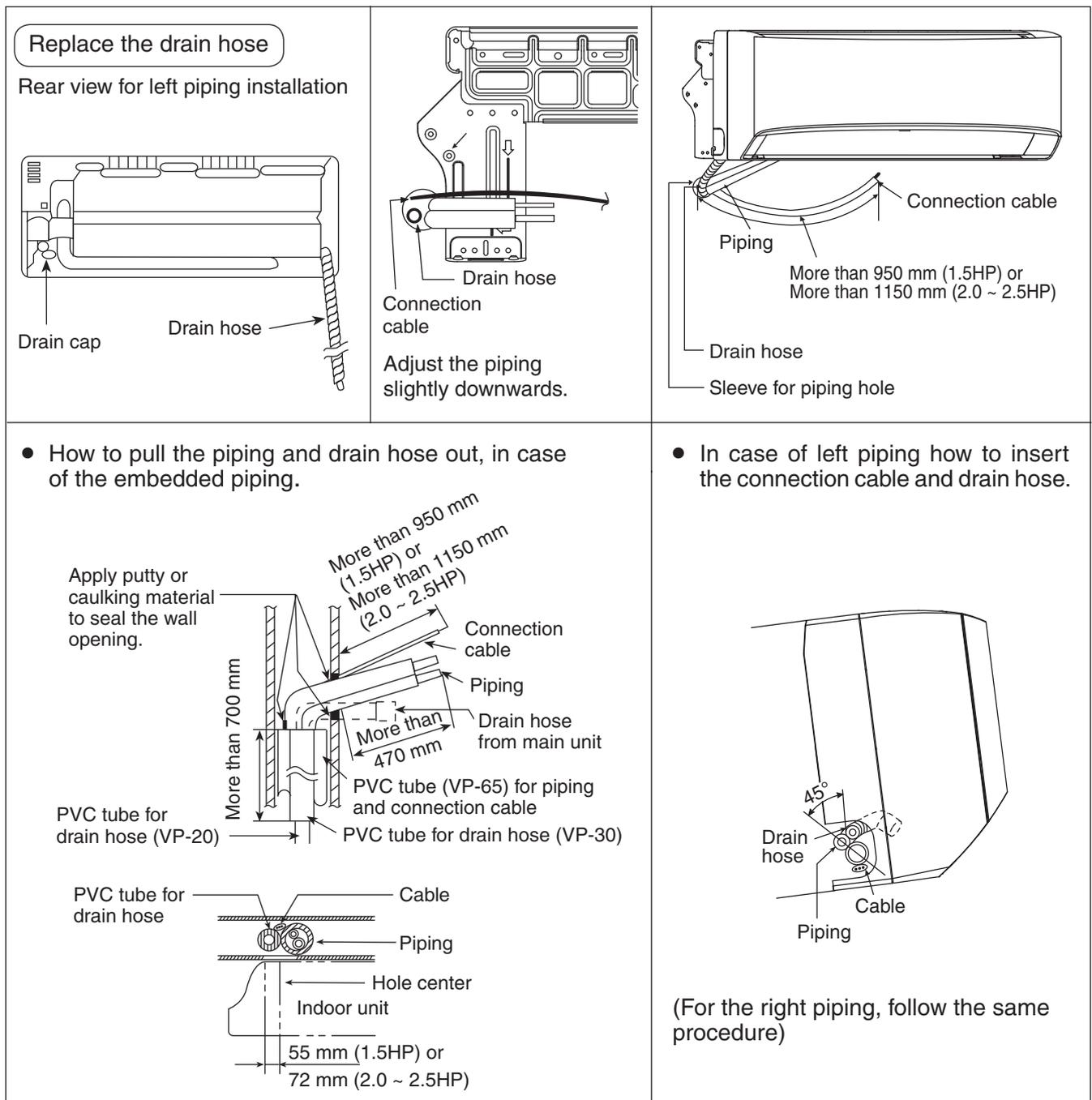


Insert the connection cable



To take out the unit, push the **PUSH** marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

(This can be used for left rear piping and bottom piping also.)

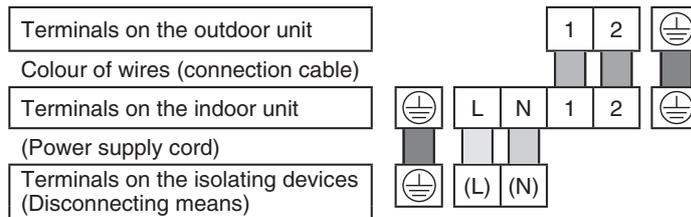


11.2.4 Connect the Cable to the Indoor Unit

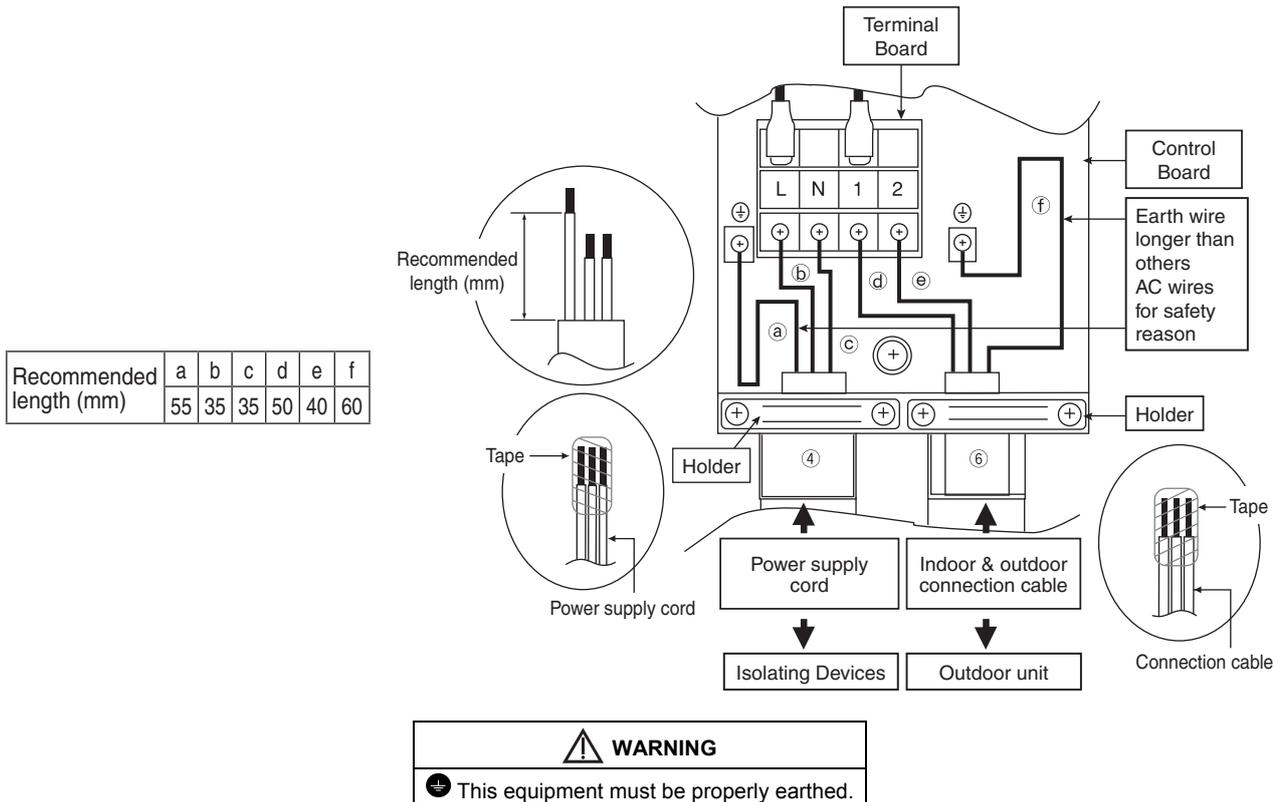
The power supply cord, indoor and outdoor unit connection cable can be connected without removing the front grille.

- 1 Install the indoor unit on the installing holder that mounted on the wall.
- 2 Open the front panel and grille door by loosening the screw.
- 3 Cable connection to the power supply through Isolating Devices (Disconnecting means).
 - Connect the approved polychloroprene sheathed **power supply cord** 3 x 1.5 mm² (1.5HP) or 3 x 2.5 mm² (2.0 ~ 2.5HP), type designation 60245 IEC 57 or heavier cord to the terminal board, and connect the other end of the cable to Isolating Devices (Disconnecting means).
 - Do not use joint power supply cord. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short.
 - In unavoidable case, joining of power supply cord between isolating devices and terminal board of air conditioner shall be done by using approved socket and plug rated 15/16A (1.5HP) or 16A (2.0HP) or 20A (2.5HP). Wiring work to both socket and plug must follow to national wiring standard.
- 4 Bind all the power supply cord lead wire with tape and route the power supply cord via the left escapement.
- 5 **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 x 1.5 mm² (1.5HP) or 3 x 2.5 mm² (2.0 ~ 2.5HP) flexible cord, type designation 60245 IEC 57 or heavier cord. Do not use joint connection cable. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short.

- 6 Bind all the indoor and outdoor connection cable with tape and route the connection cable via the right escapement.
- 7 Remove the tapes and connect the power supply cord and connection cable between indoor unit and outdoor unit according to the diagram below.

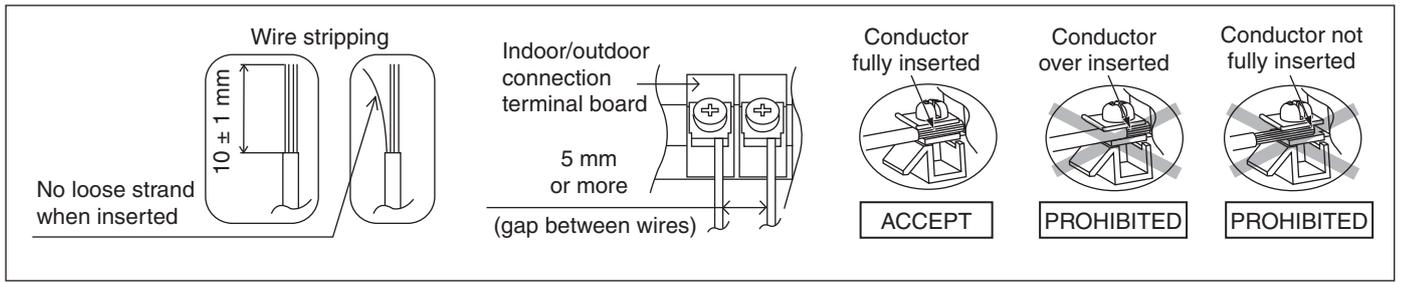


- 8 Secure the power supply cord and connection cable onto the control board with the holder.
- 9 Close grille door by tighten with screw and close the front panel.



- Note:
- Isolating Devices (Disconnecting means) should have minimum 3.0 mm contact gap.
 - Ensure the colour of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.
 - Earth wire shall be Yellow/Green (Y/G) in colour and longer than the other AC wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage.

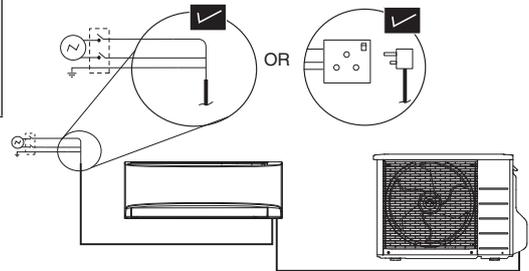
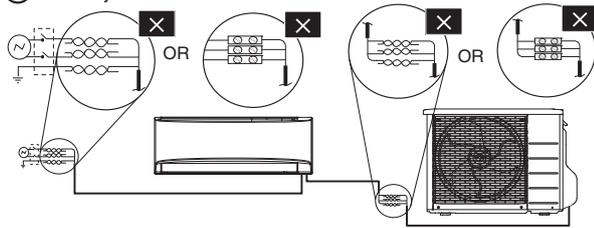
11.2.4.1 Wire Stripping and Connecting Requirement



WARNING

RISK OF FIRE
JOINING OF WIRES MAY CAUSE OVERHEATING AND FIRE.

Do not joint wires.

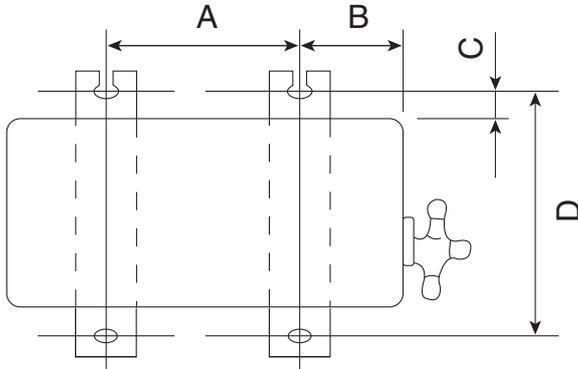


- ❗ Use complete wire without joining.
- ❗ Use approved socket and plug with earth pin.
- ❗ Wire connection in this area must follow to national wiring rules.

11.3 Outdoor Unit

11.3.1 Install the Outdoor Unit

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.
 - Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut ($\varnothing 10$ mm).
 - When installing at roof, please consider strong wind and earthquake.
Please fasten the installation stand firmly with bolt or nails.



| Model | A | B | C | D |
|---------|--------|--------|---------|----------|
| PC12*** | 570 mm | 105 mm | 18.5 mm | 320 mm |
| PC18*** | 540 mm | 160 mm | 18.5 mm | 330 mm |
| PC24*** | 613 mm | 130 mm | 24 mm | 360.5 mm |

11.3.2 Connect the Piping

11.3.2.1 Connecting the Piping to Indoor

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)

Connect the piping

- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.

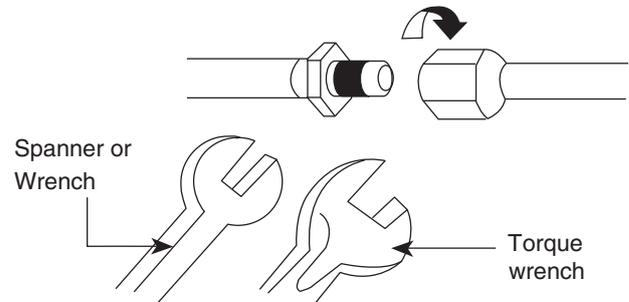
| Do not over tighten, overtightening may cause gas leakage. | |
|--|------------------------|
| Piping size | Torque |
| 6.35 mm (1/4") | [18 N•m (1.8 kgf•m)] |
| 9.52 mm (3/8") | [42 N•m (4.3 kgf•m)] |
| 12.7 mm (1/2") | [55 N•m (5.6 kgf•m)] |
| 15.88 mm (5/8") | [65 N•m (6.6 kgf•m)] |
| 19.05 mm (3/4") | [100 N•m (10.2 kgf•m)] |

11.3.2.2 Connecting the Piping to Outdoor

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge.

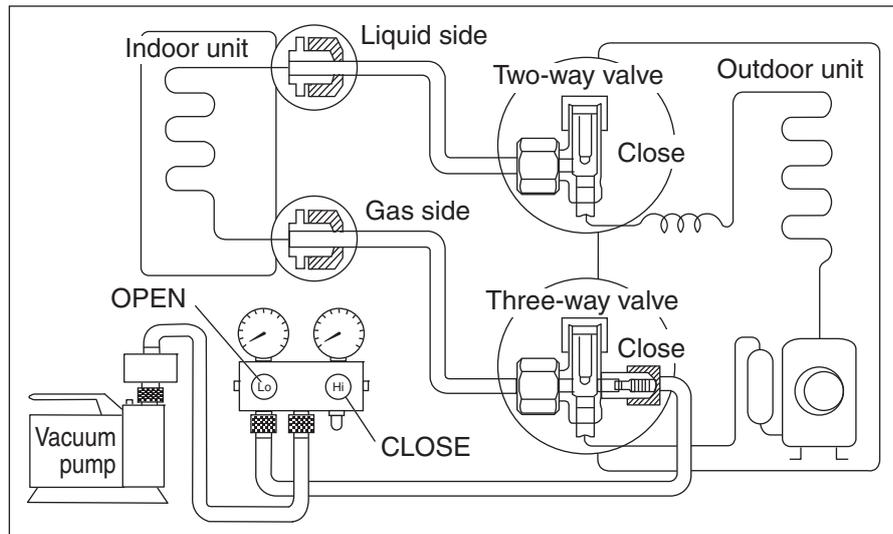
Make flare after inserting the flare nut (locate at valve) onto the copper pipe.

Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.



11.3.3 Evacuation of the Equipment

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.



- 1 Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.
 - Be sure to connect the end of the charging hose with the push pin to the service port.
- 2 Connect the center hose of the charging set to a vacuum pump.
- 3 Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.
- 4 Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.

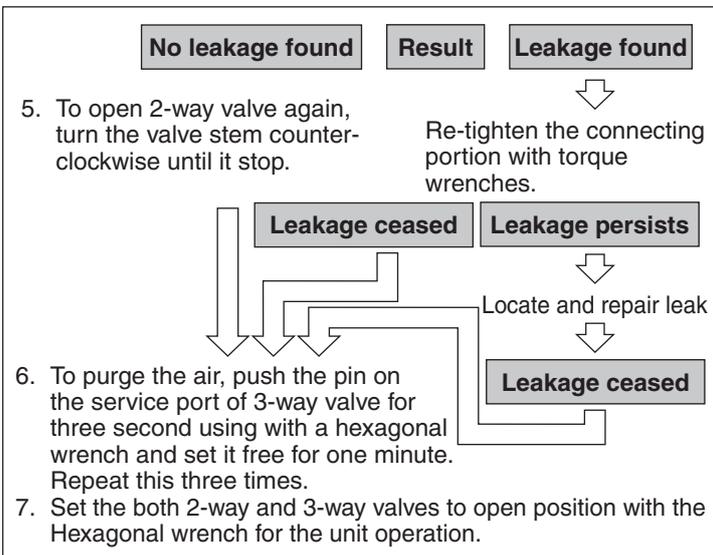
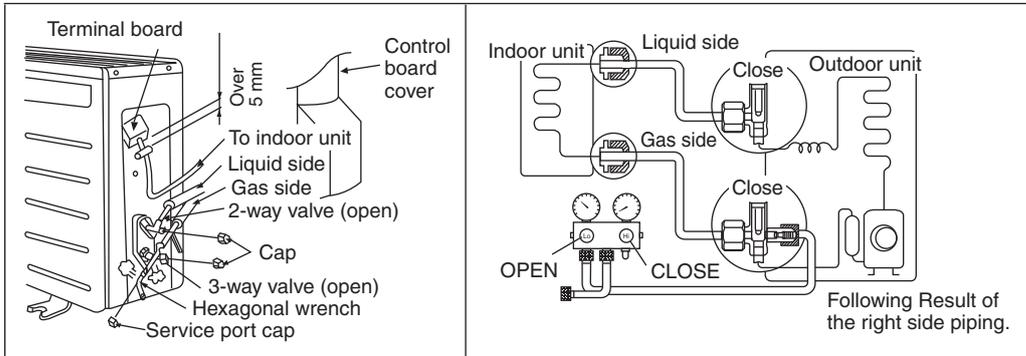
Note: BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
- 5 Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.
- 6 Tighten the service port caps of the 3-way valve at a torque of 18 N•m with a torque wrench.
- 7 Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to "OPEN" using a hexagonal wrench (4 mm).
- 8 Mount valve caps onto the 2-way valve and the 3-way valve.
 - Be sure to check for gas leakage.

- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step ③ above take the following measure:
 - If the leak stops when the piping connections are tightened further, continue working from step ③.
 - If the leak does not stop when the connections are retightened, repair location of leak.
 - Do not release refrigerant during piping work for installation and reinstallation.
 - Take care of the liquid refrigerant, it may cause frostbite.

11.3.4 Air Purging of the Piping and Indoor

The remaining air in the Refrigeration cycle which contains moisture may cause malfunction on the compressor.

- 1 Remove the caps from the 2-way and 3-way valves.
- 2 Remove the service-port cap from the 3-way valves.
- 3 To open the valve, turn the valve stem of 2-way valve counter-clockwise approx. 90° and hold it there for ten seconds, then close it.
- 4 Check gas-leakage of the connecting portion of the pipings.
 - For the left pipings, refer to item 4(A).



4(A). Checking gas leakage for left piping

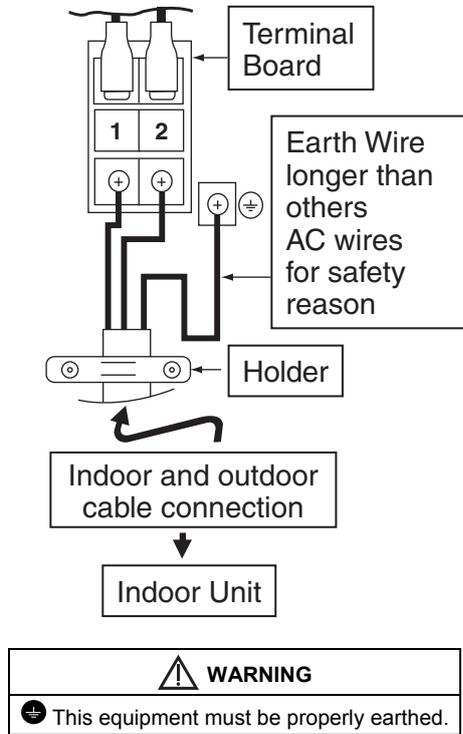
- 1) a. Connect the manifold gauge to the service port of 3-way valve.
 - b. Measure the pressure.
- 2) a. Keep it for 5-10 minutes.
 - b. Ensure that the pressure indicated on the gauge is the same as that of measured during the first time.

11.3.5 Connect the Cable to the Outdoor Unit

- 1 Remove the control board cover from the unit by loosening the screw.
- 2 **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed $3 \times 1.5 \text{ mm}^2$ (1.5HP) or $3 \times 2.5 \text{ mm}^2$ (2.0 ~ 2.5HP) flexible cord, type designation 60245 IEC 57 or heavier cord. Do not use joint connection cable. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short.

| | | | |
|-------------------------------|---|---|--|
| Terminals on the outdoor unit | 1 | 2 |  |
| Colour of wires |  |  |  |
| Terminals on the indoor unit | 1 | 2 |  |

- 3 Secure the cable onto the control board with the holder (clammer).
- 4 Attach the control board cover back to the original position with screw.
- 5 For wire stripping and connection requirement, refer to instruction 11.2.4 of indoor unit.



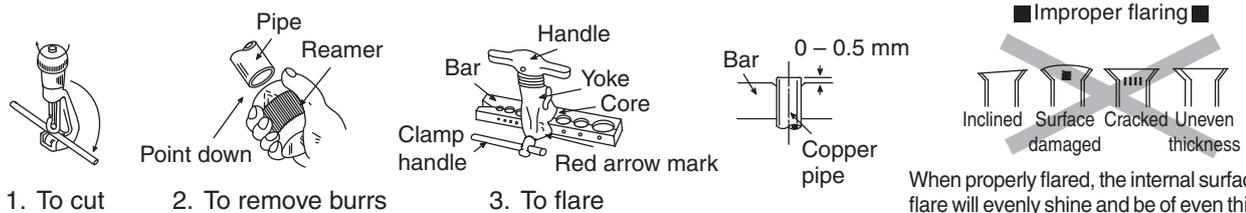
- Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.

11.3.6 Piping Insulation

- 1 Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.
- 2 If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

11.3.6.1 Cutting and Flaring the Piping

- 1 Please cut using pipe cutter and then remove the burrs.
- 2 Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
- 3 Please make flare after inserting the flare nut onto the copper pipes.

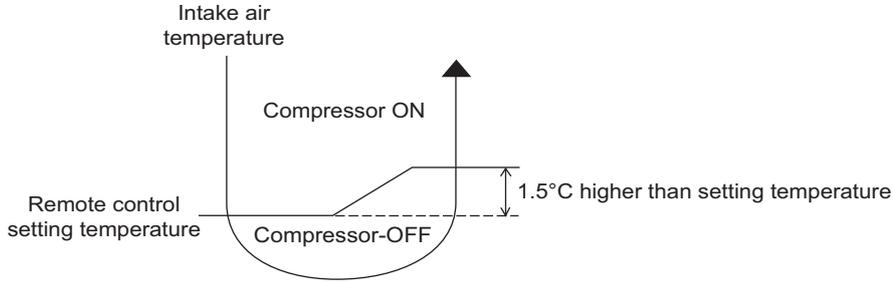


When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

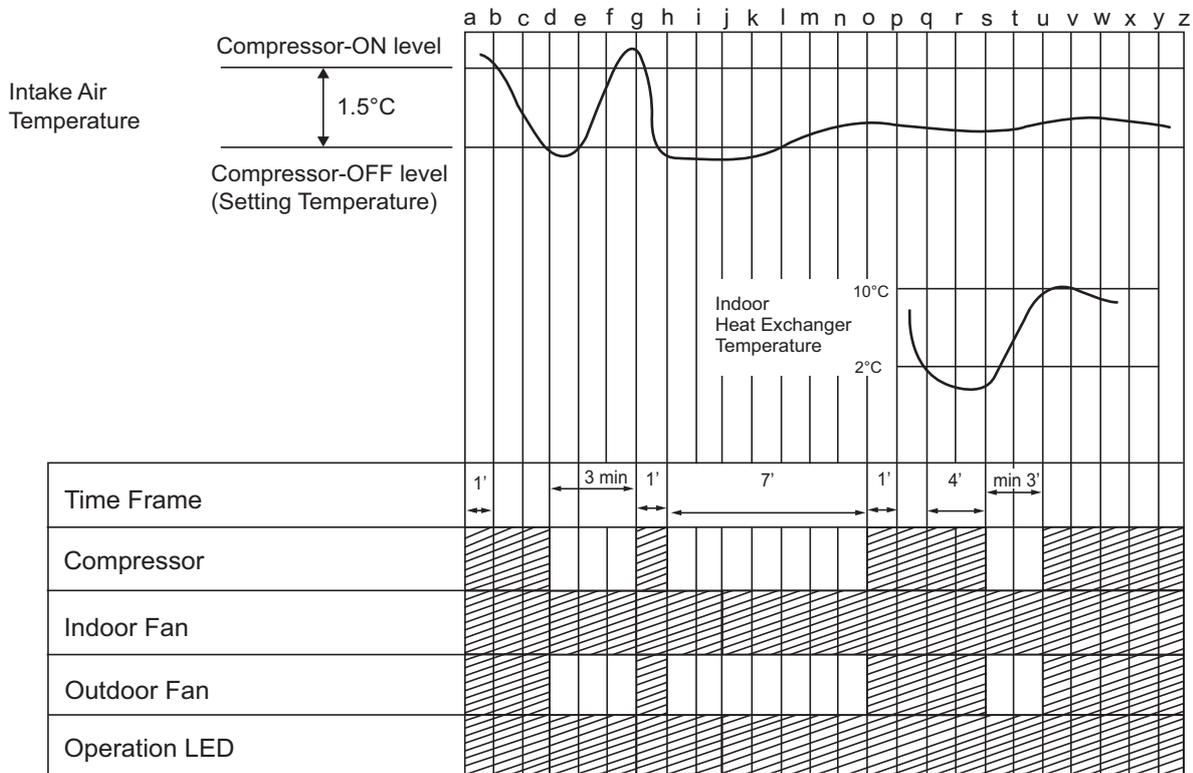
12. Operation Control

12.1 Cooling Operation

- Cooling operation can be set using remote control.
- This operation is applied to cool down the room temperature to the setting temperature set on the remote control.
- The remote control setting temperature, which takes the reading of intake air temperature sensor, can be adjusted from 16°C to 30°C.
- During cooling operation, the compressor will stop and restart as shown in figure below:

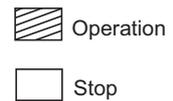


12.1.1 Cooling Operation Time Diagram (For PC12TKF)

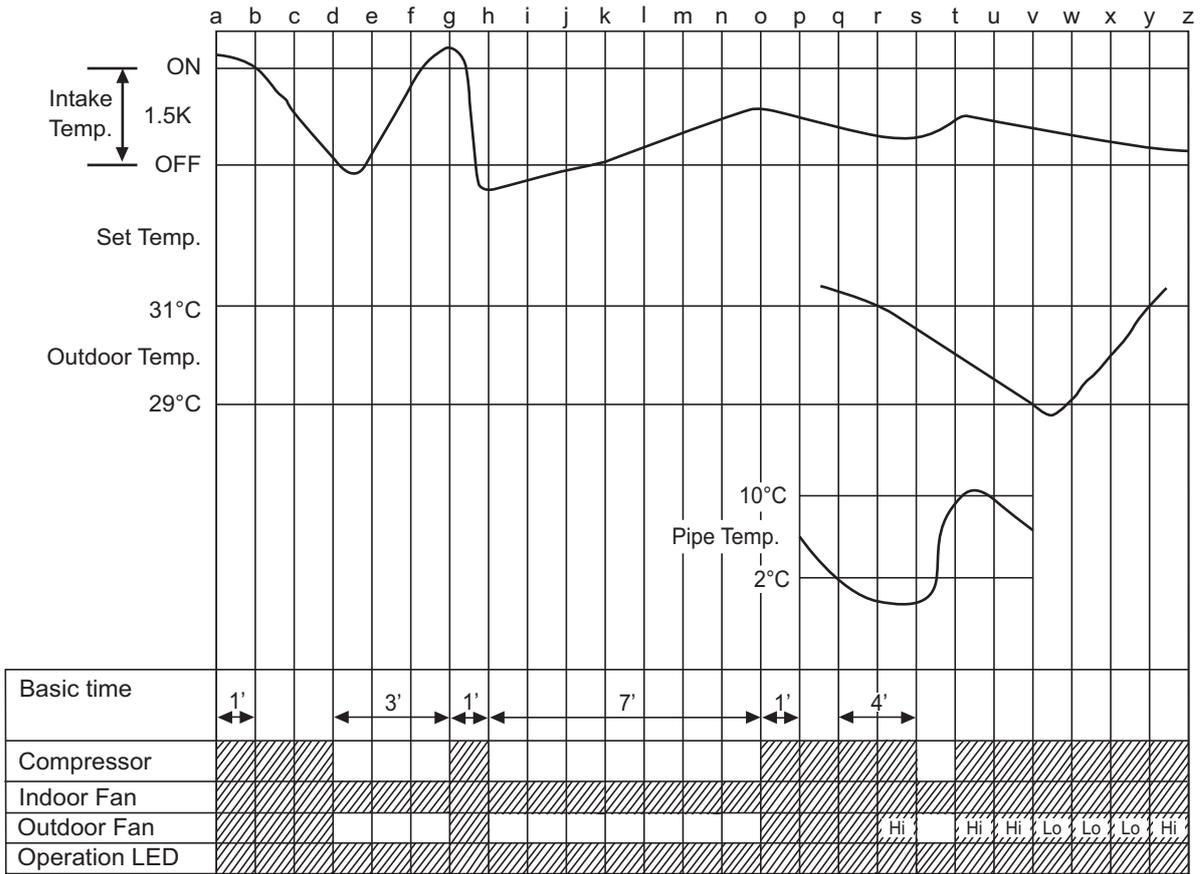


<Description of operation>

- a -b, g - h : Minimum 60 seconds forced operation
- d - g, s - u : Minimum 3 minutes restart control (Time Delay Safety Control)
- h - o : Maximum 7 minutes time save control
- q - u : Freeze Prevention control



12.1.2 Cooling Operation Time Diagram (For PC18/24TKF)



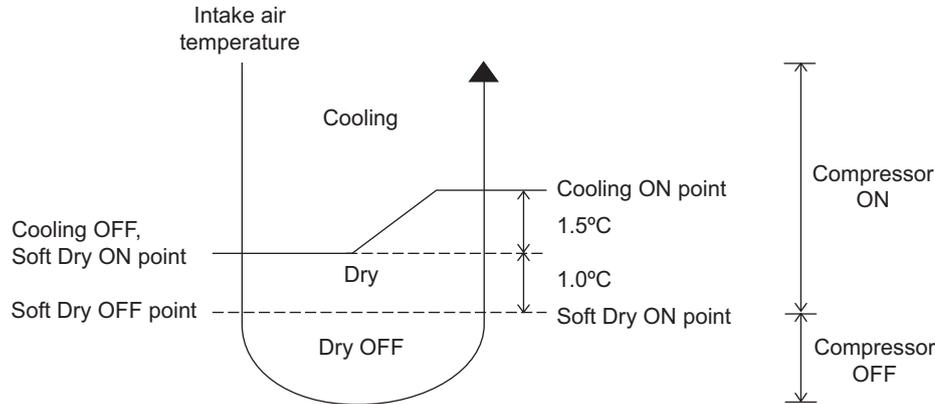
<Description of operation>

- d - g : restart control (waiting for 3 min.)
- a -b, g - h, o - p : 60 sec. Forcible operation.
- h - o : 7 min. time save control.
- q - t : freeze prevention control.
- v - y : outdoor fan control.

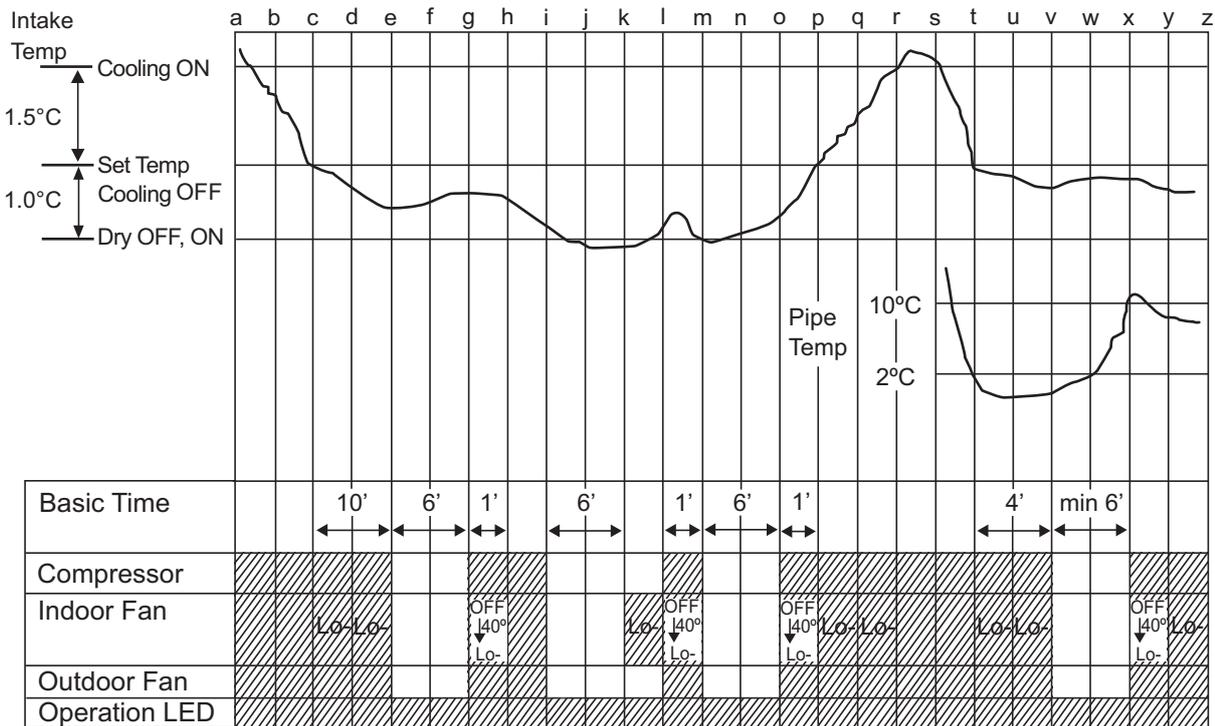
 Operation
 Stop

12.2 Soft Dry Operation

- Soft Dry operation can be set using remote control.
- Soft Dry operation is applied to dehumidify and to perform a gentle cooling to the room.
- This operation starts when the intake air temperature sensor reaches -1.5°C from the setting temperature on the remote control.
- When operation begins, Soft Dry will be switched "ON" for a maximum 10 minutes, then Soft Dry operation will be turned "OFF" for a minimum 6 minutes. After that, the Soft Dry operation will be "ON" and "OFF" based on the setting temperature as shown in figure below.
- However after 3 minutes of compressor off, during Soft Dry "OFF" (within 6 minutes Soft Dry restart control), the indoor unit will start to operate at normal Cooling mode if the intake temperature is higher than Cooling "ON" point.



12.2.1 Soft Dry Operation Time Diagram (For PC12TKF)

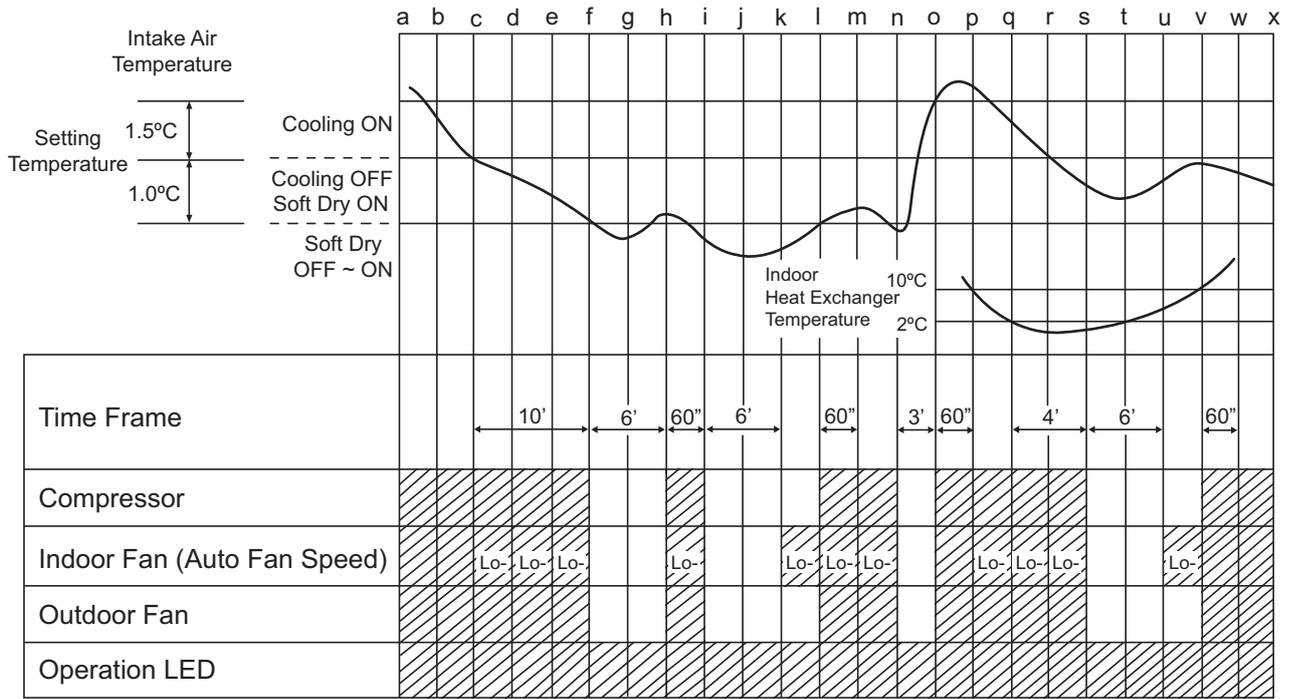


<Description of operation>

- a - c : Minimum 3 minutes restart control (Time Delay Safety Control) - Cooling operation.
- c - e : 10 minutes dry operation.
- e - g, i - k, m - o, v - x : Minimum 6 minutes restart control (Time Delay Safety Control) - Soft Dry operation.
- g - h, l - m, o - p : Minimum 60 seconds force operation.
- t - x : Freeze Prevention control.

 Operation
 Stop

12.2.2 Soft Dry Operation Time Diagram (For PC18/24TKF)



<Description of operation>

h - i, l - m, o - p, v - w : Minimum 60 seconds forced operation

n - o : Minimum 3 minutes restart control (Time Delay Safety Control) - Cooling operation

f - h, i - k, s - u : Minimum 6 minutes restart control (Time Delay Safety Control) - Soft dry operation

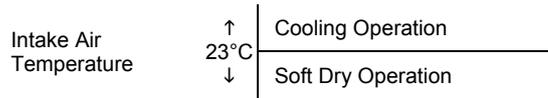
q - v : Freeze Prevention Control

Operation

Stop

12.3 Automatic Operation

- Automatic operation can be set using remote control.
- This operation starts to operate with indoor fan at SLo speed for 20 seconds to judge the intake air temperature.
- After judged the temperature, the operation mode is determined by referring to the below standard.



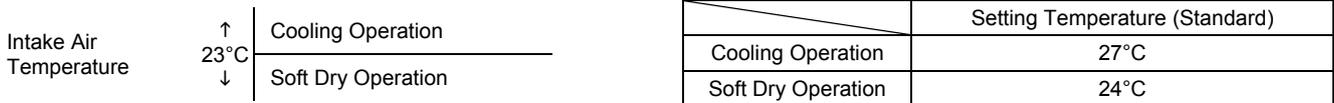
- Then, the unit start to operate at determined operation mode, until it is switched off using remote control, with the setting temperature as shown in table below.

| | Setting Temperature (Standard) |
|--------------------|--------------------------------|
| Cooling Operation | 25°C |
| Soft Dry Operation | 22°C |

- The setting temperature for all the operations can be changed one level up or one level down from the standard temperature as shown in below table by pressing on the temperature up or temperature down button at remote control.

| | | Cooling | Soft Dry |
|----------|--------|---------|----------|
| Higher | → +2°C | 27°C | 24°C |
| Standard | → ±0°C | 25°C | 22°C |
| Lower | → -2°C | 23°C | 20°C |

- The operation mode judging temperature and standard setting temperature can be increased by 2°C permanently, by open the circuit of JX03 at indoor units printed circuit board.



12.4 Indoor Fan Speed Control

- Indoor fan speed can be set using remote control

12.4.1 Fan Speed Rotation Chart

| Speed | Fan Speed (rpm) | | |
|-------|-----------------|------------|------------|
| | CS-PC12TKF | CS-PC18TKF | CS-PC24TKF |
| SHi | 1180 | 1200 | 1300 |
| Hi | 1150 | 1120 | 1220 |
| Me | 980 | 1040 | 1110 |
| HLo | 850 | 1020 | 1050 |
| CLo | 810 | 970 | 1000 |
| Lo- | 770 | 740 | 850 |
| SLo | 750 | 590 | 670 |
| QHi | 1080 | 1030 | 1130 |
| QMe | 910 | 950 | 1020 |
| QLo | 740 | 880 | 910 |

12.4.2 Automatic Fan Speed Control

- When set to Auto Fan Speed, the fan speed is adjusted between maximum and minimum setting as shown in the table.
 - Fan speed rotates in the range of Hi and Me.
 - Deodorizing Control will be activated.

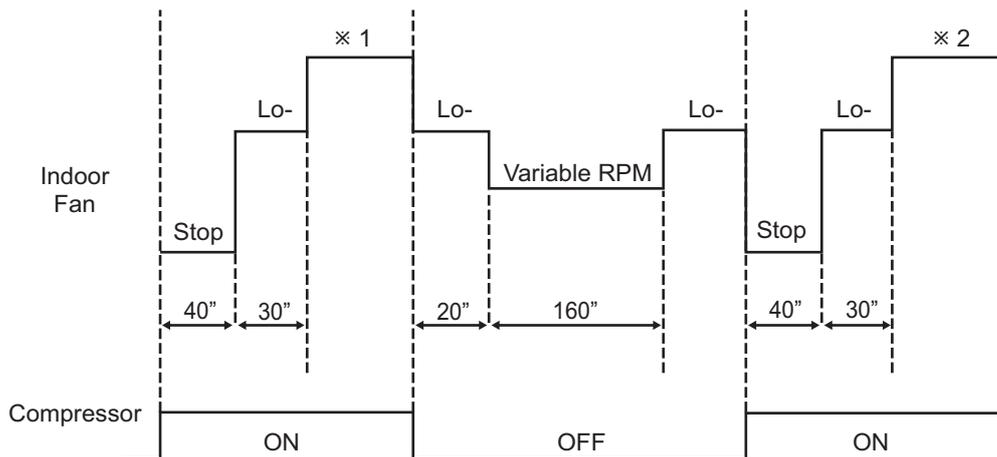
(For PC12TKF)

| Speed Mode | | | SHi | Hi | Me | HLo | CLo | Lo- | SLo | Stop |
|---------------|--------|--------|-------|----|-------|-------|-----|--------|-----|------|
| Cooling | Normal | Manual | Hi | ○ | | | | | | |
| | | | Me | | ○ | | | | | |
| | | | Lo | | | | ○ | | | |
| | | Auto | | ○ | ○ | | | ○ | | ○ |
| | Quiet | Manual | QHi | | Hi-70 | | | | | |
| | | | QMe | | | Me-70 | | | | |
| | | | QLo | | | | | CLo-70 | | |
| Auto | | Hi-70 | Me-70 | | | | ○ | | ○ | |
| Jetstream | | ○ | | | | | | | | |
| Soft Dry | Normal | Manual | | | | | | ○ | | ○ |
| | | Auto | | | | | | ○ | | ○ |
| | Quiet | Manual | | | | | | ○ | | ○ |
| | | Auto | | | | | | ○ | | ○ |
| Mode Judgment | | | | | | | | | ○ | |

(For PC18/24TKF)

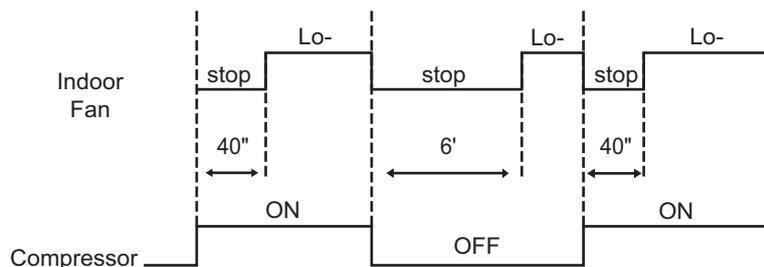
| Speed Mode | | | SHi | Hi | Me | HLo | CLo | Lo- | SLo | Stop |
|---------------|--------|--------|-------|----|-------|-------|-----|--------|-----|------|
| Cooling | Normal | Manual | Hi | ○ | | | | | | |
| | | | Me | | ○ | | | | | |
| | | | Lo | | | | ○ | | | |
| | | Auto | | ○ | ○ | | | ○ | | ○ |
| | Quiet | Manual | QHi | | Hi-90 | | | | | |
| | | | QMe | | | Me-90 | | | | |
| | | | QLo | | | | | CLo-90 | | |
| Auto | | Hi-90 | Me-90 | | | | ○ | | ○ | |
| Jetstream | | ○ | | | | | | | | |
| Soft Dry | Normal | Manual | | | | | | ○ | | ○ |
| | | Auto | | | | | | ○ | | ○ |
| | Quiet | Manual | | | | | | ○ | | ○ |
| | | Auto | | | | | | ○ | | ○ |
| Mode Judgment | | | | | | | | | ○ | |

- Auto Fan Speed during cooling operation:
 - 1 Indoor fan will rotate alternately between off and on as shown in below diagram.
 - 2 At the beginning of each compressor starts operation, indoor fan speed increases gradually for deodorizing purpose.
 - 3 For the first time the compressor operates, indoor fan will be switched to Hi fan speed from Lo- after 70 seconds from the start of compressor. This cause the room temperature to achieve the setting temperature quickly.
 - 4 During compressor stops, indoor fan will operate at Lo- for the beginning 3 minutes to prevent higher volume of refrigerant in liquid form returning to the compressor.
 - 5 After the compressor turned off for 3 minutes, indoor fan will start to operate at Lo- to circulate the air in the room. This is to obtain the actual reading of the intake air temperature.
 - 6 For the resume of compressor operation, indoor fan will operate at Me fan speed to provide comfort and lesser noise environment, after 70 seconds from the restarts of compressor.



- ※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).
- ※ 2 Fan Speed is Me after the compressor restarts.

- Auto Fan Speed during Soft Dry operation:
 - 1 Indoor fan will rotate alternately between off and Lo-.
 - 2 At the beginning of each compressor starts operation, indoor fan will increase fan speed gradually for deodorizing purpose.
 - 3 When compressor turned off for 6 minutes, indoor fan will start at Lo- to circulate the air in the room. This is to obtain the actual reading of intake air temperature.



12.4.3 Manual Fan Speed Control

- Manual fan speed adjustment can be carried out by using the Fan Speed selection button at the remote control.
- There are 3 types of fan speed settings: Lo, Me, Hi.

12.4.4 Indoor Fan Motor rpm Abnormal Control

- Immediate after the fan motor is started, rpm abnormal control is performed every second.
- During fan motor on, if fan motor feedback ≥ 2550 rpm or < 50 rpm continuously for 10 seconds, the fan motor error counter increased; fan motor is then stopped and restarted. If the fan motor error counter increased to 7, then air conditioner will stop operation.

12.5 Outdoor Fan Speed Control

- Outdoor fan speed can be changes to Hi or Lo according to outdoor temperature. (For PC24TKF)
- There is only one speed for outdoor fan motor. (For PC12/18TKF)
- When the air conditioner is turned on, the compressor and the outdoor fan will operate simultaneously.
- Likewise, both compressor and outdoor fan will stop at the same time if the unit is turned off.

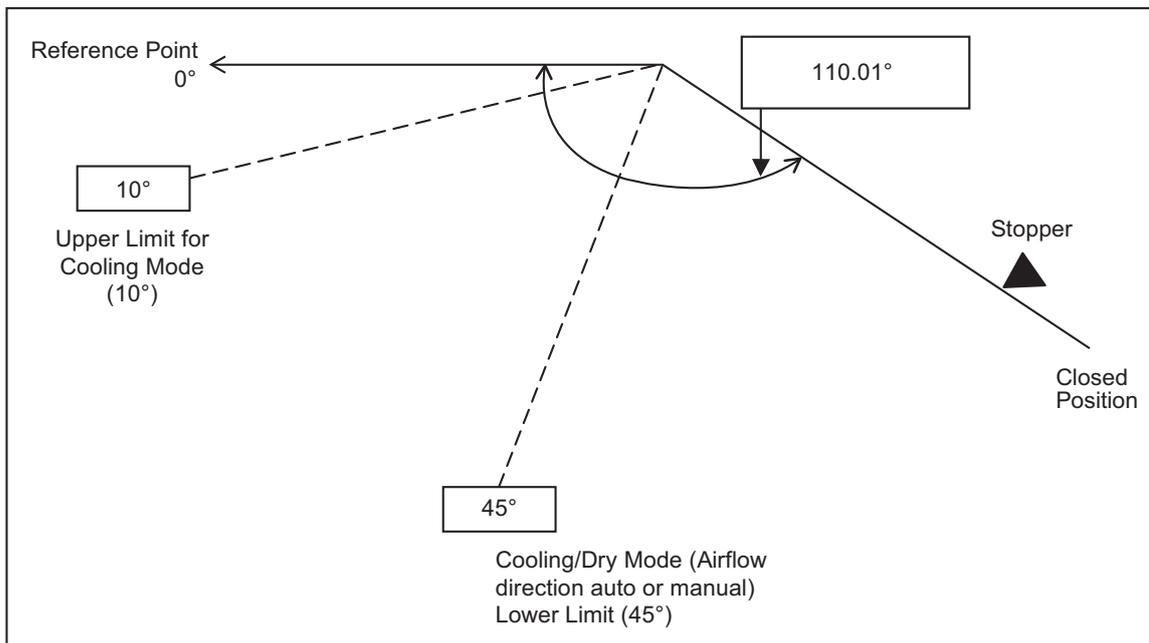
12.6 Vertical Airflow Direction Control

12.6.1 Auto Control

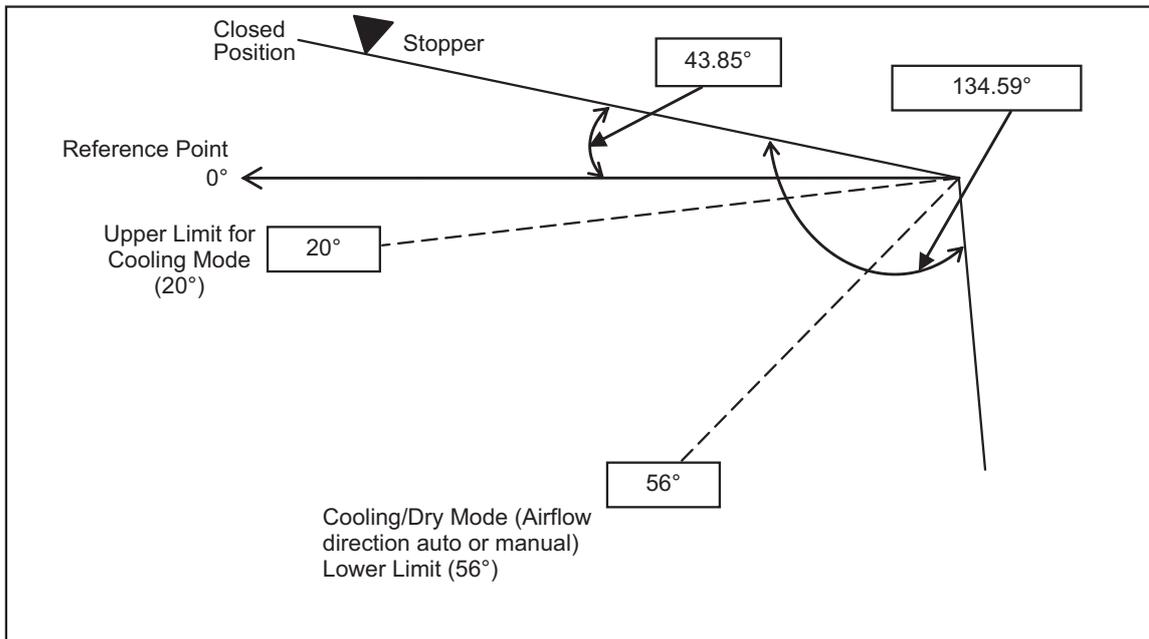
- When the vertical airflow direction is set to Auto using the remote control, the louver swings up and down as shown in the diagram.
- When stops operation using the remote control, the discharge vent is reset and stops at the closing position.
- During Cooling operation or Soft Dry operation, indoor fan motor may stop to rotate at certain periods. At that condition, the louver will stop swinging.

(For PC12TKF)

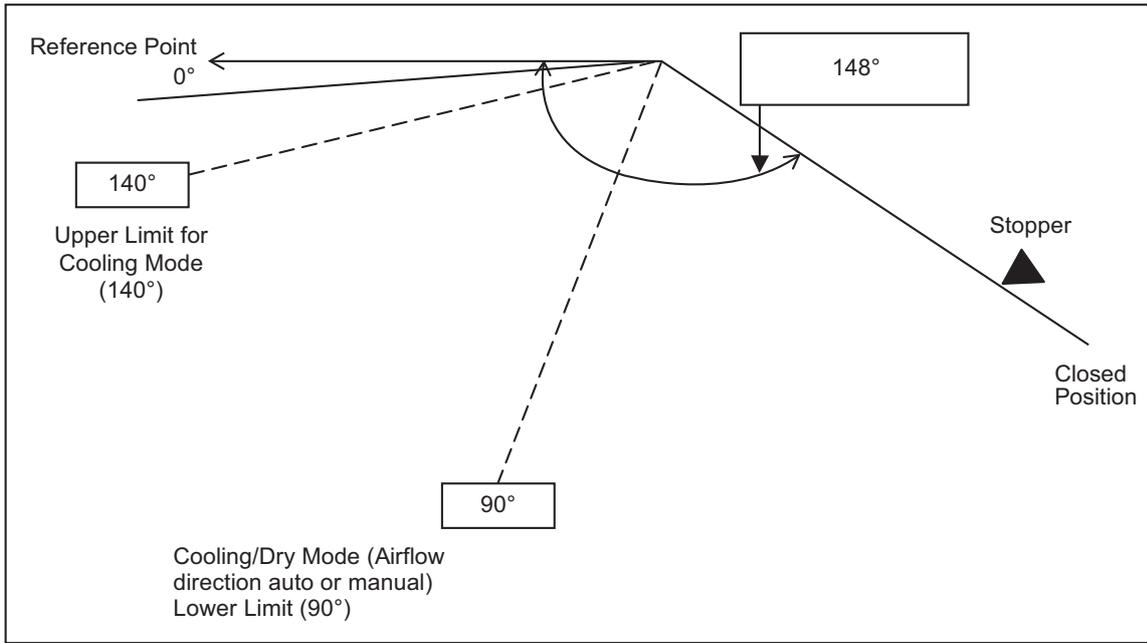
Inner Vane



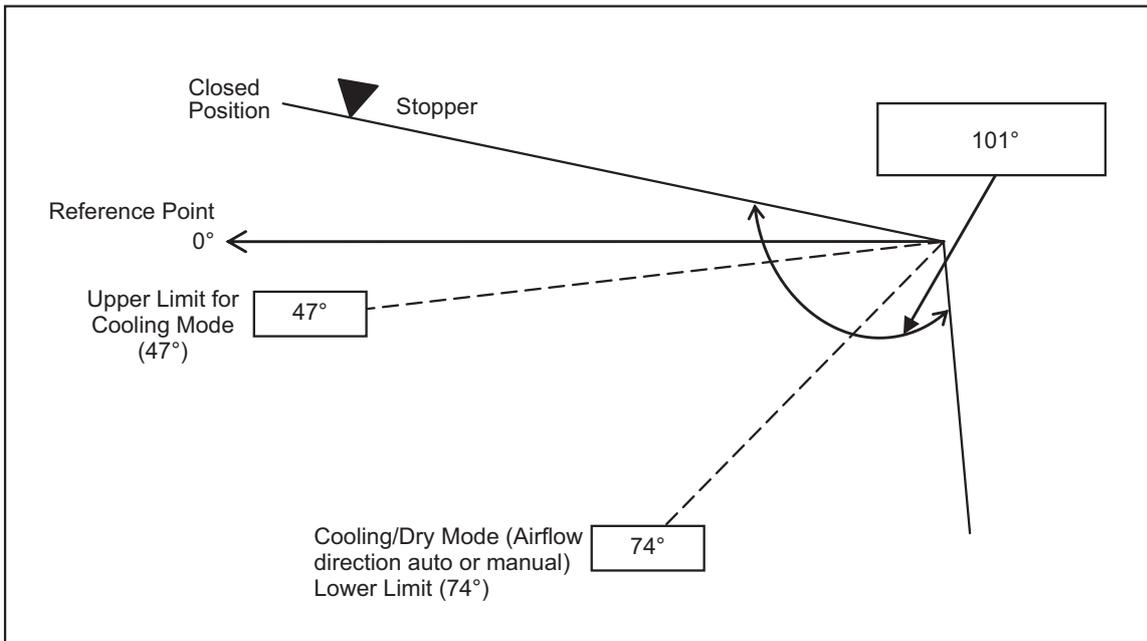
Outer Vane



(For PC18/24TKF)
Inner Vane



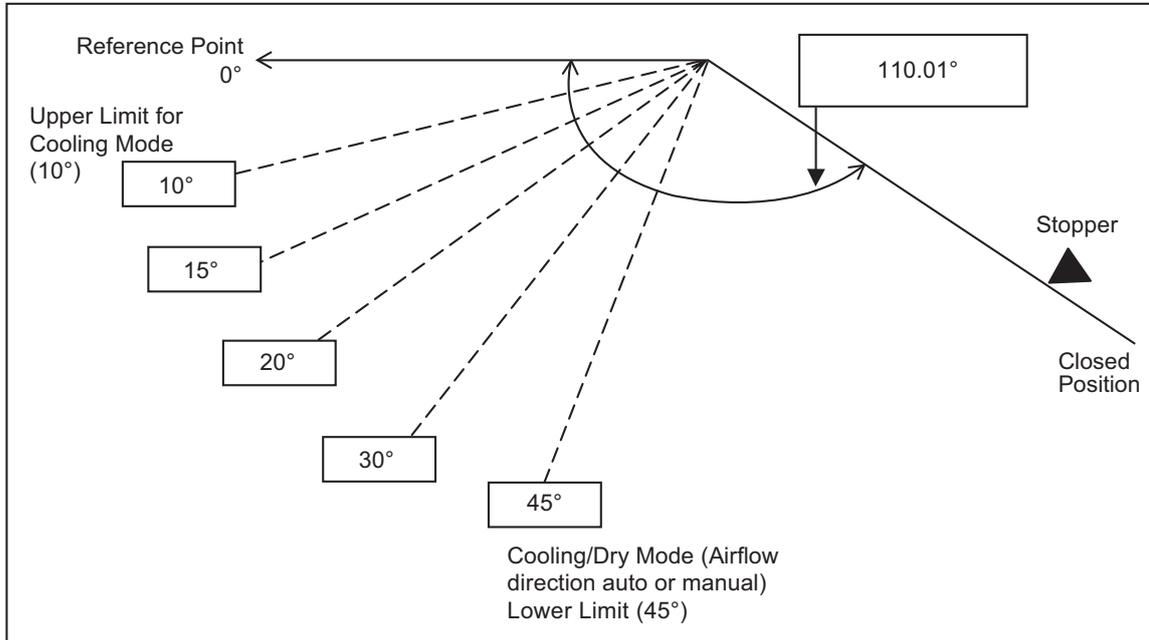
Outer Vane



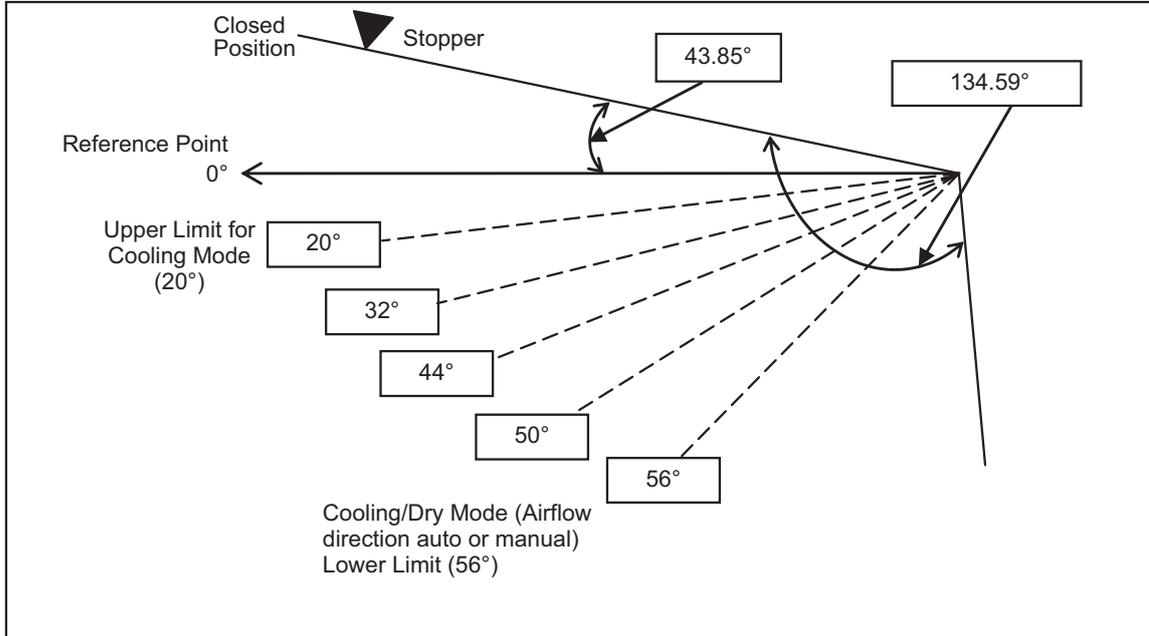
12.6.2 Manual Control

- When the vertical airflow direction is set to Manual using the remote control, the automatic airflow is released and the airflow direction louver move up and down in the range shown in the diagram.
- The louver can be adjusted by pressing the button to the desired louver position.
- When stop operation using the remote control, the discharge vent is reset, and stop at the closing position.

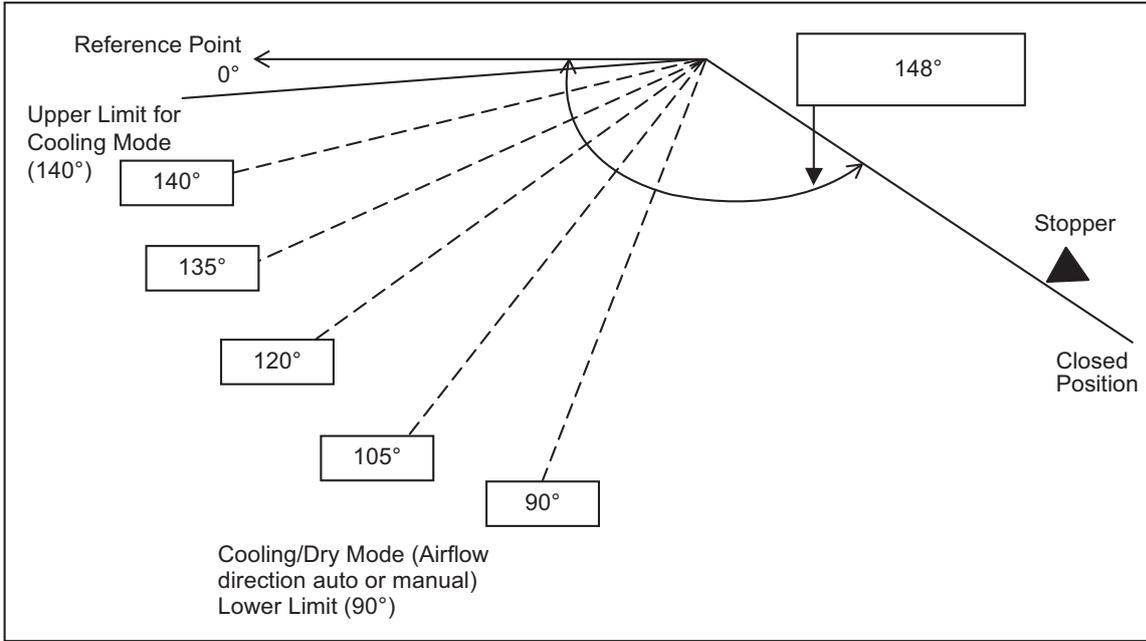
(For PC12TKF)
Inner Vane



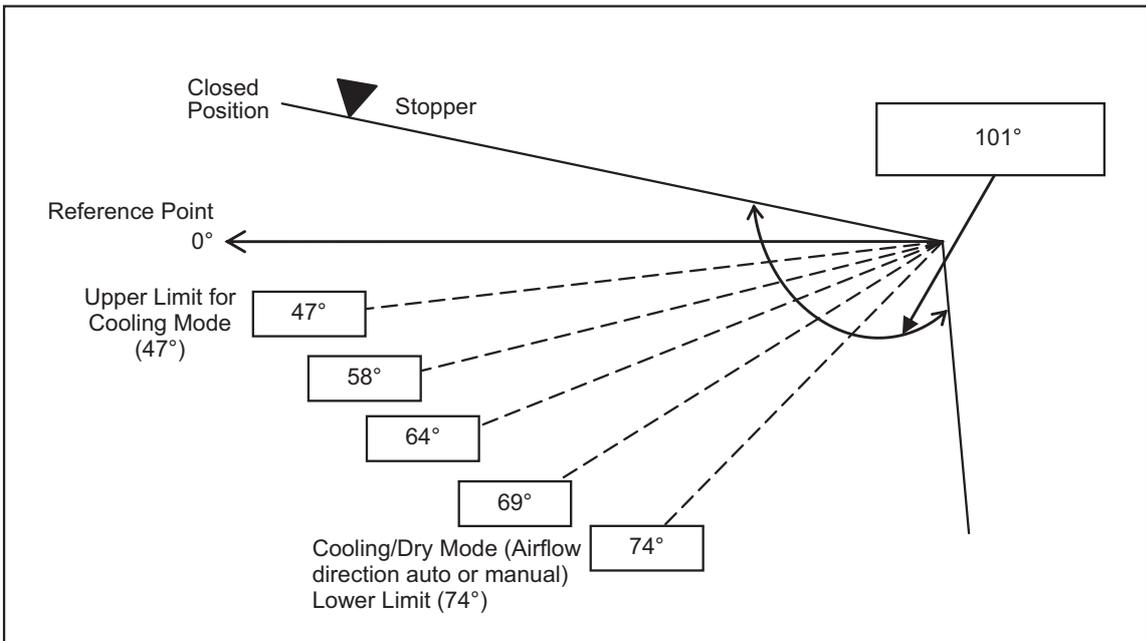
Outer Vane



(For PC18/24TKF)
Inner Vane



Outer Vane



12.7 Horizontal Airflow Direction Control

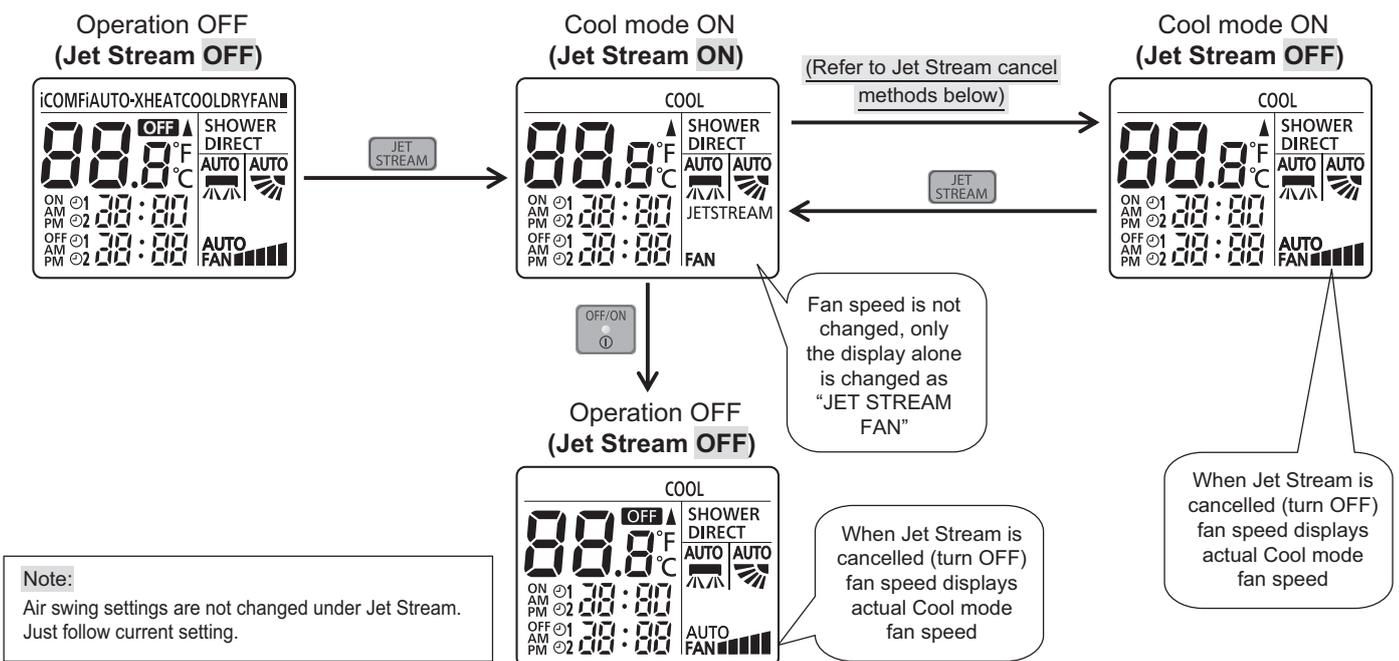
The horizontal airflow direction louvers can be adjusted manually by hand.

12.8 JETSTREAM Operation

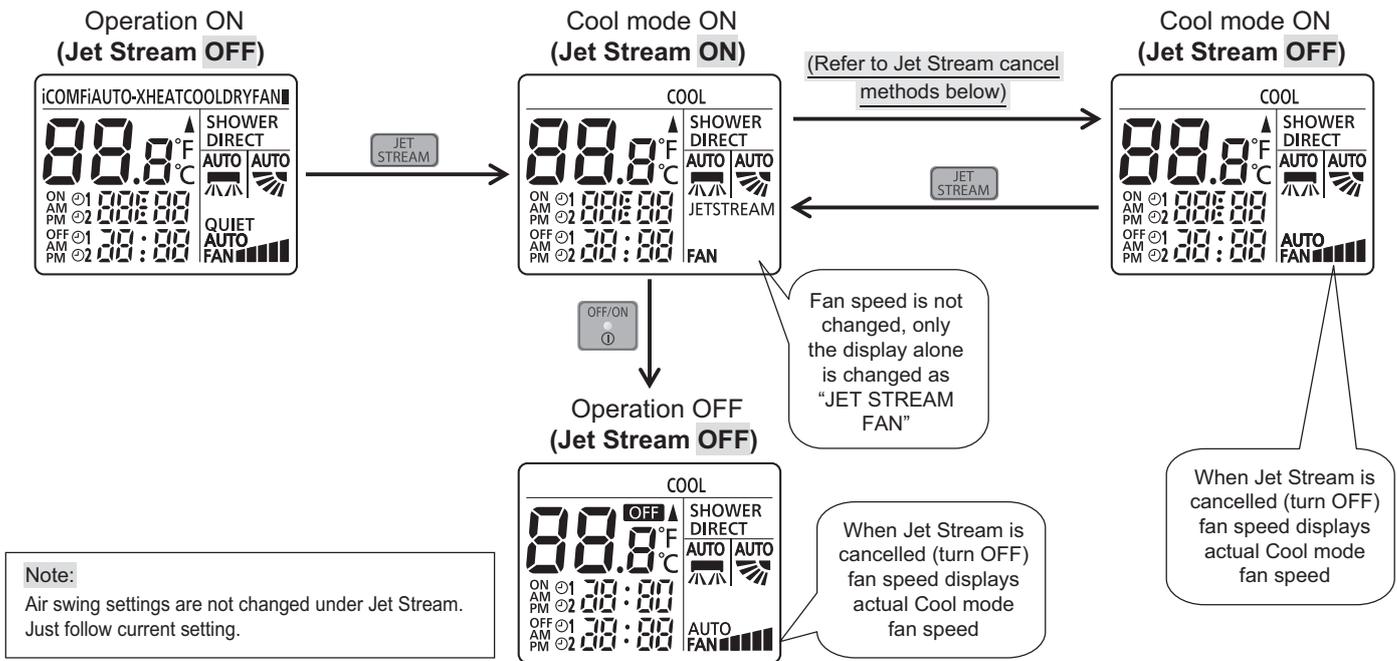
- JETSTREAM operation can be set using remote control.
- This operation is used to cool down room temperature at faster speed compare to normal operation by thermal shift and fan speed control.
- Thermal control.
 - Fan speed setting temperature will shift 2°C lower than remote control setting temperature for maximum 1 hours to accelerate room cooling.
- Fan speed control.
 - Fan speed is fixed at Super high fan speed.
 - Fan speed selection is prohibited. Fan speed selection will cancel JETSTREAM operation.
- JETSTREAM operation can be cancelled by pressing the respective button again.
- Airflow direction control is follow remote control setting.
- Horizontal vane control
 - During JETSTREAM operation at Cooling mode, if user changes horizontal vane direction setting, horizontal vane direction will be -10° of the new setting.
 - Remote control remains the same set displays horizontal vane direction, but the actual unit horizontal vane angle is different.

| Air Swing Setting | Operation Mode: Cool |
|-------------------|---|
| Manual | -10° down from previous step setting |
| Auto | Auto air swing with range shift -10° down |

- Control condition
 - JETSTREAM operation start condition
 - When JETSTREAM button at remote control is pressed.
 - When unit in OFF operation and JETSTREAM button at remote control is pressed. Unit will turn ON under COOL mode and JETSTREAM operation.
 - JETSTREAM operation stop condition
 - When one of the following conditions is satisfied, quiet operation stops:
 - Quiet button is pressed.
 - Stop by OFF/ON button.
 - FAN SPEED button is pressed.
 - JETSTREAM button is pressed again.
 - Operation mode is changed.
 - When daily timer OFF reached or Sleep timer ends.
- JETSTREAM ON/OFF method
 - When operation is OFF



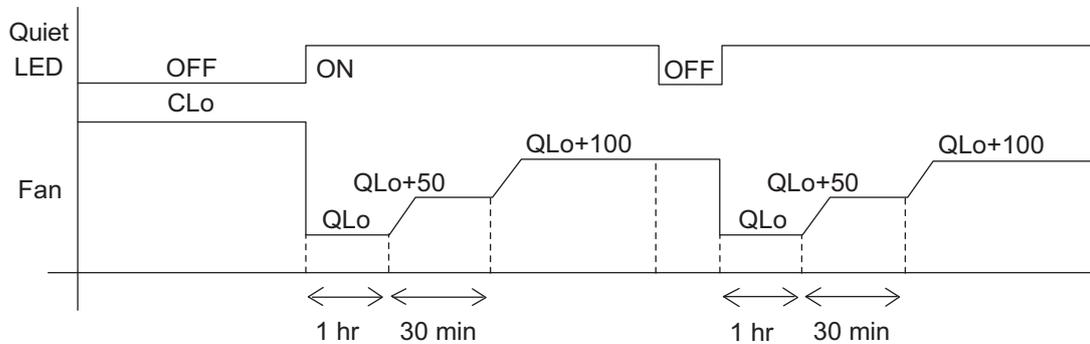
- When operation is ON



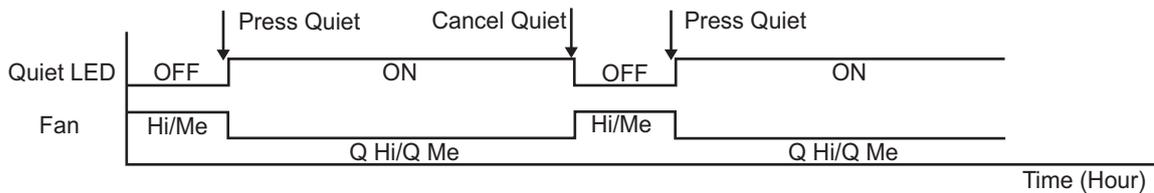
12.9 Quiet Operation

(For Cooling Operation or cooling region of Soft Dry Operation)

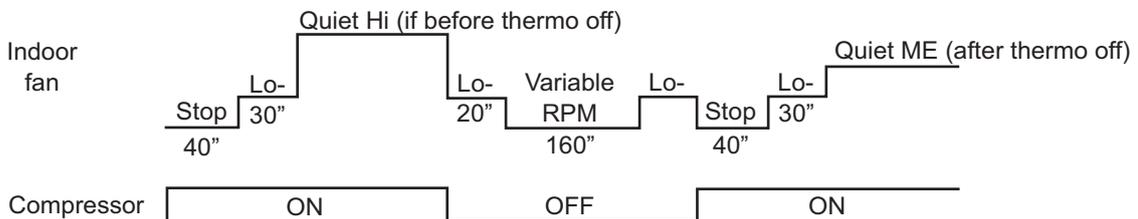
- To provide quiet cooling operation condition.
- Once the Quiet Operation is set at the remote control, the Quiet LED brightness will be dimmed. The sound level will reduce around 2dB(A) for Lo fan speed or 3dB(A) for Hi/Me fan speed against the present operation sound level.
- Dew formation become severe at Quite Lo Cool, therefore Quiet Lo cool operated only 1 hour 30 minutes (1 hour QLo, 30 minutes QLo + 50 rpm).
- Manual Airflow Direction:
 - RPM control during Lo cool



- RPM control during Hi & Me cool



- Auto Fan Speed



- Quiet operation stops when:
 - Quiet button is pressed again.
 - JETSTREAM button is pressed.
 - Stop by OFF/ON button.
 - OFF Timer activates.
 - Sleep mode timer delay OFF.
 - Operation mode button is changed.

12.10 Timer Control

12.10.1 ON Timer

- When the ON Timer is set using the remote control, the unit will start to operate slightly before the set time, so that the room will reach nearly to the set temperature by the set time.
- For Cooling and Soft Dry operation, the operation will start 15 minutes before the set time.
- For Automatic operation, the indoor fan will operate at SLo speed for 20 seconds, 15 minutes before the set time to detect the intake air temperature to determine the operation mode. The Power indicator will blink at this time.

12.10.2 OFF Timer

- When the OFF Timer is set by using the remote control, the unit will stop operate according to the desired setting.
Notes:
 - 1 By pressing ON/OFF operation button, the ON Timer or OFF Timer setting will not be cancelled.
 - 2 To cancel the previous timer setting, press CANCEL button.
 - 3 To activate the previous timer setting, press SET button.
 - 4 If main power supply is switched off, the Timer setting will be cancelled.

12.11 Sleep Mode Operation

To maximise comfort while sleeping



- This operation provides you with a comfortable environment while sleeping. It will automatically adjust the sleep pattern temperature during the activation period.
- The indoor unit indicator will dim when this operation is activated. This is not applicable if the indicator brightness has been manually dimmed.
- This operation is incorporated with the activation timer (0.5, 1, 2, 3, 4, 5, 6, 7, 8 or 9 hours).
- This operation can be set together with timer. Sleep operation has the priority over OFF timer.
- This operation can be cancelled by pressing the respective button when the sleep timer reaches 0.0h.

12.12 Random Auto Restart Control

- If there is a power failure during operation, the air conditioner will automatically restart after 3 to 4 minutes when the power is resumed.
- It will start with previous operation mode and airflow direction.
- If there are more than one air conditioner unit in operation and power failure occur, restart time for each unit to operate will be decided randomly using 4 parameters: intake air temperature, setting temperature, fan speed and air swing louver position.
- This random Auto Restart Control is not available when Timer is set.
- This control can be omitted by open the circuit of JX02 (refer printed circuit board indoor unit).

12.13 Remote Control Signal Receiving Sound

- Short beep sound will be heard when turn ON the air conditioner or enabling other operations.
- Long beep sound will be heard when turn OFF the air conditioner or disabling other operations.

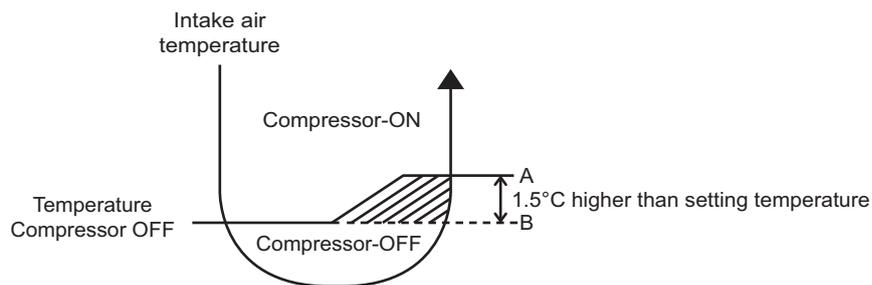
13. Protection Control

13.1 Restart Control (Time Delay Safety Control)

- When the thermo-off temperature (temperature which compressor stops to operate) is reached during:
 - Cooling operation – the compressor stops for 3 minutes (minimum) before resume operation.
 - Soft Dry operation – the compressor stops for 6 minutes (minimum) before resume operation.
- If the operation is stopped by the remote control, the compressor will not turn on within 3 minutes from the moment operation stop, although the unit is turn on again within the period.
- This phenomenon is to balance the pressure inside the refrigerant cycle.

13.2 7 Minutes Time Save Control

- The compressor will start automatically if it has stopped for 7 minutes and the intake air temperature falls between the compressor ON (A) temperature and compressor OFF temperature (B) during the period.
- This phenomenon is to reduce the built up humidity inside a room.



13.3 60 Seconds Forced Operation

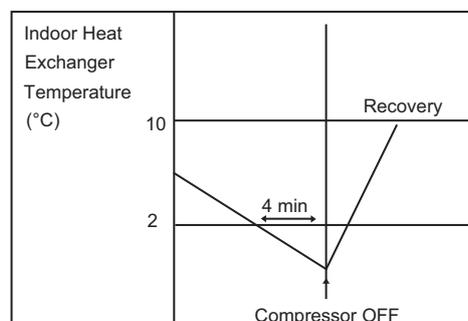
- Once the air conditioner is turned on, the compressor will not stop within 60 seconds in a normal operation although the intake air temperature has reached the thermo-off temperature. However, force stop by pressing the OFF/ON button at the remote control is permitted.
- The reason for the compressor to force operation for minimum 60 seconds is to allow the refrigerant oil run in a full cycle and return back to the outdoor unit.

13.4 Starting Current Control

- When the compressor, outdoor fan motor and indoor fan motor are simultaneously started, the indoor fan motor will start to operate 1.6 second later.
- The reason of the difference is to reduce the starting current flow.

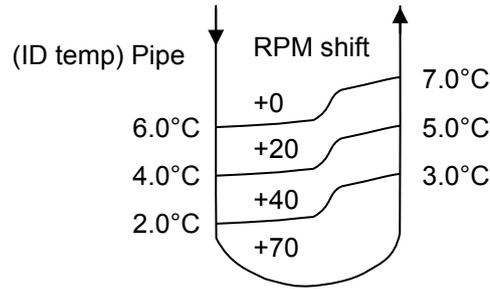
13.5 Freeze Prevention Control

- If the temperature of the indoor heat exchanger falls below 2°C continuously for 4 minutes or more, the compressor turns off. The fan speed setting remains the same.
- This phenomenon is to protect the indoor heat exchanger from freezing and to prevent higher volume of refrigerant in liquid form returning to the compressor.
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).
- Restart control (Time Delay Safety Control) will be applied in this Control if the recovery time is too short.



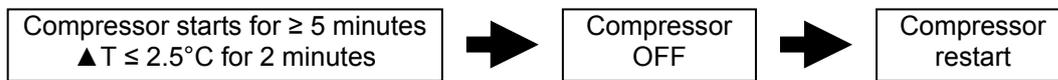
(For PC12TKF)

- The current fan speed will change to freeze prevention speed after 70 seconds compressor on. The fan speed will be increased according to the indoor pipe temperature the figure below:



13.6 Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C or less for continuously 2 minutes, compressor will stop and restart automatically.
- Time Delay Safety Control is activated before the compressor restart.



▲ T = Intake air temperature – Indoor heat exchanger temperature

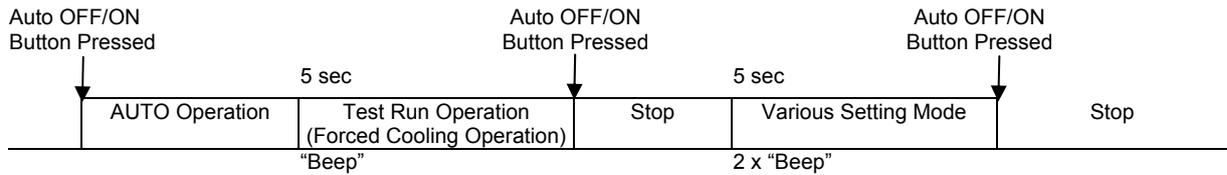
- This is to prevent compressor from rotate reversely when there is an instantaneous power failure.
- If this condition happens continuously for 5 times within 50 minutes, unit will turns OFF with TIMER indicator blinks.
- The 5 Times counter can be reset when either one of the following condition happen:
 - Unit is OFF by remote control or AUTO OFF/ON button.
 - Indoor intake temperature – Indoor piping temperature > 5°C for 1 minute or more.
 - Operation mode change.
- The unit could be ON by pressing OFF/ON button at remote control but the TIMER LED will continue blinking.
- TIMER LED blinking will be reset if:
 - Indoor intake temperature – Indoor piping temperature > 5°C for 1 minute or more.
 - Power supply reset.

13.7 Dew Prevention Control

- To prevent dew formation at indoor unit discharge area.
- This control will be activated if:
 - Cooling mode.
 - Remote Control setting temperature is less than 25°C.
 - Fan speed is at CLo.
 - Room temperature is constant ($\pm 1^\circ\text{C}$) for 60 minutes (For PC12TKF series) and 30 minutes (For PC18/24TKF series).
 - Compressor is continuously running.
- Fan speed will be adjusted accordingly in this control.
 - Fan speed will be increased slowly.
- Dew prevention stop condition
 - Remote control setting temperature is more than 25°C.
 - Fan speed is not set to CLo.

14. Servicing Mode

14.1 Auto OFF/ON Button



1 AUTO OPERATION MODE

The AUTO Operation will be activated immediately once the Auto OFF/ON button is pressed. This operation can be used to operate air conditioner if remote control is misplaced or malfunction.

2 TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)

The Test Run Operation will be activated if the Auto OFF/ON button is pressed continuously for more than 5 seconds. A “beep” sound will be heard at the fifth second, in order to identify the starting of this operation.

3 VARIOUS SETTING MODE

The Various Setting Mode will be activated if (within 20 seconds of Test Run Operation) the Auto OFF/ON button is pressed for more than 5 seconds. 2 “beep” sounds will be heard to identify the starting of this operation.

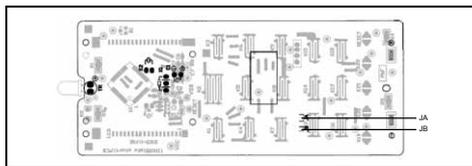
Under Various Setting Mode, user could perform the following operation:

- i. Press Auto OFF/ON button to toggle remote control receiving sound.
 - Short “beep”: Turn ON remote control receiving sound.
 - Long “beep”: Turn OFF remote control receiving sound.

After Auto OFF/ON button is pressed, the 20 seconds counter for Remote Control Receiving Sound OFF/ON Mode is restarted.

ii. Remote Control Number Switch.

- There are 4 types of remote control transmission code could be selected and stored in EEPROM of indoor unit. The indoor unit will only operate when received signal with same transmission code from remote control. This could prevent signal interference when there are 2 or more indoor units installed nearby together.
- To change remote control transmission code, short or open jumpers at the remote control printed circuit board.

|  | Remote Control Printed Circuit Board | | |
|---|--------------------------------------|----------------|--------------------|
| | Jumper A (J-A) | Jumper B (J-B) | Remote Control No. |
| | Short | Open | A (Default) |
| | Open | Open | B |
| | Short | Short | C |
| | Open | Short | D |

- During Various Setting Mode, press any button at remote control to transmit and store the desired transmission code to the EEPROM.
- After signal is received, the Various Setting Mode is cancelled and return to normal operation.
- If there is no code is transmitted of Auto OFF/ON button is not pressed within 20 seconds, the Various Setting Mode will be cancelled.

14.2 Remote Control Button

14.2.1 SET Button

- To check remote control transmission code and store the transmission code to EEPROM.
 - Press “Set” button by using pointer.
 - Press “Timer Set” button until a “beep” sound is heard as confirmation of transmission code change.
 - LCD returns to original display if remote control does not operate for 30 seconds.
- To limit set temperature range for COOL & DRY mode.
 - Press “Set” button by using pointer.
 - Press TEMP increment or decrement button to choose No. 3.
 - Press Timer increment or decrement button to select desired temperature low limit of set temperature for COOL & DRY mode.
 - Press Timer Set button to confirm low limit selection.
 - Press TEMP increment or decrement button to choose No. 4.
 - Press Timer decrement or increment button to select desired temperature high limit of set temperature for COOL & DRY mode.
 - Press Timer Set button to confirm high limit selection.
 - LCD returns to original display if remote control does not operate for 30 seconds or press Timer Cancel button.

14.2.2 RESET

- To clear and restore the remote control setting to factory default.
 - Press once to clear the memory

14.2.3 TIMER

- To change indoor unit indicators' intensity:
 - Press continuously for 5 seconds

14.2.4 TIMER

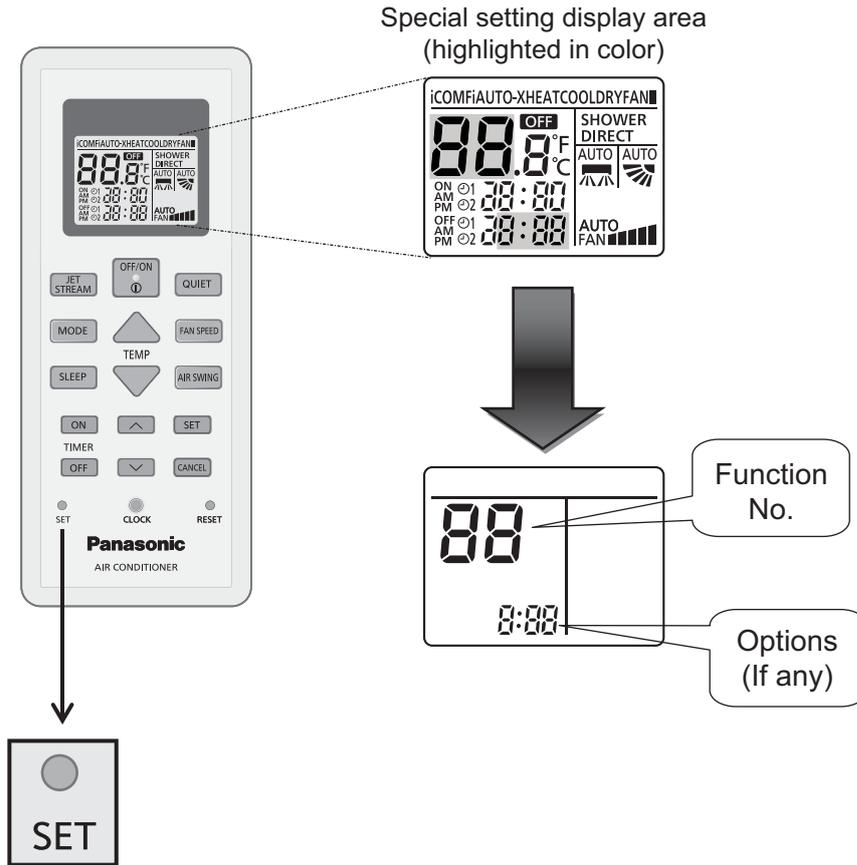
- To change remote control display from Degree Celsius (°C) to Degree Fahrenheit (°F)
 - Press continuously for 10 seconds

14.2.5 TEMP

- To change remote control set temperature range from 16°C ~ 30°C (60°F ~ 86°F) to 20°C ~ 30°C (68°F ~ 86°F).
 - Press continuously for 15 seconds.

14.2.6 Special Setting mode

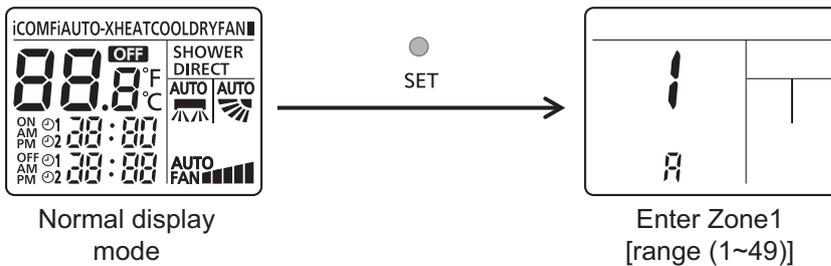
1 LCD display area:



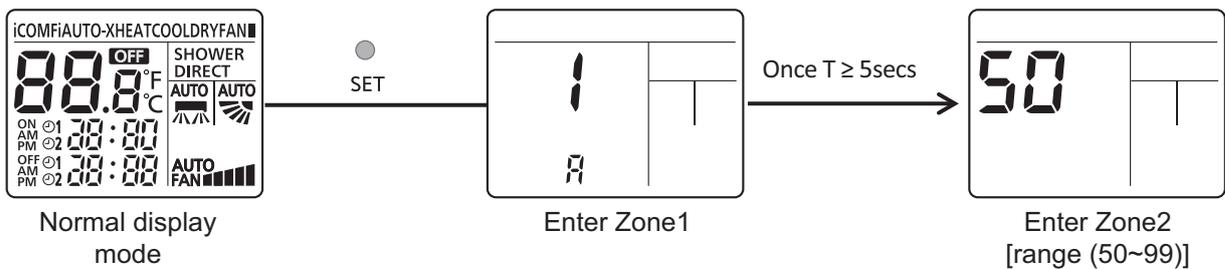
2 Cannot enter this special setting mode under the following conditions:

- ① Operation ON.
- ② Under [Real/ON/OFF] time setting mode.

3 To enter zone 1 area:



4 To enter zone 2 area: (Press SET continuously for T ≥ 5 secs)



5 Function & Options list:

Note: The functions described in the table may not be applicable to the model and may subject to change without further notice.

| | Function | | Options | Remark |
|--------|----------|--|-------------------|--------|
| | No | Name | | |
| Zone 1 | 1 | Remote control number selection | A, B, C, D | |
| | 2 | Solar radiation sensitivity level adjustment | 1, 2, 3, 4, 5 | |
| | 3 | [iAUTO-X/iAUTO/iCOMF, Cool & Dry] mode set temperature [Low2] selection | 16°C ~ [High2] | |
| | 4 | [iAUTO-X/iAUTO/iCOMF, Cool & Dry] mode set temperature [High2] selection | [Low2] ~ 30°C | |
| | 5 | Heat mode set temperature Low1 selection | 16°C ~ [High1] | |
| | 6 | Heat mode set temperature High1 selection | [Low1] ~ 30°C | |
| | 7 | Filter cleaning enable/disable selection | 00 / 01 | |
| | 8 | nanoe-G default ON enable/disable selection | 00 / 01 | |
| | 9 | Dust sensor monitoring & LED enable/disable selection | 00 / 01 | |
| | 10 | Auto restart enable/disable selection | 00 / 01 | |
| | 11 | Dust sensor sensitivity level adjustment | 1, 2, 3 | |
| | 12 ~ 49 | Reserve | | |
| Zone 2 | 50 | ECO demo ON | None (No display) | |
| | 51 | Light sensor check | None (No display) | |
| | 52 | nanoe-G / ECO sensor check | None (No display) | |
| | 53 | DOA check | None (No display) | |
| | 54 | Odor cut control selection [Enable (01) / Disable (00)] | 00 / 01 | |
| | 55 | Frequency tolerance selection [$\pm 3\text{Hz}$ (03) / $\pm 7\text{Hz}$ (07)] | 03 / 07 | |
| | 56 | Fixed fan speed selection during heat mode compressor OFF | 00/01 | |
| | 57 | nanoe check | None (No display) | |
| | 58 | Heat mode thermo shift adjustment | -3°C ~ 3°C | |
| | 59 | Others (Cool & Dry) mode thermo shift adjustment | -3°C ~ 3°C | |
| | 60 | Deice start determination judgment temperature switching | 00/01 | |
| | 61 | Cool mode disable selection [Yes (01) / No (00)] | 00/01 | |
| | 62 | Heat mode disable selection [Yes (01) / No (00)] | 00/01 | |
| | 63 | Base pan heater selection [A / b] | A / b | |
| | 64 | Fan speed reduction during cool mode thermo-Off [Enable (01) / Disable (00)] | 00/01 | |
| | 65 ~ 99 | Reserve | | |

15. Troubleshooting Guide

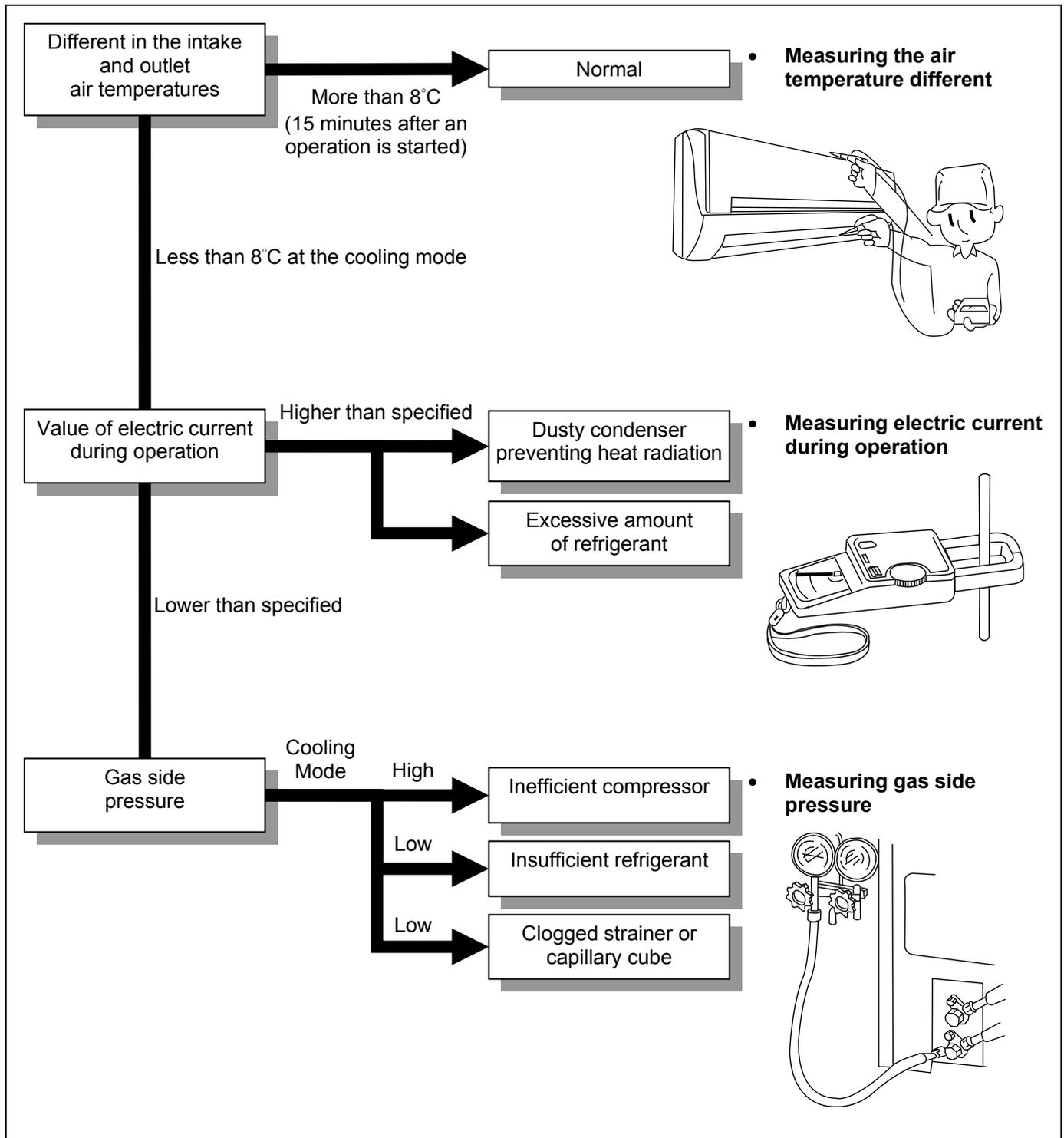
15.1 Refrigeration Cycle System

In order to diagnose malfunctions, ensure the air conditioner is free from electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan. The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table to the right.

Normal Pressure and Outlet Air Temperature (Standard)

| | Gas Pressure MPa (kg/cm ² G) | Outlet air Temperature (°C) |
|--------------|---|-----------------------------------|
| Cooling Mode | 0.4 ~ 0.6 (4 ~ 6) | 12 ~ 16 |

Condition: Indoor fan speed = High
Outdoor temperature = 35°C



15.1.1 Relationship Between the Condition of the Air Conditioner and Pressure and Electric Current

| Condition of the air conditioner | Cooling Mode | | |
|---|--------------|---------------|-----------------------------------|
| | Low Pressure | High Pressure | Electric current during operation |
| Insufficient refrigerant (gas leakage) | ↘ | ↘ | ↘ |
| Clogged capillary tube or strainer | ↘ | ↘ | ↘ |
| Short circuit in the indoor unit | ↘ | ↘ | ↘ |
| Heat radiation deficiency of the outdoor unit | ↗ | ↗ | ↗ |
| Inefficient compression | ↗ | ↘ | ↘ |

- Carry out the measurement of pressure, electric current, and temperature fifteen minutes after an operation is started.

15.1.2 Diagnosis Methods of a Malfunction of a Compressor

| Nature of fault | Symptom |
|--|---|
| Insufficient compressing of a compressor | <ul style="list-style-type: none"> • Electric current during operation becomes approximately 20% lower than the normal value. • The discharge tube of the compressor becomes abnormally hot (normally 70°C to 90°C). • The different between high pressure and low pressure becomes almost zero. |
| Locked compressor | <ul style="list-style-type: none"> • Electric current reaches a high level abnormally, and the value exceeds the limit of an ammeter. In some cases, a breaker turns off. • The compressor has a humming sound. |

16. Disassembly and Assembly Instructions



WARNING

High Voltage is generated in the electrical parts area by the capacitor. Ensure that the capacitor has discharged sufficiently before proceeding with repair work. Failure to heed this caution may result in electric shocks.

16.1 CS-PC12TKF

16.1.1 Indoor Electronic Controllers and Control Board Removal Procedures

16.1.1.1 To Remove Front Grille

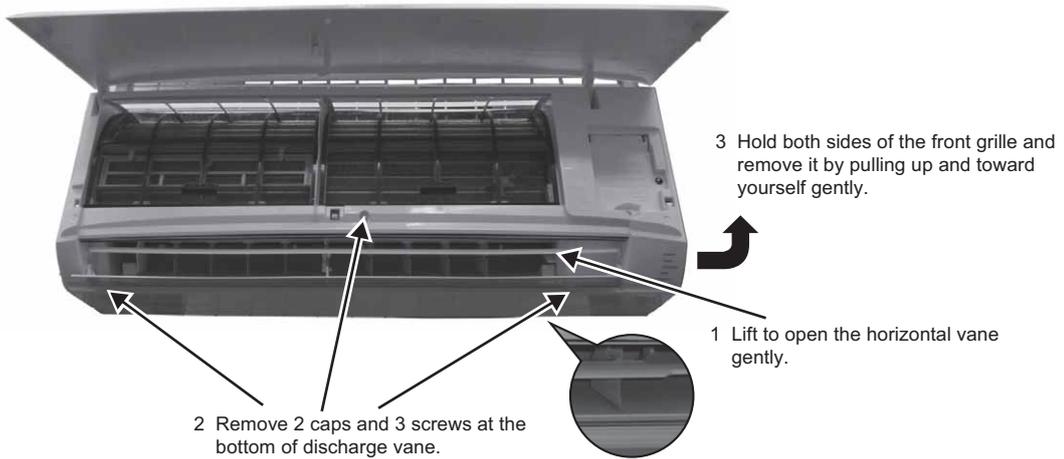


Figure 1

16.1.1.2 To Remove Electronic Controller

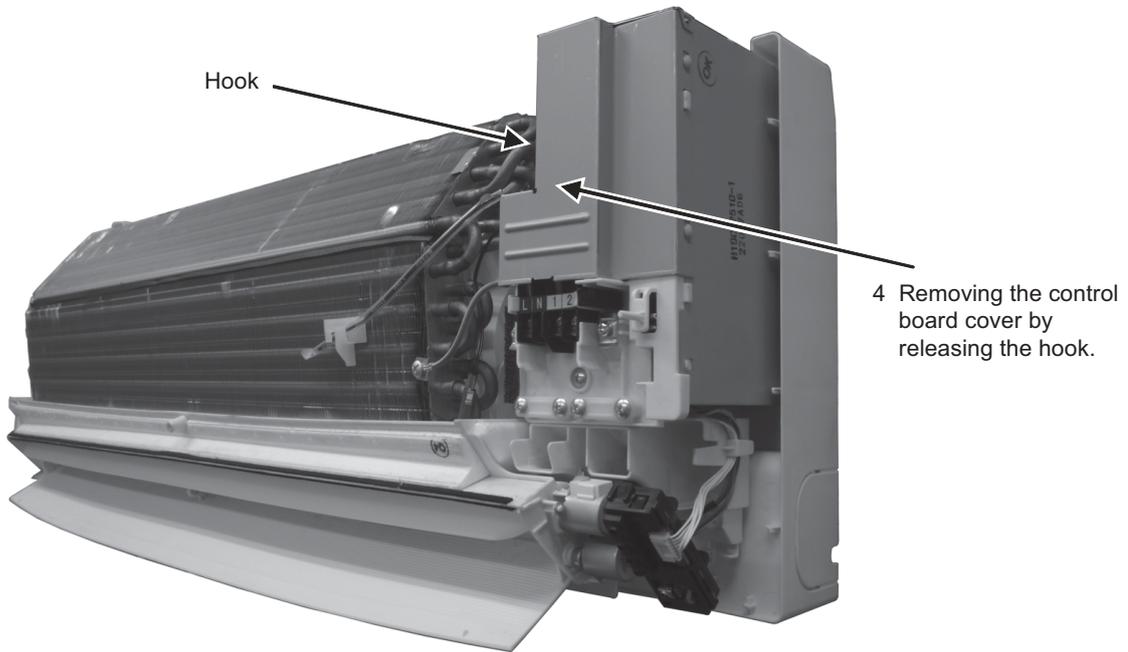


Figure 2

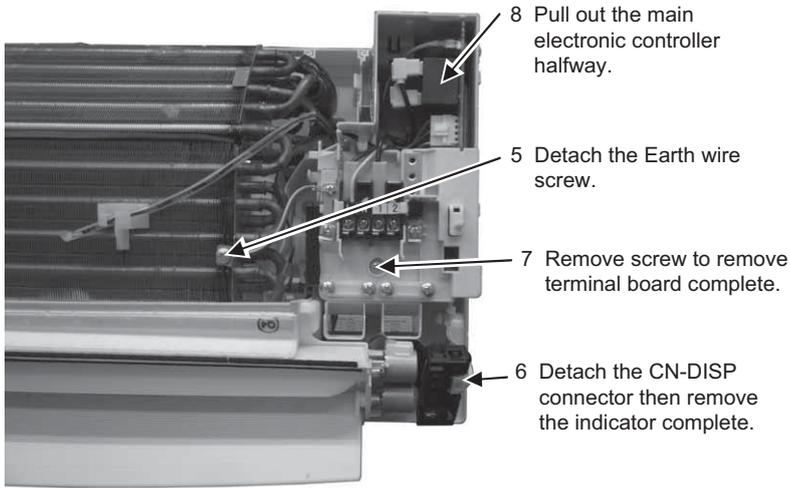
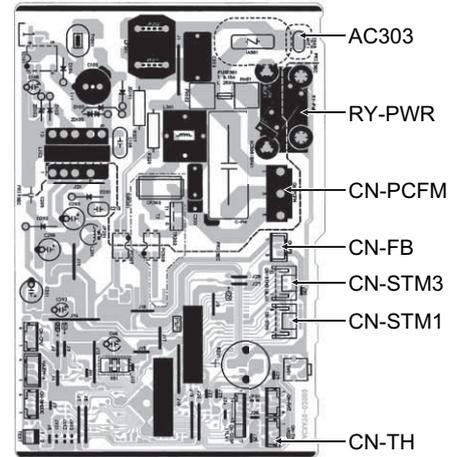


Figure 3

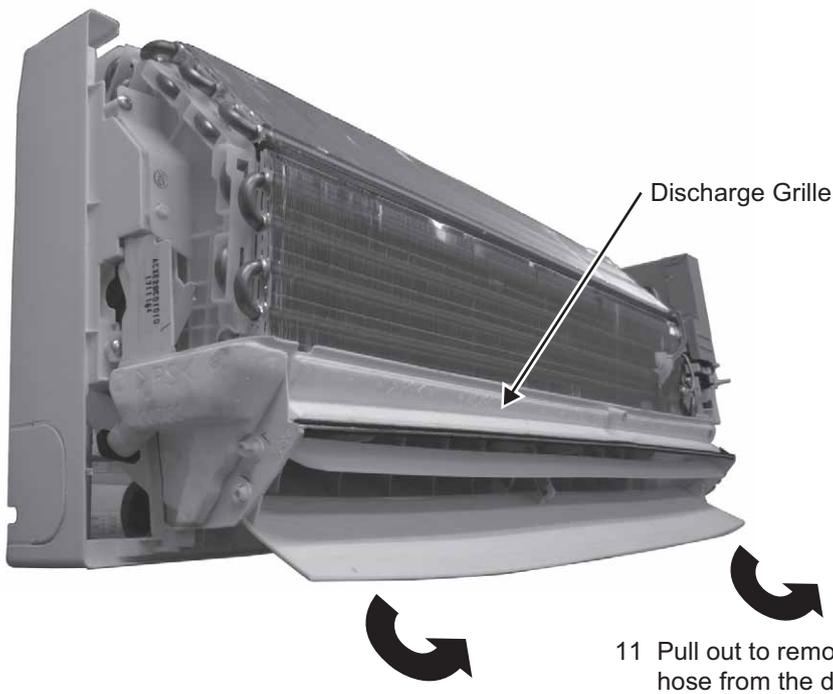
9 Detach connectors as labeled from the electronic controller. Then pull out main controller gently.



10 Detach AC303 (WHT) connector from PCB, then detach the RY-PWR (Black and Brown) from terminal board.

Figure 4

16.1.1.3 To Remove Discharge Grille



12 Then pull the discharge grille downward gently to dismantle it.

11 Pull out to remove the drain hose from the discharge grille

Figure 5

16.1.1.4 To Remove Control Board

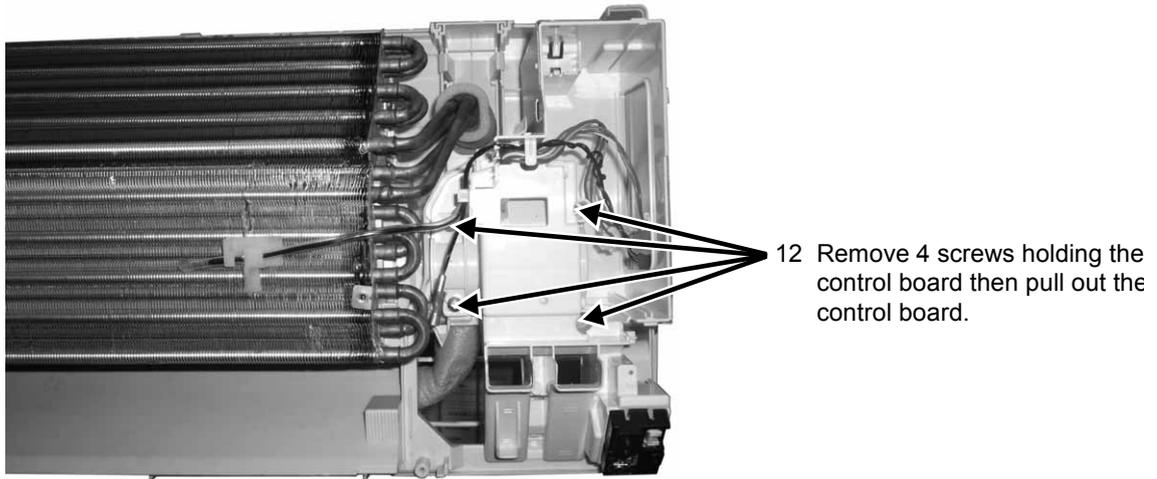


Figure 6

16.1.1.5 To Remove Cross Flow Fan and Indoor Fan Motor

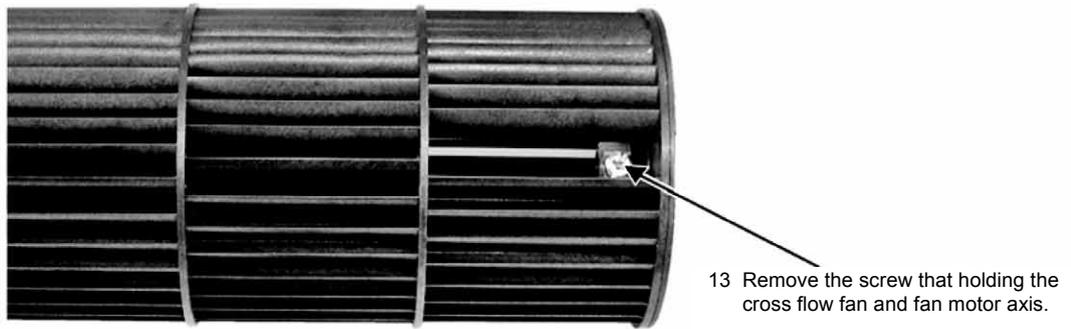


Figure 7

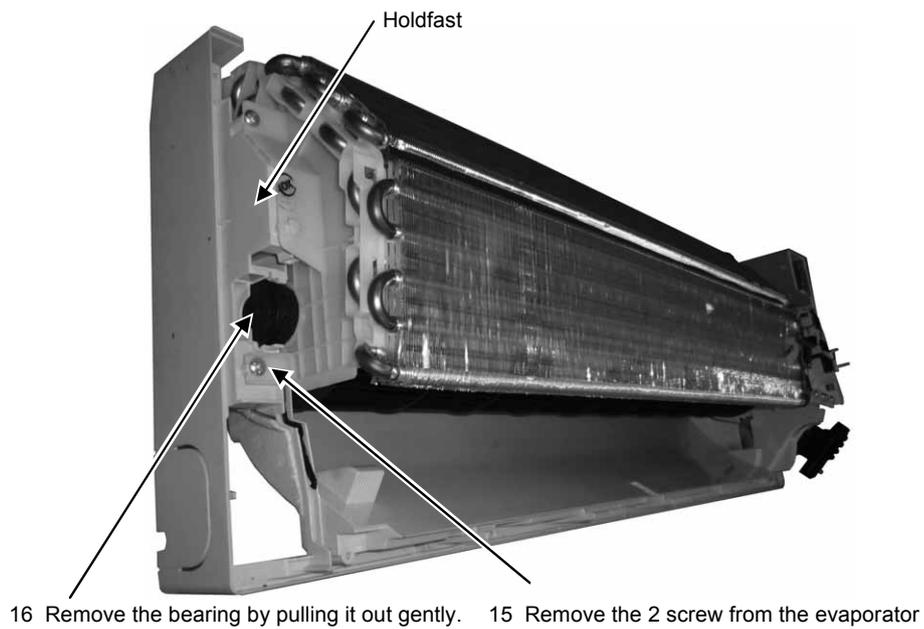
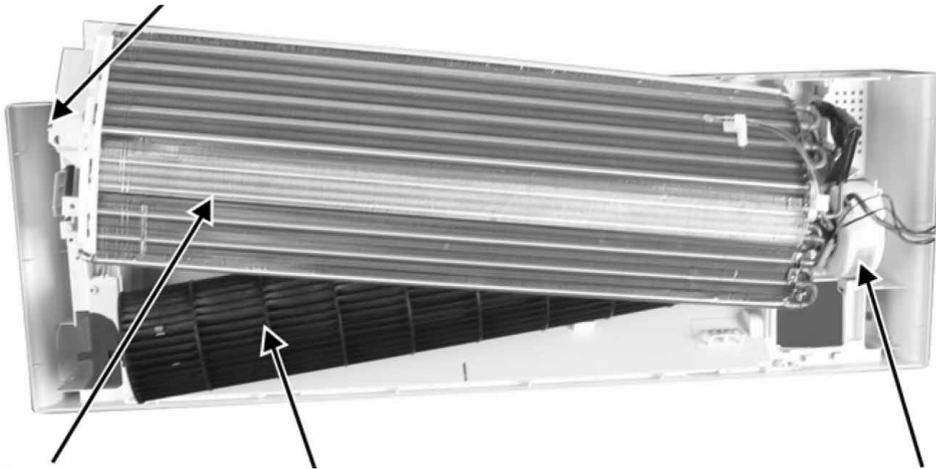


Figure 8

16 Push the holdfast to the left and lift up the evaporator.



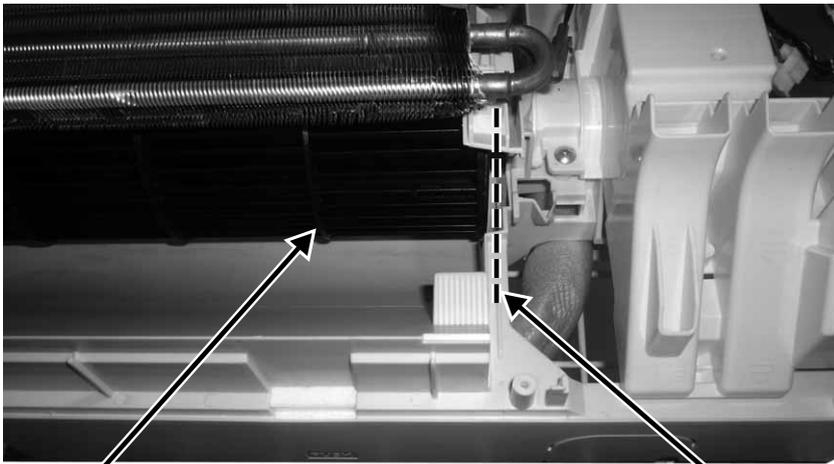
Evaporator

17 Remove the cross flow fan from the unit by pulling it to the left and downward.

18 Fan motor can be removed after the removal of cross flow fan.

Reminder: To reinstall the fan motor, please adjust the connector to 45° with fan motor before fixing control board.

Figure 9



Cross Flow Fan

Reminder: To reinstall the cross flow fan, ensure cross flow fan is in line as shown in figure 10.

Figure 10

⚠ WARNING

High Voltage is generated in the electrical parts area by the capacitor. Ensure that the capacitor has discharged sufficiently before proceeding with repair work. Failure to heed this caution may result in electric shocks.

16.2 CS-PC18TKF CS-PC24TKF

16.2.1 Indoor Electronic Controllers, Cross Flow Fan and Indoor Fan Motor Removal Procedures

16.2.1.1 To Remove Front Grille

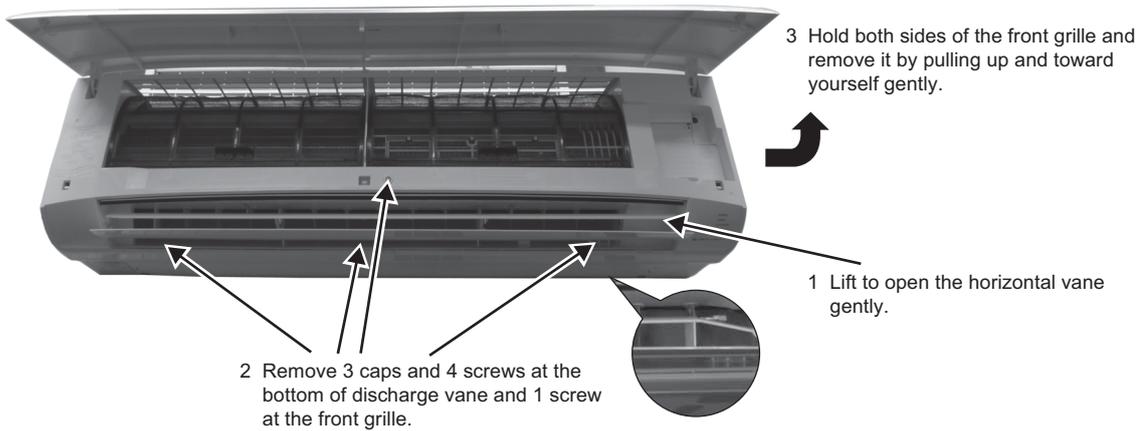


Figure 1

16.2.1.2 To Remove Horizontal Vane

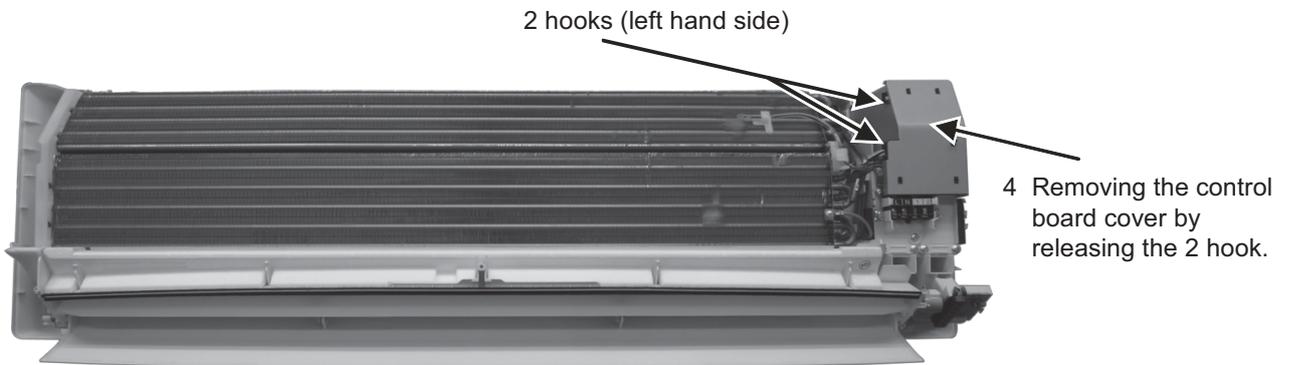


Figure 2

16.2.1.3 To Remove Main Electronic Controller

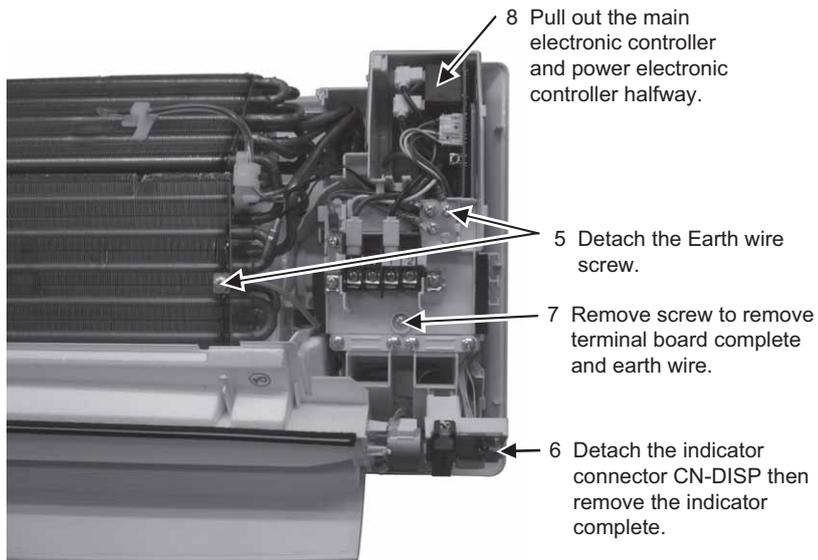
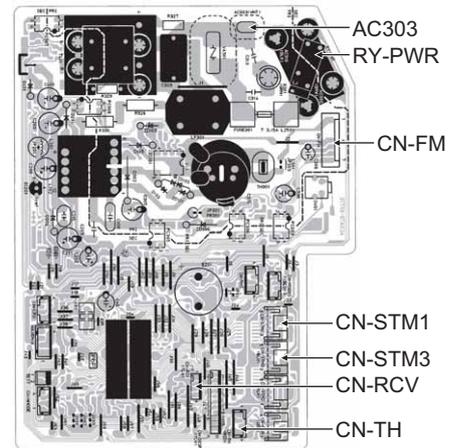


Figure 3

9 Detach 4 connectors as labeled from the electronic controller. Then pull out main controller gently.



10 Detach AC303 (WHT) from PCB, then detach the RY-PWR (Black and Brown) from terminal board.

Figure 4

16.2.1.4 To Remove Discharge Grille

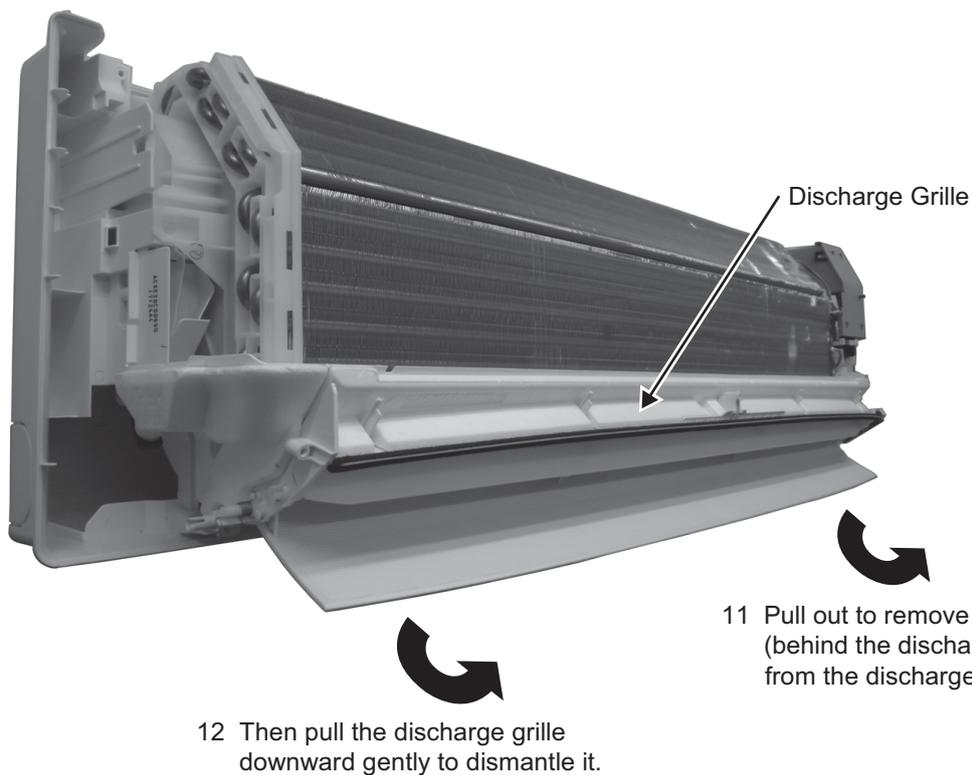


Figure 5

16.2.1.5 To Remove Control Board

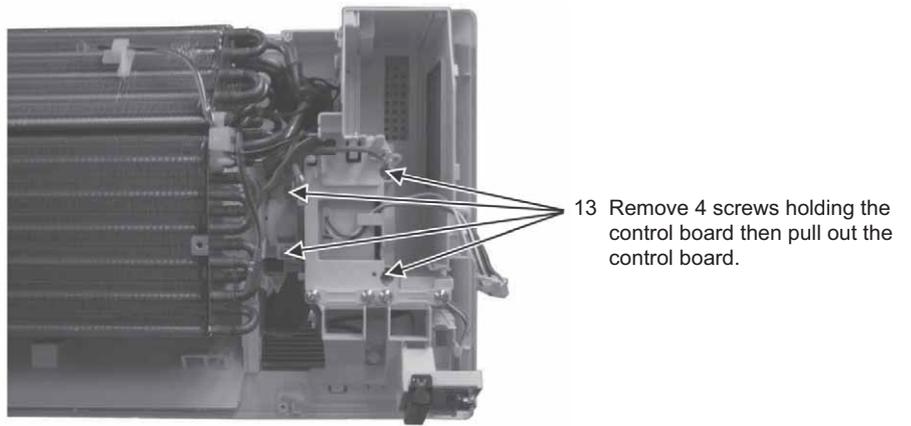


Figure 6

16.2.1.6 To Remove Cross Flow Fan and Indoor Fan Motor

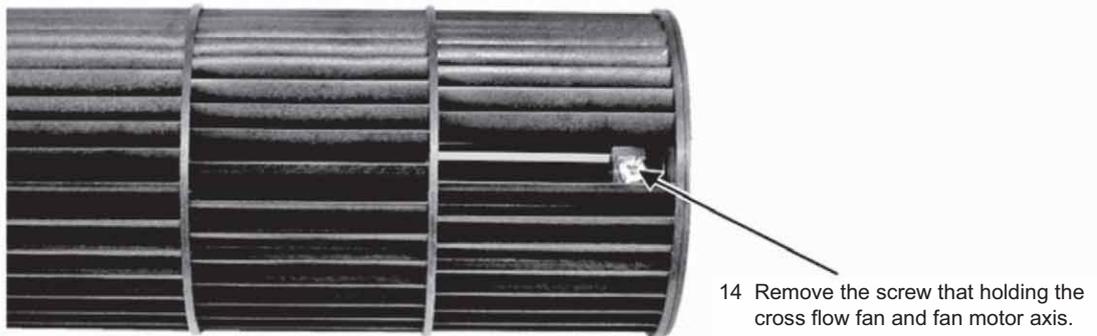


Figure 7

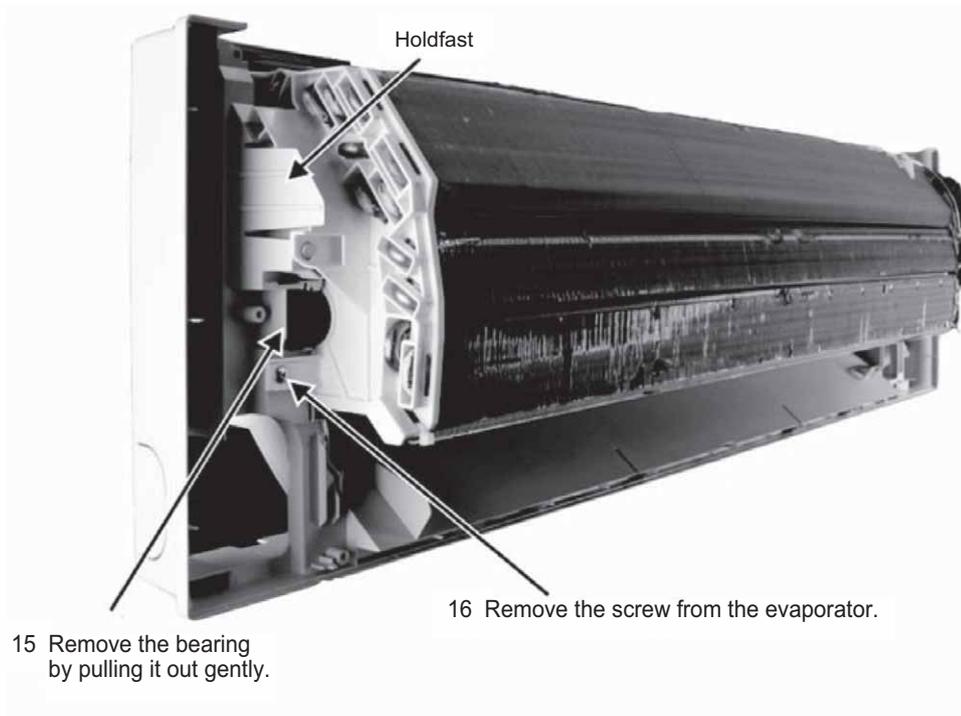
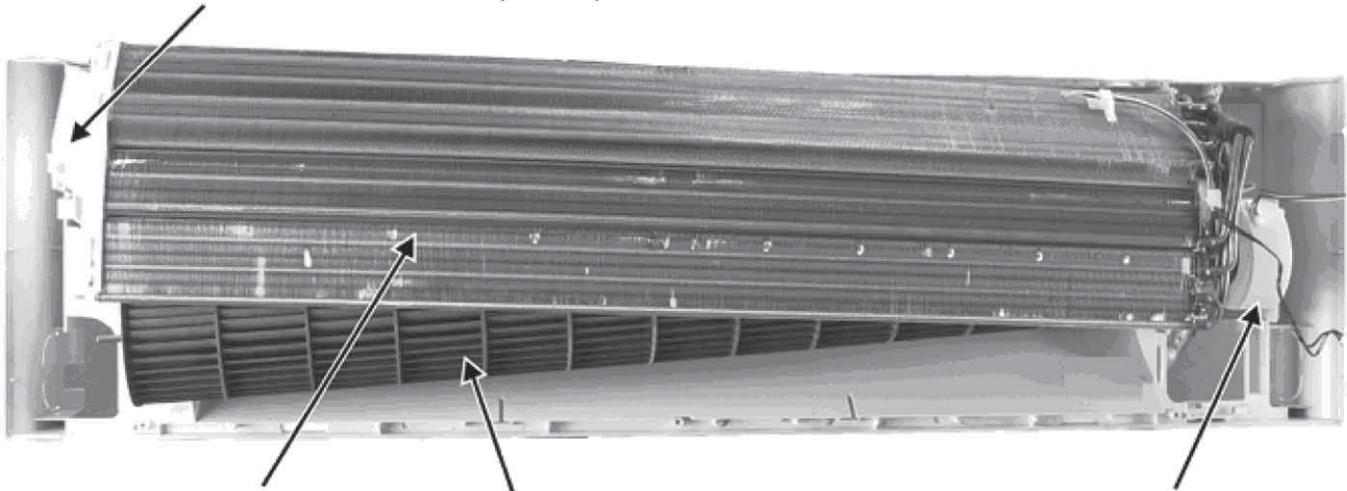


Figure 8

17 Push the holdfast to the left and lift up the evaporator.



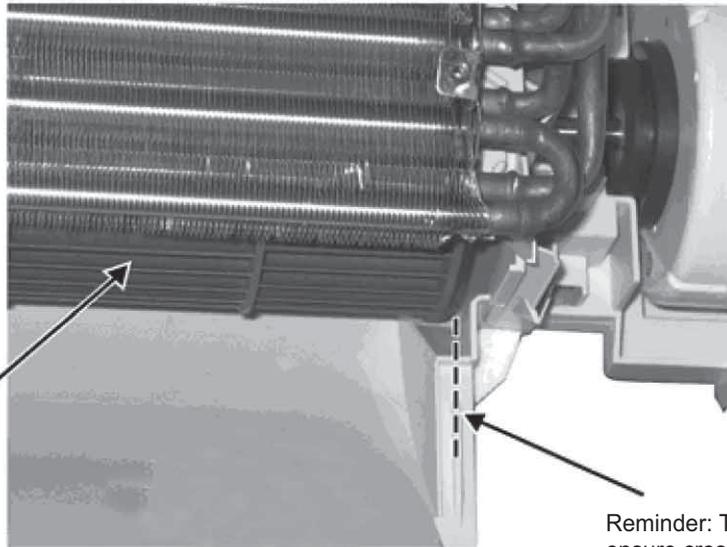
Evaporator

18 Remove the cross flow fan from the unit by pulling it to the left and downward.

19 Fan motor can be removed after the removal of cross flow fan.

Reminder: To reinstall the fan motor, please adjust the connector to 45° with fan motor before fixing control board.

Figure 9



Cross Flow Fan

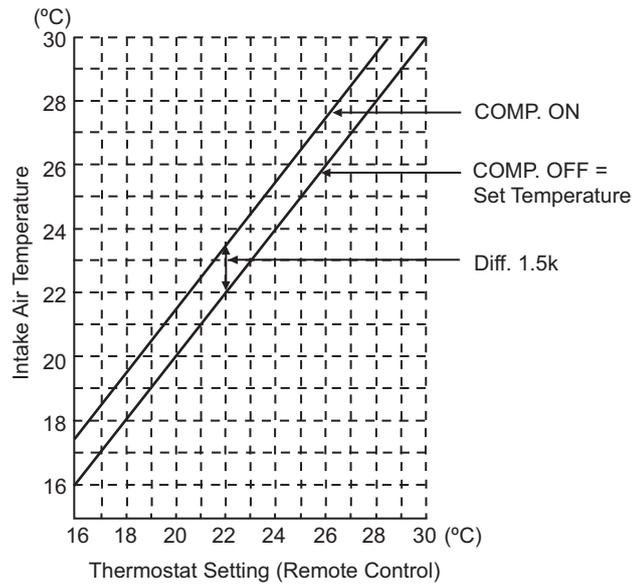
Reminder: To reinstall the cross flow fan, ensure cross flow fan is in line as shown in figure 10.

Figure 10

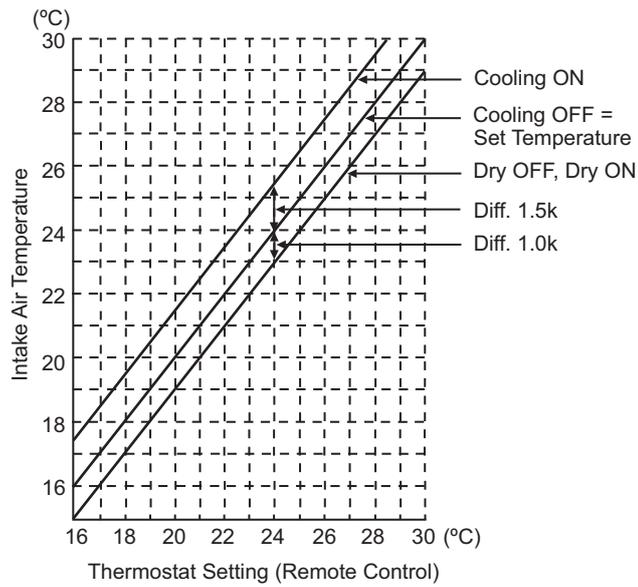
17. Technical Data

17.1 Thermostat Characteristics

Cooling



Soft Dry



17.2 Operation Characteristics

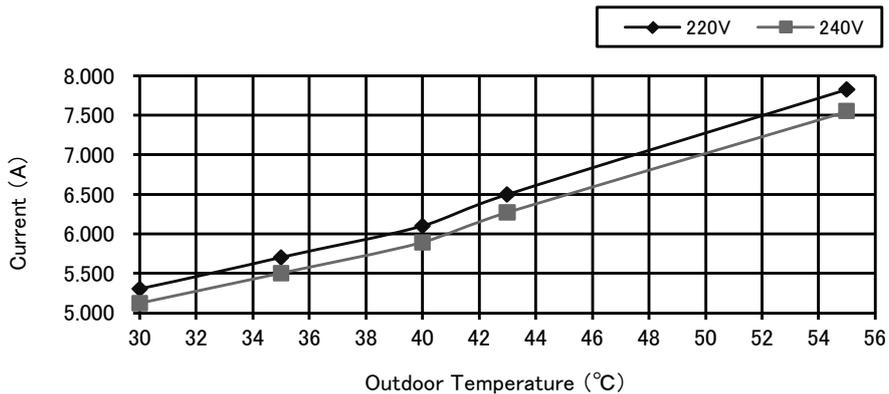
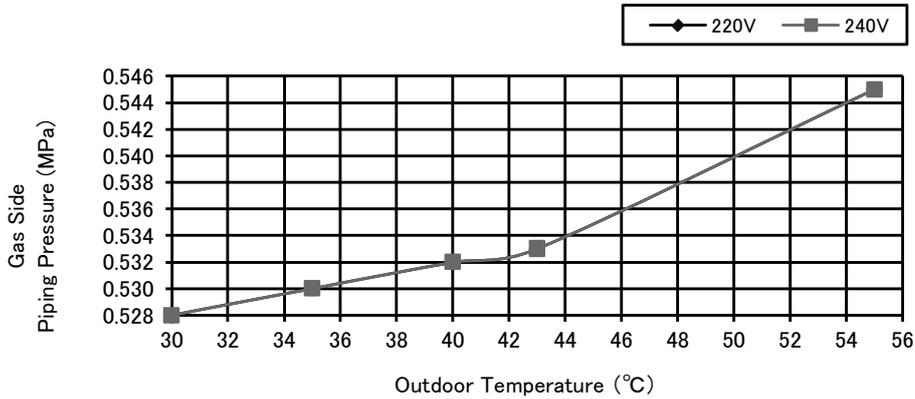
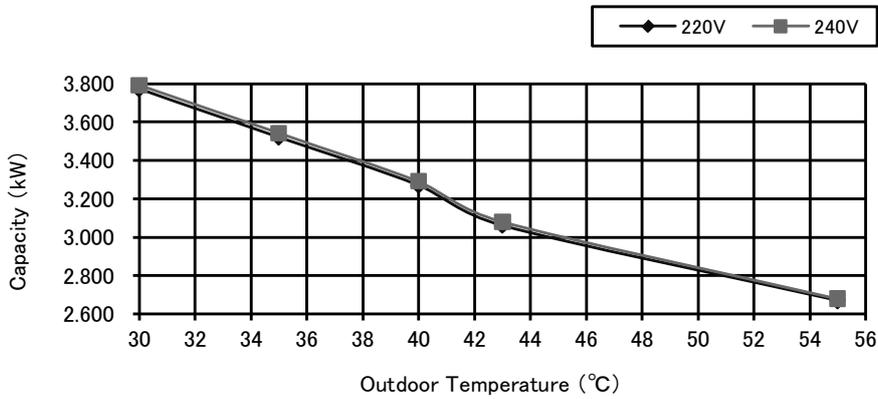
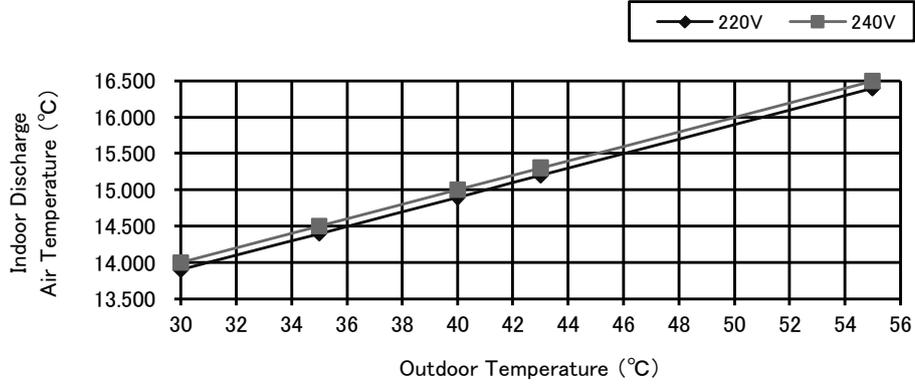
17.2.1 CS-PC12TKF CU-PC12TKF

- Cooling Characteristic

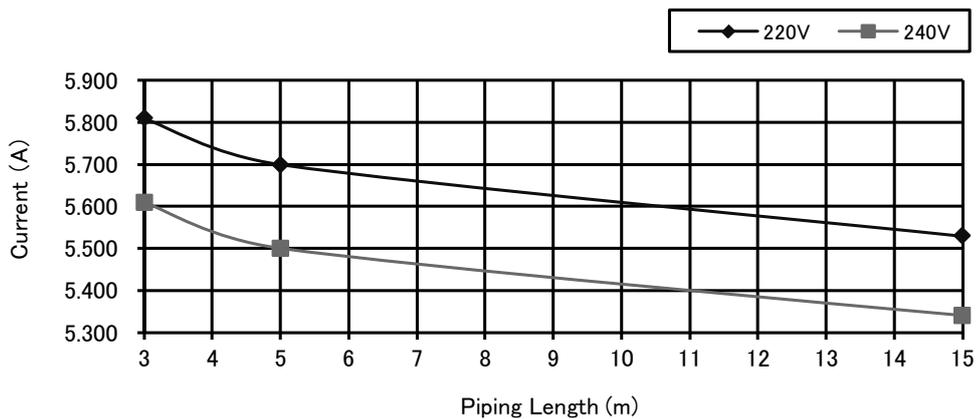
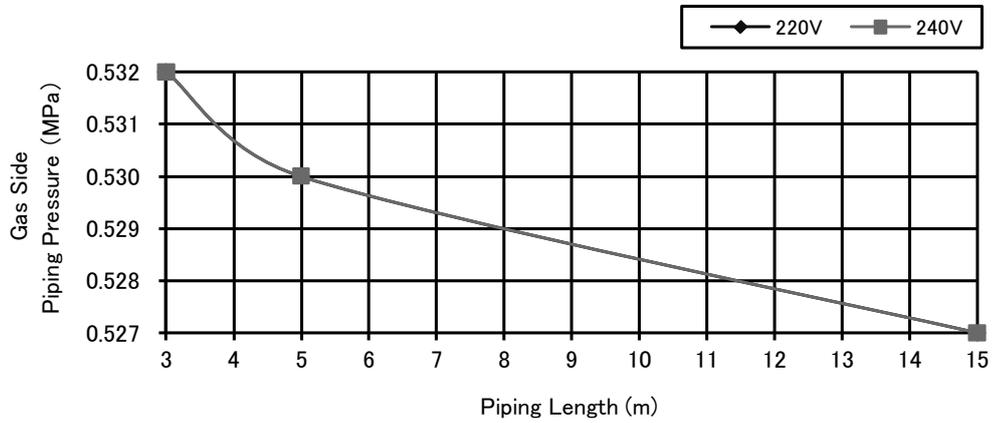
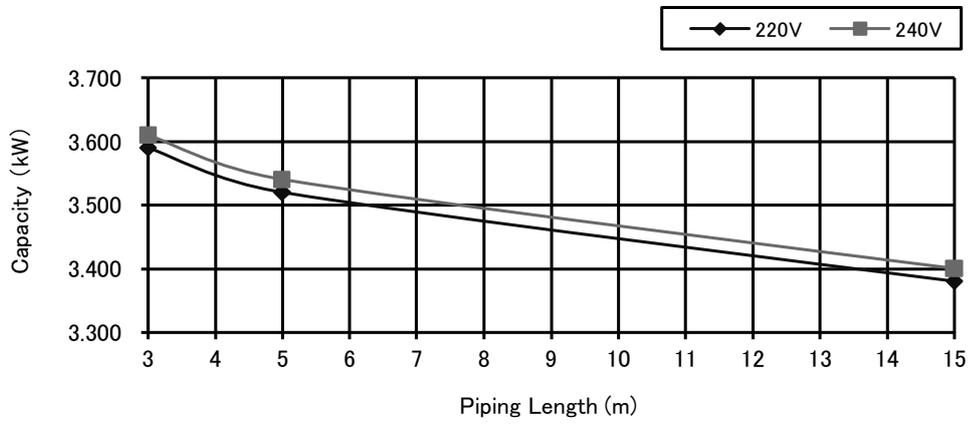
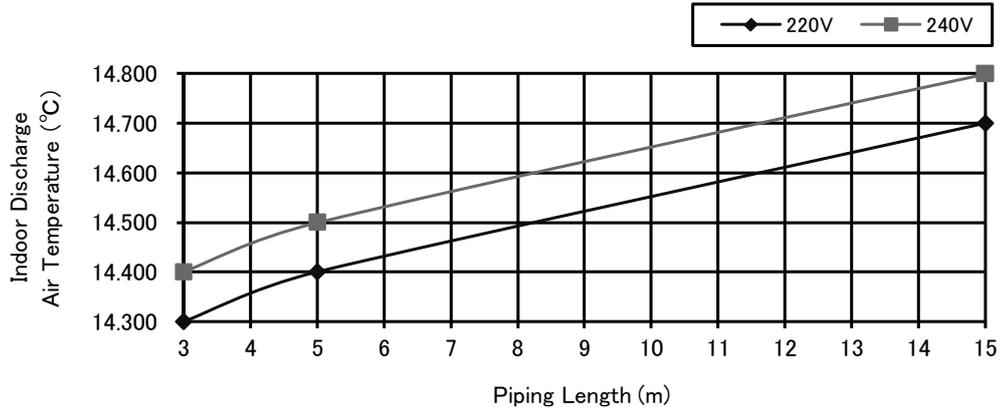
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m



- Piping Length Characteristic Cooling
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Outdoor temperature: 35°C (DBT), 24°C (WBT)
 Operation condition: High fan speed
 Piping length: 5.0 m



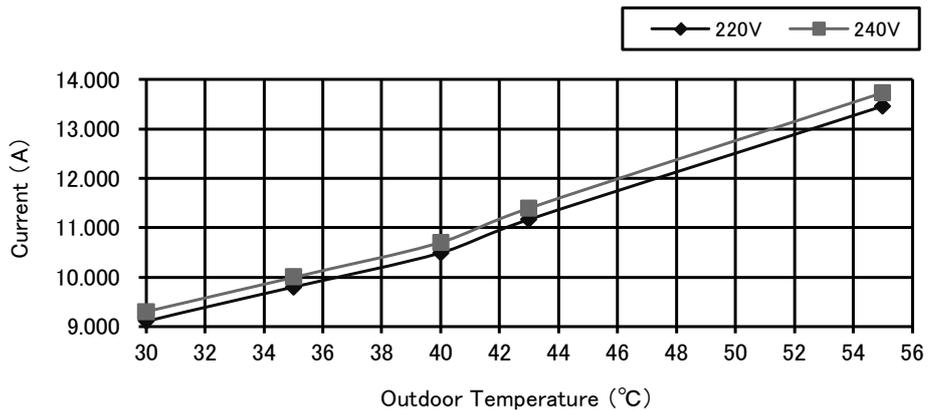
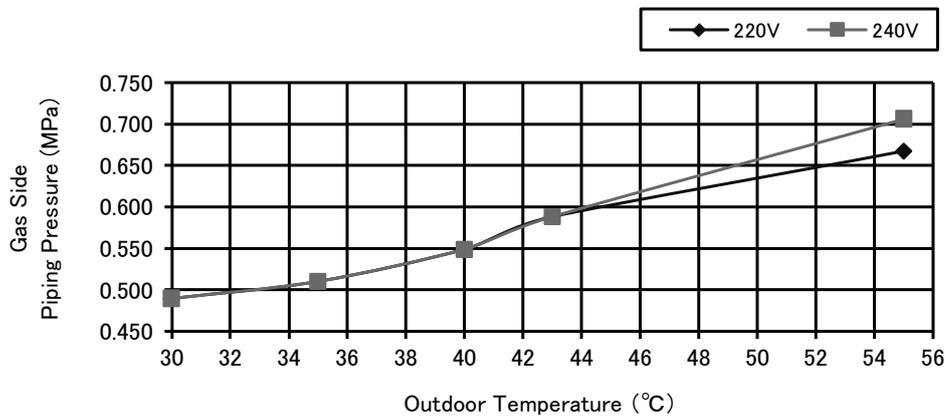
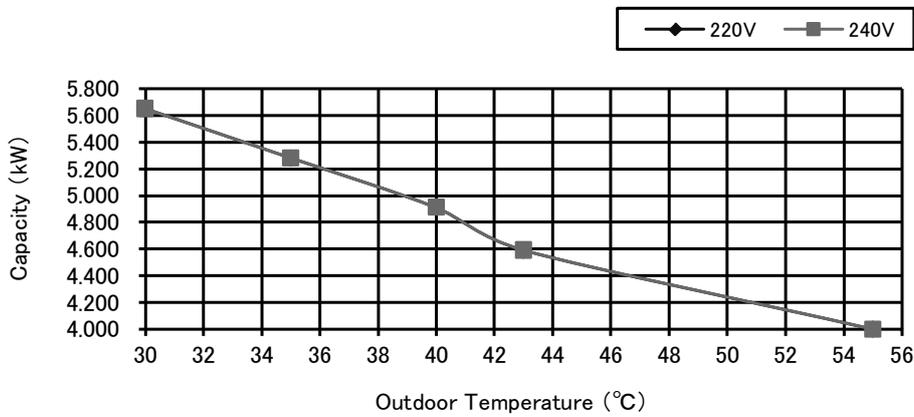
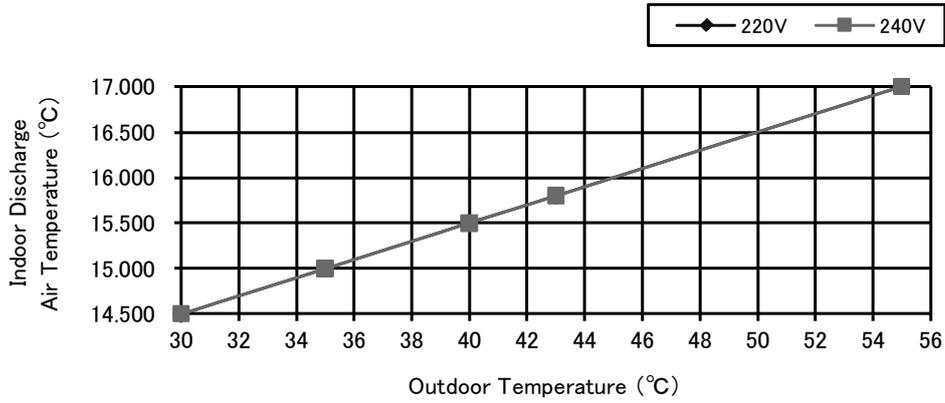
17.2.2 CS-PC18TKF CU-PC18TKF

- Cooling Characteristic

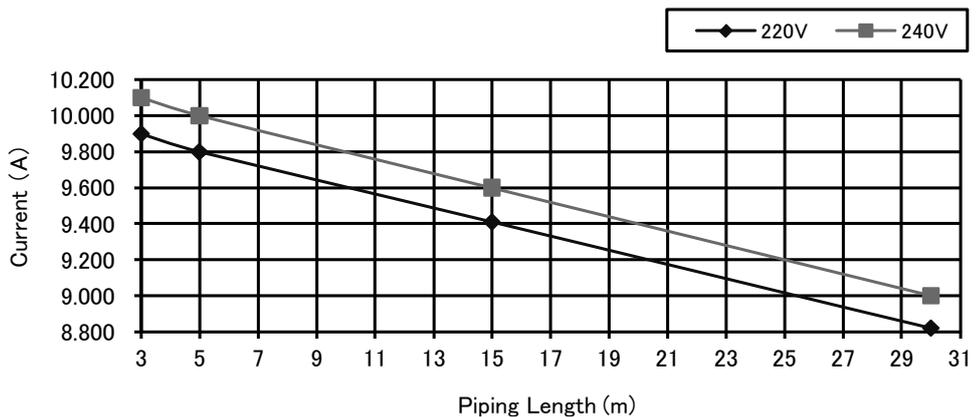
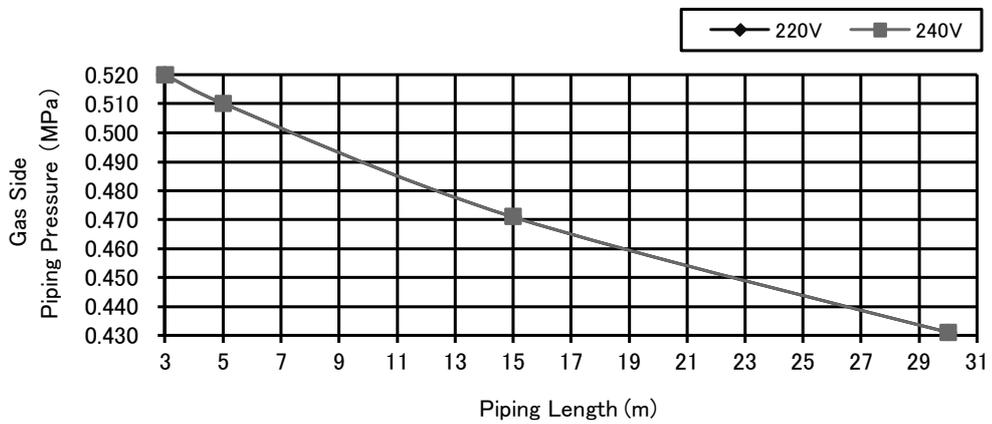
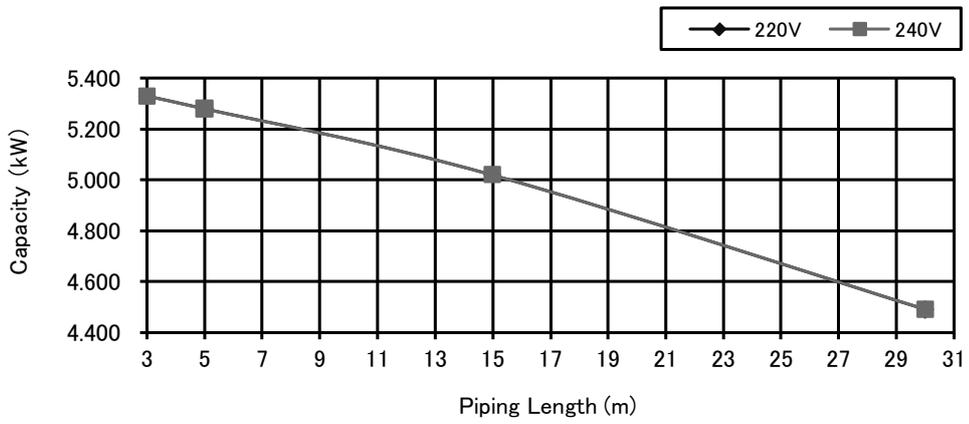
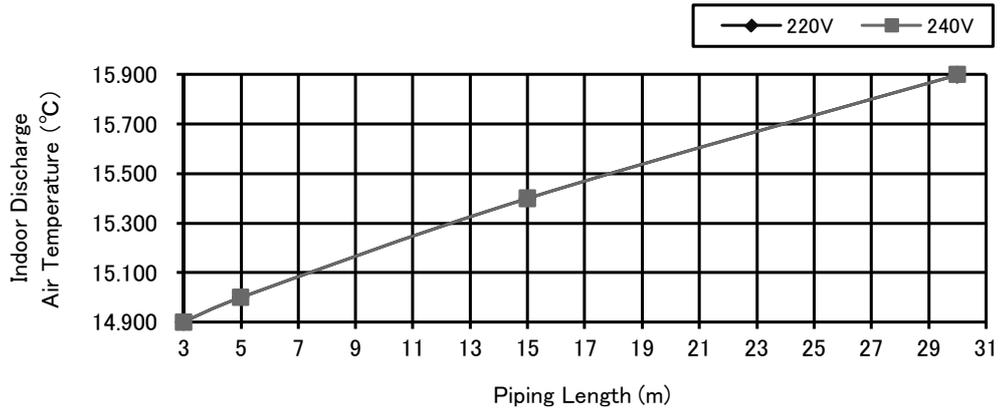
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m



- Piping Length Characteristic Cooling
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Outdoor temperature: 35°C (DBT), 24°C (WBT)
 Operation condition: High fan speed
 Piping length: 5.0 m



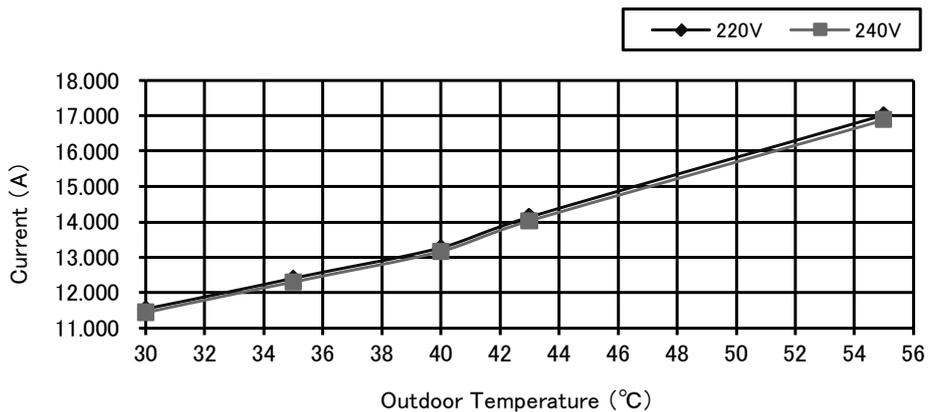
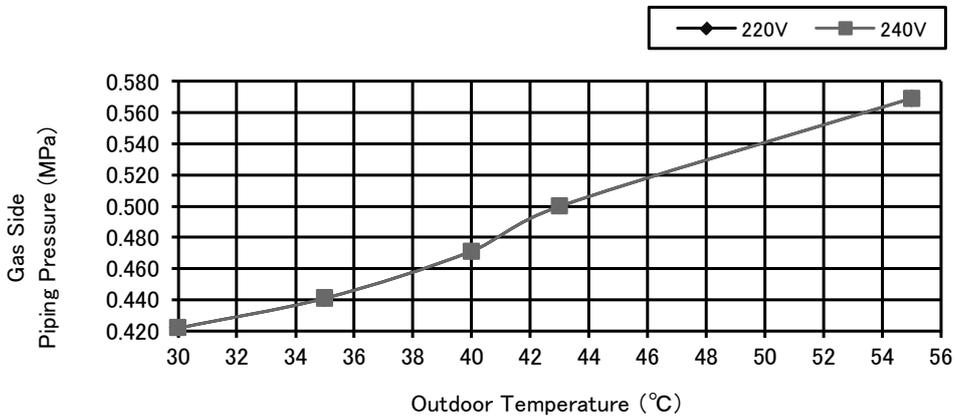
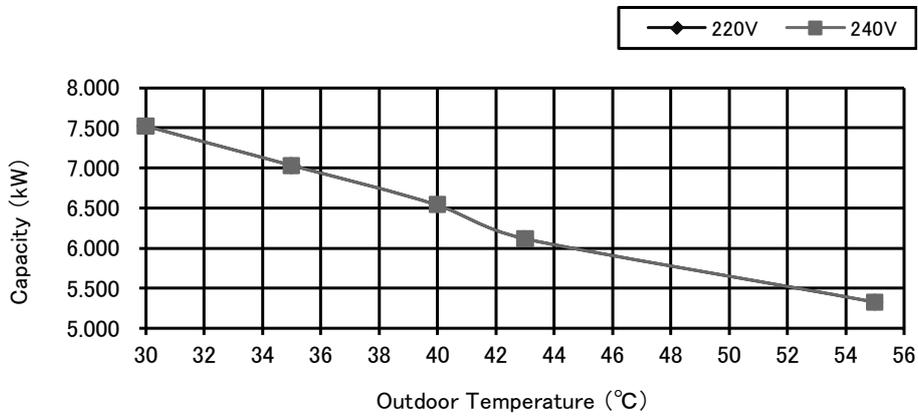
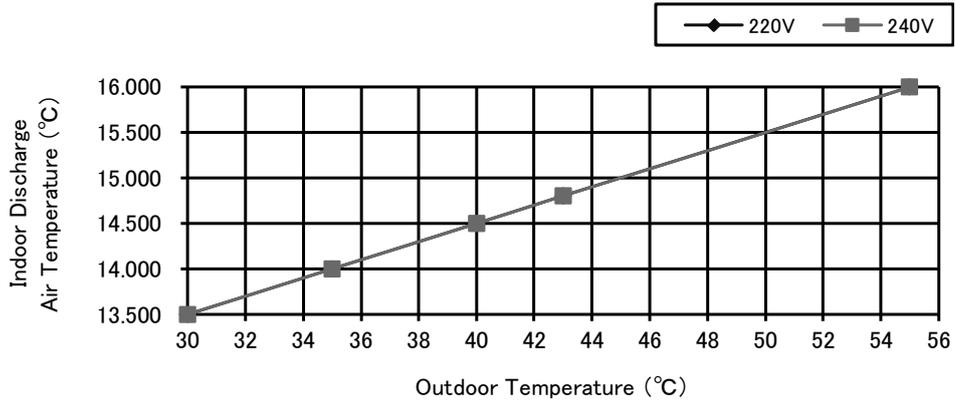
17.2.3 CS-PC24TKF CU-PC24TKF

- Cooling Characteristic

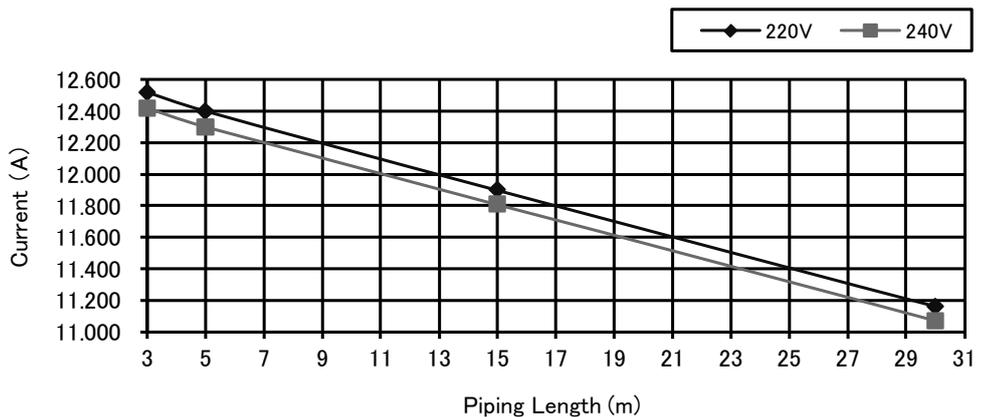
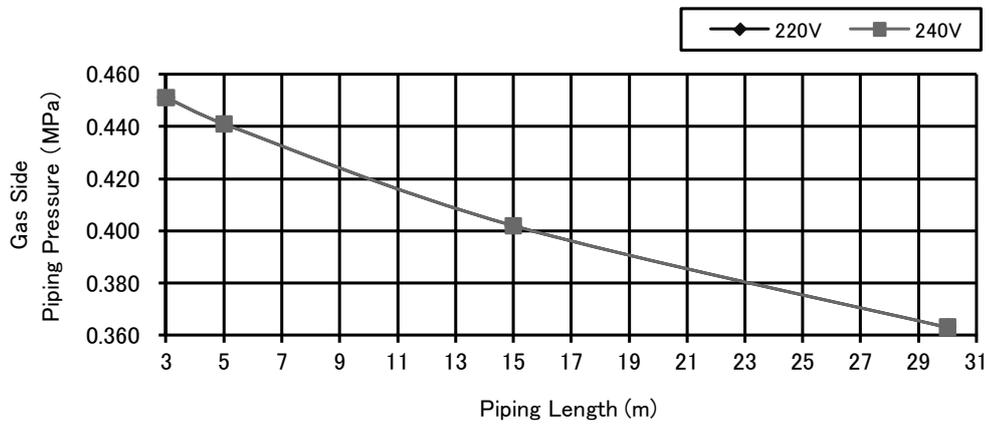
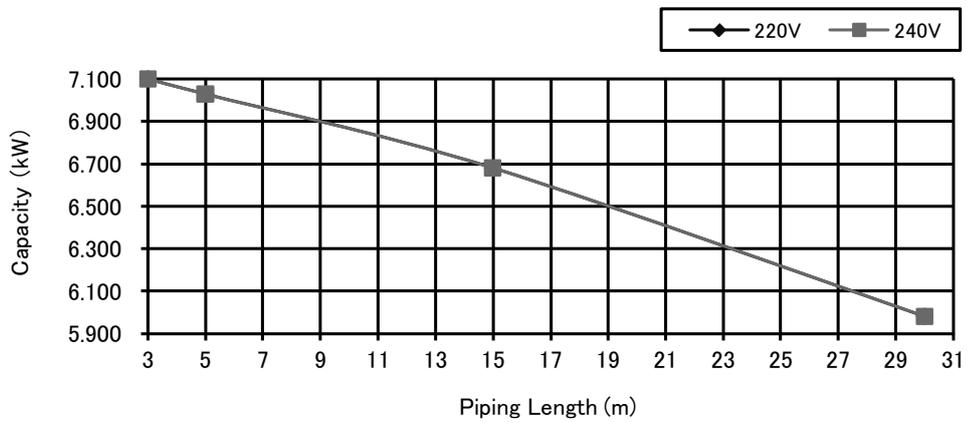
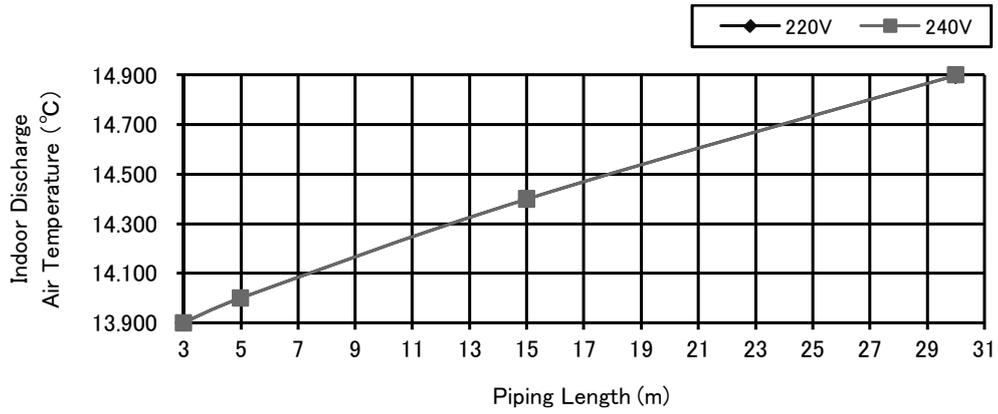
[Condition] Room temperature: 27°C (DBT), 19°C (WBT)

Operation condition: High fan speed

Piping length: 5.0 m



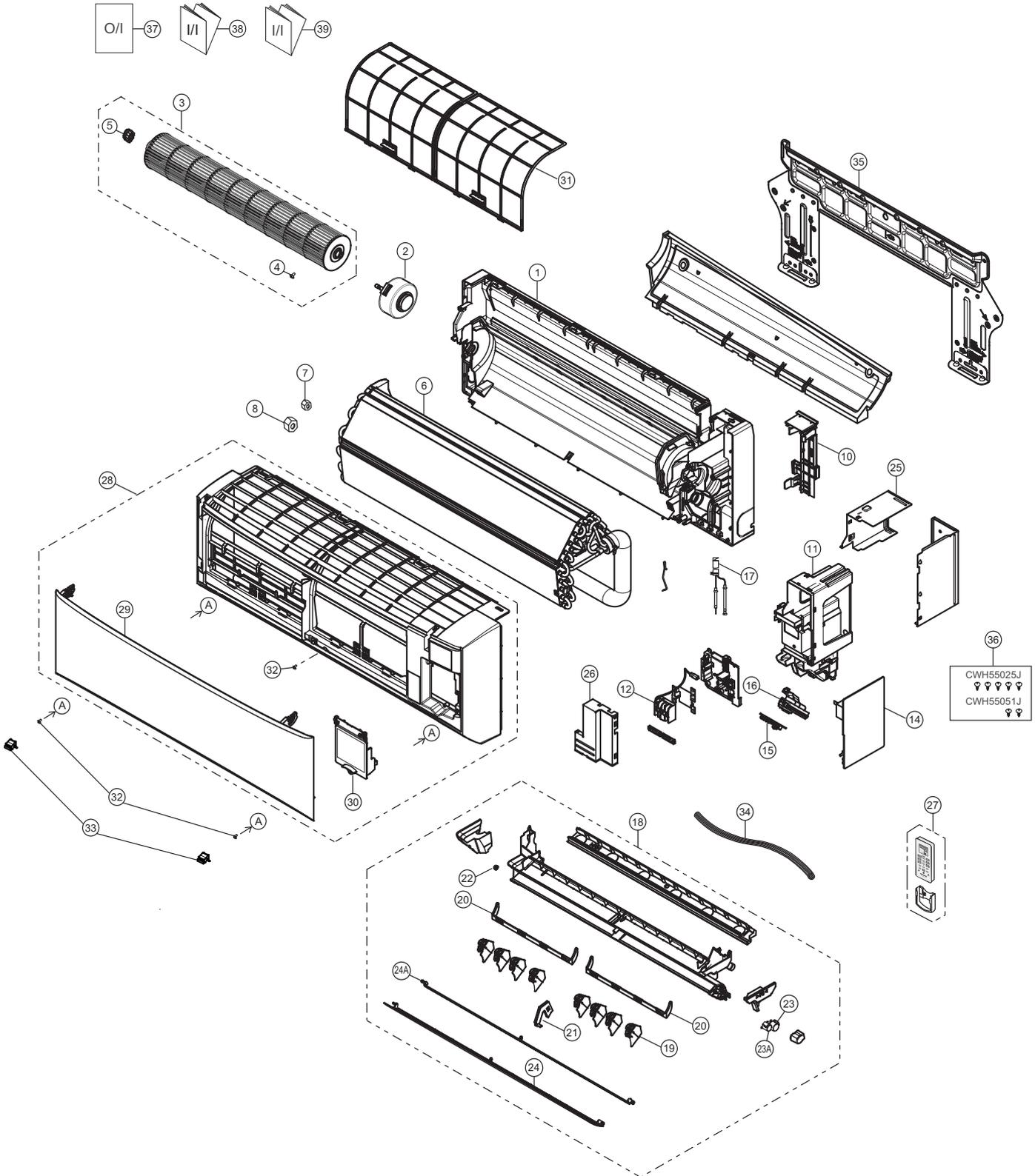
- Piping Length Characteristic Cooling
- [Condition] Room temperature: 27°C (DBT), 19°C (WBT)
 Outdoor temperature: 35°C (DBT), 24°C (WBT)
 Operation condition: High fan speed
 Piping length: 5.0 m



18. Exploded View and Replacement Parts List

18.1 Indoor Unit

18.1.1 CS-PC12TKF



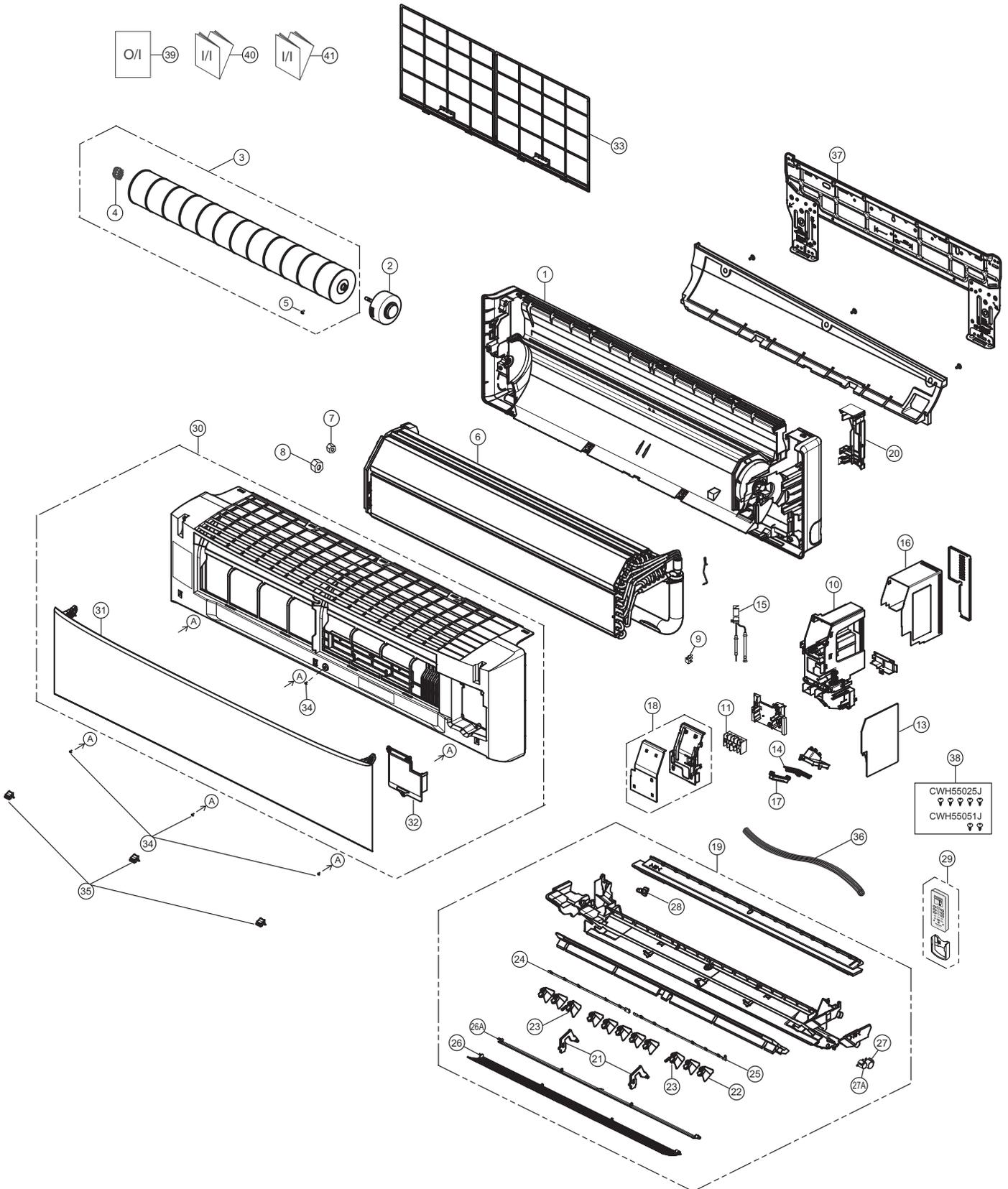
Note
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

| SAFETY | REF. NO. | PART NAME & DESCRIPTION | QTY. | CS-PC12TKF | REMARK |
|---|----------|-----------------------------------|------|--------------|--------|
| | 1 | CHASSIS COMPLETE | 1 | ACXD50C00450 | |
|  | 2 | FAN MOTOR | 1 | ACXA92-00090 | O |
| | 3 | CROSS-FLOW FAN COMPLETE | 1 | CWH02C1159 | |
| | 4 | SCREW - CROSS-FLOW FAN | 1 | CWH551146 | |
| | 5 | BEARING ASSY | 1 | CWH64K1006 | |
| | 6 | EVAPORATOR | 1 | ACXB30C02480 | |
| | 7 | FLARE NUT (LIQUID) | 1 | CWT251026 | |
| | 8 | FLARE NUT (GAS) | 1 | CWT251062 | |
| | 10 | BACK COVER CHASSIS | 1 | CWD933857A | |
| | 11 | CONTROL BOARD CASING | 1 | ACXH10C12510 | |
|  | 12 | TERMINAL BOARD COMPLETE | 1 | CWA28C2667 | O |
|  | 14 | ELECTRONIC CONTROLLER - MAIN | 1 | ACXA73C22270 | O |
|  | 15 | ELECTRONIC CONTROLLER - INDICATOR | 1 | ACXA73-08040 | O |
| | 16 | INDICATOR HOLDER | 1 | ACXD93-02460 | |
| | 17 | SENSOR COMPLETE | 1 | CWA50C2122 | O |
| | 18 | DISCHARGE GRILLE COMPLETE | 1 | ACXE20C01010 | |
| | 19 | VERTICAL VANE | 8 | ACXE24-00590 | |
| | 20 | CONNECTING BAR | 2 | ACXE26-00250 | |
| | 21 | FULCRUM | 1 | ACXH62-00120 | |
| | 22 | CAP - DRAIN TRAY | 1 | CWH521259 | |
|  | 23 | AIR SWING MOTOR | 1 | CWA981264 | O |
|  | 23A | AIR SWING MOTOR | 1 | CWA981299 | O |
| | 24 | HORIZONTAL VANE COMPLETE (BIG) | 1 | ACXE24C01090 | |
| | 24A | HORIZONTAL VANE COMPLETE (SMALL) | 1 | ACXE24C00950 | |
| | 25 | CONTROL BOARD TOP COVER | 1 | ACXH13-00700 | |
| | 26 | CONTROL BOARD FRONT COVER CO. | 1 | ACXH13C00180 | |
| | 27 | REMOTE CONTROL COMPLETE | 1 | ACXA75C04210 | O |
| | 28 | FRONT GRILLE COMPLETE | 1 | ACXE10C03050 | O |
| | 29 | INTAKE GRILLE COMPLETE | 1 | ACXE22C00950 | |
| | 30 | GRILLE DOOR COMPLETE | 1 | CWE14C1112 | |
| | 31 | AIR FILTER | 2 | CWD001385 | O |
| | 32 | SCREW - FRONT GRILLE | 3 | XTT4+16CFJ | |
| | 33 | CAP - FRONT GRILLE | 2 | ACXH52-00140 | |
| | 34 | DRAIN HOSE | 1 | CWH851173 | |
| | 35 | INSTALLATION PLATE | 1 | CWH361147 | |
| | 36 | BAG COMPLETE - INSTALLATION SCREW | 1 | CWH82C1705 | |
| | 37 | OPERATING INSTRUCTION | 1 | ACXF55-04430 | |
| | 38 | INSTALLATION INSTRUCTION | 1 | ACXF60-04630 | |
| | 39 | INSTALLATION INSTRUCTION | 1 | ACXF60-04640 | |

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

18.1.2 CS-PC18TKF CS-PC24TKF



Note
 The above exploded view is for the purpose of parts disassembly and replacement.
 The non-numbered parts are not kept as standard service parts.

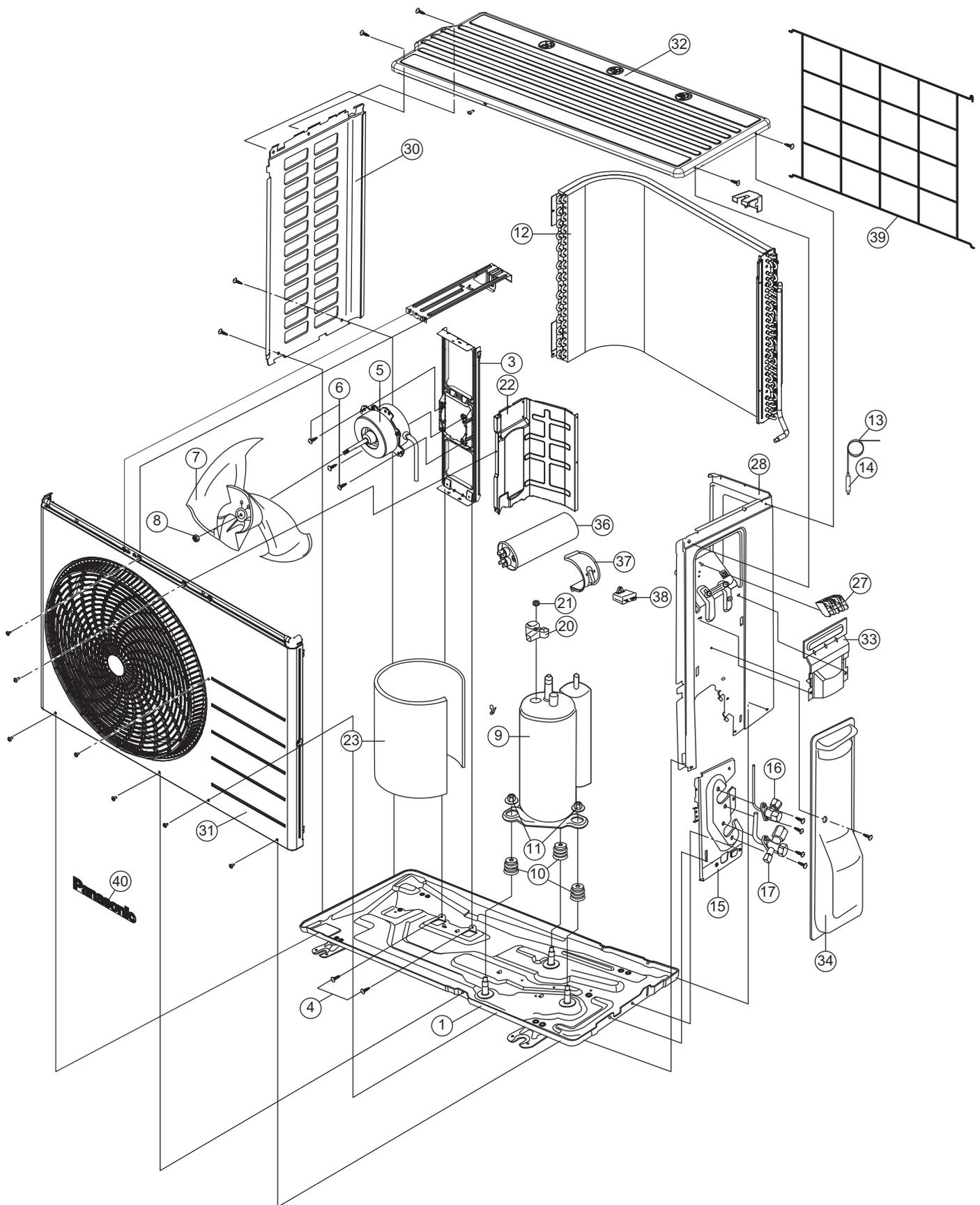
| SAFETY | REF. NO. | PART NAME & DESCRIPTION | QTY. | CS-PC18TKF | CS-PC24TKF | REMARK |
|---|----------|-----------------------------------|------|--------------|--------------|--------|
| | 1 | CHASSIS COMPLETE | 1 | ACXD50C00280 | ← | |
|  | 2 | FAN MOTOR | 1 | L6CBYYL1077 | L6CBYYL0193 | O |
| | 3 | CROSS-FLOW FAN COMPLETE | 1 | CWH02C1136 | ← | |
| | 4 | BEARING ASSY | 1 | CWH64K1010 | ← | |
| | 5 | SCREW - CROSS-FLOW FAN | 1 | CWH551146 | ← | |
| | 6 | EVAPORATOR | 1 | ACXB30C03290 | ACXB30C03340 | |
| | 7 | FLARE NUT (LIQUID) | 1 | CWT251026 | ← | |
| | 8 | FLARE NUT (GAS) | 1 | CWT251062 | CWT251036 | |
| | 9 | CLIP FOR SENSOR | 1 | CWH32142 | ← | |
| | 10 | CONTROL BOARD CASING | 1 | ACXH10-00720 | ← | |
|  | 11 | TERMINAL BOARD COMPLETE | 1 | CWA28C2756 | CWA28C2757 | O |
|  | 13 | ELECTRONIC CONTROLLER - MAIN | 1 | ACXA73C22280 | ACXA73C22290 | O |
|  | 14 | ELECTRONIC CONTROLLER - INDICATOR | 1 | ACXA73-07350 | ← | O |
| | 15 | SENSOR COMPLETE | 1 | CWA50C2122 | ← | O |
| | 16 | CONTROL BOARD COVER - METAL | 1 | ACXH13-00430 | ← | |
| | 17 | INDICATOR HOLDER | 1 | ACXD93-01960 | ← | |
| | 18 | CONTROL BOARD FRONT COVER CO. | 1 | ACXH13C00150 | ← | |
| | 19 | DISCHARGE GRILLE COMPLETE | 1 | ACXE20C00990 | ← | |
| | 20 | BACK COVER CHASSIS | 1 | CWD933463B | CWD933067B | |
| | 21 | FULCRUM | 2 | ACXH62-00080 | ← | |
| | 22 | VERTICAL VANE | 8 | ACXE24-00400 | ← | |
| | 23 | VERTICAL VANE | 3 | ACXE24-00630 | ← | |
| | 24 | CONNECTING BAR (LEFT) | 1 | ACXE26-00190 | ← | |
| | 25 | CONNECTING BAR (RIGHT) | 1 | ACXE26-00200 | ← | |
| | 26 | HORIZONTAL VANE COMPLETE (BIG) | 1 | ACXE24C01030 | ← | |
| | 26A | HORIZONTAL VANE COMPLETE (SMALL) | 1 | ACXE24C00540 | ← | |
|  | 27 | AIR SWING MOTOR | 1 | CWA981304 | ← | O |
|  | 27A | AIR SWING MOTOR | 1 | CWA981299 | ← | O |
| | 28 | CAP - DRAIN TRAY | 1 | CWH521259 | ← | |
| | 29 | REMOTE CONTROL COMPLETE | 1 | ACXA75C04210 | ← | O |
| | 30 | FRONT GRILLE COMPLETE | 1 | ACXE10C02960 | ← | |
| | 31 | INTAKE GRILLE COMPLETE | 1 | ACXE22C00860 | ← | |
| | 32 | GRILLE DOOR COMPLETE | 1 | ACXE14C00050 | ← | |
| | 33 | AIR FILTER | 2 | ACXD00-00250 | ← | O |
| | 34 | SCREW - FRONT GRILLE | 4 | XTT4+16CFJ | ← | |
| | 35 | CAP - FRONT GRILLE | 3 | ACXH52-00100 | ← | |
| | 36 | DRAIN HOSE | 1 | CWH851173 | ← | |
| | 37 | INSTALLATION PLATE | 1 | CWH361098 | ← | |
| | 38 | BAG COMPLETE - INSTALLATION SCREW | 1 | CWH82C1705 | ← | |
| | 39 | OPERATING INSTRUCTION | 1 | ACXF55-10150 | ← | |
| | 40 | INSTALLATION INSTRUCTION | 1 | ACXF60-04630 | ← | |
| | 41 | INSTALLATION INSTRUCTION | 1 | ACXF60-04640 | ← | |

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

18.2 Outdoor Unit

18.2.1 CU-PC12TKF



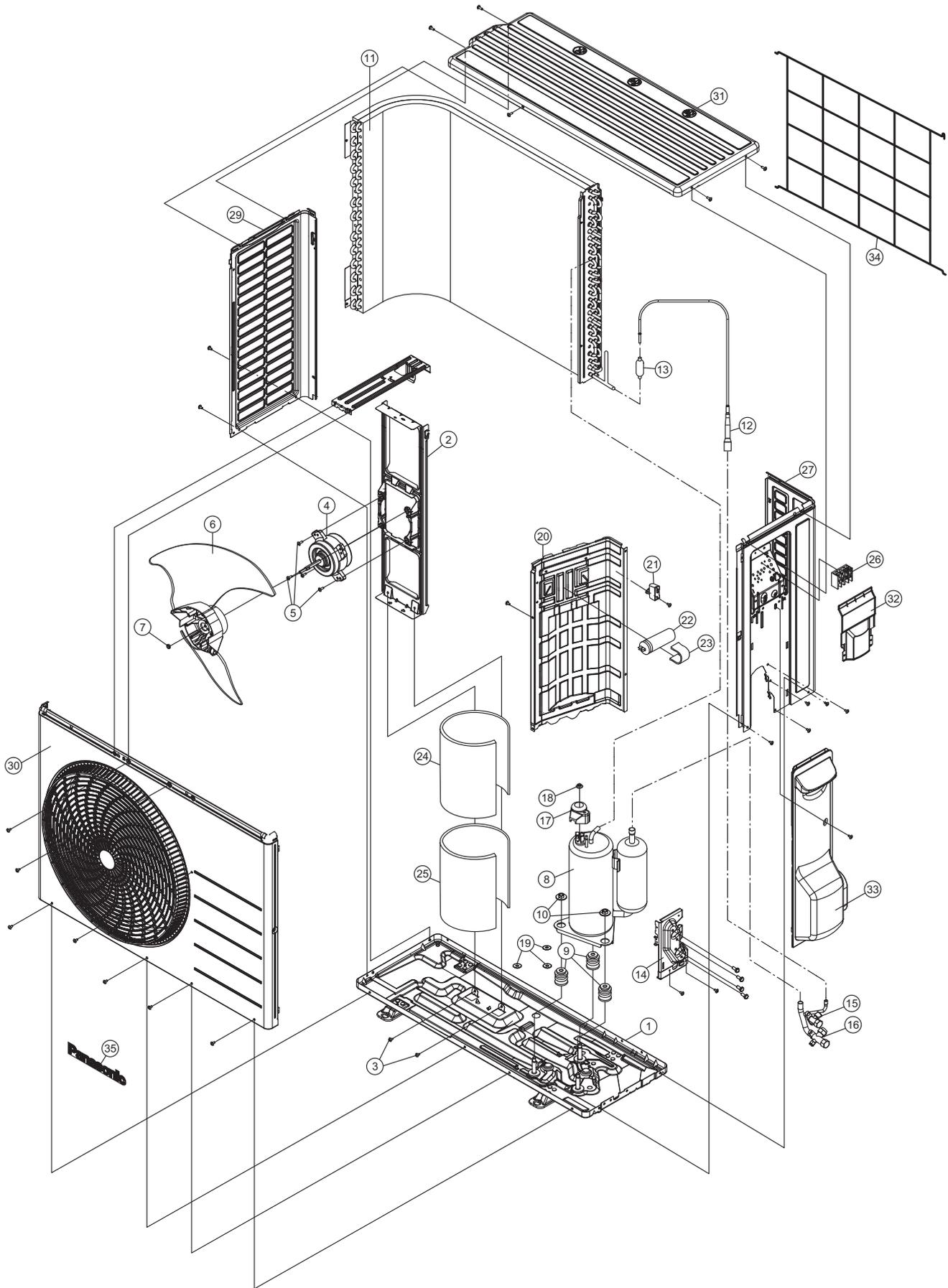
Note
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

| SAFETY | REF. NO. | PART NAME & DESCRIPTION | QTY. | CU-PC12TKF | REMARK |
|---|----------|--------------------------------|------|--------------|--------|
| | 1 | CHASSIS ASSY | 1 | CWD52K1400 | |
| | 3 | FAN MOTOR BRACKET | 1 | CWD541157 | |
| | 4 | SCREW - FAN MOTOR BRACKET | 2 | CWH551217 | |
|  | 5 | FAN MOTOR | 1 | ACXA95-00440 | O |
| | 6 | SCREW - FAN MOTOR MOUNT | 4 | CWH55406J | |
| | 7 | PROPELLER FAN ASSY | 1 | CWH03K1100 | |
| | 8 | NUT - PROPELLER FAN | 1 | CWH56053J | |
|  | 9 | COMPRESSOR | 1 | 2KS210D5AA06 | O |
| | 10 | ANTI - VIBRATION BUSHING | 3 | CWH50055 | |
| | 11 | NUT - COMPRESSOR MOUNT | 3 | CWH561049 | |
| | 12 | CONDENSER | 1 | CWB32C2821 | |
| | 13 | CAPILLARY TUBE ASSY | 1 | CWB15K1165 | |
| | 14 | STRAINER | 1 | CWB111011 | |
| | 15 | HOLDER COUPLING | 1 | CWH351233-1 | |
| | 16 | 2-WAY VALVE (LIQUID) | 1 | CWB021362 | O |
| | 17 | 3-WAY VALVE (GAS) | 1 | CWB011482 | O |
| | 20 | TERMINAL COVER | 1 | CWH171012 | |
| | 21 | NUT - TERMINAL COVER | 1 | CWH7080300J | |
| | 22 | SOUND PROOF BOARD | 1 | CWH151430 | |
| | 23 | SOUND PROOF MATERIAL | 1 | CWG302673 | |
|  | 27 | TERMINAL BOARD ASSY | 1 | CWA28K1272 | O |
| | 28 | CABINET SIDE PLATE CO. | 1 | ACXE04C00770 | |
| | 30 | CABINET SIDE PLATE | 1 | CWE041858A | |
| | 31 | CABINET FRONT PLATE ASSY | 1 | CWE06K1116 | |
| | 32 | CABINET TOP PLATE | 1 | CWE031230A | |
| | 33 | PLATE - C. B. COVER | 1 | CWH131295 | |
| | 34 | CONTROL BOARD COVER - COMPLETE | 1 | CWH13C1359 | |
|  | 36 | CAPACITOR - COMP. | 1 | F0GAH356A001 | O |
| | 37 | HOLDER CAPACITOR | 1 | CWH30060 | |
|  | 38 | CAPACITOR - FM | 1 | DS441205NPQA | O |
| | 39 | WIRE NET | 1 | CWD041212A | |
| | 40 | PANASONIC BADGE | 1 | CWE373439 | |

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

18.2.2 CU-PC18TKF



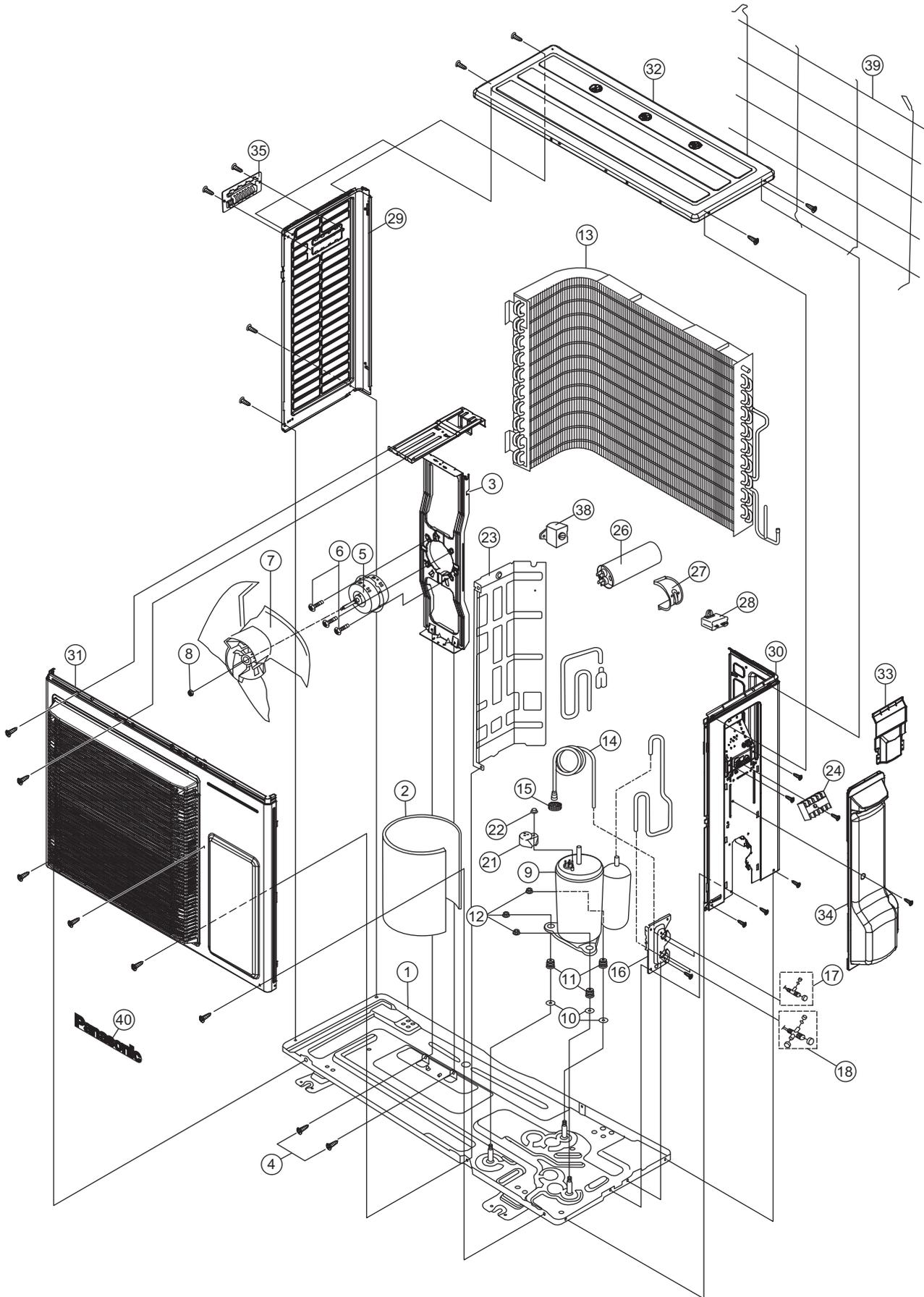
Note
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts

| SAFETY | REF. NO. | PART NAME & DESCRIPTION | QTY. | CU-PC18TKF | REMARK |
|---|----------|--------------------------------|------|--------------|--------|
| | 1 | CHASSIS ASSY | 1 | CWD52K1280 | |
| | 2 | FAN MOTOR BRACKET | 1 | CWD541167 | |
| | 3 | SCREW - FAN MOTOR BRACKET | 3 | CWH551217 | |
|  | 4 | FAN MOTOR | 1 | ACXA92-00120 | O |
| | 5 | SCREW - FAN MOTOR MOUNT | 4 | CWH55406J | |
| | 6 | PROPELLER FAN ASSY | 1 | CWH03K1066 | |
| | 7 | NUT - PROPELLER FAN | 1 | CWH56053J | |
|  | 8 | COMPRESSOR | 1 | 2KS324D5AC06 | O |
| | 9 | ANTI - VIBRATION BUSHING | 3 | CWH50055 | |
| | 10 | NUT - COMPRESSOR MOUNT | 3 | CWH561049 | |
| | 11 | CONDENSER | 1 | ACXB32C08630 | |
| | 12 | CAPILLARY TUBE ASSY | 1 | ACXB15K03060 | |
| | 13 | STRAINER | 1 | CWB11025 | |
| | 14 | HOLDER COUPLING | 1 | CWH351233-1 | |
| | 15 | 2-WAY VALVE (LIQUID) | 1 | CWB021077 | O |
| | 16 | 3-WAY VALVE (GAS) | 1 | CWB011105 | O |
| | 17 | TERMINAL COVER | 1 | CWH171012 | |
| | 18 | NUT - TERMINAL COVER | 1 | CWH7080300J | |
| | 19 | PACKING | 3 | CWB81043 | |
| | 20 | SOUND PROOF BOARD | 1 | ACXH15-00350 | |
|  | 21 | CAPACITOR - FM | 1 | DS441456CPNC | O |
|  | 22 | CAPACITOR - COMP. | 1 | DS441355NPQA | O |
| | 23 | HOLDER CAPACITOR | 1 | CWH30060 | |
| | 24 | SOUND PROOF MATERIAL | 1 | ACXG30-04840 | |
| | 25 | SOUND PROOF MATERIAL | 1 | ACXG30-04850 | |
|  | 26 | TERMINAL BOARD ASSY | 1 | CWA28K1064J | O |
| | 27 | CABINET SIDE PLATE CO. | 1 | ACXE04C03180 | |
| | 29 | CABINET SIDE PLATE | 1 | CWE041579A | |
| | 30 | CABINET FRONT PLATE ASSY | 1 | ACXE06C01590 | |
| | 31 | CABINET TOP PLATE | 1 | CWE031148A | |
| | 32 | PLATE - C. B. COVER | 1 | CWH131470 | |
| | 33 | CONTROL BOARD COVER - COMPLETE | 1 | CWH13C1253 | |
| | 34 | WIRE NET | 1 | CWD041166A | |
| | 35 | PANASONIC BADGE | 1 | CWE373439 | |

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.

18.2.3 CU-PC24TKF



Note
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

| SAFETY | REF. NO. | PART NAME & DESCRIPTION | QTY. | CU-PC24TKF | REMARK |
|---|----------|------------------------------|------|---------------|--------|
| | 1 | CHASSIS ASS'Y | 1 | ACXD52K00310 | |
| | 2 | SOUND PROOF MATERIAL | 1 | ACXG30-04710 | |
| | 3 | FAN MOTOR BRACKET | 1 | ACXD54-00180 | |
| | 4 | SCREW - FAN MOTOR BRACKET | 3 | CWH551217 | |
|  | 5 | FAN MOTOR | 1 | CWA951689 | O |
| | 6 | SCREW - FAN MOTOR MOUNT | 3 | CWH55252J | |
| | 7 | PROPELLER FAN ASS'Y | 1 | CWH03K1017 | |
| | 8 | NUT - PROPELLER FAN | 1 | CWH561092 | |
|  | 9 | COMPRESSOR | 1 | 2JS438D3EA04 | O |
| | 10 | PACKING | 3 | CWB81043 | |
| | 11 | ANTI - VIBRATION BUSHING | 3 | CWH50055 | |
| | 12 | NUT - COMPRESSOR MOUNT | 3 | CWH561049 | |
| | 13 | CONDENSER | 1 | ACXB32C00050 | |
| | 14 | CAPILLARY TUBE ASS'Y | 1 | ACXB15K02890 | |
| | 15 | STRAINER | 1 | CWB11025 | |
| | 16 | HOLDER COUPLING | 1 | CWH351225 | |
| | 17 | 2-WAY VALVE (LIQUID) | 1 | CWB021574 | O |
| | 18 | 3-WAY VALVE (GAS) | 1 | CWB011484 | O |
| | 21 | TERMINAL COVER | 1 | CWH171012 | |
| | 22 | NUT - TERMINAL COVER | 1 | CWH7080300J | |
| | 23 | SOUND PROOF BOARD | 1 | ACXH15-00310 | |
|  | 24 | TERMINAL BOARD ASS'Y | 1 | CWA28K1272 | O |
|  | 26 | CAPACITOR - COM. | 1 | CWA312079 | O |
| | 27 | HOLDER CAPACITOR | 1 | CWH30060 | |
|  | 28 | CAPACITOR - F.M | 1 | DS441505NPQB | O |
| | 29 | CABINET SIDE PLATE | 1 | ACXE04-00490A | |
| | 30 | CABINET SIDE PLATE COMPLETE | 1 | ACXE04C03190 | |
| | 31 | CABINET FRONT PLATE ASS'Y | 1 | ACXE06K00500 | |
| | 32 | CABINET TOP PLATE | 1 | ACXE03-01180A | |
| | 33 | PLATE - C. B. COVER | 1 | CWH131470 | |
| | 34 | CONTROL BOARD COVER COMPLETE | 1 | ACXH13C00170 | |
| | 35 | HANDLE | 1 | CWE161010 | |
| | 38 | THERMOSTAT | 1 | CWA151061 | |
| | 39 | WIRE NET | 1 | ACXD04-00170A | |
| | 40 | PANASONIC BADGE | 1 | CWE373439 | |

(Note)

- All parts are supplied from PAPAMY, Malaysia (Vendor Code: 00029488).
- "O" marked parts are recommended to be kept in stock.